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EvergreenHealth / Totem Lake

Traffic Study

April 23, 2019

Prepared for:

EvergreenHealth

and

CITY OF KIRKLAND
WASHINGTON

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4/23/2019

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Abbreviations

TSI	Transportation Solutions, Inc.
WSDOT	Washington State Department of Transportation
CIP	City of Kirkland Capital Improvement Plan
BKR	Bellevue-Kirkland-Redmond Tri-City Travel Demand Model
HCM	Highway Capacity Manual
LOS	Level-of-Service measured in seconds of control delay
V/C	Volume-to-Capacity ratio
TBD	To-Be-Determined
BRT	Bus Rapid Transit, Sound Transit
CKC	Cross Kirkland Corridor
SOV	Single-Occupancy Vehicle
HOV	High-Occupancy Vehicle
TBD	To Be Determined

Section 0. Executive Summary

This executive summary provides a brief overview of the major conclusions from this traffic study.

This study includes summaries of existing and future traffic conditions, planning-level recommendations for the future motorized and non-motorized transportation network serving the Totem Lake subarea and recommendations for next steps. Overall, review of local development and traffic growth in the study area shows that with future funded transportation facility improvements, traffic conditions are not forecast to be substantially worse than they are now, and in some cases, certain corridors and intersections are improved.

Study recommendations focus on transportation network improvements that are identified as providing a benefit to regional and local traffic circulation. Improvements are divided between high, medium and low priorities based on the improvement's function and need for major stakeholders.

Citywide study area improvements are prioritized for the City of Kirkland based on:

- High priority improvements include projects that are funded, or funded, and is considered to provide a significant near-term improvement to citywide traffic circulation.
- Medium priority improvements include both funded or unfunded projects that are not needed to support a near-term traffic circulation improvements but are necessary to support long-term goals and functions on key road segments and at key study intersections.
- Low priority improvements include privately funded projects and unfunded improvements that are along corridors or at intersections that in the long-term would justify an improvement.

The improvement prioritization for EvergreenHealth is not necessarily required to align with citywide priorities for the study area. Study area improvements are prioritized for EvergreenHealth based on:

- High priority improvements include projects that are funded and unfunded that support traffic circulation and access around the EvergreenHealth campus.
- Medium priority improvements include funded and unfunded projects that expand and provide alternative travel options for EvergreenHealth patients and staff and projects that complete right-of-way improvements, already identified or that are currently active.
- Low priority improvements include funded and unfunded projects that provide long-range benefits for EvergreenHealth traffic circulation.

The City of Kirkland and EvergreenHealth have two common high priority improvements, they are:

- NE 124th Street / 116th Ave NE Southbound Right Turn Lane. This improvement adds a southbound right turn lane on 116th Ave NE at NE 124th Street. The project improves traffic circulation for vehicles and transit and access to the adjacent southbound I-405 ramps on NE 124th Street.
- I-405 – NE 132nd Street Interchange. This new half interchange (northbound on-ramp and southbound off-ramp) will relieve congestion, support future land use growth opportunities in the subarea and improve circulation to and from the EvergreenHealth campus.
- Another improvement that both the City of Kirkland and EvergreenHealth agree is a priority for further analysis is a proposed revision to the NE 128th Street / Totem Lake Blvd NE intersection to add a dedicated westbound left turn movement from NE 128th Street to Totem Lake Blvd NE. The improvement requires participation from the WSDOT and additional analyses of the NE 128th Street corridor and other nearby I-405 interchanges.

Section 1. Introduction and Purpose

The EvergreenHealth/Totem Lake Traffic Study is a joint effort between the City of Kirkland and EvergreenHealth. The purpose of this traffic study is to provide planning-level recommendations for the future motorized and non-motorized transportation network serving the Totem Lake subarea, with a focus around the EvergreenHealth campus. The conclusions from this study are intended to support the shared-goals of both the City of Kirkland and EvergreenHealth and assist stakeholders with planning for future conditions.

This traffic study provides an overview of the existing conditions as well as forecasts and recommendations for year 2035 long-range conditions in the Totem Lake subarea. Year 2035 is consistent with the long-range horizon identified in the City of Kirkland's Comprehensive Plan. The technical analyses that follow incorporate the land use growth assumptions and funded motorized and non-motorized transportation improvements from the comprehensive plan.

In the Totem Lake subarea, local development activity is increasing at a higher rate than anticipated and as a result, year 2035 land use assumptions are likely to happen sooner rather than later.

Figure 1 provides an example of the relationship between the rate of local development activity and rate of planned development activity compared to the rate of planned transportation network improvements and the need to accelerate those improvements to support current development growth trends.

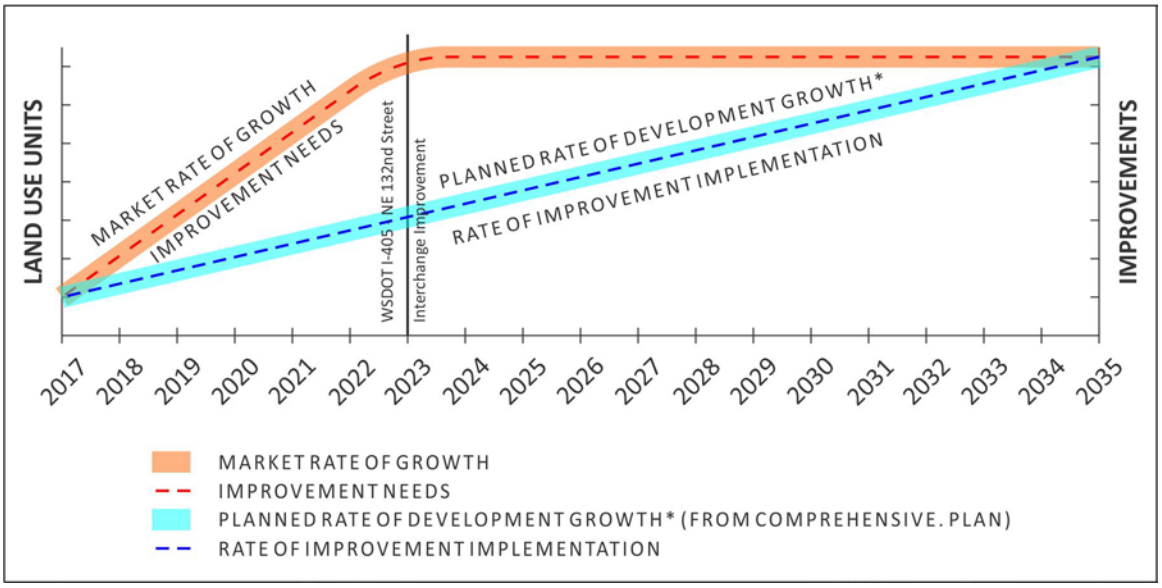


Figure 1: Development Growth and Improvement Implementation Example

For long-range planning, transportation facility improvements are funded to be implemented concurrent with development growth. In an ideal scenario, the rate at which transportation network improvements are implemented should be consistent with the rate of new development.

The planning-level recommendations from this study are intended to assist in accelerating improvements necessary to keep pace with the current market rate of growth in the Totem Lake subarea.

Study Area

The City of Kirkland and EvergreenHealth partnered to develop the scope and study area for this traffic study based on the common goal of improving the transportation network in the Totem Lake area for all users.

This study generally is generally in the Totem Lake Urban Center and includes most of the Totem Lake Business District between NE 132nd Street, NE 116th Street, 132nd Ave NE, and 116th Ave NE. The study area and study area intersections are highlights in Figure 2.

Study Overview

Overall, review of future local development activities and traffic growth in the Totem Lake Subarea and around the EvergreenHealth campus shows that with the future funded transportation facility improvements, identified in the City of Kirkland's CIP (2019-2024), future traffic conditions around the campus are not forecast to be substantially worse than they are now and, in some cases, certain roadway corridors and intersections are improved.

The major transportation facility improvement in the study area is the new I-405 - NE 132nd Street Interchange which is anticipated to be open by 2023.

Report Organization

The remaining sections of this study are organized as follows:

- **Section 2. Methods and Assumptions**. This section reviews the methods and assumptions used to evaluate existing and future traffic conditions and policies to support land use growth and changes.
- **Section 3. Existing Conditions.** The section reviews the existing motorized and non-motorized road network and land uses. The technical analysis is intended to provide an existing baseline to compare future growth in the study area and make recommendations for immediate network improvements.
- **Section 4. Future 2035 Conditions.** This section reviews the year 2035 motorized and non-motorized road network and land use conditions based on the City of Kirkland's planning forecasts. The technical analysis assumes completion of the 2035 land use plan and all funded, or funded, transportation network improvements.
- **Section 5. Improvement Recommendations and Priorities.** This section includes recommendations for additional improvements based on stakeholder priorities. Stakeholders include, and are not limited to EvergreenHealth, the City of Kirkland, WSDOT, and Sound Transit and King County Metro.
- **Section 6. Summary of Recommendations.** This section provides a matrix summarizing recommendations for improvements.
- **Section 7. Appendix**.

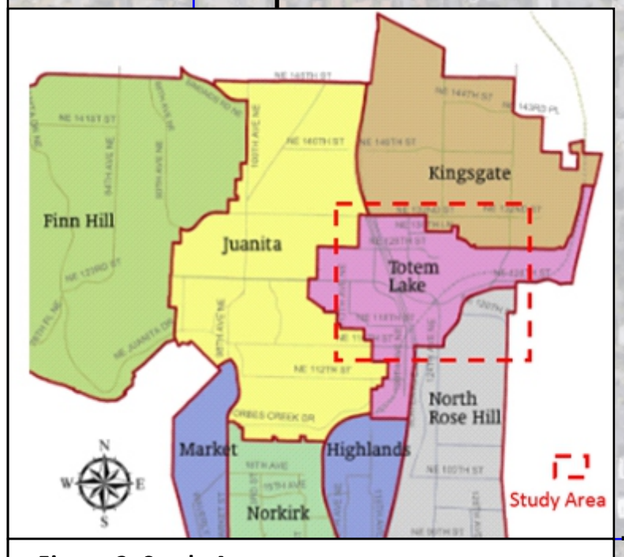


Figure 2: Study Area

- EVERGREENHEALTH CAMPUS
- TOTEM LAKE BUSINESS DISTRICT
- TOTEM LAKE URBAN CENTER
- EXISTING STUDY INTERSECTION

108th AVE NE
NE 132nd ST
NE 132nd ST
NE 132nd ST
I-405
KINGSGATE PARK & RIDE
124th AVE NE
NE 130th LN
120th AVE NE
EVERGREENHEALTH MEDICAL CENTER
132ND SQUARE PARK
132nd AVE NE
JUANITA HIGH SCHOOL
NE 128th ST
116th AVE NE
I-405
TOTEM LAKE BLVD NE
VILLAGE AT TOTEM LAKE
TOTEM LAKE WAY
NE 124th ST
TOTEM LAKE PARK
NE 124th ST
NE 124th ST
SLATER AVE NE
120th AVE NE
KIRKLAND JUSTICE CENTER
NE 118th ST
I-405
124th AVE NE
SLATER AVE NE
NE 120th ST
LAKE WASHINGTON INSTITUTE OF TECHNOLOGY
132nd AVE NE
NE 116th ST

Section 2. Methods and Assumptions

This section reviews the methods and assumptions used to evaluate existing and future traffic conditions and policies to support land use growth and changes.

Resources

For this study the following resources were used:

- Kirkland 2035 Comprehensive Plan, Chapters IX. Transportation and XV.I. Totem Lake Business District
- Totem Lake Urban Center Enhancement and Multimodal Transportation Network Plan (March 2018)
- City of Kirkland Preliminary 2019 to 2024 Capital Improvement Program (CIP)
- City of Kirkland Transit Implementation Plan
- Year 2017 baseline and 2035 Bellevue-Kirkland-Redmond (BKR) Travel Demand Model forecasts
- WSDOT I-405 Master Plan
- King County Metro CONNECTS program
- Sound Transit I-405 Bus Rapid Transit

This study focuses on traffic circulation related to the EvergreenHealth campus. Future EvergreenHealth planning is incorporated and includes anticipated campus growth in addition to their current Master Plan which was last updated in 2017.

Land Use Forecasting

The Totem Urban Center is a regional growth center expected to continue to attract growth in housing and employment. Population and employment growth forecasts in the subarea, from the Comprehensive Plan, are summarized in Table 1.

Table 1: Growth Forecasts Totem Lake Business District

	Existing (2014)	Planned (2035)
Residents:	4,680	8,678
Dwelling Units:	2,943	5,457
Residential Density:	3.50 units/gross acre	6.49 units/gross acre
Employees:	14,806	20,602
Employee Density:	17.60 jobs/gross acre	24.49 jobs/gross acre

Future conditions were forecast using the year 2035 BKR travel demand model. This “planning model” incorporates the land use and transportation facility improvements from the City of Kirkland’s Comprehensive Plan. The BKR model, is a tri-jurisdictional planning model managed and administered by the City of Bellevue.

The BKR model includes 1,112 new employees at EvergreenHealth between 2017 and 2035. This is consistent with the employment growth projections identified in EvergreenHealth’s 2017 Master Plan update.

The City of Kirkland’s mode choice goals for SOV, HOV, transit, bicycle and pedestrian travel are not specifically included in the BKR model, and the future traffic forecasts in this study are conservative.

Intersection Level of Service

The City of Kirkland provided year 2017 AM and PM peak hour traffic volumes for the key intersection in the study area. The AM and PM peak hours are defined by the City of Kirkland as the highest four consecutive 15-minute traffic volume intervals between 6:00 AM and 10:00 AM (AM peak hour) and 3:30 PM and 6:30 PM (PM peak hour). These periods represent the times when traffic volumes on local roadways are highest.

Signal timing parameters for current conditions were supplied by the City of Kirkland and WSDOT.

Table 2: Intersection Level of Service and Delay

LOS	Signals and Roundabouts Delay	Stop-Controlled Intersection Delay
A	≤ 10 seconds	≤ 10 seconds
B	10–20 seconds	10–15 seconds
C	20–35 seconds	15–25 seconds
D	35–55 seconds	25–35 seconds
E	55–80 seconds	35–50 seconds
F	> 80 seconds	> 50 seconds

Table 2 summarizes the intersection LOS and delay categories.

The Synchro computer program was used to evaluate intersection LOS and delay. Intersection Signalized intersection LOS output is based on the HCM2000 delay equations, due to most of the signal timing parameters not being supported by the more current HCM2010 calculation parameters.

The Sidra computer program was used to evaluate roundabout traffic operations based on policies from WSDOT. Future roundabouts are specifically planned with the I-405 - NE 132nd Street Interchange both roundabouts at the southbound off-ramp at 116th Ave NE and northbound on-ramp at Totem Lake Blvd NE.

The City of Kirkland intersection LOS standard is “D”. For WSDOT facilities, the LOS threshold is also “D”.

Mode Choice

Table 3 summarizes the daily and peak hour existing travel mode split and year 2035 mode choice goals for the Totem Lake Business District. The Comprehensive Plan has a peak period non-SOV mode share goal of 60% for trips generated in the Totem Lake Urban Center by 2035.

Table 3: Totem Lake Mode Choice Goals

Travel Mode	Daily Trips		Peak Hour Trips	
	2010 PSRC	2035 Goal	2012 BKR	2035 Goal
SOV	81%	64%	55%	40%
HOV	9%	15%	38%	40%
Transit	7%	15%	4%	10%
Bike & Walk	3%	6%	3%	10%

Source: City of Kirkland Comprehensive Plan Chapter XV.I Totem Lake Business District

The roadway, transit, bicycle and pedestrian networks analyses build on the recommendations from the Totem Lake Urban Center Enhancement Plan and Multimodal Plan.

Section 3. Existing Conditions

The section reviews the existing motorized and non-motorized road network and land uses. The technical analysis is intended to provide an existing baseline to compare future growth in the study area and make recommendations for immediate network improvements.

Land Use

Figure 3 illustrates the local land use and zoning map of the Totem Lake Urban Center Planning Districts.

The zoning in Totem Lake includes a mix of institutional, commercial, residential, uses throughout most of the district. The core business area generally surrounds I-405 and NE 124th Street. High and low-density residential zones are on the periphery of the

Future major redevelopment parcels near EvergreenHealth include the Village at Totem Lake, Lennar and Terrane, Jefferson House Memory Care and Totem Lake Park. Build-out of the EvergreenHealth campus includes more expansion at the DeYoung Pavilion and far-term expansion into the office-zoned areas on the west side of 120th Ave NE.

Street Network

Figure 4 shows a map of the local road network.

I-405 is the major north-south regional thoroughfare in the City of Kirkland. Existing I-405 interchange ramps are outlined below:

- NE 128th Street HOV ramps. Accessible from the northbound and southbound express lanes on I-405. Also serves, Totem Lake Freeway Station (transit).
- NE 124th Street interchange ramps at I-405 southbound Exit 20 and northbound Exit 20B. The interchange is a partial clover leaf with right turns only onto I-405.
- I-405 northbound direct access ramps to and from Totem Lake Blvd NE (Exit 20B).
- NE 116th Street single-point urban half interchange. I-405 northbound exit 20A. The interchange includes a northbound off-ramp and southbound on-ramp.

The planned I-405 - NE 132nd Street (half) interchange will complete the northbound on-ramp and southbound off-ramp “half” of the existing I-405 single-point urban half interchange at NE 116th Street.

Study area roadway functional classifications based on their hierarchies include:

- Principal arterials: NE 132nd Street, NE 124th Street, NE 116th Street, Totem Lake Blvd, and 124th Ave NE south of NE 124th Street.
- Minor arterials: 116th Ave NE, 120th Ave NE, 132nd Ave NE south of NE 124th Street, Slater Ave NE, NE 128th Street from 116th Ave NE to 120th Ave NE, and 124th Ave NE north of NE 132nd Street.
- Collector arterials: 108th Ave NE, 113th Ave NE, 115th Ave NE, 120th Ave NE, 132nd Ave NE north of NE 124th Street, NE 130th Lane from 120th Ave NE and 124th Ave NE, NE 128th Street east of 120th Ave NE, NE 122nd Way, and NE 118th Street

Figure 3: Zoning Map

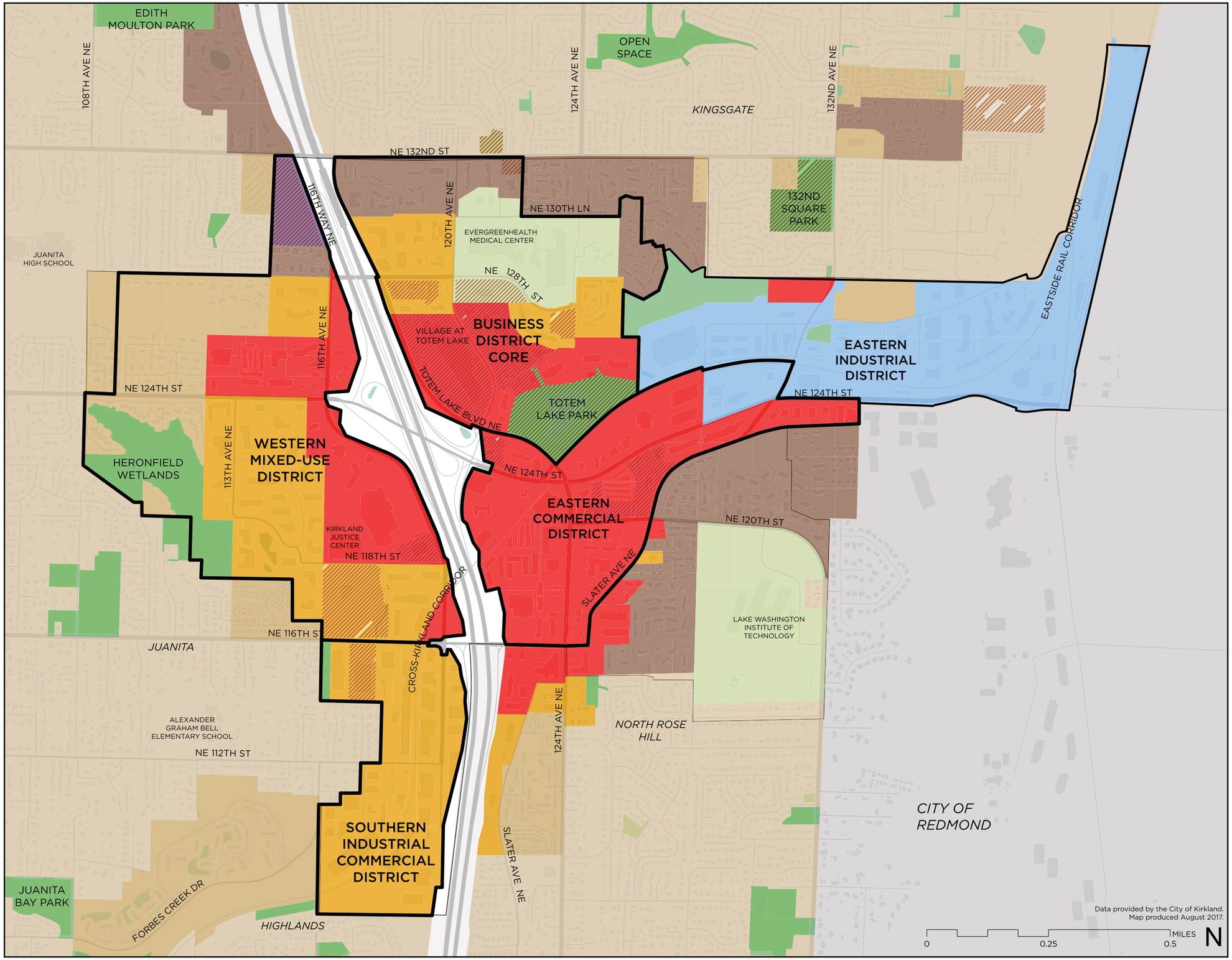
SOURCE: TOTEM LAKE URBAN CENTER ENHANCEMENT + MULTIMODAL TRANSPORTATION NETWORK PLAN (MARCH 2018)

ZONING

- Urban Center Planning District
- Commercial
- High Density Residential
- Industrial
- Institutional
- Low Density Residential
- Medium Density Residential
- Office
- Park/Open Space
- Transit Oriented Development

BASE

- Buildings
- Redevelopment Parcels
- Water
- Parks
- Enhancement Plan Study Area
- City of Kirkland Boundary



alta PLACE

CITY OF KIRKLAND WASHINGTON

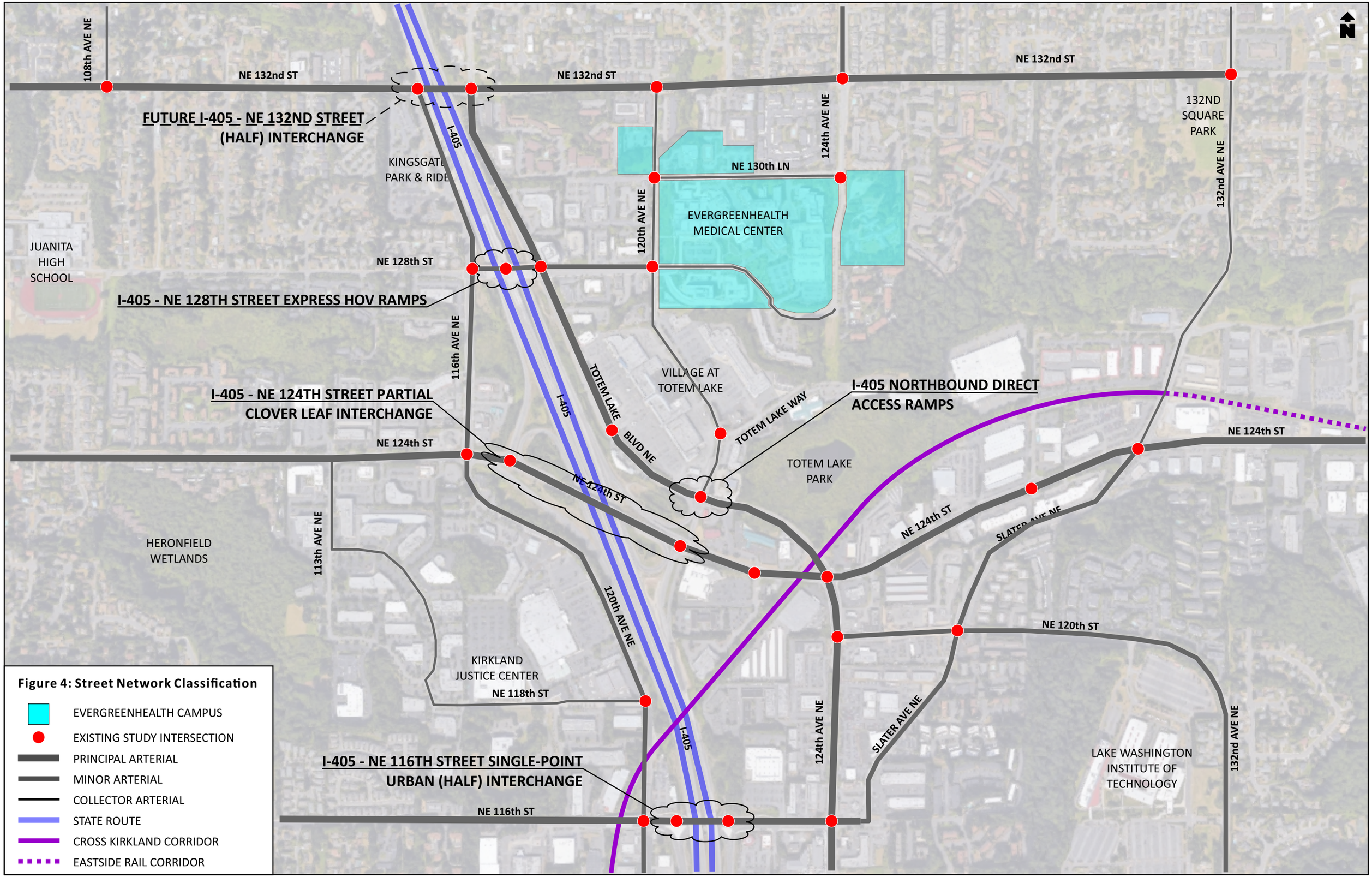


Figure 4: Street Network Classification

- EVERGREENHEALTH CAMPUS
- EXISTING STUDY INTERSECTION
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- COLLECTOR ARTERIAL
- STATE ROUTE
- CROSS KIRKLAND CORRIDOR
- EASTSIDE RAIL CORRIDOR

Vehicle Volumes

Year 2017 AM and PM peak hour turning movement volumes were supplied by the City of Kirkland for the signalized study intersections. The volumes were collected during the period when 120th Ave NE was closed between NE 128th Street and Totem Lake Blvd NE due to construction related to the Village at Totem Lake. The vehicle volumes were redistributed to affected intersections for conditions with 120th Ave NE open.

AM and PM peak hour study area intersection traffic volumes are illustrated in Figures 5 and 6.

Intersection LOS

Table 3 summarizes the existing AM and PM peak hour intersection LOS analyses.

Table 3: 2017 Existing Intersection Level of Service

ID	Intersection	Control	AM Peak Hour			PM Peak Hour		
			LOS	Delay	V/C	LOS	Delay	V/C
1	NE 132 St / 108 Ave NE	Signal	D	40.9	0.65	B	16.7	0.79
2	NE 132 St / 116 Way NE	Signal	B	12.8	0.49	D	36.9	0.93
3	NE 132 St / 116 Ave NE / TL Blvd NE	Signal	C	32.9	0.77	C	24.5	0.61
4	NE 132 St / 120 Ave NE	Signal	A	9.3	0.41	B	18.2	0.47
5	NE 132 St / 124 Ave NE	Signal	D	35.8	0.62	D	39.6	0.74
6	NE 132 St / 132 Ave NE	Signal	C	20.9	0.62	C	34.9	0.91
7	NE 130 Pl / 120 Ave NE	Signal	B	10.6	0.30	B	13.1	0.40
8	NE 130 Pl / 124 Ave NE	All Stop	A	8.6	-	B	11.6	-
9	NE 128 St / 116 Ave NE	Signal	C	27.7	0.80	D	37.3	0.47
10	NE 128 St / I-405 HOV Ramps	Signal	C	28.8	0.80	D	30.4	0.49
11	NE 128 St / TL Blvd NE	Signal	B	12.7	0.39	C	24.9	0.42
12	NE 128 St / 120 Ave NE & Transit Ctr.	Signal	C	34.2	0.53	E	57.3	0.70
13	Village at TL / TL Blvd NE	Signal	A	4.9	0.36	A	5.6	0.50
14	TL Way / 120 Ave NE	Signal	A	3.4	0.16	A	4.5	0.23
15	TL Blvd NE / 120 Ave NE / I-405 NB Ramps	Signal	C	25.0	0.53	C	25.0	0.58
16	NE 124 St / 116 Ave NE	Signal	F	74.7	0.78	E	74.0	0.85
17	NE 124 St / I-405 SB Ramps	Signal	C	24.6	0.53	E	55.1	0.66
18	NE 124 St / I-405 NB Ramps	Signal	B	11.4	0.49	B	15.9	0.49
19	NE 124 St / 120 Pl NE	Signal	A	7.9	0.50	A	9.6	0.55
20	NE 124 St / 124 Ave NE	Signal	C	29.5	0.66	D	40.5	0.67
21	NE 124 St / 128 Ave NE	Signal	A	3.9	0.34	B	10.0	0.44
22	NE 124 St / 132 Ave NE	Signal	D	51.3	0.82	D	47.3	0.82
23	NE 120 St / 124 Ave NE	Signal	A	9.6	0.49	A	9.2	0.57
24	NE 120 St / Slater Ave NE	Signal	D	45.4	0.85	D	47.3	0.87
25	NE 118 St / 120 Ave NE	Signal	A	3.9	0.37	A	5.4	0.49
26	NE 116 St / 120 Ave NE	Signal	D	36.3	0.51	D	36.3	0.60
27	NE 116 St / I-405 Ramps	Signal	C	35.0	0.78	C	30.8	0.60
29	NE 116 St / 124 Ave NE	Signal	C	22.7	0.68	D	40.5	0.70

The study intersections satisfy the City of Kirkland and the WSDOT LOS thresholds, except the following three intersections which are computed to operate at LOS “E” or “F”:

- NE 128th Street and 120th Ave NE and the Transit Center Exit. LOS C (AM) and LOS E (PM).
- NE 124th Street and 116th Ave NE. LOS F (AM) and LOS E (PM).
- NE 124th Street and I-405 southbound ramps. LOS C (AM) and LOS E (PM).

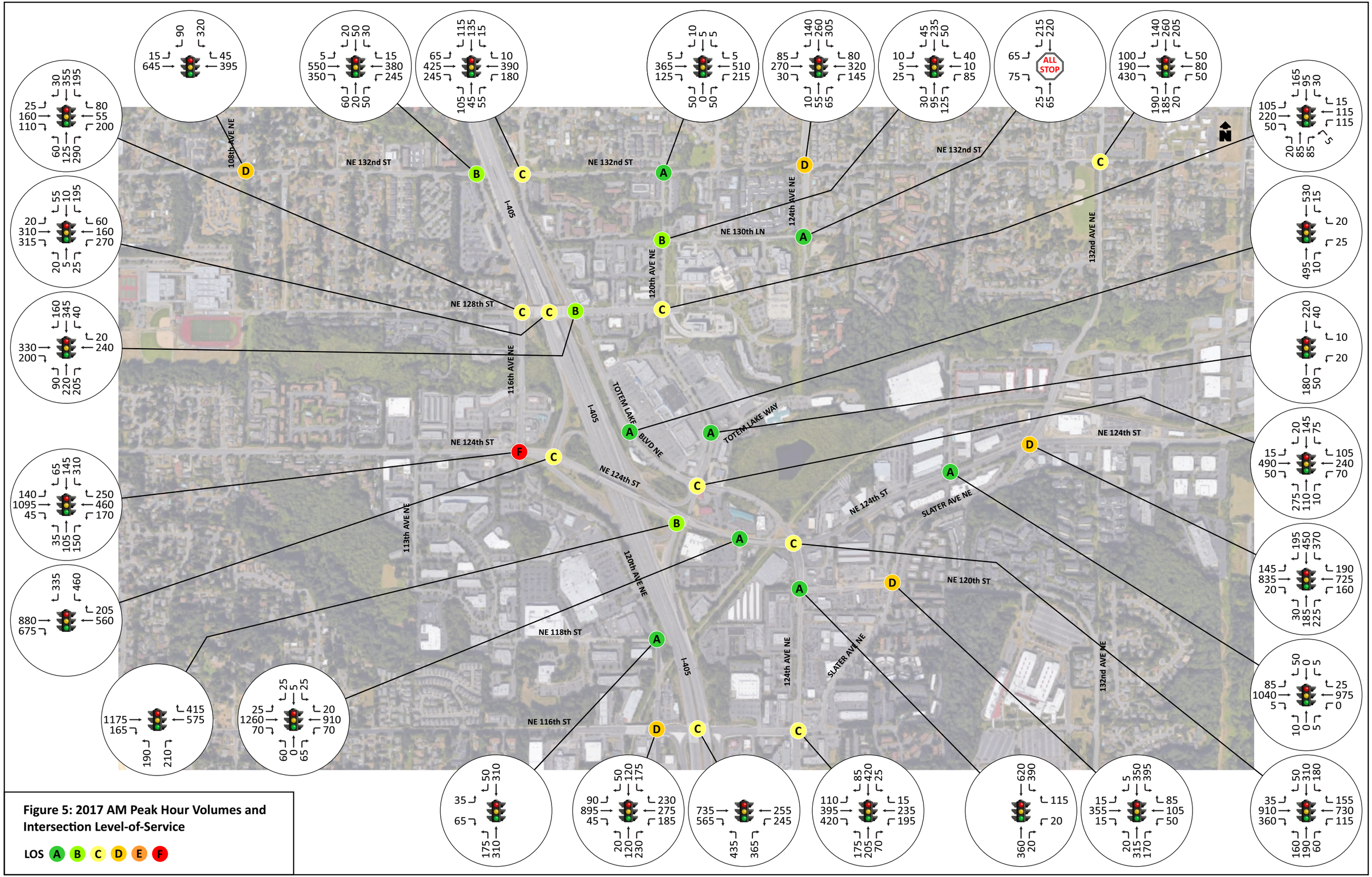


Figure 5: 2017 AM Peak Hour Volumes and Intersection Level-of-Service

LOS A B C D E F

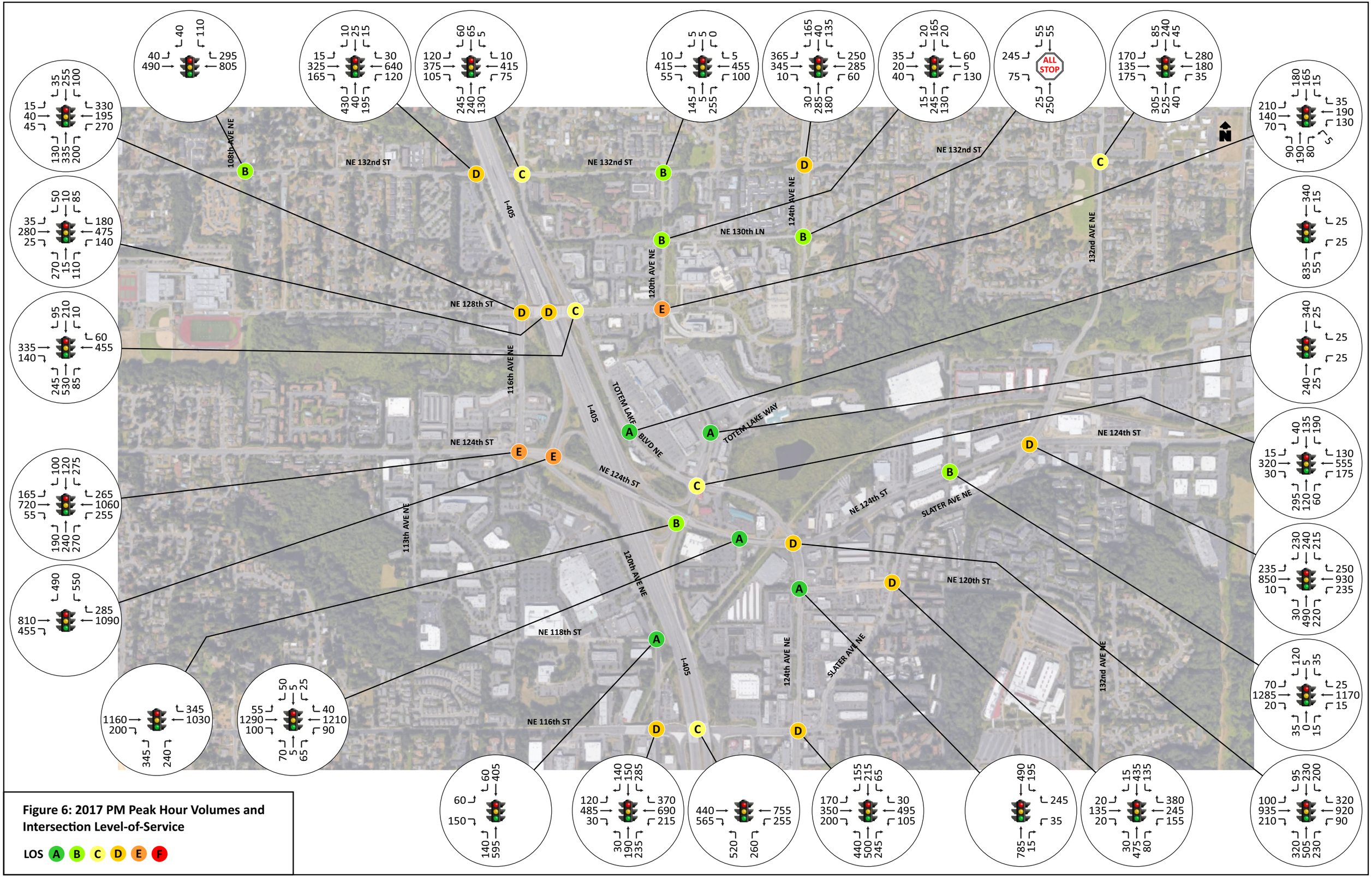


Figure 6: 2017 PM Peak Hour Volumes and Intersection Level-of-Service

LOS A B C D E F

There are two future transportation network improvements planned to improve traffic operations at two of the three existing study intersections currently computed to operation beyond the local LOS standards:

- A future capacity improvement is planned at NE 124th Street and 116th Ave NE, to add a right turn lane at the intersection. This improvement is reflected in the future conditions.
- Also, the planned I-405 - NE 132nd Street interchange will redistribute traffic and change travel patterns through the study area. This improvement is also reflected in the future conditions.

Transit Network

Figure 7 illustrates the existing King County Metro and Sound Transit routes in the study area.

Major transit hubs in the study area are at the Kingsgate Park and Ride at the southwest corner of NE 132nd Street and 116th Ave NE, the Totem Lake Freeway Station and along NE 128th Street, along NE 128th Street and at the Totem Lake Transit Center on the EvergreenHealth campus.

The City of Kirkland's Draft Transit Implementation Plan identifies existing transit service speed and reliability issues at the following intersections:

- NE 124th Street / 113th Ave NE
- NE 124th Street / 116th Ave NE
- NE 128th Street / 116th Ave NE
- NE 128th Street / I-405 Express HOV ramps
- 128th Street / Totem Lake Blvd NE
- NE 128th Street / 120th Ave NE / Totem Lake Transit Center (exit)

Bicycles

Figure 8 shows the existing bicycle network and highlights designated bike or shared-use lanes and notes the location of the Cross Kirkland Corridor and the unimproved section of the Eastside Rail Corridor.

There are no bike lanes or shared-use paths fronting the EvergreenHealth campus and there are no bike lane fronting the Kingsgate Park and Ride on 116th Ave NE.

Pedestrians

Figure 9 shows the existing gaps in the pedestrian network on existing roadways and generally within the area constrained to the Totem Lake Business District. The gap analysis which is primarily from the Totem Lake Urban Center Enhancement and Multimodal Plan is cross-referenced to the City of Kirkland's GIS system.

Near EvergreenHealth sidewalk gaps are along the west side of Totem Lake Blvd fronting I-405 and in the vicinity of the Village at Totem Lake which is still under construction.

Other lengthier sections of sidewalk gaps include the section of NE 124th Street along the I-405 overpass, on the east side of 120th Ave NE fronting I-405 and south of NE 124th Street, and on 132nd Ave NE south of Lake Washington Institute of Technology.

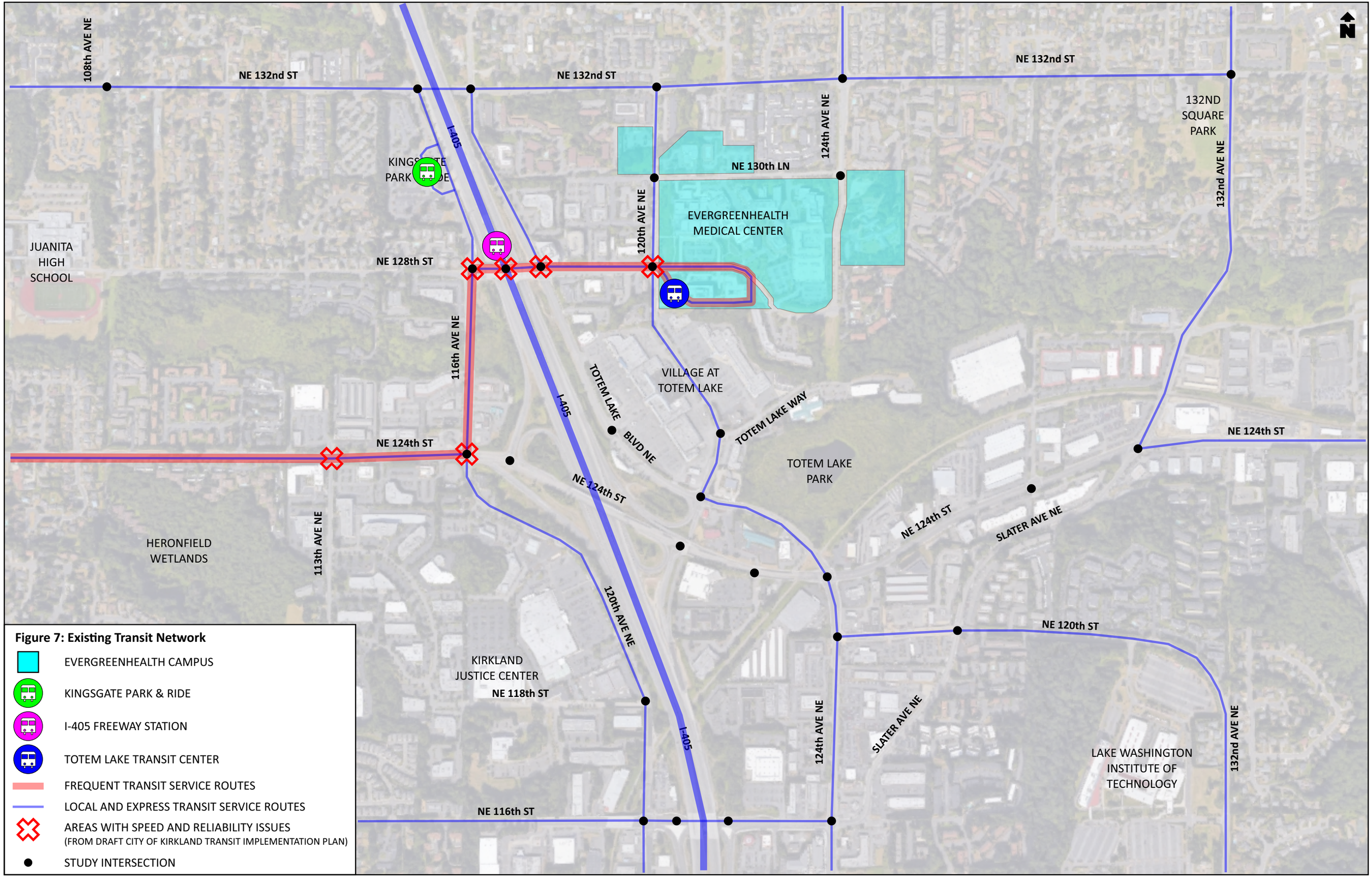


Figure 7: Existing Transit Network

- EVERGREENHEALTH CAMPUS
- KINGSGATE PARK & RIDE
- I-405 FREEWAY STATION
- TOTEM LAKE TRANSIT CENTER
- FREQUENT TRANSIT SERVICE ROUTES
- LOCAL AND EXPRESS TRANSIT SERVICE ROUTES
- AREAS WITH SPEED AND RELIABILITY ISSUES (FROM DRAFT CITY OF KIRKLAND TRANSIT IMPLEMENTATION PLAN)
- STUDY INTERSECTION

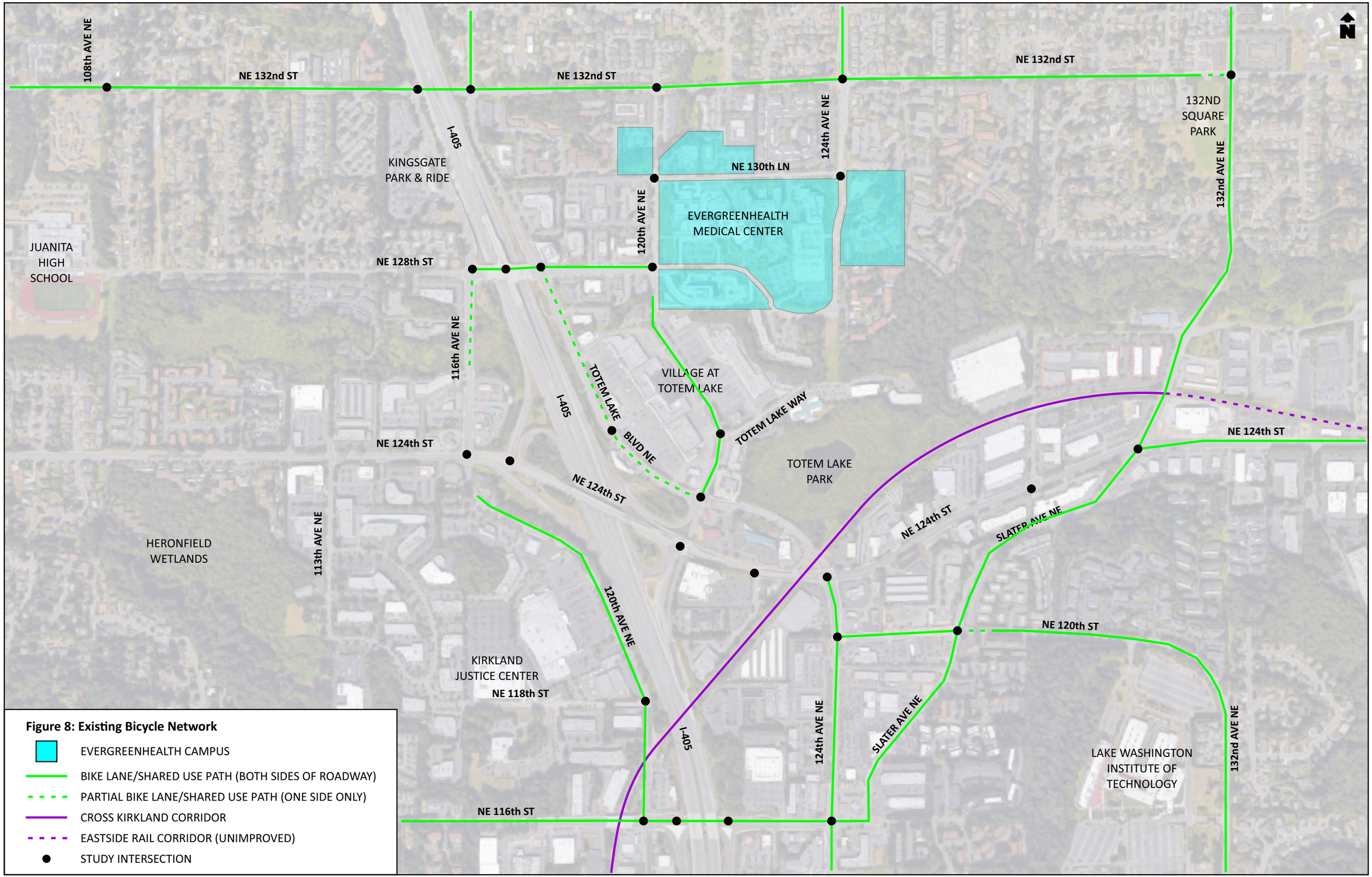


Figure 8: Existing Bicycle Network

- EVERGREENHEALTH CAMPUS
- BIKE LANE/SHARED USE PATH (BOTH SIDES OF ROADWAY)
- PARTIAL BIKE LANE/SHARED USE PATH (ONE SIDE ONLY)
- CROSS KIRKLAND CORRIDOR
- EASTSIDE RAIL CORRIDOR (UNIMPROVED)
- STUDY INTERSECTION

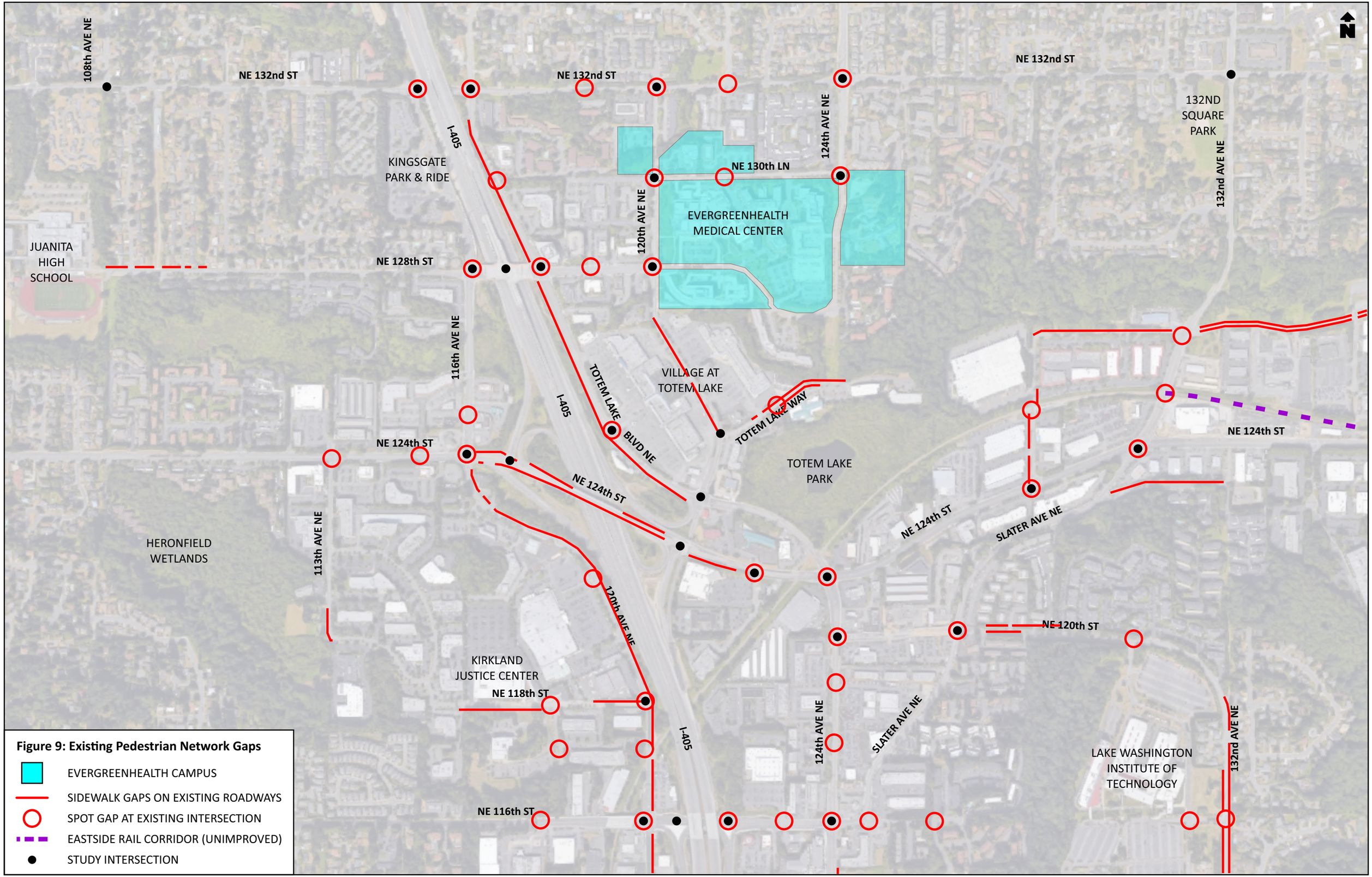


Figure 9: Existing Pedestrian Network Gaps

- EVERGREENHEALTH CAMPUS
- SIDEWALK GAPS ON EXISTING ROADWAYS
- SPOT GAP AT EXISTING INTERSECTION
- EASTSIDE RAIL CORRIDOR (UNIMPROVED)
- STUDY INTERSECTION

Section 4. Future 2035 Conditions

This section reviews the year 2035 motorized and non-motorized road network and land use conditions based on the City of Kirkland's planning forecasts. The technical analysis assumes completion of the 2035 land use plan and all funded transportation network improvements.

Land Use

Land use growth between now and 2035 includes regional growth through the subarea, funded growth in the subarea, and private development.

Regional growth includes traffic forecast through the Totem Lake subarea, i.e. via the Cities of Redmond and Woodinville. Funded growth remaining growth forecast in local area based, i.e. the remaining traffic generated with build-out of the current EvergreenHealth Master Plan.

Private development activity in the study area is highlighted in Figure 10.

Private developments include:

A. **Village at Totem Lake** – anticipated full build-out by 2021
B. **Lennar Development** – anticipated build-out by 2020
C. **Jefferson House Memory Care** – anticipated build-out by 2019
D. **Athene** – completed 2018
E. **Rairdon Fiat expansion** – frontage improvements started 2018
F. **Lifebridge** – anticipated build-out by 2020
G. **Totem Lake Retail** – was planned in 2018
H. **Kingsgate TOD** – anticipated build-out by 2024, Sound Transit
I. **Residence XII** – anticipated build-out by 2021
J. **Vareze Residential** – anticipated build-out by 2019
K. **Terrene Totem Lake Apartments** – anticipated build-out by 2020
L. **Totem Lake Way Multifamily Apartments** – permit ready to issue, build-out TBD
M. **Townhomes near Salish Village** – permit issued, build-out TBD
N. **Larson Single-Family Short Plat** – permit in review, build-out TBD

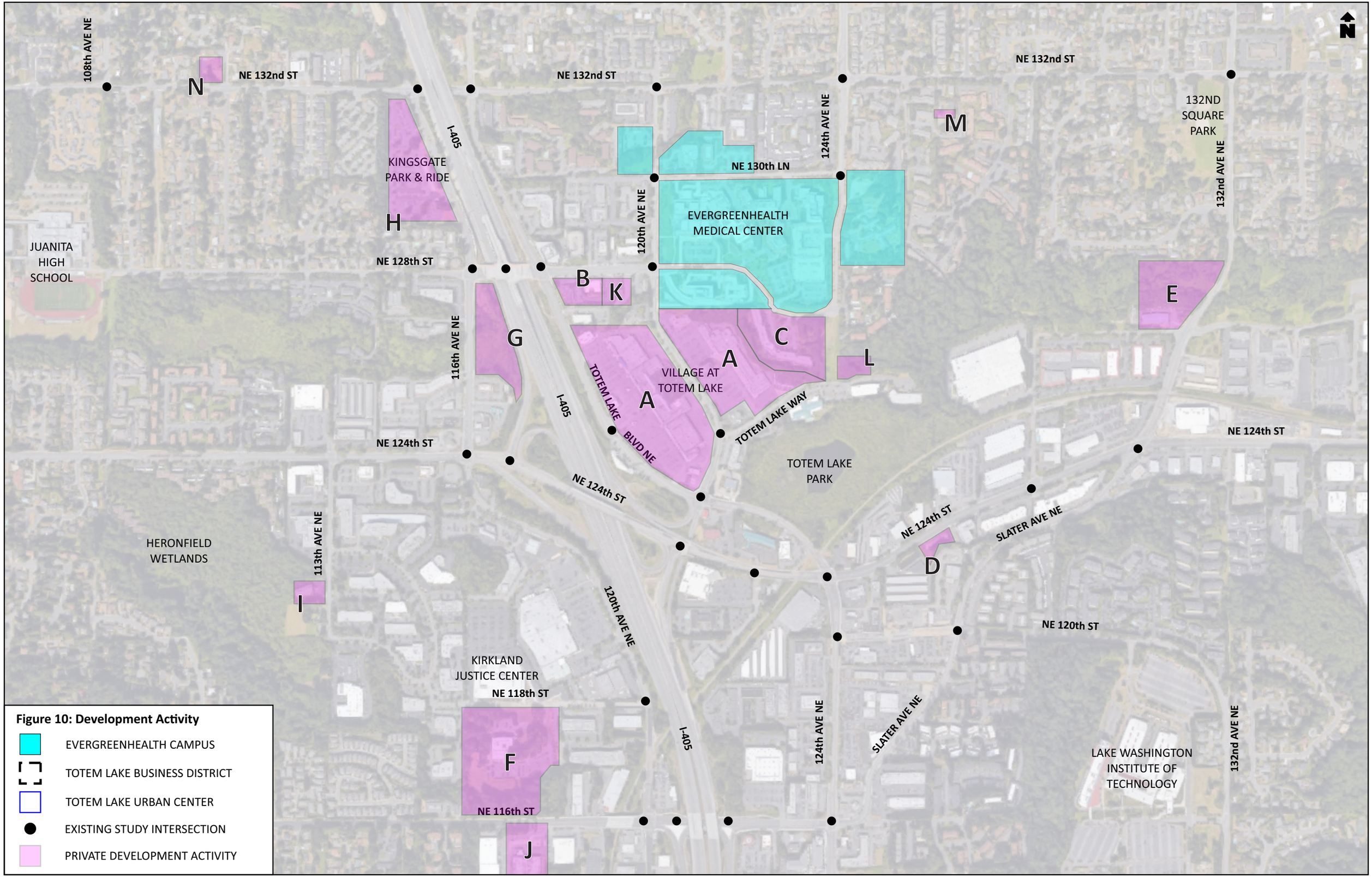
Other development not shown in the figure includes:

- Astronics – anticipated expansion by 2020
- Willows Road Warehouse – anticipated build-out by 2019

Funded Projects

The City of Kirkland's CIP provides a plan for construction, repair, maintenance and an acquisition of major capital facilities and equipment. Specific to "transportation", the CIP includes street, intersection, pedestrian safety, public transit and non-motorized facility improvements.

CIP funding sources include current revenue, such as real estate excise taxes, property taxes, impact fees applied to new development, and utilities rates charges and fees; reserve funds; debt financing; external sources, such as grants, shared projects and privately funded projects; and new sources, like new levies and establishment of a transportation benefit district.


108th AVE NE
NE 132nd ST
N
NE 132nd ST
NE 132nd ST
I-405
KINGSGATE
PARK & RIDE
H
124th AVE NE
M
NE 130th LN
132ND
SQUARE
PARK
132nd AVE NE
120th AVE NE
EVERGREENHEALTH
MEDICAL CENTER
JUANITA
HIGH
SCHOOL
NE 128th ST
B
K
E
G
C
A
L
116th AVE NE
TOTEM LAKE
BLVD NE
A
VILLAGE AT
TOTEM LAKE
I-405
TOTEM LAKE WAY
NE 124th ST
NE 124th ST
TOTEM LAKE
PARK
NE 124th ST
SLATER AVE NE
HERONFIELD
WETLANDS
113th AVE NE
I
D
120th AVE NE
NE 120th ST
KIRKLAND
JUSTICE CENTER
NE 118th ST
I-405
124th AVE NE
SLATER AVE NE
LAKE WASHINGTON
INSTITUTE OF
TECHNOLOGY
132nd AVE NE
F
NE 116th ST
J
Figure 10: Development Activity
EVERGREENHEALTH CAMPUS
TOTEM LAKE BUSINESS DISTRICT
TOTEM LAKE URBAN CENTER
EXISTING STUDY INTERSECTION
PRIVATE DEVELOPMENT ACTIVITY

To support development activity in the Totem Lake subarea the City of Kirkland incorporated debt financing to fund initially unfunded transportation facility improvements.

Funded transportation facility improvements in the study area are highlighted in Figure 11. Funded improvements are outlined below and improvements with City of Kirkland funding are referenced to their 2019-2024 CIP project number(s):

1. **Totem Lake Gateway Improvements** (CIP Project Nos. TRC1220000, STC0060500 and NMC1240000). Completes and rebuilds roadways and non-motorized facilities around Village at Totem Lake. Construction is ongoing. Total funding is $19,551,100 for intersection and roadway repairs and other miscellaneous improvements.
2. **Totem Lake Connector** (CIP Project No. NMC0861000). This is a non-motorized bridge over NE 124th Street / 124th Ave NE for the CKC. Planning began in 2016 and construction is anticipated to start in 2019. There is $5,593,100 remaining in the project budget.
3. **NE 116th Street / 124th Ave NE Northbound Dual Left-Turn Lane** (CIP Project No. TRC0920000). Widen intersection for a second northbound left turn lane on NE 116th Street. This is an active project funded at $1,375,000.
4. **124th Ave NE Roadway Improvements** (CIP Project Nos. STC0591200 and STC0591300). Improvements include sidewalks upgrades and widening of the roadway to a 5-lane section from NE 116th Street to NE 124th Street. Sidewalk upgrades to start in 2019 with the roadway reconstruction anticipated to start in 2020. Total funding is with $7,595,000 for right-of-way acquisition and construction.
5. **Bus Rapid Transit (BRT) on I-405**. This is a reginal Sound Transit project to improve transit reliability along I-405. Design is anticipated between 2020 and 2023, construction is anticipated between 2023 and 2025 and new services are anticipated to start by 2024.
6. **NE 124th Street / 116th Ave NE Southbound Right Turn Lane** (CIP Project No. TRC1240000). Widen intersection for a southbound right turn lane on 116th Ave NE. Construction is TBD, and CIP funding was identified in 2020 and 2021 at $1,600,000.
7. **I-405 - NE 132nd Street Interchange**. This project is part of the regional I-405 Master Plan and WSDOT anticipates construction of two roundabouts to support a new southbound off-ramp and new northbound on-ramp to start in 2021 with the new interchange opening by 2023. Funding for the project totals $83,000,000.
8. **NE 124th Street / 113th Ave NE Crosswalk Upgrade** (CIP Project No. NMC0120200). Upgrades crosswalks at the intersection. This active project has a current budget of $80,000.
9. **NE 116th St Crosswalks Upgrades** (CIP Project No. NMC0120100). Upgrades crosswalks upgrades on NE 116th Street. This is an active project with a current budget of $430,000.
10. **NE 132nd Street / Juanita High School Eastbound Right-Turn** (CIP Project No. TRC0930000). Widen the intersection for an eastbound right turn lane on NE 132nd Street into the high school. This is an active project with a current budget of $1,213,854.
11. **NE 132nd Street / 108th Ave NE Westbound Right-Turn Lane** (CIP Project No. TRC0940000). Widen the intersection for a westbound right turn lane on NE 132nd Street at 108th Ave NE. Construction is TBD and funding from the CIP is identified in 2019 and 2020 at $1,220,000.
12. **132nd Ave NE Crosswalk Upgrade** (CIP Project No. NMC0120300). Upgrades crosswalks on 132nd Ave NE started near Lake Washington Technical Institute of Technology and extending south. This is an active project with a current budget of $250,000.

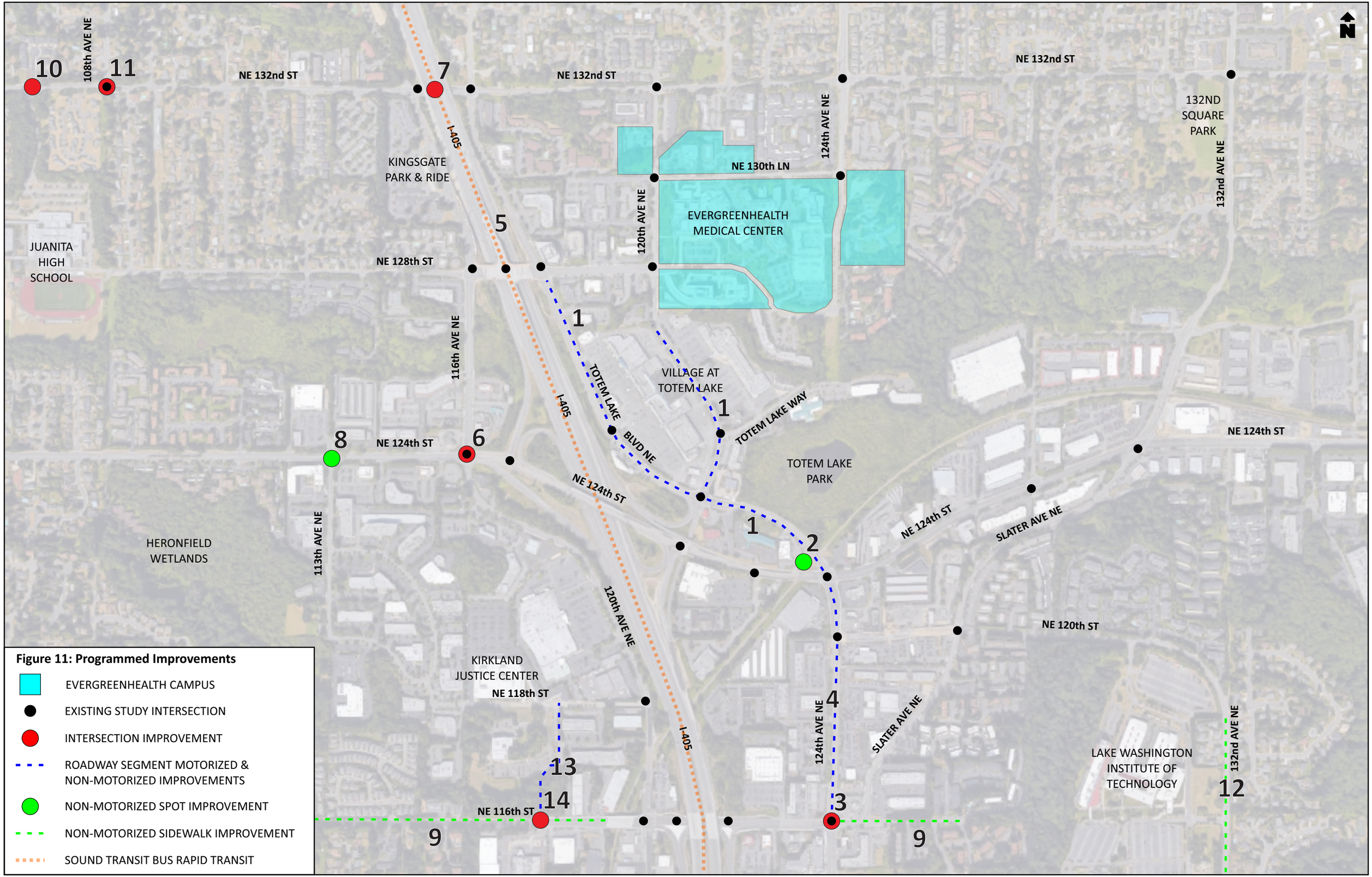


Figure 11: Programmed Improvements

- EVERGREENHEALTH CAMPUS
- EXISTING STUDY INTERSECTION
- INTERSECTION IMPROVEMENT
- ROADWAY SEGMENT MOTORIZED & NON-MOTORIZED IMPROVEMENTS
- NON-MOTORIZED SPOT IMPROVEMENT
- NON-MOTORIZED SIDEWALK IMPROVEMENT
- SOUND TRANSIT BUS RAPID TRANSIT

13. **116th Ave NE Extension**. This privately funded improvement extends the roadway to NE 116th Street and is currently under construction.
14. **NE 116th Street / 116th Ave NE**. This new intersection is privately funded and is currently under construction.

Funded improvements are incorporated into traffic analyses of future conditions.

Major regional improvements include the I-405 Master Plan and expansion of King County Metro RapidRide service and consolidation of transit service in the Totem Lake area to the NE 128th Street corridor, these efforts are not yet fully funded.

The I-405 Master Plan is a long-range improvement plan for the I-405 Corridor Program. The plan would be implemented over a 20-year period and includes more than 150 individual but coordinated projects. Major improvements include: adding new lanes in each direction, developing a BRT line and expanding transit centers, improving key arterial streets serving I-405, doubling of the region's current vanpool fleet, constructing 5,000 new park-and-ride spaces, building eight new pedestrian/bicycle crossings over I-405, increasing local transit service by 50 percent and adding a managed lane system. The I-405 - NE 132nd Street Interchange and Sound Transit BRT projects are included in the I-405 Master Plan.

Vehicle Volumes

Future conditions were forecast using the BKR travel demand model. This "planning model" incorporates the land use and transportation facility improvements from the City of Kirkland's Comprehensive Plan.

To forecast intersection turning movement volumes, first, conditions without the I-405 - NE 132nd Street Interchange were modelled. Next, traffic was redistributed through the network to reflect the future condition with the new interchange. The BKR modelled volumes at the interchange were adjusted to address capacity and intersection delay constraints based on the study intersections and proposed roundabout design for the new NE 132nd Street interchange intersections.

The BKR model is based on PM peak hour conditions only. The AM peak hour traffic volumes forecasts were calculated by applying the PM peak hour intersection growth rates from the BKR model to the 2017 AM peak hour intersection volumes.

On average the AM peak hour volumes without the interchange increased by 19% and the PM peak hour volumes increased by 26%.

AM and PM peak hour study area intersection traffic volumes are illustrated in Figures 12 and 13.

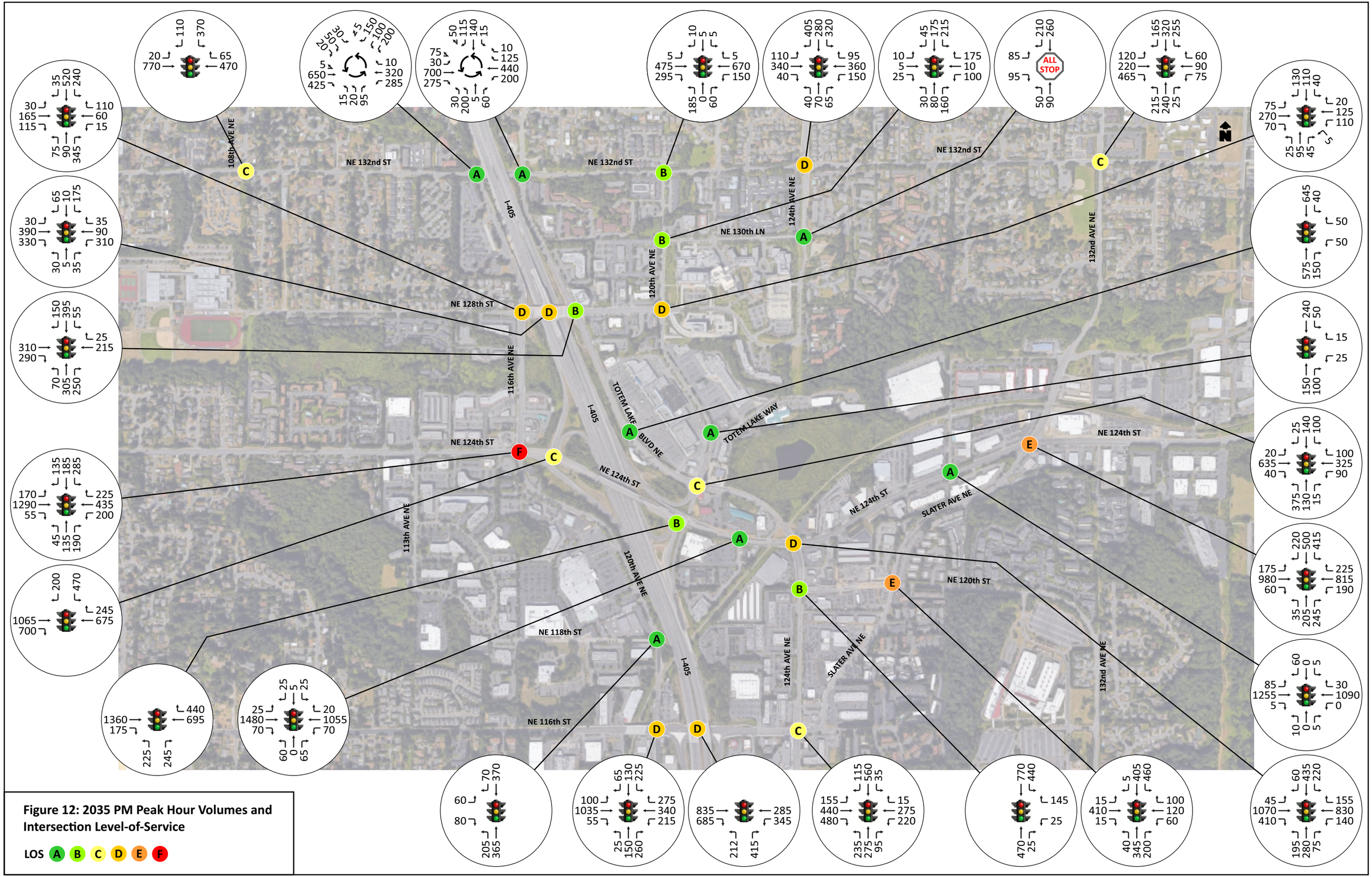


Figure 12: 2035 PM Peak Hour Volumes and Intersection Level-of-Service

LOS A B C D E F

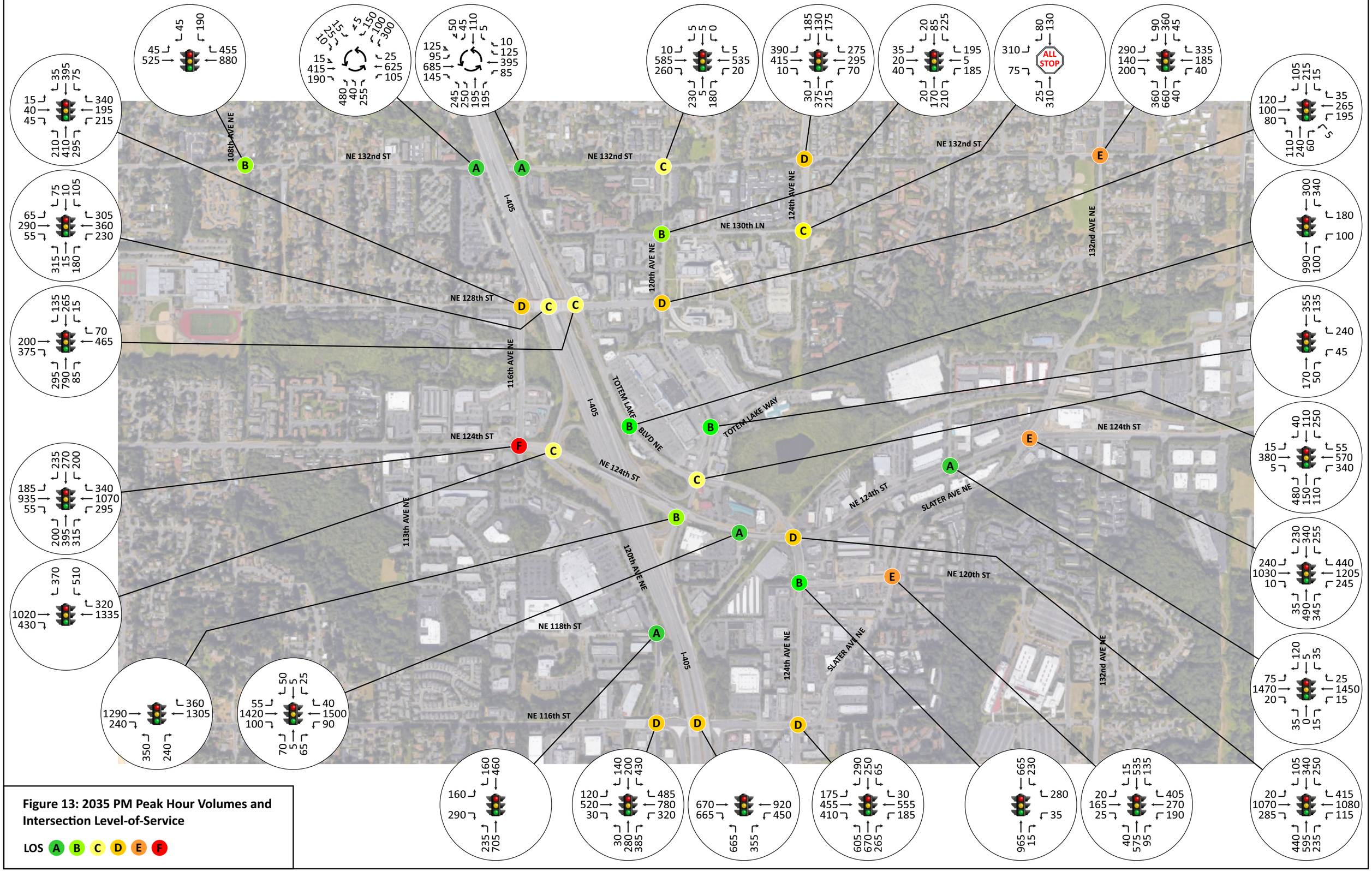


Figure 13: 2035 PM Peak Hour Volumes and Intersection Level-of-Service

LOS A B C D E F

Intersection LOS

Table 4 summarizes the existing AM and PM peak hour intersection LOS analyses.

Table 4: 2035 Future Intersection Level of Service

ID	Intersection	Control	AM Peak Hour			PM Peak Hour		
			LOS	Delay	V/C	LOS	Delay	V/C
1	NE 132 St / 108 Ave NE	Signal	C	25.1	0.76	B	16.3	0.68
2	NE 132 St / 116 Way NE	RAB	A	7.1	0.60	A	7.3	0.55
3	NE 132 St / 116 Ave NE / TL Blvd NE	RAB	A	6.5	0.53	A	9.9	0.83
4	NE 132 St / 120 Ave NE	Signal	B	20.7	0.75	C	25.1	0.81
5	NE 132 St / 124 Ave NE	Signal	D	38.7	0.68	D	46.0	0.88
6	NE 132 St / 132 Ave NE	Signal	C	25.3	0.74	E	79.2	1.12
7	NE 130 Pl / 120 Ave NE	Signal	B	14.4	0.43	B	18.3	0.60
8	NE 130 Pl / 124 Ave NE	All Stop	A	9.4	-	C	15.4	-
9	NE 128 St / 116 Ave NE	Signal	D	48.1	0.59	D	51.3	0.54
10	NE 128 St / I-405 HOV Ramps	Signal	D	44.0	0.87	C	32.4	0.60
11	NE 128 St / TL Blvd NE	Signal	B	19.7	0.36	C	27.3	0.50
12	NE 128 St / 120 Ave NE & Transit Ctr.	Signal	D	51.4	0.51	D	39.0	0.63
13	Village at TL / TL Blvd NE	Signal	A	5.6	0.47	B	14.9	0.75
14	TL Way / 120 Ave NE	Signal	A	4.0	0.18	B	11.7	0.24
15	TL Blvd NE / 120 Ave NE / I-405 NB Ramps	Signal	C	30.6	0.61	C	31.9	0.66
16	NE 124 St / 116 Ave NE	Signal	F	164.9	0.91	F	114.9	1.03
17	NE 124 St / I-405 SB Ramps	Signal	C	22.3	0.58	C	30.0	0.71
18	NE 124 St / I-405 NB Ramps	Signal	B	12.3	0.59	B	13.7	0.53
19	NE 124 St / 120 Pl NE	Signal	A	8.6	0.57	A	7.6	0.59
20	NE 124 St / 124 Ave NE	Signal	D	35.2	0.81	D	37.9	0.80
21	NE 124 St / 128 Ave NE	Signal	A	5.3	0.40	A	9.5	0.50
22	NE 124 St / 132 Ave NE	Signal	E	68.3	0.97	E	67.9	0.97
23	NE 120 St / 124 Ave NE	Signal	B	14.8	0.61	B	11.9	0.51
24	NE 120 St / Slater Ave NE	Signal	E	74.5	0.98	E	64.0	1.00
25	NE 118 St / 120 Ave NE	Signal	A	4.6	0.43	A	9.7	0.61
26	NE 116 St / 120 Ave NE	Signal	D	40.2	0.60	D	42.2	0.75
27	NE 116 St / I-405 Ramps	Signal	D	53.5	0.93	D	42.8	0.88
29	NE 116 St / 124 Ave NE	Signal	C	29.0	0.78	D	43.4	0.86

The study intersections satisfy the City of Kirkland and the WSDOT LOS thresholds in year 2035, except:

- NE 132nd Street / 132nd Ave NE. LOS C (AM) and LOS E (PM). The 2019-2024 CIP identifies an unfunded improvement to add storage the eastbound left and right turn lanes.
- NE 124th Street / 116th Ave NE. LOS F (AM) and LOS F (PM). The planned southbound right turn lane on 116th Ave NE to NE 124th Street will improve traffic operations; however, the future traffic volumes and resulting LOS continue to show that the intersection does not satisfy the City of Kirkland's LOS standards. Future improvements in intersection delay would be achieved through other currently unfunded improvements in the area, such as the I-405 Master Plan.
- NE 124th Street / 132nd Ave NE. LOS E (AM) and LOS E (PM). The 2019-2024 CIP identifies an unfunded improvement for a northbound to eastbound right turn pocket at this intersection.
- NE 120th Street / Slater Ave NE. LOS E (AM) and LOS E (PM). There are no CIP improvements identified at this intersection.

Unfunded Transportation Facility Improvements

Unfunded transportation facility improvements are listed below from the City of Kirkland's 2019-2024 CIP. These unfunded improvements are illustrated in Figure 14.

15. **132nd Ave NE Improvements** (CIP Project No. STC056000). Widen roadway from NE 85th Street to NE 120th Street with bike lanes, turn lanes, sidewalks, curb, gutter, undergrounded overhead utilities, stormwater improvements and street illumination. Estimated cost is $25,170,000.
16. **119th Ave NE Extension** (CIP Project No. STC0610000). Construct a new 28-foot wide roadway between NE 128th Street and NE 130th Street with bike lanes, curb, gutter and sidewalks. Estimated cost is $5,640,000.
17. **NE 130th Lane Extension** (CIP Project No. STC0620000). Construct a new 28-foot wide roadway between Totem Lake Blvd and 120th Ave NE with bike lanes, curb, gutter and sidewalks. Estimated cost is $10,000,000.
18. **120th Ave NE Improvements** (CIP Project No. STC0630000). Widen roadway from NE 128th Street to NE 132nd Street for bike lanes, improve curb, gutter and sidewalk, provide landscaped median islands and reconstruct three signalized intersections. Estimated cost is $4,500,000.
19. **124th Ave NE Improvements** (CIP Project No. STC0640000). Widen roadway from NE 85th Street to NE 116th Street for bike lanes and landscaped median islands, underground utilities, as necessary improve planter strips and sidewalks. Estimated cost is $30,349,000.
20. **NE 120th Street Extension** (CIP Project No. STC0720000). Extends NE 120th Street along the CKC to 120th Place NE with bicycle facilities, sidewalks, and planter strips along the entire alignment. Estimated cost is $15,780,600.
21. **120th Ave NE Extension** (CIP Project No. STC0730000). Construct new 24- to 28-foot wide roadway between NE 116th Street and NE 120th Street and modify the adjacent signal operations at the NE 116th Street / I-405 single point half urban interchange. Estimated cost is $16,392,000.
22. **NE 132nd Street Improvements Phases 1-3** (CIP Project Nos. STC0770000, STC0780000, STC0790000). Phased roadway improvements from 100th Ave NE to 132nd Ave NE includes landscaped median islands, sidewalk repairs, bike lanes, improved pedestrian access, overlay and restriping. Estimated cost for the improvements is $3,591,000
23. **NE 126th Street Non-Motorized Facilities** (CIP Project No. NMC0430000). Acquire right-of-way between 120th Ave NE to NE 126th Place to reconstruct the existing roadway and new Class 1 (separated) non-motorized facilities. Estimated cost is $4,277,200.
24. **NE 124th Street Sidewalk** (CIP Project No. NMC0880000). Construct curb, gutter, sidewalk and planter strips on the north side of the road from 116th Ave NE on the overpass. Estimated cost is $376,000.
25. **NE 120th Street Sidewalk** (CIP Project No. NMC1020000). Construct curb, gutter, and sidewalk and retaining walls, as necessary, between Slater Ave NE to 128th Way NE. Estimated cost is $548,000.
26. **120th Ave NE Sidewalk** (CIP Project No. NMC1030000). Construct sidewalk, widen pavement, acquire right-of-way, construct retaining walls and street lighting, provide pavement markings, and improve drainage between NE 112th Street and NE 116th Street. Estimated cost is $556,000.
27. **NE 132nd Street / Fire Station Intersection** (CIP Project No. TRC0950000). Improvement modifies the signal at the fire station for pedestrian actuated calls. Estimated cost is $480,000.
28. **NE 132nd Street / 124th Ave NE** (CIP Project No. TRC0960000). Widen intersection and restripe with 2 eastbound left turn lanes, 2 northbound through lanes, 1 southbound left turn lane and 1 southbound through-right turn lane and matching receiving legs. Estimated cost is $7,400,000.

Figure 14: Other Transportation Network Improvements

- EVERGREENHEALTH CAMPUS
- PROGRAMMED IMPROVEMENT
- UNFUNDED IMPROVEMENT FROM CIP
- ADDITIONAL RECOMMENDATION FROM THE TOTEM LAKE ENHANCEMENT AND MULTIMODAL TRANSPORTATION NETWORK PLAN
- PREVIOUSLY UNIDENTIFIED IMPROVEMENT

29. **NE 132nd Street / 132nd Ave NE** (CIP Project No. TRC0970000). Extend eastbound turn pockets at the intersection. Estimated cost is $1,150,000.
30. **Slater Ave NE / NE 124th Street / 132nd Ave NE** (CIP Project No. TRC1230000). Widen the intersection to construction a northbound right turn lane on Slater Ave NE, revise the existing traffic signal and acquire property. Estimated cost $2,124,000.

In addition to the unfunded CIP improvement projects above, the Totem Lake Urban Center Enhancement and Multimodal Transportation Network Plan also recommended the following additional planning-level improvements to support multimodal traffic circulation:

31. **119th Ave NE Extension (north half)**. Complete extension of 119th Ave NE from NE 130th Lane to NE 132nd Street with bike lanes, curb, gutter and sidewalks.
32. **NE 124th Lane Extension**. Extend roadway east to 116th Ave NE with bike lanes, curb, gutter and sidewalks and connections to NE 124th Street at 113th Ave NE and approximately 115th Ave NE.
33. **NE 122nd Way Extension**. Extend roadway to 120th Ave NE with bike lanes, curb, gutter and sidewalks.
34. 1**16th/118th Ave NE Extension**. Extend roadway from NE 118th Street to NE 122nd Way with bike lanes, curb, gutter and sidewalks.
35. **NE 120th Street Extension (west half)**. Complete extension of NE 120th Street along the CKC to 116th/118th Ave NE with bicycle facilities, sidewalks, and planter strips along the entire alignment.
36. **118th Ave NE Extension**. Extend roadway from NE 116th Street to the south with bike lanes, curb, gutter and sidewalks.
37. **120th Ave NE Extension (north half)**. Extend roadway from the CKC to Totem Lake Blvd NE with bike lanes, curb, gutter and sidewalks.
38. **128th Lane NE Extension**. Extend roadway from NE 124th Street to Slater Ave NE with bike lanes, curb, gutter and sidewalks.
39. **135th Ave NE Improvements**. Acquire right-of-way and improve roadway with bike lanes, curb, gutter and sidewalks between NE 124th Street and NE 126th Place.

Previously unidentified, or new, improvements that would support mitigation to year 2035 intersection LOS deficiencies and improve vehicle circulation are listed below and are also illustrated in Figure 14.

40. **NE 128th Street / Totem Lake Blvd NE Westbound Left Turn**. Revise the intersection to allow westbound left turn movements from NE 128th Street to southbound on Totem Lake Blvd NE. The improvement requires revisions to the signal timing along the overpass. This improvement was evaluated with and without a left turn pocket, refer the March 15, 2019 NE 128th Street Westbound Left Turn at Totem Lake Blvd draft memorandum included in the Appendix. The improvement will require review from WSDOT.
41. **NE 132nd Street / 132nd Ave NE**. Expand the unfunded CIP improvement at the intersection (No. TRC0970000) to include a westbound right turn lane to improvement intersection performance. The improvement requires land acquisition from northeast corner of the intersection.
42. **NE 120th Street / Slater Ave NE**. To improve peak hour intersection LOS, provide a westbound to northbound right turn lane. The improvement may support a refinement to the unfunded NE 120th Street Sidewalk project (No. NMC1020000) and is reasonable to support the westbound right turn demand. Future King County Metro service improvements may contribute to this improvement.

Preliminary traffic operations analysis of select improvements is included in the following section.

NE 128th Street / Totem Lake Blvd NE Westbound Left Turn and NE 128th Street Signal Retiming

EvergreenHealth has expressed interest in modifying the westbound approach on NE 128th Street to allow vehicles to turn left to Totem Lake Blvd NE. Figure 15 conceptually illustrates the improvements.

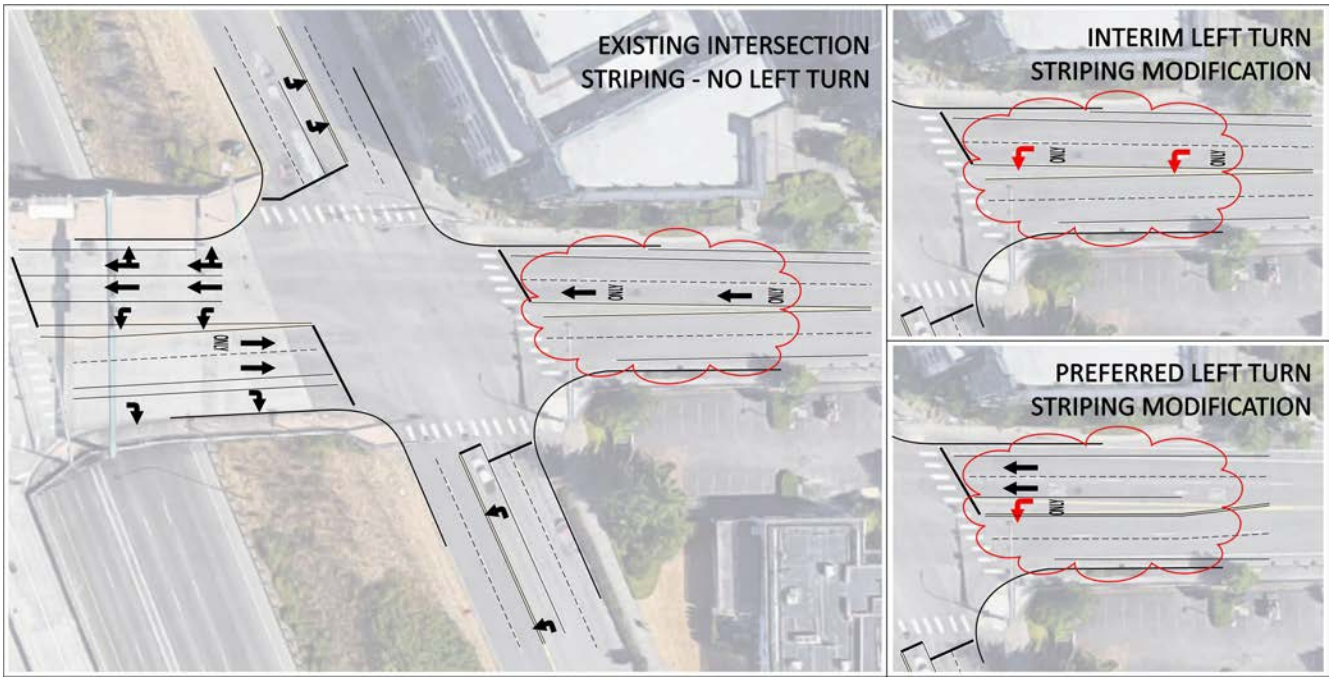


Figure 15: NE 128th Street / Totem Lake Blvd NE Westbound Left Turn

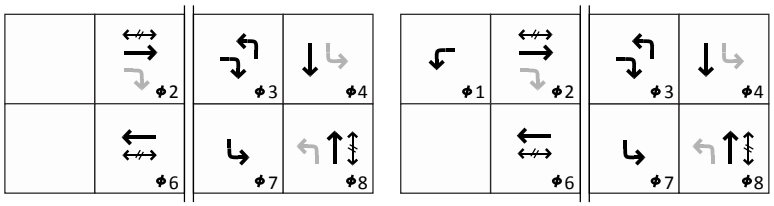
Critical issues for not allowing lefts turn from NE 128th Street to Totem Lake Blvd include an existing vertical sightline limitation for westbound vehicles approaching Totem Lake Blvd and queuing on the overpass impacting the I-405 express lane ramps.

Currently, there are a few motorists who ignore the existing signing and striping and turn left from NE 128th Street to Totem Lake Blvd NE.

A draft memorandum, dated March 15, 2019, which includes a preliminary analysis for this improvement is included in the Appendix. The preliminary analysis compared the existing conditions to an interim option, with restriping one of the westbound through lanes for left turns only, and a preferred option, to add a westbound left turn pocket and retain the both westbound through lanes.

Signal phasing without and with protected left turns is compared in the Figure 16.

Table 5 summarizes the LOS and delay and 95th-percentile queue impacts using Synchro output (without simulation). This analysis shows that a dedicated left turn may be feasible and further analysis is warranted.



Without Improvement (Existing) **With Improvement (Protected WB Left Turn)**

Figure 16: NE 128th Street / Totem Lake Blvd NE Signal Phasing

Table 5: NE 128th Street Westbound Left at Totem Lake Blvd NE Preliminary Operations Analysis

NE 128th St at	Option 0. No Action		Option 1. Restripe WB Left		Option 2. WB Left Lane	
	AM	PM	AM	PM	AM	PM
116th Ave NE	D (48.1)	D (51.3)	D (51.9)	D (43.2)	D (51.7)	D (44.6)
WB L Q (ft)	35	190	24	137	24	137
WB T Q (ft)	129	210	92	149	93	149
WB R Q (ft)	11	66	9	47	0	80
I-405 HOV Ramps	D (44.0)	C (32.4)	D (48.7)	C (24.5)	D (48.9)	C (24.7)
EB L Q (ft)	m23	m80	m17	m23	m17	m23
EB T Q (ft)	151	m190	141	44	141	44
WB L Q (ft)	#635	225	#470	204	#469	265
WB T Q (ft)	45	211	m18	152	m18	151
Totem Lake Blvd	B (19.7)	C (27.3)	D (36.6)	C (33.2)	D (36.4)	C (32.2)
EB L Q (ft)	135	55	m106	73	m106	73
EB R Q (ft)	155	89	m101	120	m101	120
WB L Q (ft)	-	-	262	229	262	229
WB T Q (ft)	86	191	224	424	91	170

m Volume for 95th percentile queue is metered by upstream signal
95th percentile volume exceeds capacity; queue may be longer. Queue shown in maximum after two cycles.

- The 116 Ave NE, I-405 HOV Ramps and Totem Lake Blvd NE intersections satisfy intersection LOS requirements for the City of Kirkland and WSDOT.
- Vehicles queues on the NE 128th Street overpass with a westbound left turn at Totem Lake Blvd NE are like conditions without a westbound left turn lane.
- The modifications to signal timings show benefits to the overpass.
- 120th Ave NE is over 800 feet to the east of Totem Lake Blvd NE and the westbound queues generated with the dedicated left turn movement are not projected to extend to 120th Ave NE.

Conclusions/Next Steps:

- A westbound left turn from NE 128th Street to Totem Lake Blvd NE would allow drivers entering the area from the south to return south using a similar route. As noted above, some drivers currently make this restricted movement now. Allowing the westbound left turn would match drivers' expectation at the intersection. This maneuver reduces confusion.
- The analysis would need to be reviewed and approved by the WSDOT and be compatible to I-405 Master Plan and Sound Transit BRT projects, which are on-going currently. A major next step is to prepare an Intersection Control Evaluation (ICE). Based on our recent experience, ICE report is typically a 12 to 18-month process.
- If determined to be undesirable during peak hour conditions. Consideration should be given for allowing westbound lefts during off-peak times. Electronic signage like the signs at NE 128th Street and 120th Ave NE and the Totem Lake Transit Center notifying drivers when right turns are not allowed could be implemented for off-peak times.
- City of Kirkland, private stakeholders (such as EvergreenHealth, Village at Totem Lake and other), Sound Transit, King County Metro and WSDOT should form a working group to collaborate, manage and complete the ICE.

NE 132nd Street / 132nd Ave NE Westbound Right-Turn Lane

Future AM and PM peak hour intersection LOS with the unfunded CIP improvement (No. TRC0970000), to extend the eastbound storage bays, and with an added add a right turn lane on NE 132nd Street, were reviewed for this intersection. Table 6 compares the findings.

Table 6: 2035 NE 132nd St / 132nd Ave NE Proposed Improvement

ID	Intersection	No Action or Action	Control	AM Peak Hour			PM Peak Hour		
				LOS	Delay	V/C	LOS	Delay	V/C
6	NE 132 St /	No Improvement	Signal	C	25.3	0.74	E	79.2	1.12
	132 Ave NE	With Westbound Right		C	25.1	0.73	D	39.1	0.91

Findings show that the improvement reduces the future PM peak hour delay by about 40 seconds and the intersection is forecast satisfy the City of Kirkland's LOC thresholds for both AM and PM peak hour conditions.

Slater Ave NE / NE 124th Street / 132nd Ave NE Northbound Right Turn Lane

Future AM and PM peak hour intersection LOS with the unfunded CIP improvement (No. TRC1230000), to add a right turn lane on Slater Ave NE, were reviewed for this intersection. Table 7 compares the findings.

Table 7: 2035 NE 124th Street / 132nd Ave NE CIP Improvement

ID	Intersection	No Action or Action	Control	AM Peak Hour			PM Peak Hour		
				LOS	Delay	V/C	LOS	Delay	V/C
22	NE 124 St /	No Improvement	Signal	E	68.3	0.97	E	67.9	0.97
	132 Ave NE	With Northbound Right		E	67.4	0.97	D	53.8	0.87

Findings show that the improvement reduces the future AM peak hour delay by less than a second and the PM peak hour delay by about 14 seconds. The AM peak hour conditions improve slightly but and the intersection would still operate outside of the City of Kirkland's LOS threshold. In the PM peak hour, the intersection is forecast satisfy the City of Kirkland's LOC thresholds and the delay reduction is significant. Other unidentified improvements are likely needed to improve future conditions.

Slater Ave NE / NE 120th Street Westbound Right Turn Lane

Future AM and PM peak hour intersection LOS with a westbound right turn lane on NE 120th Street were reviewed for this intersection. Table 8 compares the findings.

Table 8: 2035 NE 20th Street / Slater Ave CIP Improvement

ID	Intersection	No Action or Action	Control	AM Peak Hour			PM Peak Hour		
				LOS	Delay	V/C	LOS	Delay	V/C
24	NE 120 St /	No Improvement	Signal	E	74.5	0.98	E	64.0	1.00
	Slater Ave NE	With Westbound Right		E	74.6	0.98	C	31.8	0.71

Findings show that the improvement marginally reduces the future AM peak hour delay and significantly reduces the PM peak hour delay, the latter by about 32 seconds. The AM peak hour conditions still operate outside of the City of Kirkland's LOS threshold. In the PM peak hour, the intersection is forecast satisfy the City of Kirkland's LOC thresholds and the delay reduction is significant. Other unidentified improvements are likely needed to improve future conditions.

Transit Network

Major transit improvements impacting the City of Kirkland include:

- I-405 – BRT
- East Link Light Rail
- South Kirkland to Issaquah Light Rail

The I-405 – BRT improvements are planned for completion by 2024. The BRT plan improves transit service between the Cities of Lynnwood and Burien and would provide 10-minute transit headways and connections to Link Light Rail in the Cities of Lynnwood, Bellevue and Tukwila. Figure 16 shows a map of the I-405 – BRT plan.

The City of Kirkland Transit Implementation Plan states that with the I-405 – BRT Plan, Sound Transit forecasts the majority of the increases in transit ridership to the west and south of the EvergreenHealth campus. The City of Kirkland's major transit hub is in downtown Kirkland at the Kirkland Transit Center, where by 2040 transit ridership is forecast to increase by 40-precent, compared to year 2017 baseline conditions.

Figure 17: I-405 – BRT Plan

East Link Light Rail is anticipated to be complete by 2024 with service between the City of Seattle and the City of Redmond's downtown. South Kirkland to Issaquah Light Rail is anticipated to be complete by 2041 with service between the City of Kirkland and the City of Issaquah. Local, express and BRT transit improvements will provide service to and from the study area from and to future Link Light Rail stations.

The King County Metro CONNECTS Program includes a map of future King County Metro and Sound Transit local, express and BRT routes in the study area. Future routes are illustrated in Figure 18 and show:

- Two new RapidRide routes along NE 124th Street, 116th Ave NE, NE 128th Street, Totem Lake Transit Center, 120th Ave NE, Totem Lake Blvd NE, and 124th Ave NE.
- New service on NE 124th Street between NE 124th Ave NE and NE 132nd Ave NE, where none currently exists.
- Consolidated local and express services around NE 128th Street. Future service routes were rerouted from: NE 132nd Street from 116th Ave NE to 120th Ave NE; 132nd Ave NE from NE 132nd Street to NE 124th Street; Totem Lake Blvd NE from NE 132nd Street to NE 128th Street; and NE 116th Street from 120th Ave NE to 124th Ave NE.

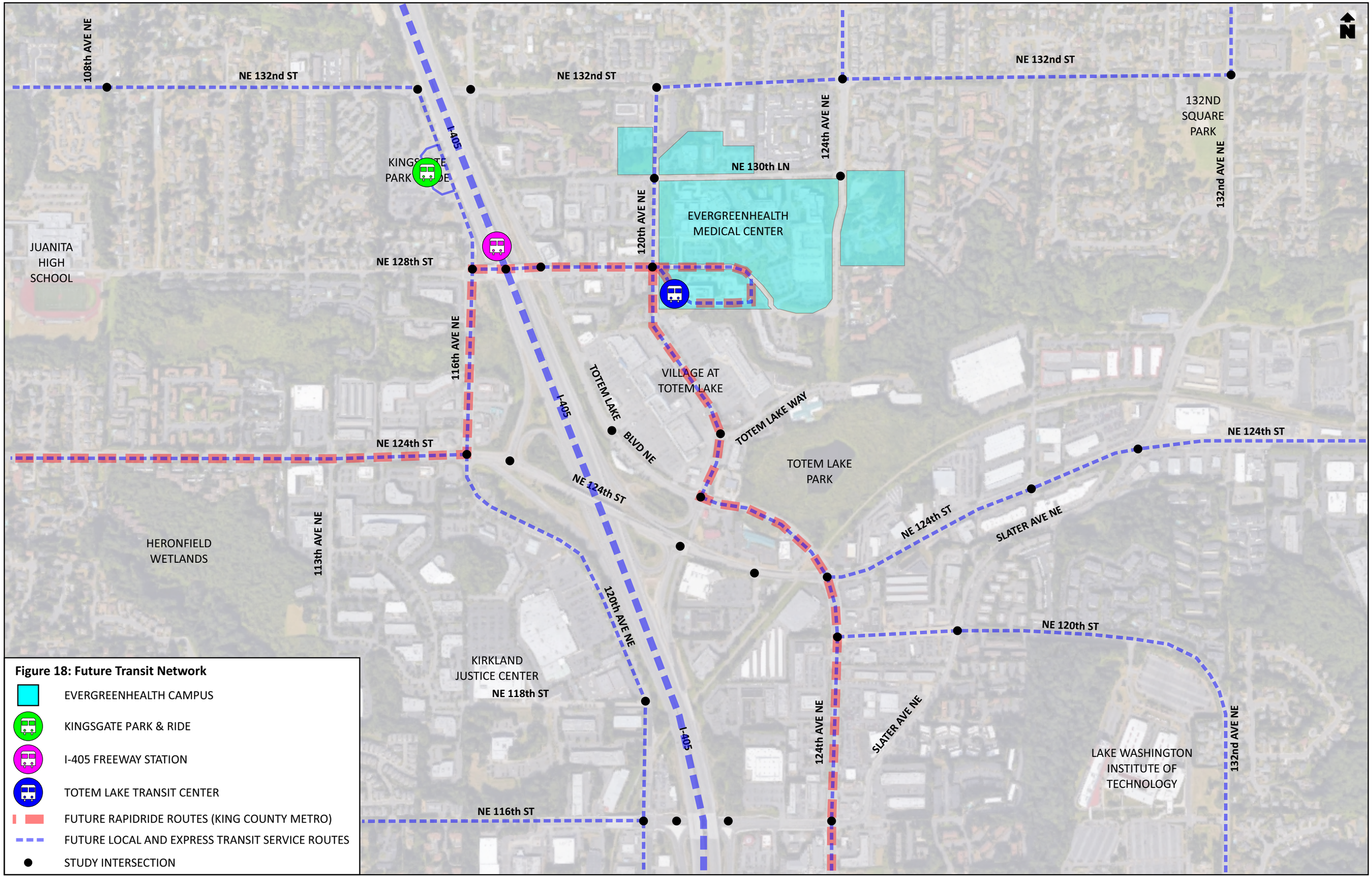


Figure 18: Future Transit Network

- EVERGREENHEALTH CAMPUS
- KINGSGATE PARK & RIDE
- I-405 FREEWAY STATION
- TOTEM LAKE TRANSIT CENTER
- FUTURE RAPIDRIDE ROUTES (KING COUNTY METRO)
- FUTURE LOCAL AND EXPRESS TRANSIT SERVICE ROUTES
- STUDY INTERSECTION

The City of Kirkland's Transit Implementation Plan was prepared to assist the City of Kirkland in improving and prioritizing transit service and implementing the goals of the City of Kirkland's Transportation Master Plan to respond to increases in population and jobs.

The City of Kirkland Transit Implementation Plan recommended two action items in the study area:

Totem Lake Transit Center Bus Stop Consolidation. The project identifies restricting transit routes and consolidating stops along NE 128th Street. The City of Kirkland is working with King County Metro during the planning phase of the North Eastside Mobility Project. Routes restructures may be implemented by September 2019. Project funding is identified through King County Metro and the improvement costs are estimated between $700,000 and $900,000.

Figure 19 provides conceptual context to the route consolidation project.

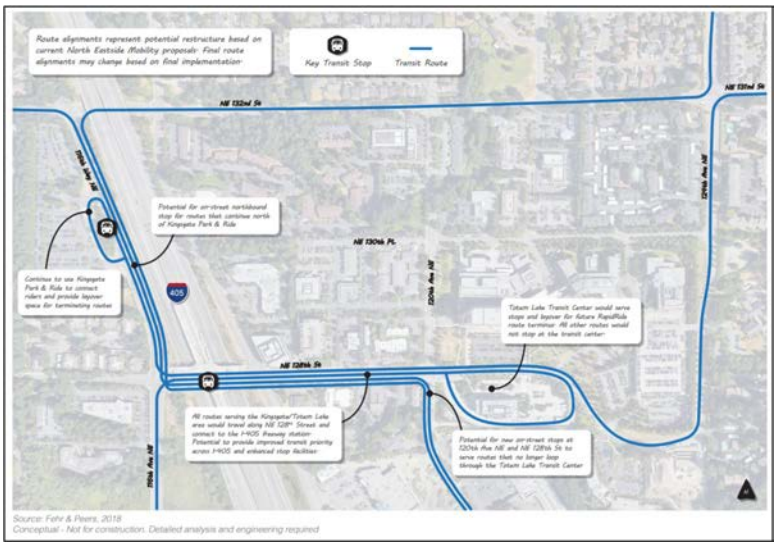


Figure 19: Bus Stop Consolidation Concept

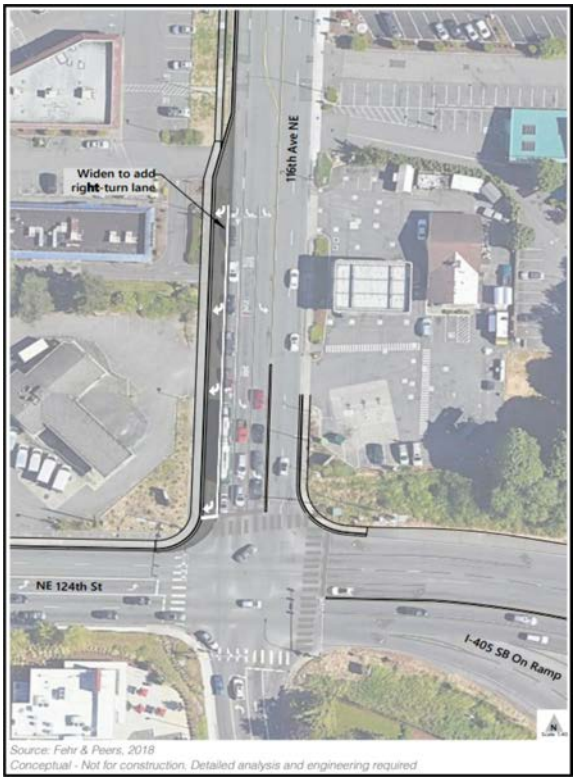


Figure 20: NE 124th Street and 116th Ave NE

NE 124th Street and 116th Ave NE Improvements (referenced as Project 6 in the above funded improvement and CIP Project No. TRC1240000, 124th St / 116th Ave NE Southbound Right Turn Lane). This project is funded and is anticipated to be completed within the 2021 calendar year. The improvement includes a southbound to westbound right turn lane and, specific to transit activities, is intended to improve travel time and reliability for the substantial number of riders that board at stops further south along the route. The improvement is forecast to reduce queues on 116th Ave NE and improve intersection LOS. The right turn lane is illustrated in Figure 20.

The improvement cost was estimated from the City of Kirkland's 2019-2024 CIP as $1,600,000.

The LOS analysis presented previously, notes that the improvement provides a needed benefit the intersection, but intersection LOS would still not meet the City of Kirkland standard and other system improvements should be explored, specifically through further implementation of the I-405 Master Plan.

Bicycles

The Totem Lake Enhancement and Multimodal Transportation Network Plan included recommendations for improvements to the local bicycle network which include filling in gaps and providing new routes for local accessibility.

Figure 21: Totem Lake Connector Concept

The major non-motorized facility improvement in the study area is the Totem Lake Connector (CIP Project No. NMC0861000). The improvement which is scheduled to open in 2019 includes construction of the grade-separated non-motorized bridge connecting the CKC over NE 124th Street / 124th Ave NE, one of the busiest intersections int the City of Kirkland. A conceptual sketch of the Totem Lake Connector is included as Figure 21.

Other bike lane and sidewalk and pedestrian improvement are identified in the City of Kirkland's CIP.

Figure 22 shows the recommended bicycle network from the Totem Lake Enhancement and Multimodal Transportation Network Plan.

Pedestrians

The Totem Lake Enhancement and Multimodal Transportation Network Plan included recommendations for improvements to the local pedestrian network which include filling in gaps and providing new routes for local accessibility. Spot improvements to improve or to enhance routes are also recommended.

Figure 23 shows the recommended pedestrian network from the Totem Lake Enhancement and Multimodal Transportation Network Plan.

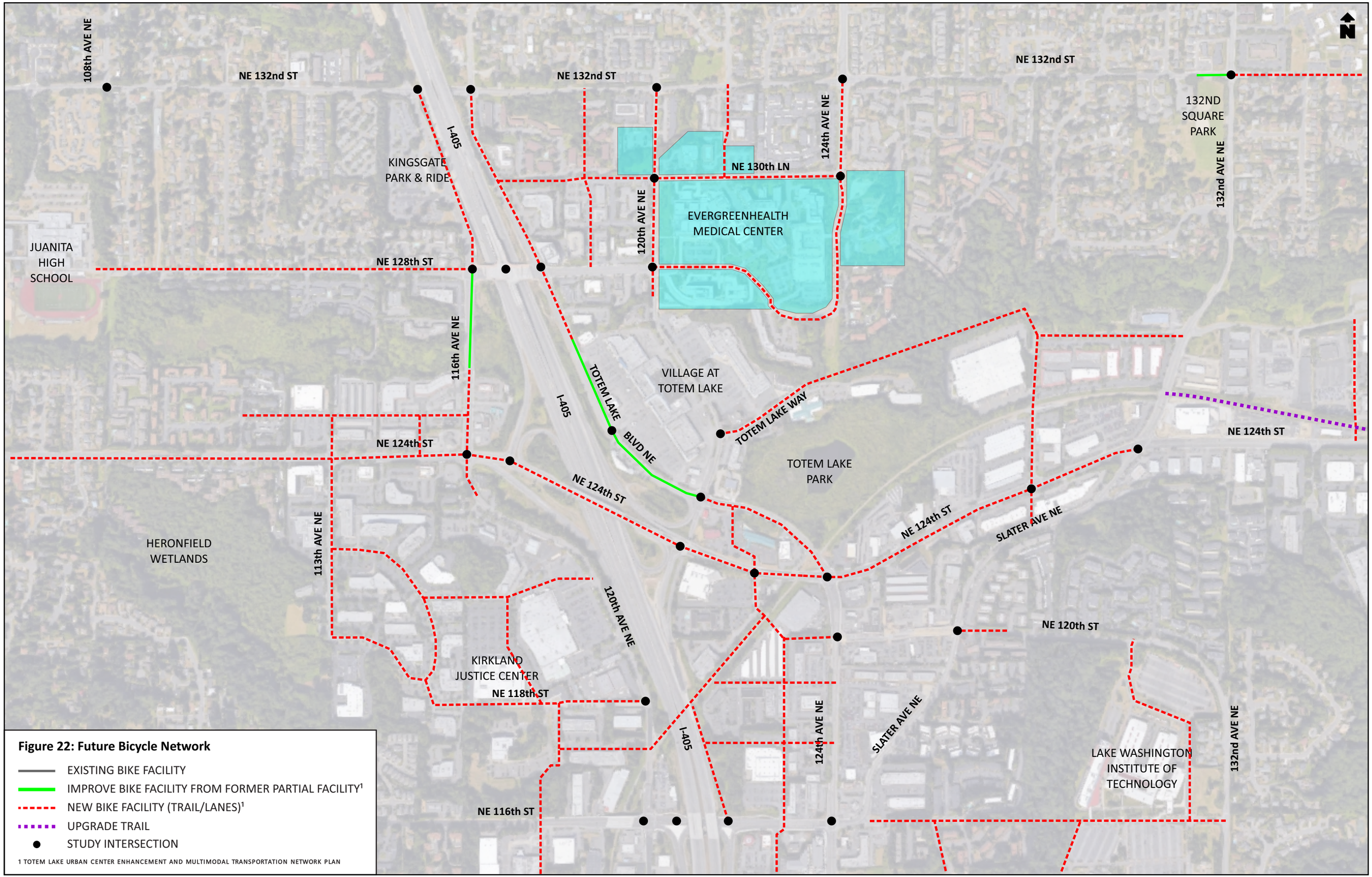


Figure 22: Future Bicycle Network

- EXISTING BIKE FACILITY
- IMPROVE BIKE FACILITY FROM FORMER PARTIAL FACILITY[1]
- NEW BIKE FACILITY (TRAIL/LANES)[1]
- UPGRADE TRAIL
- STUDY INTERSECTION

1 TOTEM LAKE URBAN CENTER ENHANCEMENT AND MULTIMODAL TRANSPORTATION NETWORK PLAN

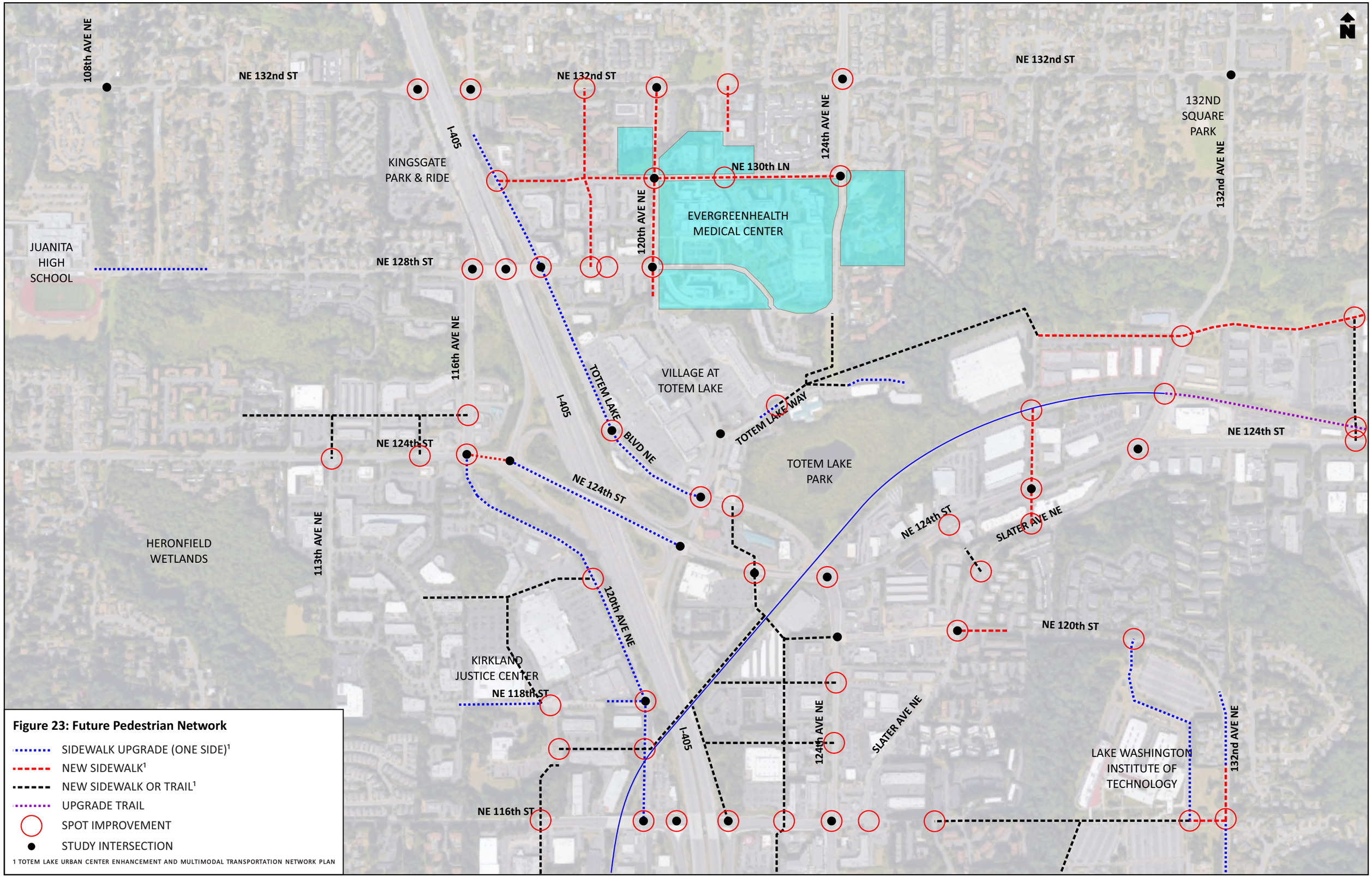


Figure 23: Future Pedestrian Network

- SIDEWALK UPGRADE (ONE SIDE)[1]
- NEW SIDEWALK[1]
- NEW SIDEWALK OR TRAIL[1]
- UPGRADE TRAIL
- SPOT IMPROVEMENT
- STUDY INTERSECTION

1 TOTEM LAKE URBAN CENTER ENHANCEMENT AND MULTIMODAL TRANSPORTATION NETWORK PLAN

Section 5. Improvement Recommendations and Priorities

This section includes recommendations for additional improvements based on stakeholder priorities.

Citywide/Study Area Transportation Facility Improvements

From the above review of the study area improvements and traffic operations forecasts, this subsection breaks down the improvements into high, medium and low priorities based on function and need of the stakeholders. The transportation facility improvements are broken into high, medium and low priorities:

- High priority improvements include projects that are funded, or funded, and is considered to provide a significant near-term improvement to citywide traffic circulation.
- Medium priority improvements include both funded or unfunded projects that are not needed to support a near-term traffic circulation improvements but are necessary to support long-term goals and functions on key road segments and at key study intersections.
- Low priority improvements include privately funded projects and unfunded improvements that are along corridors or at intersections that in the long-term would justify an improvement.

High Priority

	Funded	Unfunded	New
1. Totem Lake Gateway Improvements	X		
2. Totem Lake Connector	X		
3. NE 116th St / 124th Ave NE Northbound Dual Left-Turn Lane	X		
4. 124th Ave NE Roadway Improvements	X		
5. Bus Rapid Transit (BRT) on I-405	X		
6. NE 124th St / 116th Ave NE Southbound Right Turn Lane	X		
7. I-405 – NE 132nd St Interchange	X		
10. NE 132nd St / Juanita High School Eastbound Right-Turn	X		

Medium Priority

	Funded	Unfunded	New
8. NE 124th St / 113th Ave NE Crosswalk Upgrade	X		
9. NE 116th St Crosswalks Upgrades	X		
11. NE 132nd St / 108th Ave NE Westbound Right-Turn Lane	X		
12. 132nd Ave NE Crosswalk Upgrade	X		
15. 132nd Ave NE Improvements		X	
18. 120th Ave NE Improvements		X	
22. NE 132nd Street Improvements Phases 1-3		X	
23. NE 126th Street Non-Motorized Facilities		X	
24. NE 124th Street Sidewalk		X	
25. NE 120th Street Sidewalk		X	
30. Slater Ave NE / NE 124th Street / 132nd Ave NE		X	
40. NE 128th Street / Totem Lake Blvd NE Westbound Left Turn			X
42. NE 120th Street / Slater Ave NE			X
N/A I-405 Master Plan		X	
N/A Totem Lake Transportation Center Bus Stop Consolidation		X	

Low Priority

	Funded	Unfunded	New
13. 116th Ave NE Extension	X		
14. NE 116th Street / 116th Ave NE	X		
16. 119th Ave NE Extension (south half)		X	
17. NE 130th Lane Extension		X	
19. 124th Ave NE Improvements		X	
20. NE 120th Street Extension		X	
21. 120th Ave NE Extension		X	
26. 120th Ave NE Sidewalk		X	
27. NE 132nd Street / Fire Station Intersection		X	
28. NE 132nd Street / 124th Ave NE		X	
29. NE 132nd Street / 132nd Ave NE (add eastbound storage capacity)		X	
31. 119th Ave NE Extension (north half)		X	
32. NE 124th Lane Extension		X	
33. NE 122nd Way Extension		X	
34. 116th/118th Ave NE Extension		X	
35. NE 120th Street Extension (west half)		X	
36. 118th Ave NE Extension		X	
37. 120th Ave NE Extension (north half)		X	
38. 128th Lane NE Extension		X	
39. 135th Ave NE Improvements		X	
41. NE 132nd Street / 132nd Ave NE (westbound right)			X

The Citywide transportation improvement priorities are highlighted in Figure 24.

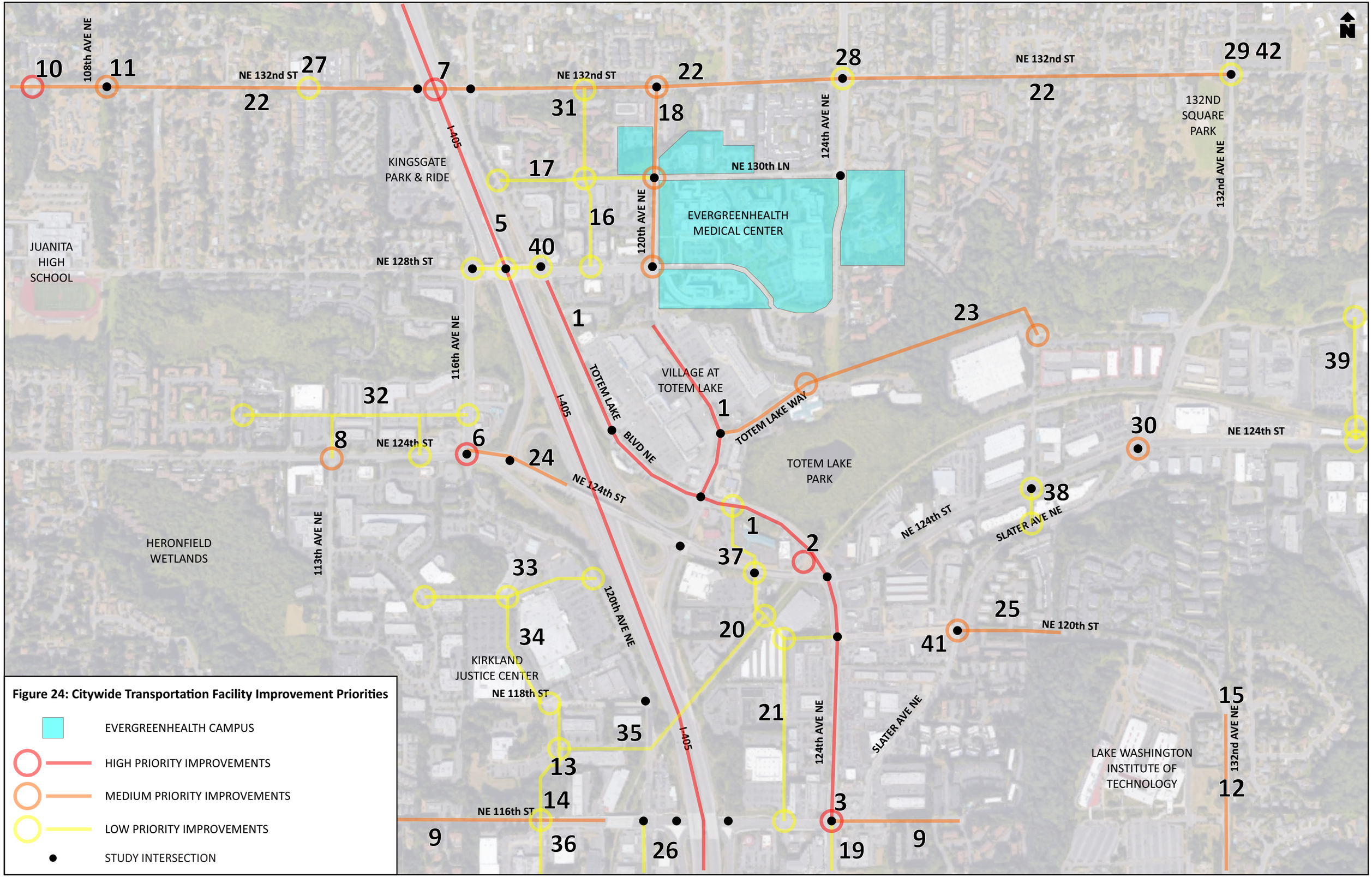


Figure 24: Citywide Transportation Facility Improvement Priorities

- EVERGREENHEALTH CAMPUS
- HIGH PRIORITY IMPROVEMENTS
- MEDIUM PRIORITY IMPROVEMENTS
- LOW PRIORITY IMPROVEMENTS
- STUDY INTERSECTION

EvergreenHealth Transportation Facility Improvements

Based on review of the study area improvements and with feedback from EvergreenHealth, the following prioritizes transportation facility improvements based on function and need for EvergreenHealth. Select transportation facility improvements are broken into high, medium and low priorities:

- High priority improvements include projects that are funded and unfunded that support traffic circulation and access around the EvergreenHealth campus.
- Medium priority improvements include funded and unfunded projects that expand and provide alternative travel options for EvergreenHealth patients and staff and projects that complete right-of-way improvements, already identified or that are currently active.
- Low priority improvements include funded and unfunded projects that provide long-range benefits for EvergreenHealth traffic circulation.

High Priority

	Funded	Unfunded	New
6. NE 124th St / 116th Ave NE Southbound Right Turn Lane	X		
7. I-405 – NE 132nd St Interchange	X		
17. NE 130th Lane Extension		X	
18. 120th Ave NE Improvements		X	
40. NE 128th Street / Totem Lake Blvd NE Westbound Left Turn			X

Medium Priority

	Funded	Unfunded	New
1. Totem Lake Gateway Improvements	X		
5. Bus Rapid Transit (BRT) on I-405	X		
17. 119th Ave NE Extension (south half)		X	
29. NE 132nd Street / 124th Ave NE		X	
31. Slater Ave NE / NE 124th Street / 132nd Ave NE		X	
32. 119th Ave NE Extension (north half)		X	
N/A Totem Lake Transportation Center Bus Stop Consolidation		X	

Low Priority

	Funded	Unfunded	New
9. NE 132nd St / 108th Ave NE Westbound Right-Turn Lane	X		
23. NE 132nd Street Phase 2 (new interchange to 124th Ave NE)		X	
24. NE 126th Street Non-Motorized Facilities		X	
N/A I-405 Master Plan		X	

The EvergreenHealth transportation improvement priorities are highlighted in Figure 25.

The improvement prioritizations for EvergreenHealth do not need to align with the citywide priorities for the City of Kirkland. Common high priority improvements are recommended to take precedence over uncommon and lower priority improvement actions.

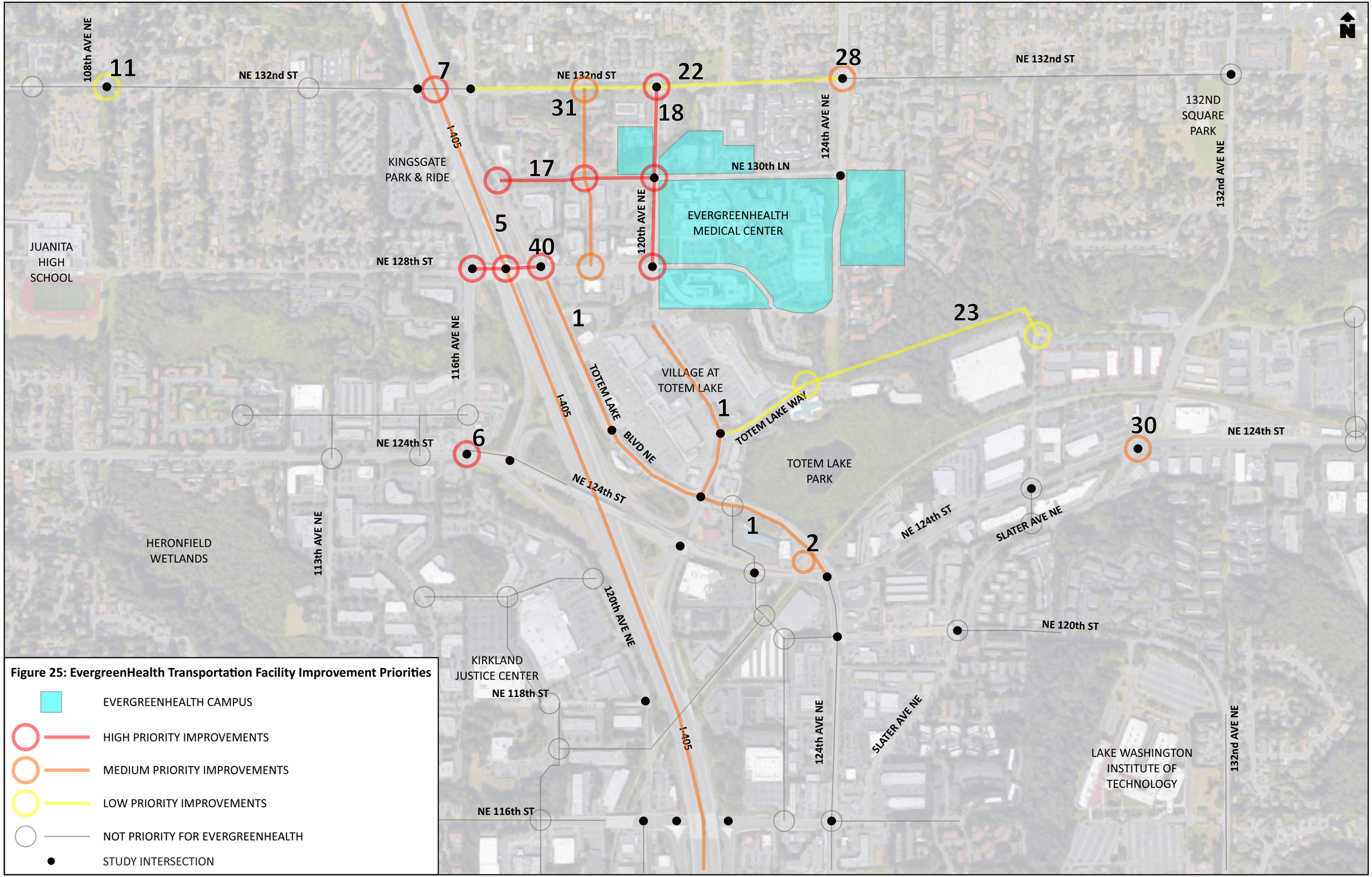


Figure 25: EvergreenHealth Transportation Facility Improvement Priorities

- EVERGREENHEALTH CAMPUS
- HIGH PRIORITY IMPROVEMENTS
- MEDIUM PRIORITY IMPROVEMENTS
- LOW PRIORITY IMPROVEMENTS
- NOT PRIORITY FOR EVERGREENHEALTH
- STUDY INTERSECTION

Two common high priority improvements include:

6. NE 124th Street / 116th Ave NE Southbound Right Turn Lane. This improvement adds a southbound right turn lane on 116th Ave NE at NE 124th Street. The project improves traffic circulation for vehicles and transit and access to the adjacent southbound I-405 ramps on NE 124th Street.
7. I-405 – NE 132nd Street Interchange. This new half interchange (northbound on-ramp and southbound off-ramp) will relieve congestion, support future land use growth opportunities in the subarea and improve circulation to and from the EvergreenHealth campus.

Conversely other improvements are higher on EvergreenHealth's priority list than on the citywide priority lists due to lesser near-term traffic circulation needs and funding resources. High priority projects for EvergreenHealth, but not for near-term citywide improvements include:

17. NE 130th Lane Extension. This is improvement's priority is considered low for the City of Kirkland. NE 130th Lane fronts the EvergreenHealth campus and its extension to Totem Lake Blvd would expand travel options and access for EvergreenHealth users. The road extension provides access to subarea properties between NE 128th and 132nd Streets opening future growth opportunities, which are important but not critical to moving traffic through the City Kirkland's existing and future-funded transportation network.
18. 120th Ave NE Improvements. This is improvement's priority is considered medium for the City of Kirkland. The project completes 120th Ave NE fronting EvergreenHealth between the Village at Totem Lake, south of NE 128th Street to NE 132nd Street. The improvement includes widening the roadway for bike lanes and improving sidewalks and the existing signalized intersections that would improve accessibility for the EvergreenHealth campus. Unlike the other high priority projects identify by the City of Kirkland, this roadway improvement is currently unfunded. Support, funding and potential right-of-way dedication by EvergreenHealth and other nearby stakeholders would likely increase this project's priority.
40. NE 128th Street / Totem Lake Blvd NE Westbound Left Turn. his is improvement's priority is considered medium for the City of Kirkland. Both the City of Kirkland and EvergreenHealth agree that this improvement is a priority for further analysis. The project proposes a revision to the NE 128th Street / Totem Lake Blvd NE intersection to add a dedicated westbound left turn movement from NE 128th Street to Totem Lake Blvd NE. The improvement requires participation from the WSDOT and additional analyses of the NE 128th Street corridor and other nearby I-405 interchanges.

Transit Network

Relative to the study area, transit network priorities for EvergreenHealth include:

- Improve access to Totem Lake Transit Center and to NE 128th St. This would incorporate Kirkland Transit Implementation Plan Project 4: Totem Lake Transit Center Bus Stop Consolidation.
- Continue to promote transit options for employees, and where practical for patients. This would be in conjunction with Commute Trip Reduction program requirements and goals.
- Support Bus Rapid Transit (BRT) on I-405.
- Kirkland Transit Implementation Plan: NE 124th Street and 116th Ave NE Improvements is a priority for both EvergeenHealth and the City of Kirkland, this is a funded project that also benefits transit circulation in the area.

Bicycle Network

Relative to the study area, bicycle network opportunities for EvergreenHealth are highlighted in Figure 26. Existing, funded and proposed facilities within a ½-mile radius of the campus and generally south of NE 132nd Street are recommended to be monitored by EvergreenHealth.

Pedestrian Network

Relative to the study area, pedestrian network opportunities for EvergreenHealth are highlighted in Figure 27. Existing, funded and proposed facilities within a ¼-mile radius of the campus and generally south of NE 132nd Street are recommended to be monitored by EvergreenHealth, with a focus on improving facilities within a quarter mile of the campus.

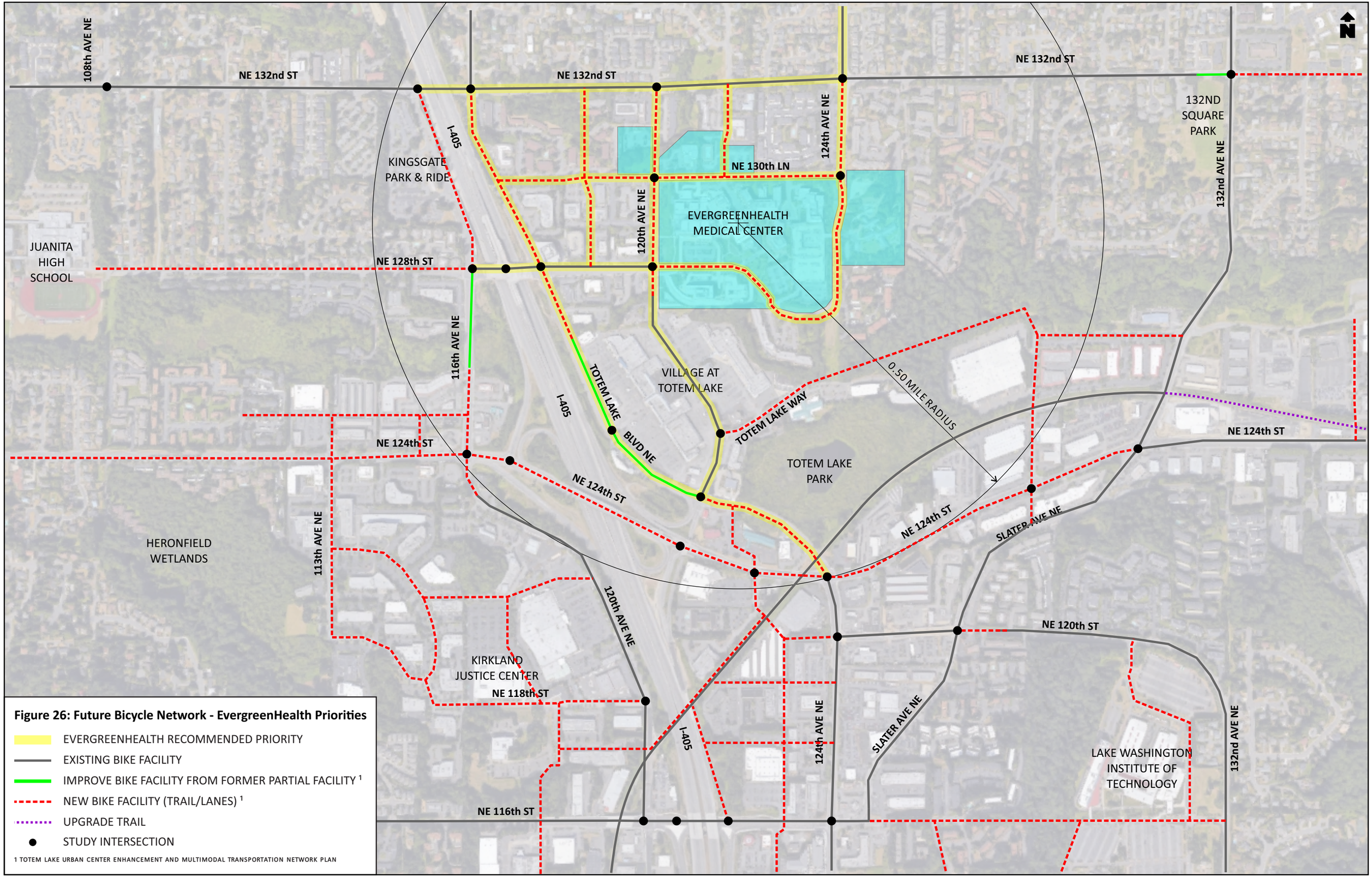


Figure 26: Future Bicycle Network - EvergreenHealth Priorities

- EVERGREENHEALTH RECOMMENDED PRIORITY
- EXISTING BIKE FACILITY
- IMPROVE BIKE FACILITY FROM FORMER PARTIAL FACILITY [1]
- NEW BIKE FACILITY (TRAIL/LANES) [1]
- UPGRADE TRAIL
- STUDY INTERSECTION

1 TOTEM LAKE URBAN CENTER ENHANCEMENT AND MULTIMODAL TRANSPORTATION NETWORK PLAN

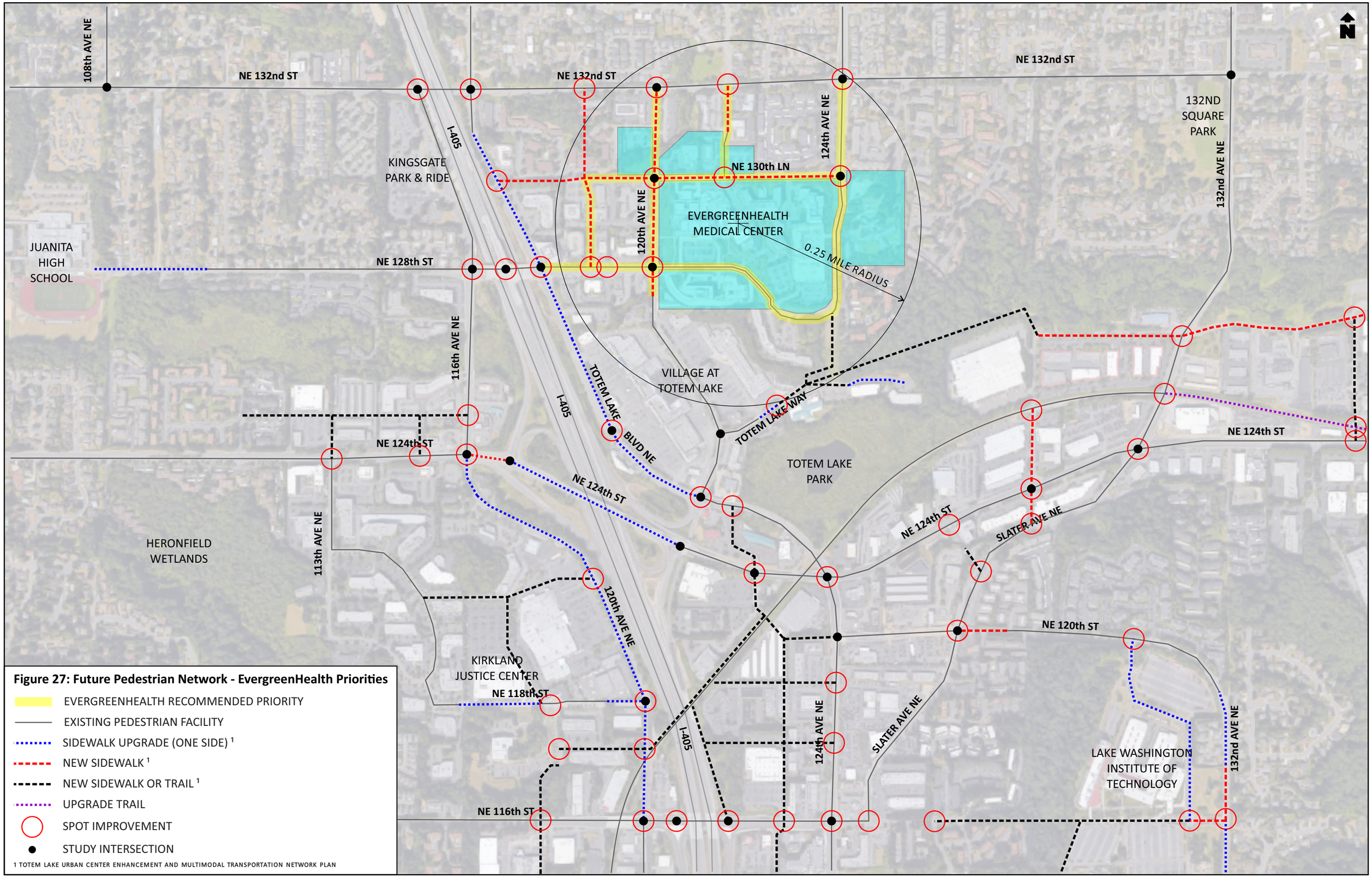


Figure 27: Future Pedestrian Network - EvergreenHealth Priorities

- EVERGREENHEALTH RECOMMENDED PRIORITY
- EXISTING PEDESTRIAN FACILITY
- SIDEWALK UPGRADE (ONE SIDE) [1]
- NEW SIDEWALK [1]
- NEW SIDEWALK OR TRAIL [1]
- UPGRADE TRAIL
- SPOT IMPROVEMENT
- STUDY INTERSECTION

1 TOTEM LAKE URBAN CENTER ENHANCEMENT AND MULTIMODAL TRANSPORTATION NETWORK PLAN

Section 6. Summary of Recommendations.

This section provides a matrix summarizing recommends for improvements. The improvement matrix is for planning purposes only and is included as Table 9.

Table 9: Project Matrix

ID. Figs. 23/24	Project Name	2019-2024 CIP ID or Reference	Status	2019 Cost ($)	Priority		Benefits			
					Kirkland	Evergreen	Veh.	Bus	Bike	Ped.
	FUNDED IMPROVEMENT – FUNDED AND ACTIVE OR PLANNED									
1	Totem Lake Gateway Improvements – Active	TRC1220000	Active - Intersection	9,031,100	High	Medium	X	X	X	X
1	Totem Lake Gateway Improvements – Repairs	STC0060500	Roadway Repairs	3,020,000	High	Medium	X	X		
1	Totem Lake Gateway Improvements - Misc.	NMC1240000	Misc. Non-motorized	7,500,000	High	Medium			X	X
2	Totem Lake Connector	NMC0861000	Active with budget remaining	5,593,100	High				X	X
3	NE 116th St / 124th Ave NE Northbound Dual Left-Turn Lane	TRC0920000	Active with budget remaining	1,375,000	High		X	X		
4	124th Ave NE Roadway Improvements Right-of-Way	STC0591200	Right-of-Way Acquisition	2,195,000	High					
4	124th Ave NE Roadway Improvements Construction	STC0591300	Construction	5,400,000	High		X	X	X	X
5	Bus Rapid Transit (BRT) on I-405	Sound Transit	Funded/Funded	N/A	High	Medium		X	X	X
6	NE 124th St / 116th Ave NE Southbound Right Turn Lane	TRC1240000	Start 2020	1,600,000	High	High	X	X		
7	I-405 – NE 132nd St Interchange	WSDOT	Start 2021	83,000,000	High	High	X	X	X	X
8	NE 124th St / 113th Ave NE Crosswalk Upgrade	NMC0120200	Active with budget remaining	80,000	Medium				X	X
9	NE 116th St Crosswalks Upgrades	NMC0120100	Active with budget remaining	430,000	Medium				X	X
10	NE 132nd St / Juanita HS Eastbound Right-Turn	TRC0930000	Active with budget remaining	1,213,854	High		X	X	X	X
11	NE 132nd St / 108th Ave NE Westbound Right-Turn Lane	TRC0940000	Start TBD	1,220,000	Medium	Low	X	X	X	X
12	132nd Ave NE Crosswalk Upgrade	NMC0120300	Active with budget remaining	250,000	Medium				X	X
13	116th Ave NE Extension	Private	Under Construction	N/A	Low		X	X	X	X
14	NE 116th St / 116th Ave NE	Private	Under Construction	N/A	Low		X	X	X	X

Table 9: Project Matrix

ID. Figs. 23/24	Project Name	2019-2024 CIP ID or Reference	Status	2019 Cost ($)	Priority		Benefits			
					Kirkland	Evergreen	Veh.	Bus	Bike	Ped.
	UNFUNDED IMPROVEMENT – CIP PROJECT LIST									
15	132nd Ave NE Improvements	STC056000	Unfunded	25,170,000	Medium		X	X	X	X
16	119th Ave NE Extension (south half)	STC0610000	Unfunded	5,640,000	Low	Medium	X		X	X
17	NE 130th Lane Extension	STC0620000	Unfunded	10,000,000	Low	High	X		X	X
18	120th Ave NE Improvements	STC0630000	Unfunded	4,500,000	Medium	High	X	X	X	X
19	124th Ave NE Improvements	STC0640000	Unfunded	30,349,000	Low		X	X	X	X
20	NE 120th St Extension	STC0720000	Unfunded	15,780,000	Low		X		X	X
21	120th Ave NE Extension	STC0730000	Unfunded	16,392,000	Low		X		X	X
22	NE 132nd St Improvements Phase 1 (west section)	STC0770000	Unfunded	1,739,000	Medium		X	X	X	X
22	NE 132nd St Improvements Phase 2 (middle section)	STC0780000	Unfunded	408,000	Medium	Low	X	X	X	X
22	NE 132nd St Improvements Phase 3 (east section)	STC0790000	Unfunded	1,444,000	Medium		X	X	X	X
23	NE 126th St Non-Motorized Facilities	NMC0430000	Unfunded	4,277,200	Medium	Low				X
24	NE 124th St Sidewalk	NMC0880000	Unfunded	376,000	Medium					X
25	NE 120th St Sidewalk	NMC1020000	Unfunded	548,000	Medium					X
26	120th Ave NE Sidewalk	NMC1030000	Unfunded	556,000	Low		X	X	X	X
27	NE 132nd St / Fire Station Intersection	TRC0950000	Unfunded	812,000	Low		X		X	X
28	NE 132nd St / 124th Ave NE	TRC0960000	Unfunded	7,400,000	Low	Medium	X	X		
29	NE 132nd St / 132nd Ave NE	No. TRC0970000	Unfunded	1,150,000	Low		X			
30	Slater Ave NE / NE 124th St / 132nd Ave NE	TRC1230000	Unfunded	2,124,000	Medium		X			
	OTHER UNFUNDED IMPROVEMENTS									
N/A	I-405 Master Plan - Regional Improvements	WSDOT and others	Unfunded	N/A	Medium	Low	X	X	X	X
N/A	Totem Lake Transit Center Bus Stop Consolidation	KC Metro and others	Unfunded	900,000	Medium	Medium	X	X	X	X

Table 9: Project Matrix

ID. Figs. 23/24	Project Name	2019-2024 CIP ID or Reference	Status	2019 Cost ($)	Priority		Benefits			
					Kirkland	Evergreen	Veh.	Bus	Bike	Ped.
	UNFUNDED IMPROVEMENT – TOTEM LAKE URBAN CENTER ENHANCEMENT AND MULTIMODAL TRANSPORTATION NETWORK PLAN									
31	119th Ave NE Extension (north half)	Enhancement Plan	Unfunded	TBD	Low	Medium	X	X	X	X
32	NE 124th Lane Extension	Enhancement Plan	Unfunded	TBD	Low		X		X	X
33	NE 122nd Way Extension	Enhancement Plan	Unfunded	TBD	Low		X		X	X
34	116th/118th Ave NE Extension	Enhancement Plan	Unfunded	TBD	Low		X		X	X
35	NE 120th St Extension (west half)	Enhancement Plan	Unfunded	TBD	Low		X		X	X
36	118th Ave NE Extension	Enhancement Plan	Unfunded	TBD	Low		X		X	X
37	120th Ave NE Extension (north half)	Enhancement Plan	Unfunded	TBD	Low		X		X	X
38	128th Lane NE Extension	Enhancement Plan	Unfunded	TBD	Low		X		X	X
39	135th Ave NE Improvements	Enhancement Plan	Unfunded	TBD	Low		X		X	X
	PREVIOSLY UNIDENTIFIED IMPROVEMENT									
40	NE 128th St / Totem Lake Blvd NE Westbound Left Turn	Previously Unidentified	Unfunded	TBD	Medium	High	X			
41	NE 132nd St / 132nd Ave NE (westbound right)	Previously Unidentified	Unfunded	TBD	Low		X			
42	NE 120th St / Slater Ave NE	Previously Unidentified	Unfunded	TBD	Medium		X	X		

Table 9: Project Matrix

ID. Figs.	Project	2019-2024 CIP ID or Reference	Additional Information	Evergreen Priority
	BICYCLE NETWORK IMPROVEMENTS			
	NE 132nd St complete parking shared lane near 132nd Square Park	Enhancement Plan		
	NE 132nd St east of+B97 132nd Ave NE	Enhancement Plan		
17	NE 130th Lane Extension from Totem Lake Blvd NE to 116th Ave NE	STC0620000		High
	NE 130th Lane from 120th Ave NE to 124th Ave NE	Enhancement Plan		High
	NE 128th St from Juanita HS to 116th Ave NE	Enhancement Plan		
	NE 128th St from 120th Ave NE to 124th Ave NE vicinity of EvergreenHealth	Enhancement Plan		High
32	NE 124th Lane Extension from NE 124th Lane to NE 116th Ave	Enhancement Plan		
32	113th Ave NE from NE 124th St to NE 124th Lane Extension	Enhancement Plan		
32	115th Ave NE from NE 124th St to NE 124th Lane Extension	Enhancement Plan		
23	NE 126th St Non-Motorized Facilities from Totem Lake Way / 120th Ave NE to 128th Ln NE	NMC0430000		
	NE 126th Place from 128th Lane NE to 132nd Ave NE	Enhancement Plan		
	NE 124th St from 132nd Ave NE to the west	Enhancement Plan		
33	NE 122nd Way Extension from 115th Ave NE to 120th Ave NE	Enhancement Plan		
	NE 120th St from 113th Ave NE to 115th Ave NE	Enhancement Plan		
20	NE 120th St Extension from 124th St along CKC to NE 118th St	STC0720000		
	NE 120th St from Slater Ave NE to 128th Way NE	Enhancement Plan		
	NE 118th St from 115th Ave NE to 120th Ave NE	Enhancement Plan		
35	NE 120th St Extension (west half) from 116th/118th Ave to 120th Ave along CKC to NE 118th St	Enhancement Plan		
	NE 119th St from CKC to 124th Ave NE	Enhancement Plan		
	NE 118th St from I-405 east frontage to 124th Ave NE	Enhancement Plan		
	I-405 east frontage from CKC to NE 116th St	Enhancement Plan		
	NE 116th St from Slater Ave NE to 132nd Ave NE via Lake Washington Technical Institute	Enhancement Plan		
	116th Ave NE from NE 124th St to partial shared lane on 116th Ave NE	Enhancement Plan		
	116th Ave NE complete partial shared lane on 116th Ave NE south of NE 128th St	Enhancement Plan		
	116th Ave NE from NE 128th St to NE 132nd St	Enhancement Plan		
	120th Ave NE from existing bike lane to NE 124th St	Enhancement Plan		
	Totem Lake Blvd NE from Village at Totem Lake to NE 128th St	Enhancement Plan		High
	Totem Lake Blvd NE from NE 128th St to NE 132nd St	Enhancement Plan		
1	Totem Lake Gateway Improvements - complete Totem Lake Blvd NE along Village at Totem Lake	TRC1220000		High
1	Totem Lake Gateway Improvements - Totem Lake Blvd NE south to NE 124th St	TRC1220000		
16	119th Ave NE Extension (south half) from NE 128th St to NE 130th Lane	STC0610000		High
31	119th Ave NE Extension (north half) from NE 130th Lane to NE 132nd St	Enhancement Plan		High
	120th Ave NE missing section between Village at Totem Lake and NE 128th St	Enhancement Plan		High
18	120th Ave NE Improvements from NE 128th St to NE 132nd St	STC0630000		
	121st Way NE from NE 130th Lane to NE 132nd St	Enhancement Plan		High
	124th Ave NE from NE 128th St to NE 132nd St	Enhancement Plan		High

Table 9: Project Matrix

ID. Figs.	Project	2019-2024 CIP ID or Reference	Additional Information	Evergreen Priority
	BICYCLE NETWORK IMPROVEMENTS			
	113th Ave NE from NE 118th St to NE 124th St	Enhancement Plan		
	NE 122nd Way/115th Ave NE from 113th Ave NE to NE 118th St	Enhancement Plan		
34	116th/118th Ave NE Extension from 118th St to NE 122nd Way	Enhancement Plan		
13	116th Ave NE Extension from NE 116th St to NE 118th St	Private		
36	118th Ave NE Extension south of NE 116th St	Enhancement Plan		
21	120th Ave NE Extension from NE 116th St to NE 120th St	STC0730000		
	120th Ave NE extend south of NE 116th St	Enhancement Plan		
37	120th Ave NE Extension from NE 120th St/CKC to Totem Lake Blvd NE	Enhancement Plan		
	127th Ave NE south of NE 116th St	Enhancement Plan		
	128th Ave NE south of NE 116th St	Enhancement Plan		
	Internal to Lake Washington Institute of Technology	Enhancement Plan		
	128th Lane NE from NE 124th St to NE 126th Place	Enhancement Plan		
	128th Lane NE from Slater Ave NE to NE 124th St	Enhancement Plan		
39	135th Ave NE Improvements from NE 124th Street across regional trail to NE 126th Place	Enhancement Plan		
	Improve Eastside Rail Corridor section west of 132nd Ave NE	Enhancement Plan		
2	Totem Lake Connector	NMC0861000		

Table 9: Project Matrix

ID. Figs.	Project	2019-2024 CIP ID or Reference	Additional Information	Evergreen Priority
	PEDESTRIAN NETWORK IMPROVEMENTS			
7	I-405 – NE 132nd St Interchange - Spot Improvements Off-Ramp Intersection	WSDOT	Spot Improvement	
7	I-405 – NE 132nd St Interchange - Spot Improvements On-Ramp Intersection	WSDOT	Spot Improvement	
17	NE 130th Lane Extension from Totem Lake Blvd NE to 116th Ave NE	STC0620000	New Sidewalk	High
	NE 130th Lane from 120th Ave NE to 124th Ave NE	Enhancement Plan	New Sidewalk	High
	NE 128th St / 116th Ave NE Spot Improvements	Enhancement Plan	Spot Improvement	
	NE 128th St / I-405 Express HOV Spot Improvements	Enhancement Plan	Spot Improvement	
	NE 128th St / Totem Lake Blvd Spot Improvements	Enhancement Plan	Spot Improvement	High
	NE 128th St / 119th St NE Spot Improvements	Enhancement Plan	Spot Improvement	High
32	NE 124th Lane Extension from NE 124th Lane to NE 116th Ave	Enhancement Plan	New Sidewalk/Trail	
32	113th Ave NE from NE 124th St to NE 124th Lane Extension	Enhancement Plan	New Sidewalk/Trail	
32	115th Ave NE from NE 124th St to NE 124th Lane Extension	Enhancement Plan	New Sidewalk/Trail	
	Totem Lake Way Upgrade Sidewalk between 120th Ave NE to 124th St NE	Enhancement Plan	Upgrade Facility	
23	NE 126th St Non-Motorized Facilities from 124th Ave NE to 128th Ln NE	NMC0430000	New Sidewalk/Trail	
	Totem Lake Way from 124th Ave NE to the Existing Partial Sidewalk	Enhancement Plan	Upgrade Facility	
	Totem Lake Way from Upgrade Existing Partial Sidewalk to the east	Enhancement Plan	New Sidewalk/Trail	
	NE 126th Place from 128th Lane NE to 132nd Ave NE	Enhancement Plan	New Sidewalk	
	NE 126th Place east of 132nd Ave NE	Enhancement Plan	New Sidewalk	
24	NE 124th St Sidewalk from NE 116th Ave to I-405 Off-Ramp	NMC0880000	New Sidewalk	
	NE 124th St from across overpass	Enhancement Plan	Upgrade Facility	
	NE 124th St / 124th Ave NE / Totem Lake Blvd Spot Improvements	Enhancement Plan	Spot Improvement	
	NE 124th St vicinity of Althene senior housing development Spot Improvements	Enhancement Plan	Spot Improvement	
	NE 124th St / 132nd Ave NE Spot Improvements	Enhancement Plan	Spot Improvement	
33	NE 122nd Way Extension from 115th Ave NE to 120th Ave NE	Enhancement Plan	New Sidewalk/Trail	
	Facility to the back of Althene senior housing development to Slater Ave NE	Enhancement Plan	New Sidewalk/Trail	
20	NE 120th St Extension from 124th St along CKC to NE 118th St	Enhancement Plan	New Sidewalk/Trail	
25	NE 120th St Sidewalk Complete Missing Section east of Slater Ave NE	NMC1020000	New Sidewalk	
	NE 118th St Upgrade Sidewalk east of 116th/118th Ave NE	Enhancement Plan	Upgrade Facility	
	NE 118th St Upgrade Sidewalk east of 120th Ave NE	Enhancement Plan	Upgrade Facility	
	NE 119th St from CKC to 124th Ave NE	Enhancement Plan	New Sidewalk/Trail	
	NE 118th St from I-405 east frontage to 124th Ave NE	Enhancement Plan	New Sidewalk/Trail	
35	NE 120th St Extension (west half) from 116th/118th Ave to 120th Ave along CKC to NE 118th St	Enhancement Plan	New Sidewalk/Trail	
	NE 116th St from Slater Ave NE to 132nd Ave NE via Lake Washington Technical Institute	Enhancement Plan	New Sidewalk/Trail	
	128th Ave NE south of NE 116th St	Enhancement Plan	New Sidewalk/Trail	High
16	119th Ave NE Extension (south half) from NE 128th St to NE 130th Lane	STC0610000	New Sidewalk	High
31	119th Ave NE Extension (north half) from NE 130th Lane to NE 132nd St	Enhancement Plan	New Sidewalk	
	120th Ave NE missing section between Village at Totem Lake and NE 128th St	Enhancement Plan	New Sidewalk	High

Table 9: Project Matrix

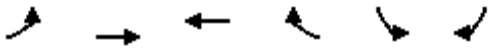
ID. Figs.	Project	2019-2024 CIP ID or Reference	Additional Information	Evergreen Priority
	PEDESTRIAN NETWORK IMPROVEMENTS			
18	120th Ave NE Improvements from NE 128th St to NE 132nd St	STC0630000	New Sidewalk	
	121st Way NE from north end of NE 130th Lane to NE 132nd St	Enhancement Plan	New Sidewalk	
	Totem Lake Blvd NE from NE 128th St to NE 132nd St Complete Missing Section of Sidewalk	Enhancement Plan	Upgrade Facility	
1	Totem Lake Gateway Improvements - complete sidewalks from NE 120th St to NE 128th St	TRC1220000	Upgrade Facility	
	Trail along Power Line Corridor to NE 126th St	Enhancement Plan	New Sidewalk/Trail	
34	116th/118th Ave NE Extension from 118th St to NE 122nd Way	Enhancement Plan	New Sidewalk/Trail	
13	116th Ave NE Extension from NE 116th St to NE 118th St	Private	New Sidewalk/Trail	
36	118th Ave NE Extension south of NE 116th St	Enhancement Plan	New Sidewalk/Trail	
	120th Ave NE from NE 116th St to NE 124th St Upgrade Sidewalk	Enhancement Plan	Upgrade Facility	
37	120th Ave NE Extension from NE 120th St/CKC to Totem Lake Blvd NE	Enhancement Plan	New Sidewalk/Trail	
21	120th Ave NE Extension from NE 116th St to NE 120th St	STC0730000	New Sidewalk/Trail	
	120th Ave NE extend south of NE 116th St	Enhancement Plan	New Sidewalk/Trail	
	Internal to Lake Washington Institute of Technology Upgrade Sidewalk	Enhancement Plan	Upgrade Facility	
	128th Lane NE from NE 124th St to NE 126th Place	Enhancement Plan	New Sidewalk	
	128th Lane NE from Slater Ave NE to NE 124th St	Enhancement Plan	New Sidewalk	
	135th Ave NE Improvements from NE 124th Street across regional trail to NE 126th Place	Enhancement Plan	New Sidewalk	
15	132nd Ave NE Improvements - Upgrade Sidewalk south of NE 120th St	STC056000	Upgrade Facility	
15	132nd Ave NE Improvements - New Sidewalk north of Lake Washington Institute of Technology access	STC056000	New Sidewalk	
15	132nd Ave NE Improvements - Upgrade Sidewalk south of Internal to Lake Washington Institute of Technology access	STC056000	Upgrade Facility	
	Improve Eastside Rail Corridor section west of 132nd Ave NE	Enhancement Plan	Upgrade Facility	
2	Totem Lake Connector	NMC0861000	Bridge	

Section 7. Appendix

List of Appendices:

- Existing AM and PM Intersection Capacity Reports
- Future AM and PM Intersection Capacity Reports
- March 15, 2019 NE 128th Street Westbound Left Turn at Totem Lake Blvd Draft Memorandum
- Select CIP Projects Intersection Capacity Reports
- Master Transportation Project List

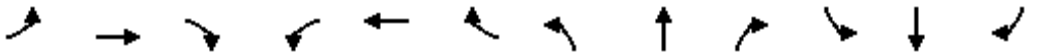
Existing AM and PM Intersection Capacity Reports



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	645	395	45	320	90
Future Volume (vph)	15	645	395	45	320	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	0%		15%	
Total Lost time (s)	4.5	5.0	5.5		5.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1863	1795		1670	1361
Flt Permitted	0.43	1.00	1.00		0.95	1.00
Satd. Flow (perm)	796	1863	1795		1670	1361
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	679	416	47	337	95
RTOR Reduction (vph)	0	0	3	0	0	78
Lane Group Flow (vph)	16	679	460	0	337	17
Confl. Peds. (#/hr)				6	9	20
Confl. Bikes (#/hr)				2		5
Heavy Vehicles (%)	2%	2%	4%	4%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases	6					8
Actuated Green, G (s)	89.0	89.0	82.0		21.0	21.0
Effective Green, g (s)	89.0	89.0	82.0		21.0	21.0
Actuated g/C Ratio	0.74	0.74	0.68		0.18	0.18
Clearance Time (s)	4.5	5.0	5.5		5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	606	1381	1226		292	238
v/s Ratio Prot	0.00	c0.36	0.26		c0.20	
v/s Ratio Perm	0.02					0.01
v/c Ratio	0.03	0.49	0.38		1.15	0.07
Uniform Delay, d1	4.7	6.3	8.1		49.5	41.3
Progression Factor	1.00	1.00	1.28		1.00	1.00
Incremental Delay, d2	0.0	1.3	0.8		101.0	0.0
Delay (s)	4.7	7.6	11.2		150.5	41.4
Level of Service	A	A	B		F	D
Approach Delay (s)		7.5	11.2		126.5	
Approach LOS		A	B		F	

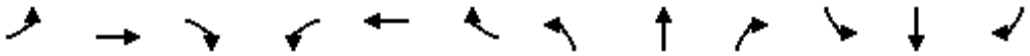
Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	550	350	245	380	15	60	20	50	30	50	20
Future Volume (vph)	5	550	350	245	380	15	60	20	50	30	50	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00	0.96		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1787	1881	1537	1752	1832			1708	1454		1799	
Flt Permitted	0.52	1.00	1.00	0.35	1.00			0.63	1.00		0.87	
Satd. Flow (perm)	972	1881	1537	642	1832			1112	1454		1584	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	585	372	261	404	16	64	21	53	32	53	21
RTOR Reduction (vph)	0	0	67	0	1	0	0	0	47	0	8	0
Lane Group Flow (vph)	5	585	305	261	419	0	0	85	6	0	98	0
Confl. Peds. (#/hr)			21			5	2		9	9		2
Confl. Bikes (#/hr)			2			6						5
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	82.3	81.1	81.1	96.1	89.4			12.9	12.9		12.9	
Effective Green, g (s)	82.3	81.1	81.1	96.1	89.4			12.9	12.9		12.9	
Actuated g/C Ratio	0.69	0.68	0.68	0.80	0.75			0.11	0.11		0.11	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5			5.5	5.5		5.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	674	1271	1038	602	1364			119	156		170	
v/s Ratio Prot	0.00	c0.31		c0.03	0.23							
v/s Ratio Perm	0.01		0.20	0.31				c0.08	0.00		0.06	
v/c Ratio	0.01	0.46	0.29	0.43	0.31			0.71	0.04		0.58	
Uniform Delay, d1	5.9	9.2	7.9	4.9	5.1			51.8	48.0		50.9	
Progression Factor	0.91	0.86	0.58	1.03	0.76			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.8	0.5	0.3	0.5			15.5	0.0		2.9	
Delay (s)	5.4	8.7	5.0	5.4	4.4			67.3	48.0		53.9	
Level of Service	A	A	A	A	A			E	D		D	
Approach Delay (s)		7.3			4.8			59.9			53.9	
Approach LOS		A			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	425	245	180	390	10	105	45	55	15	135	115
Future Volume (vph)	65	425	245	180	390	10	105	45	55	15	135	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.0		6.0	6.0		5.5	4.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.95		1.00	1.00		1.00	0.92			0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1744		1752	1837		1787	1692			3277	
Flt Permitted	0.49	1.00		0.09	1.00		0.29	1.00			0.93	
Satd. Flow (perm)	918	1744		162	1837		537	1692			3042	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	73	478	275	202	438	11	118	51	62	17	152	129
RTOR Reduction (vph)	0	15	0	0	0	0	0	44	0	0	117	0
Lane Group Flow (vph)	73	738	0	202	449	0	118	69	0	0	181	0
Confl. Peds. (#/hr)			8			3			6	6		7
Confl. Bikes (#/hr)			2						1			
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	62.0	56.1		77.3	65.9		32.2	32.2			11.3	
Effective Green, g (s)	62.0	56.1		77.3	65.9		32.2	32.2			11.3	
Actuated g/C Ratio	0.52	0.47		0.64	0.55		0.27	0.27			0.09	
Clearance Time (s)	5.5	5.0		6.0	6.0		5.5	4.5			6.5	
Vehicle Extension (s)	2.5	4.0		2.5	4.0		3.0	2.0			2.0	
Lane Grp Cap (vph)	516	815		319	1008		283	454			286	
v/s Ratio Prot	0.01	c0.42		c0.09	0.24		c0.05	0.04				
v/s Ratio Perm	0.07			0.32			0.07				c0.06	
v/c Ratio	0.14	0.90		0.63	0.44		0.42	0.15			0.63	
Uniform Delay, d1	14.6	29.5		26.2	16.1		34.8	33.5			52.4	
Progression Factor	1.04	0.69		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	14.9		3.6	1.4		1.0	0.1			3.3	
Delay (s)	15.3	35.1		29.7	17.6		35.8	33.5			55.7	
Level of Service	B	D		C	B		D	C			E	
Approach Delay (s)		33.4			21.3			34.7			55.7	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
Description: WSDOT			

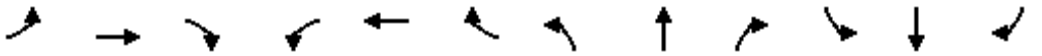
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	365	125	215	510	5	50	0	50	5	5	10
Future Volume (vph)	5	365	125	215	510	5	50	0	50	5	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5		5.5	5.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00		1.00	0.85		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1779		1770	1860		1667	1448		1715	1604	
Flt Permitted	0.47	1.00		0.40	1.00		0.75	1.00		0.72	1.00	
Satd. Flow (perm)	874	1779		747	1860		1312	1448		1307	1604	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	5	372	128	219	520	5	51	0	51	5	5	10
RTOR Reduction (vph)	0	7	0	0	0	0	0	47	0	0	9	0
Lane Group Flow (vph)	5	493	0	219	525	0	51	4	0	5	6	0
Confl. Peds. (#/hr)			3			5	1		1	1		1
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	8%	8%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	69.6	68.4		81.4	74.7		7.6	7.6		7.1	7.1	
Effective Green, g (s)	69.6	68.4		81.4	74.7		7.6	7.6		7.1	7.1	
Actuated g/C Ratio	0.70	0.68		0.81	0.75		0.08	0.08		0.07	0.07	
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		6.0	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	619	1216		684	1389		99	110		92	113	
v/s Ratio Prot	0.00	c0.28		c0.02	0.28			0.00			0.00	
v/s Ratio Perm	0.01			0.24			c0.04			0.00		
v/c Ratio	0.01	0.41		0.32	0.38		0.52	0.04		0.05	0.05	
Uniform Delay, d1	4.6	6.9		3.0	4.5		44.4	42.8		43.3	43.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.0		0.1	0.8		1.9	0.0		0.1	0.1	
Delay (s)	4.6	7.9		3.1	5.2		46.3	42.9		43.4	43.4	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		7.9			4.6			44.6			43.4	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	270	30	145	320	80	10	55	65	305	260	355
Future Volume (vph)	85	270	30	145	320	80	10	55	65	305	260	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1830		1787	1881	1540	1770	1863	1566	1787	1881	1561
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.59	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	1770	1830		1787	1881	1540	1104	1863	1566	924	1881	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	89	281	31	151	333	83	10	57	68	318	271	370
RTOR Reduction (vph)	0	3	0	0	0	43	0	0	52	0	0	254
Lane Group Flow (vph)	89	309	0	151	333	40	10	57	16	318	271	116
Confl. Peds. (#/hr)			3			8			2			5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4	5	3	8	1
Permitted Phases						2	4		4	8		8
Actuated Green, G (s)	10.2	50.8		14.3	54.9	54.9	13.6	12.4	26.7	32.9	25.7	35.9
Effective Green, g (s)	10.2	50.8		14.3	54.9	54.9	13.6	12.4	26.7	32.9	25.7	35.9
Actuated g/C Ratio	0.09	0.44		0.12	0.48	0.48	0.12	0.11	0.23	0.29	0.22	0.31
Clearance Time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	156	808		222	897	735	137	200	445	369	420	487
v/s Ratio Prot	0.05	0.17		c0.08	c0.18		0.00	0.03	0.00	c0.10	0.14	0.02
v/s Ratio Perm						0.03	0.01		0.01	c0.14		0.05
v/c Ratio	0.57	0.38		0.68	0.37	0.05	0.07	0.28	0.04	0.86	0.65	0.24
Uniform Delay, d1	50.3	21.6		48.2	19.1	16.1	45.0	47.2	34.2	37.2	40.5	29.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	1.4		6.7	1.2	0.1	0.1	0.3	0.0	17.7	2.5	0.1
Delay (s)	53.4	22.9		54.8	20.3	16.3	45.0	47.5	34.2	54.9	43.1	29.5
Level of Service	D	C		D	C	B	D	D	C	D	D	C
Approach Delay (s)		29.7			28.9			40.6			41.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	190	430	50	80	50	190	185	20	205	260	140
Future Volume (vph)	100	190	430	50	80	50	190	185	20	205	260	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1556	1770	1734		1770	1830		1787	1764	
Flt Permitted	0.67	1.00	1.00	0.52	1.00		0.25	1.00		0.62	1.00	
Satd. Flow (perm)	1256	1881	1556	973	1734		459	1830		1157	1764	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	108	204	462	54	86	54	204	199	22	220	280	151
RTOR Reduction (vph)	0	0	365	0	34	0	0	4	0	0	22	0
Lane Group Flow (vph)	108	204	97	54	106	0	204	217	0	220	409	0
Confl. Peds. (#/hr)						4			2			6
Confl. Bikes (#/hr)			4			2			1			
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)	20.9	13.7	13.7	11.7	9.1		29.8	20.3		27.6	19.2	
Effective Green, g (s)	20.9	13.7	13.7	11.7	9.1		29.8	20.3		27.6	19.2	
Actuated g/C Ratio	0.32	0.21	0.21	0.18	0.14		0.46	0.31		0.42	0.30	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	462	396	327	207	242		402	571		572	521	
v/s Ratio Prot	c0.03	c0.11		0.01	0.06		c0.07	0.12		0.05	c0.23	
v/s Ratio Perm	0.05		0.06	0.04			0.16			0.11		
v/c Ratio	0.23	0.52	0.30	0.26	0.44		0.51	0.38		0.38	0.79	
Uniform Delay, d1	16.4	22.7	21.6	24.3	25.6		11.9	17.4		12.3	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.5	0.2	0.2	0.5		0.4	0.2		0.2	7.1	
Delay (s)	16.5	23.2	21.8	24.5	26.1		12.2	17.6		12.4	28.1	
Level of Service	B	C	C	C	C		B	B		B	C	
Approach Delay (s)		21.4			25.6			15.0			22.8	
Approach LOS		C			C			B			C	

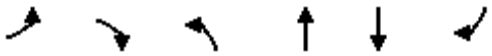
Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Cycle Optimized - Free

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	5	25	85	10	40	30	95	125	50	235	45
Future Volume (vph)	10	5	25	85	10	40	30	95	125	50	235	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.92			0.96		1.00	0.91		1.00	0.98	
Flt Protected		0.99			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1686			1656		1689	1623		1755	1802	
Flt Permitted		0.92			0.78		0.57	1.00		0.61	1.00	
Satd. Flow (perm)		1572			1335		1016	1623		1121	1802	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	6	28	94	11	44	33	106	139	56	261	50
RTOR Reduction (vph)	0	24	0	0	29	0	0	37	0	0	5	0
Lane Group Flow (vph)	0	21	0	0	120	0	33	208	0	56	306	0
Confl. Peds. (#/hr)	13		2	2		13	13		7	7		13
Confl. Bikes (#/hr)						13			7			13
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	5%	5%	5%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		9.5			9.5		50.0	50.0		50.0	50.0	
Effective Green, g (s)		9.5			9.5		50.0	50.0		50.0	50.0	
Actuated g/C Ratio		0.14			0.14		0.71	0.71		0.71	0.71	
Clearance Time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		213			181		725	1159		800	1287	
v/s Ratio Prot								0.13			c0.17	
v/s Ratio Perm		0.01			c0.09		0.03			0.05		
v/c Ratio		0.10			0.66		0.05	0.18		0.07	0.24	
Uniform Delay, d1		26.5			28.7		3.0	3.3		3.0	3.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			6.8		0.1	0.3		0.2	0.4	
Delay (s)		26.6			35.5		3.1	3.6		3.2	3.9	
Level of Service		C			D		A	A		A	A	
Approach Delay (s)		26.6			35.5			3.6			3.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	65	75	25	65	220	215
Future Volume (vph)	65	75	25	65	220	215
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	68	78	26	68	229	224

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total (vph)	146	94	229	224
Volume Left (vph)	68	26	0	0
Volume Right (vph)	78	0	0	224
Hadj (s)	-0.19	0.09	0.03	-0.67
Departure Headway (s)	4.8	4.9	5.0	4.3
Degree Utilization, x	0.20	0.13	0.32	0.27
Capacity (veh/h)	690	698	698	813
Control Delay (s)	9.0	8.6	9.1	7.7
Approach Delay (s)	9.0	8.6	8.4	
Approach LOS	A	A	A	

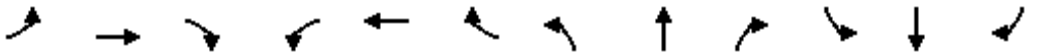
Intersection Summary			
Delay	8.6		
Level of Service	A		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Volume extrapolated from BKR and 2017 local intersection volumes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	160	110	100	55	80	60	125	290	195	355	30
Future Volume (vph)	25	160	110	100	55	80	60	125	290	195	355	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1756		1649	1709	1526	1787	3145		1752	3455	
Flt Permitted	0.95	1.00		0.95	0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	1756		1649	1709	1526	1787	3145		1752	3455	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	178	122	111	61	89	67	139	322	217	394	33
RTOR Reduction (vph)	0	16	0	0	0	60	0	275	0	0	4	0
Lane Group Flow (vph)	28	284	0	84	88	29	67	186	0	217	423	0
Confl. Peds. (#/hr)			3			40			17			7
Confl. Bikes (#/hr)						1			1			1
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	3%	3%	3%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	20.3	20.3		10.0	10.0	24.9	6.6	11.1		14.9	19.4	
Effective Green, g (s)	20.3	20.3		10.0	10.0	24.9	6.6	11.1		14.9	19.4	
Actuated g/C Ratio	0.27	0.27		0.13	0.13	0.33	0.09	0.15		0.20	0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	474	466		215	223	497	154	456		341	877	
v/s Ratio Prot	0.02	c0.16		0.05	c0.05	0.01	0.04	0.06		c0.12	c0.12	
v/s Ratio Perm						0.01						
v/c Ratio	0.06	0.61		0.39	0.39	0.06	0.44	0.41		0.64	0.48	
Uniform Delay, d1	20.9	24.6		30.4	30.4	17.7	33.1	29.7		28.3	24.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	2.3		1.4	1.4	0.0	1.4	0.7		3.4	0.5	
Delay (s)	21.0	26.8		31.8	31.8	17.7	34.6	30.4		31.6	24.7	
Level of Service	C	C		C	C	B	C	C		C	C	
Approach Delay (s)		26.3			27.0			30.9			27.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	20.1
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
Description: WSDOT Timing			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	310	315	270	160	60	20	5	25	195	10	55
Future Volume (vph)	20	310	315	270	160	60	20	5	25	195	10	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.92		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3271		1752	3361			1758	1553		1761	1568
Flt Permitted	0.60	1.00		0.33	1.00			0.96	1.00		0.95	1.00
Satd. Flow (perm)	1117	3271		617	3361			1758	1553		1761	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	344	350	300	178	67	22	6	28	217	11	61
RTOR Reduction (vph)	0	129	0	0	27	0	0	0	25	0	0	49
Lane Group Flow (vph)	22	565	0	300	218	0	0	28	3	0	228	12
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	37.4	37.4		37.4	37.4			8.1	8.1		15.8	15.8
Effective Green, g (s)	37.4	37.4		37.4	37.4			8.1	8.1		15.8	15.8
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.10	0.10		0.20	0.20
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	540	1582		298	1626			184	162		359	320
v/s Ratio Prot		0.17			0.06			c0.02			c0.13	
v/s Ratio Perm	0.02			c0.49					0.00			0.01
v/c Ratio	0.04	0.36		1.01	0.13			0.15	0.02		0.64	0.04
Uniform Delay, d1	10.5	12.4		19.9	11.0			31.5	31.0		28.1	24.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2		53.8	0.0			0.5	0.1		4.1	0.1
Delay (s)	10.5	12.6		73.8	11.0			32.0	31.1		32.2	24.7
Level of Service	B	B		E	B			C	C		C	C
Approach Delay (s)		12.6			45.6			31.5			30.6	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	77.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT + HNTB Volumes			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	330	200	0	240	20	90	220	205	40	345	160
Future Volume (vph)	0	330	200	0	240	20	90	220	205	40	345	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00		0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99		1.00		1.00	0.99		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		0.99		1.00	0.93		1.00	0.95	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1569		3454		1787	3295		1770	3371	
Flt Permitted		1.00	1.00		1.00		0.33	1.00		0.49	1.00	
Satd. Flow (perm)		3539	1569		3454		627	3295		910	3371	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	355	215	0	258	22	97	237	220	43	371	172
RTOR Reduction (vph)	0	0	137	0	6	0	0	130	0	0	52	0
Lane Group Flow (vph)	0	355	78	0	274	0	97	327	0	43	491	0
Confl. Peds. (#/hr)	44		4	4		44			3			
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov		NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3		6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		11.7	18.0		11.7		26.6	20.3		18.6	16.3	
Effective Green, g (s)		11.7	18.0		11.7		26.6	20.3		18.6	16.3	
Actuated g/C Ratio		0.24	0.36		0.24		0.54	0.41		0.38	0.33	
Clearance Time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5		4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		838	571		818		485	1354		382	1112	
v/s Ratio Prot		c0.10	0.02		0.08		c0.03	0.10		0.01	c0.15	
v/s Ratio Perm			0.03				0.08			0.04		
v/c Ratio		0.42	0.14		0.33		0.20	0.24		0.11	0.44	
Uniform Delay, d1		16.0	10.5		15.6		5.9	9.5		9.8	13.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.5	0.1		0.3		0.1	0.1		0.1	0.3	
Delay (s)		16.5	10.6		16.0		6.0	9.6		9.9	13.3	
Level of Service		B	B		B		A	A		A	B	
Approach Delay (s)		14.2			16.0			9.0			13.0	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	15.1
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Description: WSDOT

c Critical Lane Group

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	220	50	115	115	15	20	85	85	30	95	165
Future Volume (vph)	105	220	50	115	115	15	20	85	85	30	95	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.5	5.0		5.0	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	0.96	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1678	1845	1502	1687	1731		1787	1710		1768	1683	
Flt Permitted	0.63	1.00	1.00	0.95	1.00		0.46	1.00		0.64	1.00	
Satd. Flow (perm)	1117	1845	1502	1687	1731		856	1710		1194	1683	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	239	54	125	125	16	22	92	92	33	103	179
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	114	239	54	125	141	0	22	184	0	33	282	0
Confl. Peds. (#/hr)	22		11			22			6	6		4
Confl. Bikes (#/hr)									2			3
Heavy Vehicles (%)	3%	3%	3%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6		6				4			8		
Actuated Green, G (s)	16.4	16.4	16.4	13.3	36.2		53.9	53.9		46.1	46.1	
Effective Green, g (s)	16.4	16.4	16.4	13.3	36.2		53.9	53.9		46.1	46.1	
Actuated g/C Ratio	0.16	0.16	0.16	0.13	0.34		0.51	0.51		0.44	0.44	
Clearance Time (s)	5.0	5.0	5.0	6.5	5.0		5.0	4.5		4.5	4.5	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	174	288	234	213	596		464	877		524	738	
v/s Ratio Prot		c0.13		c0.07	0.08		0.00	c0.11			c0.17	
v/s Ratio Perm	0.10		0.04				0.02			0.03		
v/c Ratio	0.66	0.83	0.23	0.59	0.24		0.05	0.21		0.06	0.38	
Uniform Delay, d1	41.6	42.9	38.8	43.3	24.5		13.2	13.9		17.0	19.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.6	16.9	0.2	2.7	0.1		0.0	0.5		0.2	1.5	
Delay (s)	48.2	59.8	39.0	45.9	24.6		13.2	14.5		17.2	21.4	
Level of Service	D	E	D	D	C		B	B		B	C	
Approach Delay (s)		53.8			34.6			14.3			20.9	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Unsure timing program w Overlaps

c Critical Lane Group

Movement	NWL
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	1.00
Flt Protected	0.95
Satd. Flow (prot)	902
Flt Permitted	0.95
Satd. Flow (perm)	902
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	5
RTOR Reduction (vph)	0
Lane Group Flow (vph)	5
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	100%
Turn Type	Prot
Protected Phases	10
Permitted Phases	
Actuated Green, G (s)	1.4
Effective Green, g (s)	1.4
Actuated g/C Ratio	0.01
Clearance Time (s)	4.0
Vehicle Extension (s)	0.2
Lane Grp Cap (vph)	12
v/s Ratio Prot	c0.01
v/s Ratio Perm	
v/c Ratio	0.42
Uniform Delay, d1	51.4
Progression Factor	1.00
Incremental Delay, d2	8.3
Delay (s)	59.7
Level of Service	E
Approach Delay (s)	59.7
Approach LOS	E

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	20	495	40	15	530
Future Volume (vph)	25	20	495	40	15	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.5	5.5		4.5	5.5
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	1568	3465		1752	3505
Flt Permitted	0.95	1.00	1.00		0.35	1.00
Satd. Flow (perm)	1752	1568	3465		640	3505
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	21	516	42	16	552
RTOR Reduction (vph)	0	20	6	0	0	0
Lane Group Flow (vph)	26	1	552	0	16	552
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	0.7	1.4	16.3		21.5	21.5
Effective Green, g (s)	0.7	1.4	16.3		21.5	21.5
Actuated g/C Ratio	0.02	0.04	0.50		0.66	0.66
Clearance Time (s)	5.0	4.5	5.5		4.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	37	67	1727		444	2304
v/s Ratio Prot	c0.01	0.00	c0.16		0.00	c0.16
v/s Ratio Perm		0.00			0.02	
v/c Ratio	0.70	0.01	0.32		0.04	0.24
Uniform Delay, d1	15.9	15.0	4.9		2.3	2.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	39.1	0.0	0.0		0.0	0.0
Delay (s)	55.0	15.0	4.9		2.3	2.3
Level of Service	E	B	A		A	A
Approach Delay (s)	37.2		4.9			2.3
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	32.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Cycle length optimized - Free. Volume extrapolated from adjacent intersections

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	10	180	50	40	220
Future Volume (vph)	20	10	180	50	40	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1808		1770	1863
Flt Permitted	0.95	1.00	1.00		0.61	1.00
Satd. Flow (perm)	1770	1583	1808		1135	1863
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	10	188	52	42	229
RTOR Reduction (vph)	0	10	5	0	0	0
Lane Group Flow (vph)	21	0	235	0	42	229
Turn Type	Perm	Perm	NA		Perm	NA
Protected Phases			4			8
Permitted Phases	2	2			8	
Actuated Green, G (s)	2.6	2.6	67.9		67.9	67.9
Effective Green, g (s)	2.6	2.6	67.9		67.9	67.9
Actuated g/C Ratio	0.03	0.03	0.85		0.85	0.85
Clearance Time (s)	5.0	5.0	4.5		4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	57	51	1534		963	1581
v/s Ratio Prot			c0.13			0.12
v/s Ratio Perm	c0.01	0.00			0.04	
v/c Ratio	0.37	0.01	0.15		0.04	0.14
Uniform Delay, d1	37.9	37.5	1.1		1.0	1.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.0	0.2		0.1	0.2
Delay (s)	39.4	37.5	1.3		1.0	1.2
Level of Service	D	D	A		A	A
Approach Delay (s)	38.8		1.3			1.2
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

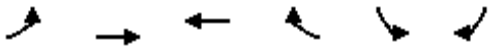
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	490	50	70	240	105	275	110	10	75	145	20
Future Volume (vph)	15	490	50	70	240	105	275	110	10	75	145	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3490		1752	3345		1698	1749	1577	3367	1791	
Flt Permitted	0.51	1.00		0.33	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	943	3490		602	3345		1698	1749	1577	3367	1791	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	516	53	74	253	111	289	116	11	79	153	21
RTOR Reduction (vph)	0	5	0	0	34	0	0	0	9	0	3	0
Lane Group Flow (vph)	16	564	0	74	330	0	199	206	2	79	171	0
Confl. Peds. (#/hr)									2			
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	4%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	21.4	19.0		31.6	24.2		15.8	15.8	15.8	13.6	13.6	
Effective Green, g (s)	21.4	19.0		31.6	24.2		15.8	15.8	15.8	13.6	13.6	
Actuated g/C Ratio	0.29	0.25		0.42	0.32		0.21	0.21	0.21	0.18	0.18	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	296	887		371	1083		359	369	333	613	326	
v/s Ratio Prot	0.00	c0.16		c0.02	c0.10		0.12	c0.12		0.02	c0.10	
v/s Ratio Perm	0.01			0.06					0.00			
v/c Ratio	0.05	0.64		0.20	0.30		0.55	0.56	0.01	0.13	0.52	
Uniform Delay, d1	20.1	24.8		17.8	18.9		26.3	26.3	23.3	25.6	27.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.5		0.3	0.2		1.9	1.8	0.0	0.1	1.5	
Delay (s)	20.1	26.3		18.1	19.1		28.2	28.2	23.3	25.7	29.1	
Level of Service	C	C		B	B		C	C	C	C	C	
Approach Delay (s)		26.1			18.9			28.0			28.1	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	18.7
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	1095	45	170	460	250	35	105	150	310	145	65
Future Volume (vph)	140	1095	45	170	460	250	35	105	150	310	145	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.5		6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
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	3550		1787	3574	1599	1752	1845	1568	3433	1765	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3550		1787	3574	1599	1752	1845	1568	3433	1765	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	144	1129	46	175	474	258	36	108	155	320	149	67
RTOR Reduction (vph)	0	2	0	0	0	172	0	0	126	0	12	0
Lane Group Flow (vph)	144	1173	0	175	474	86	36	108	29	320	204	0
Confl. Peds. (#/hr)												3
Confl. Bikes (#/hr)			2						2			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA	Prot	Split	NA	
Protected Phases	5	2		1 8	6 8	6 8	3	3	3	4	4	
Permitted Phases												
Actuated Green, G (s)	12.7	39.5		18.0	44.8	44.8	25.0	25.0	25.0	21.5	21.5	
Effective Green, g (s)	12.7	39.5		18.0	44.8	44.8	25.0	25.0	25.0	21.5	21.5	
Actuated g/C Ratio	0.09	0.29		0.13	0.33	0.33	0.19	0.19	0.19	0.16	0.16	
Clearance Time (s)	6.0	6.5					6.5	6.5	6.5	6.0	6.0	
Vehicle Extension (s)	3.0	4.0					3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	168	1038		238	1186	530	324	341	290	546	281	
v/s Ratio Prot	0.08	c0.33		c0.10	0.13	0.05	0.02	c0.06	0.02	0.09	c0.12	
v/s Ratio Perm												
v/c Ratio	0.86	1.13		0.74	0.40	0.16	0.11	0.32	0.10	0.59	0.73	
Uniform Delay, d1	60.3	47.8		56.2	34.7	31.8	45.8	47.6	45.7	52.6	54.0	
Progression Factor	1.00	1.00		1.01	0.72	0.89	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.5	70.9		10.8	0.2	0.1	0.2	0.5	0.1	1.6	9.0	
Delay (s)	92.7	118.7		67.3	25.1	28.5	45.9	48.1	45.8	54.2	63.0	
Level of Service	F	F		E	C	C	D	D	D	D	E	
Approach Delay (s)		115.8			34.2			46.7			57.8	
Approach LOS		F			C			D			E	

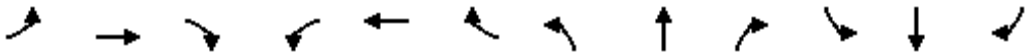
Intersection Summary			
HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	880	560	0	460	335
Future Volume (vph)	0	880	560	0	460	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		0.97	0.91
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	1.00		0.98	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		3574	3574		3419	1455
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		3574	3574		3419	1455
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	898	571	0	469	342
RTOR Reduction (vph)	0	0	0	0	12	196
Lane Group Flow (vph)	0	898	571	0	546	57
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	custom
Protected Phases		1 2 3	1 2 3		4 8	4 8
Permitted Phases						
Actuated Green, G (s)		80.0	80.0		30.5	30.5
Effective Green, g (s)		73.5	73.5		30.5	30.5
Actuated g/C Ratio		0.54	0.54		0.23	0.23
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)		1945	1945		772	328
v/s Ratio Prot		c0.25	0.16		c0.16	0.04
v/s Ratio Perm						
v/c Ratio		0.46	0.29		0.71	0.17
Uniform Delay, d1		18.7	16.7		48.1	42.1
Progression Factor		0.58	0.75		1.00	1.00
Incremental Delay, d2		0.1	0.1		3.0	0.3
Delay (s)		10.9	12.6		51.1	42.4
Level of Service		B	B		D	D
Approach Delay (s)		10.9	12.6		48.4	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1175	165	0	575	415	190	0	210	0	0	0
Future Volume (vph)	0	1175	165	0	575	415	190	0	210	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	2.0		3.0	3.0	3.0		3.0			
Lane Util. Factor		0.95	1.00		0.91	1.00	0.97		1.00			
Frpb, ped/bikes		1.00	0.98		1.00	1.00	1.00		1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		3574	1565		5136	1599	3433		1583			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		3574	1565		5136	1599	3433		1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1277	179	0	625	451	207	0	228	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	45	0	0	0
Lane Group Flow (vph)	0	1277	179	0	625	451	207	0	183	0	0	0
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		2			6		8		8			
Permitted Phases			Free			Free						
Actuated Green, G (s)		104.4	135.0		104.4	135.0	21.1		21.1			
Effective Green, g (s)		106.4	135.0		106.4	135.0	22.6		22.6			
Actuated g/C Ratio		0.79	1.00		0.79	1.00	0.17		0.17			
Clearance Time (s)		5.0			5.0		4.5		4.5			
Vehicle Extension (s)		3.5			3.5		3.0		3.0			
Lane Grp Cap (vph)		2816	1565		4047	1599	574		265			
v/s Ratio Prot		c0.36			0.12		0.06		c0.12			
v/s Ratio Perm			0.11			0.28						
v/c Ratio		0.45	0.11		0.15	0.28	0.36		0.69			
Uniform Delay, d1		4.7	0.0		3.4	0.0	49.8		52.9			
Progression Factor		0.70	1.00		2.11	1.00	1.00		1.00			
Incremental Delay, d2		0.5	0.1		0.1	0.4	0.4		7.5			
Delay (s)		3.8	0.1		7.3	0.4	50.2		60.5			
Level of Service		A	A		A	A	D		E			
Approach Delay (s)		3.3			4.4			55.6			0.0	
Approach LOS		A			A			E			A	

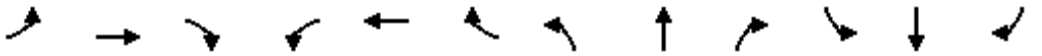
Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1260	70	70	910	20	60	0	65	25	5	25
Future Volume (vph)	25	1260	70	70	910	20	60	0	65	25	5	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0		3.5	3.0			2.5	2.5		3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1787	3542		1787	3561			1787	1560		1738	
Flt Permitted	0.27	1.00		0.16	1.00			0.66	1.00		0.80	
Satd. Flow (perm)	509	3542		294	3561			1245	1560		1429	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	1340	74	74	968	21	64	0	69	27	5	27
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	62	0	25	0
Lane Group Flow (vph)	27	1413	0	74	989	0	0	64	7	0	35	0
Confl. Peds. (#/hr)			1			3			4	4		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)	107.7	104.1		110.3	105.4			11.0	11.0		10.5	
Effective Green, g (s)	111.7	106.1		114.3	107.4			13.0	13.0		12.5	
Actuated g/C Ratio	0.83	0.79		0.85	0.80			0.10	0.10		0.09	
Clearance Time (s)	5.5	5.0		5.5	5.0			4.5	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	474	2783		325	2832			119	150		132	
v/s Ratio Prot	0.00	c0.40		c0.01	0.28							
v/s Ratio Perm	0.04			0.18				c0.05	0.00		0.02	
v/c Ratio	0.06	0.51		0.23	0.35			0.54	0.04		0.26	
Uniform Delay, d1	2.2	5.1		3.3	3.9			58.1	55.4		57.0	
Progression Factor	0.93	1.16		0.47	0.10			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.6		0.1	0.3			2.3	0.0		0.4	
Delay (s)	2.1	6.6		1.7	0.7			60.5	55.4		57.3	
Level of Service	A	A		A	A			E	E		E	
Approach Delay (s)		6.5			0.8			57.8			57.3	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

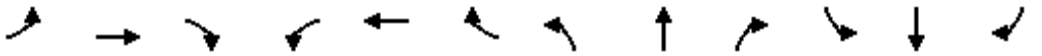


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	910	360	115	730	155	160	190	60	180	310	50
Future Volume (vph)	35	910	360	115	730	155	160	190	60	180	310	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.5	3.0	3.0	4.5	3.5	4.5	4.5	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1558	1770	3539	1551	3400	3505	1547	1752	1845	1536
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3574	1558	1770	3539	1551	3400	3505	1547	1752	1845	1536
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	948	375	120	760	161	167	198	62	188	323	52
RTOR Reduction (vph)	0	0	80	0	0	77	0	0	52	0	0	40
Lane Group Flow (vph)	36	948	295	120	760	84	167	198	11	188	323	12
Confl. Peds. (#/hr)			2			5						4
Confl. Bikes (#/hr)			3			2			1			3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	6.3	61.1	61.1	12.7	68.0	68.0	10.2	22.1	22.1	16.6	29.0	29.0
Effective Green, g (s)	8.3	63.1	63.1	14.7	70.0	70.0	12.2	24.1	23.1	18.6	31.0	31.0
Actuated g/C Ratio	0.06	0.47	0.47	0.11	0.52	0.52	0.09	0.18	0.17	0.14	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.5	5.5	6.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	1670	728	192	1835	804	307	625	264	241	423	352
v/s Ratio Prot	0.02	c0.27		c0.07	0.21		0.05	0.06		c0.11	c0.18	
v/s Ratio Perm			0.19			0.05			0.01			0.01
v/c Ratio	0.33	0.57	0.41	0.62	0.41	0.11	0.54	0.32	0.04	0.78	0.76	0.03
Uniform Delay, d1	60.7	26.1	23.6	57.5	19.9	16.5	58.7	48.3	46.7	56.2	48.6	40.4
Progression Factor	1.23	0.76	0.61	1.48	0.34	0.08	1.23	0.86	0.26	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.3	1.5	4.3	0.7	0.3	1.0	0.3	0.1	15.0	8.0	0.0
Delay (s)	75.0	21.0	15.9	89.2	7.5	1.5	73.0	41.8	12.1	71.2	56.6	40.4
Level of Service	E	C	B	F	A	A	E	D	B	E	E	D
Approach Delay (s)		21.0			16.0			49.6			60.0	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	1040	5	0	975	25	10	0	5	5	0	50
Future Volume (vph)	85	1040	5	0	975	25	10	0	5	5	0	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0			3.0			3.0			3.0	3.0
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00			0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			1.00			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3536			3524			1626			1799	1585
Flt Permitted	0.25	1.00			1.00			0.80			0.92	1.00
Satd. Flow (perm)	467	3536			3524			1348			1739	1585
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	88	1072	5	0	1005	26	10	0	5	5	0	52
RTOR Reduction (vph)	0	0	0	0	1	0	0	14	0	0	0	49
Lane Group Flow (vph)	88	1077	0	0	1030	0	0	1	0	0	5	3
Confl. Peds. (#/hr)						2	4		2	2		4
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	119.9	119.9			108.4			5.1			5.1	5.1
Effective Green, g (s)	121.9	121.9			110.4			7.1			7.1	7.1
Actuated g/C Ratio	0.90	0.90			0.82			0.05			0.05	0.05
Clearance Time (s)	5.5	5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)	2.0	2.0			2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	498	3192			2881			70			91	83
v/s Ratio Prot	0.01	c0.30			c0.29							
v/s Ratio Perm	0.15							0.00			c0.00	0.00
v/c Ratio	0.18	0.34			0.36			0.01			0.05	0.03
Uniform Delay, d1	1.2	0.9			3.2			60.6			60.8	60.7
Progression Factor	2.08	2.62			0.32			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.2			0.3			0.0			0.1	0.1
Delay (s)	2.6	2.6			1.3			60.6			60.9	60.8
Level of Service	A	A			A			E			E	E
Approach Delay (s)		2.6			1.3			60.6			60.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



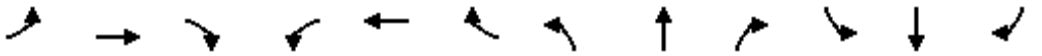
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	835	20	160	725	190	30	185	225	370	450	195
Future Volume (vph)	145	835	20	160	725	190	30	185	225	370	450	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	3.0		4.5	3.0	3.0	3.5	3.5		2.5	2.5	2.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3560		1770	3539	1583	1787	3280		1770	1863	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3560		1770	3539	1583	1787	3280		1770	1863	1557
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	149	861	21	165	747	196	31	191	232	381	464	201
RTOR Reduction (vph)	0	1	0	0	0	108	0	160	0	0	0	129
Lane Group Flow (vph)	149	881	0	165	747	88	31	263	0	381	464	72
Confl. Peds. (#/hr)												2
Confl. Bikes (#/hr)			3									3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	15.2	50.6		15.5	50.9	50.9	4.8	24.9		20.5	40.6	40.6
Effective Green, g (s)	17.2	52.6		17.5	52.9	52.9	7.8	27.9		23.5	43.6	43.6
Actuated g/C Ratio	0.13	0.39		0.13	0.39	0.39	0.06	0.21		0.17	0.32	0.32
Clearance Time (s)	6.5	5.0		6.5	5.0	5.0	6.5	6.5		5.5	5.5	5.5
Vehicle Extension (s)	4.0	3.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	227	1387		229	1386	620	103	677		308	601	502
v/s Ratio Prot	0.08	c0.25		c0.09	0.21		0.02	0.08		c0.22	c0.25	
v/s Ratio Perm						0.06						0.05
v/c Ratio	0.66	0.64		0.72	0.54	0.14	0.30	0.39		1.24	0.77	0.14
Uniform Delay, d1	56.1	33.4		56.4	31.6	26.4	61.0	46.2		55.8	41.2	32.4
Progression Factor	0.98	0.85		1.00	1.00	1.00	1.53	0.36		1.00	1.00	1.00
Incremental Delay, d2	7.1	2.1		9.1	1.5	0.5	0.4	0.1		131.4	5.6	0.0
Delay (s)	62.1	30.5		65.5	33.2	26.9	93.4	16.8		187.2	46.8	32.5
Level of Service	E	C		E	C	C	F	B		F	D	C
Approach Delay (s)		35.0			36.9			22.0			95.2	
Approach LOS		D			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	115	360	20	390	620
Future Volume (vph)	20	115	360	20	390	620
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	5.5		4.0	4.5
Lane Util. Factor	1.00	1.00	1.00		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	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1787	1589	1810		1770	1863
Flt Permitted	0.95	1.00	1.00		0.48	1.00
Satd. Flow (perm)	1787	1589	1810		894	1863
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	22	126	396	22	429	681
RTOR Reduction (vph)	0	109	0	0	0	0
Lane Group Flow (vph)	22	17	418	0	429	681
Confl. Peds. (#/hr)		2		6		
Heavy Vehicles (%)	1%	1%	4%	4%	2%	2%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	4.3	18.3	103.7		122.7	122.7
Effective Green, g (s)	4.3	18.3	103.7		122.7	122.7
Actuated g/C Ratio	0.03	0.14	0.77		0.91	0.91
Clearance Time (s)	3.5	4.0	5.5		4.0	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	56	215	1390		903	1693
v/s Ratio Prot	c0.01	0.01	0.23		c0.05	0.37
v/s Ratio Perm		0.00			c0.38	
v/c Ratio	0.39	0.08	0.30		0.48	0.40
Uniform Delay, d1	64.1	51.0	4.7		1.2	0.9
Progression Factor	1.48	1.61	1.00		0.80	0.74
Incremental Delay, d2	1.6	0.1	0.6		0.1	0.7
Delay (s)	96.4	82.2	5.3		1.1	1.3
Level of Service	F	F	A		A	A
Approach Delay (s)	84.4		5.3			1.2
Approach LOS	F		A			A

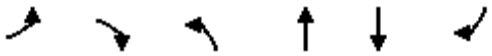
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	355	15	50	105	85	20	315	170	395	350	5
Future Volume (vph)	15	355	15	50	105	85	20	315	170	395	350	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.95		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1852		1770	1720		1787	1766		1787	1877	
Flt Permitted	0.59	1.00		0.15	1.00		0.54	1.00		0.09	1.00	
Satd. Flow (perm)	1097	1852		280	1720		1008	1766		170	1877	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	382	16	54	113	91	22	339	183	425	376	5
RTOR Reduction (vph)	0	1	0	0	21	0	0	14	0	0	0	0
Lane Group Flow (vph)	16	397	0	54	183	0	22	508	0	425	381	0
Confl. Peds. (#/hr)						1			2			3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	37.4	35.0		45.9	39.0		44.8	41.1		78.6	70.4	
Effective Green, g (s)	37.4	35.0		45.9	39.0		44.8	41.1		78.6	70.4	
Actuated g/C Ratio	0.28	0.26		0.34	0.29		0.33	0.30		0.58	0.52	
Clearance Time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Vehicle Extension (s)	0.5	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	315	480		171	496		355	537		494	978	
v/s Ratio Prot	0.00	c0.21		c0.02	0.11		0.00	c0.29		c0.21	0.20	
v/s Ratio Perm	0.01			0.09			0.02			0.29		
v/c Ratio	0.05	0.83		0.32	0.37		0.06	0.95		0.86	0.39	
Uniform Delay, d1	35.6	47.1		33.4	38.2		30.5	45.9		38.4	19.4	
Progression Factor	0.93	0.98		1.00	1.00		1.00	1.00		0.63	0.64	
Incremental Delay, d2	0.0	9.9		0.4	0.2		0.0	27.6		11.8	1.0	
Delay (s)	33.2	56.1		33.8	38.4		30.5	73.4		36.0	13.4	
Level of Service	C	E		C	D		C	E		D	B	
Approach Delay (s)		55.2			37.4			71.7			25.3	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

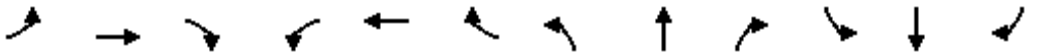


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	65	175	310	310	50
Future Volume (vph)	35	65	175	310	310	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1751	1530	1785	1881	1840	
Flt Permitted	0.95	1.00	0.54	1.00	1.00	
Satd. Flow (perm)	1751	1530	1015	1881	1840	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	67	180	320	320	52
RTOR Reduction (vph)	0	61	0	0	9	0
Lane Group Flow (vph)	36	6	180	320	363	0
Confl. Peds. (#/hr)	1		4			4
Confl. Bikes (#/hr)		1				1
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Actuated Green, G (s)	1.8	1.8	9.4	9.4	9.4	
Effective Green, g (s)	1.8	1.8	9.4	9.4	9.4	
Actuated g/C Ratio	0.09	0.09	0.49	0.49	0.49	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	164	143	496	920	900	
v/s Ratio Prot				0.17	c0.20	
v/s Ratio Perm	c0.02	0.00	0.18			
v/c Ratio	0.22	0.04	0.36	0.35	0.40	
Uniform Delay, d1	8.1	7.9	3.0	3.0	3.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.1	0.5	0.2	0.3	
Delay (s)	8.7	8.0	3.5	3.2	3.4	
Level of Service	A	A	A	A	A	
Approach Delay (s)	8.3			3.3	3.4	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	19.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Cycle length optimized - Free.

c Critical Lane Group



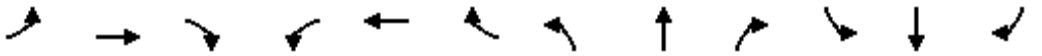
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	895	45	185	275	230	20	120	230	175	120	50
Future Volume (vph)	90	895	45	185	275	230	20	120	230	175	120	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
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	5093		1770	3539	1553	1787	1881	1576	3467	1790	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	5093		1770	3539	1553	1787	1881	1576	3467	1790	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	92	913	46	189	281	235	20	122	235	179	122	51
RTOR Reduction (vph)	0	3	0	0	0	92	0	0	206	0	13	0
Lane Group Flow (vph)	92	956	0	189	281	143	20	122	29	179	160	0
Confl. Peds. (#/hr)			1			1			2			1
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2	3	7	4		3	8	
Permitted Phases						2			4			
Actuated Green, G (s)	11.5	58.1		21.0	67.6	79.2	4.4	16.1	16.1	11.6	23.3	
Effective Green, g (s)	11.5	58.1		21.0	67.6	79.2	4.4	16.1	16.1	11.6	23.3	
Actuated g/C Ratio	0.09	0.45		0.16	0.52	0.61	0.03	0.12	0.12	0.09	0.18	
Clearance Time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	2.5	4.0		2.5	4.0	2.5	2.5	3.0	3.0	2.5	3.0	
Lane Grp Cap (vph)	158	2276		285	1840	946	60	232	195	309	320	
v/s Ratio Prot	0.05	c0.19		c0.11	0.08	0.01	0.01	0.06		c0.05	c0.09	
v/s Ratio Perm						0.08			0.02			
v/c Ratio	0.58	0.42		0.66	0.15	0.15	0.33	0.53	0.15	0.58	0.50	
Uniform Delay, d1	56.9	24.5		51.2	16.3	10.9	61.4	53.4	50.8	56.9	48.1	
Progression Factor	1.00	1.00		0.77	0.65	3.83	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	0.6		5.0	0.2	0.1	2.4	2.1	0.4	2.2	1.2	
Delay (s)	61.4	25.0		44.2	10.8	42.0	63.7	55.5	51.2	59.0	49.3	
Level of Service	E	C		D	B	D	E	E	D	E	D	
Approach Delay (s)		28.2			30.1			53.3			54.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	735	0	245	255	435	0
Future Volume (vph)	735	0	245	255	435	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	13.9		5.1	5.5	7.6	
Lane Util. Factor	1.00		0.97	0.95	0.97	
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		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	1881		3400	3505	3433	
Flt Permitted	1.00		0.95	1.00	0.95	
Satd. Flow (perm)	1881		3400	3505	3433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	774	0	258	268	458	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	774	0	258	268	458	0
Confl. Peds. (#/hr)		1				
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	65.8		14.7	94.0	22.9	
Effective Green, g (s)	65.8		14.7	94.0	22.9	
Actuated g/C Ratio	0.51		0.11	0.72	0.18	
Clearance Time (s)	13.9		5.1	5.5	7.6	
Vehicle Extension (s)	3.5		2.5	3.5	3.0	
Lane Grp Cap (vph)	952		384	2534	604	
v/s Ratio Prot	c0.41		c0.08	0.08	c0.13	
v/s Ratio Perm						
v/c Ratio	0.81		0.67	0.11	0.76	
Uniform Delay, d1	26.9		55.3	5.4	50.9	
Progression Factor	0.64		1.00	1.00	1.00	
Incremental Delay, d2	7.2		4.2	0.1	5.4	
Delay (s)	24.3		59.5	5.5	56.3	
Level of Service	C		E	A	E	
Approach Delay (s)	24.3			32.0	56.3	
Approach LOS	C			C	E	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	80.3%	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)	110	395	420	195	235	15	175	205	70	25	420	85
Future Volume (vph)	110	395	420	195	235	15	175	205	70	25	420	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1570	1770	3501		1770	1863	1544	1752	3404	
Flt Permitted	0.59	1.00	1.00	0.27	1.00		0.29	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	1111	1881	1570	509	3501		539	1863	1544	1151	3404	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	115	411	438	203	245	16	182	214	73	26	438	89
RTOR Reduction (vph)	0	0	216	0	5	0	0	0	50	0	21	0
Lane Group Flow (vph)	115	411	222	203	256	0	182	214	23	26	506	0
Confl. Peds. (#/hr)			3			3			2			8
Confl. Bikes (#/hr)			5			1			2			3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	27.8	23.2	23.2	30.8	24.7		30.1	24.0	24.0	22.1	20.0	
Effective Green, g (s)	27.8	23.2	23.2	30.8	24.7		30.1	24.0	24.0	22.1	20.0	
Actuated g/C Ratio	0.36	0.30	0.30	0.40	0.32		0.39	0.31	0.31	0.29	0.26	
Clearance Time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		3.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	444	571	476	305	1131		310	585	485	349	891	
v/s Ratio Prot	0.02	c0.22		c0.05	0.07		c0.05	0.11		0.00	0.15	
v/s Ratio Perm	0.08		0.14	0.21			c0.18		0.01	0.02		
v/c Ratio	0.26	0.72	0.47	0.67	0.23		0.59	0.37	0.05	0.07	0.57	
Uniform Delay, d1	16.5	23.7	21.6	16.5	18.9		16.3	20.3	18.2	19.6	24.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	4.3	0.7	4.9	0.1		2.8	0.4	0.0	0.0	0.8	
Delay (s)	16.7	28.0	22.3	21.4	19.0		19.1	20.7	18.3	19.6	25.3	
Level of Service	B	C	C	C	B		B	C	B	B	C	
Approach Delay (s)		24.1			20.0			19.7			25.0	
Approach LOS		C			C			B			C	

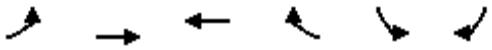
Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Free Mode - Kirkland			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	880	675	0	895	0	0
Future Volume (Veh/h)	880	675	0	895	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	957	734	0	973	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	179			131		
pX, platoon unblocked			0.72		0.75	0.72
vC, conflicting volume			1691		1281	478
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1177		139	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			423		634	779

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	638	564	489	324	324	324
Volume Left	0	0	0	0	0	0
Volume Right	0	245	489	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.38	0.33	0.29	0.19	0.19	0.19
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0			0.0		
Approach LOS						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1340	560	205	0	0
Future Volume (Veh/h)	0	1340	560	205	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1457	609	223	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		193	1155			
pX, platoon unblocked					0.85	
vC, conflicting volume	832				1338	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	832				1036	304
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	796				192	691

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3
Volume Total	728	728	304	304	223
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	223
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.43	0.43	0.18	0.18	0.13
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	735	565	0	690	0	0
Future Volume (Veh/h)	735	565	0	690	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	774	595	0	726	0	0
Pedestrians					1	
Lane Width (ft)					0.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	252			141		
pX, platoon unblocked			0.86		0.87	0.86
vC, conflicting volume			775		1138	775
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			653		996	653
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			790		209	351

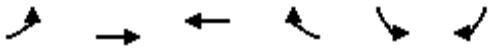
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	774	298	298	363	363
Volume Left	0	0	0	0	0
Volume Right	0	298	298	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.46	0.17	0.17	0.21	0.21
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	735	0	0	500	0	365
Future Volume (Veh/h)	735	0	0	500	0	365
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	1.00
Hourly flow rate (vph)	774	0	0	526	0	365
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)	145			774		
pX, platoon unblocked			0.65		0.65	0.65
vC, conflicting volume			775		906	775
vC1, stage 1 conf vol					775	
vC2, stage 2 conf vol					132	
vCu, unblocked vol			379		582	379
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	9
cM capacity (veh/h)			755		412	400

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	774	132	132	132	132	365
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	365
cSH	1700	1700	1700	1700	1700	400
Volume to Capacity	0.46	0.08	0.08	0.08	0.08	0.91
Queue Length 95th (ft)	0	0	0	0	0	243
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	58.2
Lane LOS						F
Approach Delay (s)	0.0	0.0				58.2
Approach LOS						F

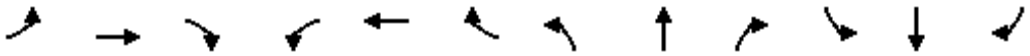
Intersection Summary			
Average Delay	12.8		
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	40	490	805	295	110	40
Future Volume (vph)	40	490	805	295	110	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	0%		15%	
Total Lost time (s)	4.5	5.0	5.5		5.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1787	1881	1781		1670	1422
Flt Permitted	0.14	1.00	1.00		0.95	1.00
Satd. Flow (perm)	264	1881	1781		1670	1422
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	500	821	301	112	41
RTOR Reduction (vph)	0	0	7	0	0	37
Lane Group Flow (vph)	41	500	1115	0	112	4
Confl. Peds. (#/hr)				14	2	6
Confl. Bikes (#/hr)				4		2
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases	6					8
Actuated Green, G (s)	116.3	116.3	107.1		13.7	13.7
Effective Green, g (s)	116.3	116.3	107.1		13.7	13.7
Actuated g/C Ratio	0.83	0.83	0.76		0.10	0.10
Clearance Time (s)	4.5	5.0	5.5		5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	264	1562	1362		163	139
v/s Ratio Prot	0.00	c0.27	c0.63		c0.07	
v/s Ratio Perm	0.12					0.00
v/c Ratio	0.16	0.32	0.82		0.69	0.03
Uniform Delay, d1	13.2	2.7	10.3		61.1	57.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.5	5.6		9.2	0.0
Delay (s)	13.3	3.3	15.9		70.3	57.2
Level of Service	B	A	B		E	E
Approach Delay (s)		4.0	15.9		66.8	
Approach LOS		A	B		E	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



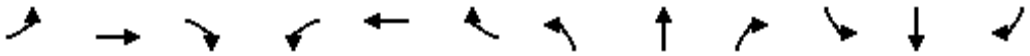
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	325	165	120	640	30	430	40	195	15	25	10
Future Volume (vph)	15	325	165	120	640	30	430	40	195	15	25	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			0.98	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1787	1881	1567	1787	1866			1737	1546		1802	
Flt Permitted	0.10	1.00	1.00	0.35	1.00			0.70	1.00		0.83	
Satd. Flow (perm)	193	1881	1567	661	1866			1281	1546		1520	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	353	179	130	696	33	467	43	212	16	27	11
RTOR Reduction (vph)	0	0	77	0	1	0	0	0	126	0	7	0
Lane Group Flow (vph)	16	353	102	130	728	0	0	510	86	0	47	0
Confl. Peds. (#/hr)			6			4	16		2	2		16
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	47.5	45.1	45.1	60.3	52.4			48.7	48.7		48.7	
Effective Green, g (s)	47.5	45.1	45.1	60.3	52.4			48.7	48.7		48.7	
Actuated g/C Ratio	0.40	0.38	0.38	0.50	0.44			0.41	0.41		0.41	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5			5.5	5.5		5.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	108	706	588	423	814			519	627		616	
v/s Ratio Prot	0.00	0.19		c0.02	c0.39							
v/s Ratio Perm	0.06		0.07	0.13				c0.40	0.06		0.03	
v/c Ratio	0.15	0.50	0.17	0.31	0.89			0.98	0.14		0.08	
Uniform Delay, d1	26.8	28.8	25.0	17.6	31.2			35.2	22.4		21.9	
Progression Factor	1.00	1.00	1.00	0.96	0.95			0.60	0.48		1.00	
Incremental Delay, d2	0.2	2.5	0.6	0.3	13.4			32.9	0.0		0.0	
Delay (s)	27.0	31.3	25.7	17.3	43.0			53.9	10.9		21.9	
Level of Service	C	C	C	B	D			D	B		C	
Approach Delay (s)		29.3			39.1			41.2			21.9	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	86.9%	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)	120	375	105	75	415	10	245	240	130	5	65	60
Future Volume (vph)	120	375	105	75	415	10	245	240	130	5	65	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.0		6.0	6.0		5.5	4.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1794		1787	1873		1805	1777			3314	
Flt Permitted	0.40	1.00		0.37	1.00		0.43	1.00			0.92	
Satd. Flow (perm)	736	1794		704	1873		809	1777			3053	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	387	108	77	428	10	253	247	134	5	67	62
RTOR Reduction (vph)	0	6	0	0	0	0	0	19	0	0	58	0
Lane Group Flow (vph)	124	489	0	77	438	0	253	362	0	0	76	0
Confl. Peds. (#/hr)			4			3			5	5		2
Confl. Bikes (#/hr)			2			2			3			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	1	6		5	2		7	4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	73.5	65.1		68.2	62.2		33.4	33.4			7.7	
Effective Green, g (s)	73.5	65.1		68.2	62.2		33.4	33.4			7.7	
Actuated g/C Ratio	0.61	0.54		0.57	0.52		0.28	0.28			0.06	
Clearance Time (s)	5.5	5.0		6.0	6.0		5.5	4.5			6.5	
Vehicle Extension (s)	2.5	4.0		2.5	4.0		3.0	2.0			2.0	
Lane Grp Cap (vph)	523	973		454	970		376	494			195	
v/s Ratio Prot	c0.02	c0.27		0.01	0.23		0.10	c0.20				
v/s Ratio Perm	0.13			0.09			0.09				0.02	
v/c Ratio	0.24	0.50		0.17	0.45		0.67	0.73			0.39	
Uniform Delay, d1	10.7	17.3		12.6	18.2		36.5	39.2			53.9	
Progression Factor	0.53	0.48		1.00	1.00		0.86	0.90			1.00	
Incremental Delay, d2	0.2	1.7		0.1	1.5		4.1	4.2			0.5	
Delay (s)	5.8	10.1		12.7	19.7		35.5	39.5			54.4	
Level of Service	A	B		B	B		D	D			D	
Approach Delay (s)		9.2			18.6			37.9			54.4	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
Description: WSDOT			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	415	55	100	455	5	145	5	255	0	5	5
Future Volume (vph)	10	415	55	100	455	5	145	5	255	0	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5		5.5	5.5			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.85			0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1787	1842		1787	1878		1761	1550			1736	
Flt Permitted	0.47	1.00		0.39	1.00		0.75	1.00			1.00	
Satd. Flow (perm)	881	1842		731	1878		1392	1550			1736	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	437	58	105	479	5	153	5	268	0	5	5
RTOR Reduction (vph)	0	3	0	0	0	0	0	226	0	0	4	0
Lane Group Flow (vph)	11	492	0	105	484	0	153	47	0	0	6	0
Confl. Peds. (#/hr)			3			2	2		1	1		2
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	63.7	62.5		72.3	66.8		15.5	15.5			15.0	
Effective Green, g (s)	63.7	62.5		72.3	66.8		15.5	15.5			15.0	
Actuated g/C Ratio	0.64	0.62		0.72	0.67		0.16	0.16			0.15	
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5			6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	572	1151		586	1254		215	240			260	
v/s Ratio Prot	0.00	c0.27		c0.01	c0.26			0.03			0.00	
v/s Ratio Perm	0.01			0.12			c0.11					
v/c Ratio	0.02	0.43		0.18	0.39		0.71	0.19			0.02	
Uniform Delay, d1	6.7	9.6		5.0	7.4		40.1	36.8			36.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	1.2		0.1	0.9		8.9	0.1			0.0	
Delay (s)	6.7	10.8		5.1	8.3		49.0	37.0			36.3	
Level of Service	A	B		A	A		D	D			D	
Approach Delay (s)		10.7			7.7			41.3			36.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	365	345	10	60	285	250	30	285	180	135	40	165
Future Volume (vph)	365	345	10	60	285	250	30	285	180	135	40	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1871		1787	1881	1560	1805	1900	1586	1787	1881	1564
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1787	1871		1787	1881	1560	1385	1900	1586	440	1881	1564
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	392	371	11	65	306	269	32	306	194	145	43	177
RTOR Reduction (vph)	0	1	0	0	0	190	0	0	137	0	0	80
Lane Group Flow (vph)	392	381	0	65	306	79	32	306	57	145	43	97
Confl. Peds. (#/hr)			7			2			2			9
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4	5	3	8	1
Permitted Phases						2	4		4	8		8
Actuated Green, G (s)	32.0	50.1		9.0	27.1	27.1	30.0	26.0	35.0	43.9	33.9	65.9
Effective Green, g (s)	32.0	50.1		9.0	27.1	27.1	30.0	26.0	35.0	43.9	33.9	65.9
Actuated g/C Ratio	0.27	0.42		0.08	0.23	0.23	0.25	0.22	0.29	0.37	0.28	0.55
Clearance Time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	476	781		134	424	352	360	411	541	288	531	858
v/s Ratio Prot	c0.22	0.20		0.04	c0.16		0.00	c0.16	0.01	c0.05	0.02	0.03
v/s Ratio Perm						0.05	0.02		0.03	0.14		0.03
v/c Ratio	0.82	0.49		0.49	0.72	0.23	0.09	0.74	0.10	0.50	0.08	0.11
Uniform Delay, d1	41.3	25.6		53.3	43.0	37.9	34.4	43.9	31.1	28.0	31.6	13.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.5	2.2		1.0	10.2	1.5	0.0	6.3	0.0	0.5	0.0	0.0
Delay (s)	51.9	27.8		54.3	53.1	39.4	34.4	50.2	31.1	28.6	31.6	13.0
Level of Service	D	C		D	D	D	C	D	C	C	C	B
Approach Delay (s)		40.0			47.5			42.3			21.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	85.3%	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)	170	135	175	35	180	280	305	525	40	45	240	85
Future Volume (vph)	170	135	175	35	180	280	305	525	40	45	240	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1540	1805	1699		1805	1875		1805	1809	
Flt Permitted	0.14	1.00	1.00	0.67	1.00		0.22	1.00		0.20	1.00	
Satd. Flow (perm)	271	1881	1540	1264	1699		423	1875		380	1809	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	181	144	186	37	191	298	324	559	43	48	255	90
RTOR Reduction (vph)	0	0	124	0	67	0	0	3	0	0	15	0
Lane Group Flow (vph)	181	144	62	37	422	0	324	599	0	48	330	0
Confl. Peds. (#/hr)			7			3			5			5
Confl. Bikes (#/hr)			3						2			3
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)	34.8	27.8	27.8	27.6	24.2		36.8	29.0		22.8	20.0	
Effective Green, g (s)	34.8	27.8	27.8	27.6	24.2		36.8	29.0		22.8	20.0	
Actuated g/C Ratio	0.42	0.33	0.33	0.33	0.29		0.44	0.35		0.27	0.24	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	241	630	515	442	495		384	655		152	435	
v/s Ratio Prot	c0.06	0.08		0.00	c0.25		c0.12	c0.32		0.01	0.18	
v/s Ratio Perm	0.25		0.04	0.02			0.25			0.08		
v/c Ratio	0.75	0.23	0.12	0.08	0.85		0.84	0.91		0.32	0.76	
Uniform Delay, d1	18.7	19.9	19.1	18.9	27.7		17.6	25.8		23.5	29.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.1	0.1	0.0	0.0	12.9		14.9	17.0		0.4	6.6	
Delay (s)	29.7	19.9	19.2	18.9	40.6		32.5	42.8		24.0	35.9	
Level of Service	C	B	B	B	D		C	D		C	D	
Approach Delay (s)		23.1			39.1			39.2			34.4	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

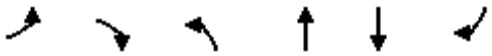
Description: Cycle Optimized - Free

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	20	40	130	5	60	15	245	130	20	165	20
Future Volume (vph)	35	20	40	130	5	60	15	245	130	20	165	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.94			0.96		1.00	0.95		1.00	0.98	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1720			1724		1736	1730		1741	1808	
Flt Permitted		0.85			0.79		0.64	1.00		0.52	1.00	
Satd. Flow (perm)		1490			1403		1163	1730		951	1808	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	21	42	135	5	62	16	255	135	21	172	21
RTOR Reduction (vph)	0	34	0	0	26	0	0	21	0	0	5	0
Lane Group Flow (vph)	0	65	0	0	177	0	16	369	0	21	188	0
Confl. Peds. (#/hr)	5		2	2		5	6		7	7		6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		13.3			13.3		46.2	46.2		46.2	46.2	
Effective Green, g (s)		13.3			13.3		46.2	46.2		46.2	46.2	
Actuated g/C Ratio		0.19			0.19		0.66	0.66		0.66	0.66	
Clearance Time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		283			266		767	1141		627	1193	
v/s Ratio Prot								c0.21			0.10	
v/s Ratio Perm		0.04			c0.13		0.01			0.02		
v/c Ratio		0.23			0.67		0.02	0.32		0.03	0.16	
Uniform Delay, d1		24.0			26.3		4.1	5.1		4.1	4.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			4.8		0.0	0.8		0.1	0.3	
Delay (s)		24.2			31.1		4.2	5.9		4.2	4.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		24.2			31.1			5.8			4.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	245	75	25	250	55	55
Future Volume (vph)	245	75	25	250	55	55
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	263	81	27	269	59	59

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total (vph)	344	296	59	59
Volume Left (vph)	263	27	0	0
Volume Right (vph)	81	0	0	59
Hadj (s)	0.05	0.05	0.03	-0.67
Departure Headway (s)	5.0	5.2	5.8	5.1
Degree Utilization, x	0.48	0.42	0.10	0.08
Capacity (veh/h)	681	663	570	645
Control Delay (s)	12.5	11.9	8.3	7.4
Approach Delay (s)	12.5	11.9	7.8	
Approach LOS	B	B	A	

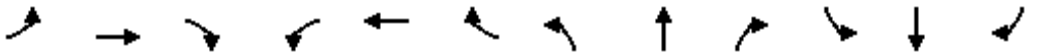
Intersection Summary			
Delay	11.6		
Level of Service	B		
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Volume extrapolated from BKR and 2017 local intersection volumes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	40	45	270	195	330	130	335	200	100	255	35
Future Volume (vph)	15	40	45	270	195	330	130	335	200	100	255	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1736		1681	1754	1516	1787	3342		1770	3446	
Flt Permitted	0.95	1.00		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1736		1681	1754	1516	1787	3342		1770	3446	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	42	47	281	203	344	135	349	208	104	266	36
RTOR Reduction (vph)	0	40	0	0	0	149	0	78	0	0	10	0
Lane Group Flow (vph)	16	49	0	236	248	195	135	479	0	104	292	0
Confl. Peds. (#/hr)						32			13			16
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	8.9	8.9		56.3	56.3	67.9	12.9	23.1		11.6	21.8	
Effective Green, g (s)	8.9	8.9		56.3	56.3	67.9	12.9	23.1		11.6	21.8	
Actuated g/C Ratio	0.07	0.07		0.47	0.47	0.57	0.11	0.19		0.10	0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	133	128		788	822	857	192	643		171	626	
v/s Ratio Prot	0.01	c0.03		0.14	c0.14	0.02	c0.08	c0.14		0.06	0.08	
v/s Ratio Perm						0.11						
v/c Ratio	0.12	0.38		0.30	0.30	0.23	0.70	0.74		0.61	0.47	
Uniform Delay, d1	51.9	52.9		19.7	19.7	13.0	51.7	45.7		52.0	43.9	
Progression Factor	1.00	1.00		0.98	0.98	1.52	1.00	1.00		1.14	0.77	
Incremental Delay, d2	0.4	1.9		0.9	0.9	0.1	10.3	4.8		5.0	0.6	
Delay (s)	52.3	54.9		20.1	20.1	19.8	62.0	50.5		64.3	34.2	
Level of Service	D	D		C	C	B	E	D		E	C	
Approach Delay (s)		54.5			20.0			52.7			41.9	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
Description: WSDOT Timing			

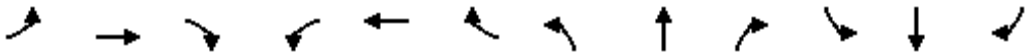
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	280	25	140	475	180	270	15	110	85	10	50
Future Volume (vph)	35	280	25	140	475	180	270	15	110	85	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1752	3462		1752	3387			1744	1553		1748	1553
Flt Permitted	0.34	1.00		0.55	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	619	3462		1018	3387			1744	1553		1748	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	292	26	146	495	188	281	16	115	89	10	52
RTOR Reduction (vph)	0	4	0	0	25	0	0	0	65	0	0	46
Lane Group Flow (vph)	36	314	0	146	658	0	0	297	50	0	99	6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	63.5	63.5		63.5	63.5			27.4	27.4		13.1	13.1
Effective Green, g (s)	63.5	63.5		63.5	63.5			27.4	27.4		13.1	13.1
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.23	0.23		0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	327	1831		538	1792			398	354		190	169
v/s Ratio Prot		0.09			c0.19			c0.17			c0.06	
v/s Ratio Perm	0.06			0.14					0.03			0.00
v/c Ratio	0.11	0.17		0.27	0.37			0.75	0.14		0.52	0.03
Uniform Delay, d1	14.1	14.6		15.5	16.5			43.1	36.9		50.5	47.8
Progression Factor	1.77	1.89		1.13	1.15			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.2		1.2	0.6			7.9	0.3		3.3	0.1
Delay (s)	25.6	27.7		18.7	19.6			51.0	37.2		53.8	47.9
Level of Service	C	C		B	B			D	D		D	D
Approach Delay (s)		27.5			19.4			47.1			51.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+ HNTB Volumes			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	335	140	0	455	60	245	530	85	10	215	95
Future Volume (vph)	0	335	140	0	455	60	245	530	85	10	215	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00		0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		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		0.98		1.00	0.98		1.00	0.95	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3574	1574		3441		1787	3485		1770	3361	
Flt Permitted		1.00	1.00		1.00		0.31	1.00		0.41	1.00	
Satd. Flow (perm)		3574	1574		3441		591	3485		766	3361	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	345	144	0	469	62	253	546	88	10	222	98
RTOR Reduction (vph)	0	0	41	0	7	0	0	10	0	0	47	0
Lane Group Flow (vph)	0	345	103	0	524	0	253	624	0	10	273	0
Confl. Peds. (#/hr)	61		6	6		61			15			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov		NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3		6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		66.9	85.9		66.9		43.1	36.7		20.3	19.0	
Effective Green, g (s)		66.9	85.9		66.9		43.1	36.7		20.3	19.0	
Actuated g/C Ratio		0.56	0.72		0.56		0.36	0.31		0.17	0.16	
Clearance Time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5		4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1992	1126		1918		401	1065		140	532	
v/s Ratio Prot		0.10	0.01		c0.15		c0.10	0.18		0.00	0.08	
v/s Ratio Perm			0.05				c0.13			0.01		
v/c Ratio		0.17	0.09		0.27		0.63	0.59		0.07	0.51	
Uniform Delay, d1		13.0	5.2		13.9		29.3	35.2		41.7	46.3	
Progression Factor		0.33	0.70		1.00		1.00	1.00		1.02	0.98	
Incremental Delay, d2		0.2	0.0		0.4		2.8	0.8		0.2	0.8	
Delay (s)		4.5	3.7		14.2		32.1	36.0		42.7	46.2	
Level of Service		A	A		B		C	D		D	D	
Approach Delay (s)		4.2			14.2			34.9			46.1	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
Description: WSDOT			

c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	210	140	70	0	130	190	35	90	190	80	15	165
Future Volume (vph)	210	140	70	0	130	190	35	90	190	80	15	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			6.5	5.0		5.0	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00	0.98		1.00	0.99
Flpb, ped/bikes	0.95	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.95			1.00	0.98		1.00	0.96		1.00	0.92
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1689	1770			1736	1761		1787	1768		1787	1716
Flt Permitted	0.58	1.00			0.95	1.00		0.12	1.00		0.59	1.00
Satd. Flow (perm)	1027	1770			1736	1761		227	1768		1105	1716
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	219	146	73	0	135	198	36	94	198	83	16	172
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	219	219	0	0	135	234	0	94	281	0	16	360
Confl. Peds. (#/hr)	23			8			23			12		
Confl. Bikes (#/hr)				1						2		
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Perm	NA		Perm	Prot	NA		pm+pt	NA		Perm	NA
Protected Phases		6			5	2		7	4			8
Permitted Phases	6			6				4			8	
Actuated Green, G (s)	58.8	58.8			8.5	73.8		41.3	41.3		28.2	28.2
Effective Green, g (s)	58.8	58.8			8.5	73.8		41.3	41.3		28.2	28.2
Actuated g/C Ratio	0.45	0.45			0.07	0.57		0.32	0.32		0.22	0.22
Clearance Time (s)	5.0	5.0			6.5	5.0		5.0	4.5		4.5	4.5
Vehicle Extension (s)	0.2	0.2			0.2	0.2		0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	464	800			113	999		169	561		239	372
v/s Ratio Prot		0.12			c0.08	0.13		0.03	c0.16			c0.21
v/s Ratio Perm	c0.21							0.14			0.01	
v/c Ratio	0.47	0.27			1.19	0.23		0.56	0.50		0.07	0.97
Uniform Delay, d1	24.8	22.3			60.8	14.0		34.8	36.0		40.4	50.4
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1			146.2	0.0		2.2	3.2		0.5	39.2
Delay (s)	25.1	22.3			206.9	14.1		37.0	39.2		41.0	89.7
Level of Service	C	C			F	B		D	D		D	F
Approach Delay (s)		23.7				84.6			38.6			87.6
Approach LOS		C				F			D			F

Intersection Summary			
HCM 2000 Control Delay	57.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Unsure timing program w Overlaps			

c Critical Lane Group

Movement	SBR	NWL
Lane Configurations		
Traffic Volume (vph)	180	5
Future Volume (vph)	180	5
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frpb, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		1.00
Flt Protected		0.95
Satd. Flow (prot)		902
Flt Permitted		0.95
Satd. Flow (perm)		902
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	188	5
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	5
Confl. Peds. (#/hr)	6	
Confl. Bikes (#/hr)		
Heavy Vehicles (%)	1%	100%
Turn Type		Prot
Protected Phases		10
Permitted Phases		
Actuated Green, G (s)		1.4
Effective Green, g (s)		1.4
Actuated g/C Ratio		0.01
Clearance Time (s)		4.0
Vehicle Extension (s)		0.2
Lane Grp Cap (vph)		9
v/s Ratio Prot		c0.01
v/s Ratio Perm		
v/c Ratio		0.56
Uniform Delay, d1		64.0
Progression Factor		1.00
Incremental Delay, d2		36.0
Delay (s)		100.0
Level of Service		F
Approach Delay (s)		100.0
Approach LOS		F

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	25	835	55	25	330
Future Volume (vph)	35	25	835	55	25	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.5	5.5		4.5	5.5
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	1568	3473		1752	3505
Flt Permitted	0.95	1.00	1.00		0.23	1.00
Satd. Flow (perm)	1752	1568	3473		431	3505
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	26	870	57	26	344
RTOR Reduction (vph)	0	24	5	0	0	0
Lane Group Flow (vph)	36	2	922	0	26	344
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	1.7	3.3	19.5		25.6	25.6
Effective Green, g (s)	1.7	3.3	19.5		25.6	25.6
Actuated g/C Ratio	0.04	0.09	0.52		0.68	0.68
Clearance Time (s)	5.0	4.5	5.5		4.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	78	136	1791		347	2373
v/s Ratio Prot	c0.02	0.00	c0.27		0.00	c0.10
v/s Ratio Perm		0.00			0.05	
v/c Ratio	0.46	0.02	0.51		0.07	0.14
Uniform Delay, d1	17.6	15.8	6.0		2.5	2.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.6	0.0	0.1		0.0	0.0
Delay (s)	19.2	15.8	6.1		2.5	2.2
Level of Service	B	B	A		A	A
Approach Delay (s)	17.8		6.1			2.2
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	37.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

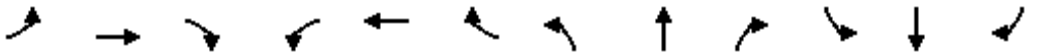
Description: Cycle length optimized - Free. Volume extrapolated from adjacent intersections

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	25	240	25	25	340
Future Volume (vph)	25	25	240	25	25	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1839		1770	1863
Flt Permitted	0.95	1.00	1.00		0.59	1.00
Satd. Flow (perm)	1770	1583	1839		1099	1863
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	26	250	26	26	354
RTOR Reduction (vph)	0	25	2	0	0	0
Lane Group Flow (vph)	26	1	274	0	26	354
Turn Type	Perm	Perm	NA		Perm	NA
Protected Phases			4			8
Permitted Phases	2	2			8	
Actuated Green, G (s)	4.1	4.1	76.4		76.4	76.4
Effective Green, g (s)	4.1	4.1	76.4		76.4	76.4
Actuated g/C Ratio	0.05	0.05	0.85		0.85	0.85
Clearance Time (s)	5.0	5.0	4.5		4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	80	72	1561		932	1581
v/s Ratio Prot			0.15			c0.19
v/s Ratio Perm	c0.01	0.00			0.02	
v/c Ratio	0.33	0.02	0.18		0.03	0.22
Uniform Delay, d1	41.6	41.0	1.2		1.1	1.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.0	0.2		0.1	0.3
Delay (s)	42.5	41.1	1.5		1.1	1.6
Level of Service	D	D	A		A	A
Approach Delay (s)	41.8		1.5			1.6
Approach LOS	D		A			A

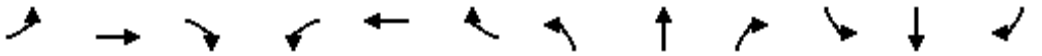
Intersection Summary			
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	320	30	175	555	130	295	120	60	190	135	40
Future Volume (vph)	15	320	30	175	555	130	295	120	60	190	135	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3487		1787	3446		1715	1767	1573	3467	1810	
Flt Permitted	0.28	1.00		0.47	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	525	3487		890	3446		1715	1767	1573	3467	1810	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	15	330	31	180	572	134	304	124	62	196	139	41
RTOR Reduction (vph)	0	6	0	0	15	0	0	0	49	0	8	0
Lane Group Flow (vph)	15	355	0	180	691	0	210	218	13	196	172	0
Confl. Peds. (#/hr)						12			16			
Confl. Bikes (#/hr)			1			3			1			3
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	15.0	14.2		32.0	26.2		16.4	16.4	16.4	13.7	13.7	
Effective Green, g (s)	15.0	14.2		32.0	26.2		16.4	16.4	16.4	13.7	13.7	
Actuated g/C Ratio	0.20	0.19		0.42	0.35		0.22	0.22	0.22	0.18	0.18	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	117	653		527	1191		371	382	340	626	327	
v/s Ratio Prot	0.00	0.10		c0.06	c0.20		0.12	c0.12		0.06	c0.09	
v/s Ratio Perm	0.02			0.09					0.01			
v/c Ratio	0.13	0.54		0.34	0.58		0.57	0.57	0.04	0.31	0.53	
Uniform Delay, d1	31.5	27.9		17.0	20.3		26.5	26.6	23.5	27.0	28.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.9		0.4	0.7		2.0	2.1	0.0	0.3	1.5	
Delay (s)	32.0	28.8		17.4	21.0		28.5	28.6	23.5	27.3	29.6	
Level of Service	C	C		B	C		C	C	C	C	C	
Approach Delay (s)		28.9			20.3			27.9			28.4	
Approach LOS		C			C			C			C	

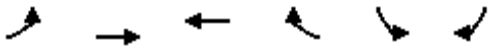
Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	18.7
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	720	55	255	1060	265	190	240	270	275	120	100
Future Volume (vph)	165	720	55	255	1060	265	190	240	270	275	120	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.5		6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
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	3530		1805	3610	1615	1805	1900	1615	3467	1722	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3530		1805	3610	1615	1805	1900	1615	3467	1722	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	168	735	56	260	1082	270	194	245	276	281	122	102
RTOR Reduction (vph)	0	4	0	0	0	133	0	0	220	0	22	0
Lane Group Flow (vph)	168	787	0	260	1082	137	194	245	56	281	202	0
Confl. Peds. (#/hr)						1						15
Confl. Bikes (#/hr)			3						8			2
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA	Prot	Split	NA	
Protected Phases	5	2		1 8	6 8	6 8	3	3	3	4	4	
Permitted Phases												
Actuated Green, G (s)	9.0	40.7		18.0	49.7	49.7	28.3	28.3	28.3	22.0	22.0	
Effective Green, g (s)	9.0	40.7		18.0	49.7	49.7	28.3	28.3	28.3	22.0	22.0	
Actuated g/C Ratio	0.06	0.29		0.13	0.36	0.36	0.20	0.20	0.20	0.16	0.16	
Clearance Time (s)	6.0	6.5					6.5	6.5	6.5	6.0	6.0	
Vehicle Extension (s)	3.0	4.0					3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	114	1026		232	1281	573	364	384	326	544	270	
v/s Ratio Prot	c0.09	0.22		c0.14	c0.30	0.08	0.11	c0.13	0.03	0.08	c0.12	
v/s Ratio Perm												
v/c Ratio	1.47	0.77		1.12	0.84	0.24	0.53	0.64	0.17	0.52	0.75	
Uniform Delay, d1	65.5	45.3		61.0	41.6	31.8	49.9	51.2	46.2	54.1	56.4	
Progression Factor	1.00	1.00		1.20	1.22	2.09	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	254.3	5.5		89.7	4.3	0.2	1.5	3.5	0.3	0.8	10.8	
Delay (s)	319.8	50.8		162.8	55.1	66.7	51.4	54.6	46.4	55.0	67.2	
Level of Service	F	D		F	E	E	D	D	D	D	E	
Approach Delay (s)		97.9			74.4			50.6			60.4	
Approach LOS		F			E			D			E	

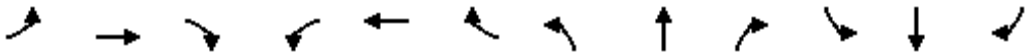
Intersection Summary			
HCM 2000 Control Delay	74.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
Description: WSDOT			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	810	1090	0	550	490
Future Volume (vph)	0	810	1090	0	550	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		0.97	0.91
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	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		3610	3574		3361	1441
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		3610	3574		3361	1441
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	818	1101	0	556	495
RTOR Reduction (vph)	0	0	0	0	20	91
Lane Group Flow (vph)	0	818	1101	0	699	241
Confl. Peds. (#/hr)	2			2		
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Turn Type		NA	NA		Prot	custom
Protected Phases		1 2 3	1 2 3		4 8	4 8
Permitted Phases						
Actuated Green, G (s)		89.5	89.5		26.0	26.0
Effective Green, g (s)		83.0	83.0		26.0	26.0
Actuated g/C Ratio		0.59	0.59		0.19	0.19
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)		2140	2118		624	267
v/s Ratio Prot		0.23	c0.31		c0.21	0.17
v/s Ratio Perm						
v/c Ratio		0.38	0.52		1.12	0.90
Uniform Delay, d1		15.0	16.8		57.0	55.8
Progression Factor		0.86	1.64		1.00	1.00
Incremental Delay, d2		0.1	0.2		73.6	30.7
Delay (s)		13.0	27.7		130.6	86.5
Level of Service		B	C		F	F
Approach Delay (s)		13.0	27.7		116.6	
Approach LOS		B	C		F	

Intersection Summary			
HCM 2000 Control Delay	55.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
Description: WSDOT			
c Critical Lane Group			



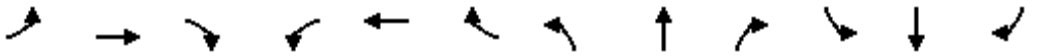
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1160	200	0	1030	345	345	0	240	0	0	0
Future Volume (vph)	0	1160	200	0	1030	345	345	0	240	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	4.0	4.5		4.5			
Lane Util. Factor		0.95	1.00		0.91	1.00	0.97		1.00			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		3574	1599		5136	1599	3467		1599			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		3574	1599		5136	1599	3467		1599			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1208	208	0	1073	359	359	0	250	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	58	0	0	0
Lane Group Flow (vph)	0	1208	208	0	1073	359	359	0	192	0	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		2			6		8		8			
Permitted Phases			Free			Free						
Actuated Green, G (s)		107.3	140.0		107.3	140.0	23.2		23.2			
Effective Green, g (s)		107.3	140.0		107.3	140.0	23.2		23.2			
Actuated g/C Ratio		0.77	1.00		0.77	1.00	0.17		0.17			
Clearance Time (s)		5.0			5.0		4.5		4.5			
Vehicle Extension (s)		3.5			3.5		3.0		3.0			
Lane Grp Cap (vph)		2739	1599		3936	1599	574		264			
v/s Ratio Prot		c0.34			0.21		0.10		c0.12			
v/s Ratio Perm			0.13			0.22						
v/c Ratio		0.44	0.13		0.27	0.22	0.63		0.73			
Uniform Delay, d1		5.8	0.0		4.8	0.0	54.4		55.4			
Progression Factor		1.20	1.00		1.83	1.00	1.00		1.00			
Incremental Delay, d2		0.4	0.1		0.2	0.3	2.1		9.5			
Delay (s)		7.3	0.1		9.0	0.3	56.5		64.9			
Level of Service		A	A		A	A	E		E			
Approach Delay (s)		6.3			6.8			59.9			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: WSDOT			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1290	100	90	1210	40	70	5	65	25	5	50
Future Volume (vph)	55	1290	100	90	1210	40	70	5	65	25	5	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0		3.5	3.0			2.5	2.5		3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.96		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1770	3495		1787	3554			1797	1541		1692	
Flt Permitted	0.19	1.00		0.14	1.00			0.54	1.00		0.81	
Satd. Flow (perm)	346	3495		271	3554			1018	1541		1394	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	57	1344	104	94	1260	42	73	5	68	26	5	52
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	61	0	47	0
Lane Group Flow (vph)	57	1446	0	94	1301	0	0	78	7	0	36	0
Confl. Peds. (#/hr)			2			1			7	7		
Confl. Bikes (#/hr)						2			2			1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)	110.2	105.4		115.0	107.8			12.4	12.4		11.9	
Effective Green, g (s)	114.2	107.4		119.0	109.8			14.4	14.4		13.9	
Actuated g/C Ratio	0.82	0.77		0.85	0.78			0.10	0.10		0.10	
Clearance Time (s)	5.5	5.0		5.5	5.0			4.5	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	351	2681		329	2787			104	158		138	
v/s Ratio Prot	0.01	c0.41		c0.02	0.37							
v/s Ratio Perm	0.12			0.22				c0.08	0.00		0.03	
v/c Ratio	0.16	0.54		0.29	0.47			0.75	0.04		0.26	
Uniform Delay, d1	3.2	6.5		4.3	5.1			61.1	56.6		58.3	
Progression Factor	1.55	1.26		0.89	0.10			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.7		0.1	0.5			23.2	0.0		0.4	
Delay (s)	5.0	8.9		4.0	1.0			84.3	56.6		58.7	
Level of Service	A	A		A	A			F	E		E	
Approach Delay (s)		8.7			1.2			71.4			58.7	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

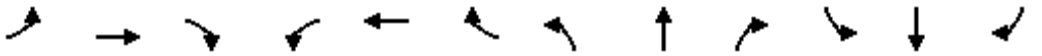


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	935	210	90	920	320	320	505	230	200	230	95
Future Volume (vph)	100	935	210	90	920	320	320	505	230	200	230	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.0	4.0	5.5	4.5	4.5	5.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1553	1787	3574	1569	3467	3574	1578	1787	1881	1567
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3574	1553	1787	3574	1569	3467	3574	1578	1787	1881	1567
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	954	214	92	939	327	327	515	235	204	235	97
RTOR Reduction (vph)	0	0	58	0	0	126	0	0	191	0	0	79
Lane Group Flow (vph)	102	954	156	92	939	201	327	515	44	204	235	18
Confl. Peds. (#/hr)			4			4						4
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	12.3	65.0	65.0	11.6	64.8	64.8	17.0	25.4	25.4	15.5	24.4	24.4
Effective Green, g (s)	13.3	66.0	66.0	12.6	65.8	65.8	18.0	26.4	26.4	16.5	25.4	25.4
Actuated g/C Ratio	0.10	0.47	0.47	0.09	0.47	0.47	0.13	0.19	0.19	0.12	0.18	0.18
Clearance Time (s)	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.5	5.5	6.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	169	1684	732	160	1679	737	445	673	297	210	341	284
v/s Ratio Prot	c0.06	c0.27		0.05	0.26		0.09	c0.14		c0.11	0.12	
v/s Ratio Perm			0.10			0.13			0.03			0.01
v/c Ratio	0.60	0.57	0.21	0.57	0.56	0.27	0.73	0.77	0.15	0.97	0.69	0.06
Uniform Delay, d1	60.8	26.7	21.7	61.1	26.7	22.6	58.7	53.9	47.4	61.5	53.6	47.4
Progression Factor	1.19	0.95	0.97	1.41	0.35	0.15	1.10	1.03	1.77	1.00	1.00	1.00
Incremental Delay, d2	3.6	1.2	0.6	2.9	1.3	0.9	4.5	3.9	0.1	53.5	4.6	0.0
Delay (s)	76.0	26.6	21.6	89.3	10.6	4.2	68.9	59.4	83.8	115.0	58.2	47.5
Level of Service	E	C	C	F	B	A	E	E	F	F	E	D
Approach Delay (s)		29.7			14.4			67.6			77.9	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.5	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)	18.5
Intersection Capacity Utilization	76.3%	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)	70	1285	20	15	1170	25	35	0	15	35	5	120
Future Volume (vph)	70	1285	20	15	1170	25	35	0	15	35	5	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0		4.0	3.0			3.0			3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	1.00
Satd. Flow (prot)	1787	3565		1787	3561			1748			1802	1567
Flt Permitted	0.20	1.00		0.19	1.00			0.76			0.74	1.00
Satd. Flow (perm)	381	3565		349	3561			1381			1394	1567
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	71	1311	20	15	1194	26	36	0	15	36	5	122
RTOR Reduction (vph)	0	0	0	0	0	0	0	47	0	0	0	113
Lane Group Flow (vph)	71	1331	0	15	1220	0	0	4	0	0	41	9
Confl. Peds. (#/hr)			1			1	3					3
Confl. Bikes (#/hr)			4			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	117.8	113.0		113.5	111.1			8.6			8.6	8.6
Effective Green, g (s)	121.8	115.0		117.5	113.1			10.6			10.6	10.6
Actuated g/C Ratio	0.87	0.82		0.84	0.81			0.08			0.08	0.08
Clearance Time (s)	5.5	5.0		6.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	399	2928		338	2876			104			105	118
v/s Ratio Prot	c0.01	c0.37		0.00	0.34							
v/s Ratio Perm	0.15			0.04				0.00			c0.03	0.01
v/c Ratio	0.18	0.45		0.04	0.42			0.04			0.39	0.08
Uniform Delay, d1	2.0	3.6		2.3	3.9			60.0			61.6	60.2
Progression Factor	0.75	2.43		0.45	0.62			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.4		0.0	0.3			0.1			0.9	0.1
Delay (s)	1.6	9.1		1.0	2.7			60.0			62.5	60.3
Level of Service	A	A		A	A			E			E	E
Approach Delay (s)		8.7			2.7			60.0			60.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	850	10	235	930	250	30	490	220	215	240	230
Future Volume (vph)	235	850	10	235	930	250	30	490	220	215	240	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	3.0		4.5	3.0	3.0	3.5	3.5		2.5	2.5	2.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3567		1787	3574	1547	1805	3423		1805	1900	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3567		1787	3574	1547	1805	3423		1805	1900	1593
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	245	885	10	245	969	260	31	510	229	224	250	240
RTOR Reduction (vph)	0	1	0	0	0	116	0	37	0	0	0	152
Lane Group Flow (vph)	245	894	0	245	969	144	31	702	0	224	250	88
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			1			7						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	21.7	43.5		21.0	42.8	42.8	3.6	34.2		17.8	48.4	48.4
Effective Green, g (s)	23.7	45.5		23.0	44.8	44.8	6.6	37.2		20.8	51.4	51.4
Actuated g/C Ratio	0.17	0.32		0.16	0.32	0.32	0.05	0.27		0.15	0.37	0.37
Clearance Time (s)	6.5	5.0		6.5	5.0	5.0	6.5	6.5		5.5	5.5	5.5
Vehicle Extension (s)	4.0	3.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	302	1159		293	1143	495	85	909		268	697	584
v/s Ratio Prot	c0.14	0.25		0.14	c0.27		0.02	c0.21		c0.12	0.13	
v/s Ratio Perm						0.09						0.06
v/c Ratio	0.81	0.77		0.84	0.85	0.29	0.36	0.77		0.84	0.36	0.15
Uniform Delay, d1	56.0	42.6		56.7	44.4	35.7	64.7	47.5		57.9	32.3	29.7
Progression Factor	0.85	0.71		1.00	1.00	1.00	1.21	0.93		1.00	1.00	1.00
Incremental Delay, d2	14.7	4.6		17.6	7.9	1.5	0.4	1.8		18.9	0.1	0.0
Delay (s)	62.2	35.0		74.2	52.3	37.2	78.7	46.0		76.8	32.4	29.7
Level of Service	E	D		E	D	D	E	D		E	C	C
Approach Delay (s)		40.9			53.3			47.3			45.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Splits adjusted for Cycle Length			

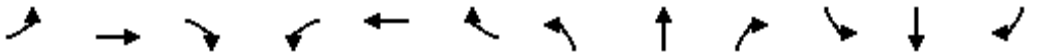
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	245	785	15	195	490
Future Volume (vph)	35	245	785	15	195	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	5.5		4.0	4.5
Lane Util. Factor	1.00	1.00	1.00		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	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1787	1582	1875		1787	1881
Flt Permitted	0.95	1.00	1.00		0.28	1.00
Satd. Flow (perm)	1787	1582	1875		523	1881
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	37	261	835	16	207	521
RTOR Reduction (vph)	0	165	0	0	0	0
Lane Group Flow (vph)	37	96	851	0	207	521
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		1		2		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	6.5	14.5	112.5		125.5	125.5
Effective Green, g (s)	6.5	14.5	112.5		125.5	125.5
Actuated g/C Ratio	0.05	0.10	0.80		0.90	0.90
Clearance Time (s)	3.5	4.0	5.5		4.0	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	82	163	1506		541	1686
v/s Ratio Prot	0.02	c0.03	c0.45		0.02	0.28
v/s Ratio Perm		0.03			0.32	
v/c Ratio	0.45	0.59	0.56		0.38	0.31
Uniform Delay, d1	65.0	59.9	4.9		3.7	1.0
Progression Factor	0.97	0.48	1.00		1.30	0.39
Incremental Delay, d2	0.7	1.6	1.5		0.2	0.5
Delay (s)	64.0	30.3	6.5		4.9	0.9
Level of Service	E	C	A		A	A
Approach Delay (s)	34.5		6.5			2.0
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

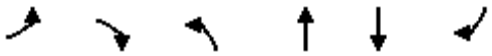
Description: Splits adjusted for Cycle Length

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	135	20	155	245	380	30	475	80	135	435	15
Future Volume (vph)	20	135	20	155	245	380	30	475	80	135	435	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1821		1787	1662		1787	1831		1805	1889	
Flt Permitted	0.09	1.00		0.53	1.00		0.33	1.00		0.13	1.00	
Satd. Flow (perm)	165	1821		1006	1662		627	1831		246	1889	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	142	21	163	258	400	32	500	84	142	458	16
RTOR Reduction (vph)	0	3	0	0	35	0	0	4	0	0	1	0
Lane Group Flow (vph)	21	160	0	163	623	0	32	580	0	142	473	0
Confl. Peds. (#/hr)			1			6			4			
Confl. Bikes (#/hr)			1			4			2			9
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	48.7	45.1		61.3	53.2		56.5	52.6		68.2	59.8	
Effective Green, g (s)	48.7	45.1		61.3	53.2		56.5	52.6		68.2	59.8	
Actuated g/C Ratio	0.35	0.32		0.44	0.38		0.40	0.38		0.49	0.43	
Clearance Time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Vehicle Extension (s)	0.5	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	98	586		508	631		285	687		243	806	
v/s Ratio Prot	0.01	0.09		c0.03	c0.37		0.00	c0.32		c0.05	0.25	
v/s Ratio Perm	0.07			0.11			0.04			0.24		
v/c Ratio	0.21	0.27		0.32	0.99		0.11	0.84		0.58	0.59	
Uniform Delay, d1	34.9	35.3		24.7	43.1		26.4	40.0		27.0	30.7	
Progression Factor	0.81	0.98		1.00	1.00		1.00	1.00		0.98	0.63	
Incremental Delay, d2	0.4	0.1		0.1	32.3		0.1	12.1		2.1	2.8	
Delay (s)	28.5	34.5		24.8	75.4		26.5	52.1		28.5	22.3	
Level of Service	C	C		C	E		C	D		C	C	
Approach Delay (s)		33.8			65.4			50.8			23.7	
Approach LOS		C			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.3	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)	19.5
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

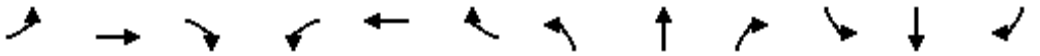


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	150	140	595	405	60
Future Volume (vph)	60	150	140	595	405	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1563	1803	1900	1867	
Flt Permitted	0.95	1.00	0.46	1.00	1.00	
Satd. Flow (perm)	1787	1563	866	1900	1867	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	64	160	149	633	431	64
RTOR Reduction (vph)	0	134	0	0	7	0
Lane Group Flow (vph)	64	26	149	633	488	0
Confl. Peds. (#/hr)			2			
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Actuated Green, G (s)	5.3	5.3	19.2	19.2	19.2	
Effective Green, g (s)	5.3	5.3	19.2	19.2	19.2	
Actuated g/C Ratio	0.16	0.16	0.59	0.59	0.59	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	291	254	511	1122	1102	
v/s Ratio Prot				c0.33	0.26	
v/s Ratio Perm	c0.04	0.02	0.17			
v/c Ratio	0.22	0.10	0.29	0.56	0.44	
Uniform Delay, d1	11.8	11.6	3.3	4.1	3.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.2	0.3	0.7	0.3	
Delay (s)	12.2	11.8	3.6	4.7	4.0	
Level of Service	B	B	A	A	A	
Approach Delay (s)	11.9			4.5	4.0	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	32.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Cycle length optimized - Free.

c Critical Lane Group



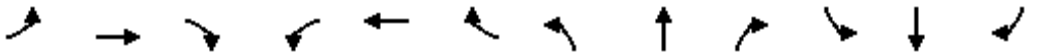
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	485	30	215	690	370	30	190	235	285	150	140
Future Volume (vph)	120	485	30	215	690	370	30	190	235	285	150	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
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	5090		1787	3574	1572	1787	1881	1599	3467	1731	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	5090		1787	3574	1572	1787	1881	1599	3467	1731	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	495	31	219	704	378	31	194	240	291	153	143
RTOR Reduction (vph)	0	5	0	0	0	178	0	0	199	0	31	0
Lane Group Flow (vph)	122	521	0	219	704	200	31	194	41	291	265	0
Confl. Peds. (#/hr)						1						3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2	3	7	4		3	8	
Permitted Phases						2			4			
Actuated Green, G (s)	13.0	38.5		22.9	48.4	63.5	4.9	20.3	20.3	15.1	30.5	
Effective Green, g (s)	13.0	38.5		22.9	48.4	63.5	4.9	20.3	20.3	15.1	30.5	
Actuated g/C Ratio	0.11	0.32		0.19	0.40	0.53	0.04	0.17	0.17	0.13	0.25	
Clearance Time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	2.5	4.0		2.5	4.0	2.5	2.5	3.0	3.0	2.5	3.0	
Lane Grp Cap (vph)	193	1633		341	1441	831	72	318	270	436	439	
v/s Ratio Prot	0.07	0.10		c0.12	c0.20	0.03	0.02	0.10		c0.08	c0.15	
v/s Ratio Perm						0.10			0.03			
v/c Ratio	0.63	0.32		0.64	0.49	0.24	0.43	0.61	0.15	0.67	0.60	
Uniform Delay, d1	51.2	30.8		44.8	26.6	15.2	56.2	46.2	42.5	50.1	39.4	
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	5.8	0.5		3.6	1.2	0.1	3.0	3.4	0.3	3.5	2.4	
Delay (s)	57.0	31.3		48.4	27.8	15.4	59.2	49.6	42.8	53.5	41.8	
Level of Service	E	C		D	C	B	E	D	D	D	D	
Approach Delay (s)		36.2			27.6			46.7			47.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	440	0	255	755	520	0
Future Volume (vph)	440	0	255	755	520	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	13.9		5.1	5.5	7.6	
Lane Util. Factor	1.00		0.97	0.95	0.97	
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		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	1863		3467	3574	3467	
Flt Permitted	1.00		0.95	1.00	0.95	
Satd. Flow (perm)	1863		3467	3574	3467	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	454	0	263	778	536	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	454	0	263	778	536	0
Confl. Peds. (#/hr)		5				
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	63.1		14.7	91.3	25.6	
Effective Green, g (s)	63.1		14.7	91.3	25.6	
Actuated g/C Ratio	0.49		0.11	0.70	0.20	
Clearance Time (s)	13.9		5.1	5.5	7.6	
Vehicle Extension (s)	3.5		2.5	3.5	3.0	
Lane Grp Cap (vph)	904		392	2510	682	
v/s Ratio Prot	c0.24		c0.08	0.22	c0.15	
v/s Ratio Perm						
v/c Ratio	0.50		0.67	0.31	0.79	
Uniform Delay, d1	22.8		55.3	7.4	49.6	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.0		4.1	0.3	6.0	
Delay (s)	24.8		59.4	7.7	55.5	
Level of Service	C		E	A	E	
Approach Delay (s)	24.8			20.7	55.5	
Approach LOS	C			C	E	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



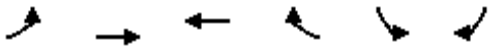
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	350	200	105	495	30	440	500	245	65	215	155
Future Volume (vph)	170	350	200	105	495	30	440	500	245	65	215	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1551	1787	3538		1787	1881	1527	1787	3321	
Flt Permitted	0.26	1.00	1.00	0.26	1.00		0.30	1.00	1.00	0.47	1.00	
Satd. Flow (perm)	493	1863	1551	480	3538		560	1881	1527	886	3321	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	177	365	208	109	516	31	458	521	255	68	224	161
RTOR Reduction (vph)	0	0	135	0	4	0	0	0	68	0	89	0
Lane Group Flow (vph)	177	365	73	109	543	0	458	521	187	68	296	0
Confl. Peds. (#/hr)			5			3			9			5
Confl. Bikes (#/hr)			1			2			2			1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	53.8	40.9	40.9	51.4	39.7		81.4	70.1	70.1	35.6	29.3	
Effective Green, g (s)	53.8	40.9	40.9	51.4	39.7		81.4	70.1	70.1	35.6	29.3	
Actuated g/C Ratio	0.36	0.27	0.27	0.34	0.26		0.54	0.47	0.47	0.24	0.20	
Clearance Time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		3.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	286	507	422	266	936		689	879	713	248	648	
v/s Ratio Prot	c0.05	c0.20		0.03	0.15		c0.21	0.28		0.01	0.09	
v/s Ratio Perm	0.17		0.05	0.11			c0.15		0.12	0.05		
v/c Ratio	0.62	0.72	0.17	0.41	0.58		0.66	0.59	0.26	0.27	0.46	
Uniform Delay, d1	35.5	49.4	41.7	36.2	47.9		22.5	29.4	24.3	45.4	53.3	
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	3.4	4.9	0.2	0.7	0.9		2.4	2.9	0.9	0.2	2.3	
Delay (s)	38.8	54.2	41.9	36.9	48.8		24.9	32.4	25.2	45.6	55.6	
Level of Service	D	D	D	D	D		C	C	C	D	E	
Approach Delay (s)		47.2			46.9			28.1			54.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	810	455	0	1580	0	0
Future Volume (Veh/h)	810	455	0	1580	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	880	495	0	1717	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	179			131		
pX, platoon unblocked			0.81		0.90	0.81
vC, conflicting volume			1375		1452	440
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1002		147	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			559		746	882

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	587	458	330	572	572	572
Volume Left	0	0	0	0	0	0
Volume Right	0	165	330	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.27	0.19	0.34	0.34	0.34
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0			0.0		
Approach LOS						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1360	1090	285	0	0
Future Volume (Veh/h)	0	1360	1090	285	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1478	1185	310	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		193	1155			
pX, platoon unblocked	0.94				0.91	0.94
vC, conflicting volume	1495				1924	592
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1399				1521	438
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	455				99	532

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3
Volume Total	739	739	592	592	310
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	310
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.43	0.43	0.35	0.35	0.18
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	440	565	0	1275	0	0
Future Volume (Veh/h)	440	565	0	1275	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	454	582	0	1314	0	0
Pedestrians					5	
Lane Width (ft)					0.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	252			141		
pX, platoon unblocked			0.92		0.96	0.92
vC, conflicting volume			459		1116	459
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			366		777	366
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1098		322	582

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	454	291	291	657	657
Volume Left	0	0	0	0	0
Volume Right	0	291	291	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.27	0.17	0.17	0.39	0.39
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

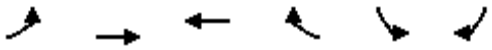
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	440	0	0	1010	0	260
Future Volume (Veh/h)	440	0	0	1010	0	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	454	0	0	1041	0	268
Pedestrians					5	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)	145			774		
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			459		719	459
vC1, stage 1 conf vol					459	
vC2, stage 2 conf vol					260	
vCu, unblocked vol			249		562	249
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	57
cM capacity (veh/h)			1094		570	624

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	454	260	260	260	260	268
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	268
cSH	1700	1700	1700	1700	1700	624
Volume to Capacity	0.27	0.15	0.15	0.15	0.15	0.43
Queue Length 95th (ft)	0	0	0	0	0	54
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	15.0
Lane LOS						C
Approach Delay (s)	0.0	0.0				15.0
Approach LOS						C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

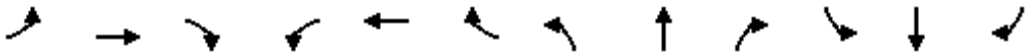
Future AM and PM Intersection Capacity Reports



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	770	470	65	370	110
Future Volume (vph)	20	770	470	65	370	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	0%		15%	
Total Lost time (s)	4.5	5.0	5.5	5.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.96	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1827	1495	1670	1367
Flt Permitted	0.37	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	687	1863	1827	1495	1670	1367
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	811	495	68	389	116
RTOR Reduction (vph)	0	0	0	28	0	85
Lane Group Flow (vph)	21	811	495	40	389	31
Confl. Peds. (#/hr)				6	9	20
Confl. Bikes (#/hr)				2		5
Heavy Vehicles (%)	2%	2%	4%	4%	0%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases	6			2		8
Actuated Green, G (s)	77.6	77.6	70.5	70.5	32.4	32.4
Effective Green, g (s)	77.6	77.6	70.5	70.5	32.4	32.4
Actuated g/C Ratio	0.65	0.65	0.59	0.59	0.27	0.27
Clearance Time (s)	4.5	5.0	5.5	5.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	463	1204	1073	878	450	369
v/s Ratio Prot	0.00	c0.44	0.27		c0.23	
v/s Ratio Perm	0.03			0.03		0.02
v/c Ratio	0.05	0.67	0.46	0.05	0.86	0.08
Uniform Delay, d1	8.9	13.3	14.0	10.5	41.7	32.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	3.0	1.4	0.1	15.3	0.0
Delay (s)	8.9	16.3	15.4	10.6	57.0	32.8
Level of Service	A	B	B	B	E	C
Approach Delay (s)		16.1	14.8		51.4	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	475	295	150	670	5	185	0	10	5	5	10
Future Volume (vph)	5	475	295	150	670	5	185	0	10	5	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5		5.5	5.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00		1.00	0.85		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1737		1770	1860		1667	1456		1715	1604	
Flt Permitted	0.33	1.00		0.18	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	617	1737		340	1860		1312	1456		1356	1604	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	5	485	301	153	684	5	189	0	10	5	5	10
RTOR Reduction (vph)	0	20	0	0	0	0	0	8	0	0	8	0
Lane Group Flow (vph)	5	766	0	153	689	0	189	2	0	5	7	0
Confl. Peds. (#/hr)			3			5	1		1	1		1
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	8%	8%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	59.6	58.4		71.2	64.5		17.8	17.8		17.3	17.3	
Effective Green, g (s)	59.6	58.4		71.2	64.5		17.8	17.8		17.3	17.3	
Actuated g/C Ratio	0.60	0.58		0.71	0.64		0.18	0.18		0.17	0.17	
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5		6.0	6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	381	1014		346	1199		233	259		234	277	
v/s Ratio Prot	0.00	c0.44		c0.03	c0.37			0.00			0.00	
v/s Ratio Perm	0.01			0.28			c0.14			0.00		
v/c Ratio	0.01	0.76		0.44	0.57		0.81	0.01		0.02	0.02	
Uniform Delay, d1	8.7	15.5		11.2	10.0		39.5	33.8		34.3	34.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	5.2		0.3	2.0		18.0	0.0		0.0	0.0	
Delay (s)	8.7	20.7		11.6	12.0		57.5	33.8		34.3	34.4	
Level of Service	A	C		B	B		E	C		C	C	
Approach Delay (s)		20.7			11.9			56.3			34.3	
Approach LOS		C			B			E			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.1%	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)	110	340	40	150	360	95	40	70	65	320	280	405
Future Volume (vph)	110	340	40	150	360	95	40	70	65	320	280	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1828		1787	1881	1540	1770	1863	1565	1787	1881	1563
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.49	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)	1770	1828		1787	1881	1540	911	1863	1565	904	1881	1563
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	115	354	42	156	375	99	42	73	68	333	292	422
RTOR Reduction (vph)	0	3	0	0	0	53	0	0	53	0	0	215
Lane Group Flow (vph)	115	393	0	156	375	46	42	73	15	333	292	207
Confl. Peds. (#/hr)			3			8			2			5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4	5	3	8	1
Permitted Phases						2	4		4	8		8
Actuated Green, G (s)	11.1	51.0		13.1	53.0	53.0	17.0	12.1	25.2	33.9	23.0	34.1
Effective Green, g (s)	11.1	51.0		13.1	53.0	53.0	17.0	12.1	25.2	33.9	23.0	34.1
Actuated g/C Ratio	0.10	0.44		0.11	0.46	0.46	0.15	0.11	0.22	0.29	0.20	0.30
Clearance Time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	170	810		203	866	709	171	196	342	383	376	463
v/s Ratio Prot	0.06	c0.22		c0.09	0.20		0.01	0.04	0.00	c0.12	0.16	0.04
v/s Ratio Perm						0.03	0.03		0.00	c0.14		0.09
v/c Ratio	0.68	0.49		0.77	0.43	0.06	0.25	0.37	0.04	0.87	0.78	0.45
Uniform Delay, d1	50.2	22.7		49.5	20.9	17.2	42.8	47.9	35.4	36.4	43.6	32.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	2.1		14.5	1.6	0.2	0.3	0.4	0.0	17.9	8.9	0.3
Delay (s)	58.3	24.8		63.9	22.5	17.4	43.1	48.3	35.4	54.4	52.4	33.1
Level of Service	E	C		E	C	B	D	D	D	D	D	C
Approach Delay (s)		32.3			31.9			42.3			45.2	
Approach LOS		C			C			D			D	

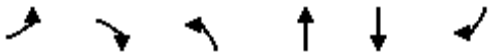
Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	220	465	75	90	60	215	240	25	255	320	165
Future Volume (vph)	120	220	465	75	90	60	215	240	25	255	320	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1555	1770	1728		1770	1832		1787	1767	
Flt Permitted	0.61	1.00	1.00	0.40	1.00		0.17	1.00		0.51	1.00	
Satd. Flow (perm)	1145	1881	1555	739	1728		317	1832		961	1767	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	129	237	500	81	97	65	231	258	27	274	344	177
RTOR Reduction (vph)	0	0	401	0	35	0	0	4	0	0	20	0
Lane Group Flow (vph)	129	237	99	81	127	0	231	281	0	274	501	0
Confl. Peds. (#/hr)						4			2			6
Confl. Bikes (#/hr)			4			2			1			
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)	21.8	14.0	14.0	14.2	10.2		33.6	23.5		31.6	22.5	
Effective Green, g (s)	21.8	14.0	14.0	14.2	10.2		33.6	23.5		31.6	22.5	
Actuated g/C Ratio	0.31	0.20	0.20	0.20	0.14		0.48	0.33		0.45	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	424	373	308	207	249		358	609		536	563	
v/s Ratio Prot	c0.03	c0.13		0.02	0.07		c0.09	0.15		0.07	c0.28	
v/s Ratio Perm	0.06		0.06	0.06			0.21			0.16		
v/c Ratio	0.30	0.64	0.32	0.39	0.51		0.65	0.46		0.51	0.89	
Uniform Delay, d1	19.6	26.0	24.2	27.4	27.9		13.4	18.6		12.8	22.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	2.6	0.2	0.4	0.6		3.0	0.2		0.3	15.8	
Delay (s)	19.7	28.6	24.5	27.9	28.5		16.4	18.8		13.1	38.6	
Level of Service	B	C	C	C	C		B	B		B	D	
Approach Delay (s)		24.9			28.3			17.7			29.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	5	25	100	10	175	30	55	160	215	175	45
Future Volume (vph)	10	5	25	100	10	175	30	55	160	215	175	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.96		1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.92			0.92		1.00	0.89		1.00	0.97	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1689			1576		1686	1565		1755	1786	
Flt Permitted		0.90			0.87		0.61	1.00		0.61	1.00	
Satd. Flow (perm)		1532			1387		1078	1565		1127	1786	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	6	28	111	11	194	33	61	178	239	194	50
RTOR Reduction (vph)	0	22	0	0	100	0	0	65	0	0	9	0
Lane Group Flow (vph)	0	23	0	0	216	0	33	174	0	239	235	0
Confl. Peds. (#/hr)	13		2	2		13	13		7	7		13
Confl. Bikes (#/hr)						13			7			13
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	5%	5%	5%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		15.0			15.0		44.5	44.5		44.5	44.5	
Effective Green, g (s)		15.0			15.0		44.5	44.5		44.5	44.5	
Actuated g/C Ratio		0.21			0.21		0.64	0.64		0.64	0.64	
Clearance Time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		328			297		685	994		716	1135	
v/s Ratio Prot								0.11			0.13	
v/s Ratio Perm		0.02			c0.16		0.03			c0.21		
v/c Ratio		0.07			0.73		0.05	0.18		0.33	0.21	
Uniform Delay, d1		21.9			25.6		4.8	5.2		5.9	5.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			7.3		0.1	0.4		1.3	0.4	
Delay (s)		22.0			32.9		4.9	5.6		7.2	5.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		22.0			32.9			5.5			6.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



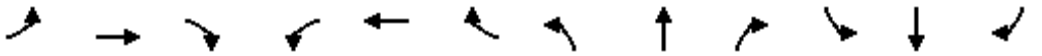
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	85	95	50	90	260	210
Future Volume (vph)	85	95	50	90	260	210
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	89	99	52	94	271	219

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total (vph)	188	146	271	219
Volume Left (vph)	89	52	0	0
Volume Right (vph)	99	0	0	219
Hadj (s)	-0.19	0.11	0.03	-0.67
Departure Headway (s)	5.1	5.1	5.2	4.5
Degree Utilization, x	0.26	0.21	0.39	0.27
Capacity (veh/h)	659	667	670	776
Control Delay (s)	9.9	9.5	10.3	8.0
Approach Delay (s)	9.9	9.5	9.3	
Approach LOS	A	A	A	

Intersection Summary			
Delay	9.4		
Level of Service	A		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Future Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.88		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1753		1649	1733	1517	1787	3059		1752	3463	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	1753		1649	1733	1517	1787	3059		1752	3463	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	183	128	17	67	122	83	100	383	267	606	39
RTOR Reduction (vph)	0	17	0	0	0	91	0	224	0	0	2	0
Lane Group Flow (vph)	33	294	0	15	69	31	83	259	0	267	643	0
Confl. Peds. (#/hr)			3			40			17			7
Confl. Bikes (#/hr)						1			1			1
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	3%	3%	3%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	32.1	32.1		12.2	12.2	41.3	12.3	66.5		29.1	83.3	
Effective Green, g (s)	32.1	32.1		12.2	12.2	41.3	12.3	66.5		29.1	83.3	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.26	0.08	0.42		0.18	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	358	351		125	132	391	137	1271		318	1802	
v/s Ratio Prot	0.02	c0.17		0.01	c0.04	0.01	0.05	0.08		c0.15	c0.19	
v/s Ratio Perm						0.01						
v/c Ratio	0.09	0.84		0.12	0.52	0.08	0.61	0.20		0.84	0.36	
Uniform Delay, d1	52.1	61.5		68.9	71.1	45.0	71.5	29.8		63.2	22.6	
Progression Factor	1.00	1.00		0.82	0.82	1.71	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	15.9		0.5	4.2	0.1	6.2	0.4		17.1	0.1	
Delay (s)	52.2	77.3		57.3	62.8	76.9	77.7	30.2		80.3	22.7	
Level of Service	D	E		E	E	E	E	C		F	C	
Approach Delay (s)		74.9			70.8			37.2			39.6	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	74.1%	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)	30	390	330	310	90	35	30	5	35	175	10	65
Future Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.93		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3296		1752	3357			1753	1553		1761	1568
Flt Permitted	0.66	1.00		0.29	1.00			0.96	1.00		0.95	1.00
Satd. Flow (perm)	1237	3296		533	3357			1753	1553		1761	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	433	367	344	100	39	33	6	39	194	11	72
RTOR Reduction (vph)	0	92	0	0	17	0	0	0	36	0	0	39
Lane Group Flow (vph)	33	708	0	344	122	0	0	39	3	0	205	33
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	91.8	91.8		91.8	91.8			13.4	13.4		38.8	38.8
Effective Green, g (s)	91.8	91.8		91.8	91.8			13.4	13.4		38.8	38.8
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08	0.08		0.24	0.24
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	709	1891		305	1926			146	130		427	380
v/s Ratio Prot		0.21			0.04			c0.02			c0.12	
v/s Ratio Perm	0.03			c0.64					0.00			0.02
v/c Ratio	0.05	0.37		1.13	0.06			0.27	0.03		0.48	0.09
Uniform Delay, d1	14.9	18.5		34.1	15.1			68.7	67.3		52.0	46.9
Progression Factor	0.60	0.43		1.16	0.91			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1		90.3	0.0			1.3	0.1		3.8	0.5
Delay (s)	9.0	8.0		129.8	13.7			70.0	67.4		55.8	47.4
Level of Service	A	A		F	B			E	E		E	D
Approach Delay (s)		8.1			96.4			68.7			53.6	
Approach LOS		A			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	310	290	0	215	25	70	305	250	55	395	150
Future Volume (vph)	0	310	290	0	215	25	70	305	250	55	395	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00		0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99		0.99		1.00	0.99		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		0.98		1.00	0.93		1.00	0.96	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1566		3432		1787	3311		1770	3393	
Flt Permitted		1.00	1.00		1.00		0.39	1.00		0.43	1.00	
Satd. Flow (perm)		3539	1566		3432		731	3311		794	3393	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	333	312	0	231	27	75	328	269	59	425	161
RTOR Reduction (vph)	0	0	147	0	14	0	0	111	0	0	32	0
Lane Group Flow (vph)	0	333	165	0	244	0	75	486	0	59	554	0
Confl. Peds. (#/hr)	44		4	4		44			3			
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov		NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3		6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		14.1	20.2		14.1		53.1	47.0		48.5	44.7	
Effective Green, g (s)		14.1	20.2		14.1		53.1	47.0		48.5	44.7	
Actuated g/C Ratio		0.18	0.25		0.18		0.66	0.59		0.61	0.56	
Clearance Time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5		4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		623	395		604		565	1945		527	1895	
v/s Ratio Prot		c0.09	c0.03		0.07		0.01	0.15		0.01	c0.16	
v/s Ratio Perm			0.07				0.08			0.06		
v/c Ratio		0.53	0.42		0.40		0.13	0.25		0.11	0.29	
Uniform Delay, d1		30.0	25.0		29.2		4.9	8.0		6.4	9.3	
Progression Factor		1.16	1.61		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.5		0.6		0.1	0.3		0.1	0.4	
Delay (s)		35.8	40.7		29.8		4.9	8.3		6.5	9.7	
Level of Service		D	D		C		A	A		A	A	
Approach Delay (s)		38.2			29.8			7.9			9.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	270	70	110	125	20	25	95	45	40	110	130
Future Volume (vph)	75	270	70	110	125	20	25	95	45	40	110	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.5	5.0		5.0	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.95	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.95		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1845	1568	1687	1718		1787	1768		1787	1710	
Flt Permitted	0.56	1.00	1.00	0.95	1.00		0.37	1.00		0.66	1.00	
Satd. Flow (perm)	982	1845	1568	1687	1718		694	1768		1242	1710	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	293	76	120	136	22	27	103	49	43	120	141
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	82	293	14	120	158	0	27	152	0	43	261	0
Confl. Peds. (#/hr)	22					22			6			4
Confl. Bikes (#/hr)									2			3
Heavy Vehicles (%)	3%	3%	3%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6		6				4			8		
Actuated Green, G (s)	23.6	23.6	23.6	11.4	41.5		46.5	46.5		37.3	37.3	
Effective Green, g (s)	23.6	23.6	23.6	11.4	41.5		46.5	46.5		37.3	37.3	
Actuated g/C Ratio	0.18	0.18	0.18	0.09	0.32		0.36	0.36		0.29	0.29	
Clearance Time (s)	5.0	5.0	5.0	6.5	5.0		5.0	4.5		4.5	4.5	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	178	334	284	147	548		283	632		356	490	
v/s Ratio Prot		c0.16		c0.07	0.09		0.00	c0.09			c0.15	
v/s Ratio Perm	0.08		0.01				0.03			0.03		
v/c Ratio	0.46	0.88	0.05	0.82	0.29		0.10	0.24		0.12	0.53	
Uniform Delay, d1	47.5	51.8	43.9	58.3	33.2		28.3	29.3		34.2	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	21.3	0.0	27.0	0.1		0.1	0.9		0.7	4.1	
Delay (s)	48.2	73.1	44.0	85.3	33.3		28.3	30.2		34.9	43.1	
Level of Service	D	E	D	F	C		C	C		C	D	
Approach Delay (s)		63.7			55.7			30.0			42.0	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	51.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NWL
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	1.00
Flt Protected	0.95
Satd. Flow (prot)	1770
Flt Permitted	0.95
Satd. Flow (perm)	1770
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	5
RTOR Reduction (vph)	0
Lane Group Flow (vph)	5
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	2%
Turn Type	Prot
Protected Phases	10
Permitted Phases	
Actuated Green, G (s)	28.0
Effective Green, g (s)	28.0
Actuated g/C Ratio	0.22
Clearance Time (s)	4.5
Vehicle Extension (s)	0.2
Lane Grp Cap (vph)	381
v/s Ratio Prot	c0.00
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	40.1
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	40.2
Level of Service	D
Approach Delay (s)	40.2
Approach LOS	D

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	50	575	150	40	645
Future Volume (vph)	50	50	575	150	40	645
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.5	5.5		4.5	5.5
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	1568	3396		1752	3505
Flt Permitted	0.95	1.00	1.00		0.29	1.00
Satd. Flow (perm)	1752	1568	3396		530	3505
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	52	599	156	42	672
RTOR Reduction (vph)	0	45	25	0	0	0
Lane Group Flow (vph)	52	7	730	0	42	672
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	2.1	5.1	17.5		25.0	25.0
Effective Green, g (s)	2.1	5.1	17.5		25.0	25.0
Actuated g/C Ratio	0.06	0.14	0.47		0.66	0.66
Clearance Time (s)	5.0	4.5	5.5		4.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	97	212	1580		449	2330
v/s Ratio Prot	c0.03	0.00	c0.21		0.01	c0.19
v/s Ratio Perm		0.00			0.05	
v/c Ratio	0.54	0.03	0.46		0.09	0.29
Uniform Delay, d1	17.3	14.1	6.8		2.5	2.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.8	0.0	0.1		0.0	0.0
Delay (s)	20.1	14.1	6.9		2.5	2.6
Level of Service	C	B	A		A	A
Approach Delay (s)	17.1		6.9			2.6
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	37.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

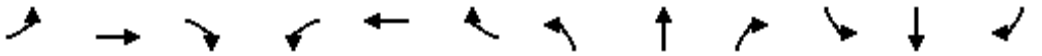
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	15	150	100	50	240
Future Volume (vph)	25	15	150	100	50	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.95		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1762		1770	1863
Flt Permitted	0.95	1.00	1.00		0.60	1.00
Satd. Flow (perm)	1770	1583	1762		1115	1863
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	16	156	104	52	250
RTOR Reduction (vph)	0	15	14	0	0	0
Lane Group Flow (vph)	26	1	246	0	52	250
Turn Type	Perm	Perm	NA		Perm	NA
Protected Phases			4			8
Permitted Phases	2	2			8	
Actuated Green, G (s)	4.0	4.0	66.5		66.5	66.5
Effective Green, g (s)	4.0	4.0	66.5		66.5	66.5
Actuated g/C Ratio	0.05	0.05	0.83		0.83	0.83
Clearance Time (s)	5.0	5.0	4.5		4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	88	79	1464		926	1548
v/s Ratio Prot			c0.14			0.13
v/s Ratio Perm	c0.01	0.00			0.05	
v/c Ratio	0.30	0.01	0.17		0.06	0.16
Uniform Delay, d1	36.6	36.1	1.3		1.2	1.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.0	0.2		0.1	0.2
Delay (s)	37.3	36.1	1.6		1.3	1.5
Level of Service	D	D	A		A	A
Approach Delay (s)	36.9		1.6			1.5
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

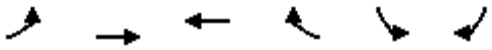
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	635	40	90	325	100	375	130	15	100	140	25
Future Volume (vph)	20	635	40	90	325	100	375	130	15	100	140	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3508		1752	3381		1698	1745	1577	3367	1782	
Flt Permitted	0.41	1.00		0.22	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	767	3508		411	3381		1698	1745	1577	3367	1782	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	668	42	95	342	105	395	137	16	105	147	26
RTOR Reduction (vph)	0	3	0	0	20	0	0	0	12	0	4	0
Lane Group Flow (vph)	21	707	0	95	427	0	265	267	4	105	169	0
Confl. Peds. (#/hr)									2			
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	4%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	32.3	26.0		36.9	28.3		21.7	21.7	21.7	15.1	15.1	
Effective Green, g (s)	32.3	26.0		36.9	28.3		21.7	21.7	21.7	15.1	15.1	
Actuated g/C Ratio	0.36	0.29		0.41	0.31		0.24	0.24	0.24	0.17	0.17	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	345	1012		296	1061		408	420	379	564	298	
v/s Ratio Prot	0.00	c0.20		c0.03	0.13		c0.16	0.15		0.03	c0.09	
v/s Ratio Perm	0.02			0.10					0.00			
v/c Ratio	0.06	0.70		0.32	0.40		0.65	0.64	0.01	0.19	0.57	
Uniform Delay, d1	21.9	28.6		27.1	24.3		30.8	30.7	26.0	32.2	34.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	2.1		0.6	0.3		3.6	3.1	0.0	0.2	2.5	
Delay (s)	22.0	30.7		27.7	24.5		34.3	33.8	26.0	32.4	37.0	
Level of Service	C	C		C	C		C	C	C	C	D	
Approach Delay (s)		30.4			25.1			33.8			35.2	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	18.7
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	1290	55	200	435	225	45	135	190	285	185	135
Future Volume (vph)	170	1290	55	200	435	225	45	135	190	285	185	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.5		6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3549		1787	3574	1599	1752	1845	1568	3433	1863	1551
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3549		1787	3574	1599	1752	1845	1568	3433	1863	1551
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	175	1330	57	206	448	232	46	139	196	294	191	139
RTOR Reduction (vph)	0	2	0	0	0	156	0	0	149	0	0	116
Lane Group Flow (vph)	175	1385	0	206	448	76	46	139	47	294	191	23
Confl. Peds. (#/hr)												3
Confl. Bikes (#/hr)			2						2			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA	Prot	Split	NA	Perm
Protected Phases	5	2		1 8	6 8	6 8	3	3	3	4	4	
Permitted Phases												4
Actuated Green, G (s)	5.0	39.5		10.0	44.5	44.5	32.4	32.4	32.4	22.1	22.1	22.1
Effective Green, g (s)	5.0	39.5		10.0	44.5	44.5	32.4	32.4	32.4	22.1	22.1	22.1
Actuated g/C Ratio	0.04	0.29		0.07	0.33	0.33	0.24	0.24	0.24	0.16	0.16	0.16
Clearance Time (s)	6.0	6.5					6.5	6.5	6.5	6.0	6.0	6.0
Vehicle Extension (s)	3.0	4.0					3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	66	1038		132	1178	527	420	442	376	561	304	253
v/s Ratio Prot	c0.10	c0.39		c0.12	0.13	0.05	0.03	c0.08	0.03	0.09	c0.10	
v/s Ratio Perm												0.01
v/c Ratio	2.65	1.33		1.56	0.38	0.15	0.11	0.31	0.13	0.52	0.63	0.09
Uniform Delay, d1	65.0	47.8		62.5	34.7	31.9	40.0	42.2	40.2	51.6	52.6	47.9
Progression Factor	1.00	1.00		1.01	0.67	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	784.7	157.0		284.9	0.2	0.1	0.1	0.4	0.2	0.9	4.0	0.2
Delay (s)	849.7	204.8		347.9	23.4	25.6	40.2	42.6	40.3	52.5	56.6	48.1
Level of Service	F	F		F	C	C	D	D	D	D	E	D
Approach Delay (s)		277.0			99.4			41.1			52.8	
Approach LOS		F			F			D			D	

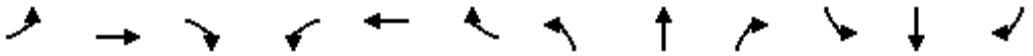
Intersection Summary			
HCM 2000 Control Delay	164.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1065	675	0	470	200
Future Volume (vph)	0	1065	675	0	470	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		0.97	0.91
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	1.00		0.99	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3574	3574		3461	1455
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3574	3574		3461	1455
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1087	689	0	480	204
RTOR Reduction (vph)	0	0	0	0	2	147
Lane Group Flow (vph)	0	1087	689	0	498	37
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA		Prot	custom
Protected Phases		1 2 3	1 2 3		4 8	4 8
Permitted Phases						
Actuated Green, G (s)		83.4	83.4		27.1	27.1
Effective Green, g (s)		76.9	76.9		27.1	27.1
Actuated g/C Ratio		0.57	0.57		0.20	0.20
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)		2035	2035		694	292
v/s Ratio Prot		c0.30	0.19		c0.14	0.03
v/s Ratio Perm						
v/c Ratio		0.53	0.34		0.72	0.13
Uniform Delay, d1		18.0	15.5		50.4	44.2
Progression Factor		0.60	0.75		1.00	1.00
Incremental Delay, d2		0.0	0.1		3.5	0.2
Delay (s)		10.7	11.7		53.9	44.4
Level of Service		B	B		D	D
Approach Delay (s)		10.7	11.7		51.4	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1360	175	0	695	440	225	0	245	0	0	0
Future Volume (vph)	0	1360	175	0	695	440	225	0	245	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	2.0		3.0	3.0	3.0		3.0			
Lane Util. Factor		0.95	1.00		0.91	1.00	0.97		1.00			
Frpb, ped/bikes		1.00	0.98		1.00	1.00	1.00		1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		3574	1565		5136	1599	3433		1583			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		3574	1565		5136	1599	3433		1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1478	190	0	755	478	245	0	266	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	1478	190	0	755	478	245	0	240	0	0	0
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		2			6		8		8			
Permitted Phases			Free			Free						
Actuated Green, G (s)		99.3	135.0		99.3	135.0	26.2		26.2			
Effective Green, g (s)		101.3	135.0		101.3	135.0	27.7		27.7			
Actuated g/C Ratio		0.75	1.00		0.75	1.00	0.21		0.21			
Clearance Time (s)		5.0			5.0		4.5		4.5			
Vehicle Extension (s)		3.5			3.5		3.0		3.0			
Lane Grp Cap (vph)		2681	1565		3853	1599	704		324			
v/s Ratio Prot		c0.41			0.15		0.07		c0.15			
v/s Ratio Perm			0.12			0.30						
v/c Ratio		0.55	0.12		0.20	0.30	0.35		0.74			
Uniform Delay, d1		7.2	0.0		4.9	0.0	45.9		50.3			
Progression Factor		0.55	1.00		2.11	1.00	1.00		1.00			
Incremental Delay, d2		0.7	0.1		0.1	0.5	0.3		8.8			
Delay (s)		4.7	0.1		10.5	0.5	46.2		59.0			
Level of Service		A	A		B	A	D		E			
Approach Delay (s)		4.2			6.6			52.9			0.0	
Approach LOS		A			A			D			A	

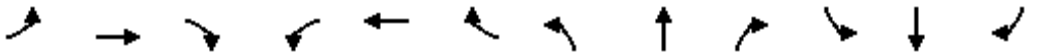
Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1480	70	70	1055	20	60	0	65	25	5	25
Future Volume (vph)	25	1480	70	70	1055	20	60	0	65	25	5	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0		3.5	3.0			2.5	2.5		3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1787	3547		1787	3562			1787	1560		1738	
Flt Permitted	0.23	1.00		0.11	1.00			0.66	1.00		0.80	
Satd. Flow (perm)	427	3547		213	3562			1245	1560		1429	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	1574	74	74	1122	21	64	0	69	27	5	27
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	62	0	25	0
Lane Group Flow (vph)	27	1647	0	74	1143	0	0	64	7	0	35	0
Confl. Peds. (#/hr)			1			3			4	4		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)	107.3	103.7		110.7	105.4			11.0	11.0		10.5	
Effective Green, g (s)	111.3	105.7		114.7	107.4			13.0	13.0		12.5	
Actuated g/C Ratio	0.82	0.78		0.85	0.80			0.10	0.10		0.09	
Clearance Time (s)	5.5	5.0		5.5	5.0			4.5	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	408	2777		266	2833			119	150		132	
v/s Ratio Prot	0.00	c0.46		c0.02	0.32							
v/s Ratio Perm	0.05			0.22				c0.05	0.00		0.02	
v/c Ratio	0.07	0.59		0.28	0.40			0.54	0.04		0.26	
Uniform Delay, d1	2.4	5.9		5.0	4.2			58.1	55.4		57.0	
Progression Factor	0.95	1.27		1.94	0.09			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.8		0.2	0.4			2.3	0.0		0.4	
Delay (s)	2.3	8.4		9.8	0.7			60.5	55.4		57.3	
Level of Service	A	A		A	A			E	E		E	
Approach Delay (s)		8.3			1.3			57.8			57.3	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

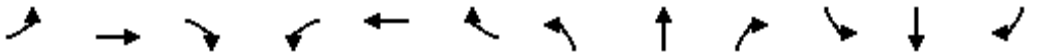


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1070	410	140	830	155	195	280	75	220	435	60
Future Volume (vph)	45	1070	410	140	830	155	195	280	75	220	435	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.5	3.0	3.0	4.5	3.5	4.5	4.5	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1574	1770	3539	1551	3400	3505	1547	1752	1845	1537
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3574	1574	1770	3539	1551	3400	3505	1547	1752	1845	1537
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	1115	427	146	865	161	203	292	78	229	453	62
RTOR Reduction (vph)	0	0	98	0	0	87	0	0	62	0	0	45
Lane Group Flow (vph)	47	1115	329	146	865	74	203	292	16	229	453	18
Confl. Peds. (#/hr)			2			5						4
Confl. Bikes (#/hr)			3			2			1			3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	7.0	53.2	53.2	13.4	60.1	60.1	8.8	26.4	26.4	19.5	37.6	37.6
Effective Green, g (s)	9.0	55.2	55.2	15.4	62.1	62.1	10.8	28.4	27.4	21.5	39.6	39.6
Actuated g/C Ratio	0.07	0.41	0.41	0.11	0.46	0.46	0.08	0.21	0.20	0.16	0.29	0.29
Clearance Time (s)	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.5	5.5	6.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	119	1461	643	201	1627	713	272	737	313	279	541	450
v/s Ratio Prot	0.03	c0.31		c0.08	0.24		0.06	0.08		c0.13	c0.25	
v/s Ratio Perm			0.21			0.05			0.01			0.01
v/c Ratio	0.39	0.76	0.51	0.73	0.53	0.10	0.75	0.40	0.05	0.82	0.84	0.04
Uniform Delay, d1	60.4	34.3	29.8	57.8	26.1	20.7	60.8	45.9	43.3	54.9	44.7	34.1
Progression Factor	1.30	0.75	0.56	1.40	0.39	0.07	1.17	0.92	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	3.2	2.4	9.9	1.2	0.3	9.3	0.3	0.1	17.3	10.9	0.0
Delay (s)	79.4	28.9	19.1	90.6	11.3	1.7	80.4	42.7	43.4	72.2	55.5	34.2
Level of Service	E	C	B	F	B	A	F	D	D	E	E	C
Approach Delay (s)		27.8			19.9			56.2			58.9	
Approach LOS		C			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	81.1%	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)	85	1255	5	0	1090	30	10	0	5	5	0	60
Future Volume (vph)	85	1255	5	0	1090	30	10	0	5	5	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0			3.0			3.0			3.0	3.0
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00			0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			1.00			0.95			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	3537			3523			1626			1799	1585
Flt Permitted	0.22	1.00			1.00			0.81			0.91	1.00
Satd. Flow (perm)	404	3537			3523			1357			1727	1585
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	88	1294	5	0	1124	31	10	0	5	5	0	62
RTOR Reduction (vph)	0	0	0	0	1	0	0	14	0	0	0	59
Lane Group Flow (vph)	88	1299	0	0	1154	0	0	1	0	0	5	3
Confl. Peds. (#/hr)						2	4		2	2		4
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	119.6	119.6			108.1			5.4			5.4	5.4
Effective Green, g (s)	121.6	121.6			110.1			7.4			7.4	7.4
Actuated g/C Ratio	0.90	0.90			0.82			0.05			0.05	0.05
Clearance Time (s)	5.5	5.0			5.0			5.0			5.0	5.0
Vehicle Extension (s)	2.0	2.0			2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	444	3185			2873			74			94	86
v/s Ratio Prot	0.01	c0.37			0.33							
v/s Ratio Perm	0.17							0.00			c0.00	0.00
v/c Ratio	0.20	0.41			0.40			0.01			0.05	0.04
Uniform Delay, d1	1.5	1.1			3.4			60.3			60.5	60.4
Progression Factor	2.52	4.78			0.36			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.3			0.4			0.0			0.1	0.1
Delay (s)	3.8	5.3			1.6			60.4			60.6	60.5
Level of Service	A	A			A			E			E	E
Approach Delay (s)		5.2			1.6			60.4			60.5	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



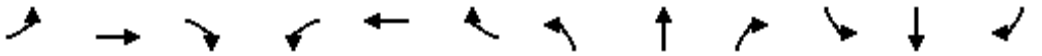
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	980	60	190	815	225	35	205	245	415	500	220
Future Volume (vph)	175	980	60	190	815	225	35	205	245	415	500	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	3.0		4.5	3.0	3.0	3.5	3.5		2.5	2.5	2.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3538		1770	3539	1583	1787	3282		1770	1863	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3538		1770	3539	1583	1787	3282		1770	1863	1557
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	180	1010	62	196	840	232	36	211	253	428	515	227
RTOR Reduction (vph)	0	3	0	0	0	116	0	133	0	0	0	119
Lane Group Flow (vph)	180	1069	0	196	840	116	36	331	0	428	515	108
Confl. Peds. (#/hr)												2
Confl. Bikes (#/hr)			3									3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	10.5	43.7		11.5	44.7	44.7	6.8	35.8		20.5	49.5	49.5
Effective Green, g (s)	12.5	45.7		13.5	46.7	46.7	9.8	38.8		23.5	52.5	52.5
Actuated g/C Ratio	0.09	0.34		0.10	0.35	0.35	0.07	0.29		0.17	0.39	0.39
Clearance Time (s)	6.5	5.0		6.5	5.0	5.0	6.5	6.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	1197		177	1224	547	129	943		308	724	605
v/s Ratio Prot	0.10	c0.30		c0.11	0.24		0.02	0.10		c0.24	c0.28	
v/s Ratio Perm						0.07						0.07
v/c Ratio	1.09	0.89		1.11	0.69	0.21	0.28	0.35		1.39	0.71	0.18
Uniform Delay, d1	61.2	42.3		60.8	37.9	31.2	59.3	38.1		55.8	34.8	27.1
Progression Factor	1.16	0.69		1.00	1.00	1.00	1.52	0.29		1.00	1.00	1.00
Incremental Delay, d2	94.1	9.7		99.3	3.1	0.9	0.5	0.4		194.1	3.3	0.1
Delay (s)	165.1	39.0		160.1	41.0	32.0	90.4	11.4		249.9	38.2	27.2
Level of Service	F	D		F	D	C	F	B		F	D	C
Approach Delay (s)		57.1			57.8			17.1			113.5	
Approach LOS		E			E			B			F	

Intersection Summary			
HCM 2000 Control Delay	68.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	145	470	25	440	770
Future Volume (vph)	25	145	470	25	440	770
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	5.5		4.0	4.5
Lane Util. Factor	1.00	1.00	0.95		1.00	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	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1787	1591	3439		1770	3539
Flt Permitted	0.95	1.00	1.00		0.43	1.00
Satd. Flow (perm)	1787	1591	3439		807	3539
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	27	159	516	27	484	846
RTOR Reduction (vph)	0	111	1	0	0	0
Lane Group Flow (vph)	27	48	542	0	484	846
Confl. Peds. (#/hr)		2		6		
Heavy Vehicles (%)	1%	1%	4%	4%	2%	2%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	4.6	15.3	106.7		122.4	122.4
Effective Green, g (s)	4.6	15.3	106.7		122.4	122.4
Actuated g/C Ratio	0.03	0.11	0.79		0.91	0.91
Clearance Time (s)	3.5	4.0	5.5		4.0	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	60	180	2718		808	3208
v/s Ratio Prot	c0.02	0.02	0.16		c0.05	0.24
v/s Ratio Perm		0.01			c0.50	
v/c Ratio	0.45	0.27	0.20		0.60	0.26
Uniform Delay, d1	64.0	54.7	3.5		0.9	0.8
Progression Factor	1.31	2.79	1.00		1.51	1.06
Incremental Delay, d2	1.9	0.3	0.2		0.7	0.2
Delay (s)	86.0	152.9	3.7		2.1	1.0
Level of Service	F	F	A		A	A
Approach Delay (s)	143.2		3.7			1.4
Approach LOS	F		A			A

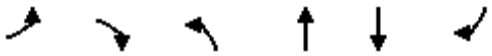
Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	410	15	60	120	100	40	345	200	460	405	5
Future Volume (vph)	15	410	15	60	120	100	40	345	200	460	405	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.93		1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1853		1770	1717		1787	1760		1787	1877	
Flt Permitted	0.56	1.00		0.13	1.00		0.51	1.00		0.10	1.00	
Satd. Flow (perm)	1048	1853		251	1717		955	1760		182	1877	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	441	16	65	129	108	43	371	215	495	435	5
RTOR Reduction (vph)	0	1	0	0	20	0	0	16	0	0	1	0
Lane Group Flow (vph)	16	456	0	65	217	0	43	570	0	495	439	0
Confl. Peds. (#/hr)						1			2			3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	42.1	39.7		51.2	44.3		42.1	36.8		73.3	63.5	
Effective Green, g (s)	42.1	39.7		51.2	44.3		42.1	36.8		73.3	63.5	
Actuated g/C Ratio	0.31	0.29		0.38	0.33		0.31	0.27		0.54	0.47	
Clearance Time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Vehicle Extension (s)	0.5	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	339	544		179	563		330	479		479	882	
v/s Ratio Prot	0.00	c0.25		c0.02	0.13		0.01	c0.32		c0.24	0.23	
v/s Ratio Perm	0.01			0.12			0.04			0.32		
v/c Ratio	0.05	0.84		0.36	0.39		0.13	1.19		1.03	0.50	
Uniform Delay, d1	32.3	44.7		31.1	34.9		32.8	49.1		42.2	24.7	
Progression Factor	0.99	1.01		1.00	1.00		1.00	1.00		0.82	0.67	
Incremental Delay, d2	0.0	9.8		0.5	0.2		0.1	104.7		43.8	1.5	
Delay (s)	32.0	54.9		31.5	35.0		32.8	153.8		78.6	18.0	
Level of Service	C	D		C	D		C	F		E	B	
Approach Delay (s)		54.1			34.3			145.5			50.1	
Approach LOS		D			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	74.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	99.2%	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)	60	80	205	365	370	70
Future Volume (vph)	60	80	205	365	370	70
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	
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	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1751	1533	1785	1881	1834	
Flt Permitted	0.95	1.00	0.50	1.00	1.00	
Satd. Flow (perm)	1751	1533	942	1881	1834	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	62	82	211	376	381	72
RTOR Reduction (vph)	0	70	0	0	10	0
Lane Group Flow (vph)	62	12	211	376	443	0
Confl. Peds. (#/hr)	1		4			4
Confl. Bikes (#/hr)		1				1
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Actuated Green, G (s)	3.4	3.4	11.5	11.5	11.5	
Effective Green, g (s)	3.4	3.4	11.5	11.5	11.5	
Actuated g/C Ratio	0.15	0.15	0.50	0.50	0.50	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	259	227	473	944	921	
v/s Ratio Prot				0.20	c0.24	
v/s Ratio Perm	c0.04	0.01	0.22			
v/c Ratio	0.24	0.05	0.45	0.40	0.48	
Uniform Delay, d1	8.6	8.4	3.7	3.5	3.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.1	0.7	0.3	0.4	
Delay (s)	9.1	8.5	4.3	3.8	4.1	
Level of Service	A	A	A	A	A	
Approach Delay (s)	8.7			4.0	4.1	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	22.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1035	55	215	340	275	25	150	260	225	130	65
Future Volume (vph)	100	1035	55	215	340	275	25	150	260	225	130	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
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	5091		1770	3539	1554	1787	1881	1576	3467	1779	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	5091		1770	3539	1554	1787	1881	1576	3467	1779	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	1056	56	219	347	281	26	153	265	230	133	66
RTOR Reduction (vph)	0	4	0	0	0	117	0	0	227	0	15	0
Lane Group Flow (vph)	102	1108	0	219	347	164	26	153	38	230	184	0
Confl. Peds. (#/hr)			1			1			2			1
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2	3	7	4		3	8	
Permitted Phases						2			4			
Actuated Green, G (s)	12.3	48.5		26.1	62.3	75.8	4.8	18.7	18.7	13.5	27.4	
Effective Green, g (s)	12.3	48.5		26.1	62.3	75.8	4.8	18.7	18.7	13.5	27.4	
Actuated g/C Ratio	0.09	0.37		0.20	0.48	0.58	0.04	0.14	0.14	0.10	0.21	
Clearance Time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	2.5	4.0		2.5	4.0	2.5	2.5	3.0	3.0	2.5	3.0	
Lane Grp Cap (vph)	169	1899		355	1695	906	65	270	226	360	374	
v/s Ratio Prot	0.06	c0.22		c0.12	0.10	0.02	0.01	c0.08		c0.07	0.10	
v/s Ratio Perm						0.09			0.02			
v/c Ratio	0.60	0.58		0.62	0.20	0.18	0.40	0.57	0.17	0.64	0.49	
Uniform Delay, d1	56.5	32.7		47.4	19.5	12.6	61.2	51.9	48.8	55.9	45.2	
Progression Factor	1.00	1.00		0.56	0.68	4.73	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.0	1.3		2.6	0.3	0.1	2.9	2.7	0.4	3.2	1.0	
Delay (s)	61.6	34.0		29.1	13.6	59.8	64.1	54.6	49.2	59.2	46.2	
Level of Service	E	C		C	B	E	E	D	D	E	D	
Approach Delay (s)		36.3			32.9			51.9			53.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	835	0	345	285	545	0
Future Volume (vph)	835	0	345	285	545	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	13.9		5.1	5.5	7.6	
Lane Util. Factor	1.00		0.97	0.95	0.97	
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		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	1881		3400	3505	3433	
Flt Permitted	1.00		0.95	1.00	0.95	
Satd. Flow (perm)	1881		3400	3505	3433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	879	0	363	300	574	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	879	0	363	300	574	0
Confl. Peds. (#/hr)		1	345			
Heavy Vehicles (%)	1%	1%	3%	3%	2%	2%
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	57.4		18.6	89.5	27.4	
Effective Green, g (s)	57.4		18.6	89.5	27.4	
Actuated g/C Ratio	0.44		0.14	0.69	0.21	
Clearance Time (s)	13.9		5.1	5.5	7.6	
Vehicle Extension (s)	3.5		2.5	3.5	3.0	
Lane Grp Cap (vph)	830		486	2413	723	
v/s Ratio Prot	c0.47		c0.11	0.09	c0.17	
v/s Ratio Perm						
v/c Ratio	1.06		0.75	0.12	0.79	
Uniform Delay, d1	36.3		53.4	6.9	48.6	
Progression Factor	0.55		1.00	1.00	1.00	
Incremental Delay, d2	46.3		5.9	0.1	6.0	
Delay (s)	66.2		59.3	7.0	54.6	
Level of Service	E		E	A	D	
Approach Delay (s)	66.2			35.6	54.6	
Approach LOS	E			D	D	

Intersection Summary			
HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

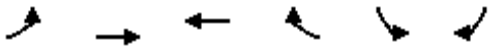
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	440	480	220	275	15	235	275	95	35	560	115
Future Volume (vph)	155	440	480	220	275	15	235	275	95	35	560	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1570	1770	3508		3433	1863	1544	1752	3403	
Flt Permitted	0.57	1.00	1.00	0.21	1.00		0.21	1.00	1.00	0.54	1.00	
Satd. Flow (perm)	1063	1881	1570	391	3508		770	1863	1544	987	3403	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	161	458	500	229	286	16	245	286	99	36	583	120
RTOR Reduction (vph)	0	0	170	0	4	0	0	0	66	0	20	0
Lane Group Flow (vph)	161	458	330	229	298	0	245	286	33	36	683	0
Confl. Peds. (#/hr)			3			3			2			8
Confl. Bikes (#/hr)			5			1			2			3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	30.7	24.6	24.6	30.7	24.6		33.6	27.5	27.5	28.0	24.7	
Effective Green, g (s)	30.7	24.6	24.6	30.7	24.6		33.6	27.5	27.5	28.0	24.7	
Actuated g/C Ratio	0.37	0.30	0.30	0.37	0.30		0.41	0.33	0.33	0.34	0.30	
Clearance Time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		3.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	449	560	468	247	1046		510	621	514	365	1018	
v/s Ratio Prot	0.03	0.24		c0.07	0.08		c0.04	0.15		0.00	c0.20	
v/s Ratio Perm	0.11		0.21	c0.28			0.16		0.02	0.03		
v/c Ratio	0.36	0.82	0.71	0.93	0.28		0.48	0.46	0.06	0.10	0.67	
Uniform Delay, d1	17.9	26.9	25.7	22.9	22.2		16.7	21.7	18.7	18.4	25.3	
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	0.4	9.0	4.8	37.6	0.2		0.7	0.5	0.1	0.0	1.8	
Delay (s)	18.2	35.9	30.5	60.5	22.4		17.4	22.2	18.8	18.4	27.1	
Level of Service	B	D	C	E	C		B	C	B	B	C	
Approach Delay (s)		31.0			38.8			19.8			26.7	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	21.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1065	700	0	875	0	0
Future Volume (Veh/h)	1065	700	0	875	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1158	761	0	951	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	180			135		
pX, platoon unblocked			0.71		0.76	0.71
vC, conflicting volume			1919		1475	579
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1483		276	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			320		523	773

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	772	640	507	317	317	317
Volume Left	0	0	0	0	0	0
Volume Right	0	254	507	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.45	0.38	0.30	0.19	0.19	0.19
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0			0.0		
Approach LOS						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1535	675	245	0	0
Future Volume (Veh/h)	0	1535	675	245	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1668	734	266	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		195	1151			
pX, platoon unblocked	0.98				0.82	0.98
vC, conflicting volume	1000				1568	367
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	968				1162	325
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	696				154	660

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3
Volume Total	834	834	367	367	266
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	266
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.49	0.49	0.22	0.22	0.16
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	835	685	0	830	0	0
Future Volume (Veh/h)	835	685	0	830	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	879	721	0	874	0	0
Pedestrians					1	
Lane Width (ft)					0.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	253			142		
pX, platoon unblocked			0.81		0.82	0.81
vC, conflicting volume			880		1317	880
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			732		1156	732
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			696		156	294

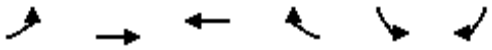
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	879	360	360	437	437
Volume Left	0	0	0	0	0
Volume Right	0	360	360	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.52	0.21	0.21	0.26	0.26
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	835	0	0	630	0	415
Future Volume (Veh/h)	835	0	0	630	0	415
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	1.00
Hourly flow rate (vph)	879	0	0	663	0	415
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)	144			773		
pX, platoon unblocked			0.56		0.56	0.56
vC, conflicting volume			880		1046	880
vC1, stage 1 conf vol					880	
vC2, stage 2 conf vol					166	
vCu, unblocked vol			392		688	392
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			646		349	339

Direction, Lane #	EB 1	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	879	166	166	166	166	415
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	415
cSH	1700	1700	1700	1700	1700	339
Volume to Capacity	0.52	0.10	0.10	0.10	0.10	1.22
Queue Length 95th (ft)	0	0	0	0	0	452
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	157.4
Lane LOS						F
Approach Delay (s)	0.0	0.0				157.4
Approach LOS						F

Intersection Summary			
Average Delay	33.4		
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		



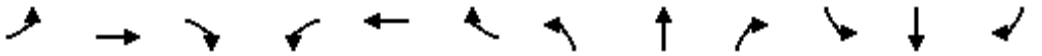
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	45	525	880	455	190	45
Future Volume (vph)	45	525	880	455	190	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	0%		15%	
Total Lost time (s)	4.5	5.0	5.5	5.5	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.93	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1787	1881	1881	1494	1670	1426
Flt Permitted	0.21	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	397	1881	1881	1494	1670	1426
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	46	536	898	464	194	46
RTOR Reduction (vph)	0	0	0	122	0	39
Lane Group Flow (vph)	46	536	898	342	194	7
Confl. Peds. (#/hr)				14	2	6
Confl. Bikes (#/hr)				4		2
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases	6			2		8
Actuated Green, G (s)	109.7	109.7	100.5	100.5	20.3	20.3
Effective Green, g (s)	109.7	109.7	100.5	100.5	20.3	20.3
Actuated g/C Ratio	0.78	0.78	0.72	0.72	0.15	0.15
Clearance Time (s)	4.5	5.0	5.5	5.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	352	1473	1350	1072	242	206
v/s Ratio Prot	0.00	c0.28	c0.48		c0.12	
v/s Ratio Perm	0.10			0.23		0.00
v/c Ratio	0.13	0.36	0.67	0.32	0.80	0.03
Uniform Delay, d1	9.0	4.6	10.7	7.2	57.9	51.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.7	2.6	0.8	16.3	0.0
Delay (s)	9.1	5.3	13.3	8.0	74.2	51.4
Level of Service	A	A	B	A	E	D
Approach Delay (s)		5.6	11.5		69.8	
Approach LOS		A	B		E	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	585	260	20	535	5	230	5	280	0	5	5
Future Volume (vph)	10	585	260	20	535	5	230	5	280	0	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5		5.5	5.5			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.95		1.00	1.00		1.00	0.85			0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1787	1779		1787	1878		1761	1550			1736	
Flt Permitted	0.37	1.00		0.15	1.00		0.75	1.00			1.00	
Satd. Flow (perm)	699	1779		286	1878		1392	1550			1736	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	616	274	21	563	5	242	5	295	0	5	5
RTOR Reduction (vph)	0	14	0	0	0	0	0	236	0	0	4	0
Lane Group Flow (vph)	11	876	0	21	568	0	242	64	0	0	6	0
Confl. Peds. (#/hr)			3			2	2		1	1		2
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	62.2	61.0		64.6	62.2		20.1	20.1			19.6	
Effective Green, g (s)	62.2	61.0		64.6	62.2		20.1	20.1			19.6	
Actuated g/C Ratio	0.62	0.61		0.65	0.62		0.20	0.20			0.20	
Clearance Time (s)	5.5	5.5		5.5	5.5		5.5	5.5			6.0	
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.0			2.0	
Lane Grp Cap (vph)	447	1085		220	1168		279	311			340	
v/s Ratio Prot	0.00	c0.49		c0.00	0.30			0.04			0.00	
v/s Ratio Perm	0.01			0.06			c0.17					
v/c Ratio	0.02	0.81		0.10	0.49		0.87	0.21			0.02	
Uniform Delay, d1	7.8	15.0		12.3	10.2		38.7	33.3			32.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	6.5		0.1	1.4		22.8	0.1			0.0	
Delay (s)	7.8	21.5		12.3	11.7		61.5	33.4			32.4	
Level of Service	A	C		B	B		E	C			C	
Approach Delay (s)		21.3			11.7			46.0			32.4	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.3%	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)	390	415	10	70	295	275	30	375	215	175	130	185
Future Volume (vph)	390	415	10	70	295	275	30	375	215	175	130	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1873		1787	1881	1560	1805	1900	1586	1787	1881	1562
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.67	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	1787	1873		1787	1881	1560	1269	1900	1586	276	1881	1562
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	419	446	11	75	317	296	32	403	231	188	140	199
RTOR Reduction (vph)	0	1	0	0	0	166	0	0	154	0	0	91
Lane Group Flow (vph)	419	456	0	75	317	130	32	403	77	188	140	108
Confl. Peds. (#/hr)			7			2			2			9
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		7	4	5	3	8	1
Permitted Phases						2	4		4	8		8
Actuated Green, G (s)	30.0	48.0		10.0	28.0	28.0	33.1	29.5	39.5	44.4	35.4	65.4
Effective Green, g (s)	30.0	48.0		10.0	28.0	28.0	33.1	29.5	39.5	44.4	35.4	65.4
Actuated g/C Ratio	0.25	0.40		0.08	0.23	0.23	0.28	0.25	0.33	0.37	0.29	0.55
Clearance Time (s)	6.0	5.5		6.0	5.5	5.5	6.0	6.0	6.0	6.0	5.5	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	446	749		148	438	364	366	467	522	215	554	851
v/s Ratio Prot	c0.23	0.24		0.04	c0.17		0.00	0.21	0.01	c0.07	0.07	0.03
v/s Ratio Perm						0.08	0.02		0.04	c0.26		0.04
v/c Ratio	0.94	0.61		0.51	0.72	0.36	0.09	0.86	0.15	0.87	0.25	0.13
Uniform Delay, d1	44.1	28.6		52.6	42.4	38.5	32.0	43.3	28.4	30.0	32.2	13.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.3	3.7		1.0	10.0	2.7	0.0	14.7	0.0	29.4	0.1	0.0
Delay (s)	71.4	32.2		53.6	52.4	41.2	32.1	58.0	28.4	59.3	32.3	13.4
Level of Service	E	C		D	D	D	C	E	C	E	C	B
Approach Delay (s)		51.0			47.7			46.5			34.8	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	93.4%	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)	290	140	200	40	185	335	360	660	40	45	360	90
Future Volume (vph)	290	140	200	40	185	335	360	660	40	45	360	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1532	1805	1685		1805	1880		1805	1829	
Flt Permitted	0.11	1.00	1.00	0.66	1.00		0.11	1.00		0.13	1.00	
Satd. Flow (perm)	203	1881	1532	1258	1685		211	1880		245	1829	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	309	149	213	43	197	356	383	702	43	48	383	96
RTOR Reduction (vph)	0	0	137	0	56	0	0	2	0	0	8	0
Lane Group Flow (vph)	309	149	76	43	497	0	383	743	0	48	471	0
Confl. Peds. (#/hr)			7			3			5			5
Confl. Bikes (#/hr)			3						2			3
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4			2			6		
Actuated Green, G (s)	52.0	41.8	41.8	37.2	32.0		55.0	46.0		35.0	31.0	
Effective Green, g (s)	52.0	41.8	41.8	37.2	32.0		55.0	46.0		35.0	31.0	
Actuated g/C Ratio	0.44	0.36	0.36	0.32	0.27		0.47	0.39		0.30	0.26	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	293	672	547	424	460		358	739		126	484	
v/s Ratio Prot	c0.14	0.08		0.00	0.30		c0.17	0.40		0.01	0.26	
v/s Ratio Perm	c0.33		0.05	0.03			c0.33			0.10		
v/c Ratio	1.05	0.22	0.14	0.10	1.08		1.07	1.01		0.38	0.97	
Uniform Delay, d1	34.6	26.2	25.4	27.9	42.5		35.6	35.5		32.7	42.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	67.7	0.1	0.0	0.0	65.4		67.4	34.5		0.7	33.6	
Delay (s)	102.3	26.3	25.5	27.9	107.9		102.9	70.0		33.4	76.2	
Level of Service	F	C	C	C	F		F	E		C	E	
Approach Delay (s)		61.0			102.1			81.2			72.3	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	79.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	107.7%	ICU Level of Service	G
Analysis Period (min)	15		

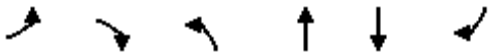
Description: Cycle Optimized - Free

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	20	40	185	5	195	20	170	210	225	85	20
Future Volume (vph)	35	20	40	185	5	195	20	170	210	225	85	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.94			0.93		1.00	0.92		1.00	0.97	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1722			1683		1734	1662		1742	1781	
Flt Permitted		0.81			0.82		0.69	1.00		0.48	1.00	
Satd. Flow (perm)		1420			1406		1252	1662		884	1781	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	21	42	193	5	203	21	177	219	234	89	21
RTOR Reduction (vph)	0	29	0	0	62	0	0	52	0	0	9	0
Lane Group Flow (vph)	0	70	0	0	339	0	21	344	0	234	101	0
Confl. Peds. (#/hr)	5		2	2		5	6		7	7		6
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		20.9			20.9		38.6	38.6		38.6	38.6	
Effective Green, g (s)		20.9			20.9		38.6	38.6		38.6	38.6	
Actuated g/C Ratio		0.30			0.30		0.55	0.55		0.55	0.55	
Clearance Time (s)		5.0			5.0		5.5	5.5		5.5	5.5	
Vehicle Extension (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		423			419		690	916		487	982	
v/s Ratio Prot								0.21			0.06	
v/s Ratio Perm		0.05			c0.24		0.02			c0.26		
v/c Ratio		0.16			0.81		0.03	0.38		0.48	0.10	
Uniform Delay, d1		18.1			22.7		7.2	8.9		9.6	7.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			10.4		0.1	1.2		3.4	0.2	
Delay (s)		18.2			33.1		7.2	10.1		13.0	7.7	
Level of Service		B			C		A	B		B	A	
Approach Delay (s)		18.2			33.1			9.9			11.3	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	310	75	25	310	130	80
Future Volume (vph)	310	75	25	310	130	80
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	333	81	27	333	140	86

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total (vph)	414	360	140	86
Volume Left (vph)	333	27	0	0
Volume Right (vph)	81	0	0	86
Hadj (s)	0.08	0.05	0.03	-0.67
Departure Headway (s)	5.6	5.7	6.4	5.6
Degree Utilization, x	0.64	0.57	0.25	0.13
Capacity (veh/h)	618	599	526	587
Control Delay (s)	18.0	16.0	10.2	8.3
Approach Delay (s)	18.0	16.0	9.5	
Approach LOS	C	C	A	

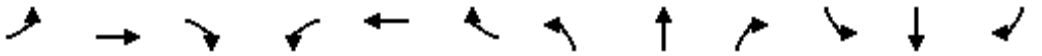
Intersection Summary			
Delay	15.4		
Level of Service	C		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Description: Volume extrapolated from BKR and 2017 local intersection volumes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Future Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1736		1681	1761	1515	1787	3314		1770	3476	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1736		1681	1761	1515	1787	3314		1770	3476	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	42	47	224	203	354	219	427	307	78	411	36
RTOR Reduction (vph)	0	40	0	0	0	170	0	110	0	0	6	0
Lane Group Flow (vph)	16	49	0	202	225	184	219	624	0	78	441	0
Confl. Peds. (#/hr)						32			13			16
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	8.9	8.9		52.4	52.4	62.5	15.4	28.5		10.1	23.2	
Effective Green, g (s)	8.9	8.9		52.4	52.4	62.5	15.4	28.5		10.1	23.2	
Actuated g/C Ratio	0.07	0.07		0.44	0.44	0.52	0.13	0.24		0.08	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	133	128		734	768	789	229	787		148	672	
v/s Ratio Prot	0.01	c0.03		0.12	c0.13	0.02	c0.12	c0.19		0.04	0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.12	0.38		0.28	0.29	0.23	0.96	0.79		0.53	0.66	
Uniform Delay, d1	51.9	52.9		21.6	21.8	15.7	52.0	43.0		52.7	44.7	
Progression Factor	1.00	1.00		1.20	1.21	3.83	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.9		0.8	0.9	0.1	46.8	5.7		2.6	2.4	
Delay (s)	52.3	54.9		26.8	27.2	60.2	98.8	48.7		55.2	47.1	
Level of Service	D	D		C	C	E	F	D		E	D	
Approach Delay (s)		54.5			42.1			60.2			48.3	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT Timing			

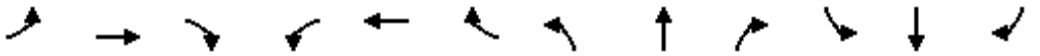
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Future Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.93			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1752	3421		1752	3308			1744	1553		1747	1553
Flt Permitted	0.32	1.00		0.52	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	586	3421		954	3308			1744	1553		1747	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	302	57	240	375	318	328	16	188	109	10	78
RTOR Reduction (vph)	0	11	0	0	105	0	0	0	97	0	0	60
Lane Group Flow (vph)	68	348	0	240	588	0	0	344	91	0	119	18
Heavy Vehicles (%)	3%	3%	3%	3%	3%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	58.6	58.6		58.6	58.6			31.5	31.5		13.9	13.9
Effective Green, g (s)	58.6	58.6		58.6	58.6			31.5	31.5		13.9	13.9
Actuated g/C Ratio	0.49	0.49		0.49	0.49			0.26	0.26		0.12	0.12
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	286	1670		465	1615			457	407		202	179
v/s Ratio Prot		0.10			0.18			c0.20			c0.07	
v/s Ratio Perm	0.12			c0.25					0.06			0.01
v/c Ratio	0.24	0.21		0.52	0.36			0.75	0.22		0.59	0.10
Uniform Delay, d1	17.8	17.5		21.0	19.1			40.7	34.7		50.3	47.5
Progression Factor	1.63	1.71		1.05	1.11			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.2		3.8	0.6			7.3	0.4		5.1	0.3
Delay (s)	30.5	30.2		25.8	21.9			48.0	35.0		55.5	47.8
Level of Service	C	C		C	C			D	D		E	D
Approach Delay (s)		30.2			22.9			43.4			52.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+Volumes			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	375	0	465	70	295	790	85	15	265	135
Future Volume (vph)	0	200	375	0	465	70	295	790	85	15	265	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00		0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99		0.99		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		0.98		1.00	0.99		1.00	0.95	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3574	1576		3430		1787	3512		1770	3344	
Flt Permitted		1.00	1.00		1.00		0.26	1.00		0.27	1.00	
Satd. Flow (perm)		3574	1576		3430		490	3512		504	3344	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	206	387	0	479	72	304	814	88	15	273	139
RTOR Reduction (vph)	0	0	74	0	7	0	0	8	0	0	57	0
Lane Group Flow (vph)	0	206	313	0	544	0	304	894	0	15	355	0
Confl. Peds. (#/hr)	61		6	6		61			15			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov		NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3		6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		60.8	82.5		60.8		49.2	42.1		24.4	22.4	
Effective Green, g (s)		60.8	82.5		60.8		49.2	42.1		24.4	22.4	
Actuated g/C Ratio		0.51	0.69		0.51		0.41	0.35		0.20	0.19	
Clearance Time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5		4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1810	1083		1737		435	1232		123	624	
v/s Ratio Prot		0.06	0.05		c0.16		c0.13	c0.25		0.00	0.11	
v/s Ratio Perm			0.15				0.16			0.02		
v/c Ratio		0.11	0.29		0.31		0.70	0.73		0.12	0.57	
Uniform Delay, d1		15.5	7.3		17.4		26.3	33.9		38.5	44.4	
Progression Factor		0.58	0.98		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.5		4.5	2.2		0.3	1.2	
Delay (s)		9.2	7.3		17.8		30.8	36.1		38.8	45.6	
Level of Service		A	A		B		C	D		D	D	
Approach Delay (s)		8.0			17.8			34.7			45.4	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT			

c Critical Lane Group

Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	100	80	195	265	35	110	240	60	15	215	105
Future Volume (vph)	120	100	80	195	265	35	110	240	60	15	215	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	6.5	5.0		5.0	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.96	1.00	1.00	1.00	1.00		1.00	1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1707	1863	1519	1736	1777		1787	1804		1748	1777	
Flt Permitted	0.45	1.00	1.00	0.95	1.00		0.28	1.00		0.57	1.00	
Satd. Flow (perm)	807	1863	1519	1736	1777		531	1804		1047	1777	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	104	83	203	276	36	115	250	62	16	224	109
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	125	104	83	203	312	0	115	313	0	16	333	0
Confl. Peds. (#/hr)	23		8			23			12	12		6
Confl. Bikes (#/hr)			1						2			
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	
Protected Phases		6		5	2		7	4			8	
Permitted Phases	6		6				4			8		
Actuated Green, G (s)	40.6	40.6	40.6	17.7	64.8		50.3	50.3		38.1	38.1	
Effective Green, g (s)	40.6	40.6	40.6	17.7	64.8		50.3	50.3		38.1	38.1	
Actuated g/C Ratio	0.31	0.31	0.31	0.14	0.50		0.39	0.39		0.29	0.29	
Clearance Time (s)	5.0	5.0	5.0	6.5	5.0		5.0	4.5		4.5	4.5	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	252	581	474	236	885		275	698		306	520	
v/s Ratio Prot		0.06		c0.12	0.18		0.02	c0.17			c0.19	
v/s Ratio Perm	c0.15		0.05				0.14			0.02		
v/c Ratio	0.50	0.18	0.18	0.86	0.35		0.42	0.45		0.05	0.64	
Uniform Delay, d1	36.4	32.6	32.5	54.9	19.8		28.1	29.6		33.0	40.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.1	25.1	0.1		0.4	2.1		0.3	5.9	
Delay (s)	36.9	32.6	32.6	80.0	19.9		28.5	31.6		33.3	45.9	
Level of Service	D	C	C	F	B		C	C		C	D	
Approach Delay (s)		34.3			43.6			30.8			45.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Unsure timing program w Overlaps

c Critical Lane Group

Movement	NWL
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	1.00
Flt Protected	0.95
Satd. Flow (prot)	902
Flt Permitted	0.95
Satd. Flow (perm)	902
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	5
RTOR Reduction (vph)	0
Lane Group Flow (vph)	5
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	100%
Turn Type	Prot
Protected Phases	10
Permitted Phases	
Actuated Green, G (s)	1.4
Effective Green, g (s)	1.4
Actuated g/C Ratio	0.01
Clearance Time (s)	4.0
Vehicle Extension (s)	0.2
Lane Grp Cap (vph)	9
v/s Ratio Prot	c0.01
v/s Ratio Perm	
v/c Ratio	0.56
Uniform Delay, d1	64.0
Progression Factor	1.00
Incremental Delay, d2	36.0
Delay (s)	100.0
Level of Service	F
Approach Delay (s)	100.0
Approach LOS	F

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	100	180	990	100	340	300
Future Volume (vph)	100	180	990	100	340	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.5	5.5		4.5	5.5
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	1568	3457		1752	3505
Flt Permitted	0.95	1.00	1.00		0.12	1.00
Satd. Flow (perm)	1752	1568	3457		230	3505
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	104	188	1031	104	354	312
RTOR Reduction (vph)	0	12	7	0	0	0
Lane Group Flow (vph)	104	176	1128	0	354	313
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	6.7	19.9	28.0		45.7	45.7
Effective Green, g (s)	6.7	19.9	28.0		45.7	45.7
Actuated g/C Ratio	0.11	0.32	0.45		0.73	0.73
Clearance Time (s)	5.0	4.5	5.5		4.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	186	496	1538		486	2546
v/s Ratio Prot	c0.06	0.07	0.33		c0.15	0.09
v/s Ratio Perm		0.04			c0.38	
v/c Ratio	0.56	0.36	0.73		0.73	0.12
Uniform Delay, d1	26.7	16.6	14.4		12.8	2.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.2	1.6		4.6	0.0
Delay (s)	28.8	16.7	16.0		17.4	2.6
Level of Service	C	B	B		B	A
Approach Delay (s)	21.0		16.0			10.4
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

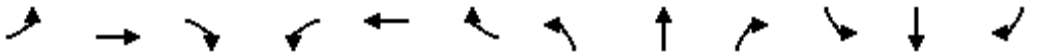
Description: Cycle length optimized - Free. Volume extrapolated from adjacent intersections

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	240	170	50	135	355
Future Volume (vph)	10	240	170	50	135	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1806		1770	1863
Flt Permitted	0.95	1.00	1.00		0.62	1.00
Satd. Flow (perm)	1770	1583	1806		1147	1863
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	250	177	52	141	370
RTOR Reduction (vph)	0	228	5	0	0	0
Lane Group Flow (vph)	10	22	224	0	141	370
Turn Type	Perm	Perm	NA		Perm	NA
Protected Phases			4			8
Permitted Phases	2	2			8	
Actuated Green, G (s)	7.8	7.8	72.7		72.7	72.7
Effective Green, g (s)	7.8	7.8	72.7		72.7	72.7
Actuated g/C Ratio	0.09	0.09	0.81		0.81	0.81
Clearance Time (s)	5.0	5.0	4.5		4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	153	137	1458		926	1504
v/s Ratio Prot			0.12			c0.20
v/s Ratio Perm	0.01	c0.01			0.12	
v/c Ratio	0.07	0.16	0.15		0.15	0.25
Uniform Delay, d1	37.8	38.1	1.9		1.9	2.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.2	0.2		0.3	0.4
Delay (s)	37.8	38.3	2.1		2.2	2.5
Level of Service	D	D	A		A	A
Approach Delay (s)	38.2		2.1			2.4
Approach LOS	D		A			A

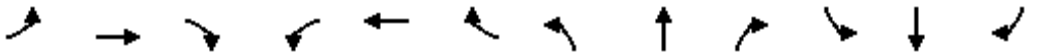
Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



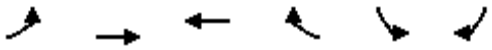
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	380	5	340	570	55	480	150	110	250	110	40
Future Volume (vph)	15	380	5	340	570	55	480	150	110	250	110	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3532		1787	3513		1715	1759	1569	3467	1798	
Flt Permitted	0.25	1.00		0.52	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (perm)	472	3532		974	3513		1715	1759	1569	3467	1798	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	15	392	5	351	588	57	495	155	113	258	113	41
RTOR Reduction (vph)	0	1	0	0	6	0	0	0	82	0	9	0
Lane Group Flow (vph)	15	396	0	351	639	0	322	328	31	258	145	0
Confl. Peds. (#/hr)						12			16			
Confl. Bikes (#/hr)			1			3			1			3
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	17.4	17.4		35.3	34.8		26.0	26.0	26.0	14.1	14.1	
Effective Green, g (s)	17.4	17.4		35.3	34.8		26.0	26.0	26.0	14.1	14.1	
Actuated g/C Ratio	0.18	0.18		0.37	0.37		0.27	0.27	0.27	0.15	0.15	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.6	4.6	4.6	4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	108	645		523	1284		468	480	428	513	266	
v/s Ratio Prot	0.00	c0.11		c0.13	0.18		c0.19	0.19		0.07	c0.08	
v/s Ratio Perm	0.02			c0.11					0.02			
v/c Ratio	0.14	0.61		0.67	0.50		0.69	0.68	0.07	0.50	0.54	
Uniform Delay, d1	32.8	35.8		25.3	23.4		31.0	30.9	25.7	37.3	37.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	1.7		3.4	0.3		4.2	4.0	0.1	0.8	2.3	
Delay (s)	33.4	37.6		28.7	23.7		35.2	34.9	25.7	38.1	39.8	
Level of Service	C	D		C	C		D	C	C	D	D	
Approach Delay (s)		37.4			25.5			33.7			38.8	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	18.7
Intersection Capacity Utilization	73.1%	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)	185	935	55	295	1070	340	200	395	315	200	270	235
Future Volume (vph)	185	935	55	295	1070	340	200	395	315	200	270	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.5		6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3540		1805	3610	1615	1805	1900	1615	3467	1881	1537
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3540		1805	3610	1615	1805	1900	1615	3467	1881	1537
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	189	954	56	301	1092	347	204	403	321	204	276	240
RTOR Reduction (vph)	0	3	0	0	0	163	0	0	237	0	0	198
Lane Group Flow (vph)	189	1007	0	301	1092	184	204	403	84	204	276	42
Confl. Peds. (#/hr)						1						15
Confl. Bikes (#/hr)			3						8			2
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA	Prot	Split	NA	Perm
Protected Phases	5	2		1 8	6 8	6 8	3	3	3	4	4	
Permitted Phases												4
Actuated Green, G (s)	10.0	34.8		16.0	40.8	40.8	38.0	38.0	38.0	25.2	25.2	25.2
Effective Green, g (s)	10.0	34.8		16.0	40.8	40.8	38.0	38.0	38.0	25.2	25.2	25.2
Actuated g/C Ratio	0.07	0.24		0.11	0.28	0.28	0.26	0.26	0.26	0.17	0.17	0.17
Clearance Time (s)	6.0	6.5					6.5	6.5	6.5	6.0	6.0	6.0
Vehicle Extension (s)	3.0	4.0					3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	123	849		199	1015	454	473	497	423	602	326	267
v/s Ratio Prot	0.11	c0.28		c0.17	0.30	0.11	0.11	c0.21	0.05	0.06	c0.15	
v/s Ratio Perm												0.03
v/c Ratio	1.54	1.19		1.51	1.08	0.41	0.43	0.81	0.20	0.34	0.85	0.16
Uniform Delay, d1	67.5	55.1		64.5	52.1	42.3	44.5	50.1	41.7	52.6	58.0	50.9
Progression Factor	1.00	1.00		0.98	0.98	1.05	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	277.9	95.6		250.4	48.4	0.5	0.6	9.7	0.2	0.3	18.0	0.3
Delay (s)	345.4	150.7		313.9	99.4	44.8	45.1	59.8	41.9	52.9	76.0	51.1
Level of Service	F	F		F	F	D	D	E	D	D	E	D
Approach Delay (s)		181.4			125.6			50.4			61.2	
Approach LOS		F			F			D			E	

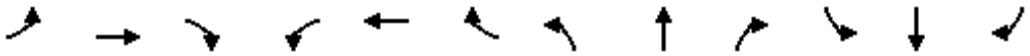
Intersection Summary			
HCM 2000 Control Delay	114.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1020	1335	0	510	370
Future Volume (vph)	0	1020	1335	0	510	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		0.97	0.91
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	1.00		0.98	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		3610	3574		3385	1441
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		3610	3574		3385	1441
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1030	1348	0	515	374
RTOR Reduction (vph)	0	0	0	0	11	47
Lane Group Flow (vph)	0	1030	1348	0	601	230
Confl. Peds. (#/hr)	2			2		
Heavy Vehicles (%)	0%	0%	1%	1%	2%	2%
Turn Type		NA	NA		Prot	custom
Protected Phases		1 2 3	1 2 3		4 8	4 8
Permitted Phases						
Actuated Green, G (s)		90.3	90.3		30.2	30.2
Effective Green, g (s)		83.8	83.8		30.2	30.2
Actuated g/C Ratio		0.58	0.58		0.21	0.21
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)		2086	2065		705	300
v/s Ratio Prot		0.29	c0.38		c0.18	0.16
v/s Ratio Perm						
v/c Ratio		0.49	0.65		0.85	0.77
Uniform Delay, d1		18.1	20.7		55.3	54.1
Progression Factor		0.60	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.8		9.8	11.2
Delay (s)		10.9	21.5		65.0	65.3
Level of Service		B	C		E	E
Approach Delay (s)		10.9	21.5		65.1	
Approach LOS		B	C		E	

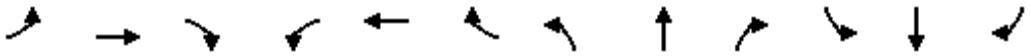
Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



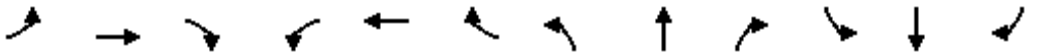
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1290	240	0	1305	360	350	0	240	0	0	0
Future Volume (vph)	0	1290	240	0	1305	360	350	0	240	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0	4.0	4.5		4.5			
Lane Util. Factor		0.95	1.00		0.91	1.00	0.97		1.00			
Frt		1.00	0.85		1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (prot)		3574	1599		5136	1599	3467		1599			
Flt Permitted		1.00	1.00		1.00	1.00	0.95		1.00			
Satd. Flow (perm)		3574	1599		5136	1599	3467		1599			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1344	250	0	1359	375	365	0	250	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	56	0	0	0
Lane Group Flow (vph)	0	1344	250	0	1359	375	365	0	194	0	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Prot		Prot			
Protected Phases		2			6		8		8			
Permitted Phases			Free			Free						
Actuated Green, G (s)		107.7	140.0		107.7	140.0	22.8		22.8			
Effective Green, g (s)		107.7	140.0		107.7	140.0	22.8		22.8			
Actuated g/C Ratio		0.77	1.00		0.77	1.00	0.16		0.16			
Clearance Time (s)		5.0			5.0		4.5		4.5			
Vehicle Extension (s)		3.5			3.5		3.0		3.0			
Lane Grp Cap (vph)		2749	1599		3951	1599	564		260			
v/s Ratio Prot		c0.38			0.26		0.11		c0.12			
v/s Ratio Perm			0.16			0.23						
v/c Ratio		0.49	0.16		0.34	0.23	0.65		0.75			
Uniform Delay, d1		6.0	0.0		5.1	0.0	54.8		55.8			
Progression Factor		1.00	1.00		1.02	1.00	1.00		1.00			
Incremental Delay, d2		0.6	0.2		0.2	0.3	2.6		11.0			
Delay (s)		6.6	0.2		5.4	0.3	57.4		66.9			
Level of Service		A	A		A	A	E		E			
Approach Delay (s)		5.6			4.3			61.2			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1420	100	90	1500	40	70	5	65	25	5	50
Future Volume (vph)	55	1420	100	90	1500	40	70	5	65	25	5	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0		3.5	3.0			2.5	2.5		3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.96		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1770	3498		1787	3558			1797	1541		1692	
Flt Permitted	0.12	1.00		0.12	1.00			0.54	1.00		0.81	
Satd. Flow (perm)	231	3498		225	3558			1018	1541		1394	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	57	1479	104	94	1562	42	73	5	68	26	5	52
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	61	0	47	0
Lane Group Flow (vph)	57	1581	0	94	1604	0	0	78	7	0	36	0
Confl. Peds. (#/hr)			2			1			7	7		
Confl. Bikes (#/hr)						2			2			1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)	110.5	105.3		114.7	107.4			12.4	12.4		11.9	
Effective Green, g (s)	114.5	107.3		118.7	109.4			14.4	14.4		13.9	
Actuated g/C Ratio	0.82	0.77		0.85	0.78			0.10	0.10		0.10	
Clearance Time (s)	5.5	5.0		5.5	5.0			4.5	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	268	2680		294	2780			104	158		138	
v/s Ratio Prot	0.01	c0.45		c0.02	0.45							
v/s Ratio Perm	0.16			0.25				c0.08	0.00		0.03	
v/c Ratio	0.21	0.59		0.32	0.58			0.75	0.04		0.26	
Uniform Delay, d1	4.5	7.0		5.6	6.1			61.1	56.6		58.3	
Progression Factor	0.70	0.67		2.01	0.08			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.9		0.2	0.7			23.2	0.0		0.4	
Delay (s)	3.3	5.5		11.4	1.2			84.3	56.6		58.7	
Level of Service	A	A		B	A			F	E		E	
Approach Delay (s)		5.5			1.7			71.4			58.7	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

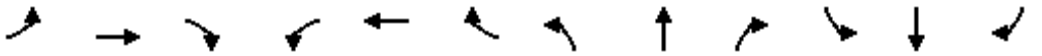


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1070	285	115	1080	415	440	595	235	250	340	105
Future Volume (vph)	20	1070	285	115	1080	415	440	595	235	250	340	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.0	4.0	5.5	4.5	4.5	5.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1571	1787	3574	1569	3467	3574	1578	1787	1881	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3574	1571	1787	3574	1569	3467	3574	1578	1787	1881	1568
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	1092	291	117	1102	423	449	607	240	255	347	107
RTOR Reduction (vph)	0	0	65	0	0	142	0	0	165	0	0	83
Lane Group Flow (vph)	20	1092	226	117	1102	281	449	607	75	255	347	24
Confl. Peds. (#/hr)			4			4						4
Confl. Bikes (#/hr)			2			1			1			2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	4.2	55.5	55.5	11.7	63.5	63.5	20.0	27.9	27.9	22.4	30.8	30.8
Effective Green, g (s)	5.2	56.5	56.5	12.7	64.5	64.5	21.0	28.9	28.9	23.4	31.8	31.8
Actuated g/C Ratio	0.04	0.40	0.40	0.09	0.46	0.46	0.15	0.21	0.21	0.17	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.5	5.5	6.5	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	66	1442	634	162	1646	722	520	737	325	298	427	356
v/s Ratio Prot	0.01	c0.31		c0.07	0.31		0.13	0.17		c0.14	c0.18	
v/s Ratio Perm			0.14			0.18			0.05			0.02
v/c Ratio	0.30	0.76	0.36	0.72	0.67	0.39	0.86	0.82	0.23	0.86	0.81	0.07
Uniform Delay, d1	65.6	35.9	29.1	61.9	29.4	24.8	58.1	53.1	46.3	56.7	51.3	42.5
Progression Factor	1.39	0.74	0.54	1.35	0.48	0.47	1.15	0.84	0.51	1.00	1.00	1.00
Incremental Delay, d2	0.8	3.2	1.3	11.2	1.9	1.4	12.4	6.5	0.1	20.0	10.7	0.0
Delay (s)	91.9	29.6	17.1	94.9	16.2	13.0	79.1	51.1	23.8	76.7	62.0	42.5
Level of Service	F	C	B	F	B	B	E	D	C	E	E	D
Approach Delay (s)		27.9			20.9			55.7			64.3	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	83.5%	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	1470	20	15	1450	25	35	0	15	35	5	120
Future Volume (vph)	75	1470	20	15	1450	25	35	0	15	35	5	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.0		4.0	3.0			3.0			3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	1.00
Satd. Flow (prot)	1787	3566		1787	3564			1748			1802	1567
Flt Permitted	0.14	1.00		0.15	1.00			0.76			0.74	1.00
Satd. Flow (perm)	257	3566		283	3564			1381			1394	1567
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	1500	20	15	1480	26	36	0	15	36	5	122
RTOR Reduction (vph)	0	0	0	0	0	0	0	47	0	0	0	110
Lane Group Flow (vph)	77	1520	0	15	1506	0	0	4	0	0	41	12
Confl. Peds. (#/hr)			1			1	3					3
Confl. Bikes (#/hr)			4			1			1			1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	120.2	113.0		111.1	108.7			8.6			8.6	8.6
Effective Green, g (s)	123.4	115.0		115.1	110.7			10.6			10.6	10.6
Actuated g/C Ratio	0.88	0.82		0.82	0.79			0.08			0.08	0.08
Clearance Time (s)	5.5	5.0		6.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	2.0
Lane Grp Cap (vph)	327	2929		279	2818			104			105	118
v/s Ratio Prot	c0.02	c0.43		0.00	c0.42							
v/s Ratio Perm	0.19			0.04				0.00			c0.03	0.01
v/c Ratio	0.24	0.52		0.05	0.53			0.04			0.39	0.10
Uniform Delay, d1	3.6	3.9		2.8	5.3			60.0			61.6	60.3
Progression Factor	0.41	0.75		0.37	1.65			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.5		0.0	0.2			0.1			0.9	0.1
Delay (s)	1.6	3.4		1.1	9.0			60.0			62.5	60.4
Level of Service	A	A		A	A			E			E	E
Approach Delay (s)		3.3			8.9			60.0			60.9	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	9.5	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)	10.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	1030	10	245	1205	440	35	490	345	255	340	230
Future Volume (vph)	240	1030	10	245	1205	440	35	490	345	255	340	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	3.0		4.5	3.0	3.0	3.5	3.5		2.5	2.5	2.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3569		1787	3574	1547	1805	3361		1805	1900	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3569		1787	3574	1547	1805	3361		1805	1900	1593
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	1073	10	255	1255	458	36	510	359	266	354	240
RTOR Reduction (vph)	0	1	0	0	0	131	0	90	0	0	0	152
Lane Group Flow (vph)	250	1082	0	255	1255	327	36	779	0	266	354	88
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			1			7						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	21.7	42.2		21.3	41.8	41.8	4.8	34.5		18.5	48.2	48.2
Effective Green, g (s)	23.7	44.2		23.3	43.8	43.8	7.8	37.5		21.5	51.2	51.2
Actuated g/C Ratio	0.17	0.32		0.17	0.31	0.31	0.06	0.27		0.15	0.37	0.37
Clearance Time (s)	6.5	5.0		6.5	5.0	5.0	6.5	6.5		5.5	5.5	5.5
Vehicle Extension (s)	4.0	3.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	302	1126		297	1118	483	100	900		277	694	582
v/s Ratio Prot	0.14	0.30		c0.14	c0.35		0.02	c0.23		c0.15	0.19	
v/s Ratio Perm						0.21						0.06
v/c Ratio	0.83	0.96		0.86	1.12	0.68	0.36	0.87		0.96	0.51	0.15
Uniform Delay, d1	56.2	47.1		56.7	48.1	41.9	63.7	48.8		58.8	34.6	29.8
Progression Factor	0.91	0.68		1.00	1.00	1.00	1.23	0.87		1.00	1.00	1.00
Incremental Delay, d2	15.8	17.5		20.4	67.2	7.4	0.1	0.9		42.9	0.3	0.0
Delay (s)	66.8	49.3		77.1	115.3	49.3	78.6	43.1		101.7	34.9	29.9
Level of Service	E	D		E	F	D	E	D		F	C	C
Approach Delay (s)		52.6			95.0			44.6			54.2	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	67.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
Description: Splits adjusted for Cycle Length			

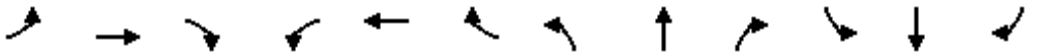
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	280	965	15	230	665
Future Volume (vph)	35	280	965	15	230	665
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.0	5.5		4.0	4.5
Lane Util. Factor	1.00	1.00	0.95		1.00	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	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1787	1594	3563		1787	3574
Flt Permitted	0.95	1.00	1.00		0.23	1.00
Satd. Flow (perm)	1787	1594	3563		440	3574
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	37	298	1027	16	245	707
RTOR Reduction (vph)	0	58	1	0	0	0
Lane Group Flow (vph)	37	240	1042	0	245	707
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		1		2		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	2	3	4		3	8
Permitted Phases		2			8	
Actuated Green, G (s)	6.5	26.3	100.7		125.5	125.5
Effective Green, g (s)	6.5	26.3	100.7		125.5	125.5
Actuated g/C Ratio	0.05	0.19	0.72		0.90	0.90
Clearance Time (s)	3.5	4.0	5.5		4.0	4.5
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	82	299	2562		584	3203
v/s Ratio Prot	0.02	c0.11	0.29		0.06	0.20
v/s Ratio Perm		0.04			c0.32	
v/c Ratio	0.45	0.80	0.41		0.42	0.22
Uniform Delay, d1	65.0	54.4	7.8		2.6	0.9
Progression Factor	1.31	0.70	1.00		3.88	0.58
Incremental Delay, d2	0.5	5.3	0.5		0.2	0.1
Delay (s)	85.8	43.3	8.3		10.1	0.7
Level of Service	F	D	A		B	A
Approach Delay (s)	48.0		8.3			3.1
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

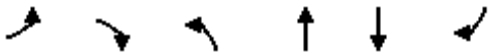
Description: Splits adjusted for Cycle Length

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	165	25	190	270	405	40	575	95	135	535	15
Future Volume (vph)	20	165	25	190	270	405	40	575	95	135	535	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.91		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1821		1787	1665		1787	1832		1805	1891	
Flt Permitted	0.09	1.00		0.48	1.00		0.20	1.00		0.07	1.00	
Satd. Flow (perm)	170	1821		903	1665		384	1832		133	1891	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	174	26	200	284	426	42	605	100	142	563	16
RTOR Reduction (vph)	0	3	0	0	33	0	0	4	0	0	1	0
Lane Group Flow (vph)	21	197	0	200	677	0	42	701	0	142	578	0
Confl. Peds. (#/hr)			1			6			4			
Confl. Bikes (#/hr)			1			4			2			9
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	47.4	43.8		61.3	53.2		58.0	52.6		68.2	58.3	
Effective Green, g (s)	47.4	43.8		61.3	53.2		58.0	52.6		68.2	58.3	
Actuated g/C Ratio	0.34	0.31		0.44	0.38		0.41	0.38		0.49	0.42	
Clearance Time (s)	4.5	5.0		4.5	5.5		4.5	5.5		4.0	5.0	
Vehicle Extension (s)	0.5	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	98	569		480	632		213	688		197	787	
v/s Ratio Prot	0.01	0.11		c0.04	c0.41		0.01	c0.38		c0.06	0.31	
v/s Ratio Perm	0.07			0.14			0.07			0.29		
v/c Ratio	0.21	0.35		0.42	1.07		0.20	1.02		0.72	0.73	
Uniform Delay, d1	36.7	37.1		25.5	43.4		27.7	43.7		32.9	34.4	
Progression Factor	0.91	0.99		1.00	1.00		1.00	1.00		0.99	0.70	
Incremental Delay, d2	0.4	0.1		0.2	56.1		0.2	39.2		8.9	5.1	
Delay (s)	34.0	36.9		25.7	99.5		27.8	82.9		41.6	29.0	
Level of Service	C	D		C	F		C	F		D	C	
Approach Delay (s)		36.6			83.3			79.8			31.5	
Approach LOS		D			F			E			C	

Intersection Summary			
HCM 2000 Control Delay	64.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

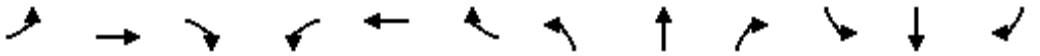


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	290	235	705	460	160
Future Volume (vph)	160	290	235	705	460	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	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	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1564	1803	1900	1834	
Flt Permitted	0.95	1.00	0.32	1.00	1.00	
Satd. Flow (perm)	1787	1564	601	1900	1834	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	170	309	250	750	489	170
RTOR Reduction (vph)	0	238	0	0	16	0
Lane Group Flow (vph)	170	71	250	750	643	0
Confl. Peds. (#/hr)			2			
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4	2			
Actuated Green, G (s)	11.5	11.5	30.7	30.7	30.7	
Effective Green, g (s)	11.5	11.5	30.7	30.7	30.7	
Actuated g/C Ratio	0.23	0.23	0.61	0.61	0.61	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	409	358	367	1161	1121	
v/s Ratio Prot				0.39	0.35	
v/s Ratio Perm	c0.10	0.05	c0.42			
v/c Ratio	0.42	0.20	0.68	0.65	0.57	
Uniform Delay, d1	16.5	15.6	6.5	6.3	5.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.3	5.1	1.2	0.7	
Delay (s)	17.2	15.9	11.6	7.5	6.5	
Level of Service	B	B	B	A	A	
Approach Delay (s)	16.4			8.5	6.5	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Cycle length optimized - Free.

c Critical Lane Group



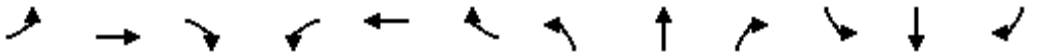
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	520	30	320	780	485	30	280	385	430	200	140
Future Volume (vph)	120	520	30	320	780	485	30	280	385	430	200	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
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	5093		1787	3574	1576	1787	1881	1599	3467	1753	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	5093		1787	3574	1576	1787	1881	1599	3467	1753	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	531	31	327	796	495	31	286	393	439	204	143
RTOR Reduction (vph)	0	6	0	0	0	154	0	0	245	0	19	0
Lane Group Flow (vph)	122	556	0	327	796	341	31	286	148	439	328	0
Confl. Peds. (#/hr)						1						3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2	3	7	4		3	8	
Permitted Phases						2			4			
Actuated Green, G (s)	13.0	21.5		27.8	36.3	57.0	4.9	26.8	26.8	20.7	42.6	
Effective Green, g (s)	13.0	21.5		27.8	36.3	57.0	4.9	26.8	26.8	20.7	42.6	
Actuated g/C Ratio	0.11	0.18		0.23	0.30	0.48	0.04	0.22	0.22	0.17	0.36	
Clearance Time (s)	5.5	6.3		5.5	6.3	5.5	5.5	5.9	5.9	5.5	5.9	
Vehicle Extension (s)	2.5	4.0		2.5	4.0	2.5	2.5	3.0	3.0	2.5	3.0	
Lane Grp Cap (vph)	193	912		413	1081	748	72	420	357	598	622	
v/s Ratio Prot	0.07	0.11		c0.18	c0.22	0.08	0.02	c0.15		c0.13	0.19	
v/s Ratio Perm						0.14			0.09			
v/c Ratio	0.63	0.61		0.79	0.74	0.46	0.43	0.68	0.41	0.73	0.53	
Uniform Delay, d1	51.2	45.4		43.4	37.6	21.1	56.2	42.7	39.9	47.0	30.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.8	3.0		9.7	4.5	0.3	3.0	4.5	0.8	4.4	0.8	
Delay (s)	57.0	48.4		53.1	42.0	21.4	59.2	47.2	40.7	51.4	31.5	
Level of Service	E	D		D	D	C	E	D	D	D	C	
Approach Delay (s)		50.0			38.0			44.1			42.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	670	0	450	920	665	0
Future Volume (vph)	670	0	450	920	665	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	13.9		5.1	5.5	7.6	
Lane Util. Factor	1.00		0.97	0.95	0.97	
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		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	1863		3467	3574	3467	
Flt Permitted	1.00		0.95	1.00	0.95	
Satd. Flow (perm)	1863		3467	3574	3467	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	691	0	464	948	686	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	691	0	464	948	686	0
Confl. Peds. (#/hr)		5				
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	49.8		22.1	85.4	31.5	
Effective Green, g (s)	49.8		22.1	85.4	31.5	
Actuated g/C Ratio	0.38		0.17	0.66	0.24	
Clearance Time (s)	13.9		5.1	5.5	7.6	
Vehicle Extension (s)	3.5		2.5	3.5	3.0	
Lane Grp Cap (vph)	713		589	2347	840	
v/s Ratio Prot	c0.37		c0.13	0.27	c0.20	
v/s Ratio Perm						
v/c Ratio	0.97		0.79	0.40	0.82	
Uniform Delay, d1	39.3		51.7	10.4	46.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	27.0		6.7	0.5	6.2	
Delay (s)	66.3		58.4	10.9	52.7	
Level of Service	E		E	B	D	
Approach Delay (s)	66.3			26.5	52.7	
Approach LOS	E			C	D	

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



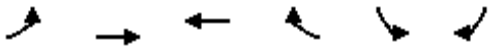
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	455	410	185	555	30	605	670	265	65	250	290
Future Volume (vph)	175	455	410	185	555	30	605	670	265	65	250	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1551	1787	3544		3467	1881	1527	1787	3250	
Flt Permitted	0.25	1.00	1.00	0.11	1.00		0.30	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	463	1863	1551	202	3544		1103	1881	1527	298	3250	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	182	474	427	193	578	31	630	698	276	68	260	302
RTOR Reduction (vph)	0	0	243	0	3	0	0	0	50	0	136	0
Lane Group Flow (vph)	182	474	184	193	606	0	630	698	226	68	426	0
Confl. Peds. (#/hr)			5			3			9			5
Confl. Bikes (#/hr)			1			2			2			1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	55.9	42.3	42.3	56.7	42.7		77.7	67.8	67.8	58.5	53.6	
Effective Green, g (s)	55.9	42.3	42.3	56.7	42.7		77.7	67.8	67.8	58.5	53.6	
Actuated g/C Ratio	0.37	0.28	0.28	0.38	0.28		0.52	0.45	0.45	0.39	0.36	
Clearance Time (s)	5.0	5.5	5.5	5.0	5.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		3.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	291	525	437	224	1008		872	850	690	164	1161	
v/s Ratio Prot	0.06	c0.25		c0.08	0.17		c0.09	c0.37		0.01	0.13	
v/s Ratio Perm	0.18		0.12	0.25			0.28		0.15	0.15		
v/c Ratio	0.63	0.90	0.42	0.86	0.60		0.72	0.82	0.33	0.41	0.37	
Uniform Delay, d1	34.2	51.9	43.9	37.2	46.3		23.2	35.8	26.4	32.9	35.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	18.7	0.7	26.8	1.0		3.0	8.8	1.3	0.6	0.9	
Delay (s)	37.8	70.6	44.5	64.1	47.3		26.1	44.6	27.7	33.5	36.5	
Level of Service	D	E	D	E	D		C	D	C	C	D	
Approach Delay (s)		54.8			51.4			34.4			36.2	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1020	430	0	1705	0	0
Future Volume (Veh/h)	1020	430	0	1705	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1109	467	0	1853	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	179			131		
pX, platoon unblocked			0.77		0.87	0.77
vC, conflicting volume			1576		1727	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1144		0	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			465		892	832

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	739	525	311	618	618	618
Volume Left	0	0	0	0	0	0
Volume Right	0	156	311	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.43	0.31	0.18	0.36	0.36	0.36
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0			0.0		
Approach LOS						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1530	1335	320	0	0
Future Volume (Veh/h)	0	1530	1335	320	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1663	1451	348	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		193	1155			
pX, platoon unblocked	0.90				0.88	0.90
vC, conflicting volume	1799				2282	726
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1670				1686	481
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	344				75	480

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3
Volume Total	832	832	726	726	348
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	348
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.49	0.49	0.43	0.43	0.20
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0		0.0		
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	670	665	0	1585	0	0
Future Volume (Veh/h)	670	665	0	1585	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	691	686	0	1634	0	0
Pedestrians					5	
Lane Width (ft)					0.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	252			141		
pX, platoon unblocked			0.89		0.93	0.89
vC, conflicting volume			696		1513	696
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			596		1046	596
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			875		210	400

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	691	343	343	817	817
Volume Left	0	0	0	0	0
Volume Right	0	343	343	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.20	0.20	0.48	0.48
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	670	0	0	1370	0	355
Future Volume (Veh/h)	670	0	0	1370	0	355
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	691	0	0	1412	0	366
Pedestrians					5	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)	145			774		
pX, platoon unblocked			0.63		0.63	0.63
vC, conflicting volume			696		1049	696
vC1, stage 1 conf vol					696	
vC2, stage 2 conf vol					353	
vCu, unblocked vol			225		785	225
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	25
cM capacity (veh/h)			846		433	490

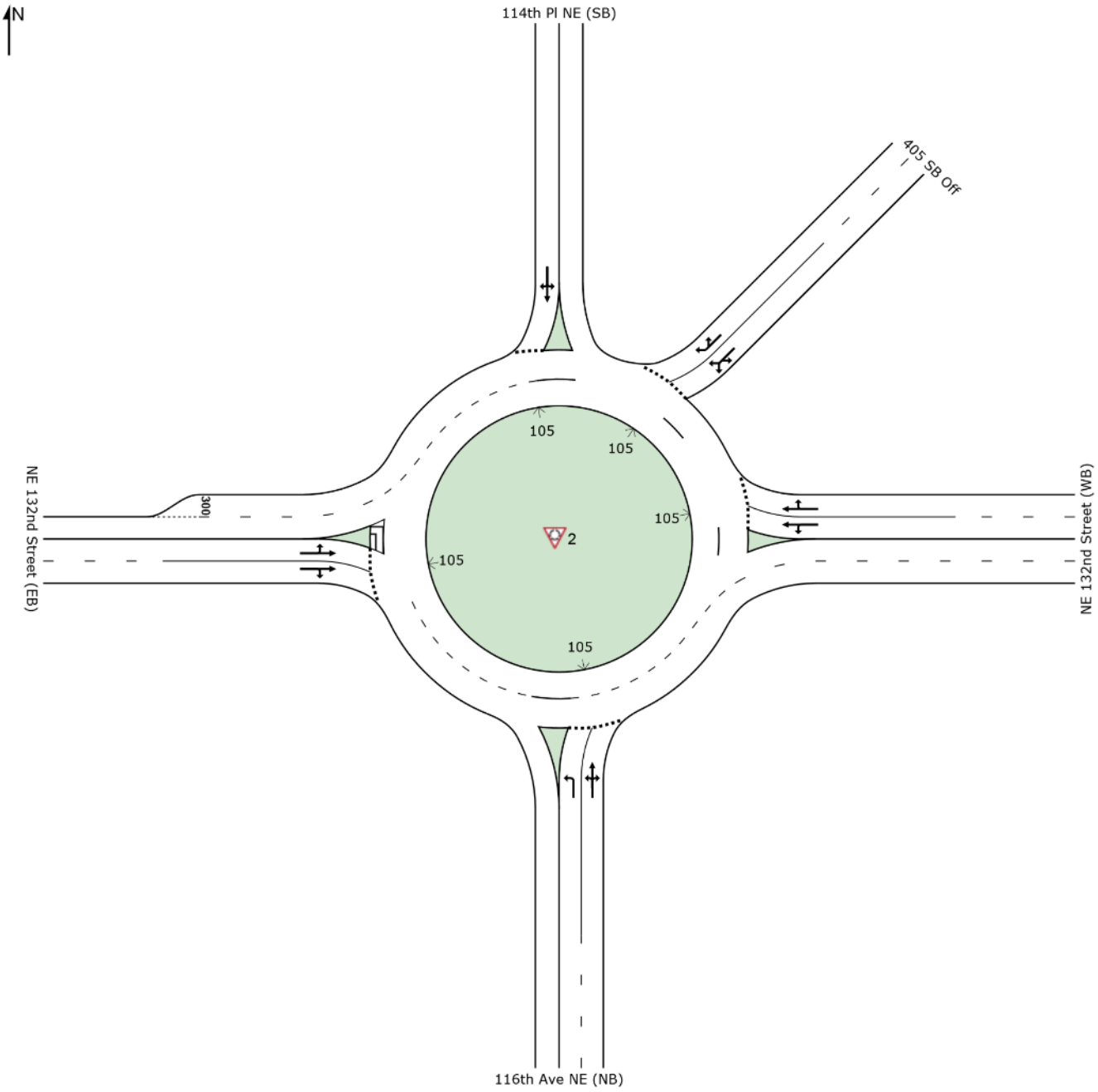
Direction, Lane #	EB 1	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	691	353	353	353	353	366
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	366
cSH	1700	1700	1700	1700	1700	490
Volume to Capacity	0.41	0.21	0.21	0.21	0.21	0.75
Queue Length 95th (ft)	0	0	0	0	0	157
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	30.9
Lane LOS						D
Approach Delay (s)	0.0	0.0				30.9
Approach LOS						D

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

SITE LAYOUT

Site: 2 [NE 132nd St at 114th Pl NE]

Roundabout



MOVEMENT SUMMARY

Site: 2 [2035AM NE 132nd St at 114th Pl NE]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 116th Ave NE (NB)											
3	L2	16	7.0	0.030	9.0	LOS A	0.1	3.3	0.64	0.73	24.3
8	T1	21	7.0	0.147	2.6	LOS A	0.7	19.8	0.67	0.59	25.0
18	R2	100	7.0	0.147	3.7	LOS A	0.7	19.8	0.67	0.59	23.8
Approach		137	7.0	0.147	4.2	LOS A	0.7	19.8	0.67	0.61	24.1
East: NE 132nd Street (WB)											
1	L2	300	3.0	0.288	7.3	LOS A	1.5	39.6	0.17	0.49	28.9
6	T1	337	3.0	0.288	1.7	LOS A	1.5	39.6	0.16	0.31	29.7
16	R2	11	3.0	0.192	2.4	LOS A	0.9	23.1	0.16	0.21	28.9
Approach		647	3.0	0.288	4.3	LOS A	1.5	39.6	0.17	0.39	29.3
NorthEast: 405 SB Off											
1bx	L3	211	3.0	0.292	7.8	LOS A	1.2	31.8	0.52	0.69	9.8
1ax	L1	105	3.0	0.292	6.3	LOS A	1.2	31.8	0.52	0.69	23.8
16ax	R1	158	3.0	0.292	2.3	LOS A	1.2	31.8	0.51	0.43	24.9
16bx	R3	5	3.0	0.176	3.8	LOS A	0.7	16.9	0.51	0.41	23.9
Approach		479	3.0	0.292	5.6	LOS A	1.2	31.8	0.51	0.60	17.6
North: 114th Pl NE (SB)											
7	L2	32	0.0	0.129	8.2	LOS A	0.5	12.8	0.59	0.61	13.4
4	T1	53	0.0	0.129	3.0	LOS A	0.5	12.8	0.59	0.61	23.7
14	R2	21	0.0	0.129	3.9	LOS A	0.5	12.8	0.59	0.61	24.1
Approach		105	0.0	0.129	4.7	LOS A	0.5	12.8	0.59	0.61	20.5
West: NE 132nd Street (EB)											
5	L2	5	1.0	0.596	16.6	LOS B	5.7	143.7	0.87	0.99	31.3
2	T1	684	1.0	0.596	10.1	LOS B	6.2	156.8	0.87	0.97	20.4
12	R2	447	1.0	0.596	9.4	LOS A	6.2	156.8	0.86	0.92	30.5
Approach		1137	1.0	0.596	9.9	LOS A	6.2	156.8	0.87	0.95	24.6
All Vehicles		2505	2.2	0.596	7.1	LOS A	6.2	156.8	0.60	0.70	23.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2035PM NE 132nd St at 114th Pl NE]

Roundabout

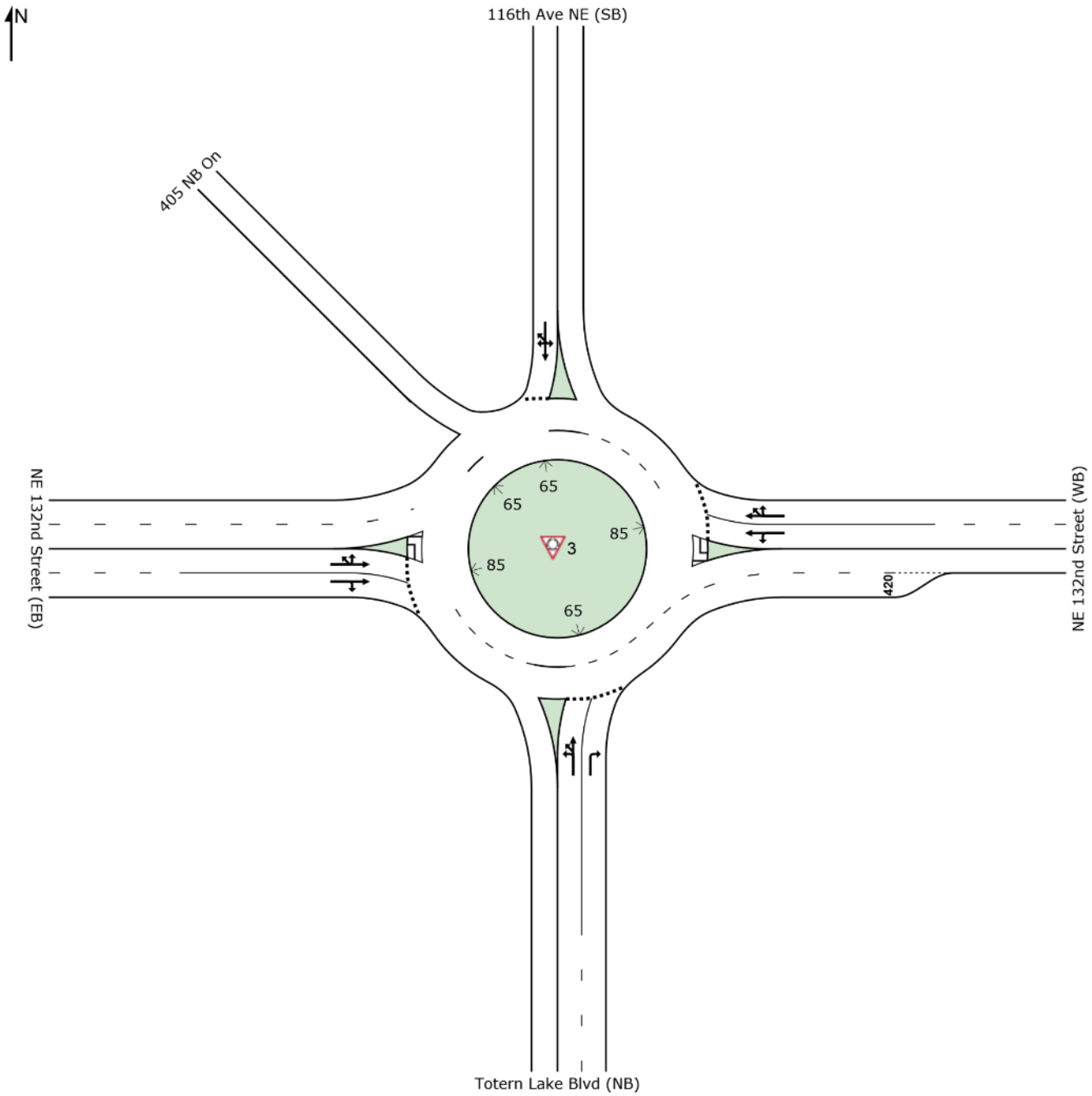
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 116th Ave NE (NB)											
3	L2	505	2.0	0.490	8.4	LOS A	3.1	79.9	0.71	0.87	24.4
8	T1	42	2.0	0.402	3.4	LOS A	2.1	54.3	0.68	0.74	24.9
18	R2	268	2.0	0.402	4.5	LOS A	2.1	54.3	0.68	0.74	23.6
Approach		816	2.0	0.490	6.8	LOS A	3.1	79.9	0.70	0.82	24.3
East: NE 132nd Street (WB)											
1	L2	111	1.0	0.481	10.9	LOS B	3.1	79.0	0.67	0.62	31.1
6	T1	658	1.0	0.481	5.1	LOS A	3.1	79.0	0.65	0.59	31.0
16	R2	26	1.0	0.320	5.5	LOS A	1.6	41.1	0.61	0.56	30.0
Approach		795	1.0	0.481	5.9	LOS A	3.1	79.0	0.65	0.60	31.0
NorthEast: 405 SB Off											
1bx	L3	316	3.0	0.547	13.2	LOS B	4.1	104.1	0.86	1.07	9.1
1ax	L1	105	3.0	0.547	11.7	LOS B	4.1	104.1	0.86	1.07	22.1
16ax	R1	158	3.0	0.297	6.0	LOS A	1.4	36.8	0.77	0.77	23.8
16bx	R3	5	3.0	0.297	7.5	LOS A	1.4	36.8	0.77	0.77	22.8
Approach		584	3.0	0.547	11.0	LOS B	4.1	104.1	0.83	0.99	15.1
North: 114th Pl NE (SB)											
7	L2	16	0.0	0.122	16.1	LOS B	0.7	16.5	0.85	0.88	12.5
4	T1	26	0.0	0.122	10.9	LOS B	0.7	16.5	0.85	0.88	22.0
14	R2	11	0.0	0.122	11.8	LOS B	0.7	16.5	0.85	0.88	22.3
Approach		53	0.0	0.122	12.6	LOS B	0.7	16.5	0.85	0.88	19.1
West: NE 132nd Street (EB)											
5	L2	16	1.0	0.333	11.9	LOS B	2.2	56.6	0.74	0.67	32.7
2	T1	437	1.0	0.333	5.7	LOS A	2.5	62.5	0.74	0.66	21.3
12	R2	200	1.0	0.333	5.8	LOS A	2.5	62.5	0.74	0.65	31.5
Approach		653	1.0	0.333	5.9	LOS A	2.5	62.5	0.74	0.66	24.9
All Vehicles		2900	1.7	0.547	7.3	LOS A	4.1	104.1	0.72	0.76	23.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 3 [NE 132nd St at Totem Lake Blvd NE]

Roundabout



MOVEMENT SUMMARY

Site: 3 [2035AM NE 132nd St at Totem Lake Blvd NE]

Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Totern Lake Blvd (NB)											
3	L2	32	1.0	0.290	8.3	LOS A	1.5	38.7	0.69	0.81	23.5
3a	L1	211	1.0	0.290	7.5	LOS A	1.5	38.7	0.69	0.81	23.8
8	T1	5	1.0	0.290	3.7	LOS A	1.5	38.7	0.69	0.81	23.8
18	R2	63	1.0	0.121	6.2	LOS A	0.5	12.7	0.64	0.75	23.6
Approach		311	1.0	0.290	7.3	LOS A	1.5	38.7	0.68	0.80	23.7
East: NE 132nd Street (WB)											
1	L2	211	3.0	0.341	10.3	LOS B	2.2	55.3	0.58	0.67	31.5
6	T1	463	3.0	0.341	5.2	LOS A	2.3	58.8	0.57	0.57	21.1
16a	R1	132	3.0	0.341	4.6	LOS A	2.3	58.8	0.56	0.52	32.1
16	R2	11	3.0	0.341	5.0	LOS A	2.3	58.8	0.56	0.52	31.6
Approach		816	3.0	0.341	6.4	LOS A	2.3	58.8	0.57	0.59	25.9
North: 116th Ave NE (SB)											
7	L2	16	1.0	0.527	11.7	LOS B	3.1	78.9	0.78	0.93	24.0
4	T1	147	1.0	0.527	7.3	LOS A	3.1	78.9	0.78	0.93	23.8
14	R2	121	1.0	0.527	7.9	LOS A	3.1	78.9	0.78	0.93	22.2
14b	R3	53	1.0	0.527	8.2	LOS A	3.1	78.9	0.78	0.93	23.1
Approach		337	1.0	0.527	7.8	LOS A	3.1	78.9	0.78	0.93	23.2
West: NE 132nd Street (EB)											
5b	L3	79	2.0	0.517	11.3	LOS B	4.0	100.4	0.64	0.59	30.7
5	L2	32	2.0	0.517	10.3	LOS B	4.0	100.4	0.64	0.59	30.3
2	T1	737	2.0	0.517	5.4	LOS A	4.0	100.4	0.63	0.60	30.3
12	R2	289	2.0	0.418	5.7	LOS A	2.7	69.7	0.61	0.63	29.7
Approach		1137	2.0	0.517	6.1	LOS A	4.0	100.4	0.63	0.61	30.2
All Vehicles		2600	2.1	0.527	6.5	LOS A	4.0	100.4	0.64	0.67	26.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 3 [2035PM NE 132nd St at Totem Lake Blvd NE]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Totern Lake Blvd (NB)											
3	L2	258	0.0	0.828	14.9	LOS B	9.3	231.4	0.92	1.28	21.4
3a	L1	263	0.0	0.828	14.2	LOS B	9.3	231.4	0.92	1.28	22.5
8	T1	205	0.0	0.828	10.3	LOS B	9.3	231.4	0.92	1.28	22.5
18	R2	205	0.0	0.367	7.1	LOS A	1.7	43.1	0.70	0.83	23.4
Approach		932	0.0	0.828	12.0	LOS B	9.3	231.4	0.87	1.18	22.5
East: NE 132nd Street (WB)											
1	L2	89	1.0	0.545	20.3	LOS C	5.0	125.7	1.00	1.11	28.2
6	T1	416	1.0	0.545	14.2	LOS B	5.7	143.8	1.00	1.07	18.9
16a	R1	132	1.0	0.545	12.6	LOS B	5.7	143.8	1.00	1.04	29.4
16	R2	11	1.0	0.545	13.1	LOS B	5.7	143.8	1.00	1.04	28.9
Approach		647	1.0	0.545	14.7	LOS B	5.7	143.8	1.00	1.07	22.6
North: 116th Ave NE (SB)											
7	L2	5	0.0	0.416	12.5	LOS B	2.4	60.1	0.82	0.93	23.8
4	T1	116	0.0	0.416	8.0	LOS A	2.4	60.1	0.82	0.93	23.6
14	R2	47	0.0	0.416	8.6	LOS A	2.4	60.1	0.82	0.93	21.9
14b	R3	53	0.0	0.416	9.0	LOS A	2.4	60.1	0.82	0.93	22.9
Approach		221	0.0	0.416	8.5	LOS A	2.4	60.1	0.82	0.93	23.2
West: NE 132nd Street (EB)											
5b	L3	132	2.0	0.485	10.4	LOS B	3.7	93.5	0.51	0.56	30.7
5	L2	100	2.0	0.485	9.4	LOS A	3.7	93.5	0.51	0.56	30.3
2	T1	721	2.0	0.485	4.5	LOS A	3.7	93.5	0.50	0.54	30.5
12	R2	153	2.0	0.383	4.7	LOS A	2.5	63.6	0.48	0.52	29.9
Approach		1105	2.0	0.485	5.7	LOS A	3.7	93.5	0.50	0.54	30.4
All Vehicles		2905	1.0	0.828	9.9	LOS A	9.3	231.4	0.75	0.89	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

March 15, 2019 NE 128th Street Westbound Left Turn at Totem Lake Blvd Draft Memorandum

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Technicam Memoranndum

March 15, 2019

To: Joel Pfundt, City of Kirkland

From: Jeff Hee

Subject: NE 128th Street Westbound Left Turn at Totem Lake Blvd

The following summarizes our preliminary analysis for a dedicated westbound left turn phase on NE 128th Street at Totem Lake Blvd.

Setting

The NE 128th Street overpass connects 116th Ave NE to the I-405 HOV ramps to Totem Lake Blvd. These three signalized intersections are coordinated and maintained by the WSDOT. The overpass intersections are shown in Figure 1.

Figure 1: NE 128th Street Overpass

The overpass includes transit shelters, wide sidewalks and bicycle lanes. The Totem Lake Freeway Station is on the I-405 HOV ramps on the north side of NE 128th Street. NE 128th Street continues east to 120th Ave NE and to EvergreenHealth Medical Center.

Issue

At 128th Street and Totem Lake Blvd there are no left-turns allowed in the eastbound and westbound directions. We understand the following issues regarding the reasoning eastbound and westbound left turns are not allowed at NE 128th Street and Totem Blvd:

- Concern that left-turns would require green-time that would reduce capacity on the overpass and create queuing issues that would spillback between the closely spacing intersections and impact the HOV ramps and transit operations.
- Sightline issues created by the crest vertical curve with the physical construction of the overpass are perceived to not allow permissive, same time as the opposing greens, lefts to occur safely.

EvergreenHealth has expressed strong interest in modifying the NE 128th Street and Totem Lake Blvd signal to allow a westbound left-turn movement. To resolve possible issues:

- Left turn phase would need to be protected (green arrow only), to address sightlines limitations.
- Update the signal timing and coordination on the overpass to continue to support traffic flow with dedicated green time added at the NE 128th Street and Totem Lake Blvd traffic signal.
- Left turn phase westbound only, to minimize left turn stacking in the eastbound direction and queuing to through adjacent intersections.

Volumes

Future year 2035 AM and PM peak hour traffic volumes are from the *EvergreenHealth / Totem Lake Traffic Study* currently in-progress. The volumes forecast are based on output from the BKR travel demand model. Figure 3 illustrates the year 2035 AM and PM peak hour traffic volumes.

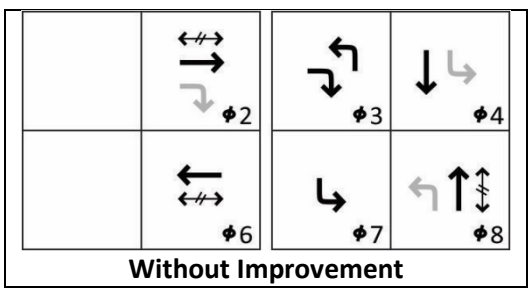
Traffic Analysis

The following compares traffic operations for the year 2035 conditions without and with a westbound left turn at NE 128th Street and Totem Lake Blvd and modified signal timing and coordination on NE 128th Street at 116th Ave NE, at the I-405 HOV ramps and at Totem Lake Blvd.

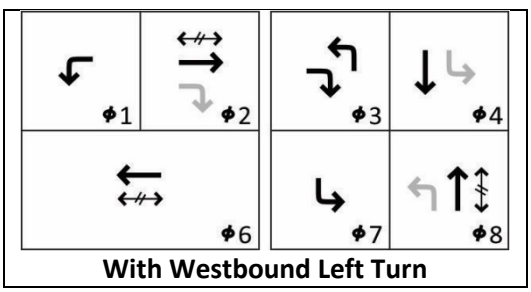
Options evaluated for both AM and PM peak hour conditions include:

0. **No Action**.
1. **Restripe one westbound through lane into a left turn lane**. This interim lane alignment option, shifts westbound traffic into one through lane and does not add a “new” left turn pocket to NE 128th Street.
2. **Add a westbound left turn pocket**. This is the preferred option to maintain capacity for the westbound movement (keep both lanes). The signal timing was not adjusted for the added left turn pocked.

The signal phasing without and with protected westbound lefts is compared below.



Without Improvement



With Westbound Left Turn

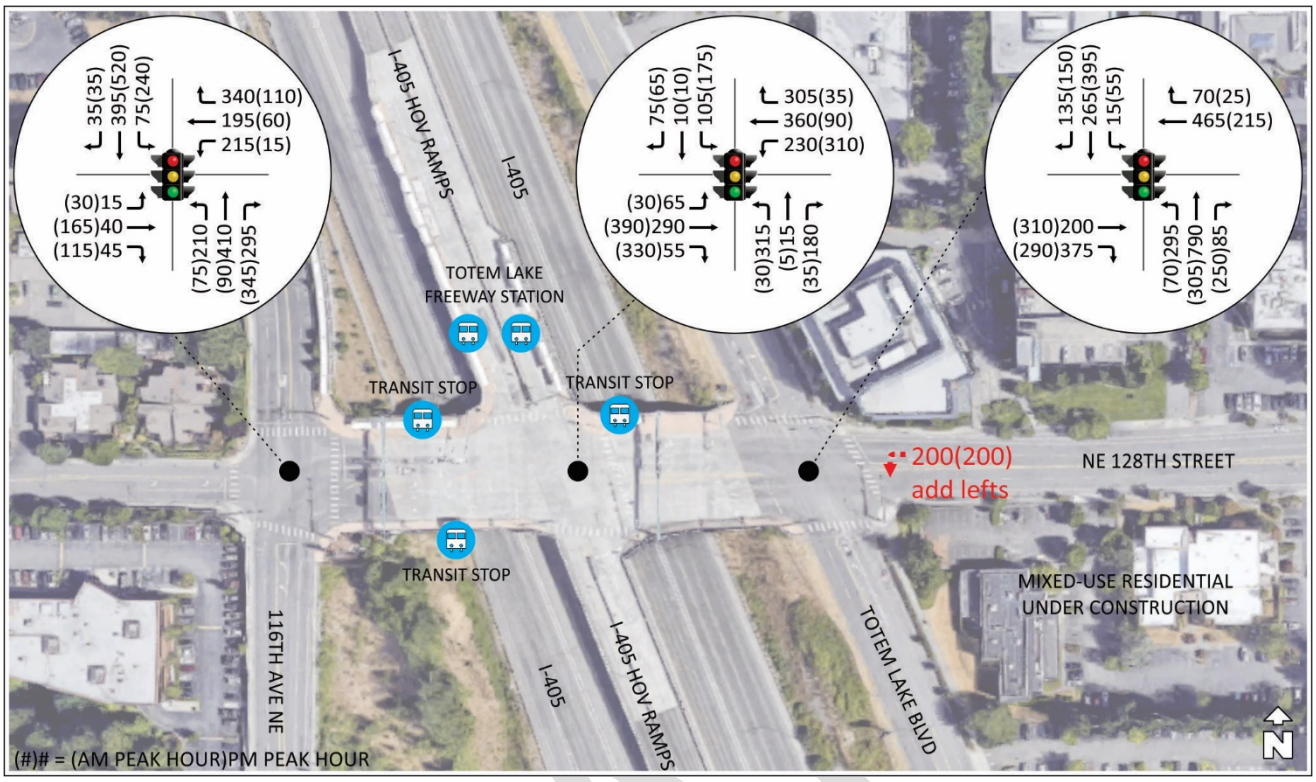


Figure 3: 2035 AM and PM Peak Hour Volume

For this study it is assumed that the left turn volume would be 200 vehicle in the AM and PM peak hour.

Intersection LOS and delay was evaluated using Synchro and based on HCM 2000 methodology, consistent with the *EvergreenHealth / Totem Lake Traffic Study*. Table 1 summarizes the LOS and delay.

Table 1: Level of Service Analysis

NE 128th St at	Option 0. No Action		Option 1. Restripe WB Left		Option 2. WB Left Lane	
	AM LOS	PM LOS	AM LOS	PM LOS	AM LOS	PM LOS
116th Ave NE	D (48.1)	D (51.3)	D (51.9)	D (43.2)	D (51.7)	D (44.6)
I-405 HOV Ramps	D (44.0)	C (32.4)	D (48.7)	C (24.5)	D (48.9)	C (24.7)
Totem Lake Blvd	B (19.7)	C (27.3)	D (36.6)	C (33.2)	D (36.4)	C (32.2)

Vehicle queues were evaluated using the Synchro calculations (no simulation). Table 2 evaluates queue impacts, based on 95th-percentile queue calculation output.

Table 2: Preliminary Queue Analysis

NE 128th St at		116th Ave NE			I-405 HOV Ramps				Totem Lake Blvd			
		WBL	WBT	WBR	EBL	EBT	WBL	WBT	EBT	EBR	WB L	WB T
Option 0. No Action	AM	35	129	11	m23	151	#635	45	135	155	-	86
	PM	190	210	66	m80	m190	225	211	55	89	-	191
Option 1. Restripe WB Left	AM	m24	92	9	m17	141	#470	m18	m106	m101	262	224
	PM	137	149	47	m23	44	204	152	73	120	229	424
Option 2. WB Left Lane	50-Q	m24	93	0	m17	141	#469	m18	m106	m101	262	91
	95-Q	137	149	80	m23	44	265	151	73	120	229	170

Review

- 116 Ave NE, I-405 HOV Ramps and Totem Lake Blvd intersections satisfy intersection LOS requirements for the City of Kirkland and WSDOT for all three options.
- Vehicles queues on the overpass with a westbound left turn at Totem Lake Blvd comparable to conditions without a westbound left turn lane.
- The modifications to signal timings show benefits to the overpass.
- 120th Ave NE is over 800 feet to the east of Totem Lake Blvd and the westbound queues generated with the left turn are not projected to extend to 120th Ave NE.

Considerations

- A westbound left turn at Totem Lake Blvd would allow drivers entering the area from the south to return south using a similar route. This action reduces confusion.
- Currently there are a few drivers who ignore the signing and striping and make lefts both in the eastbound and westbound directions at Totem Lake Blvd.
- The analysis would need to be vetted by the WSDOT and be compatible to I-405 Master Plan and Sound Transit BRT projects, which are on-going currently.
- The preliminary analysis is not for design purposes.
- If determined too “impactful” during peak hour conditions. Consideration should be given for allowing westbound lefts during off-peak times. Electronic signage similar to the signs at NE 128th Street and 120th Ave NE and the Totem Lake Transit Center notifying drivers when right turns are not allowed (or red), could be implemented for off-peak times.

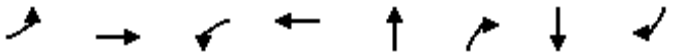
If you have any questions, please contact me at your convenience.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	311	15	69	122	83	483	267	645
v/c Ratio	0.09	0.85	0.12	0.52	0.25	0.61	0.32	0.84	0.36
Control Delay	49.4	77.1	57.2	71.9	10.4	89.4	8.9	84.8	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	49.4	77.1	57.2	71.9	10.7	89.4	8.9	84.8	25.3
Queue Length 50th (ft)	29	297	16	76	0	86	33	273	203
Queue Length 95th (ft)	57	386	35	129	11	143	93	361	317
Internal Link Dist (ft)		430		183			1261		936
Turn Bay Length (ft)	100		50			50		150	
Base Capacity (vph)	442	449	298	314	559	172	1494	408	1806
Starvation Cap Reductn	0	0	0	0	141	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.69	0.05	0.22	0.29	0.48	0.32	0.65	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Future Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.88		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1753		1649	1733	1517	1787	3059		1752	3463	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	1753		1649	1733	1517	1787	3059		1752	3463	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	183	128	17	67	122	83	100	383	267	606	39
RTOR Reduction (vph)	0	17	0	0	0	91	0	224	0	0	2	0
Lane Group Flow (vph)	33	294	0	15	69	31	83	259	0	267	643	0
Confl. Peds. (#/hr)			3			40			17			7
Confl. Bikes (#/hr)						1			1			1
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	3%	3%	3%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	32.1	32.1		12.2	12.2	41.3	12.3	66.5		29.1	83.3	
Effective Green, g (s)	32.1	32.1		12.2	12.2	41.3	12.3	66.5		29.1	83.3	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.26	0.08	0.42		0.18	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	358	351		125	132	391	137	1271		318	1802	
v/s Ratio Prot	0.02	c0.17		0.01	c0.04	0.01	0.05	0.08		c0.15	c0.19	
v/s Ratio Perm						0.01						
v/c Ratio	0.09	0.84		0.12	0.52	0.08	0.61	0.20		0.84	0.36	
Uniform Delay, d1	52.1	61.5		68.9	71.1	45.0	71.5	29.8		63.2	22.6	
Progression Factor	1.00	1.00		0.82	0.82	1.71	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	15.9		0.5	4.2	0.1	6.2	0.4		17.1	0.1	
Delay (s)	52.2	77.3		57.3	62.8	76.9	77.7	30.2		80.3	22.7	
Level of Service	D	E		E	E	E	E	C		F	C	
Approach Delay (s)		74.9			70.8			37.2			39.6	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



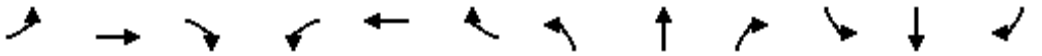
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	33	800	344	139	39	39	205	72
v/c Ratio	0.05	0.40	1.13	0.07	0.24	0.21	0.47	0.17
Control Delay	9.3	6.2	126.6	10.0	66.5	10.3	56.8	22.3
Queue Delay	0.0	1.8	1.4	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	8.0	127.9	10.0	66.5	10.3	56.8	22.3
Queue Length 50th (ft)	10	114	~408	12	40	0	182	17
Queue Length 95th (ft)	m23	151	#635	45	67	23	#403	73
Internal Link Dist (ft)		183		167	527		515	
Turn Bay Length (ft)	90					100		50
Base Capacity (vph)	710	1982	305	1943	405	398	440	429
Starvation Cap Reductn	0	972	32	0	0	0	0	0
Spillback Cap Reductn	0	2	0	0	0	8	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.79	1.26	0.07	0.10	0.10	0.47	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Future Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.93		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3296		1752	3357			1753	1553		1761	1568
Flt Permitted	0.66	1.00		0.29	1.00			0.96	1.00		0.95	1.00
Satd. Flow (perm)	1237	3296		533	3357			1753	1553		1761	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	433	367	344	100	39	33	6	39	194	11	72
RTOR Reduction (vph)	0	92	0	0	17	0	0	0	36	0	0	39
Lane Group Flow (vph)	33	708	0	344	122	0	0	39	3	0	205	33
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	91.8	91.8		91.8	91.8			13.4	13.4		38.8	38.8
Effective Green, g (s)	91.8	91.8		91.8	91.8			13.4	13.4		38.8	38.8
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08	0.08		0.24	0.24
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	709	1891		305	1926			146	130		427	380
v/s Ratio Prot		0.21			0.04			c0.02			c0.12	
v/s Ratio Perm	0.03			c0.64					0.00			0.02
v/c Ratio	0.05	0.37		1.13	0.06			0.27	0.03		0.48	0.09
Uniform Delay, d1	14.9	18.5		34.1	15.1			68.7	67.3		52.0	46.9
Progression Factor	0.60	0.43		1.16	0.91			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1		90.3	0.0			1.3	0.1		3.8	0.5
Delay (s)	9.0	8.0		129.8	13.7			70.0	67.4		55.8	47.4
Level of Service	A	A		F	B			E	E		E	D
Approach Delay (s)		8.1			96.4			68.7			53.6	
Approach LOS		A			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	333	312	258	75	597	59	586
v/c Ratio	0.53	0.58	0.42	0.13	0.28	0.10	0.30
Control Delay	37.3	15.8	28.8	5.2	5.3	5.1	9.2
Queue Delay	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Delay	37.3	15.9	28.8	5.2	5.3	5.1	9.3
Queue Length 50th (ft)	100	72	56	10	38	8	63
Queue Length 95th (ft)	135	155	86	26	76	22	112
Internal Link Dist (ft)	167		753		1176		989
Turn Bay Length (ft)				100		50	
Base Capacity (vph)	1238	624	1211	650	2130	573	1927
Starvation Cap Reductn	116	27	0	0	0	0	0
Spillback Cap Reductn	0	0	172	73	0	0	158
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.52	0.25	0.13	0.28	0.10	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	310	290	0	215	25	70	305	250	55	395	150
Future Volume (vph)	0	310	290	0	215	25	70	305	250	55	395	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00		0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99		0.99		1.00	0.99		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		0.98		1.00	0.93		1.00	0.96	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1566		3432		1787	3311		1770	3393	
Flt Permitted		1.00	1.00		1.00		0.39	1.00		0.43	1.00	
Satd. Flow (perm)		3539	1566		3432		731	3311		794	3393	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	333	312	0	231	27	75	328	269	59	425	161
RTOR Reduction (vph)	0	0	147	0	14	0	0	111	0	0	32	0
Lane Group Flow (vph)	0	333	165	0	244	0	75	486	0	59	554	0
Confl. Peds. (#/hr)	44		4	4		44			3			
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov		NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3		6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		14.1	20.2		14.1		53.1	47.0		48.5	44.7	
Effective Green, g (s)		14.1	20.2		14.1		53.1	47.0		48.5	44.7	
Actuated g/C Ratio		0.18	0.25		0.18		0.66	0.59		0.61	0.56	
Clearance Time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5		4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		623	395		604		565	1945		527	1895	
v/s Ratio Prot		c0.09	c0.03		0.07		0.01	0.15		0.01	c0.16	
v/s Ratio Perm			0.07				0.08			0.06		
v/c Ratio		0.53	0.42		0.40		0.13	0.25		0.11	0.29	
Uniform Delay, d1		30.0	25.0		29.2		4.9	8.0		6.4	9.3	
Progression Factor		1.16	1.61		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.5		0.6		0.1	0.3		0.1	0.4	
Delay (s)		35.8	40.7		29.8		4.9	8.3		6.5	9.7	
Level of Service		D	D		C		A	A		A	A	
Approach Delay (s)		38.2			29.8			7.9			9.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	89	202	225	354	219	734	78	447
v/c Ratio	0.12	0.53	0.28	0.29	0.37	0.96	0.82	0.52	0.66
Control Delay	51.9	40.5	30.0	30.2	7.4	101.6	42.9	64.4	48.3
Queue Delay	0.0	0.4	1.3	1.5	0.3	0.0	0.0	0.0	0.0
Total Delay	51.9	40.8	31.3	31.7	7.7	101.6	42.9	64.4	48.3
Queue Length 50th (ft)	12	35	109	125	56	171	232	59	167
Queue Length 95th (ft)	34	86	190	210	66	#326	301	107	208
Internal Link Dist (ft)		430		183			1261		901
Turn Bay Length (ft)	100		50			50		150	
Base Capacity (vph)	391	410	734	769	1017	229	941	227	860
Starvation Cap Reductn	0	0	354	372	232	0	0	0	0
Spillback Cap Reductn	0	103	0	0	0	0	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.29	0.53	0.57	0.45	0.96	0.78	0.34	0.52

Intersection Summary

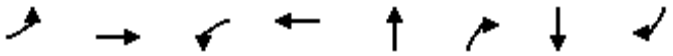
Description: WSDOT Timing

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Future Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1736		1681	1761	1515	1787	3314		1770	3476	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1736		1681	1761	1515	1787	3314		1770	3476	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	42	47	224	203	354	219	427	307	78	411	36
RTOR Reduction (vph)	0	40	0	0	0	170	0	110	0	0	6	0
Lane Group Flow (vph)	16	49	0	202	225	184	219	624	0	78	441	0
Confl. Peds. (#/hr)						32			13			16
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	8.9	8.9		52.4	52.4	62.5	15.4	28.5		10.1	23.2	
Effective Green, g (s)	8.9	8.9		52.4	52.4	62.5	15.4	28.5		10.1	23.2	
Actuated g/C Ratio	0.07	0.07		0.44	0.44	0.52	0.13	0.24		0.08	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	133	128		734	768	789	229	787		148	672	
v/s Ratio Prot	0.01	c0.03		0.12	c0.13	0.02	c0.12	c0.19		0.04	0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.12	0.38		0.28	0.29	0.23	0.96	0.79		0.53	0.66	
Uniform Delay, d1	51.9	52.9		21.6	21.8	15.7	52.0	43.0		52.7	44.7	
Progression Factor	1.00	1.00		1.20	1.21	3.83	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.9		0.8	0.9	0.1	46.8	5.7		2.6	2.4	
Delay (s)	52.3	54.9		26.8	27.2	60.2	98.8	48.7		55.2	47.1	
Level of Service	D	D		C	C	E	F	D		E	D	
Approach Delay (s)		54.5			42.1			60.2			48.3	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT Timing			

c Critical Lane Group

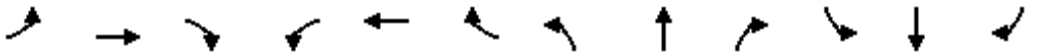


Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	68	359	240	693	344	188	119	78
v/c Ratio	0.24	0.21	0.52	0.40	0.75	0.37	0.59	0.33
Control Delay	38.6	31.8	30.2	17.2	50.6	12.6	61.9	17.5
Queue Delay	0.0	1.3	3.5	1.0	0.0	0.0	0.0	0.0
Total Delay	38.6	33.1	33.6	18.2	50.6	12.6	61.9	17.5
Queue Length 50th (ft)	52	140	128	137	245	33	88	7
Queue Length 95th (ft)	m80	m190	225	211	315	85	149	53
Internal Link Dist (ft)		183		167	527		515	
Turn Bay Length (ft)	90					100		50
Base Capacity (vph)	286	1680	465	1719	660	670	211	247
Starvation Cap Reductn	0	1090	143	725	0	0	0	0
Spillback Cap Reductn	0	0	0	48	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.61	0.75	0.70	0.52	0.28	0.56	0.32

Intersection Summary

Description: WSDOT+Volumes

m Volume for 95th percentile queue is metered by upstream signal.



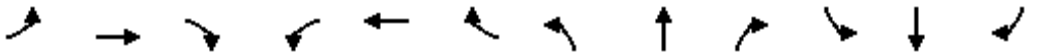
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Future Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.93			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1752	3421		1752	3308			1744	1553		1747	1553
Flt Permitted	0.32	1.00		0.52	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	586	3421		954	3308			1744	1553		1747	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	302	57	240	375	318	328	16	188	109	10	78
RTOR Reduction (vph)	0	11	0	0	105	0	0	0	97	0	0	60
Lane Group Flow (vph)	68	348	0	240	588	0	0	344	91	0	119	18
Heavy Vehicles (%)	3%	3%	3%	3%	3%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	58.6	58.6		58.6	58.6			31.5	31.5		13.9	13.9
Effective Green, g (s)	58.6	58.6		58.6	58.6			31.5	31.5		13.9	13.9
Actuated g/C Ratio	0.49	0.49		0.49	0.49			0.26	0.26		0.12	0.12
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	286	1670		465	1615			457	407		202	179
v/s Ratio Prot		0.10			0.18			c0.20			c0.07	
v/s Ratio Perm	0.12			c0.25					0.06			0.01
v/c Ratio	0.24	0.21		0.52	0.36			0.75	0.22		0.59	0.10
Uniform Delay, d1	17.8	17.5		21.0	19.1			40.7	34.7		50.3	47.5
Progression Factor	1.63	1.71		1.05	1.11			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.2		3.8	0.6			7.3	0.4		5.1	0.3
Delay (s)	30.5	30.2		25.8	21.9			48.0	35.0		55.5	47.8
Level of Service	C	C		C	C			D	D		E	D
Approach Delay (s)		30.2			22.9			43.4			52.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+Volumes			

c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	387	551	304	902	15	412
v/c Ratio	0.11	0.33	0.30	0.72	0.73	0.10	0.69
Control Delay	9.4	2.8	17.3	36.4	36.8	22.9	45.0
Queue Delay	0.4	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	3.0	17.3	36.4	36.8	22.9	45.0
Queue Length 50th (ft)	18	18	113	176	302	7	135
Queue Length 95th (ft)	55	89	191	209	357	18	177
Internal Link Dist (ft)	167		753		1176		1005
Turn Bay Length (ft)				100		50	
Base Capacity (vph)	1903	1351	1833	577	1732	152	833
Starvation Cap Reductn	1282	386	0	0	0	0	0
Spillback Cap Reductn	0	0	145	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.40	0.33	0.53	0.52	0.10	0.50

Intersection Summary
Description: WSDOT



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	375	0	465	70	295	790	85	15	265	135
Future Volume (vph)	0	200	375	0	465	70	295	790	85	15	265	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00		0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99		0.99		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		0.98		1.00	0.99		1.00	0.95	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3574	1576		3430		1787	3512		1770	3344	
Flt Permitted		1.00	1.00		1.00		0.26	1.00		0.27	1.00	
Satd. Flow (perm)		3574	1576		3430		490	3512		504	3344	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	206	387	0	479	72	304	814	88	15	273	139
RTOR Reduction (vph)	0	0	74	0	7	0	0	8	0	0	57	0
Lane Group Flow (vph)	0	206	313	0	544	0	304	894	0	15	355	0
Confl. Peds. (#/hr)	61		6	6		61			15			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov		NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3		6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		60.8	82.5		60.8		49.2	42.1		24.4	22.4	
Effective Green, g (s)		60.8	82.5		60.8		49.2	42.1		24.4	22.4	
Actuated g/C Ratio		0.51	0.69		0.51		0.41	0.35		0.20	0.19	
Clearance Time (s)		5.0	5.1		5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5		4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1810	1083		1737		435	1232		123	624	
v/s Ratio Prot		0.06	0.05		c0.16		c0.13	c0.25		0.00	0.11	
v/s Ratio Perm			0.15				0.16			0.02		
v/c Ratio		0.11	0.29		0.31		0.70	0.73		0.12	0.57	
Uniform Delay, d1		15.5	7.3		17.4		26.3	33.9		38.5	44.4	
Progression Factor		0.58	0.98		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1		0.5		4.5	2.2		0.3	1.2	
Delay (s)		9.2	7.3		17.8		30.8	36.1		38.8	45.6	
Level of Service		A	A		B		C	D		D	D	
Approach Delay (s)		8.0			17.8			34.7			45.4	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	311	15	69	122	83	483	267	645
v/c Ratio	0.09	0.85	0.03	0.12	0.14	0.52	0.78	0.64	0.79
Control Delay	41.5	67.4	35.4	35.4	1.6	67.8	21.6	52.5	53.4
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	41.5	67.4	35.4	35.4	1.8	67.8	21.6	52.5	53.4
Queue Length 50th (ft)	23	233	8	38	0	68	42	204	267
Queue Length 95th (ft)	52	#364	m24	92	9	120	96	291	315
Internal Link Dist (ft)		430		183			673		641
Turn Bay Length (ft)	100		50			50		150	
Base Capacity (vph)	392	404	532	560	893	178	1086	414	1077
Starvation Cap Reductn	0	0	0	0	343	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.77	0.03	0.12	0.22	0.47	0.44	0.64	0.60

Intersection Summary

Description: WSDOT Timing

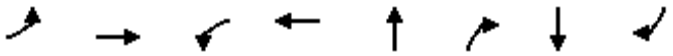
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Future Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.88		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1753		1649	1733	1495	1787	3071		1752	3464	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	1753		1649	1733	1495	1787	3071		1752	3464	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	183	128	17	67	122	83	100	383	267	606	39
RTOR Reduction (vph)	0	20	0	0	0	54	0	349	0	0	4	0
Lane Group Flow (vph)	33	291	0	15	69	68	83	134	0	267	641	0
Confl. Peds. (#/hr)			3			40			17			7
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	3%	3%	3%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	25.6	25.6		42.0	42.0	72.7	11.7	11.6		30.7	30.6	
Effective Green, g (s)	25.6	25.6		42.0	42.0	72.7	11.7	11.6		30.7	30.6	
Actuated g/C Ratio	0.20	0.20		0.32	0.32	0.56	0.09	0.09		0.24	0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	351	345		532	559	836	160	274		413	815	
v/s Ratio Prot	0.02	c0.17		0.01	c0.04	0.02	0.05	0.04		c0.15	c0.19	
v/s Ratio Perm						0.03						
v/c Ratio	0.09	0.84		0.03	0.12	0.08	0.52	0.49		0.65	0.79	
Uniform Delay, d1	42.7	50.3		30.1	31.0	13.2	56.5	56.4		44.8	46.6	
Progression Factor	1.00	1.00		0.96	0.97	0.84	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	16.9		0.1	0.4	0.0	2.1	1.6		3.1	5.2	
Delay (s)	42.8	67.1		29.1	30.6	11.2	58.6	58.0		47.8	51.8	
Level of Service	D	E		C	C	B	E	E		D	D	
Approach Delay (s)		64.8			19.0			58.1			50.7	
Approach LOS		E			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT Timing			

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	33	800	344	139	39	39	205	72
v/c Ratio	0.04	0.33	0.82	0.06	0.20	0.17	1.44	0.39
Control Delay	6.7	3.3	31.1	2.4	50.4	4.7	276.1	23.0
Queue Delay	0.0	0.3	2.3	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	3.6	33.4	2.4	50.4	4.7	276.1	23.0
Queue Length 50th (ft)	3	8	200	5	32	0	~234	7
Queue Length 95th (ft)	m17	141	#470	m18	53	13	#394	56
Internal Link Dist (ft)		183		167	527		515	
Turn Bay Length (ft)	90					100		50
Base Capacity (vph)	871	2394	418	2378	498	487	142	184
Starvation Cap Reductn	0	948	22	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.55	0.87	0.06	0.08	0.08	1.44	0.39

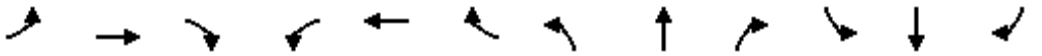
Intersection Summary

Description: WSDOT+Volumes

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

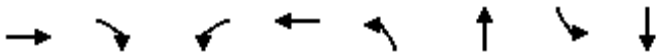
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Future Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.93		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3296		1752	3357			1753	1553		1761	1568
Flt Permitted	0.66	1.00		0.32	1.00			0.96	1.00		0.95	1.00
Satd. Flow (perm)	1237	3296		594	3357			1753	1553		1761	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	433	367	344	100	39	33	6	39	194	11	72
RTOR Reduction (vph)	0	74	0	0	12	0	0	0	35	0	0	58
Lane Group Flow (vph)	33	726	0	344	127	0	0	39	4	0	205	14
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	90.5	90.5		90.5	90.5			13.0	13.0		10.5	10.5
Effective Green, g (s)	90.5	90.5		90.5	90.5			13.0	13.0		10.5	10.5
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.10	0.10		0.08	0.08
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	861	2294		413	2336			175	155		142	126
v/s Ratio Prot		0.22			0.04			c0.02			c0.12	
v/s Ratio Perm	0.03			c0.58					0.00			0.01
v/c Ratio	0.04	0.32		0.83	0.05			0.22	0.03		1.44	0.11
Uniform Delay, d1	6.2	7.7		14.3	6.2			53.9	52.8		59.8	55.4
Progression Factor	0.67	0.45		0.71	0.37			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.3		16.7	0.0			0.9	0.1		234.7	0.5
Delay (s)	4.2	3.8		26.9	2.3			54.7	52.9		294.5	56.0
Level of Service	A	A		C	A			D	D		F	E
Approach Delay (s)		3.8			19.8			53.8			232.5	
Approach LOS		A			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+Volumes			

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	333	312	215	258	75	597	59	586
v/c Ratio	0.23	0.37	0.75	0.24	0.39	0.63	0.34	0.80
Control Delay	18.1	7.9	63.9	13.5	35.8	33.2	34.9	53.6
Queue Delay	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.7
Total Delay	19.0	8.4	63.9	13.5	35.9	33.2	34.9	54.3
Queue Length 50th (ft)	73	40	184	108	45	173	35	232
Queue Length 95th (ft)	m106	m101	262	224	75	215	62	281
Internal Link Dist (ft)	167			753		742		656
Turn Bay Length (ft)					100		50	
Base Capacity (vph)	1453	956	384	1097	310	1233	177	850
Starvation Cap Reductn	829	288	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	36	6	0	0	73
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.47	0.56	0.24	0.25	0.48	0.33	0.75

Intersection Summary

Description: WSDOT

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	310	290	200	215	25	70	305	250	55	395	150
Future Volume (vph)	0	310	290	200	215	25	70	305	250	55	395	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.93		1.00	0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1559	1752	1802		1787	3308		1770	3380	
Flt Permitted		1.00	1.00	0.95	1.00		0.16	1.00		0.25	1.00	
Satd. Flow (perm)		3539	1559	1752	1802		303	3308		467	3380	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	333	312	215	231	27	75	328	269	59	425	161
RTOR Reduction (vph)	0	0	106	0	2	0	0	130	0	0	31	0
Lane Group Flow (vph)	0	333	206	215	256	0	75	467	0	59	555	0
Confl. Peds. (#/hr)	44		4	4		44			3			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		52.4	61.2	21.1	78.0		41.0	32.2		32.8	28.1	
Effective Green, g (s)		52.4	61.2	21.1	78.0		41.0	32.2		32.8	28.1	
Actuated g/C Ratio		0.40	0.47	0.16	0.60		0.32	0.25		0.25	0.22	
Clearance Time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5	3.0	4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1426	733	284	1081		196	819		164	730	
v/s Ratio Prot		0.09	c0.02	c0.12	0.14		c0.03	c0.14		0.01	c0.16	
v/s Ratio Perm			0.11				0.09			0.08		
v/c Ratio		0.23	0.28	0.76	0.24		0.38	0.57		0.36	0.76	
Uniform Delay, d1		25.6	21.0	52.0	12.1		33.5	42.8		38.1	47.8	
Progression Factor		0.64	0.88	0.92	1.02		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.1	10.9	0.5		0.9	1.0		1.0	4.6	
Delay (s)		16.8	18.7	58.7	12.9		34.4	43.8		39.1	52.3	
Level of Service		B	B	E	B		C	D		D	D	
Approach Delay (s)		17.7			33.7			42.8			51.1	
Approach LOS		B			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	71.5%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: WSDOT				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	89	202	225	354	219	734	78	447
v/c Ratio	0.12	0.53	0.27	0.29	0.37	0.83	0.78	0.67	0.76
Control Delay	51.9	39.9	20.1	20.3	4.7	74.1	38.7	81.4	55.2
Queue Delay	0.0	0.0	1.2	1.3	0.4	0.0	0.0	0.0	0.0
Total Delay	51.9	39.9	21.4	21.6	5.1	74.1	38.7	81.4	55.2
Queue Length 50th (ft)	12	34	82	91	19	163	219	60	172
Queue Length 95th (ft)	34	85	137	149	47	#278	285	#129	224
Internal Link Dist (ft)		430		183			673		641
Turn Bay Length (ft)	100		50			50		150	
Base Capacity (vph)	421	439	740	776	949	291	1049	123	674
Starvation Cap Reductn	0	0	350	367	218	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.20	0.52	0.55	0.48	0.75	0.70	0.63	0.66

Intersection Summary

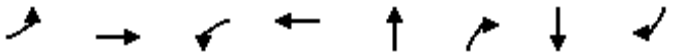
Description: WSDOT Timing

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Future Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1736		1681	1761	1513	1787	3314		1770	3476	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1736		1681	1761	1513	1787	3314		1770	3476	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	42	47	224	203	354	219	427	307	78	411	36
RTOR Reduction (vph)	0	41	0	0	0	174	0	113	0	0	6	0
Lane Group Flow (vph)	16	48	0	202	225	180	219	621	0	78	441	0
Confl. Peds. (#/hr)						32			13			16
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	8.9	8.9		52.9	52.9	60.9	17.8	30.1		8.0	20.3	
Effective Green, g (s)	8.9	8.9		52.9	52.9	60.9	17.8	30.1		8.0	20.3	
Actuated g/C Ratio	0.07	0.07		0.44	0.44	0.51	0.15	0.25		0.07	0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	133	128		741	776	767	265	831		118	588	
v/s Ratio Prot	0.01	c0.03		0.12	c0.13	0.02	c0.12	c0.19		0.04	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.12	0.38		0.27	0.29	0.23	0.83	0.75		0.66	0.75	
Uniform Delay, d1	51.9	52.9		21.3	21.5	16.5	49.6	41.4		54.7	47.4	
Progression Factor	1.00	1.00		0.81	0.81	2.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.9		0.8	0.8	0.1	18.2	3.8		11.8	5.5	
Delay (s)	52.3	54.8		18.2	18.4	33.2	67.8	45.3		66.5	53.0	
Level of Service	D	D		B	B	C	E	D		E	D	
Approach Delay (s)		54.4			25.0			50.4			55.0	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT Timing			

c Critical Lane Group

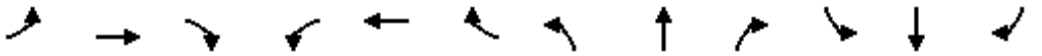


Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	68	359	240	693	344	188	119	78
v/c Ratio	0.23	0.21	0.50	0.39	0.78	0.39	0.60	0.33
Control Delay	5.8	3.1	22.7	11.1	54.0	15.5	63.1	17.8
Queue Delay	0.0	0.4	3.0	1.0	0.0	0.0	0.0	0.0
Total Delay	5.8	3.5	25.7	12.1	54.0	15.5	63.1	17.8
Queue Length 50th (ft)	5	10	112	116	246	42	88	7
Queue Length 95th (ft)	m23	44	204	152	332	99	150	53
Internal Link Dist (ft)		183		167	527		515	
Turn Bay Length (ft)	90					100		50
Base Capacity (vph)	297	1722	478	1764	544	567	232	265
Starvation Cap Reductn	0	850	146	762	0	0	0	0
Spillback Cap Reductn	0	12	0	0	1	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.41	0.72	0.69	0.63	0.33	0.51	0.29

Intersection Summary

Description: WSDOT+Volumes

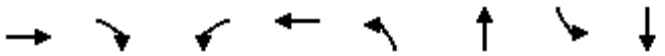
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Future Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.93			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1752	3421		1752	3308			1744	1553		1747	1553
Flt Permitted	0.32	1.00		0.52	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	594	3421		958	3308			1744	1553		1747	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	302	57	240	375	318	328	16	188	109	10	78
RTOR Reduction (vph)	0	11	0	0	110	0	0	0	89	0	0	60
Lane Group Flow (vph)	68	348	0	240	583	0	0	344	99	0	119	18
Heavy Vehicles (%)	3%	3%	3%	3%	3%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	60.1	60.1		60.1	60.1			30.3	30.3		13.6	13.6
Effective Green, g (s)	60.1	60.1		60.1	60.1			30.3	30.3		13.6	13.6
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.25	0.25		0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	297	1713		479	1656			440	392		197	176
v/s Ratio Prot		0.10			0.18			c0.20			c0.07	
v/s Ratio Perm	0.11			c0.25					0.06			0.01
v/c Ratio	0.23	0.20		0.50	0.35			0.78	0.25		0.60	0.10
Uniform Delay, d1	16.9	16.6		20.0	18.2			41.8	35.8		50.6	47.7
Progression Factor	0.21	0.17		0.84	0.78			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.2		3.0	0.5			9.3	0.5		5.9	0.3
Delay (s)	4.9	3.0		19.8	14.7			51.0	36.3		56.6	48.1
Level of Service	A	A		B	B			D	D		E	D
Approach Delay (s)		3.3			16.0			45.8			53.2	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+Volumes			

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	387	206	551	304	902	15	412
v/c Ratio	0.18	0.44	0.59	0.55	0.77	0.76	0.13	0.76
Control Delay	21.6	5.8	51.6	21.1	41.6	39.4	26.8	50.9
Queue Delay	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	22.2	6.2	51.6	21.1	41.6	39.4	26.8	51.1
Queue Length 50th (ft)	45	27	146	260	178	306	7	137
Queue Length 95th (ft)	73	120	229	424	233	383	20	193
Internal Link Dist (ft)	167			753		742		656
Turn Bay Length (ft)					100		50	
Base Capacity (vph)	1135	960	349	1001	473	1289	115	599
Starvation Cap Reductn	593	214	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	18	2	0	0	18
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.52	0.59	0.56	0.65	0.70	0.13	0.71

Intersection Summary
Description: WSDOT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	375	200	465	70	295	790	85	15	265	135
Future Volume (vph)	0	200	375	200	465	70	295	790	85	15	265	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.95	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3574	1579	1770	1805		1787	3512		1770	3344	
Flt Permitted		1.00	1.00	0.95	1.00		0.24	1.00		0.26	1.00	
Satd. Flow (perm)		3574	1579	1770	1805		445	3512		485	3344	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	206	387	206	479	72	304	814	88	15	273	139
RTOR Reduction (vph)	0	0	108	0	4	0	0	7	0	0	53	0
Lane Group Flow (vph)	0	206	279	206	547	0	304	895	0	15	359	0
Confl. Peds. (#/hr)	61		6	6		61			15			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		35.1	56.2	23.7	63.3		46.7	40.4		21.7	20.5	
Effective Green, g (s)		35.1	56.2	23.7	63.3		46.7	40.4		21.7	20.5	
Actuated g/C Ratio		0.29	0.47	0.20	0.53		0.39	0.34		0.18	0.17	
Clearance Time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5	3.0	4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1045	739	349	952		409	1182		100	571	
v/s Ratio Prot		0.06	0.07	0.12	c0.30		c0.13	c0.25		0.00	0.11	
v/s Ratio Perm			0.11				0.16			0.03		
v/c Ratio		0.20	0.38	0.59	0.57		0.74	0.76		0.15	0.63	
Uniform Delay, d1		31.9	20.6	43.7	19.2		28.1	35.4		40.7	46.2	
Progression Factor		0.67	0.91	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.2	2.7	2.5		6.8	2.8		0.5	2.2	
Delay (s)		21.8	19.0	46.4	21.7		34.9	38.2		41.2	48.4	
Level of Service		C	B	D	C		C	D		D	D	
Approach Delay (s)		20.0			28.4			37.4			48.1	
Approach LOS		B			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	78.9%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: WSDOT				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	311	15	69	122	83	483	267	645
v/c Ratio	0.09	0.85	0.03	0.12	0.14	0.52	0.78	0.64	0.79
Control Delay	41.5	67.4	36.1	35.9	1.1	67.8	21.6	52.5	53.4
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	41.5	67.4	36.1	35.9	1.3	67.8	21.6	52.5	53.4
Queue Length 50th (ft)	23	233	8	38	0	68	42	204	267
Queue Length 95th (ft)	52	#364	m24	93	0	120	96	291	315
Internal Link Dist (ft)		430		183			673		641
Turn Bay Length (ft)	100		50			50		150	
Base Capacity (vph)	392	404	532	560	893	178	1086	414	1077
Starvation Cap Reductn	0	0	0	0	343	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.77	0.03	0.12	0.22	0.47	0.44	0.64	0.60

Intersection Summary

Description: WSDOT Timing

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

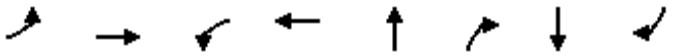
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Future Volume (vph)	30	165	115	15	60	110	75	90	345	240	545	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.88		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1753		1649	1733	1495	1787	3071		1752	3464	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1787	1753		1649	1733	1495	1787	3071		1752	3464	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	183	128	17	67	122	83	100	383	267	606	39
RTOR Reduction (vph)	0	20	0	0	0	54	0	349	0	0	4	0
Lane Group Flow (vph)	33	291	0	15	69	68	83	134	0	267	641	0
Confl. Peds. (#/hr)			3			40			17			7
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	3%	3%	3%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	25.6	25.6		42.0	42.0	72.7	11.7	11.6		30.7	30.6	
Effective Green, g (s)	25.6	25.6		42.0	42.0	72.7	11.7	11.6		30.7	30.6	
Actuated g/C Ratio	0.20	0.20		0.32	0.32	0.56	0.09	0.09		0.24	0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	351	345		532	559	836	160	274		413	815	
v/s Ratio Prot	0.02	c0.17		0.01	c0.04	0.02	0.05	0.04		c0.15	c0.19	
v/s Ratio Perm						0.03						
v/c Ratio	0.09	0.84		0.03	0.12	0.08	0.52	0.49		0.65	0.79	
Uniform Delay, d1	42.7	50.3		30.1	31.0	13.2	56.5	56.4		44.8	46.6	
Progression Factor	1.00	1.00		0.98	0.99	0.50	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	16.9		0.1	0.4	0.0	2.1	1.6		3.1	5.2	
Delay (s)	42.8	67.1		29.6	31.1	6.6	58.6	58.0		47.8	51.8	
Level of Service	D	E		C	C	A	E	E		D	D	
Approach Delay (s)		64.8			16.5			58.1			50.7	
Approach LOS		E			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

Description: WSDOT Timing

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	33	800	344	139	39	39	205	72
v/c Ratio	0.04	0.33	0.82	0.06	0.20	0.17	1.44	0.39
Control Delay	6.7	3.3	32.0	2.4	50.4	4.7	276.1	23.0
Queue Delay	0.0	0.3	2.3	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	3.6	34.3	2.4	50.4	4.7	276.1	23.0
Queue Length 50th (ft)	3	8	203	5	32	0	~234	7
Queue Length 95th (ft)	m17	141	#469	m18	53	13	#394	56
Internal Link Dist (ft)		183		167	527		515	
Turn Bay Length (ft)	90					100		50
Base Capacity (vph)	871	2394	418	2378	498	487	142	184
Starvation Cap Reductn	0	948	22	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.55	0.87	0.06	0.08	0.08	1.44	0.39

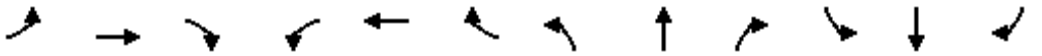
Intersection Summary

Description: WSDOT+Volumes

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

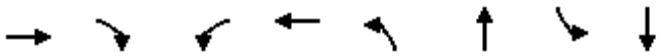
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Future Volume (vph)	30	390	330	310	90	35	30	5	35	175	10	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.93		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3296		1752	3357			1753	1553		1761	1568
Flt Permitted	0.66	1.00		0.32	1.00			0.96	1.00		0.95	1.00
Satd. Flow (perm)	1237	3296		594	3357			1753	1553		1761	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	433	367	344	100	39	33	6	39	194	11	72
RTOR Reduction (vph)	0	74	0	0	12	0	0	0	35	0	0	58
Lane Group Flow (vph)	33	726	0	344	127	0	0	39	4	0	205	14
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	90.5	90.5		90.5	90.5			13.0	13.0		10.5	10.5
Effective Green, g (s)	90.5	90.5		90.5	90.5			13.0	13.0		10.5	10.5
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.10	0.10		0.08	0.08
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	861	2294		413	2336			175	155		142	126
v/s Ratio Prot		0.22			0.04			c0.02			c0.12	
v/s Ratio Perm	0.03			c0.58					0.00			0.01
v/c Ratio	0.04	0.32		0.83	0.05			0.22	0.03		1.44	0.11
Uniform Delay, d1	6.2	7.7		14.3	6.2			53.9	52.8		59.8	55.4
Progression Factor	0.67	0.45		0.76	0.37			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.3		17.0	0.0			0.9	0.1		234.7	0.5
Delay (s)	4.2	3.8		27.9	2.3			54.7	52.9		294.5	56.0
Level of Service	A	A		C	A			D	D		F	E
Approach Delay (s)		3.8			20.5			53.8			232.5	
Approach LOS		A			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+Volumes			

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	333	312	215	258	75	597	59	586
v/c Ratio	0.23	0.37	0.75	0.12	0.39	0.63	0.34	0.80
Control Delay	18.1	7.9	63.9	11.2	35.8	33.2	34.9	53.6
Queue Delay	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.7
Total Delay	19.0	8.4	63.9	11.2	35.9	33.2	34.9	54.3
Queue Length 50th (ft)	73	40	184	36	45	173	35	232
Queue Length 95th (ft)	m106	m101	262	91	75	215	62	281
Internal Link Dist (ft)	167			753		742		656
Turn Bay Length (ft)			200		100		50	
Base Capacity (vph)	1453	956	384	2086	310	1233	177	850
Starvation Cap Reductn	829	288	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	68	6	0	0	75
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.47	0.56	0.13	0.25	0.48	0.33	0.76

Intersection Summary

Description: WSDOT

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	310	290	200	215	25	70	305	250	55	395	150
Future Volume (vph)	0	310	290	200	215	25	70	305	250	55	395	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.93		1.00	0.96	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1559	1752	3424		1787	3308		1770	3380	
Flt Permitted		1.00	1.00	0.95	1.00		0.16	1.00		0.25	1.00	
Satd. Flow (perm)		3539	1559	1752	3424		303	3308		467	3380	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	333	312	215	231	27	75	328	269	59	425	161
RTOR Reduction (vph)	0	0	106	0	6	0	0	130	0	0	31	0
Lane Group Flow (vph)	0	333	206	215	252	0	75	467	0	59	555	0
Confl. Peds. (#/hr)	44		4	4		44			3			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		52.4	61.2	21.1	78.0		41.0	32.2		32.8	28.1	
Effective Green, g (s)		52.4	61.2	21.1	78.0		41.0	32.2		32.8	28.1	
Actuated g/C Ratio		0.40	0.47	0.16	0.60		0.32	0.25		0.25	0.22	
Clearance Time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5	3.0	4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1426	733	284	2054		196	819		164	730	
v/s Ratio Prot		0.09	c0.02	c0.12	0.07		c0.03	c0.14		0.01	c0.16	
v/s Ratio Perm			0.11				0.09			0.08		
v/c Ratio		0.23	0.28	0.76	0.12		0.38	0.57		0.36	0.76	
Uniform Delay, d1		25.6	21.0	52.0	11.2		33.5	42.8		38.1	47.8	
Progression Factor		0.64	0.88	0.92	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3	0.1	10.9	0.1		0.9	1.0		1.0	4.6	
Delay (s)		16.8	18.7	58.7	11.2		34.4	43.8		39.1	52.3	
Level of Service		B	B	E	B		C	D		D	D	
Approach Delay (s)		17.7			32.8			42.8			51.1	
Approach LOS		B			C			D			D	

Intersection Summary					
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.6		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C		
Analysis Period (min)	15				
Description: WSDOT					

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	89	202	225	354	219	734	78	447
v/c Ratio	0.12	0.53	0.27	0.29	0.37	0.83	0.78	0.67	0.76
Control Delay	51.9	39.9	21.1	21.2	5.6	74.1	38.7	81.4	55.2
Queue Delay	0.0	0.0	1.2	1.3	0.4	0.0	0.0	0.0	0.0
Total Delay	51.9	39.9	22.3	22.5	6.0	74.1	38.7	81.4	55.2
Queue Length 50th (ft)	12	34	82	91	33	163	219	60	172
Queue Length 95th (ft)	34	85	137	149	80	#278	285	#129	224
Internal Link Dist (ft)		430		183			673		641
Turn Bay Length (ft)	100		50			50		150	
Base Capacity (vph)	421	439	740	776	949	291	1049	123	674
Starvation Cap Reductn	0	0	350	367	218	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.20	0.52	0.55	0.48	0.75	0.70	0.63	0.66

Intersection Summary

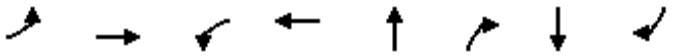
Description: WSDOT Timing

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Future Volume (vph)	15	40	45	215	195	340	210	410	295	75	395	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1736		1681	1761	1513	1787	3314		1770	3476	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1736		1681	1761	1513	1787	3314		1770	3476	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	42	47	224	203	354	219	427	307	78	411	36
RTOR Reduction (vph)	0	41	0	0	0	174	0	113	0	0	6	0
Lane Group Flow (vph)	16	48	0	202	225	180	219	621	0	78	441	0
Confl. Peds. (#/hr)						32			13			16
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	2	2		6	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	8.9	8.9		52.9	52.9	60.9	17.8	30.1		8.0	20.3	
Effective Green, g (s)	8.9	8.9		52.9	52.9	60.9	17.8	30.1		8.0	20.3	
Actuated g/C Ratio	0.07	0.07		0.44	0.44	0.51	0.15	0.25		0.07	0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0	4.6	4.6	5.5		4.6	5.5	
Vehicle Extension (s)	3.0	3.0		3.5	3.5	2.5	2.5	3.5		2.5	3.5	
Lane Grp Cap (vph)	133	128		741	776	767	265	831		118	588	
v/s Ratio Prot	0.01	c0.03		0.12	c0.13	0.02	c0.12	c0.19		0.04	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.12	0.38		0.27	0.29	0.23	0.83	0.75		0.66	0.75	
Uniform Delay, d1	51.9	52.9		21.3	21.5	16.5	49.6	41.4		54.7	47.4	
Progression Factor	1.00	1.00		0.85	0.85	2.48	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.9		0.8	0.8	0.1	18.2	3.8		11.8	5.5	
Delay (s)	52.3	54.8		19.0	19.2	41.1	67.8	45.3		66.5	53.0	
Level of Service	D	D		B	B	D	E	D		E	D	
Approach Delay (s)		54.4			29.1			50.4			55.0	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT Timing			

c Critical Lane Group

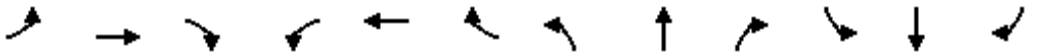


Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	68	359	240	693	344	188	119	78
v/c Ratio	0.23	0.21	0.50	0.39	0.78	0.39	0.60	0.33
Control Delay	5.8	3.1	24.4	11.1	54.0	15.5	63.1	17.8
Queue Delay	0.0	0.4	2.2	0.7	0.0	0.0	0.0	0.0
Total Delay	5.8	3.5	26.6	11.9	54.0	15.5	63.1	17.8
Queue Length 50th (ft)	5	10	113	117	246	42	88	7
Queue Length 95th (ft)	m23	44	264	151	332	99	150	53
Internal Link Dist (ft)		183		167	527		515	
Turn Bay Length (ft)	90					100		50
Base Capacity (vph)	297	1722	478	1764	544	567	232	265
Starvation Cap Reductn	0	850	129	701	0	0	0	0
Spillback Cap Reductn	0	12	0	0	1	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.41	0.69	0.65	0.63	0.33	0.51	0.29

Intersection Summary

Description: WSDOT+Volumes

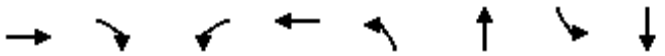
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Future Volume (vph)	65	290	55	230	360	305	315	15	180	105	10	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.93			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1752	3421		1752	3308			1744	1553		1747	1553
Flt Permitted	0.32	1.00		0.52	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	594	3421		958	3308			1744	1553		1747	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	302	57	240	375	318	328	16	188	109	10	78
RTOR Reduction (vph)	0	11	0	0	110	0	0	0	89	0	0	60
Lane Group Flow (vph)	68	348	0	240	583	0	0	344	99	0	119	18
Heavy Vehicles (%)	3%	3%	3%	3%	3%	0%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases		2			6		3	3		4	4	
Permitted Phases	2			6					3			4
Actuated Green, G (s)	60.1	60.1		60.1	60.1			30.3	30.3		13.6	13.6
Effective Green, g (s)	60.1	60.1		60.1	60.1			30.3	30.3		13.6	13.6
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.25	0.25		0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	4.0	4.0		3.0	3.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	297	1713		479	1656			440	392		197	176
v/s Ratio Prot		0.10			0.18			c0.20			c0.07	
v/s Ratio Perm	0.11			c0.25					0.06			0.01
v/c Ratio	0.23	0.20		0.50	0.35			0.78	0.25		0.60	0.10
Uniform Delay, d1	16.9	16.6		20.0	18.2			41.8	35.8		50.6	47.7
Progression Factor	0.21	0.17		0.89	0.78			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.2		3.4	0.5			9.3	0.5		5.9	0.3
Delay (s)	4.9	3.0		21.2	14.7			51.0	36.3		56.6	48.1
Level of Service	A	A		C	B			D	D		E	D
Approach Delay (s)		3.3			16.4			45.8			53.2	
Approach LOS		A			B			D			D	

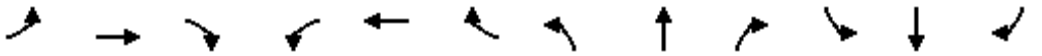
Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: WSDOT+Volumes			

c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	387	206	551	304	902	15	412
v/c Ratio	0.18	0.44	0.59	0.29	0.77	0.76	0.13	0.76
Control Delay	21.6	5.8	51.6	15.3	41.6	39.4	26.8	50.9
Queue Delay	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	22.2	6.2	51.6	15.3	41.6	39.4	26.8	51.1
Queue Length 50th (ft)	45	27	146	110	178	306	7	137
Queue Length 95th (ft)	73	120	229	170	233	383	20	193
Internal Link Dist (ft)	167			753		742		656
Turn Bay Length (ft)			200		100		50	
Base Capacity (vph)	1135	960	349	1903	473	1289	115	599
Starvation Cap Reductn	593	214	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	63	2	0	0	17
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.52	0.59	0.30	0.65	0.70	0.13	0.71

Intersection Summary
Description: WSDOT

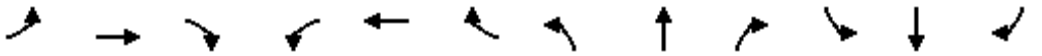


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	200	375	200	465	70	295	790	85	15	265	135
Future Volume (vph)	0	200	375	200	465	70	295	790	85	15	265	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.95	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3574	1579	1770	3430		1787	3512		1770	3344	
Flt Permitted		1.00	1.00	0.95	1.00		0.24	1.00		0.26	1.00	
Satd. Flow (perm)		3574	1579	1770	3430		445	3512		485	3344	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	206	387	206	479	72	304	814	88	15	273	139
RTOR Reduction (vph)	0	0	108	0	9	0	0	7	0	0	53	0
Lane Group Flow (vph)	0	206	279	206	542	0	304	895	0	15	359	0
Confl. Peds. (#/hr)	61		6	6		61			15			
Confl. Bikes (#/hr)			1						1			2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type		NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		35.1	56.2	23.7	63.3		46.7	40.4		21.7	20.5	
Effective Green, g (s)		35.1	56.2	23.7	63.3		46.7	40.4		21.7	20.5	
Actuated g/C Ratio		0.29	0.47	0.20	0.53		0.39	0.34		0.18	0.17	
Clearance Time (s)		5.0	5.1	4.5	5.0		5.1	5.0		5.1	5.0	
Vehicle Extension (s)		4.0	2.5	3.0	4.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)		1045	739	349	1809		409	1182		100	571	
v/s Ratio Prot		0.06	c0.07	c0.12	0.16		c0.13	c0.25		0.00	0.11	
v/s Ratio Perm			0.11				0.16			0.03		
v/c Ratio		0.20	0.38	0.59	0.30		0.74	0.76		0.15	0.63	
Uniform Delay, d1		31.9	20.6	43.7	15.9		28.1	35.4		40.7	46.2	
Progression Factor		0.67	0.91	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.2	2.7	0.4		6.8	2.8		0.5	2.2	
Delay (s)		21.8	19.0	46.4	16.3		34.9	38.2		41.2	48.4	
Level of Service		C	B	D	B		C	D		D	D	
Approach Delay (s)		20.0			24.5			37.4			48.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
Description: WSDOT			

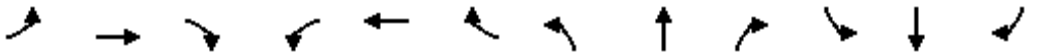
c Critical Lane Group

Select CIP Projects Intersection Capacity Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	220	465	75	90	60	215	240	25	255	320	165
Future Volume (vph)	120	220	465	75	90	60	215	240	25	255	320	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1555	1770	1863	1531	1770	1832		1787	1767	
Flt Permitted	0.69	1.00	1.00	0.45	1.00	1.00	0.17	1.00		0.51	1.00	
Satd. Flow (perm)	1306	1881	1555	847	1863	1531	316	1832		962	1767	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	129	237	500	81	97	65	231	258	27	274	344	177
RTOR Reduction (vph)	0	0	401	0	0	57	0	4	0	0	20	0
Lane Group Flow (vph)	129	237	99	81	97	8	231	281	0	274	501	0
Confl. Peds. (#/hr)						4			2			6
Confl. Bikes (#/hr)			4			2			1			
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	23.0	14.0	14.0	12.8	8.8	8.8	33.6	23.6		31.6	22.6	
Effective Green, g (s)	23.0	14.0	14.0	12.8	8.8	8.8	33.6	23.6		31.6	22.6	
Actuated g/C Ratio	0.33	0.20	0.20	0.18	0.12	0.12	0.48	0.33		0.45	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	488	373	308	205	232	190	356	612		535	565	
v/s Ratio Prot	c0.03	c0.13		0.02	0.05		c0.09	0.15		0.07	c0.28	
v/s Ratio Perm	0.05		0.06	0.05		0.01	0.22			0.16		
v/c Ratio	0.26	0.64	0.32	0.40	0.42	0.04	0.65	0.46		0.51	0.89	
Uniform Delay, d1	17.8	26.0	24.2	28.3	28.5	27.2	13.4	18.5		12.8	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	2.6	0.2	0.5	0.4	0.0	3.0	0.2		0.3	15.1	
Delay (s)	17.9	28.6	24.5	28.7	29.0	27.2	16.5	18.7		13.1	37.9	
Level of Service	B	C	C	C	C	C	B	B		B	D	
Approach Delay (s)		24.6			28.4			17.7			29.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	980	60	190	815	225	35	205	245	415	500	220
Future Volume (vph)	175	980	60	190	815	225	35	205	245	415	500	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	3.0		4.5	3.0	3.0	3.5	3.5		2.5	2.5	2.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3538		1770	3539	1583	1787	3282		1770	1863	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3538		1770	3539	1583	1787	3282		1770	1863	1557
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	180	1010	62	196	840	232	36	211	253	428	515	227
RTOR Reduction (vph)	0	3	0	0	0	116	0	133	0	0	0	119
Lane Group Flow (vph)	180	1069	0	196	840	116	36	331	0	428	515	108
Confl. Peds. (#/hr)												2
Confl. Bikes (#/hr)			3									3
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2						8
Actuated Green, G (s)	10.5	43.7		11.5	44.7	44.7	6.8	35.8		20.5	49.5	49.5
Effective Green, g (s)	12.5	45.7		13.5	46.7	46.7	9.8	38.8		23.5	52.5	52.5
Actuated g/C Ratio	0.09	0.34		0.10	0.35	0.35	0.07	0.29		0.17	0.39	0.39
Clearance Time (s)	6.5	5.0		6.5	5.0	5.0	6.5	6.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	1197		177	1224	547	129	943		308	724	605
v/s Ratio Prot	0.10	c0.30		c0.11	0.24		0.02	0.10		c0.24	c0.28	
v/s Ratio Perm						0.07						0.07
v/c Ratio	1.09	0.89		1.11	0.69	0.21	0.28	0.35		1.39	0.71	0.18
Uniform Delay, d1	61.2	42.3		60.8	37.9	31.2	59.3	38.1		55.8	34.8	27.1
Progression Factor	1.16	0.69		1.00	1.00	1.00	1.53	0.08		1.00	1.00	1.00
Incremental Delay, d2	94.1	9.7		99.3	3.1	0.9	0.6	0.5		194.1	3.3	0.1
Delay (s)	165.0	39.0		160.1	41.0	32.0	91.4	3.5		249.9	38.2	27.2
Level of Service	F	D		F	D	C	F	A		F	D	C
Approach Delay (s)		57.1			57.8			9.8			113.5	
Approach LOS		E			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	67.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.8%	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	410	15	60	120	100	40	345	200	460	405	5
Future Volume (vph)	15	410	15	60	120	100	40	345	200	460	405	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.5	5.5	4.5	5.5		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1853		1770	1863	1546	1787	1760		1787	1877	
Flt Permitted	0.67	1.00		0.13	1.00	1.00	0.51	1.00		0.10	1.00	
Satd. Flow (perm)	1256	1853		246	1863	1546	955	1760		182	1877	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	441	16	65	129	108	43	371	215	495	435	5
RTOR Reduction (vph)	0	1	0	0	0	72	0	16	0	0	1	0
Lane Group Flow (vph)	16	456	0	65	129	36	43	570	0	495	439	0
Confl. Peds. (#/hr)						1			2			3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	41.9	39.5		51.3	44.4	44.4	42.1	36.8		73.2	63.4	
Effective Green, g (s)	41.9	39.5		51.3	44.4	44.4	42.1	36.8		73.2	63.4	
Actuated g/C Ratio	0.31	0.29		0.38	0.33	0.33	0.31	0.27		0.54	0.47	
Clearance Time (s)	4.5	5.0		4.5	5.5	5.5	4.5	5.5		4.0	5.0	
Vehicle Extension (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	398	542		181	612	508	330	479		477	881	
v/s Ratio Prot	0.00	c0.25		c0.02	0.07		0.01	c0.32		c0.24	0.23	
v/s Ratio Perm	0.01			0.12		0.02	0.04			0.32		
v/c Ratio	0.04	0.84		0.36	0.21	0.07	0.13	1.19		1.04	0.50	
Uniform Delay, d1	32.4	44.8		31.0	32.7	31.1	32.8	49.1		42.2	24.8	
Progression Factor	0.99	1.01		1.00	1.00	1.00	1.00	1.00		0.82	0.67	
Incremental Delay, d2	0.0	10.2		0.4	0.1	0.0	0.1	104.7		45.2	1.5	
Delay (s)	32.2	55.6		31.5	32.7	31.1	32.8	153.8		79.9	18.0	
Level of Service	C	E		C	C	C	C	F		E	B	
Approach Delay (s)		54.8			31.9			145.5			50.8	
Approach LOS		D			C			F			D	

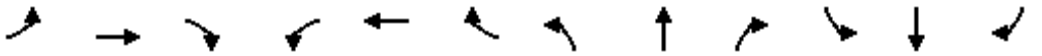
Intersection Summary			
HCM 2000 Control Delay	74.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	140	200	40	185	335	360	660	40	45	360	90
Future Volume (vph)	290	140	200	40	185	335	360	660	40	45	360	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881	1534	1805	1900	1571	1805	1880		1805	1830	
Flt Permitted	0.35	1.00	1.00	0.66	1.00	1.00	0.13	1.00		0.14	1.00	
Satd. Flow (perm)	665	1881	1534	1258	1900	1571	254	1880		260	1830	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	309	149	213	43	197	356	383	702	43	48	383	96
RTOR Reduction (vph)	0	0	153	0	0	169	0	2	0	0	8	0
Lane Group Flow (vph)	309	149	60	43	197	187	383	743	0	48	471	0
Confl. Peds. (#/hr)			7			3			5			5
Confl. Bikes (#/hr)			3						2			3
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	37.7	28.8	28.8	22.3	18.4	18.4	54.9	46.0		34.7	30.8	
Effective Green, g (s)	37.7	28.8	28.8	22.3	18.4	18.4	54.9	46.0		34.7	30.8	
Actuated g/C Ratio	0.37	0.28	0.28	0.22	0.18	0.18	0.54	0.45		0.34	0.30	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	400	528	430	294	340	281	424	842		146	549	
v/s Ratio Prot	c0.11	0.08		0.01	0.10		c0.17	0.40		0.01	0.26	
v/s Ratio Perm	c0.18		0.04	0.03		0.12	c0.32			0.10		
v/c Ratio	0.77	0.28	0.14	0.15	0.58	0.67	0.90	0.88		0.33	0.86	
Uniform Delay, d1	25.5	28.8	27.6	32.2	38.6	39.2	26.5	25.8		25.1	33.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.2	0.1	0.1	0.1	1.5	4.5	21.7	10.5		0.5	12.2	
Delay (s)	33.7	28.9	27.7	32.3	40.0	43.8	48.2	36.4		25.6	46.0	
Level of Service	C	C	C	C	D	D	D	D		C	D	
Approach Delay (s)		30.7			41.7			40.4			44.2	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

Description: Cycle Optimized - Free

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	1030	10	245	1205	440	35	490	345	255	340	230
Future Volume (vph)	240	1030	10	245	1205	440	35	490	345	255	340	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	3.0		4.5	3.0	3.0	3.5	3.5	3.5	2.5	2.5	2.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3569		1787	3574	1549	1805	3610	1586	1805	1900	1592
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3569		1787	3574	1549	1805	3610	1586	1805	1900	1592
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	1073	10	255	1255	458	36	510	359	266	354	240
RTOR Reduction (vph)	0	1	0	0	0	124	0	0	270	0	0	165
Lane Group Flow (vph)	250	1082	0	255	1255	334	36	510	89	266	354	75
Confl. Peds. (#/hr)						2			5			
Confl. Bikes (#/hr)			1			7						3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases						2			4			8
Actuated Green, G (s)	23.8	47.7		23.0	46.9	46.9	4.8	27.3	27.3	18.5	41.0	41.0
Effective Green, g (s)	25.8	49.7		25.0	48.9	48.9	7.8	30.3	30.3	21.5	44.0	44.0
Actuated g/C Ratio	0.18	0.36		0.18	0.35	0.35	0.06	0.22	0.22	0.15	0.31	0.31
Clearance Time (s)	6.5	5.0		6.5	5.0	5.0	6.5	6.5	6.5	5.5	5.5	5.5
Vehicle Extension (s)	4.0	3.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	329	1266		319	1248	541	100	781	343	277	597	500
v/s Ratio Prot	0.14	0.30		c0.14	c0.35		0.02	0.14		c0.15	c0.19	
v/s Ratio Perm						0.22			0.06			0.05
v/c Ratio	0.76	0.85		0.80	1.01	0.62	0.36	0.65	0.26	0.96	0.59	0.15
Uniform Delay, d1	54.2	41.8		55.1	45.5	37.8	63.7	50.1	45.5	58.8	40.5	34.6
Progression Factor	0.95	0.64		1.00	1.00	1.00	1.07	0.77	1.25	1.00	1.00	1.00
Incremental Delay, d2	9.2	6.7		12.3	26.8	5.2	0.6	1.2	0.1	42.9	1.1	0.1
Delay (s)	60.7	33.4		67.4	72.4	43.0	68.5	39.7	57.1	101.7	41.5	34.6
Level of Service	E	C		E	E	D	E	D	E	F	D	C
Approach Delay (s)		38.5			64.9			47.7			58.2	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.8	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)	13.5
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Splits adjusted for Cycle Length			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	165	25	190	270	405	40	575	95	135	535	15
Future Volume (vph)	20	165	25	190	270	405	40	575	95	135	535	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.5	5.5	4.5	5.5		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.95	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1820		1787	1881	1522	1787	1832		1805	1891	
Flt Permitted	0.49	1.00		0.27	1.00	1.00	0.34	1.00		0.19	1.00	
Satd. Flow (perm)	916	1820		515	1881	1522	631	1832		360	1891	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	174	26	200	284	426	42	605	100	142	563	16
RTOR Reduction (vph)	0	4	0	0	0	328	0	3	0	0	0	0
Lane Group Flow (vph)	21	196	0	200	284	98	42	702	0	142	579	0
Confl. Peds. (#/hr)			1			6			4			
Confl. Bikes (#/hr)			1			4			2			9
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	24.9	21.3		40.2	32.1	32.1	79.1	74.0		89.3	79.7	
Effective Green, g (s)	24.9	21.3		40.2	32.1	32.1	79.1	74.0		89.3	79.7	
Actuated g/C Ratio	0.18	0.15		0.29	0.23	0.23	0.56	0.53		0.64	0.57	
Clearance Time (s)	4.5	5.0		4.5	5.5	5.5	4.5	5.5		4.0	5.0	
Vehicle Extension (s)	0.5	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	184	276		283	431	348	398	968		341	1076	
v/s Ratio Prot	0.00	0.11		c0.08	0.15		0.00	c0.38		c0.03	0.31	
v/s Ratio Perm	0.02			c0.13		0.06	0.06			0.23		
v/c Ratio	0.11	0.71		0.71	0.66	0.28	0.11	0.73		0.42	0.54	
Uniform Delay, d1	47.9	56.4		40.9	49.0	44.4	14.8	25.2		17.4	18.7	
Progression Factor	0.69	0.78		1.00	1.00	1.00	1.00	1.00		0.28	0.49	
Incremental Delay, d2	0.1	6.4		6.4	2.8	0.2	0.0	4.7		0.3	1.6	
Delay (s)	33.2	50.5		47.4	51.8	44.6	14.9	30.0		5.1	10.8	
Level of Service	C	D		D	D	D	B	C		A	B	
Approach Delay (s)		48.8			47.4			29.1			9.7	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Master List of Transportation Improvements

Funded Improvements:

1. **Totem Lake Gateway Improvements** (CIP Project Nos. TRC1220000, STC0060500 and NMC1240000). Completes and rebuilds roadways and non-motorized facilities around Village at Totem Lake. Construction is ongoing. Total funding is $19,551,100 for intersection and roadway repairs and other miscellaneous improvements.
2. **Totem Lake Connector** (CIP Project No. NMC0861000). This is a non-motorized bridge over NE 124th Street / 124th Ave NE for the CKC. Planning began in 2016 and construction is anticipated to start in 2019. There is $5,593,100 remaining in the project budget.
3. **NE 116th Street / 124th Ave NE Northbound Dual Left-Turn Lane** (CIP Project No. TRC0920000). Widen intersection for a second northbound left turn lane on NE 116th Street. This is an active project funded at $1,375,000.
4. **124th Ave NE Roadway Improvements** (CIP Project Nos. STC0591200 and STC0591300). Improvements include sidewalks upgrades and widening of the roadway to a 5-lane section from NE 116th Street to NE 124th Street. Sidewalk upgrades to start in 2019 with the roadway reconstruction anticipated to start in 2020. Total funding is with $7,595,000 for right-of-way acquisition and construction.
5. **Bus Rapid Transit (BRT) on I-405**. This is a reginal Sound Transit project to improve transit reliability along I-405. Design is anticipated between 2020 and 2023, construction is anticipated between 2023 and 2025 and new services are anticipated to start by 2024.
6. **NE 124th Street / 116th Ave NE Southbound Right Turn Lane** (CIP Project No. TRC1240000). Widen intersection for a southbound right turn lane on 116th Ave NE. Construction is TBD, and CIP funding was identified in 2020 and 2021 at $1,600,000.
7. **I-405 - NE 132nd Street Interchange**. This project is part of the regional I-405 Master Plan and WSDOT anticipates construction of two roundabouts to support a new southbound off-ramp and new northbound on-ramp to start in 2021 with the new interchange opening by 2023. Funding for the project totals $83,000,000.
8. **NE 124th Street / 113th Ave NE Crosswalk Upgrade** (CIP Project No. NMC0120200). Upgrades crosswalks at the intersection. This active project has a current budget of $80,000.
9. **NE 116th St Crosswalks Upgrades** (CIP Project No. NMC0120100). Upgrades crosswalks upgrades on NE 116th Street. This is an active project with a current budget of $430,000.
10. **NE 132nd Street / Juanita High School Eastbound Right-Turn** (CIP Project No. TRC0930000). Widen the intersection for an eastbound right turn lane on NE 132nd Street into the high school. This is an active project with a current budget of $1,213,854.
11. **NE 132nd Street / 108th Ave NE Westbound Right-Turn Lane** (CIP Project No. TRC0940000). Widen the intersection for a westbound right turn lane on NE 132nd Street at 108th Ave NE. Construction is TBD and funding from the CIP is identified in 2019 and 2020 at $1,220,000.
12. **132nd Ave NE Crosswalk Upgrade** (CIP Project No. NMC0120300). Upgrades crosswalks on 132nd Ave NE started near Lake Washington Technical Institute of Technology and extending south. This is an active project with a current budget of $250,000.
13. **116th Ave NE Extension**. This privately funded improvement extends the roadway to NE 116th Street and is currently under construction.

14. **NE 116th Street / 116th Ave NE**. This new intersection is privately funded and is currently under construction.

Unfunded Transportation Facility Improvements:

15. **132nd Ave NE Improvements** (CIP Project No. STC056000). Widen roadway from NE 85th Street to NE 120th Street with bike lanes, turn lanes, sidewalks, curb, gutter, undergrounded overhead utilities, stormwater improvements and street illumination. Estimated cost is $25,170,000.
16. **119th Ave NE Extension** (CIP Project No. STC0610000). Construct a new 28-foot wide roadway between NE 128th Street and NE 130th Street with bike lanes, curb, gutter and sidewalks. Estimated cost is $5,640,000.
17. **NE 130th Lane Extension** (CIP Project No. STC0620000). Construct a new 28-foot wide roadway between Totem Lake Blvd and 120th Ave NE with bike lanes, curb, gutter and sidewalks. Estimated cost is $10,000,000.
18. **120th Ave NE Improvements** (CIP Project No. STC0630000). Widen roadway from NE 128th Street to NE 132nd Street for bike lanes, improve curb, gutter and sidewalk, provide landscaped median islands and reconstruct three signalized intersections. Estimated cost is $4,500,000.
19. **124th Ave NE Improvements** (CIP Project No. STC0640000). Widen roadway from NE 85th Street to NE 116th Street for bike lanes and landscaped median islands, underground utilities, as necessary improve planter strips and sidewalks. Estimated cost is $30,349,000.
20. **NE 120th Street Extension** (CIP Project No. STC0720000). Extends NE 120th Street along the CKC to 120th Place NE with bicycle facilities, sidewalks, and planter strips along the entire alignment. Estimated cost is $15,780,600.
21. **120th Ave NE Extension** (CIP Project No. STC0730000). Construct new 24- to 28-foot wide roadway between NE 116th Street and NE 120th Street and modify the adjacent signal operations at the NE 116th Street / I-405 single point half urban interchange. Estimated cost is $16,392,000.
22. **NE 132nd Street Improvements Phases 1-3** (CIP Project Nos. STC0770000, STC0780000, STC0790000). Phased roadway improvements from 100th Ave NE to 132nd Ave NE includes landscaped median islands, sidewalk repairs, bike lanes, improved pedestrian access, overlay and restriping. Estimated cost for the improvements is $3,591,000
23. **NE 126th Street Non-Motorized Facilities** (CIP Project No. NMC0430000). Acquire right-of-way between 120th Ave NE to NE 126th Place to reconstruct the existing roadway and new Class 1 (separated) non-motorized facilities. Estimated cost is $4,277,200.
24. **NE 124th Street Sidewalk** (CIP Project No. NMC0880000). Construct curb, gutter, sidewalk and planter strips on the north side of the road from 116th Ave NE on the overpass. Estimated cost is $376,000.
25. **NE 120th Street Sidewalk** (CIP Project No. NMC1020000). Construct curb, gutter, and sidewalk and retaining walls, as necessary, between Slater Ave NE to 128th Way NE. Estimated cost is $548,000.
26. **120th Ave NE Sidewalk** (CIP Project No. NMC1030000). Construct sidewalk, widen pavement, acquire right-of-way, construct retaining walls and street lighting, provide pavement markings, and improve drainage between NE 112th Street and NE 116th Street. Estimated cost is $556,000.
27. **NE 132nd Street / Fire Station Intersection** (CIP Project No. TRC0950000). Improvement modifies the signal at the fire station for pedestrian actuated calls. Estimated cost is $480,000.

28. **NE 132nd Street / 124th Ave NE** (CIP Project No. TRC0960000). Widen intersection and restripe with 2 eastbound left turn lanes, 2 northbound through lanes, 1 southbound left turn lane and 1 southbound through-right turn lane and matching receiving legs. Estimated cost is $7,400,000.
29. **NE 132nd Street / 132nd Ave NE** (CIP Project No. TRC0970000). Extend eastbound turn pockets at the intersection. Estimated cost is $1,150,000.
30. **Slater Ave NE / NE 124th Street / 132nd Ave NE** (CIP Project No. TRC1230000). Widen the intersection to construction a northbound right turn lane on Slater Ave NE, revise the existing traffic signal and acquire property. Estimated cost $2,124,000.

Other Unfunded Improvements:

- **I-405 Master Plan.** Project implementation.
- **Totem Lake Transit Center Bus Stop Consolidation**. The project identifies restricting transit routes and consolidating stops along NE 128th Street. The City of Kirkland is working with King County Metro during the planning phase of the North Eastside Mobility Project. Routes restructures may be implemented by September 2019. Project funding is identified through King County Metro and the improvement costs are estimated between $700,000 and $900,000.

Totem Lake Urban Center Enhancement and Multimodal Transportation Network Plan Additional Improvement Recommendations:

31. **119th Ave NE Extension (north half)**. Complete extension of 119th Ave NE from NE 130th Lane to NE 132nd Street with bike lanes, curb, gutter and sidewalks.
32. **NE 124th Lane Extension**. Extend roadway east to 116th Ave NE with bike lanes, curb, gutter and sidewalks and connections to NE 124th Street at 113th Ave NE and approximately 115th Ave NE.
33. **NE 122nd Way Extension**. Extend roadway to 120th Ave NE with bike lanes, curb, gutter and sidewalks.
34. 1**16th/118th Ave NE Extension**. Extend roadway from NE 118th Street to NE 122nd Way with bike lanes, curb, gutter and sidewalks.
35. **NE 120th Street Extension (west half)**. Complete extension of NE 120th Street along the CKC to 116th/118th Ave NE with bicycle facilities, sidewalks, and planter strips along the entire alignment.
36. **118th Ave NE Extension**. Extend roadway from NE 116th Street to the south with bike lanes, curb, gutter and sidewalks.
37. **120th Ave NE Extension (north half)**. Extend roadway from the CKC to Totem Lake Blvd NE with bike lanes, curb, gutter and sidewalks.
38. **128th Lane NE Extension**. Extend roadway from NE 124th Street to Slater Ave NE with bike lanes, curb, gutter and sidewalks.
39. **135th Ave NE Improvements**. Acquire right-of-way and improve roadway with bike lanes, curb, gutter and sidewalks between NE 124th Street and NE 126th Place.

Previously unidentified (new) improvements

40. **NE 128th Street / Totem Lake Blvd NE Westbound Left Turn**. Revise the intersection to allow westbound left turn movements from NE 128th Street to southbound on Totem Lake Blvd NE. The improvement requires revisions to the signal timing along the overpass. This improvement was evaluated with and without a left turn pocket, refer the March 15, 2019 NE 128th Street Westbound

Left Turn at Totem Lake Blvd draft memorandum included in the Appendix. The improvement will require review from WSDOT.

41. **NE 132nd Street / 132nd Ave NE**. Expand the unfunded CIP improvement at the intersection (No. TRC0970000) to include a westbound right turn lane to improvement intersection performance. The improvement requires land acquisition from northeast corner of the intersection.
42. **NE 120th Street / Slater Ave NE**. To improve peak hour intersection LOS, provide a westbound to northbound right turn lane. The improvement may support a refinement to the unfunded NE 120th Street Sidewalk project (No. NMC1020000) and is reasonable to support the westbound right turn demand. Future King County Metro service improvements may contribute to this improvement.