

# Undi Commerce Park

Marysville, WA

Updated Transportation Impact Analysis

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## FINDINGS/CONCLUSIONS

This Updated Traffic Impact Analysis (TIA) has been prepared for the proposed Undi Commerce Park project in the City of Marysville, WA. The TIA was completed based on scoping comments received via email from City of Marysville staff and consistent with City of Marysville TIA guidelines. This is an update to the prior TIA (dated September 10, 2021) to address City comments dated November 21, 2022.

**Project Proposal.** The proposed Undi Commerce Park site is located east of Smokey Point Blvd and south of 152<sup>nd</sup> Street NE. The project proposal includes up to 815,484 square feet (SF) of industrial park use with vehicular access provided via five new full-access driveways on Smokey Point Blvd and one new full-access driveway on 152<sup>nd</sup> Street NE. The existing site includes 7,560 SF of general office space, which would be removed with the proposed project.

**Trip Generation.** The Undi Commerce Park project is estimated to generate 2,661 net new weekday daily trips, with 317 net new trips (256 in, 61 out) occurring during the AM peak hour and 316 net new trips (66 in, 250 out) occurring during the PM peak hour.

**Intersection Level of Service (LOS).** The LOS analyses documented in this report were assessed at nine (9) off-site intersections during the weekday PM peak hour. Each of the study intersections are anticipated to operate at acceptable levels with full buildout of the proposed project in 2023 (year of opening) and 2029 (horizon year) with the following exceptions:

- The 51<sup>st</sup> Ave NE/152<sup>nd</sup> Street NE (#3) intersection operates at LOS F during the weekday PM peak hour under existing conditions and is expected to continue to operate at LOS F without or with the proposed project in 2023 (year of opening) during the weekday PM peak hour. This intersection is currently all way stop-controlled and the City has plans to install a traffic signal at this intersection identified on their current 6-Year TIP (TIP #17). This project is contained within the Transportation Impact Fee (TIF) calculations and is assumed to be completed by 2029 (horizon year). This intersection is expected to operate at acceptable levels with the proposed project in 2029 (horizon year) during the weekday PM peak hour with the City's planned intersection improvements.

**Site Access Evaluation.** The LOS results indicate that the individual movements at each of the proposed site access locations are expected to operate at acceptable levels with minimal queuing during the weekday PM peak hour in 2023 (year of opening) and 2029 (horizon year).

**Mitigation.** The following measures have been identified to mitigate transportation impacts of the proposed Undi Commerce Park project.

- **City of Marysville Mitigation.** The City of Marysville requires payment of transportation impact fees to help fund planned roadway improvements throughout the City. Transportation impact fees for the proposed Undi Commerce Park project were calculated based on the trip generation estimate documented in this TIA and the City of Marysville's currently adopted transportation impact fee rate of \$2,220 per PM peak hour trip. At full buildout, the proposed Undi Commerce Park project is estimated to generate 316 net new PM peak hour trips. As a result, the estimated City of Marysville transportation impact fee is **\$701,520** (\$2,220 X 316 PM peak hour trips). Actual impact fees will be calculated by the City based on the proposed land uses and trip generation rates in effect at the time of building permit issuance.
- **Snohomish County Mitigation.** The City of Marysville and Snohomish County have adopted an interlocal agreement whereby developments in Marysville must assess potential mitigation

for impacts on Snohomish County roadway facilities. Mitigation fees to Snohomish County are based on predetermined distribution percentages according to location or specific project impacts to planned roadway improvements. Mitigation fees to Snohomish County were based on the use of the standard distribution percentage based on the project location (20%) multiplied by the daily trip generation (2,661 net new daily project trips) and adopted cost per ADT (\$157 for commercial developments within TSA A and the UGA). The resulting Snohomish County transportation impact fee is **\$83,555.40**. A mitigation offer form to Snohomish County will be submitted separately.

## INTRODUCTION

This Updated TIA documents traffic impacts associated with the proposed Undi Commerce Park project, located east of Smokey Point Blvd and south of 152<sup>nd</sup> Street NE in the City of Marysville. A site vicinity map is provided in **Figure 1**. This is an update to the prior TIA (dated September 10, 2021) to address City comments dated November 21, 2022.

## Project Description

The project proposal includes up to 815,484 square feet (SF) of industrial park use with vehicular access provided via five new full-access driveways on Smokey Point Blvd and one new full-access driveway on 152<sup>nd</sup> Street NE. The existing site includes 7,560 SF of general office space, which would be removed with the proposed project. The traffic analysis is based on full project buildout by 2023, with a horizon year of 2029. A preliminary site plan is shown in **Figure 2**.

## Traffic Scoping & Study Area

The scope of work for this Transportation Impact Analysis was established in coordination with City of Marysville staff and consistent with City of Marysville TIA guidelines. A total of nine (9) off-site study intersections were identified for evaluation during future weekday PM peak hour conditions in 2023 (year of opening) and 2029 (horizon year):

1. Smokey Point Blvd/156<sup>th</sup> Street NE
2. Smokey Point Blvd/152<sup>nd</sup> Street NE
3. 51<sup>st</sup> Avenue NE/152<sup>nd</sup> Street NE
4. Smokey Point Blvd/State Avenue/136<sup>th</sup> Street NE
5. State Avenue/128<sup>th</sup> Street NE
6. State Avenue/116<sup>th</sup> Street NE
7. 51<sup>st</sup> Avenue NE/136<sup>th</sup> Street NE
8. 51<sup>st</sup> Avenue NE/132<sup>nd</sup> Street NE
9. 51<sup>st</sup> Avenue NE/122<sup>nd</sup> Place NE

## Project Approach

To analyze the traffic impacts of the Undi Commerce Park project, the following tasks were undertaken to evaluate traffic impacts associated with the project:

- Assessment of existing conditions through field reconnaissance and review of existing planning documents.
- Review of City planning documents to evaluate long-term road improvements plans in project vicinity.
- Estimated weekday vehicular AM peak hour, PM peak hour, and daily trips generated by the development.
- Documented traffic forecasts and assumptions for future year 2023 (year of opening) and 2029 (horizon year) without and with project conditions.
- Evaluation of weekday PM peak hour level of service (LOS) at nine (9) off-site study intersections.

- Evaluation of anticipated weekday PM peak hour operations at the proposed site access locations including LOS and queuing.
- Identified impacts to Snohomish County key intersections and evaluated Snohomish County mitigation requirements per the interlocal agreement.
- Estimated transportation impact fees to City of Marysville.

## Primary Data and Information Sources

- Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10<sup>th</sup> Edition, 2017.
- *Highway Capacity Manual (HCM 6<sup>th</sup> Edition)*, 2016.
- 2021 weekday PM peak hour traffic counts, All Traffic Data (ATD).
- City of Marysville 2023-2028 Six Year Transportation Improvement Plan (TIP).
- Interlocal Agreement Between Snohomish County and the City of Marysville on Reciprocal Mitigation of Transportation Impacts, 1999.

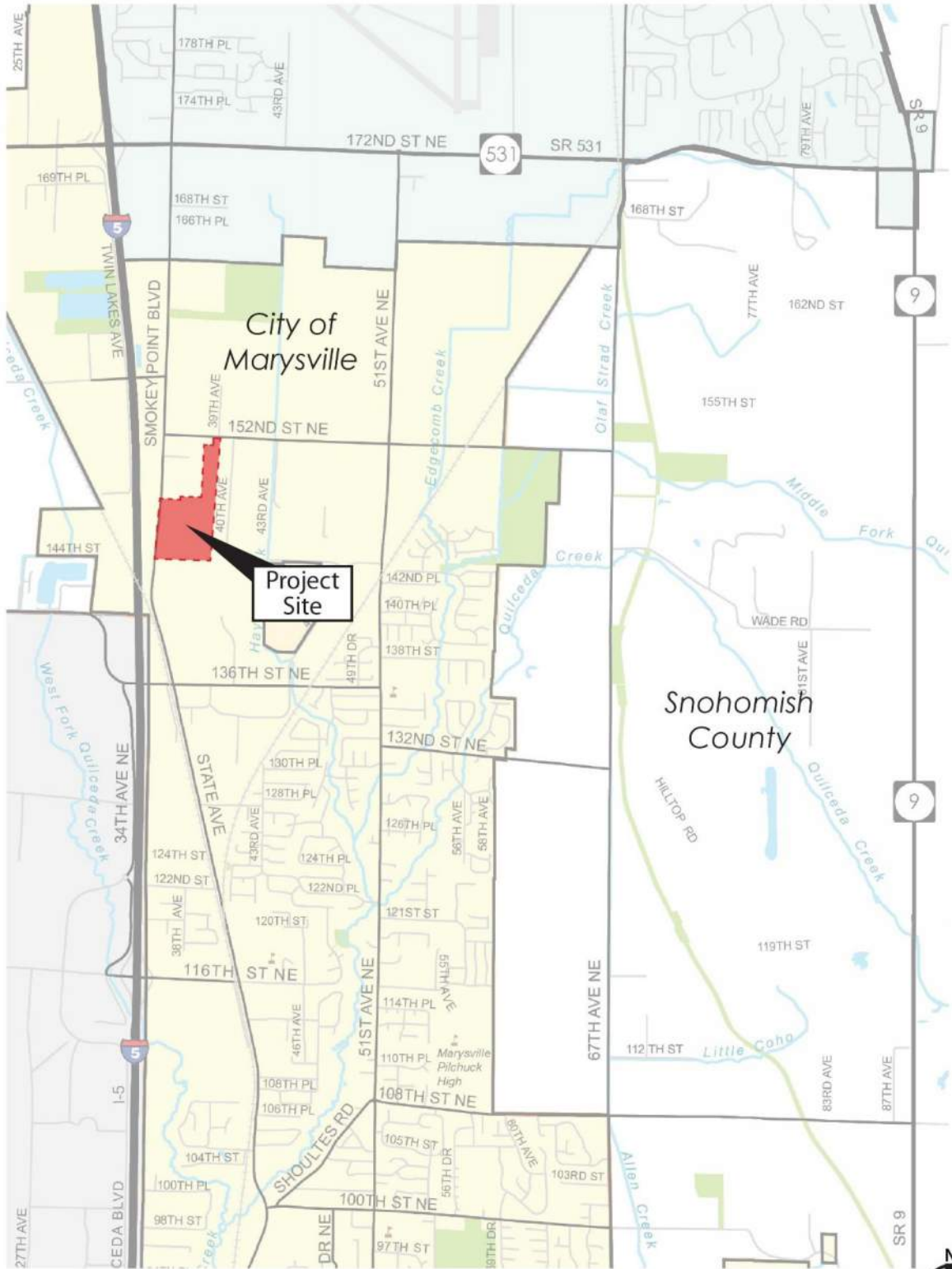


Figure 1: Project Site Vicinity Map





Figure 2: Preliminary Site Plan



## EXISTING CONDITIONS

This section describes existing transportation system conditions in the study area. Existing conditions described include an inventory of existing roadways, public transportation services, non-motorized transportation facilities, existing traffic volumes, and intersection levels of service (LOS).

### Roadway Network

The existing street characteristics in the vicinity of the proposed Undi Commerce Park project are described below in **Table 1**.

**Table 1**  
**Existing Roadway Network Summary – Project Site Vicinity**

Roadway	Orientation	Classification	Speed Limit	Number of Travel Lanes	Street Parking	Sidewalks	Bicycle Facilities
Smokey Point Blvd	North-South	Principal Arterial	40 mph	4	None	Both Sides	None
152 <sup>nd</sup> Street NE	East-West	Collector Arterial	35 mph	2	None	None	None

### Transit Service

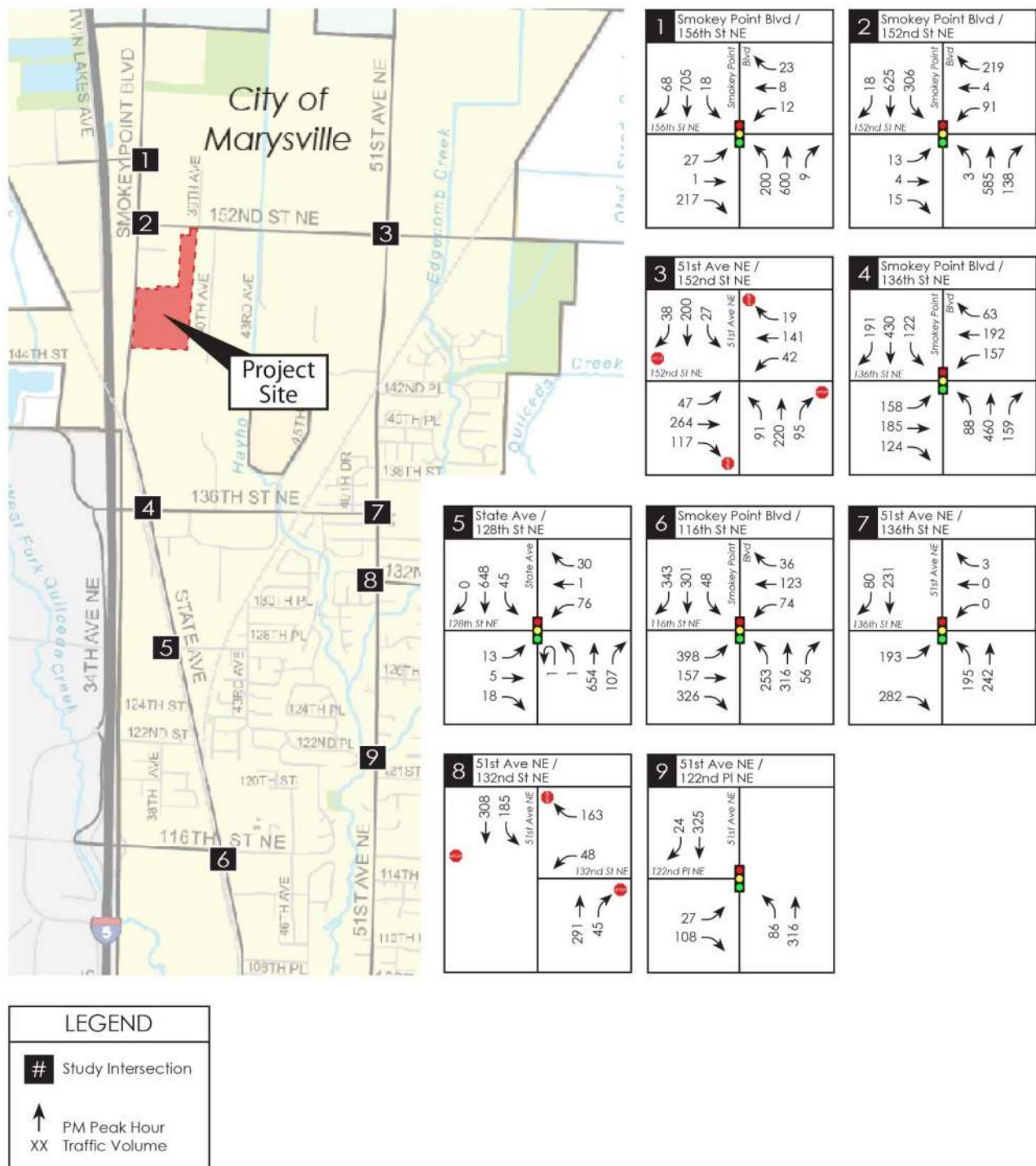
Transit service to and from the project vicinity is provided by Community Transit. The closest bus stops are located on Smokey Point Blvd and 152<sup>nd</sup> Street NE. The bus stops provide access to Community Transit Routes 201 and 202 which provides service between Smokey Point and Lynnwood throughout the day with approximately 20-minute headways.

### Non-motorized Transportation Facilities

Non-motorized transportation facilities in the project vicinity include a mix of sidewalks and paved shoulders. Sidewalks exist on both sides of Smokey Point Blvd. Crosswalks with pedestrian push buttons are provided on all legs at the Smokey Point Blvd/152<sup>nd</sup> Street NE signalized intersection. Pedestrian activity is minimal in the project vicinity.

### Traffic Volumes

Existing weekday PM peak hour traffic volumes at the nine (9) off-site study intersections were based on counts conducted by All Traffic Data on July 7, 2021. The PM peak hour represents the highest one-hour time period between 4:00 and 6:00 PM. **Figure 3** illustrates the 2021 existing weekday PM peak hour traffic volumes at the study intersections. **Appendix A** includes the existing weekday PM peak hour traffic count sheets.



**Figure 3:** Existing 2021 Weekday PM Peak Hour Traffic Volumes



## Intersection Levels of Service

LOS generally refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS. At signalized intersections, LOS A represents free-flow conditions (motorists experience little or no delays), and LOS F represents forced-flow conditions where motorists experience an average delay in excess of 80 seconds per vehicle.

The LOS reported for signalized intersections represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only).

The LOS reported at stop-controlled intersections is based on the average control delay and can be reported for each controlled minor approach, controlled minor lane group, and controlled major-street movement (and for the overall intersection at all way stop-controlled intersections. Additional v/c ratio criteria apply to lane group or movement LOS only). **Table 2** outlines the HCM 6<sup>th</sup> Edition LOS criteria for signalized and stop-controlled intersections based on these methodologies.

**Table 2**  
**LOS Criteria for Signalized and Two-Way Stop Controlled Intersections<sup>1</sup>**

SIGNALIZED INTERSECTIONS			UNSGINALIZED INTERSECTIONS		
Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio <sup>2</sup>		Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio <sup>3</sup>	
	≤ 1.0	> 1.0		≤ 1.0	> 1.0
≤ 10	A	F	≤ 10	A	F
> 10 to ≤ 20	B	F	> 10 to ≤ 15	B	F
> 20 to ≤ 35	C	F	> 15 to ≤ 25	C	F
> 35 to ≤ 55	D	F	> 25 to ≤ 35	D	F
> 55 to ≤ 80	E	F	> 35 to ≤ 50	E	F
> 80	F	F	> 50	F	F

<sup>1</sup> Source: Highway Capacity Manual (6<sup>th</sup> Edition), Transportation Research Board, 2016.

<sup>2</sup> For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.

<sup>3</sup> For two-way stop controlled intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop controlled intersections. For approach-based and intersection-wide assessments at all way stop-controlled intersections, LOS is solely defined by control delay.

Level of service calculations at the nine (9) off-site study intersections were based on methodology and procedures outlined in the Highway Capacity Manual (6<sup>th</sup> Edition) using Synchro 11 traffic analysis software. Existing signal timing was provided by the City of Marysville. The existing LOS results are summarized in **Table 3**. Detailed LOS summary worksheets are provided in **Appendix B**.

The City of Marysville’s adopted *Comprehensive Plan* establishes the following LOS standards:

- LOS E mitigated for State Avenue/Smokey Point Blvd within the City
- LOS D at all other intersections of two or more arterials within the City (and at unsignalized intersections)

*It should also be noted that the City may allow the LOS for traffic movements from the minor street at a two-way, stop controlled intersection to operate below the adopted standard if the Public Works Director (or designee) determines that no significant safety or operational impact will result.*

**Table 3**  
**2021 Existing Weekday PM Peak Hour LOS Summary**

Study Intersection	LOS	Delay (sec)
<u>Signalized Intersections:</u>		
1. Smokey Point Blvd/156 <sup>th</sup> Street NE	B	15.6
2. Smokey Point Blvd/152 <sup>nd</sup> Street NE	B	16.3
4. Smokey Point Blvd/136 <sup>th</sup> Street NE	C	20.4
5. State Ave/128 <sup>th</sup> Street NE	B	12.9
6. State Ave/116 <sup>th</sup> Street NE	D	35.5
7. 51 <sup>st</sup> Ave NE/136 <sup>th</sup> Street NE	A	5.6
9. 51 <sup>st</sup> Ave NE/122 <sup>nd</sup> Place NE	A	9.0
<u>All Way Stop-Controlled Intersections:</u>		
3. 51 <sup>st</sup> Ave NE/152 <sup>nd</sup> Street NE	F	50.1
8. 51 <sup>st</sup> Ave NE/132 <sup>nd</sup> Street NE	C	20.2

As shown in **Table 3**, each of the study intersections currently operate at LOS D or better during the weekday PM peak hour with one exception. The existing 51<sup>st</sup> Ave NE/152<sup>nd</sup> Street NE all way stop-controlled intersection currently operates at LOS F during the weekday PM peak hour.

## Collision History

Collisions at the study intersections and roadway segments within the study area were summarized for the three-year period from 2018 to 2020. Collision data was provided by WSDOT. Summaries of the total, yearly average, and collisions per million entering vehicles (MEV) at intersections and collisions per million vehicle miles (MVM) on roadway segments are provided in **Table 4**.

**Table 4**  
**Collision Data Summary 2018 – 2020**

Location	2018	2019	2020	3-Year Total Collisions	Average Annual Collisions	Collisions per MEV or MVM <sup>1</sup>
<u>Study Intersections</u>						
1. Smokey Point Blvd/156 <sup>th</sup> St NE	5	1	3	9	3.00	0.44
2. Smokey Point Blvd/152 <sup>nd</sup> St NE	5	7	4	16	5.33	0.72
3. 51 <sup>st</sup> Ave NE/152 <sup>nd</sup> St NE	2	4	3	9	3.00	0.63
4. Smokey Point Blvd/136 <sup>th</sup> St NE	5	5	5	15	5.00	0.59
5. State Ave/128 <sup>th</sup> St NE	2	1	2	5	1.67	0.29
6. State Ave/116 <sup>th</sup> St NE	14	3	13	30	10.00	1.13
7. 51 <sup>st</sup> Ave NE/136 <sup>th</sup> St NE	0	0	3	3	1.00	0.22
8. 51 <sup>st</sup> Ave NE/132 <sup>nd</sup> St NE	1	1	0	2	0.67	0.18
9. 51 <sup>st</sup> Ave NE/122 <sup>nd</sup> Pl NE	0	1	0	1	0.33	0.10
<u>Roadway Segments:</u>						
<b>Smokey Point Blvd between:</b>						
156 <sup>th</sup> Street NE and 116 <sup>th</sup> Street NE	37	43	30	110	36.67	2.34
<b>152<sup>nd</sup> Street NE between:</b>						
Smokey Point Blvd and 51 <sup>st</sup> Ave NE	5	3	4	12	4.00	1.50
<b>136<sup>th</sup> Street NE between:</b>						
State Ave and 51 <sup>st</sup> Ave NE	3	3	2	9	3.00	1.12
<b>51<sup>st</sup> Avenue NE between:</b>						
152 <sup>nd</sup> Street NE and 122 <sup>nd</sup> Place NE	14	14	16	44	14.67	2.76

1. MEV = Million Entering Vehicles (intersections). MVM = Million Vehicle Miles (segments).

Based on City of Marysville TIA guidelines, potential safety inadequacies are intersections with a collision rate greater than 1.0 collisions per MEV or roadway segments with a collision greater than 10.0 collisions per MVM.

Based on these criteria, the only study intersection or roadway segment in the project study area with potential safety inadequacies is the State Avenue/116<sup>th</sup> Street NE intersection (1.13 collisions per MEV). Review of the collision history at this intersection shows that the most frequent collision type was rear end type collisions (10 out of 30 total collisions during the study period). The City of Marysville has planned improvements at this intersection identified on their current 6-Year TIP (TIP #20). Improvements include constructing turn lanes, modifying traffic signal, adding a second westbound thru lane, extending the eastbound right-turn lane, and removing the split phasing.

## FUTURE CONDITIONS

The following section of the report describes the traffic impacts of the proposed Undi Commerce Park project on the surrounding arterial network and identified study intersections in the project vicinity.

The analysis of traffic impacts includes project trip generation, distribution and assignment of project trips, and LOS evaluation at study intersections and the proposed site access. The analysis was conducted during the weekday PM peak hour for future 2023 (year of opening) and 2029 (horizon year) conditions.

### Future Planned Improvements

This section documents the known transportation improvements in the study area. Based on review of the *City of Marysville 2023-2028 Six Year Transportation Improvement Plan (TIP)*, there are several planned improvements in the project study area. Each of the planned improvements are described below.

- Shoultes Elementary Safe Routes to School Project (TIP #3): This project will construct pedestrian facilities including curb, gutter, and sidewalk as part of the Safe Routes to School Program.
- 2020 City Safety Program (TIP #9): This project will construct rectangular rapid flashing beacons (RRFBs) at 100<sup>th</sup> Street NE/55<sup>th</sup> Ave NE and 51<sup>st</sup> Ave NE/139<sup>th</sup> Place NE intersections. This project is partially funded by the Highway Safety Improvement Program.
- 51<sup>st</sup> Avenue NE/132<sup>nd</sup> Street NE Intersection (TIP #14): This project will construct a new traffic signal at the intersection.
- 51<sup>st</sup> Avenue NE/152<sup>nd</sup> Street NE Intersection (TIP #17): This project will construct a new traffic signal at the intersection.
- State Avenue/116<sup>th</sup> Street NE Intersection (TIP #20): This project will modify traffic signal, add a second westbound thru lane, extend the eastbound right-turn lane, and add a southbound right turn-lane and overlap phase.
- State Avenue – 104<sup>th</sup> Street NE to 116<sup>th</sup> Street NE (TIP #29): This project will include widening State Avenue from a 3-lane to a 5-lane roadway with curb, gutter, and sidewalk. The project is partially funded by the Transportation Improvement Board.
- 51<sup>st</sup> Avenue NE – 152<sup>nd</sup> Street NE to Arlington City Limits (TIP #32 and #41): This project will include widening 51<sup>st</sup> Avenue NE from a 2-lane to a 3-lane roadway with curb, gutter, and sidewalk, including bicycle lanes.
- 152<sup>nd</sup> Street NE – Smokey Point Blvd to 43<sup>rd</sup> VIC (TIP #44): This project will include widening 152<sup>nd</sup> Street NE from a 2-lane to a 3-lane roadway with curb, gutter, and sidewalk, including bicycle lanes.
- 156<sup>th</sup> Street NE – Smokey Point Blvd to 51<sup>st</sup> Avenue NE (TIP #46): This project will include widening 156<sup>th</sup> Street NE to a 5-lane roadway including pedestrian and bicycle facilities.
- 160<sup>th</sup> Street NE – Smokey Point Blvd to 51<sup>st</sup> Avenue NE (TIP #47): This project will include widening 160<sup>th</sup> Street NE to a 3-lane roadway including pedestrian and bicycle facilities.

- 156<sup>th</sup> Street NE Interchange (TIP #61): This project will include completing interchange improvements to the existing overcrossing.
- 152<sup>nd</sup> Street NE – 51<sup>st</sup> Avenue NE to 67<sup>th</sup> Avenue NE (TIP #62): This project will include widening 152<sup>nd</sup> Street NE to a 5-lane roadway with improvements at arterial intersections.

## Project Trip Generation

Trip generation estimates associated with full buildout of the proposed project for weekday daily, AM and PM peak hour were based on methodology documented in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition for Land Use Code (LUC) 130 (Industrial Park) and LUC 710 (Office).

**Table 5** summarizes the net new weekday daily, AM peak hour, and PM peak hour trip generation estimates, including credit for the existing use to be removed.

**Table 5**  
**Undi Commerce Park – Trip Generation Summary**

Time Period	Net New Trips Generated		
	In	Out	Total
Weekday Daily	1,330	1,331	2,661
Weekday AM Peak Hour	256	61	317
Weekday PM Peak Hour	66	250	316

As shown in **Table 5**, the proposed project is estimated to generate 2,661 net new weekday daily trips, with 317 net new trips (256 in, 61 out) occurring during the weekday AM peak hour and 316 net new trips (66 in, 250 out) occurring during the weekday PM peak hour. Detailed trip generation estimates are provided in **Appendix C**.

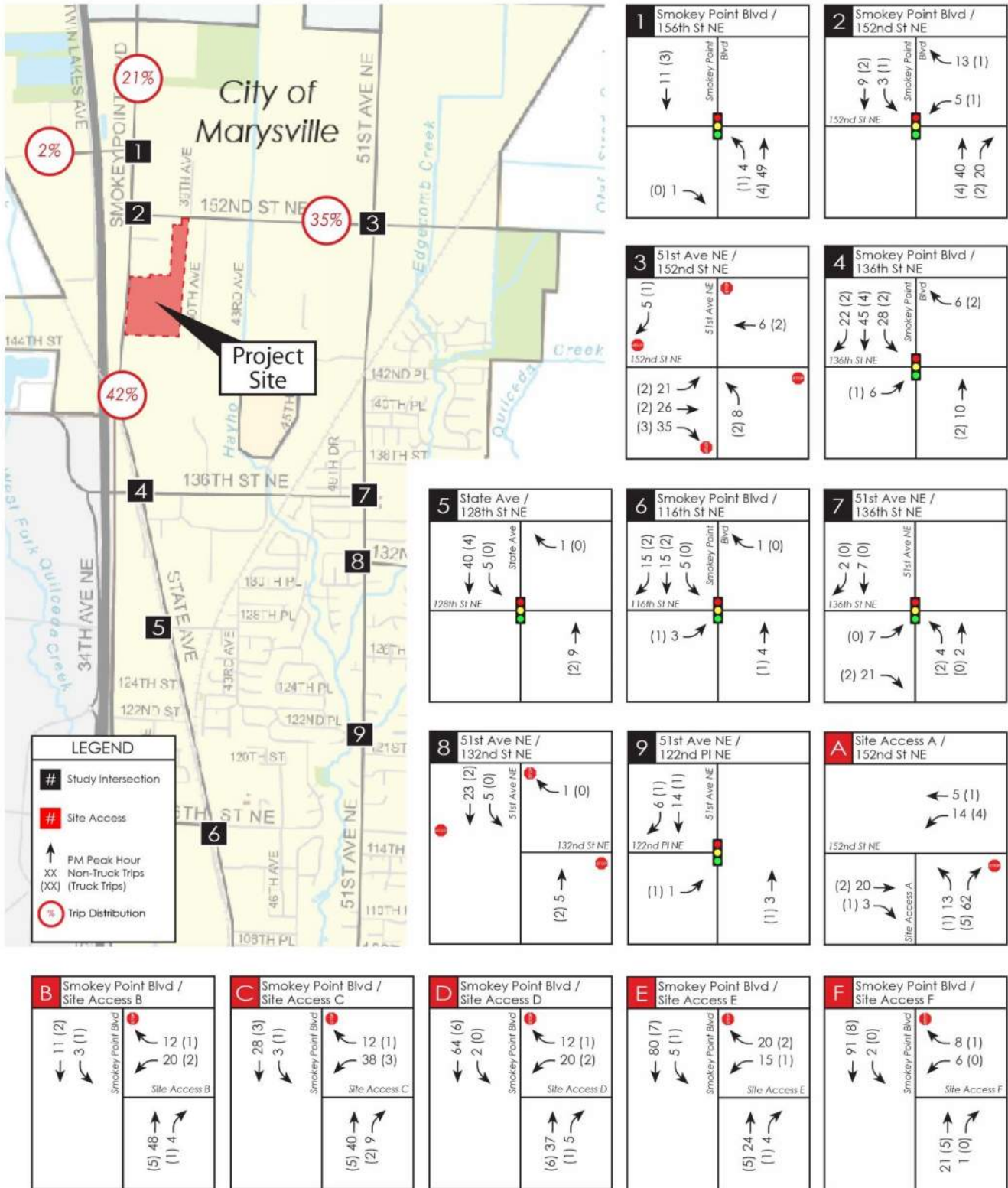
## Project Trip Distribution and Assignment

The distribution of project-generated trips during the weekday AM and PM peak hours was estimated based on traffic model distribution figures as provided by the City of Marysville. These figures are included in **Appendix D**.

The distribution figures were used to assign the 316 net new weekday PM peak hour (66 inbound and 250 outbound) trips generated by the Undi Commerce Park project to the adjacent street network. Separate distribution patterns were used for the 2023 (year of opening) and 2029 (horizon year) analyses due to anticipated changes in the roadway network in the site vicinity. The most significant change is the planned I-5/156<sup>th</sup> Street NE interchange (assumed by year 2029).

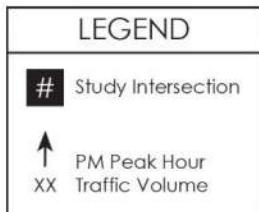
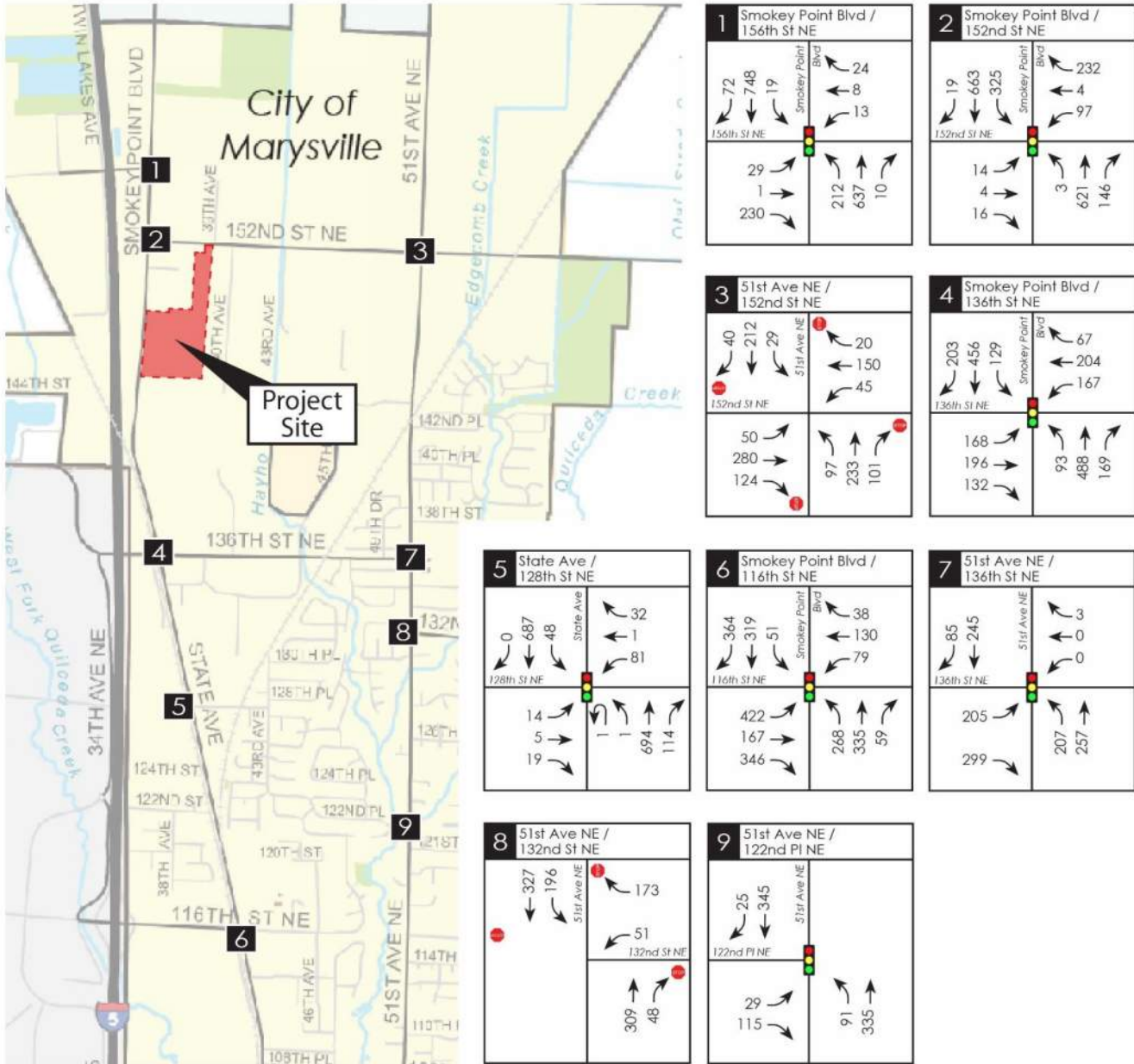
Based on the trip distribution percentages, the net new weekday PM peak hour project trips were assigned through the study intersections. Note that gross project trips were assigned at the proposed project driveways on Smokey Point Blvd and 152<sup>nd</sup> Street NE. The resulting assignment of the net new weekday PM peak hour project trips through the study intersections and gross project trips at site access driveways is shown in **Figure 4** (2023 buildout) and **Figure 7** (2029 horizon year).





**Figure 4: PM Peak Hour Project Trip Assignment (2023 Opening Year)**





**Figure 5: 2023 No Action PM Peak Hour Traffic Volumes (Opening Year)**



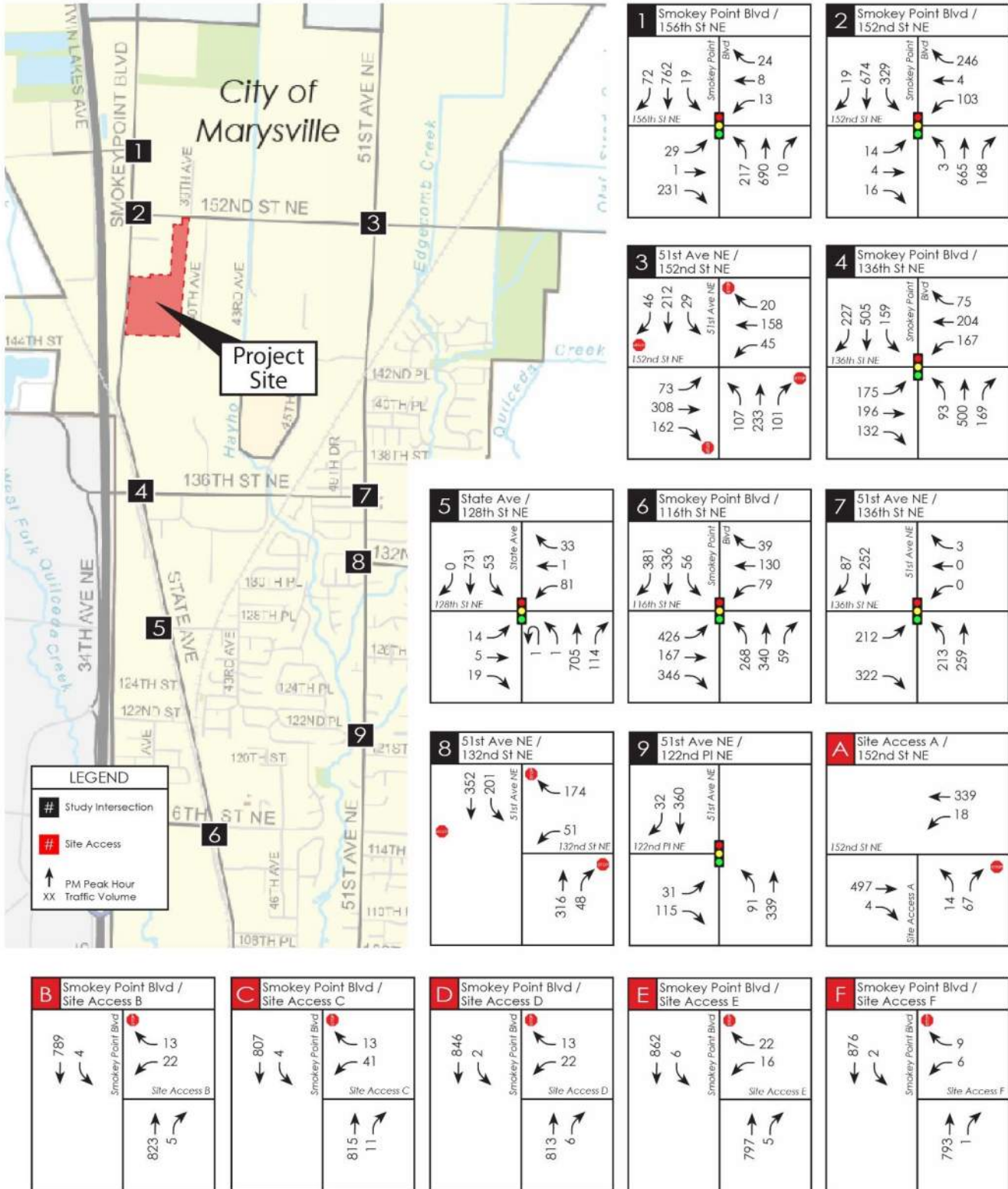
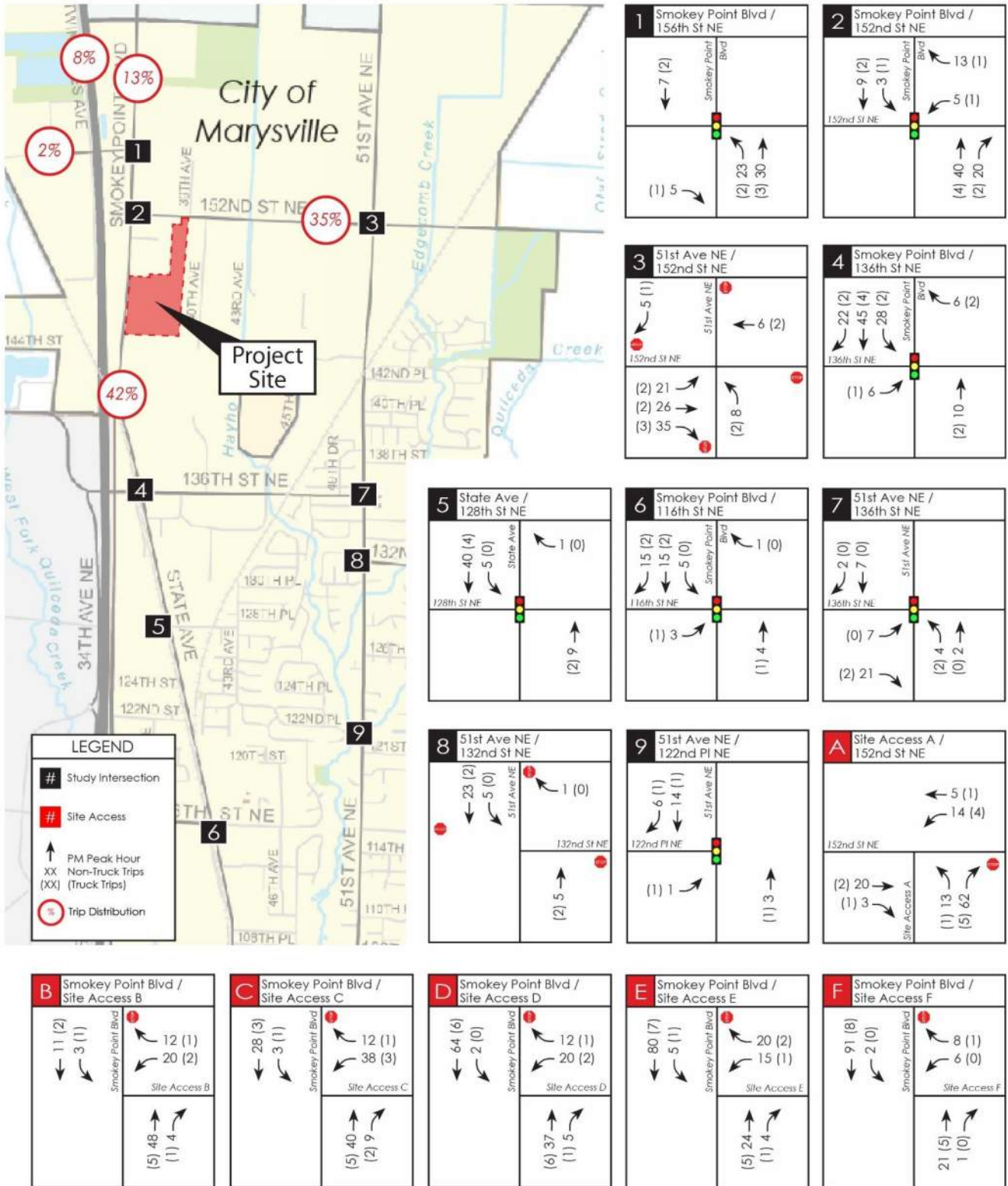


Figure 6: 2023 With Project PM Peak Hour Traffic Volumes (Opening Year)





\*Project trips at driveways are gross project trips

**Figure 7: PM Peak Hour Project Trip Assignment (2029 Horizon Year)**



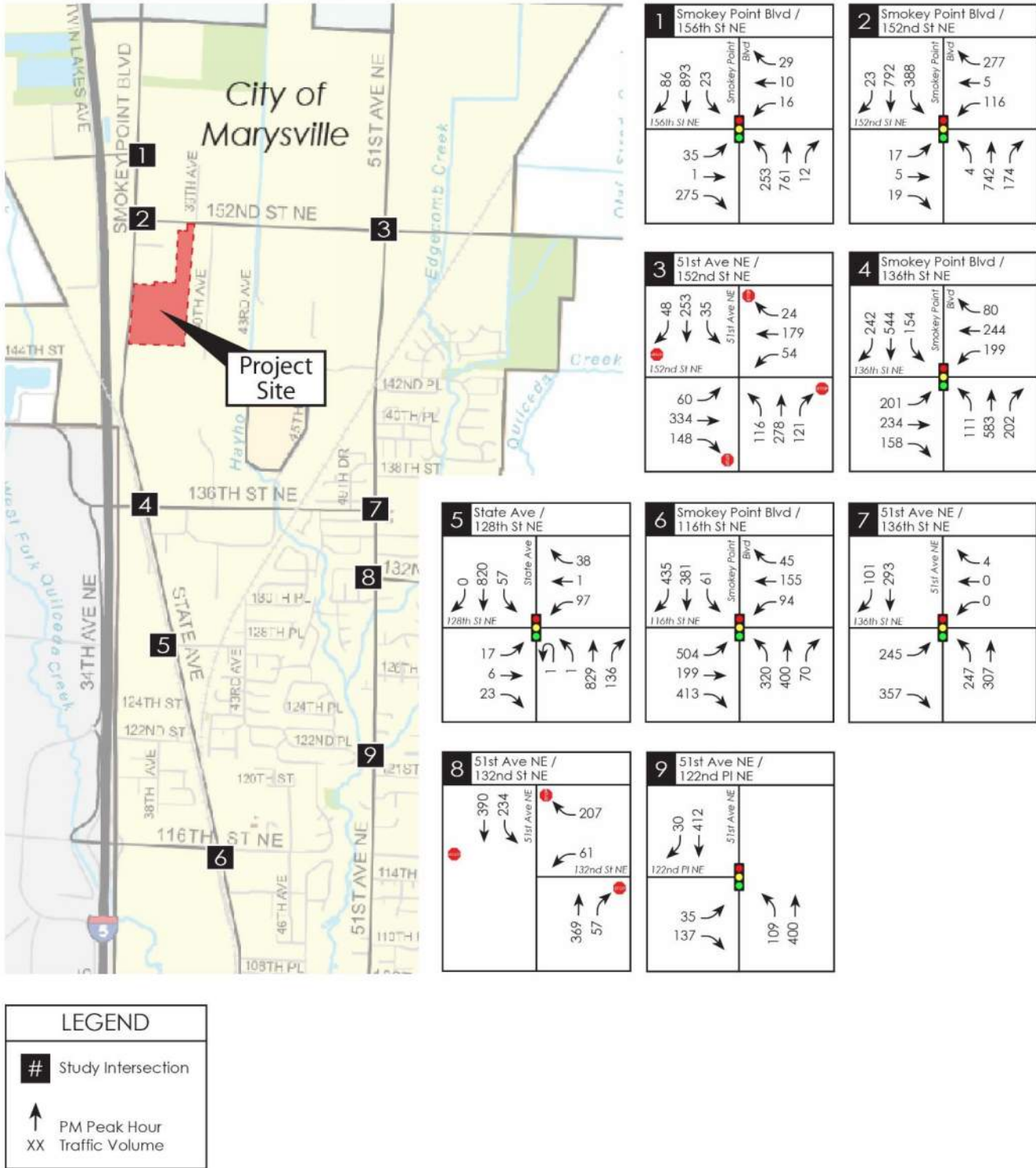


Figure 8: 2029 No Action PM Peak Hour Traffic Volumes (Horizon Year)



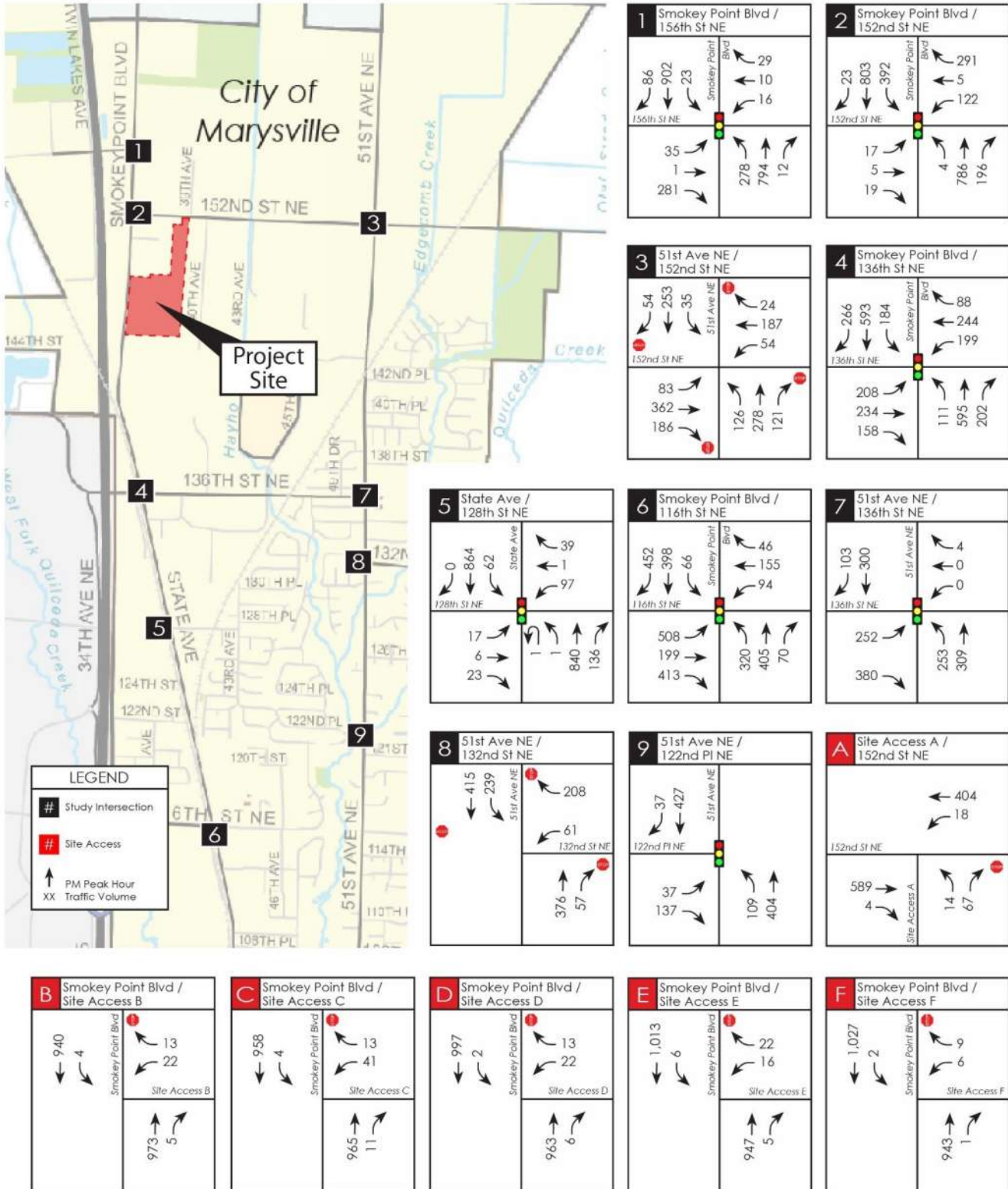


Figure 9: 2029 With Project PM Peak Hour Traffic Volumes (Horizon Year)



## Future Traffic Volumes

Future year 2023 (year of opening) and 2029 (horizon year) No Action (without project) PM peak hour traffic volumes were estimated by applying a three (3) percent annual growth rate to the existing traffic counts, consistent with City of Marysville guidelines.

The resulting future 2023 No Action PM peak hour traffic volumes at the study intersections are shown in **Figure 5**. The 2023 With Project traffic volumes were determined by adding the trip assignment from the proposed development (shown in **Figure 4**) to the future 2023 No Action traffic volumes (shown in **Figure 5**). The 2023 With Project traffic volumes are shown in **Figure 6**.

The future 2029 No Action PM peak hour traffic volumes at the study intersections are shown in **Figure 8**. The 2029 With Project traffic volumes were determined by adding the trip assignment from the proposed development (shown in **Figure 7**) to the future 2029 No Action traffic volumes (shown in **Figure 8**). The 2029 With Project traffic volumes are shown in **Figure 9**.

## Intersection LOS Analysis

Future intersection LOS analyses were evaluated at the nine (9) off-site study intersections for future year 2023 (year of opening) and 2029 (horizon year) conditions with and without the Undi Commerce Park project. Study intersections were identified through coordination with City of Marysville staff. The signal timing data used at the signalized study intersection was based on data provided by City of Marysville.

The 2023 roadway network assumed in the future LOS analyses was based on existing intersection geometry. The 2029 roadway network was based on existing intersection geometry, plus completion of the following City planned improvements:

- 51<sup>st</sup> Avenue NE/152<sup>nd</sup> Street NE Intersection – construct a new traffic signal at the intersection. Eastbound and westbound channelization includes a left-turn lane, two thru lanes, and right-turn lane. Northbound and southbound channelization includes a left-turn lane, thru lane, and right-turn lane.
- State Avenue/116<sup>th</sup> Street NE Intersection – modify traffic signal, add a second westbound thru lane, extend the eastbound right-turn lane, remove eastbound/westbound split phasing, and add a southbound right-turn overlap phase.
- 51<sup>st</sup> Avenue NE/132<sup>nd</sup> Street NE Intersection – construct a new southbound left-turn lane at the existing all-way stop controlled intersection.
- 156<sup>th</sup> Street NE Interchange – convert the existing overcrossing to a full single-point urban interchange (SPUI) with Interstate 5.

The LOS results for future year 2023 (year of opening) and 2029 (horizon year) are summarized in **Tables 6 and 7**. Detailed LOS worksheets are provided in **Appendix B**.

The City of Marysville's adopted *Comprehensive Plan* establishes the following LOS standards:

- LOS E mitigated for State Avenue/Smokey Point Blvd within the City
- LOS D at all other intersections of two or more arterials within the City (and at unsignalized intersections)

*It should also be noted that the City may allow the LOS for traffic movements from the minor street at a two-way, stop controlled intersection to operate below the adopted standard if the Public Works Director (or designee) determines that no significant safety or operational impact will result.*

**Table 6**  
**2023 Weekday PM Peak Hour LOS Summary**

Study Intersection	No Action		With Project	
	LOS	Delay (sec)	LOS	Delay (sec)
<u>Signalized Intersections:</u>				
1. Smokey Point Blvd/156 <sup>th</sup> Street NE	B	16.1	B	16.2
2. Smokey Point Blvd/152 <sup>nd</sup> Street NE	B	17.1	B	18.3
4. Smokey Point Blvd/136 <sup>th</sup> Street NE	C	21.7	C	23.2
5. State Ave/128 <sup>th</sup> Street NE	B	13.2	B	13.3
6. State Ave/116 <sup>th</sup> Street NE	D	42.1	D	45.7
7. 51 <sup>st</sup> Ave NE/136 <sup>th</sup> Street NE	A	5.6	A	5.7
9. 51 <sup>st</sup> Ave NE/122 <sup>nd</sup> Place NE	A	9.9	B	10.5
<u>All Way Stop-Controlled Intersections:</u>				
3. 51 <sup>st</sup> Ave NE/152 <sup>nd</sup> Street NE	F	68.6	F	102.6
8. 51 <sup>st</sup> Ave NE/132 <sup>nd</sup> Street NE	C	25.0	D	30.2

**Table 7**  
**2029 Weekday PM Peak Hour LOS Summary**

Study Intersection	No Action		With Project	
	LOS	Delay (sec)	LOS	Delay (sec)
<u>Signalized Intersections:</u>				
1. Smokey Point Blvd/156 <sup>th</sup> Street NE	B	19.1	B	20.3
2. Smokey Point Blvd/152 <sup>nd</sup> Street NE	C	23.7	C	28.3
4. Smokey Point Blvd/136 <sup>th</sup> Street NE	C	28.9	C	32.9
5. State Ave/128 <sup>th</sup> Street NE	B	14.5	B	14.6
6. State Ave/116 <sup>th</sup> Street NE	C	32.7	C	34.0
7. 51 <sup>st</sup> Ave NE/136 <sup>th</sup> Street NE	A	6.0	A	6.1
9. 51 <sup>st</sup> Ave NE/122 <sup>nd</sup> Place NE	B	12.1	B	13.7
<u>All Way Stop-Controlled Intersections:</u>				
3. 51 <sup>st</sup> Ave NE/152 <sup>nd</sup> Street NE	B	14.1	B	14.6
8. 51 <sup>st</sup> Ave NE/132 <sup>nd</sup> Street NE	C	21.2	C	23.5

As shown in **Tables 6 and 7**, each of the nine (9) off-site study intersections are anticipated to operate at acceptable levels during the weekday PM peak hour in 2023 (year of opening) and 2029 (horizon year) with the following exceptions:

- The 51<sup>st</sup> Ave NE/152<sup>nd</sup> Street NE (#3) intersection operates at LOS F during the weekday PM peak hour under existing conditions and is expected to continue to operate at LOS F without or with the proposed project in 2023 (year of opening) during the weekday PM peak hour. This intersection is currently all way stop-controlled and the City has plans to install a traffic signal at this intersection identified on their current 6-Year TIP (TIP #17). This project is contained within the Transportation Impact Fee (TIF) calculations and is assumed to be completed by 2029 (horizon year). This intersection is expected to operate at acceptable levels with the proposed project in 2029 (horizon year) during the weekday PM peak hour with the City's planned intersection improvements.



## Site Access Evaluation

Vehicular access to the proposed Undi Commerce Park project is proposed via five (5) new full access driveways on Smokey Point Blvd and one (1) new full access driveway on 152<sup>nd</sup> Street NE.

To assess operations at the proposed site access locations, LOS and queuing was conducted during the PM peak hour for future 2023 (year of opening) and 2029 (horizon year) conditions. The reported queues for the individual movements at each of the proposed site access locations are 95<sup>th</sup>-percentile queues, which are only exceeded five (5) percent of the time. The 2023 and 2029 with project PM peak hour traffic volumes at the proposed site access locations was shown previously in **Figures 6 and 9**. The weekday PM peak hour site access analysis for future year 2023 and 2029 is summarized below in **Table 8**.

**Table 8**  
**Future Weekday PM Peak Hour Site Access LOS and Queue Summary**

Site Access / Movement	2023 (Year of Opening)			2029 (Horizon Year)		
	LOS	Delay (sec)	95 <sup>th</sup> % Queue (ft)	LOS	Delay (sec)	95 <sup>th</sup> % Queue (ft)
A. Site Access/152 <sup>nd</sup> Street NE						
Westbound Left-Turn	B	14.8	25'	C	17.0	25'
Northbound Approach	A	8.9	< 25'	A	9.3	< 25'
B. North Dwy/Smokey Point Blvd						
Southbound Left-Turn	C	17.9	< 25'	C	21.3	25'
Westbound Approach	B	10.8	0'	B	11.8	0'
C. North Middle Dwy/Smokey Point Blvd						
Southbound Left-Turn	C	20.3	< 25'	C	24.8	25'
Westbound Approach	B	10.8	0'	B	11.8	0'
D. Middle Dwy/Smokey Point Blvd						
Southbound Left-Turn	C	17.9	< 25'	C	21.3	25'
Westbound Approach	A	9.7	0'	B	10.4	0'
E. South Middle Dwy/Smokey Point Blvd						
Southbound Left-Turn	C	15.9	< 25'	C	18.2	25'
Westbound Approach	B	10.3	0'	B	11.2	0'
F. South Dwy/Smokey Point Blvd						
Southbound Left-Turn	B	14.6	< 25'	C	16.5	< 25'
Westbound Approach	A	9.6	0'	B	10.3	0'

As shown in **Table 8**, the individual movements at each of the proposed site access locations are expected to operate at acceptable levels during the weekday PM peak hour in both 2023 (year of opening) and 2029 (horizon year). Additionally, 95<sup>th</sup>-percentile queues are anticipated to be no more than 25 feet.

## Snohomish County Key Intersections

In accordance with the *Snohomish County Traffic Worksheet and Traffic Study Requirements for Developments in the City of Marysville*, project trip impacts at Snohomish County key intersections were identified. Weekday AM and PM peak hour Trip Distribution and Assignment figures and tables were prepared consistent with these guidelines and are included in **Appendix E**.

## MITIGATION

The following summarizes the measures proposed to mitigate the transportation impacts of the proposed Undi Commerce Park project.

### City of Marysville Mitigation

The City of Marysville requires payment of transportation impact fees to help fund planned roadway improvements throughout the City. Transportation impact fees for the proposed Undi Commerce Park project were calculated based on the trip generation estimate documented in this TIA and the City of Marysville's currently adopted transportation impact fee rate of \$2,220 per PM peak hour trip. At full buildout, the proposed Undi Commerce Park project is estimated to generate 316 net new PM peak hour trips. As a result, the estimated City of Marysville transportation impact fee is **\$701,520** (\$2,220 X 316 PM peak hour trips). Actual impact fees will be calculated by the City based on the proposed land uses and trip generation rates in effect at the time of building permit issuance.

### Snohomish County Mitigation

The City of Marysville and Snohomish County have adopted an interlocal agreement whereby developments in Marysville must assess potential mitigation for impacts on Snohomish County roadway facilities. Mitigation fees to Snohomish County are based on predetermined distribution percentages according to location or specific project impacts to planned roadway improvements. Mitigation fees to Snohomish County were based on the use of the standard distribution percentage based on the project location (20%) multiplied by the daily trip generation (2,661 net new daily project trips) and adopted cost per ADT (\$157 for commercial developments within TSA A and the UGA). The resulting Snohomish County transportation impact fee is **\$83,555.40**. A mitigation offer form to Snohomish County will be submitted separately.

# Appendix A

## Existing Traffic Count Data



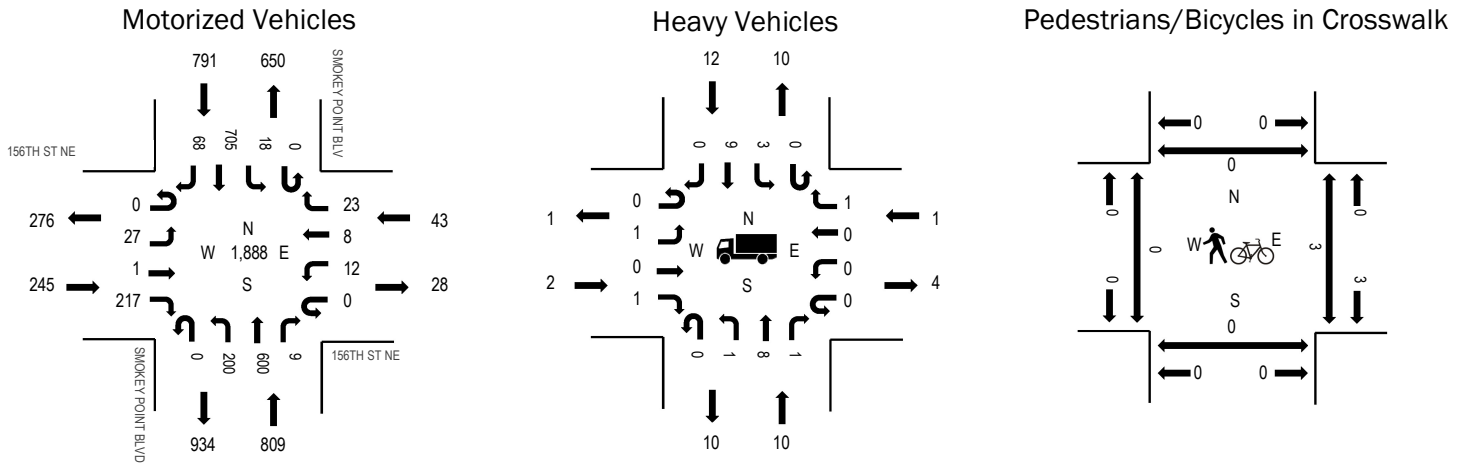
(303) 216-2439  
www.alltrafficdata.net

Location: 1 SMOKEY POINT BLVD & 156TH ST NE PM

Date: Wednesday, July 7, 2021

Peak Hour: 04:30 PM - 05:30 PM

**Peak Hour**



	HV%	PHF
EB	0.8%	0.83
WB	2.3%	0.83
NB	1.2%	0.95
SB	1.5%	0.92
All	1.3%	0.95

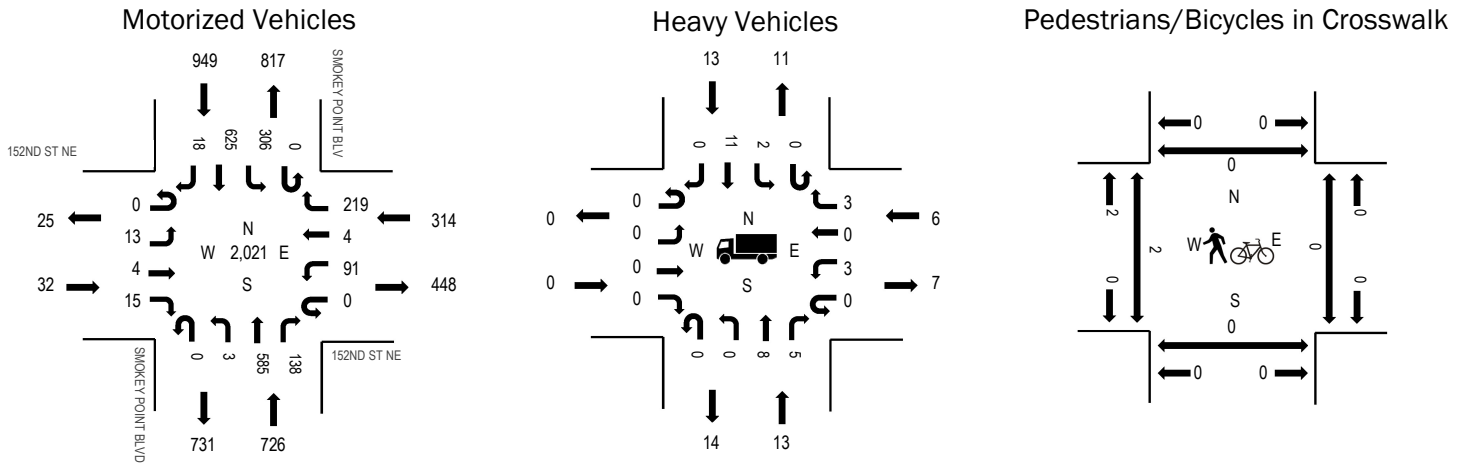
**Traffic Counts - Motorized Vehicles**

Interval Start Time	156TH ST NE Eastbound				156TH ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	7	1	54	0	6	0	9	0	55	161	0	0	5	149	13	460	1,842
4:15 PM	0	12	0	64	0	3	1	6	0	45	171	3	0	3	142	12	462	1,853
4:30 PM	0	4	1	53	0	3	3	4	0	47	163	3	0	4	170	17	472	1,888
4:45 PM	0	9	0	52	0	4	1	5	0	44	143	2	0	2	172	14	448	1,809
5:00 PM	0	6	0	46	0	2	2	9	0	54	152	2	0	5	178	15	471	1,722
5:15 PM	0	8	0	66	0	3	2	5	0	55	142	2	0	7	185	22	497	
5:30 PM	0	8	2	48	0	2	0	11	0	39	113	0	0	7	156	7	393	
5:45 PM	0	6	1	44	0	3	0	7	0	38	126	1	0	9	115	11	361	
Count Total	0	60	5	427	0	26	9	56	0	377	1,171	13	0	42	1,267	111	3,564	
Peak Hour	0	27	1	217	0	12	8	23	0	200	600	9	0	18	705	68	1,888	

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	5	1	9	15	4:00 PM	0	0	0	0	0	4:00 PM	1	0	0	0	1
4:15 PM	0	6	0	5	11	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	3	0	2	5	4:30 PM	0	0	1	0	1	4:30 PM	0	0	1	0	1
4:45 PM	1	2	0	3	6	4:45 PM	0	0	1	0	1	4:45 PM	0	0	1	0	1
5:00 PM	1	2	0	2	5	5:00 PM	0	0	1	0	1	5:00 PM	0	0	1	0	1
5:15 PM	0	3	1	5	9	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	2	0	2	4	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	4	0	3	7	5:45 PM	0	0	0	0	0	5:45 PM	0	0	1	0	1
Count Total	2	27	2	31	62	Count Total	0	0	3	0	3	Count Total	1	0	4	0	5
Peak Hour	2	10	1	12	25	Peak Hour	0	0	3	0	3	Peak Hour	0	0	3	0	3

Peak Hour



	HV%	PHF
EB	0.0%	0.62
WB	1.9%	0.89
NB	1.8%	0.94
SB	1.4%	0.88
All	1.6%	0.95

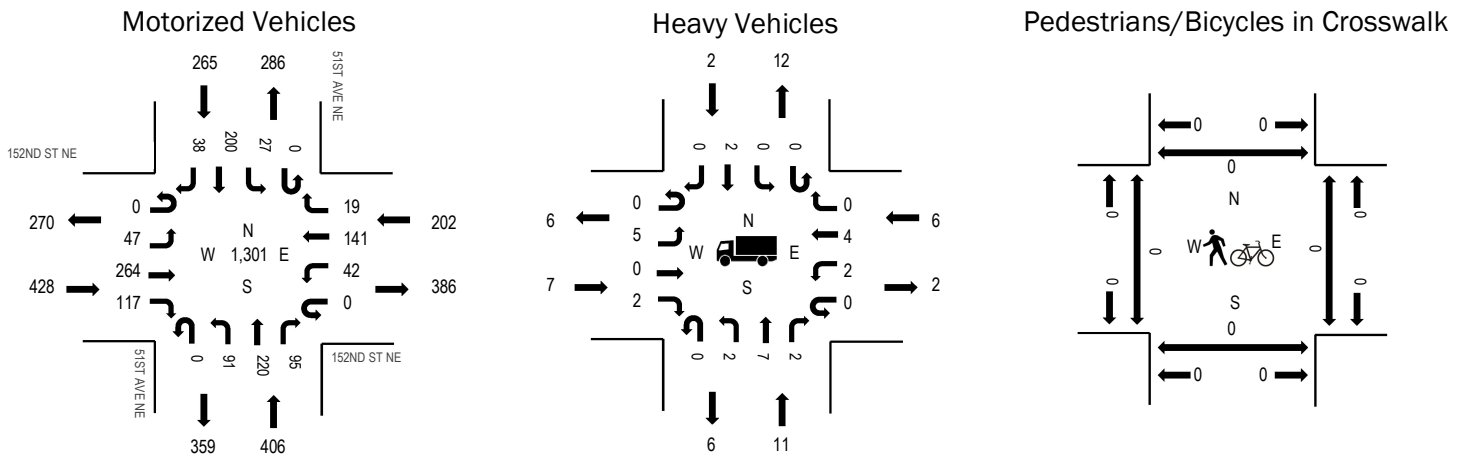
Traffic Counts - Motorized Vehicles

Interval Start Time	152ND ST NE Eastbound				152ND ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	2	1	4	0	34	2	61	0	1	155	38	0	69	146	1	514	2,004
4:15 PM	0	5	3	3	0	24	4	64	0	3	148	22	0	77	144	2	499	1,989
4:30 PM	0	6	1	6	0	18	2	58	0	0	152	42	0	73	139	6	503	2,021
4:45 PM	0	2	0	3	0	30	1	57	0	1	127	37	0	74	152	4	488	1,920
5:00 PM	0	4	1	1	0	17	0	62	0	1	156	26	0	72	154	5	499	1,824
5:15 PM	0	1	2	5	0	26	1	42	0	1	150	33	0	87	180	3	531	
5:30 PM	0	2	1	3	0	20	0	40	0	0	119	19	0	75	122	1	402	
5:45 PM	0	4	0	0	0	24	0	44	0	1	116	25	0	54	124	0	392	
Count Total	0	26	9	25	0	193	10	428	0	8	1,123	242	0	581	1,161	22	3,828	
Peak Hour	0	13	4	15	0	91	4	219	0	3	585	138	0	306	625	18	2,021	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	6	1	6	13	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	1	3	7	4	15	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	5	1	2	8	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	4	1	4	9	4:45 PM	0	0	0	0	0	4:45 PM	1	0	0	0	1
5:00 PM	0	2	1	4	7	5:00 PM	0	1	0	0	1	5:00 PM	1	0	0	0	1
5:15 PM	0	2	3	3	8	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	2	0	1	3	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	3	2	1	6	5:45 PM	0	1	0	0	1	5:45 PM	0	0	1	0	1
Count Total	1	27	16	25	69	Count Total	0	2	0	0	2	Count Total	2	0	1	0	3
Peak Hour	0	13	6	13	32	Peak Hour	0	1	0	0	1	Peak Hour	2	0	0	0	2

Peak Hour



	HV%	PHF
EB	1.6%	0.91
WB	3.0%	0.92
NB	2.7%	0.92
SB	0.8%	0.93
All	2.0%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	152ND ST NE Eastbound				152ND ST NE Westbound				51ST AVE NE Northbound				51ST AVE NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	10	31	31	0	13	36	6	0	26	40	11	0	10	34	12	260	1,239
4:15 PM	0	13	55	36	0	8	44	7	0	26	44	13	0	9	36	17	308	1,288
4:30 PM	0	13	57	34	0	9	39	5	0	24	59	27	0	7	55	8	337	1,301
4:45 PM	0	10	72	28	0	12	29	6	0	23	62	21	0	6	49	16	334	1,238
5:00 PM	0	13	58	26	0	11	33	3	0	24	51	21	0	7	54	8	309	1,148
5:15 PM	0	11	77	29	0	10	40	5	0	20	48	26	0	7	42	6	321	
5:30 PM	0	5	57	25	0	14	25	8	0	15	51	16	0	4	47	7	274	
5:45 PM	0	5	38	22	0	10	38	1	0	14	44	18	0	4	42	8	244	
Count Total	0	80	445	231	0	87	284	41	0	172	399	153	0	54	359	82	2,387	
Peak Hour	0	47	264	117	0	42	141	19	0	91	220	95	0	27	200	38	1,301	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	2	0	1	7	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	3	2	4	2	11	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	4	0	1	0	5	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	1	4	2	0	7	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	1	2	0	0	3	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	1	5	3	2	11	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	1	0	1	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	1	4	1	0	6	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	15	20	11	6	52	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	7	11	6	2	26	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



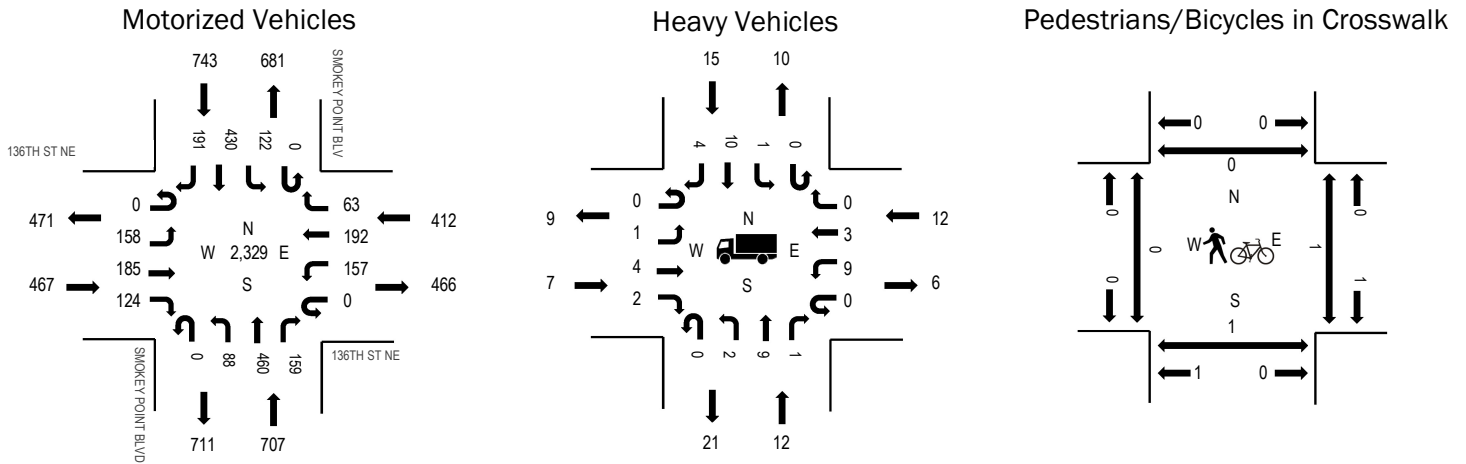
(303) 216-2439  
www.alltrafficdata.net

Location: 4 SMOKEY POINT BLVD & 136TH ST NE PM

Date: Wednesday, July 7, 2021

Peak Hour: 04:00 PM - 05:00 PM

**Peak Hour**



	HV%	PHF
EB	1.5%	0.93
WB	2.9%	0.84
NB	1.7%	0.80
SB	2.0%	0.89
All	2.0%	0.94

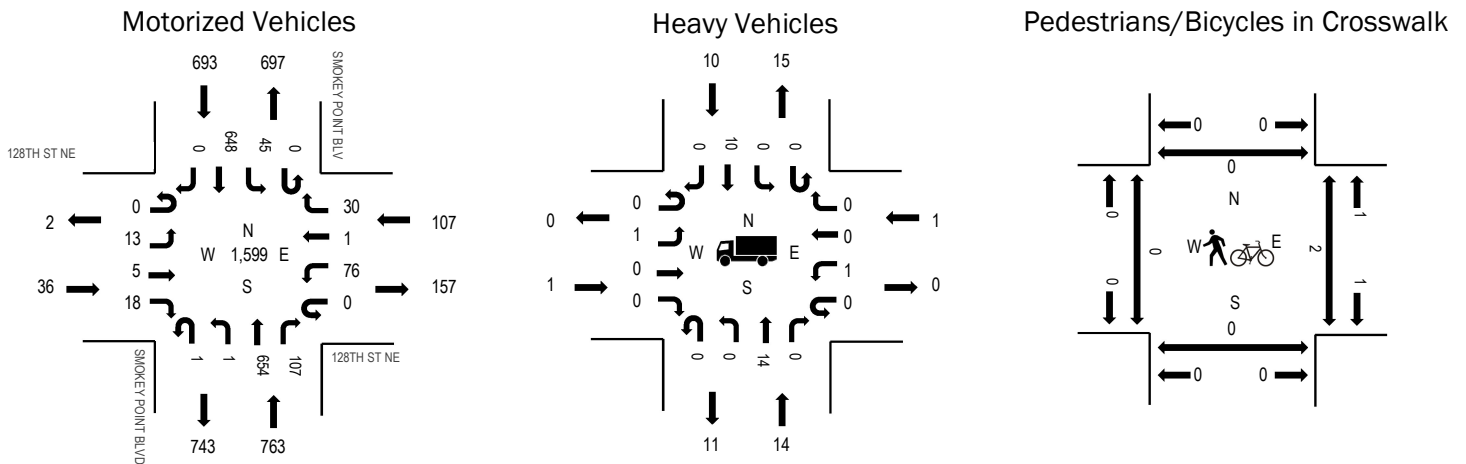
**Traffic Counts - Motorized Vehicles**

Interval Start Time	136TH ST NE Eastbound				136TH ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	44	47	35	0	43	39	12	0	22	121	48	0	35	124	50	620	2,329
4:15 PM	0	39	50	32	0	36	47	16	0	22	103	24	0	23	95	45	532	2,276
4:30 PM	0	37	40	34	0	35	42	19	0	20	150	52	0	33	107	53	622	2,293
4:45 PM	0	38	48	23	0	43	64	16	0	24	86	35	0	31	104	43	555	2,194
5:00 PM	0	31	54	21	0	46	42	11	0	20	112	55	0	35	102	38	567	2,099
5:15 PM	0	27	39	30	0	28	45	9	0	20	114	42	0	32	110	53	549	
5:30 PM	0	27	45	25	0	29	54	14	0	28	79	50	0	40	89	43	523	
5:45 PM	0	29	21	19	0	27	34	16	0	14	99	52	0	29	80	40	460	
Count Total	0	272	344	219	0	287	367	113	0	170	864	358	0	258	811	365	4,428	
Peak Hour	0	158	185	124	0	157	192	63	0	88	460	159	0	122	430	191	2,329	

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	4	4	4	13	4:00 PM	0	1	0	1	2	4:00 PM	0	0	1	0	1
4:15 PM	4	2	2	6	14	4:15 PM	0	0	0	0	0	4:15 PM	0	1	0	0	1
4:30 PM	1	3	3	1	8	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	1	3	3	4	11	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	1	3	2	3	9	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	5	2	6	13	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	1	4	1	0	6	5:30 PM	0	0	0	2	2	5:30 PM	2	0	0	0	2
5:45 PM	0	3	1	1	5	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	9	27	18	25	79	Count Total	0	1	0	3	4	Count Total	2	1	1	0	4
Peak Hour	7	12	12	15	46	Peak Hour	0	1	0	1	2	Peak Hour	0	1	1	0	2

**Peak Hour**



	HV%	PHF
EB	2.8%	0.69
WB	0.9%	0.81
NB	1.8%	0.91
SB	1.4%	0.94
All	1.6%	0.94

**Traffic Counts - Motorized Vehicles**

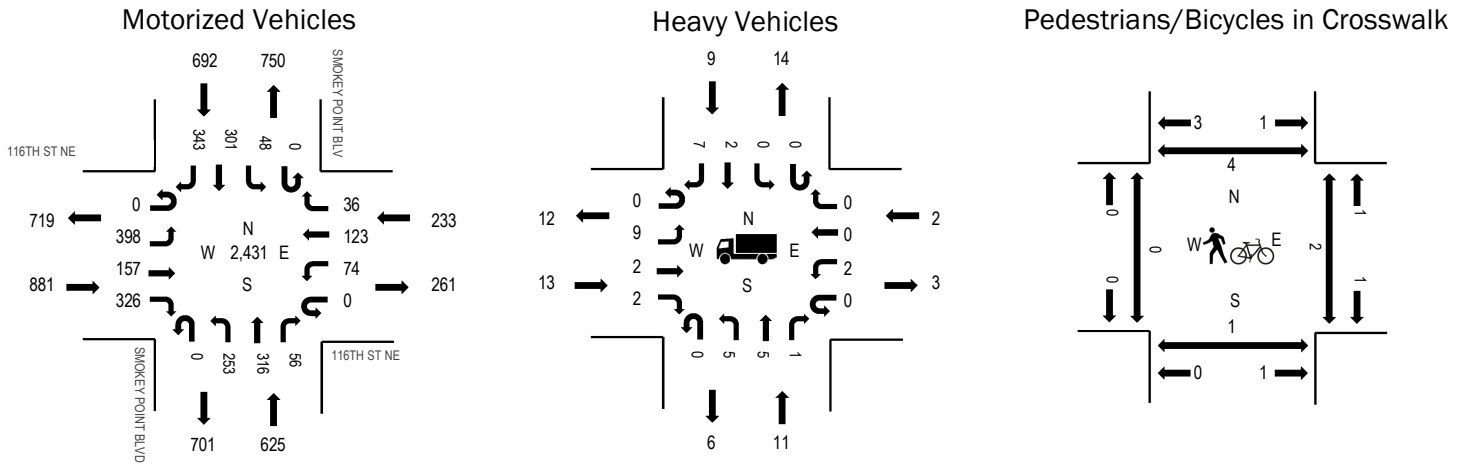
Interval Start Time	128TH ST NE Eastbound				128TH ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	3	1	4	0	24	1	8	0	0	172	28	0	9	175	0	425	1,599
4:15 PM	0	1	0	5	0	19	0	2	0	0	162	16	0	16	136	0	357	1,569
4:30 PM	0	4	2	3	0	13	0	7	0	0	180	30	0	12	172	0	423	1,591
4:45 PM	0	5	2	6	0	20	0	13	1	1	140	33	0	8	165	0	394	1,507
5:00 PM	0	1	0	3	0	13	0	12	0	1	182	28	0	11	144	0	395	1,448
5:15 PM	0	0	0	3	0	21	0	8	0	0	150	33	0	12	152	0	379	
5:30 PM	0	0	0	0	0	9	0	5	0	0	159	31	0	8	127	0	339	
5:45 PM	0	0	2	3	0	13	0	10	0	0	148	25	0	12	122	0	335	
Count Total	0	14	7	27	0	132	1	65	1	2	1,293	224	0	88	1,193	0	3,047	
Peak Hour	0	13	5	18	0	76	1	30	1	1	654	107	0	45	648	0	1,599	

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	3	0	4	8	4:00 PM	0	2	0	0	2	4:00 PM	0	0	2	0	2
4:15 PM	0	1	0	1	2	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	5	0	2	7	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	5	1	3	9	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	2	2	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	5	0	3	8	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	3	1	2	6	5:30 PM	0	0	0	2	2	5:30 PM	0	0	2	0	2
5:45 PM	0	2	0	0	2	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	1	24	2	17	44	Count Total	0	2	0	2	4	Count Total	0	0	4	0	4
Peak Hour	1	14	1	10	26	Peak Hour	0	2	0	0	2	Peak Hour	0	0	2	0	2



Peak Hour



	HV%	PHF
EB	1.5%	0.91
WB	0.9%	0.92
NB	1.8%	0.90
SB	1.3%	0.94
All	1.4%	0.94

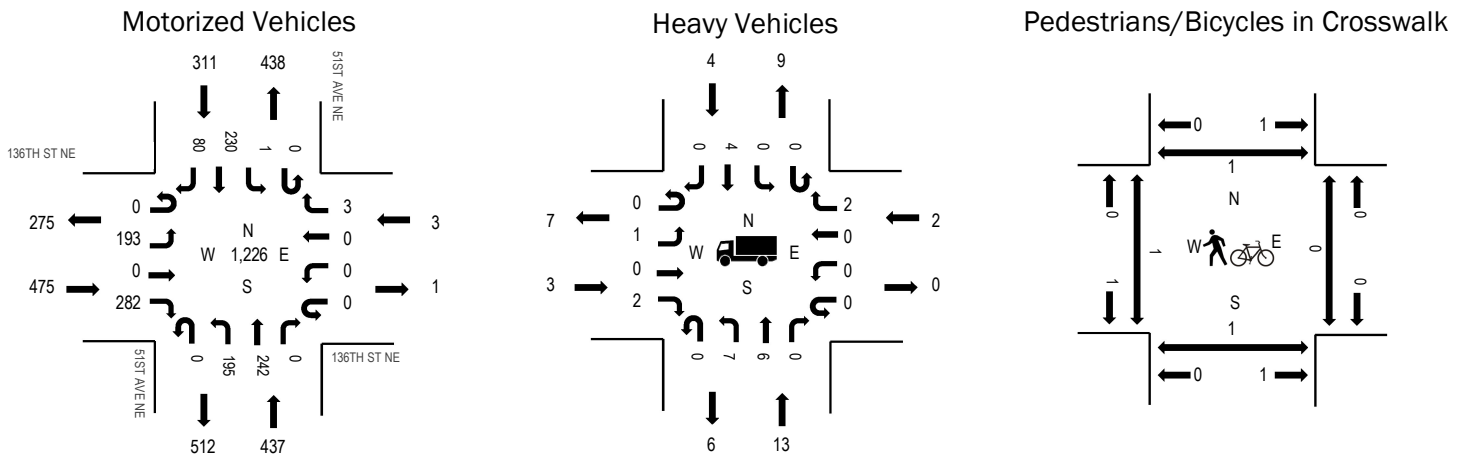
Traffic Counts - Motorized Vehicles

Interval Start Time	116TH ST NE Eastbound				116TH ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	121	37	83	0	18	34	11	0	67	76	18	0	11	89	84	649	2,431
4:15 PM	0	96	38	78	0	16	32	6	0	70	88	16	0	8	64	73	585	2,421
4:30 PM	0	97	41	89	0	24	25	7	0	55	84	12	0	13	75	95	617	2,408
4:45 PM	0	84	41	76	0	16	32	12	0	61	68	10	0	16	73	91	580	2,356
5:00 PM	0	102	41	100	0	18	32	8	0	53	100	15	0	6	79	85	639	2,327
5:15 PM	0	85	39	70	0	15	20	7	0	72	81	11	0	7	68	97	572	
5:30 PM	0	104	42	72	0	22	33	10	0	57	84	9	0	4	69	59	565	
5:45 PM	0	89	47	93	0	17	31	10	0	68	68	6	0	15	53	54	551	
Count Total	0	778	326	661	0	146	239	71	0	503	649	97	0	80	570	638	4,758	
Peak Hour	0	398	157	326	0	74	123	36	0	253	316	56	0	48	301	343	2,431	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	4	0	4	12	4:00 PM	1	0	1	0	2	4:00 PM	0	1	1	1	3
4:15 PM	5	2	2	2	11	4:15 PM	0	0	2	0	2	4:15 PM	0	0	0	2	2
4:30 PM	3	3	0	1	7	4:30 PM	1	0	0	0	1	4:30 PM	0	0	0	1	1
4:45 PM	1	2	0	2	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	1	0	1
5:00 PM	5	0	0	3	8	5:00 PM	0	0	0	0	0	5:00 PM	1	0	0	0	1
5:15 PM	7	5	0	2	14	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	2	2	0	3	7	5:30 PM	0	0	0	1	1	5:30 PM	0	0	1	1	2
5:45 PM	3	0	2	0	5	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	30	18	4	17	69	Count Total	2	0	3	1	6	Count Total	1	1	3	5	10
Peak Hour	13	11	2	9	35	Peak Hour	2	0	3	0	5	Peak Hour	0	1	2	4	7

Peak Hour



	HV%	PHF
EB	0.6%	0.91
WB	66.7%	0.25
NB	3.0%	0.96
SB	1.3%	0.87
All	1.8%	0.95

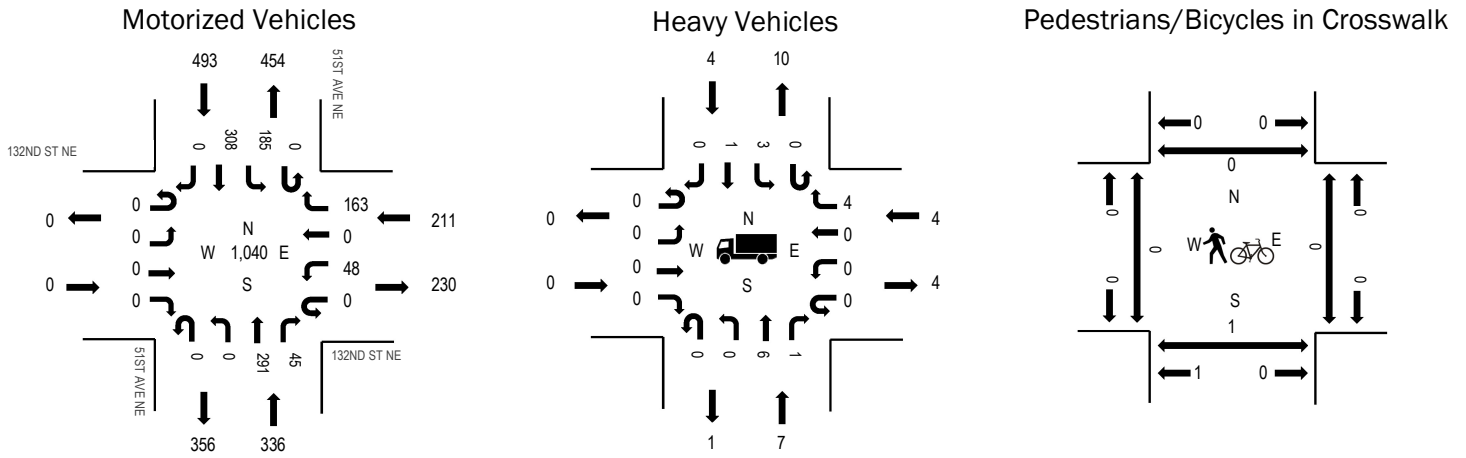
Traffic Counts - Motorized Vehicles

Interval Start Time	136TH ST NE Eastbound				136TH ST NE Westbound				51ST AVE NE Northbound				51ST AVE NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	52	0	55	0	0	0	0	0	42	51	0	0	0	47	19	266	1,182
4:15 PM	0	47	0	60	0	0	0	0	0	51	58	0	0	0	51	19	286	1,226
4:30 PM	0	53	0	78	0	0	0	3	0	40	74	0	0	0	58	17	323	1,216
4:45 PM	0	42	0	64	0	0	0	0	0	55	57	0	0	0	64	25	307	1,187
5:00 PM	0	51	0	80	0	0	0	0	0	49	53	0	0	1	57	19	310	1,145
5:15 PM	0	49	0	63	0	0	0	0	0	42	52	0	0	0	50	20	276	
5:30 PM	0	37	0	76	0	0	0	0	0	42	65	0	0	0	50	24	294	
5:45 PM	0	41	0	49	0	0	0	3	0	40	51	0	0	0	61	20	265	
Count Total	0	372	0	525	0	0	0	6	0	361	461	0	0	1	438	163	2,327	
Peak Hour	0	193	0	282	0	0	0	3	0	195	242	0	0	1	230	80	1,226	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	0	2	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	1	7	0	0	8	4:15 PM	1	0	0	0	1	4:15 PM	1	1	0	0	2
4:30 PM	0	1	2	1	4	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	1	4	0	2	7	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	1	1	0	1	3	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	1	1
5:15 PM	4	1	0	0	5	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	1	1
5:30 PM	4	0	0	0	4	5:30 PM	0	1	0	0	1	5:30 PM	0	1	0	0	1
5:45 PM	0	3	2	2	7	5:45 PM	0	6	0	0	6	5:45 PM	2	2	0	4	8
Count Total	11	19	4	6	40	Count Total	1	7	0	0	8	Count Total	3	4	0	6	13
Peak Hour	3	13	2	4	22	Peak Hour	1	0	0	0	1	Peak Hour	1	1	0	1	3

Peak Hour



	HV%	PHF
EB	0.0%	0.00
WB	1.9%	0.92
NB	2.1%	0.91
SB	0.8%	0.88
All	1.4%	0.89

Traffic Counts - Motorized Vehicles

Interval Start Time	132ND ST NE Eastbound				132ND ST NE Westbound				51ST AVE NE Northbound				51ST AVE NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	14	0	24	0	0	75	19	0	38	57	0	227	1,012
4:15 PM	0	0	0	0	0	13	0	33	0	0	71	14	0	41	62	0	234	1,040
4:30 PM	0	0	0	0	0	10	0	48	0	0	81	11	0	64	79	0	293	1,040
4:45 PM	0	0	0	0	0	14	0	41	0	0	71	9	0	38	85	0	258	995
5:00 PM	0	0	0	0	0	11	0	41	0	0	68	11	0	42	82	0	255	953
5:15 PM	0	0	0	0	0	9	0	40	0	0	57	12	0	44	72	0	234	
5:30 PM	0	0	0	0	0	10	0	28	0	0	78	11	0	43	78	0	248	
5:45 PM	0	0	0	0	0	4	0	29	0	0	66	14	0	35	68	0	216	
Count Total	0	0	0	0	0	85	0	284	0	0	567	101	0	345	583	0	1,965	
Peak Hour	0	0	0	0	0	48	0	163	0	0	291	45	0	185	308	0	1,040	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	3	0	1	4	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	2	1	1	4	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	1	1	2	4	4:45 PM	0	0	1	0	1	4:45 PM	0	0	0	0	0
5:00 PM	0	1	2	0	3	5:00 PM	0	1	0	0	1	5:00 PM	0	1	0	0	1
5:15 PM	0	1	0	2	3	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	2	2	5:30 PM	0	1	0	0	1	5:30 PM	0	0	5	0	5
5:45 PM	0	4	0	2	6	5:45 PM	0	0	2	0	2	5:45 PM	0	0	0	0	0
Count Total	0	12	4	10	26	Count Total	0	2	3	0	5	Count Total	0	1	5	0	6
Peak Hour	0	7	4	4	15	Peak Hour	0	1	1	0	2	Peak Hour	0	1	0	0	1



ALL TRAFFIC DATA SERVICES

(303) 216-2439

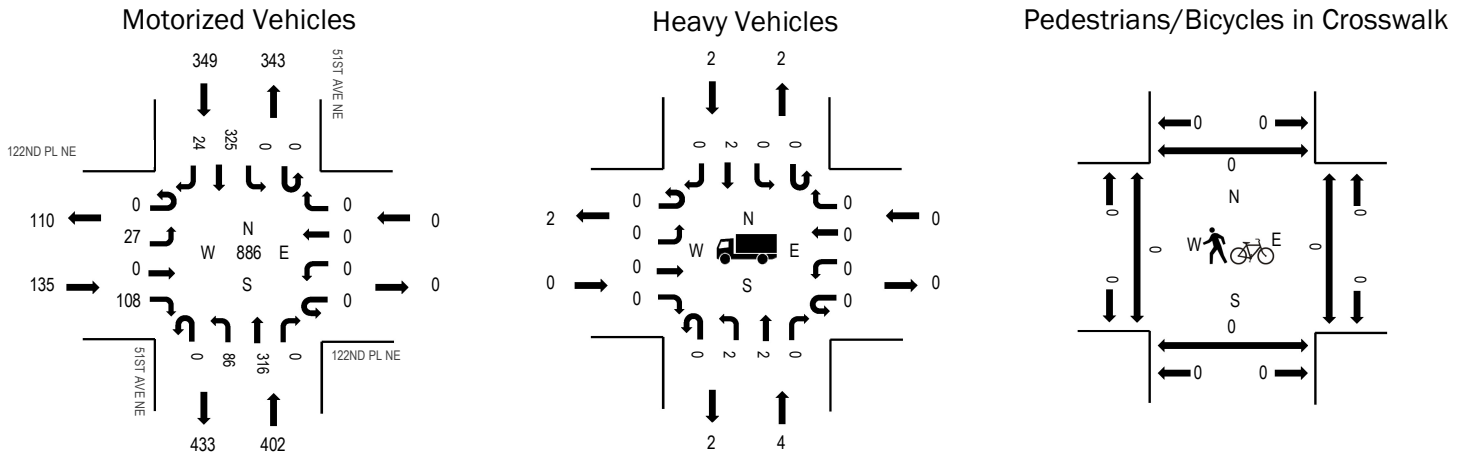
www.alltrafficdata.net

Location: 9 51ST AVE NE & 122ND PL NE PM

Date: Wednesday, July 7, 2021

Peak Hour: 04:45 PM - 05:45 PM

Peak Hour



	HV%	PHF
EB	0.0%	0.82
WB	0.0%	0.00
NB	1.0%	0.86
SB	0.6%	0.89
All	0.7%	0.87

Traffic Counts - Motorized Vehicles

Interval Start Time	122ND PL NE Eastbound				122ND PL NE Westbound				51ST AVE NE Northbound				51ST AVE NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	12	0	22	0	0	0	0	0	17	54	0	0	0	64	4	173	827
4:15 PM	0	9	0	18	0	0	0	0	0	18	71	0	0	0	71	7	194	857
4:30 PM	0	10	0	27	0	0	0	0	0	22	81	0	0	0	90	3	233	863
4:45 PM	0	6	0	29	0	0	0	0	0	19	79	0	0	0	87	7	227	886
5:00 PM	0	5	0	22	0	0	0	0	0	16	77	0	0	0	79	4	203	857
5:15 PM	0	9	0	23	0	0	0	0	0	24	70	0	0	0	68	6	200	
5:30 PM	0	7	0	34	0	0	0	0	0	27	90	0	0	0	91	7	256	
5:45 PM	0	8	0	24	0	0	0	0	0	17	77	0	0	0	68	4	198	
Count Total	0	66	0	199	0	0	0	0	0	160	599	0	0	0	618	42	1,684	
Peak Hour	0	27	0	108	0	0	0	0	0	86	316	0	0	0	325	24	886	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	1	2	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	4	0	1	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	1	0	2	3	4:30 PM	1	0	0	0	1	4:30 PM	0	0	0	0	0
4:45 PM	0	2	0	1	3	4:45 PM	0	1	0	2	3	4:45 PM	0	0	0	0	0
5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	1	0	1	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	1	0	0	1	5:30 PM	0	0	0	0	0
5:45 PM	0	4	0	1	5	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	14	0	7	21	Count Total	1	2	0	2	5	Count Total	0	0	0	0	0
Peak Hour	0	4	0	2	6	Peak Hour	0	2	0	2	4	Peak Hour	0	0	0	0	0

# Appendix B

## Level of Service (LOS) Calculations

2021 Existing

Lanes, Volumes, Timings  
1: Smokey Point Blvd & 156th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↕		↖	↕	
Traffic Volume (vph)	27	1	217	12	8	23	200	600	9	18	705	68
Future Volume (vph)	27	1	217	12	8	23	200	600	9	18	705	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-6%			0%			0%			0%	
Storage Length (ft)	200		200	200		0	200		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			40			40	
Link Distance (ft)		612			381			1355			1050	
Travel Time (s)		16.7			7.4			23.1			17.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	0%	0%	4%	1%	1%	11%	17%	1%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	25.0	25.0	12.0	25.0		12.0	25.0		12.0	25.0	
Total Split (s)	20.0	25.0	25.0	20.0	25.0		20.0	45.0		15.0	45.0	
Total Split (%)	18.2%	22.7%	22.7%	18.2%	22.7%		18.2%	40.9%		13.6%	40.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

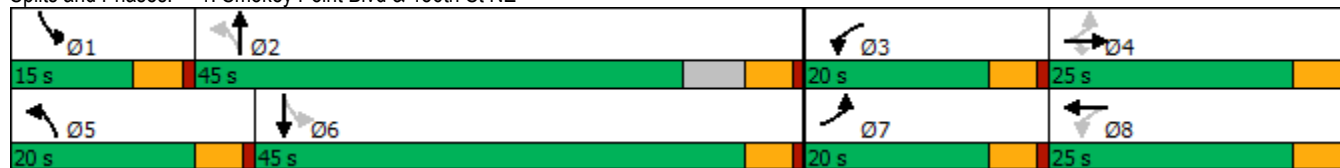
Cycle Length: 110

Actuated Cycle Length: 62

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Smokey Point Blvd & 156th St NE



HCM 6th Signalized Intersection Summary  
 1: Smokey Point Blvd & 156th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1	217	12	8	23	200	600	9	18	705	68
Future Volume (veh/h)	27	1	217	12	8	23	200	600	9	18	705	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2076	2136	2121	1900	1900	1841	1885	1885	1737	1648	1885	1900
Adj Flow Rate, veh/h	28	1	228	13	8	24	211	632	9	19	742	72
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	0	1	0	0	4	1	1	11	17	1	0
Cap, veh/h	403	344	290	333	59	176	444	1549	22	391	1123	109
Arrive On Green	0.04	0.16	0.16	0.02	0.14	0.14	0.12	0.43	0.43	0.03	0.34	0.34
Sat Flow, veh/h	1977	2136	1797	1810	419	1256	1795	3615	51	1570	3297	320
Grp Volume(v), veh/h	28	1	228	13	0	32	211	313	328	19	403	411
Grp Sat Flow(s),veh/h/ln	1977	2136	1797	1810	0	1674	1795	1791	1876	1570	1791	1826
Q Serve(g_s), s	0.7	0.0	6.9	0.3	0.0	0.9	3.8	6.8	6.8	0.4	10.8	10.8
Cycle Q Clear(g_c), s	0.7	0.0	6.9	0.3	0.0	0.9	3.8	6.8	6.8	0.4	10.8	10.8
Prop In Lane	1.00		1.00	1.00		0.75	1.00		0.03	1.00		0.18
Lane Grp Cap(c), veh/h	403	344	290	333	0	234	444	767	804	391	610	622
V/C Ratio(X)	0.07	0.00	0.79	0.04	0.00	0.14	0.48	0.41	0.41	0.05	0.66	0.66
Avail Cap(c_a), veh/h	844	760	639	774	0	595	707	1274	1334	620	1274	1299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	19.8	22.7	19.9	0.0	21.2	10.2	11.1	11.1	11.2	15.8	15.8
Incr Delay (d2), s/veh	0.0	0.0	1.8	0.0	0.0	0.1	0.3	0.4	0.4	0.0	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.7	0.1	0.0	0.3	1.1	2.2	2.3	0.1	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	19.8	24.5	19.9	0.0	21.3	10.5	11.6	11.5	11.3	17.3	17.2
LnGrp LOS	B	B	C	B	A	C	B	B	B	B	B	B
Approach Vol, veh/h		257			45			852			833	
Approach Delay, s/veh		23.9			20.9			11.3			17.1	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	29.1	6.3	14.1	11.7	24.1	7.5	12.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	40.0	15.0	20.0	15.0	40.0	15.0	20.0				
Max Q Clear Time (g_c+I1), s	2.4	8.8	2.3	8.9	5.8	12.8	2.7	2.9				
Green Ext Time (p_c), s	0.0	4.8	0.0	0.3	0.2	6.3	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.6									
HCM 6th LOS			B									



Lanes, Volumes, Timings  
2: Smokey Point Blvd & 152nd St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	4	15	91	4	219	3	585	138	306	625	18
Future Volume (vph)	13	4	15	91	4	219	3	585	138	306	625	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	125		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		385			654			718			1355	
Travel Time (s)		7.5			12.7			12.2			23.1	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	0%	1%	4%	1%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		9.0	22.0		9.0	26.0	
Total Split (s)	21.0	21.0		21.0	25.0		21.0	45.0		21.0	45.0	
Total Split (%)	18.8%	18.8%		18.8%	22.3%		18.8%	40.2%		18.8%	40.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

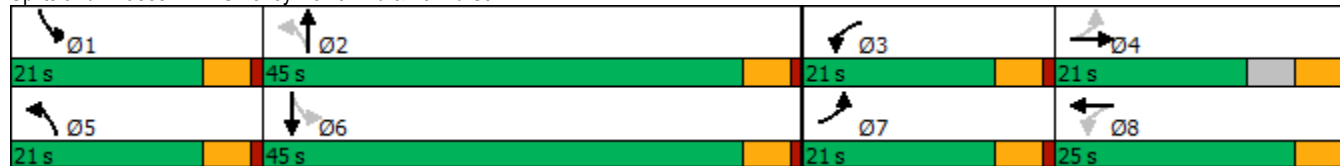
Cycle Length: 112

Actuated Cycle Length: 57.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Smokey Point Blvd & 152nd St NE



HCM 6th Signalized Intersection Summary  
 2: Smokey Point Blvd & 152nd St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	4	15	91	4	219	3	585	138	306	625	18
Future Volume (veh/h)	13	4	15	91	4	219	3	585	138	306	625	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1885	1900	1885	1841	1885	1870	1900
Adj Flow Rate, veh/h	14	4	16	96	4	231	3	616	145	322	658	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	3	0	1	0	1	4	1	2	0
Cap, veh/h	205	45	178	411	5	293	361	848	199	477	1574	45
Arrive On Green	0.01	0.13	0.13	0.06	0.18	0.18	0.00	0.29	0.29	0.15	0.45	0.45
Sat Flow, veh/h	1810	332	1329	1767	27	1587	1810	2876	676	1795	3527	102
Grp Volume(v), veh/h	14	0	20	96	0	235	3	383	378	322	331	346
Grp Sat Flow(s),veh/h/ln	1810	0	1661	1767	0	1614	1810	1791	1761	1795	1777	1852
Q Serve(g_s), s	0.4	0.0	0.6	2.6	0.0	7.9	0.1	10.9	11.0	6.4	7.2	7.2
Cycle Q Clear(g_c), s	0.4	0.0	0.6	2.6	0.0	7.9	0.1	10.9	11.0	6.4	7.2	7.2
Prop In Lane	1.00		0.80	1.00		0.98	1.00		0.38	1.00		0.05
Lane Grp Cap(c), veh/h	205	0	223	411	0	298	361	528	519	477	793	826
V/C Ratio(X)	0.07	0.00	0.09	0.23	0.00	0.79	0.01	0.73	0.73	0.68	0.42	0.42
Avail Cap(c_a), veh/h	689	0	467	795	0	568	864	1260	1239	705	1250	1303
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	21.6	19.3	0.0	22.1	14.0	18.0	18.0	11.6	10.7	10.7
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	1.8	0.0	1.4	1.5	1.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	1.0	0.0	2.8	0.0	4.0	3.9	2.0	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	21.6	19.4	0.0	23.9	14.0	19.4	19.5	12.9	11.0	11.0
LnGrp LOS	C	A	C	B	A	C	B	B	B	B	B	B
Approach Vol, veh/h		34			331			764			999	
Approach Delay, s/veh		21.4			22.6			19.4			11.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.8	21.8	8.7	12.6	5.2	30.4	5.8	15.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	16.0	40.0	16.0	16.0	16.0	40.0	16.0	20.0				
Max Q Clear Time (g_c+I1), s	8.4	13.0	4.6	2.6	2.1	9.2	2.4	9.9				
Green Ext Time (p_c), s	0.4	3.8	0.1	0.0	0.0	3.3	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
 3: 51st Ave NE & 152nd St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	264	117	42	141	19	91	220	95	27	200	38
Future Volume (vph)	47	264	117	42	141	19	91	220	95	27	200	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		871			769			861			867	
Travel Time (s)		14.8			13.1			16.8			16.9	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	11%	0%	2%	5%	3%	0%	2%	3%	2%	0%	1%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	50.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	47	264	117	42	141	19	91	220	95	27	200	38
Future Vol, veh/h	47	264	117	42	141	19	91	220	95	27	200	38
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles, %	11	0	2	5	3	0	2	3	2	0	1	0
Mvmt Flow	52	290	129	46	153	21	99	239	103	29	215	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	71.5	21.4	57.3	25.9
HCM LOS	F	C	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		22%	11%	21%
Vol Thru, %		54%	62%	70%
Vol Right, %		23%	27%	9%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		406	428	202
LT Vol		91	47	42
Through Vol		220	264	141
RT Vol		95	117	19
Lane Flow Rate		441	470	220
Geometry Grp		1	1	1
Degree of Util (X)		0.945	1.006	0.531
Departure Headway (Hd)		7.71	7.698	8.818
Convergence, Y/N		Yes	Yes	Yes
Cap		468	470	411
Service Time		5.8	5.783	6.818
HCM Lane V/C Ratio		0.942	1	0.535
HCM Control Delay		57.3	71.5	21.4
HCM Lane LOS		F	F	C
HCM 95th-tile Q		11.3	13.4	3

Lanes, Volumes, Timings  
4: Smokey Point Blvd & 136th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	185	124	157	192	63	88	460	159	122	430	191
Future Volume (vph)	158	185	124	157	192	63	88	460	159	122	430	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	225		0	275		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		178			861			811			837	
Travel Time (s)		3.5			16.8			13.8			14.3	
Confl. Peds. (#/hr)			1	1					1			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	6%	2%	0%	2%	2%	1%	1%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

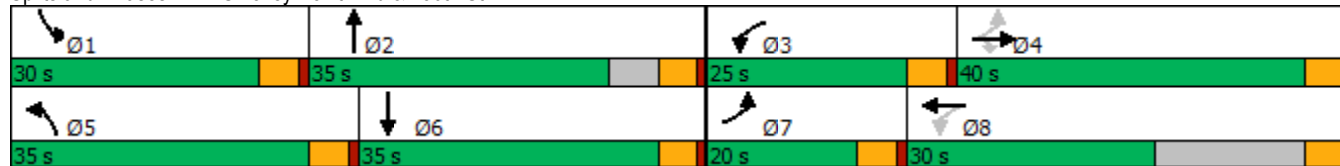
Cycle Length: 135

Actuated Cycle Length: 81.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Smokey Point Blvd & 136th St NE



HCM 6th Signalized Intersection Summary  
 4: Smokey Point Blvd & 136th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	185	124	157	192	63	88	460	159	122	430	191
Future Volume (veh/h)	158	185	124	157	192	63	88	460	159	122	430	191
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1811	1870	1900	1870	1870	1885	1885	1870	1870
Adj Flow Rate, veh/h	168	197	132	167	204	67	94	489	169	130	457	203
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	2	6	2	0	2	2	1	1	2	2
Cap, veh/h	369	358	303	408	262	86	122	658	226	170	670	295
Arrive On Green	0.10	0.19	0.19	0.11	0.19	0.19	0.07	0.25	0.25	0.09	0.28	0.28
Sat Flow, veh/h	1795	1870	1583	1725	1347	443	1781	2594	891	1795	2399	1057
Grp Volume(v), veh/h	168	197	132	167	0	271	94	334	324	130	337	323
Grp Sat Flow(s),veh/h/ln	1795	1870	1583	1725	0	1790	1781	1777	1708	1795	1777	1680
Q Serve(g_s), s	4.1	5.4	4.1	4.2	0.0	8.1	2.9	9.7	9.8	4.0	9.5	9.6
Cycle Q Clear(g_c), s	4.1	5.4	4.1	4.2	0.0	8.1	2.9	9.7	9.8	4.0	9.5	9.6
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.52	1.00		0.63
Lane Grp Cap(c), veh/h	369	358	303	408	0	348	122	451	433	170	496	469
V/C Ratio(X)	0.46	0.55	0.44	0.41	0.00	0.78	0.77	0.74	0.75	0.77	0.68	0.69
Avail Cap(c_a), veh/h	662	1162	983	838	0	794	948	946	909	797	946	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	20.6	20.1	15.7	0.0	21.6	25.8	19.3	19.4	24.9	18.1	18.1
Incr Delay (d2), s/veh	0.3	0.5	0.4	0.2	0.0	1.4	3.8	0.9	1.0	2.7	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.2	1.4	1.5	0.0	3.2	1.2	3.5	3.4	1.6	3.4	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.5	21.1	20.5	16.0	0.0	23.0	29.6	20.2	20.4	27.6	18.7	18.8
LnGrp LOS	B	C	C	B	A	C	C	C	C	C	B	B
Approach Vol, veh/h		497			438			752			790	
Approach Delay, s/veh		19.4			20.3			21.5			20.2	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	19.3	11.0	15.8	8.9	20.7	10.8	15.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	6.0	11.8	6.2	7.4	4.9	11.6	6.1	10.1				
Green Ext Time (p_c), s	0.1	2.3	0.2	0.9	0.1	2.3	0.1	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.4									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
5: State Ave & 128th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↖	↕↔		↖	↕↔	
Traffic Volume (vph)	13	5	18	76	1	30	2	654	107	45	648	0
Future Volume (vph)	13	5	18	76	1	30	2	654	107	45	648	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	200		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		476			540			714				620
Travel Time (s)		13.0			14.7			12.2				10.6
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	0%	0%	1%	0%	0%	0%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	13.0	13.0		25.0	25.0		10.0	17.0		10.0	22.0	
Total Split (s)	35.0	35.0		25.0	25.0		25.0	55.0		25.0	55.0	
Total Split (%)	25.0%	25.0%		17.9%	17.9%		17.9%	39.3%		17.9%	39.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

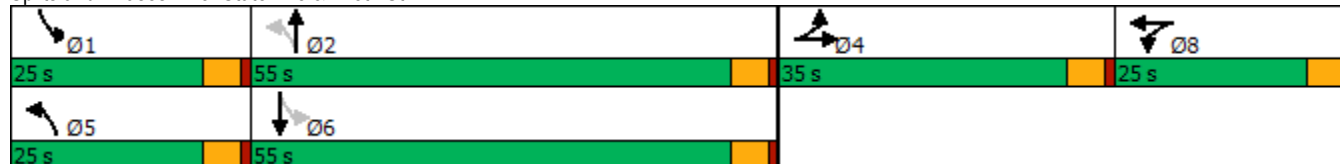
Cycle Length: 140

Actuated Cycle Length: 57.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: State Ave & 128th St NE



# HCM 6th Signalized Intersection Summary

## 5: State Ave & 128th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↗		↗	↕↗	
Traffic Volume (veh/h)	13	5	18	76	1	30	2	654	107	45	648	0
Future Volume (veh/h)	13	5	18	76	1	30	2	654	107	45	648	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1900	1900	1885	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	14	5	19	81	1	32	2	696	114	48	689	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	0	0	1	0	0	0	2	0	0	2	0
Cap, veh/h	43	15	58	109	1	43	351	1033	169	353	1371	0
Arrive On Green	0.07	0.07	0.07	0.09	0.09	0.09	0.00	0.34	0.34	0.05	0.39	0.00
Sat Flow, veh/h	632	226	857	1243	15	491	1810	3055	500	1810	3647	0
Grp Volume(v), veh/h	38	0	0	114	0	0	2	405	405	48	689	0
Grp Sat Flow(s),veh/h/ln	1714	0	0	1749	0	0	1810	1777	1779	1810	1777	0
Q Serve(g_s), s	0.9	0.0	0.0	2.8	0.0	0.0	0.0	8.6	8.6	0.7	6.5	0.0
Cycle Q Clear(g_c), s	0.9	0.0	0.0	2.8	0.0	0.0	0.0	8.6	8.6	0.7	6.5	0.0
Prop In Lane	0.37		0.50	0.71		0.28	1.00		0.28	1.00		0.00
Lane Grp Cap(c), veh/h	116	0	0	153	0	0	351	601	601	353	1371	0
V/C Ratio(X)	0.33	0.00	0.00	0.74	0.00	0.00	0.01	0.67	0.67	0.14	0.50	0.00
Avail Cap(c_a), veh/h	1173	0	0	798	0	0	1172	2027	2029	1087	4053	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.5	0.0	0.0	19.5	0.0	0.0	9.8	12.4	12.4	9.3	10.3	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.7	0.0	0.0	0.0	1.0	1.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.1	0.0	0.0	0.0	2.6	2.6	0.2	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	0.0	0.0	22.2	0.0	0.0	9.8	13.4	13.4	9.6	10.5	0.0
LnGrp LOS	C	A	A	C	A	A	A	B	B	A	B	A
Approach Vol, veh/h		38			114			812			737	
Approach Delay, s/veh		20.7			22.2			13.4			10.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	19.8		8.0	5.1	21.9		8.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	50.0		30.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	2.7	10.6		2.9	2.0	8.5		4.8				
Green Ext Time (p_c), s	0.1	4.3		0.1	0.0	4.0		0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			12.9									
HCM 6th LOS			B									



Lanes, Volumes, Timings  
6: State Ave & 116th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	398	157	326	74	123	36	253	316	56	48	301	343
Future Volume (vph)	398	157	326	74	123	36	253	316	56	48	301	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	175		0	450		0	450		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		790			763			665			684	
Travel Time (s)		21.5			20.8			11.3			11.7	
Confl. Peds. (#/hr)			1			4			2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	1%	3%	0%	0%	2%	2%	2%	0%	1%	2%
Shared Lane Traffic (%)	31%											
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4 5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	5.0	5.0		7.0	10.0		5.0	10.0	10.0
Minimum Split (s)	31.5	31.5	12.0	39.5	39.5		12.0	30.0		10.0	15.0	15.0
Total Split (s)	39.5	39.5	25.0	24.5	24.5		25.0	25.0		25.0	25.0	25.0
Total Split (%)	34.6%	34.6%	21.9%	21.5%	21.5%		21.9%	21.9%		21.9%	21.9%	21.9%
Yellow Time (s)	3.5	3.5	4.0	3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	5.0	4.5	4.5		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

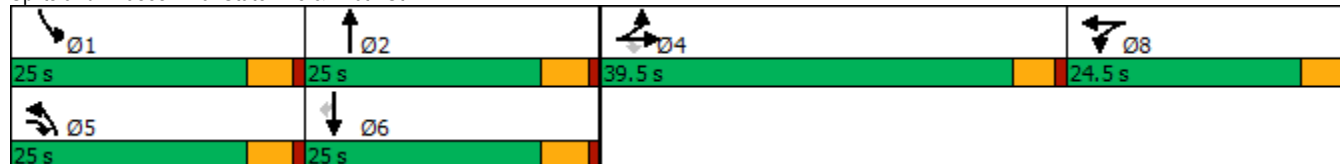
Cycle Length: 114

Actuated Cycle Length: 97

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: State Ave & 116th St NE



HCM 6th Signalized Intersection Summary  
6: State Ave & 116th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	398	157	326	74	123	36	253	316	56	48	301	343
Future Volume (veh/h)	398	157	326	74	123	36	253	316	56	48	301	343
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1885	1856	1900	1900	1870	1870	1870	1900	1885	1870
Adj Flow Rate, veh/h	295	346	347	79	131	38	269	336	60	51	320	365
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	1	1	3	0	0	2	2	2	0	1	2
Cap, veh/h	422	447	654	221	176	51	308	1116	197	75	450	378
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.17	0.37	0.37	0.04	0.24	0.24
Sat Flow, veh/h	1781	1885	1594	1767	1412	410	1781	3017	533	1810	1885	1585
Grp Volume(v), veh/h	295	346	347	79	0	169	269	196	200	51	320	365
Grp Sat Flow(s),veh/h/ln	1781	1885	1594	1767	0	1822	1781	1777	1773	1810	1885	1585
Q Serve(g_s), s	12.7	14.4	13.8	3.4	0.0	7.5	12.3	6.6	6.7	2.3	13.1	19.1
Cycle Q Clear(g_c), s	12.7	14.4	13.8	3.4	0.0	7.5	12.3	6.6	6.7	2.3	13.1	19.1
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	422	447	654	221	0	228	308	658	656	75	450	378
V/C Ratio(X)	0.70	0.77	0.53	0.36	0.00	0.74	0.87	0.30	0.30	0.68	0.71	0.97
Avail Cap(c_a), veh/h	743	787	942	421	0	434	425	658	656	432	450	378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.3	29.9	18.7	33.6	0.0	35.4	33.8	18.7	18.8	39.6	29.3	31.6
Incr Delay (d2), s/veh	1.6	2.2	0.5	0.4	0.0	1.8	11.0	0.2	0.2	4.0	4.9	37.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	6.7	5.0	1.5	0.0	3.4	6.0	2.5	2.6	1.1	6.2	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	32.1	19.2	34.0	0.0	37.2	44.7	18.9	18.9	43.6	34.2	68.7
LnGrp LOS	C	C	B	C	A	D	D	B	B	D	C	E
Approach Vol, veh/h		988			248			665			736	
Approach Delay, s/veh		27.2			36.2			29.4			51.9	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	36.0		24.4	19.5	25.0		15.0				
Change Period (Y+Rc), s	5.0	5.0		4.5	5.0	5.0		4.5				
Max Green Setting (Gmax), s	20.0	20.0		35.0	20.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s	4.3	8.7		16.4	14.3	21.1		9.5				
Green Ext Time (p_c), s	0.0	1.3		3.4	0.2	0.0		0.5				

Intersection Summary

HCM 6th Ctrl Delay 35.5  
HCM 6th LOS D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved changes to right turn type.

Lanes, Volumes, Timings  
7: 51st Ave NE & 136th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	0	282	0	0	3	195	242	0	0	231	80
Future Volume (vph)	193	0	282	0	0	3	195	242	0	0	231	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	175		0	0		75
Storage Lanes	0		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		451			363			572			389	
Travel Time (s)		8.8			7.1			11.1			7.6	
Confl. Peds. (#/hr)			1	1		1	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	67%	4%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Prot		pm+ov			Perm	pm+pt	NA			NA	pm+ov
Protected Phases	4		5	8	8		5	2			6	4
Permitted Phases			4			8	2					6
Detector Phase	4		5	8	8	8	5	2			6	4
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	5.0
Minimum Split (s)	24.0		10.0	12.0	12.0	12.0	10.0	23.0			26.0	24.0
Total Split (s)	25.0		20.0	25.0	25.0	25.0	20.0	30.0			25.0	25.0
Total Split (%)	26.3%		21.1%	26.3%	26.3%	26.3%	21.1%	31.6%			26.3%	26.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None		None	None	None	None	None	Min			Min	None

Intersection Summary

Area Type: Other

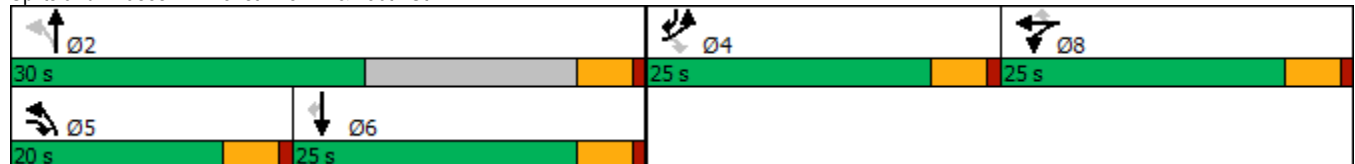
Cycle Length: 95

Actuated Cycle Length: 51.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 51st Ave NE & 136th St NE



HCM 6th Signalized Intersection Summary  
 7: 51st Ave NE & 136th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	0	282	0	0	3	195	242	0	0	231	80
Future Volume (veh/h)	193	0	282	0	0	3	195	242	0	0	231	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	0	1885	1900	1900	907	1841	1856	0	0	1870	1900
Adj Flow Rate, veh/h	203	0	297	0	0	3	205	255	0	0	243	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	67	4	3	0	0	2	0
Cap, veh/h	0	0	0	0	11	4	704	1134	0	0	508	437
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.01	0.15	0.61	0.00	0.00	0.27	0.27
Sat Flow, veh/h		0		0	1900	767	1753	1856	0	0	1870	1607
Grp Volume(v), veh/h		0.0		0	0	3	205	255	0	0	243	84
Grp Sat Flow(s),veh/h/ln				0	1900	767	1753	1856	0	0	1870	1607
Q Serve(g_s), s				0.0	0.0	0.1	1.7	1.6	0.0	0.0	2.8	1.0
Cycle Q Clear(g_c), s				0.0	0.0	0.1	1.7	1.6	0.0	0.0	2.8	1.0
Prop In Lane				0.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	11	4	704	1134	0	0	508	437
V/C Ratio(X)				0.00	0.00	0.68	0.29	0.22	0.00	0.00	0.48	0.19
Avail Cap(c_a), veh/h				0	1455	588	1451	1776	0	0	1432	1231
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				0.0	0.0	13.0	4.3	2.3	0.0	0.0	8.0	7.3
Incr Delay (d2), s/veh				0.0	0.0	86.0	0.1	0.0	0.0	0.0	0.3	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.6	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	99.0	4.4	2.3	0.0	0.0	8.2	7.4
LnGrp LOS				A	A	F	A	A	A	A	A	A
Approach Vol, veh/h					3			460			327	
Approach Delay, s/veh					99.0			3.2			8.0	
Approach LOS					F			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		21.0			8.9	12.1		5.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		25.0			15.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s		3.6			3.7	4.8		2.1				
Green Ext Time (p_c), s		0.8			0.2	0.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					5.6							
HCM 6th LOS					A							
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
 8: 51st Ave NE & 132nd St NE

07/22/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	163	291	45	185	308
Future Volume (vph)	48	163	291	45	185	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	35		35			35
Link Distance (ft)	568		444			412
Travel Time (s)	11.1		8.6			8.0
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles (%)	0%	3%	2%	2%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		h			h
Traffic Vol, veh/h	48	163	291	45	185	308
Future Vol, veh/h	48	163	291	45	185	308
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles, %	0	3	2	2	2	0
Mvmt Flow	52	177	320	49	210	350
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12.2	14.7	27.2
HCM LOS	B	B	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	23%	38%
Vol Thru, %	87%	0%	62%
Vol Right, %	13%	77%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	336	211	493
LT Vol	0	48	185
Through Vol	291	0	308
RT Vol	45	163	0
Lane Flow Rate	369	229	560
Geometry Grp	1	1	1
Degree of Util (X)	0.548	0.368	0.815
Departure Headway (Hd)	5.339	5.774	5.238
Convergence, Y/N	Yes	Yes	Yes
Cap	676	622	689
Service Time	3.385	3.83	3.278
HCM Lane V/C Ratio	0.546	0.368	0.813
HCM Control Delay	14.7	12.2	27.2
HCM Lane LOS	B	B	D
HCM 95th-tile Q	3.3	1.7	8.6

Lanes, Volumes, Timings  
 9: 51st Ave NE & 122nd PI NE

07/22/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	108	86	316	325	24
Future Volume (vph)	27	108	86	316	325	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	4%			-6%	-5%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			35	35	
Link Distance (ft)	560			821	628	
Travel Time (s)	15.3			16.0	12.2	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases			2			
Detector Phase	7		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5		9.5	9.5	21.5	
Total Split (s)	9.5		14.5	24.5	24.5	
Total Split (%)	19.6%		29.9%	50.5%	50.5%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	None	None	

Intersection Summary

Area Type: Other

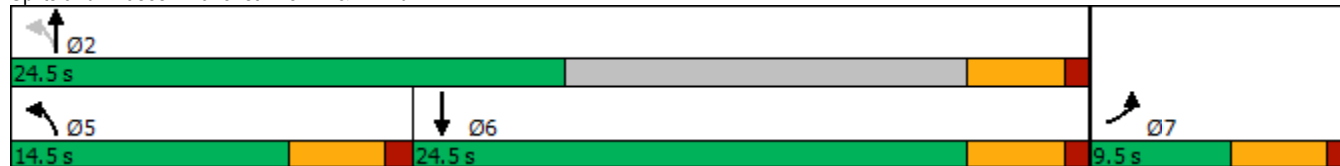
Cycle Length: 48.5

Actuated Cycle Length: 29.3

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 51st Ave NE & 122nd PI NE



HCM 6th Signalized Intersection Summary  
 9: 51st Ave NE & 122nd PI NE

07/22/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	108	86	316	325	24
Future Volume (veh/h)	27	108	86	316	325	24
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00			1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1806	1806	2106	2121	2082	2097
Adj Flow Rate, veh/h	31	124	99	363	374	28
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	2	1	1	0
Cap, veh/h	39	155	596	1187	586	44
Arrive On Green	0.12	0.12	0.10	0.56	0.31	0.31
Sat Flow, veh/h	311	1245	2006	2121	1913	143
Grp Volume(v), veh/h	156	0	99	363	0	402
Grp Sat Flow(s),veh/h/ln	1566	0	2006	2121	0	2056
Q Serve(g_s), s	2.8	0.0	0.8	2.6	0.0	4.8
Cycle Q Clear(g_c), s	2.8	0.0	0.8	2.6	0.0	4.8
Prop In Lane	0.20	0.79	1.00			0.07
Lane Grp Cap(c), veh/h	195	0	596	1187	0	630
V/C Ratio(X)	0.80	0.00	0.17	0.31	0.00	0.64
Avail Cap(c_a), veh/h	275	0	1109	1489	0	1443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	5.1	3.3	0.0	8.5
Incr Delay (d2), s/veh	10.7	0.0	0.0	0.1	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.1	0.2	0.0	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.8	0.0	5.1	3.5	0.0	9.6
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	156			462	402	
Approach Delay, s/veh	22.8			3.8	9.6	
Approach LOS	C			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		20.4		8.0	7.2	13.2
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0		5.0	10.0	20.0
Max Q Clear Time (g_c+I1), s		4.6		4.8	2.8	6.8
Green Ext Time (p_c), s		1.8		0.0	0.1	1.9
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.0			
HCM 6th LOS			A			
<b>Notes</b>						
User approved volume balancing among the lanes for turning movement.						



2023 No Action  
(Year of Opening)

Lanes, Volumes, Timings  
1: Smokey Point Blvd & 156th St NE

07/22/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1	230	13	8	24	212	637	10	19	748	72
Future Volume (vph)	29	1	230	13	8	24	212	637	10	19	748	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-6%			0%			0%			0%	
Storage Length (ft)	200		200	200		0	200		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			40			40	
Link Distance (ft)		612			381			1355			1050	
Travel Time (s)		16.7			7.4			23.1			17.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	0%	0%	4%	1%	1%	11%	17%	1%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	25.0	25.0	12.0	25.0		12.0	25.0		12.0	25.0	
Total Split (s)	20.0	25.0	25.0	20.0	25.0		20.0	45.0		15.0	45.0	
Total Split (%)	18.2%	22.7%	22.7%	18.2%	22.7%		18.2%	40.9%		13.6%	40.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 63.8

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Smokey Point Blvd & 156th St NE



HCM 6th Signalized Intersection Summary  
 1: Smokey Point Blvd & 156th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1	230	13	8	24	212	637	10	19	748	72
Future Volume (veh/h)	29	1	230	13	8	24	212	637	10	19	748	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2076	2136	2121	1900	1900	1841	1885	1885	1737	1648	1885	1900
Adj Flow Rate, veh/h	31	1	242	14	8	25	223	671	11	20	787	76
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	0	1	0	0	4	1	1	11	17	1	0
Cap, veh/h	411	359	302	334	59	184	426	1567	26	378	1160	112
Arrive On Green	0.05	0.17	0.17	0.02	0.14	0.14	0.12	0.43	0.43	0.03	0.35	0.35
Sat Flow, veh/h	1977	2136	1797	1810	405	1267	1795	3606	59	1570	3299	318
Grp Volume(v), veh/h	31	1	242	14	0	33	223	333	349	20	427	436
Grp Sat Flow(s),veh/h/ln	1977	2136	1797	1810	0	1672	1795	1791	1874	1570	1791	1826
Q Serve(g_s), s	0.8	0.0	7.6	0.4	0.0	1.0	4.2	7.6	7.6	0.5	11.9	11.9
Cycle Q Clear(g_c), s	0.8	0.0	7.6	0.4	0.0	1.0	4.2	7.6	7.6	0.5	11.9	11.9
Prop In Lane	1.00		1.00	1.00		0.76	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	411	359	302	334	0	242	426	778	814	378	630	642
V/C Ratio(X)	0.08	0.00	0.80	0.04	0.00	0.14	0.52	0.43	0.43	0.05	0.68	0.68
Avail Cap(c_a), veh/h	822	727	611	751	0	569	676	1218	1275	593	1218	1242
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.5	20.4	23.5	20.4	0.0	21.9	10.9	11.6	11.6	11.3	16.2	16.2
Incr Delay (d2), s/veh	0.0	0.0	1.9	0.0	0.0	0.1	0.4	0.5	0.4	0.0	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.1	0.1	0.0	0.4	1.3	2.5	2.6	0.1	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	20.4	25.4	20.5	0.0	22.0	11.3	12.0	12.0	11.4	17.8	17.8
LnGrp LOS	B	C	C	C	A	C	B	B	B	B	B	B
Approach Vol, veh/h		274			47			905			883	
Approach Delay, s/veh		24.7			21.6			11.8			17.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	30.5	6.4	14.9	11.8	25.7	7.8	13.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	40.0	15.0	20.0	15.0	40.0	15.0	20.0				
Max Q Clear Time (g_c+I1), s	2.5	9.6	2.4	9.6	6.2	13.9	2.8	3.0				
Green Ext Time (p_c), s	0.0	5.2	0.0	0.3	0.2	6.7	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			16.1									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
2: Smokey Point Blvd & 152nd St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	16	97	4	232	3	621	146	325	663	19
Future Volume (vph)	14	4	16	97	4	232	3	621	146	325	663	19
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	125		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		385			654			718			1355	
Travel Time (s)		7.5			12.7			12.2			23.1	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	0%	1%	4%	1%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		9.0	22.0		9.0	26.0	
Total Split (s)	21.0	21.0		21.0	25.0		21.0	45.0		21.0	45.0	
Total Split (%)	18.8%	18.8%		18.8%	22.3%		18.8%	40.2%		18.8%	40.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

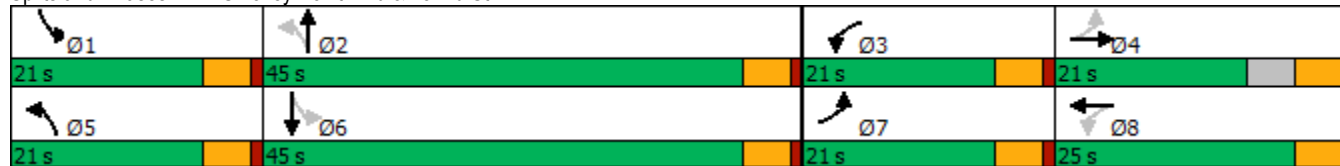
Cycle Length: 112

Actuated Cycle Length: 60.7

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Smokey Point Blvd & 152nd St NE



HCM 6th Signalized Intersection Summary  
 2: Smokey Point Blvd & 152nd St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	4	16	97	4	232	3	621	146	325	663	19
Future Volume (veh/h)	14	4	16	97	4	232	3	621	146	325	663	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1885	1900	1885	1841	1885	1870	1900
Adj Flow Rate, veh/h	15	4	17	102	4	244	3	654	154	342	698	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	3	0	1	0	1	4	1	2	0
Cap, veh/h	196	43	184	413	5	302	352	878	207	472	1624	47
Arrive On Green	0.01	0.14	0.14	0.07	0.19	0.19	0.00	0.31	0.31	0.16	0.46	0.46
Sat Flow, veh/h	1810	316	1342	1767	26	1588	1810	2875	676	1795	3528	101
Grp Volume(v), veh/h	15	0	21	102	0	248	3	407	401	342	351	367
Grp Sat Flow(s),veh/h/ln	1810	0	1658	1767	0	1614	1810	1791	1761	1795	1777	1852
Q Serve(g_s), s	0.4	0.0	0.7	2.9	0.0	8.9	0.1	12.3	12.4	7.2	8.0	8.0
Cycle Q Clear(g_c), s	0.4	0.0	0.7	2.9	0.0	8.9	0.1	12.3	12.4	7.2	8.0	8.0
Prop In Lane	1.00		0.81	1.00		0.98	1.00		0.38	1.00		0.05
Lane Grp Cap(c), veh/h	196	0	228	413	0	307	352	547	538	472	818	853
V/C Ratio(X)	0.08	0.00	0.09	0.25	0.00	0.81	0.01	0.74	0.75	0.72	0.43	0.43
Avail Cap(c_a), veh/h	648	0	439	761	0	534	826	1186	1166	663	1177	1226
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	22.8	20.1	0.0	23.4	14.5	18.9	18.9	12.3	11.0	11.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	1.9	0.0	1.5	1.6	1.8	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	1.1	0.0	3.2	0.0	4.6	4.5	2.4	2.5	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	22.8	20.2	0.0	25.3	14.5	20.4	20.4	14.1	11.2	11.2
LnGrp LOS	C	A	C	C	A	C	B	C	C	B	B	B
Approach Vol, veh/h		36			350			811			1060	
Approach Delay, s/veh		22.6			23.8			20.4			12.2	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	23.4	9.1	13.3	5.2	32.8	5.9	16.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	16.0	40.0	16.0	16.0	16.0	40.0	16.0	20.0				
Max Q Clear Time (g_c+I1), s	9.2	14.4	4.9	2.7	2.1	10.0	2.4	10.9				
Green Ext Time (p_c), s	0.4	4.1	0.1	0.0	0.0	3.5	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay	17.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
 3: 51st Ave NE & 152nd St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	280	124	45	150	20	97	233	101	29	212	40
Future Volume (vph)	50	280	124	45	150	20	97	233	101	29	212	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		871			769			861			867	
Travel Time (s)		14.8			13.1			16.8			16.9	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	11%	0%	2%	5%	3%	0%	2%	3%	2%	0%	1%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	68.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	280	124	45	150	20	97	233	101	29	212	40
Future Vol, veh/h	50	280	124	45	150	20	97	233	101	29	212	40
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles, %	11	0	2	5	3	0	2	3	2	0	1	0
Mvmt Flow	55	308	136	49	163	22	105	253	110	31	228	43
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	105.6	24.4	75.8	30.6
HCM LOS	F	C	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		23%	11%	21%
Vol Thru, %		54%	62%	70%
Vol Right, %		23%	27%	9%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		431	454	215
LT Vol		97	50	45
Through Vol		233	280	150
RT Vol		101	124	20
Lane Flow Rate		468	499	234
Geometry Grp		1	1	1
Degree of Util (X)		1.014	1.114	0.576
Departure Headway (Hd)		8.245	8.039	9.375
Convergence, Y/N		Yes	Yes	Yes
Cap		445	449	388
Service Time		6.245	6.128	7.375
HCM Lane V/C Ratio		1.052	1.111	0.603
HCM Control Delay		75.8	105.6	24.4
HCM Lane LOS		F	F	C
HCM 95th-tile Q		13.3	17.1	3.5

Lanes, Volumes, Timings  
4: Smokey Point Blvd & 136th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	196	132	167	204	67	93	488	169	129	456	203
Future Volume (vph)	168	196	132	167	204	67	93	488	169	129	456	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	225		0	275		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		178			861			811			837	
Travel Time (s)		3.5			16.8			13.8			14.3	
Confl. Peds. (#/hr)			1	1					1			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	6%	2%	0%	2%	2%	1%	1%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

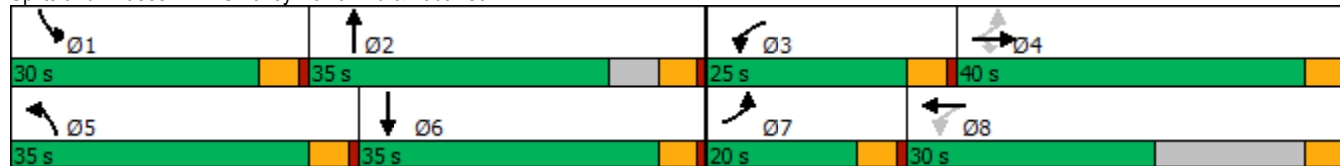
Cycle Length: 135

Actuated Cycle Length: 85.4

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Smokey Point Blvd & 136th St NE





HCM 6th Signalized Intersection Summary  
 4: Smokey Point Blvd & 136th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	168	196	132	167	204	67	93	488	169	129	456	203
Future Volume (veh/h)	168	196	132	167	204	67	93	488	169	129	456	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1811	1870	1900	1870	1870	1885	1885	1870	1870
Adj Flow Rate, veh/h	179	209	140	178	217	71	99	519	180	137	485	216
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	2	6	2	0	2	2	1	1	2	2
Cap, veh/h	364	370	313	406	271	89	129	678	234	178	690	306
Arrive On Green	0.11	0.20	0.20	0.11	0.20	0.20	0.07	0.26	0.26	0.10	0.29	0.29
Sat Flow, veh/h	1795	1870	1583	1725	1349	441	1781	2590	894	1795	2396	1061
Grp Volume(v), veh/h	179	209	140	178	0	288	99	355	344	137	359	342
Grp Sat Flow(s),veh/h/ln	1795	1870	1583	1725	0	1790	1781	1777	1707	1795	1777	1679
Q Serve(g_s), s	4.6	6.1	4.7	4.8	0.0	9.2	3.3	11.1	11.2	4.5	10.9	11.0
Cycle Q Clear(g_c), s	4.6	6.1	4.7	4.8	0.0	9.2	3.3	11.1	11.2	4.5	10.9	11.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.52	1.00		0.63
Lane Grp Cap(c), veh/h	364	370	313	406	0	360	129	465	447	178	512	484
V/C Ratio(X)	0.49	0.56	0.45	0.44	0.00	0.80	0.77	0.76	0.77	0.77	0.70	0.71
Avail Cap(c_a), veh/h	618	1085	918	788	0	742	886	883	849	744	883	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	21.9	21.3	16.5	0.0	23.0	27.5	20.6	20.6	26.5	19.2	19.2
Incr Delay (d2), s/veh	0.4	0.5	0.4	0.3	0.0	1.6	3.6	1.0	1.1	2.7	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.5	1.6	1.7	0.0	3.7	1.4	4.1	4.0	1.9	4.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	22.4	21.7	16.8	0.0	24.5	31.0	21.6	21.7	29.2	19.8	19.9
LnGrp LOS	B	C	C	B	A	C	C	C	C	C	B	B
Approach Vol, veh/h		528			466			798			838	
Approach Delay, s/veh		20.5			21.6			22.8			21.4	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	20.8	11.6	16.9	9.4	22.4	11.5	17.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	6.5	13.2	6.8	8.1	5.3	13.0	6.6	11.2				
Green Ext Time (p_c), s	0.1	2.4	0.2	0.9	0.1	2.5	0.1	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			21.7									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
5: State Ave & 128th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↔		↗	↕↔	
Traffic Volume (vph)	14	5	19	81	1	32	2	694	114	48	687	0
Future Volume (vph)	14	5	19	81	1	32	2	694	114	48	687	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	200		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		476			540			714			620	
Travel Time (s)		13.0			14.7			12.2			10.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	0%	0%	1%	0%	0%	0%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	13.0	13.0		25.0	25.0		10.0	17.0		10.0	22.0	
Total Split (s)	35.0	35.0		25.0	25.0		25.0	55.0		25.0	55.0	
Total Split (%)	25.0%	25.0%		17.9%	17.9%		17.9%	39.3%		17.9%	39.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

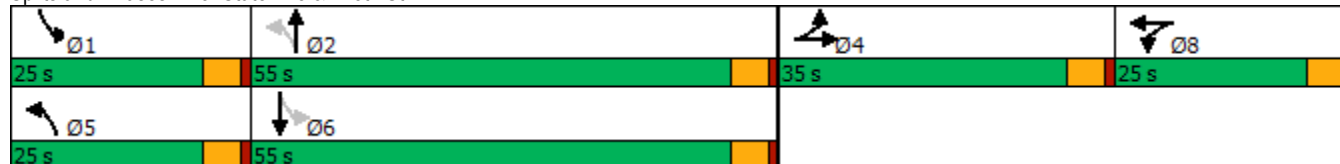
Cycle Length: 140

Actuated Cycle Length: 62.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: State Ave & 128th St NE



HCM 6th Signalized Intersection Summary  
 5: State Ave & 128th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	14	5	19	81	1	32	2	694	114	48	687	0
Future Volume (veh/h)	14	5	19	81	1	32	2	694	114	48	687	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1900	1900	1885	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	15	5	20	86	1	34	2	738	121	51	731	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	0	0	1	0	0	0	2	0	0	2	0
Cap, veh/h	45	15	60	116	1	46	341	1070	175	344	1420	0
Arrive On Green	0.07	0.07	0.07	0.09	0.09	0.09	0.00	0.35	0.35	0.05	0.40	0.00
Sat Flow, veh/h	643	214	857	1243	14	492	1810	3055	501	1810	3647	0
Grp Volume(v), veh/h	40	0	0	121	0	0	2	429	430	51	731	0
Grp Sat Flow(s),veh/h/ln	1714	0	0	1749	0	0	1810	1777	1779	1810	1777	0
Q Serve(g_s), s	1.0	0.0	0.0	3.1	0.0	0.0	0.0	9.5	9.5	0.8	7.2	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	3.1	0.0	0.0	0.0	9.5	9.5	0.8	7.2	0.0
Prop In Lane	0.37		0.50	0.71		0.28	1.00		0.28	1.00		0.00
Lane Grp Cap(c), veh/h	119	0	0	163	0	0	341	623	623	344	1420	0
V/C Ratio(X)	0.34	0.00	0.00	0.74	0.00	0.00	0.01	0.69	0.69	0.15	0.51	0.00
Avail Cap(c_a), veh/h	1118	0	0	761	0	0	1123	1931	1933	1037	3863	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.4	0.0	0.0	20.3	0.0	0.0	9.9	12.8	12.8	9.5	10.4	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.5	0.0	0.0	0.0	1.0	1.0	0.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.3	0.0	0.0	0.0	3.0	3.0	0.3	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	0.0	0.0	22.8	0.0	0.0	9.9	13.8	13.8	9.8	10.7	0.0
LnGrp LOS	C	A	A	C	A	A	A	B	B	A	B	A
Approach Vol, veh/h		40			121			861			782	
Approach Delay, s/veh		21.6			22.8			13.8			10.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	21.1		8.2	5.1	23.4		9.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	50.0		30.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	2.8	11.5		3.0	2.0	9.2		5.1				
Green Ext Time (p_c), s	0.1	4.6		0.1	0.0	4.3		0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			13.2									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
6: State Ave & 116th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	422	167	346	79	130	38	268	335	59	51	319	364
Future Volume (vph)	422	167	346	79	130	38	268	335	59	51	319	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	175		0	450		0	450		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		790			763			665			684	
Travel Time (s)		21.5			20.8			11.3			11.7	
Confl. Peds. (#/hr)			1			4			2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	1%	3%	0%	0%	2%	2%	2%	0%	1%	2%
Shared Lane Traffic (%)	31%											
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4 5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	5.0	5.0		7.0	10.0		5.0	10.0	10.0
Minimum Split (s)	31.5	31.5	12.0	39.5	39.5		12.0	30.0		10.0	15.0	15.0
Total Split (s)	39.5	39.5	25.0	24.5	24.5		25.0	25.0		25.0	25.0	25.0
Total Split (%)	34.6%	34.6%	21.9%	21.5%	21.5%		21.9%	21.9%		21.9%	21.9%	21.9%
Yellow Time (s)	3.5	3.5	4.0	3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	5.0	4.5	4.5		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

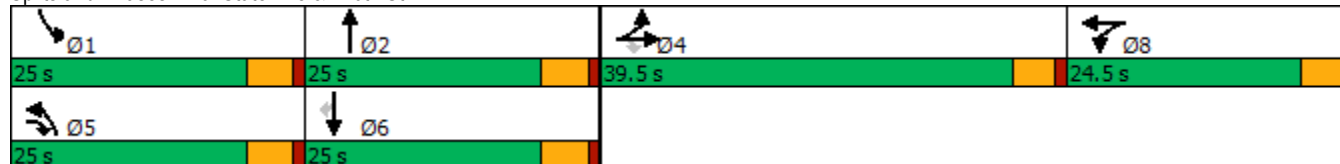
Cycle Length: 114

Actuated Cycle Length: 100.3

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: State Ave & 116th St NE



HCM 6th Signalized Intersection Summary  
6: State Ave & 116th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	422	167	346	79	130	38	268	335	59	51	319	364
Future Volume (veh/h)	422	167	346	79	130	38	268	335	59	51	319	364
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1885	1856	1900	1900	1870	1870	1870	1900	1885	1870
Adj Flow Rate, veh/h	314	368	368	84	138	40	285	356	63	54	339	387
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	1	1	3	0	0	2	2	2	0	1	2
Cap, veh/h	440	465	682	227	181	53	322	1108	194	75	429	361
Arrive On Green	0.25	0.25	0.25	0.13	0.13	0.13	0.18	0.37	0.37	0.04	0.23	0.23
Sat Flow, veh/h	1781	1885	1594	1767	1412	409	1781	3021	529	1810	1885	1585
Grp Volume(v), veh/h	314	368	368	84	0	178	285	208	211	54	339	387
Grp Sat Flow(s),veh/h/ln	1781	1885	1594	1767	0	1822	1781	1777	1773	1810	1885	1585
Q Serve(g_s), s	14.2	16.0	15.1	3.8	0.0	8.3	13.7	7.4	7.5	2.6	14.9	20.0
Cycle Q Clear(g_c), s	14.2	16.0	15.1	3.8	0.0	8.3	13.7	7.4	7.5	2.6	14.9	20.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	440	465	682	227	0	234	322	652	650	75	429	361
V/C Ratio(X)	0.71	0.79	0.54	0.37	0.00	0.76	0.89	0.32	0.32	0.72	0.79	1.07
Avail Cap(c_a), veh/h	710	751	924	402	0	415	406	652	650	412	429	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	31.0	18.7	35.0	0.0	37.0	35.1	19.9	20.0	41.6	31.9	33.9
Incr Delay (d2), s/veh	1.6	2.3	0.5	0.4	0.0	1.9	15.1	0.2	0.2	4.7	9.3	67.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	7.5	5.5	1.7	0.0	3.8	7.0	2.9	2.9	1.2	7.5	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	33.2	19.2	35.4	0.0	38.9	50.2	20.2	20.2	46.2	41.2	101.8
LnGrp LOS	C	C	B	D	A	D	D	C	C	D	D	F
Approach Vol, veh/h		1050			262			704			780	
Approach Delay, s/veh		27.9			37.8			32.3			71.6	
Approach LOS		C			D			C			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	37.2		26.2	20.9	25.0		15.8				
Change Period (Y+Rc), s	5.0	5.0		4.5	5.0	5.0		4.5				
Max Green Setting (Gmax), s	20.0	20.0		35.0	20.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s	4.6	9.5		18.0	15.7	22.0		10.3				
Green Ext Time (p_c), s	0.0	1.4		3.6	0.2	0.0		0.6				

Intersection Summary

HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved changes to right turn type.

Lanes, Volumes, Timings  
7: 51st Ave NE & 136th St NE

07/22/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	0	299	0	0	3	207	257	0	0	245	85
Future Volume (vph)	205	0	299	0	0	3	207	257	0	0	245	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	175		0	0		75
Storage Lanes	0		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		451			363			572			389	
Travel Time (s)		8.8			7.1			11.1			7.6	
Confl. Peds. (#/hr)			1	1		1	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	67%	4%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Prot		pm+ov			Perm	pm+pt	NA			NA	pm+ov
Protected Phases	4		5	8	8		5	2			6	4
Permitted Phases			4			8	2					6
Detector Phase	4		5	8	8	8	5	2			6	4
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	5.0
Minimum Split (s)	24.0		10.0	12.0	12.0	12.0	10.0	23.0			26.0	24.0
Total Split (s)	25.0		20.0	25.0	25.0	25.0	20.0	30.0			25.0	25.0
Total Split (%)	26.3%		21.1%	26.3%	26.3%	26.3%	21.1%	31.6%			26.3%	26.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None		None	None	None	None	None	Min			Min	None

Intersection Summary

Area Type: Other

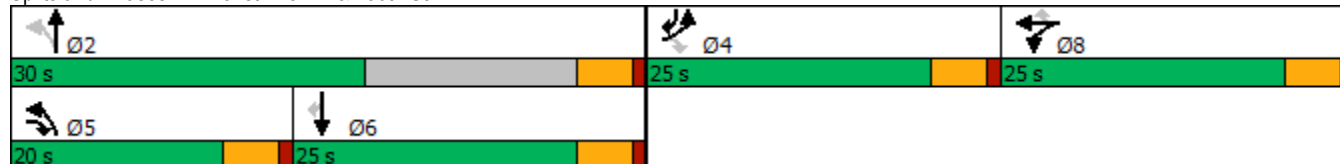
Cycle Length: 95

Actuated Cycle Length: 53.3

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 51st Ave NE & 136th St NE



HCM 6th Signalized Intersection Summary  
 7: 51st Ave NE & 136th St NE

07/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	0	299	0	0	3	207	257	0	0	245	85
Future Volume (veh/h)	205	0	299	0	0	3	207	257	0	0	245	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	0	1885	1900	1900	907	1841	1856	0	0	1870	1900
Adj Flow Rate, veh/h	216	0	315	0	0	3	218	271	0	0	258	89
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	67	4	3	0	0	2	0
Cap, veh/h	0	0	0	0	11	4	697	1137	0	0	506	435
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.01	0.15	0.61	0.00	0.00	0.27	0.27
Sat Flow, veh/h		0		0	1900	767	1753	1856	0	0	1870	1607
Grp Volume(v), veh/h		0.0		0	0	3	218	271	0	0	258	89
Grp Sat Flow(s),veh/h/ln				0	1900	767	1753	1856	0	0	1870	1607
Q Serve(g_s), s				0.0	0.0	0.1	1.9	1.7	0.0	0.0	3.1	1.1
Cycle Q Clear(g_c), s				0.0	0.0	0.1	1.9	1.7	0.0	0.0	3.1	1.1
Prop In Lane				0.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	11	4	697	1137	0	0	506	435
V/C Ratio(X)				0.00	0.00	0.68	0.31	0.24	0.00	0.00	0.51	0.20
Avail Cap(c_a), veh/h				0	1449	585	1434	1769	0	0	1426	1226
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				0.0	0.0	13.0	4.4	2.3	0.0	0.0	8.1	7.4
Incr Delay (d2), s/veh				0.0	0.0	86.0	0.1	0.0	0.0	0.0	0.3	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	99.0	4.5	2.3	0.0	0.0	8.4	7.5
LnGrp LOS				A	A	F	A	A	A	A	A	A
Approach Vol, veh/h					3			489			347	
Approach Delay, s/veh					99.0			3.3			8.2	
Approach LOS					F			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		21.1			9.0	12.1		5.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		25.0			15.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s		3.7			3.9	5.1		2.1				
Green Ext Time (p_c), s		0.9			0.2	0.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					5.6							
HCM 6th LOS					A							
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
 8: 51st Ave NE & 132nd St NE

07/22/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	173	309	48	196	327
Future Volume (vph)	51	173	309	48	196	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	35		35			35
Link Distance (ft)	568		444			412
Travel Time (s)	11.1		8.6			8.0
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles (%)	0%	3%	2%	2%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized



Intersection	
Intersection Delay, s/veh	25
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	51	173	309	48	196	327
Future Vol, veh/h	51	173	309	48	196	327
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles, %	0	3	2	2	2	0
Mvmt Flow	55	188	340	53	223	372
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	13	16.4	35.5
HCM LOS	B	C	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	23%	37%
Vol Thru, %	87%	0%	63%
Vol Right, %	13%	77%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	357	224	523
LT Vol	0	51	196
Through Vol	309	0	327
RT Vol	48	173	0
Lane Flow Rate	392	243	594
Geometry Grp	1	1	1
Degree of Util (X)	0.596	0.401	0.884
Departure Headway (Hd)	5.473	5.935	5.352
Convergence, Y/N	Yes	Yes	Yes
Cap	655	604	678
Service Time	3.531	4.003	3.4
HCM Lane V/C Ratio	0.598	0.402	0.876
HCM Control Delay	16.4	13	35.5
HCM Lane LOS	C	B	E
HCM 95th-tile Q	4	1.9	10.8

Lanes, Volumes, Timings  
 9: 51st Ave NE & 122nd PI NE

07/22/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	115	91	335	345	25
Future Volume (vph)	29	115	91	335	345	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	4%			-6%	-5%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			35	35	
Link Distance (ft)	560			821	628	
Travel Time (s)	15.3			16.0	12.2	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases			2			
Detector Phase	7		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5		9.5	9.5	21.5	
Total Split (s)	9.5		14.5	24.5	24.5	
Total Split (%)	19.6%		29.9%	50.5%	50.5%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	None	None	

Intersection Summary

Area Type: Other

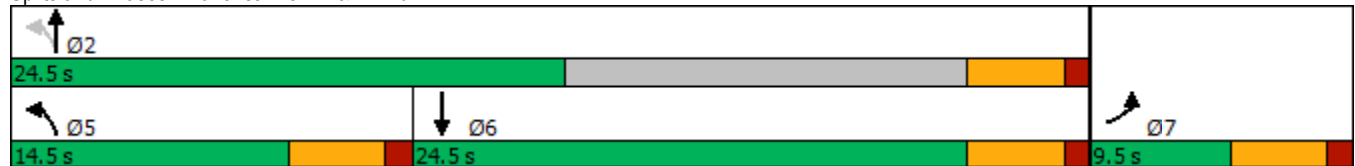
Cycle Length: 48.5

Actuated Cycle Length: 31.9

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 51st Ave NE & 122nd PI NE



HCM 6th Signalized Intersection Summary  
 9: 51st Ave NE & 122nd PI NE

07/22/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	115	91	335	345	25
Future Volume (veh/h)	29	115	91	335	345	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00			1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1806	1806	2106	2121	2082	2097
Adj Flow Rate, veh/h	33	132	105	385	397	29
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	2	1	1	0
Cap, veh/h	40	159	590	1202	606	44
Arrive On Green	0.13	0.13	0.10	0.57	0.32	0.32
Sat Flow, veh/h	311	1245	2006	2121	1916	140
Grp Volume(v), veh/h	166	0	105	385	0	426
Grp Sat Flow(s),veh/h/ln	1566	0	2006	2121	0	2056
Q Serve(g_s), s	3.0	0.0	0.8	2.8	0.0	5.3
Cycle Q Clear(g_c), s	3.0	0.0	0.8	2.8	0.0	5.3
Prop In Lane	0.20	0.80	1.00			0.07
Lane Grp Cap(c), veh/h	199	0	590	1202	0	650
V/C Ratio(X)	0.83	0.00	0.18	0.32	0.00	0.66
Avail Cap(c_a), veh/h	266	0	1075	1441	0	1398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	5.2	3.4	0.0	8.7
Incr Delay (d2), s/veh	15.3	0.0	0.1	0.2	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.1	0.3	0.0	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.9	0.0	5.2	3.5	0.0	9.8
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	166			490	426	
Approach Delay, s/veh	27.9			3.9	9.8	
Approach LOS	C			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		21.2		8.2	7.4	13.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0		5.0	10.0	20.0
Max Q Clear Time (g_c+I1), s		4.8		5.0	2.8	7.3
Green Ext Time (p_c), s		2.0		0.0	0.1	2.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.9			
HCM 6th LOS			A			
<b>Notes</b>						
User approved volume balancing among the lanes for turning movement.						

2023 With Project  
(Year of Opening)

Lanes, Volumes, Timings  
1: Smokey Point Blvd & 156th St NE

07/26/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1	231	13	8	24	217	690	10	19	762	72
Future Volume (vph)	29	1	231	13	8	24	217	690	10	19	762	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-6%			0%			0%			0%	
Storage Length (ft)	200		200	200		0	200		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			40			40	
Link Distance (ft)		612			381			1355			1050	
Travel Time (s)		16.7			7.4			23.1			17.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	0%	0%	0%	0%	4%	1%	2%	10%	16%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	25.0	25.0	12.0	25.0		12.0	25.0		12.0	25.0	
Total Split (s)	20.0	25.0	25.0	20.0	25.0		20.0	45.0		15.0	45.0	
Total Split (%)	18.2%	22.7%	22.7%	18.2%	22.7%		18.2%	40.9%		13.6%	40.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 64.5

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Smokey Point Blvd & 156th St NE



HCM 6th Signalized Intersection Summary  
 1: Smokey Point Blvd & 156th St NE

07/26/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1	231	13	8	24	217	690	10	19	762	72
Future Volume (veh/h)	29	1	231	13	8	24	217	690	10	19	762	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2091	2136	2136	1900	1900	1841	1885	1870	1752	1663	1870	1900
Adj Flow Rate, veh/h	31	1	243	14	8	25	228	726	11	20	802	76
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	0	0	0	4	1	2	10	16	2	0
Cap, veh/h	411	357	303	332	58	183	422	1573	24	363	1171	111
Arrive On Green	0.05	0.17	0.17	0.02	0.14	0.14	0.12	0.44	0.44	0.03	0.36	0.36
Sat Flow, veh/h	1991	2136	1810	1810	405	1267	1795	3583	54	1584	3279	311
Grp Volume(v), veh/h	31	1	243	14	0	33	228	360	377	20	435	443
Grp Sat Flow(s),veh/h/ln	1991	2136	1810	1810	0	1672	1795	1777	1860	1584	1777	1813
Q Serve(g_s), s	0.8	0.0	7.7	0.4	0.0	1.0	4.3	8.5	8.5	0.5	12.4	12.4
Cycle Q Clear(g_c), s	0.8	0.0	7.7	0.4	0.0	1.0	4.3	8.5	8.5	0.5	12.4	12.4
Prop In Lane	1.00		1.00	1.00		0.76	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	411	357	303	332	0	241	422	780	817	363	635	647
V/C Ratio(X)	0.08	0.00	0.80	0.04	0.00	0.14	0.54	0.46	0.46	0.06	0.68	0.68
Avail Cap(c_a), veh/h	819	718	609	744	0	562	669	1195	1252	577	1195	1220
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	20.6	23.8	20.7	0.0	22.2	11.1	11.7	11.7	11.3	16.3	16.3
Incr Delay (d2), s/veh	0.0	0.0	1.9	0.0	0.0	0.1	0.4	0.5	0.5	0.0	1.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.1	0.2	0.0	0.4	1.3	2.8	2.9	0.1	4.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.8	20.6	25.7	20.7	0.0	22.3	11.5	12.2	12.2	11.3	17.9	17.8
LnGrp LOS	B	C	C	C	A	C	B	B	B	B	B	B
Approach Vol, veh/h		275			47			965			898	
Approach Delay, s/veh		25.0			21.8			12.1			17.7	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	31.1	6.4	14.9	11.8	26.2	7.8	13.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	40.0	15.0	20.0	15.0	40.0	15.0	20.0				
Max Q Clear Time (g_c+I1), s	2.5	10.5	2.4	9.7	6.3	14.4	2.8	3.0				
Green Ext Time (p_c), s	0.0	5.6	0.0	0.3	0.2	6.9	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			16.2									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
2: Smokey Point Blvd & 152nd St NE

07/26/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	4	16	103	4	246	3	665	168	329	674	19
Future Volume (vph)	14	4	16	103	4	246	3	665	168	329	674	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	125		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		385			654			718			1355	
Travel Time (s)		7.5			12.7			12.2			23.1	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	2%	4%	1%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		9.0	22.0		9.0	26.0	
Total Split (s)	21.0	21.0		21.0	25.0		21.0	45.0		21.0	45.0	
Total Split (%)	18.8%	18.8%		18.8%	22.3%		18.8%	40.2%		18.8%	40.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

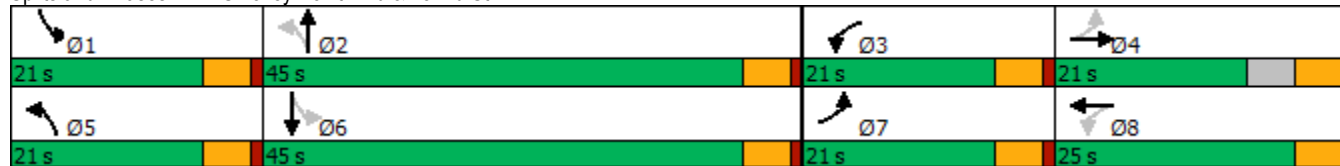
Cycle Length: 112

Actuated Cycle Length: 65.2

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Smokey Point Blvd & 152nd St NE



HCM 6th Signalized Intersection Summary  
 2: Smokey Point Blvd & 152nd St NE

07/26/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	4	16	103	4	246	3	665	168	329	674	19
Future Volume (veh/h)	14	4	16	103	4	246	3	665	168	329	674	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1841	1900	1870	1900	1870	1841	1885	1870	1900
Adj Flow Rate, veh/h	15	4	17	108	4	259	3	700	177	346	709	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	4	0	2	0	2	4	1	2	0
Cap, veh/h	184	44	188	413	5	313	356	911	230	452	1679	47
Arrive On Green	0.01	0.14	0.14	0.07	0.20	0.20	0.00	0.32	0.32	0.15	0.48	0.48
Sat Flow, veh/h	1810	316	1342	1753	25	1589	1810	2807	710	1795	3530	100
Grp Volume(v), veh/h	15	0	21	108	0	263	3	443	434	346	357	372
Grp Sat Flow(s),veh/h/ln	1810	0	1658	1753	0	1614	1810	1777	1740	1795	1777	1852
Q Serve(g_s), s	0.5	0.0	0.7	3.3	0.0	10.1	0.1	14.5	14.5	7.6	8.5	8.5
Cycle Q Clear(g_c), s	0.5	0.0	0.7	3.3	0.0	10.1	0.1	14.5	14.5	7.6	8.5	8.5
Prop In Lane	1.00		0.81	1.00		0.98	1.00		0.41	1.00		0.05
Lane Grp Cap(c), veh/h	184	0	233	413	0	318	356	576	565	452	845	881
V/C Ratio(X)	0.08	0.00	0.09	0.26	0.00	0.83	0.01	0.77	0.77	0.76	0.42	0.42
Avail Cap(c_a), veh/h	606	0	411	722	0	500	799	1100	1077	620	1100	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	24.2	20.9	0.0	24.9	14.6	19.6	19.6	13.1	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	3.3	0.0	1.6	1.7	3.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	1.3	0.0	3.8	0.0	5.4	5.3	2.7	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	0.0	24.2	21.0	0.0	28.2	14.6	21.3	21.3	16.4	11.4	11.4
LnGrp LOS	C	A	C	C	A	C	B	C	C	B	B	B
Approach Vol, veh/h		36			371			880			1075	
Approach Delay, s/veh		24.0			26.1			21.3			13.0	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	26.0	9.6	14.1	5.2	35.7	5.9	17.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	16.0	40.0	16.0	16.0	16.0	40.0	16.0	20.0				
Max Q Clear Time (g_c+I1), s	9.6	16.5	5.3	2.7	2.1	10.5	2.5	12.1				
Green Ext Time (p_c), s	0.4	4.5	0.1	0.0	0.0	3.6	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lanes, Volumes, Timings  
 3: 51st Ave NE & 152nd St NE

07/26/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	308	162	45	158	20	107	233	101	29	212	46
Future Volume (vph)	73	308	162	45	158	20	107	233	101	29	212	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		871			769			861			867	
Travel Time (s)		14.8			13.1			16.8			16.9	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles (%)	10%	1%	3%	4%	4%	0%	4%	3%	2%	0%	1%	2%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	102.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	73	308	162	45	158	20	107	233	101	29	212	46
Future Vol, veh/h	73	308	162	45	158	20	107	233	101	29	212	46
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles, %	10	1	3	4	4	0	4	3	2	0	1	2
Mvmt Flow	80	338	178	49	172	22	116	253	110	31	228	49
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	180.5			26.7			88.3			33.8		
HCM LOS	F			D			F			D		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		24%	13%	20%
Vol Thru, %		53%	57%	71%
Vol Right, %		23%	30%	9%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		441	543	223
LT Vol		107	73	45
Through Vol		233	308	158
RT Vol		101	162	20
Lane Flow Rate		479	597	242
Geometry Grp		1	1	1
Degree of Util (X)		1.049	1.312	0.597
Departure Headway (Hd)		8.823	8.258	9.962
Convergence, Y/N		Yes	Yes	Yes
Cap		417	448	366
Service Time		6.823	6.258	7.962
HCM Lane V/C Ratio		1.149	1.333	0.661
HCM Control Delay		88.3	180.5	26.7
HCM Lane LOS		F	F	D
HCM 95th-tile Q		14	25.4	3.7

Lanes, Volumes, Timings  
4: Smokey Point Blvd & 136th St NE

07/26/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	196	132	167	204	75	93	500	169	159	505	227
Future Volume (vph)	175	196	132	167	204	75	93	500	169	159	505	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	225		0	275		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		178			861			811			837	
Travel Time (s)		3.5			16.8			13.8			14.3	
Confl. Peds. (#/hr)			1	1					1			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	6%	2%	3%	2%	2%	1%	2%	3%	3%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

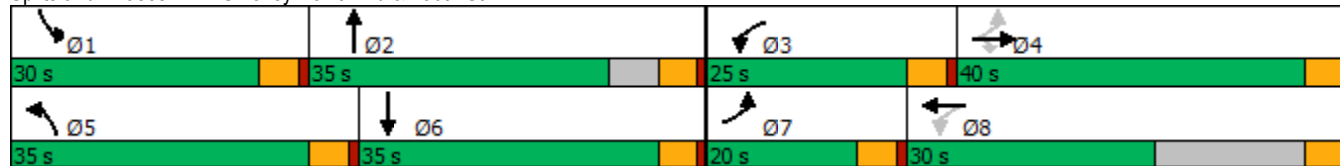
Cycle Length: 135

Actuated Cycle Length: 91.3

Natural Cycle: 90
























Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Smokey Point Blvd & 136th St NE



HCM 6th Signalized Intersection Summary  
 4: Smokey Point Blvd & 136th St NE

07/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	196	132	167	204	75	93	500	169	159	505	227
Future Volume (veh/h)	175	196	132	167	204	75	93	500	169	159	505	227
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1811	1870	1856	1870	1870	1885	1870	1856	1856
Adj Flow Rate, veh/h	186	209	140	178	217	80	99	532	180	169	537	241
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	2	6	2	3	2	2	1	2	3	3
Cap, veh/h	354	381	323	401	265	98	129	680	229	214	729	326
Arrive On Green	0.11	0.20	0.20	0.11	0.20	0.20	0.07	0.26	0.26	0.12	0.31	0.31
Sat Flow, veh/h	1795	1870	1583	1725	1303	480	1781	2608	879	1781	2368	1060
Grp Volume(v), veh/h	186	209	140	178	0	297	99	362	350	169	399	379
Grp Sat Flow(s),veh/h/ln	1795	1870	1583	1725	0	1783	1781	1777	1710	1781	1763	1665
Q Serve(g_s), s	5.2	6.5	5.0	5.2	0.0	10.4	3.6	12.3	12.4	6.0	13.2	13.3
Cycle Q Clear(g_c), s	5.2	6.5	5.0	5.2	0.0	10.4	3.6	12.3	12.4	6.0	13.2	13.3
Prop In Lane	1.00		1.00	1.00		0.27	1.00		0.51	1.00		0.64
Lane Grp Cap(c), veh/h	354	381	323	401	0	363	129	463	446	214	543	513
V/C Ratio(X)	0.53	0.55	0.43	0.44	0.00	0.82	0.77	0.78	0.79	0.79	0.74	0.74
Avail Cap(c_a), veh/h	573	1006	851	744	0	685	821	819	789	684	813	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	23.2	22.6	17.6	0.0	24.8	29.6	22.3	22.4	27.8	20.1	20.2
Incr Delay (d2), s/veh	0.5	0.5	0.3	0.3	0.0	1.8	3.6	1.1	1.2	2.5	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.7	1.8	1.9	0.0	4.2	1.5	4.7	4.6	2.5	4.8	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	23.7	23.0	17.9	0.0	26.5	33.2	23.4	23.5	30.3	20.9	21.0
LnGrp LOS	B	C	C	B	A	C	C	C	C	C	C	C
Approach Vol, veh/h		535			475			811			947	
Approach Delay, s/veh		21.7			23.3			24.7			22.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.8	22.0	12.0	18.3	9.7	25.0	12.1	18.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	8.0	14.4	7.2	8.5	5.6	15.3	7.2	12.4				
Green Ext Time (p_c), s	0.2	2.4	0.2	0.9	0.1	2.7	0.1	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			23.2									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
5: State Ave & 128th St NE

07/26/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (vph)	14	5	19	81	1	33	2	705	114	53	731	0
Future Volume (vph)	14	5	19	81	1	33	2	705	114	53	731	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	200		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		476			540			714			620	
Travel Time (s)		13.0			14.7			12.2			10.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	0%	0%	1%	0%	0%	0%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	13.0	13.0		25.0	25.0		10.0	17.0		10.0	22.0	
Total Split (s)	35.0	35.0		25.0	25.0		25.0	55.0		25.0	55.0	
Total Split (%)	25.0%	25.0%		17.9%	17.9%		17.9%	39.3%		17.9%	39.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

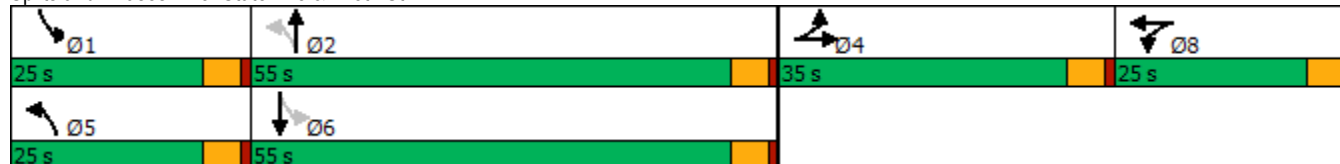
Cycle Length: 140

Actuated Cycle Length: 64.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: State Ave & 128th St NE



HCM 6th Signalized Intersection Summary  
 5: State Ave & 128th St NE

07/26/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	14	5	19	81	1	33	2	705	114	53	731	0
Future Volume (veh/h)	14	5	19	81	1	33	2	705	114	53	731	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1900	1900	1885	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	15	5	20	86	1	35	2	750	121	56	778	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	0	0	1	0	0	0	2	0	0	2	0
Cap, veh/h	45	15	59	116	1	47	327	1081	174	347	1441	0
Arrive On Green	0.07	0.07	0.07	0.09	0.09	0.09	0.00	0.35	0.35	0.06	0.41	0.00
Sat Flow, veh/h	643	214	857	1232	14	502	1810	3063	494	1810	3647	0
Grp Volume(v), veh/h	40	0	0	122	0	0	2	435	436	56	778	0
Grp Sat Flow(s),veh/h/ln	1714	0	0	1748	0	0	1810	1777	1780	1810	1777	0
Q Serve(g_s), s	1.0	0.0	0.0	3.2	0.0	0.0	0.0	9.8	9.8	0.9	7.8	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	3.2	0.0	0.0	0.0	9.8	9.8	0.9	7.8	0.0
Prop In Lane	0.37		0.50	0.70		0.29	1.00		0.28	1.00		0.00
Lane Grp Cap(c), veh/h	119	0	0	164	0	0	327	627	628	347	1441	0
V/C Ratio(X)	0.34	0.00	0.00	0.74	0.00	0.00	0.01	0.69	0.69	0.16	0.54	0.00
Avail Cap(c_a), veh/h	1101	0	0	749	0	0	1098	1903	1906	1022	3806	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.7	0.0	0.0	20.6	0.0	0.0	10.0	12.9	12.9	9.6	10.6	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.5	0.0	0.0	0.0	1.0	1.0	0.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.3	0.0	0.0	0.0	3.1	3.1	0.3	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	0.0	23.1	0.0	0.0	10.0	14.0	14.0	9.9	10.8	0.0
LnGrp LOS	C	A	A	C	A	A	B	B	B	A	B	A
Approach Vol, veh/h		40			122			873			834	
Approach Delay, s/veh		21.9			23.1			14.0			10.7	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	21.5		8.2	5.1	23.9		9.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	50.0		30.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	2.9	11.8		3.0	2.0	9.8		5.2				
Green Ext Time (p_c), s	0.1	4.7		0.1	0.0	4.7		0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
6: State Ave & 116th St NE

07/26/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	426	167	346	79	130	39	268	340	59	56	336	381
Future Volume (vph)	426	167	346	79	130	39	268	340	59	56	336	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	175		0	450		0	450		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		790			763			665			684	
Travel Time (s)		21.5			20.8			11.3			11.7	
Confl. Peds. (#/hr)			1			4			2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	1%	1%	3%	0%	0%	2%	2%	2%	0%	1%	2%
Shared Lane Traffic (%)	31%											
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									6
Detector Phase	4	4	4 5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	5.0	5.0		7.0	10.0		5.0	10.0	10.0
Minimum Split (s)	31.5	31.5	12.0	39.5	39.5		12.0	30.0		10.0	15.0	15.0
Total Split (s)	39.5	39.5	25.0	24.5	24.5		25.0	25.0		25.0	25.0	25.0
Total Split (%)	34.6%	34.6%	21.9%	21.5%	21.5%		21.9%	21.9%		21.9%	21.9%	21.9%
Yellow Time (s)	3.5	3.5	4.0	3.5	3.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	5.0	4.5	4.5		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

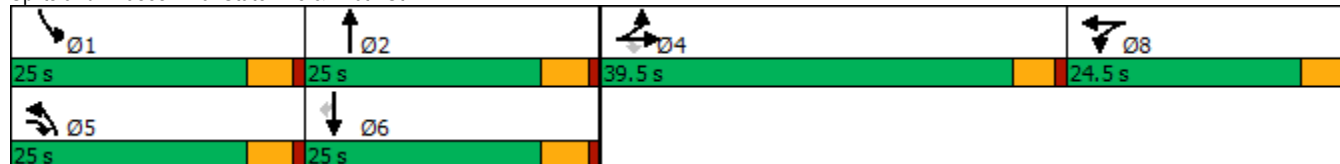
Cycle Length: 114

Actuated Cycle Length: 100.7

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: State Ave & 116th St NE



# HCM 6th Signalized Intersection Summary

## 6: State Ave & 116th St NE

07/26/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	426	167	346	79	130	39	268	340	59	56	336	381
Future Volume (veh/h)	426	167	346	79	130	39	268	340	59	56	336	381
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1885	1885	1856	1900	1900	1870	1870	1870	1900	1885	1870
Adj Flow Rate, veh/h	316	370	368	84	138	41	285	362	63	60	357	405
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	1	1	3	0	0	2	2	2	0	1	2
Cap, veh/h	438	467	684	228	181	54	322	1103	190	79	428	360
Arrive On Green	0.25	0.25	0.25	0.13	0.13	0.13	0.18	0.36	0.36	0.04	0.23	0.23
Sat Flow, veh/h	1767	1885	1594	1767	1403	417	1781	3029	522	1810	1885	1585
Grp Volume(v), veh/h	316	370	368	84	0	179	285	211	214	60	357	405
Grp Sat Flow(s),veh/h/ln	1767	1885	1594	1767	0	1820	1781	1777	1775	1810	1885	1585
Q Serve(g_s), s	14.4	16.2	15.1	3.8	0.0	8.4	13.7	7.5	7.7	2.9	15.9	20.0
Cycle Q Clear(g_c), s	14.4	16.2	15.1	3.8	0.0	8.4	13.7	7.5	7.7	2.9	15.9	20.0
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	438	467	684	228	0	235	322	647	646	79	428	360
V/C Ratio(X)	0.72	0.79	0.54	0.37	0.00	0.76	0.89	0.33	0.33	0.76	0.83	1.13
Avail Cap(c_a), veh/h	702	749	922	401	0	413	404	647	646	411	428	360
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	31.0	18.7	35.1	0.0	37.1	35.2	20.2	20.3	41.7	32.5	34.0
Incr Delay (d2), s/veh	1.7	2.3	0.5	0.4	0.0	1.9	15.3	0.2	0.2	5.5	13.0	85.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	7.5	5.5	1.7	0.0	3.8	7.0	3.0	3.0	1.4	8.4	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	33.3	19.2	35.5	0.0	39.0	50.5	20.4	20.5	47.1	45.5	120.0
LnGrp LOS	C	C	B	D	A	D	D	C	C	D	D	F
Approach Vol, veh/h		1054			263			710			822	
Approach Delay, s/veh		28.0			37.9			32.5			82.3	
Approach LOS		C			D			C			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	37.1		26.3	20.9	25.0		15.9				
Change Period (Y+Rc), s	5.0	5.0		4.5	5.0	5.0		4.5				
Max Green Setting (Gmax), s	20.0	20.0		35.0	20.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s	4.9	9.7		18.2	15.7	22.0		10.4				
Green Ext Time (p_c), s	0.0	1.4		3.6	0.2	0.0		0.6				

### Intersection Summary

HCM 6th Ctrl Delay	45.7
HCM 6th LOS	D

### Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved changes to right turn type.



Lanes, Volumes, Timings  
7: 51st Ave NE & 136th St NE

07/26/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	0	322	0	0	3	213	259	0	0	252	87
Future Volume (vph)	212	0	322	0	0	3	213	259	0	0	252	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	175		0	0		75
Storage Lanes	0		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		451			363			572			389	
Travel Time (s)		8.8			7.1			11.1			7.6	
Confl. Peds. (#/hr)			1	1		1	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	67%	4%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Prot		pm+ov			Perm	pm+pt	NA			NA	pm+ov
Protected Phases	4		5	8	8		5	2			6	4
Permitted Phases			4			8	2					6
Detector Phase	4		5	8	8	8	5	2			6	4
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	5.0
Minimum Split (s)	24.0		10.0	12.0	12.0	12.0	10.0	23.0			26.0	24.0
Total Split (s)	25.0		20.0	25.0	25.0	25.0	20.0	30.0			25.0	25.0
Total Split (%)	26.3%		21.1%	26.3%	26.3%	26.3%	21.1%	31.6%			26.3%	26.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None		None	None	None	None	None	Min			Min	None

Intersection Summary

Area Type: Other

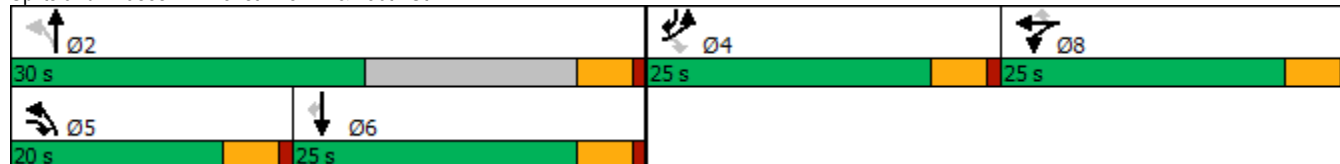
Cycle Length: 95

Actuated Cycle Length: 54.1

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 51st Ave NE & 136th St NE



HCM 6th Signalized Intersection Summary  
 7: 51st Ave NE & 136th St NE

07/26/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↖	↗	↖	↗			↗	↖
Traffic Volume (veh/h)	212	0	322	0	0	3	213	259	0	0	252	87
Future Volume (veh/h)	212	0	322	0	0	3	213	259	0	0	252	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	0	1885	1900	1900	907	1841	1870	0	0	1870	1900
Adj Flow Rate, veh/h	223	0	339	0	0	3	224	273	0	0	265	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	67	4	2	0	0	2	0
Cap, veh/h	0	0	0	0	11	4	693	1148	0	0	505	434
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.01	0.15	0.61	0.00	0.00	0.27	0.27
Sat Flow, veh/h		0		0	1900	767	1753	1870	0	0	1870	1607
Grp Volume(v), veh/h		0.0		0	0	3	224	273	0	0	265	92
Grp Sat Flow(s),veh/h/ln				0	1900	767	1753	1870	0	0	1870	1607
Q Serve(g_s), s				0.0	0.0	0.1	1.9	1.7	0.0	0.0	3.2	1.2
Cycle Q Clear(g_c), s				0.0	0.0	0.1	1.9	1.7	0.0	0.0	3.2	1.2
Prop In Lane				0.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	11	4	693	1148	0	0	505	434
V/C Ratio(X)				0.00	0.00	0.68	0.32	0.24	0.00	0.00	0.52	0.21
Avail Cap(c_a), veh/h				0	1446	584	1426	1780	0	0	1424	1223
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				0.0	0.0	13.0	4.4	2.3	0.0	0.0	8.2	7.4
Incr Delay (d2), s/veh				0.0	0.0	86.0	0.1	0.0	0.0	0.0	0.3	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	99.1	4.5	2.3	0.0	0.0	8.5	7.5
LnGrp LOS				A	A	F	A	A	A	A	A	A
Approach Vol, veh/h					3			497			357	
Approach Delay, s/veh					99.1			3.3			8.2	
Approach LOS					F			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		21.1			9.0	12.1		5.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		25.0			15.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s		3.7			3.9	5.2		2.1				
Green Ext Time (p_c), s		0.9			0.2	0.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					5.7							
HCM 6th LOS					A							
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
 8: 51st Ave NE & 132nd St NE

07/26/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	174	316	48	201	352
Future Volume (vph)	51	174	316	48	201	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	35		35		35	
Link Distance (ft)	568		444		412	
Travel Time (s)	11.1		8.6		8.0	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles (%)	0%	2%	3%	2%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	30.2
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		h			h
Traffic Vol, veh/h	51	174	316	48	201	352
Future Vol, veh/h	51	174	316	48	201	352
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles, %	0	2	3	2	2	1
Mvmt Flow	55	189	347	53	228	400
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	13.3	17.3	45
HCM LOS	B	C	E

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	23%	36%
Vol Thru, %	87%	0%	64%
Vol Right, %	13%	77%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	364	225	553
LT Vol	0	51	201
Through Vol	316	0	352
RT Vol	48	174	0
Lane Flow Rate	400	245	628
Geometry Grp	1	1	1
Degree of Util (X)	0.619	0.411	0.941
Departure Headway (Hd)	5.567	6.045	5.389
Convergence, Y/N	Yes	Yes	Yes
Cap	644	592	672
Service Time	3.63	4.12	3.443
HCM Lane V/C Ratio	0.621	0.414	0.935
HCM Control Delay	17.3	13.3	45
HCM Lane LOS	C	B	E
HCM 95th-tile Q	4.3	2	13

Lanes, Volumes, Timings  
 9: 51st Ave NE & 122nd PI NE

07/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	115	91	339	360	32
Future Volume (vph)	31	115	91	339	360	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	4%			-6%	-5%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			35	35	
Link Distance (ft)	560			821	628	
Travel Time (s)	15.3			16.0	12.2	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	3%	0%	2%	1%	1%	3%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases			2			
Detector Phase	7		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5		9.5	9.5	21.5	
Total Split (s)	9.5		14.5	24.5	24.5	
Total Split (%)	19.6%		29.9%	50.5%	50.5%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	None	None	

Intersection Summary

Area Type: Other

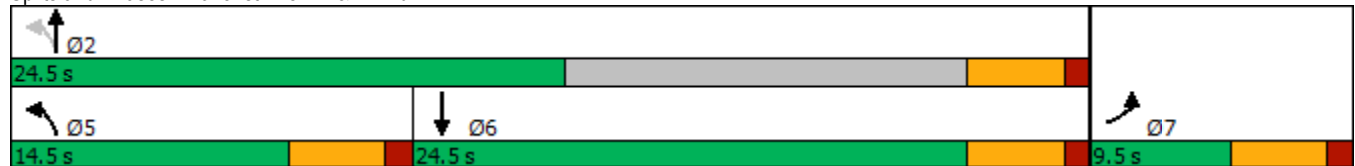
Cycle Length: 48.5

Actuated Cycle Length: 32.2

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 51st Ave NE & 122nd PI NE



HCM 6th Signalized Intersection Summary  
 9: 51st Ave NE & 122nd PI NE

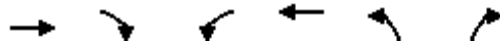
07/26/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	115	91	339	360	32
Future Volume (veh/h)	31	115	91	339	360	32
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00			1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1761	1806	2106	2121	2082	2052
Adj Flow Rate, veh/h	36	132	105	390	414	37
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	0	2	1	1	3
Cap, veh/h	43	158	576	1212	615	55
Arrive On Green	0.13	0.13	0.10	0.57	0.33	0.33
Sat Flow, veh/h	326	1195	2006	2121	1883	168
Grp Volume(v), veh/h	169	0	105	390	0	451
Grp Sat Flow(s),veh/h/ln	1530	0	2006	2121	0	2051
Q Serve(g_s), s	3.3	0.0	0.9	2.9	0.0	5.8
Cycle Q Clear(g_c), s	3.3	0.0	0.9	2.9	0.0	5.8
Prop In Lane	0.21	0.78	1.00			0.08
Lane Grp Cap(c), veh/h	202	0	576	1212	0	670
V/C Ratio(X)	0.84	0.00	0.18	0.32	0.00	0.67
Avail Cap(c_a), veh/h	252	0	1043	1397	0	1351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	5.3	3.4	0.0	8.8
Incr Delay (d2), s/veh	17.9	0.0	0.1	0.2	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.1	0.3	0.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.7	0.0	5.3	3.6	0.0	10.0
LnGrp LOS	C	A	A	A	A	B
Approach Vol, veh/h	169			495	451	
Approach Delay, s/veh	30.7			3.9	10.0	
Approach LOS	C			A	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		21.9		8.5	7.4	14.4
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0		5.0	10.0	20.0
Max Q Clear Time (g_c+I1), s		4.9		5.3	2.9	7.8
Green Ext Time (p_c), s		2.0		0.0	0.1	2.2
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			10.5			
HCM 6th LOS			B			
<b>Notes</b>						
User approved volume balancing among the lanes for turning movement.						

Lanes, Volumes, Timings  
 10: (1) Site Access & 152nd St NE

07/26/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	497	4	18	339	14	67
Future Volume (vph)	497	4	18	339	14	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	35			35	30	
Link Distance (ft)	401			416	332	
Travel Time (s)	7.8			8.1	7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	25%	22%	2%	7%	8%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	497	4	18	339	14	67
Future Vol, veh/h	497	4	18	339	14	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	25	22	2	7	8
Mvmt Flow	540	4	20	368	15	73

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	544	0	950
Stage 1	-	-	-	-	542
Stage 2	-	-	-	-	408
Critical Hdwy	-	-	4.32	-	6.47
Critical Hdwy Stg 1	-	-	-	-	5.47
Critical Hdwy Stg 2	-	-	-	-	5.47
Follow-up Hdwy	-	-	2.398	-	3.563
Pot Cap-1 Maneuver	-	-	932	-	283
Stage 1	-	-	-	-	573
Stage 2	-	-	-	-	661
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	932	-	275
Mov Cap-2 Maneuver	-	-	-	-	275
Stage 1	-	-	-	-	573
Stage 2	-	-	-	-	643

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	456	-	-	932	-
HCM Lane V/C Ratio	0.193	-	-	0.021	-
HCM Control Delay (s)	14.8	-	-	8.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-



Lanes, Volumes, Timings  
 11: Smokey Point Blvd & (2) Site Access

07/26/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	13	823	5	4	789
Future Volume (vph)	22	13	823	5	4	789
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	457		472			472
Travel Time (s)	10.4		8.0			8.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	8%	2%	20%	25%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 11: Smokey Point Blvd & (2) Site Access

07/26/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	22	13	823	5	4	789
Future Vol, veh/h	22	13	823	5	4	789
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	8	2	20	25	2
Mvmt Flow	24	14	895	5	4	858

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1335	450	0	0	900
Stage 1	898	-	-	-	-
Stage 2	437	-	-	-	-
Critical Hdwy	6.98	7.06	-	-	4.6
Critical Hdwy Stg 1	5.98	-	-	-	-
Critical Hdwy Stg 2	5.98	-	-	-	-
Follow-up Hdwy	3.59	3.38	-	-	2.45
Pot Cap-1 Maneuver	136	540	-	-	622
Stage 1	342	-	-	-	-
Stage 2	599	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	135	540	-	-	622
Mov Cap-2 Maneuver	254	-	-	-	-
Stage 1	342	-	-	-	-
Stage 2	595	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.9	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	316	622	-
HCM Lane V/C Ratio	-	-	0.12	0.007	-
HCM Control Delay (s)	-	-	17.9	10.8	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Lanes, Volumes, Timings  
 12: Smokey Point Blvd & (3) Site Access

07/26/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	41	13	815	11	4	807
Future Volume (vph)	41	13	815	11	4	807
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	453		542			472
Travel Time (s)	10.3		9.2			8.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	8%	2%	18%	25%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 12: Smokey Point Blvd & (3) Site Access

07/26/2021

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕↕		↔	↕↕
Traffic Vol, veh/h	41	13	815	11	4	807
Future Vol, veh/h	41	13	815	11	4	807
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	8	2	18	25	2
Mvmt Flow	45	14	886	12	4	877

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1339	449	0	0	898
Stage 1	892	-	-	-	-
Stage 2	447	-	-	-	-
Critical Hdwy	6.94	7.06	-	-	4.6
Critical Hdwy Stg 1	5.94	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-
Follow-up Hdwy	3.57	3.38	-	-	2.45
Pot Cap-1 Maneuver	138	541	-	-	623
Stage 1	349	-	-	-	-
Stage 2	597	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	137	541	-	-	623
Mov Cap-2 Maneuver	257	-	-	-	-
Stage 1	349	-	-	-	-
Stage 2	593	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	294	623	-
HCM Lane V/C Ratio	-	-	0.2	0.007	-
HCM Control Delay (s)	-	-	20.3	10.8	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Lanes, Volumes, Timings  
 13: Smokey Point Blvd & (4) Site Access

07/26/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	13	813	6	2	846
Future Volume (vph)	22	13	813	6	2	846
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	398		91			542
Travel Time (s)	9.0		1.6			9.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	8%	3%	17%	0%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 13: Smokey Point Blvd & (4) Site Access

07/26/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	22	13	813	6	2	846
Future Vol, veh/h	22	13	813	6	2	846
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	8	3	17	0	3
Mvmt Flow	24	14	884	7	2	920

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1352	446	0	0	891
Stage 1	888	-	-	-	-
Stage 2	464	-	-	-	-
Critical Hdwy	6.98	7.06	-	-	4.1
Critical Hdwy Stg 1	5.98	-	-	-	-
Critical Hdwy Stg 2	5.98	-	-	-	-
Follow-up Hdwy	3.59	3.38	-	-	2.2
Pot Cap-1 Maneuver	133	544	-	-	769
Stage 1	346	-	-	-	-
Stage 2	580	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	133	544	-	-	769
Mov Cap-2 Maneuver	253	-	-	-	-
Stage 1	346	-	-	-	-
Stage 2	578	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	316	769	-
HCM Lane V/C Ratio	-	-	0.12	0.003	-
HCM Control Delay (s)	-	-	17.9	9.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Lanes, Volumes, Timings  
 14: Smokey Point Blvd & (5) Site Access

07/26/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	22	797	5	6	862
Future Volume (vph)	16	22	797	5	6	862
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	384		291			91
Travel Time (s)	8.7		5.0			1.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	9%	2%	20%	17%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 14: Smokey Point Blvd & (5) Site Access

07/26/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT		T	TT
Traffic Vol, veh/h	16	22	797	5	6	862
Future Vol, veh/h	16	22	797	5	6	862
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	9	2	20	17	3
Mvmt Flow	17	24	866	5	7	937

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1352	436	0	0	871
Stage 1	869	-	-	-	-
Stage 2	483	-	-	-	-
Critical Hdwy	6.92	7.08	-	-	4.44
Critical Hdwy Stg 1	5.92	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-
Follow-up Hdwy	3.56	3.39	-	-	2.37
Pot Cap-1 Maneuver	136	549	-	-	682
Stage 1	361	-	-	-	-
Stage 2	575	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	135	549	-	-	682
Mov Cap-2 Maneuver	259	-	-	-	-
Stage 1	361	-	-	-	-
Stage 2	569	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	373	682	-
HCM Lane V/C Ratio	-	-	0.111	0.01	-
HCM Control Delay (s)	-	-	15.9	10.3	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-



Lanes, Volumes, Timings  
 15: Smokey Point Blvd & (6) Site Access

07/26/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	9	793	1	2	876
Future Volume (vph)	6	9	793	1	2	876
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	364		519			291
Travel Time (s)	8.3		8.8			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	11%	2%	0%	0%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 15: Smokey Point Blvd & (6) Site Access

07/26/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	6	9	793	1	2	876
Future Vol, veh/h	6	9	793	1	2	876
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	11	2	0	0	3
Mvmt Flow	7	10	862	1	2	952

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1343	432	0	0	863	0
Stage 1	863	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Critical Hdwy	6.8	7.12	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.41	-	-	2.2	-
Pot Cap-1 Maneuver	146	547	-	-	788	-
Stage 1	378	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	146	547	-	-	788	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	378	-	-	-	-	-
Stage 2	592	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	390	788	-
HCM Lane V/C Ratio	-	-	0.042	0.003	-
HCM Control Delay (s)	-	-	14.6	9.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2029 No Action  
(Horizon Year)

Lanes, Volumes, Timings  
1: Smokey Point Blvd & 156th St NE

04/25/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1	275	16	10	29	253	761	12	23	893	86
Future Volume (vph)	35	1	275	16	10	29	253	761	12	23	893	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-6%			0%			0%			0%	
Storage Length (ft)	200		200	200		0	200		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			40			40	
Link Distance (ft)		612			381			1355			1050	
Travel Time (s)		16.7			7.4			23.1			17.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	0%	1%	0%	0%	4%	1%	1%	11%	17%	1%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	25.0	25.0	12.0	25.0		12.0	25.0		12.0	25.0	
Total Split (s)	20.0	25.0	25.0	20.0	25.0		20.0	45.0		15.0	45.0	
Total Split (%)	18.2%	22.7%	22.7%	18.2%	22.7%		18.2%	40.9%		13.6%	40.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 74.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Smokey Point Blvd & 156th St NE



HCM 6th Signalized Intersection Summary  
 1: Smokey Point Blvd & 156th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	1	275	16	10	29	253	761	12	23	893	86
Future Volume (veh/h)	35	1	275	16	10	29	253	761	12	23	893	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2076	2136	2121	1900	1900	1841	1885	1885	1737	1648	1885	1900
Adj Flow Rate, veh/h	37	1	289	17	11	31	266	801	13	24	940	91
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	0	1	0	0	4	1	1	11	17	1	0
Cap, veh/h	422	403	339	337	73	205	383	1662	27	342	1268	123
Arrive On Green	0.05	0.19	0.19	0.03	0.17	0.17	0.11	0.46	0.46	0.04	0.38	0.38
Sat Flow, veh/h	1977	2136	1797	1810	439	1238	1795	3607	59	1570	3298	319
Grp Volume(v), veh/h	37	1	289	17	0	42	266	398	416	24	510	521
Grp Sat Flow(s),veh/h/ln	1977	2136	1797	1810	0	1677	1795	1791	1875	1570	1791	1826
Q Serve(g_s), s	1.0	0.0	10.9	0.5	0.0	1.5	5.8	10.8	10.8	0.6	17.2	17.2
Cycle Q Clear(g_c), s	1.0	0.0	10.9	0.5	0.0	1.5	5.8	10.8	10.8	0.6	17.2	17.2
Prop In Lane	1.00		1.00	1.00		0.74	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	422	403	339	337	0	278	383	825	863	342	688	702
V/C Ratio(X)	0.09	0.00	0.85	0.05	0.00	0.15	0.69	0.48	0.48	0.07	0.74	0.74
Avail Cap(c_a), veh/h	744	609	513	673	0	479	564	1022	1070	508	1022	1042
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	23.1	27.5	23.0	0.0	25.0	13.8	13.1	13.1	12.1	18.6	18.6
Incr Delay (d2), s/veh	0.0	0.0	5.6	0.0	0.0	0.1	0.9	0.5	0.5	0.0	1.9	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	4.9	0.2	0.0	0.6	1.9	3.8	4.0	0.2	6.5	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	23.1	33.1	23.0	0.0	25.1	14.7	13.6	13.6	12.2	20.5	20.5
LnGrp LOS	C	C	C	C	A	C	B	B	B	B	C	C
Approach Vol, veh/h		327			59			1080			1055	
Approach Delay, s/veh		31.8			24.5			13.9			20.3	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	37.3	7.0	18.2	13.0	31.9	8.6	16.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	40.0	15.0	20.0	15.0	40.0	15.0	20.0				
Max Q Clear Time (g_c+I1), s	2.6	12.8	2.5	12.9	7.8	19.2	3.0	3.5				
Green Ext Time (p_c), s	0.0	6.3	0.0	0.3	0.2	7.7	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			19.1									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
2: Smokey Point Blvd & 152nd St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	19	116	5	277	4	742	174	388	792	23
Future Volume (vph)	17	5	19	116	5	277	4	742	174	388	792	23
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	125		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		385			654			718			1355	
Travel Time (s)		7.5			12.7			12.2			23.1	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	0%	1%	4%	1%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		9.0	22.0		9.0	26.0	
Total Split (s)	21.0	21.0		21.0	25.0		21.0	45.0		21.0	45.0	
Total Split (%)	18.8%	18.8%		18.8%	22.3%		18.8%	40.2%		18.8%	40.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

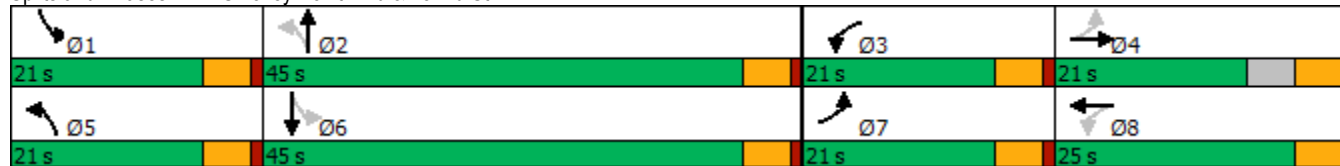
Cycle Length: 112

Actuated Cycle Length: 70.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Smokey Point Blvd & 152nd St NE



HCM 6th Signalized Intersection Summary  
 2: Smokey Point Blvd & 152nd St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	5	19	116	5	277	4	742	174	388	792	23
Future Volume (veh/h)	17	5	19	116	5	277	4	742	174	388	792	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1885	1900	1885	1841	1885	1870	1900
Adj Flow Rate, veh/h	18	5	20	122	5	292	4	781	183	408	834	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	3	0	1	0	1	4	1	2	0
Cap, veh/h	163	50	200	422	6	335	324	970	227	452	1769	51
Arrive On Green	0.02	0.15	0.15	0.08	0.21	0.21	0.00	0.34	0.34	0.17	0.50	0.50
Sat Flow, veh/h	1810	332	1329	1767	27	1587	1810	2878	674	1795	3527	101
Grp Volume(v), veh/h	18	0	25	122	0	297	4	486	478	408	420	438
Grp Sat Flow(s),veh/h/ln	1810	0	1661	1767	0	1614	1810	1791	1761	1795	1777	1852
Q Serve(g_s), s	0.6	0.0	1.0	4.2	0.0	13.4	0.1	18.6	18.6	10.3	11.6	11.6
Cycle Q Clear(g_c), s	0.6	0.0	1.0	4.2	0.0	13.4	0.1	18.6	18.6	10.3	11.6	11.6
Prop In Lane	1.00		0.80	1.00		0.98	1.00		0.38	1.00		0.05
Lane Grp Cap(c), veh/h	163	0	251	422	0	341	324	603	593	452	891	929
V/C Ratio(X)	0.11	0.00	0.10	0.29	0.00	0.87	0.01	0.81	0.81	0.90	0.47	0.47
Avail Cap(c_a), veh/h	518	0	354	662	0	430	701	953	938	531	946	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	27.5	22.8	0.0	28.6	16.3	22.7	22.7	15.2	12.2	12.2
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	12.6	0.0	2.1	2.2	16.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	1.7	0.0	6.1	0.0	7.4	7.2	5.4	3.9	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	27.6	23.0	0.0	41.3	16.4	24.8	24.8	31.6	12.5	12.5
LnGrp LOS	C	A	C	C	A	D	B	C	C	C	B	B
Approach Vol, veh/h		43			419			968			1266	
Approach Delay, s/veh		27.3			35.9			24.8			18.6	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.7	30.3	10.8	16.3	5.3	42.7	6.3	20.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	16.0	40.0	16.0	16.0	16.0	40.0	16.0	20.0				
Max Q Clear Time (g_c+I1), s	12.3	20.6	6.2	3.0	2.1	13.6	2.6	15.4				
Green Ext Time (p_c), s	0.4	4.8	0.1	0.0	0.0	4.3	0.0	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			23.7									
HCM 6th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
3: 51st Ave NE & 152nd St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	334	148	54	179	24	116	278	121	35	253	48
Future Volume (vph)	60	334	148	54	179	24	116	278	121	35	253	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		125	125		125	125		125	125		125
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		871			769			861			867	
Travel Time (s)		14.8			13.1			16.8			16.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	11%	0%	2%	5%	3%	0%	2%	3%	2%	0%	1%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	25.0	25.0	10.0	25.0	25.0	25.0	25.0	25.0	10.0	25.0	25.0
Total Split (s)	10.0	25.0	25.0	10.0	25.0	25.0	25.0	25.0	25.0	10.0	35.0	35.0
Total Split (%)	14.3%	35.7%	35.7%	14.3%	35.7%	35.7%	35.7%	35.7%	35.7%	14.3%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None

Intersection Summary

Area Type: Other

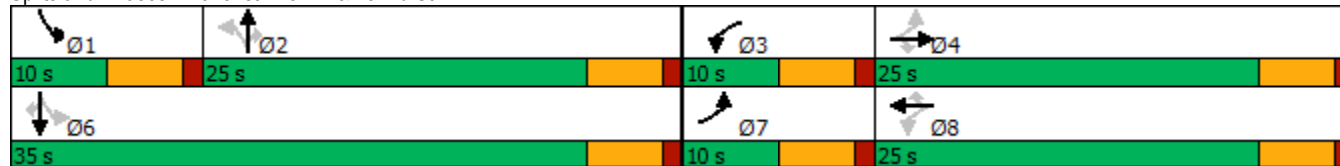
Cycle Length: 70

Actuated Cycle Length: 44

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: 51st Ave NE & 152nd St NE





HCM 6th Signalized Intersection Summary  
 3: 51st Ave NE & 152nd St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	334	148	54	179	24	116	278	121	35	253	48
Future Volume (veh/h)	60	334	148	54	179	24	116	278	121	35	253	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1900	1870	1826	1856	1900	1870	1856	1870	1900	1885	1900
Adj Flow Rate, veh/h	62	344	153	56	185	25	120	287	125	36	261	49
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	11	0	2	5	3	0	2	3	2	0	1	0
Cap, veh/h	428	720	312	364	689	311	426	454	386	344	754	642
Arrive On Green	0.06	0.20	0.20	0.06	0.20	0.20	0.24	0.24	0.24	0.04	0.40	0.40
Sat Flow, veh/h	1654	3610	1565	1739	3526	1590	1065	1856	1575	1810	1885	1604
Grp Volume(v), veh/h	62	344	153	56	185	25	120	287	125	36	261	49
Grp Sat Flow(s),veh/h/ln	1654	1805	1565	1739	1763	1590	1065	1856	1575	1810	1885	1604
Q Serve(g_s), s	1.3	3.7	3.8	1.1	1.9	0.6	4.2	6.0	2.8	0.6	4.2	0.8
Cycle Q Clear(g_c), s	1.3	3.7	3.8	1.1	1.9	0.6	4.2	6.0	2.8	0.6	4.2	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	428	720	312	364	689	311	426	454	386	344	754	642
V/C Ratio(X)	0.14	0.48	0.49	0.15	0.27	0.08	0.28	0.63	0.32	0.10	0.35	0.08
Avail Cap(c_a), veh/h	518	1656	718	465	1617	729	654	851	722	478	1297	1104
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	15.4	15.5	12.8	14.9	14.3	14.0	14.7	13.5	10.7	9.1	8.1
Incr Delay (d2), s/veh	0.2	0.5	1.2	0.2	0.2	0.1	0.4	1.5	0.5	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.3	1.2	0.3	0.6	0.2	0.9	2.2	0.8	0.2	1.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	15.9	16.7	13.0	15.1	14.5	14.4	16.2	14.0	10.8	9.4	8.1
LnGrp LOS	B	B	B	B	B	B	B	B	B	B	A	A
Approach Vol, veh/h		559			266			532			346	
Approach Delay, s/veh		15.8			14.6			15.2			9.4	
Approach LOS		B			B			B			A	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	6.8	15.7	7.5	13.7		22.4	7.6	13.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	20.0	5.0	20.0		30.0	5.0	20.0				
Max Q Clear Time (g_c+I1), s	2.6	8.0	3.1	5.8		6.2	3.3	3.9				
Green Ext Time (p_c), s	0.0	2.1	0.0	2.2		1.6	0.0	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.1									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
4: Smokey Point Blvd & 136th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	234	158	199	244	80	111	583	202	154	544	242
Future Volume (vph)	201	234	158	199	244	80	111	583	202	154	544	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	225		0	275		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		178			861			811			837	
Travel Time (s)		3.5			16.8			13.8			14.3	
Confl. Peds. (#/hr)			1	1					1			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	6%	2%	0%	2%	2%	1%	1%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

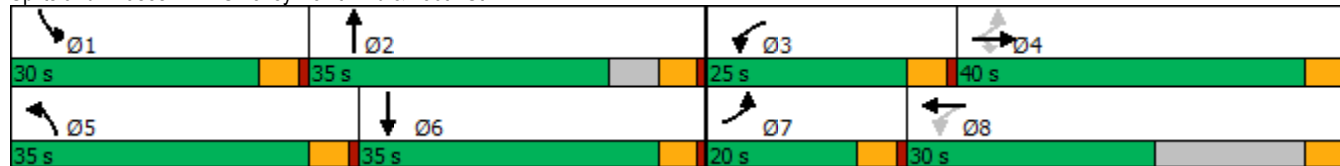
Cycle Length: 135

Actuated Cycle Length: 98.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Smokey Point Blvd & 136th St NE



HCM 6th Signalized Intersection Summary  
 4: Smokey Point Blvd & 136th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	234	158	199	244	80	111	583	202	154	544	242
Future Volume (veh/h)	201	234	158	199	244	80	111	583	202	154	544	242
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1811	1870	1900	1870	1870	1885	1885	1870	1870
Adj Flow Rate, veh/h	214	249	168	212	260	85	118	620	215	164	579	257
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	2	6	2	0	2	2	1	1	2	2
Cap, veh/h	342	411	348	395	301	98	152	740	256	204	753	334
Arrive On Green	0.12	0.22	0.22	0.12	0.22	0.22	0.09	0.29	0.29	0.11	0.31	0.31
Sat Flow, veh/h	1795	1870	1583	1725	1349	441	1781	2588	896	1795	2395	1061
Grp Volume(v), veh/h	214	249	168	212	0	345	118	425	410	164	429	407
Grp Sat Flow(s),veh/h/ln	1795	1870	1583	1725	0	1790	1781	1777	1707	1795	1777	1679
Q Serve(g_s), s	6.9	9.2	7.1	7.1	0.0	14.2	5.0	17.3	17.3	6.8	16.8	16.8
Cycle Q Clear(g_c), s	6.9	9.2	7.1	7.1	0.0	14.2	5.0	17.3	17.3	6.8	16.8	16.8
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.53	1.00		0.63
Lane Grp Cap(c), veh/h	342	411	348	395	0	399	152	508	488	204	559	528
V/C Ratio(X)	0.62	0.61	0.48	0.54	0.00	0.86	0.78	0.84	0.84	0.80	0.77	0.77
Avail Cap(c_a), veh/h	484	853	722	637	0	583	696	695	667	585	695	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	27.0	26.1	19.8	0.0	28.7	34.4	25.7	25.7	33.2	23.8	23.8
Incr Delay (d2), s/veh	0.7	0.5	0.4	0.4	0.0	6.4	3.2	4.9	5.2	2.8	3.1	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.9	2.6	2.7	0.0	6.5	2.2	7.3	7.1	3.0	6.9	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	27.5	26.5	20.2	0.0	35.1	37.6	30.7	30.9	35.9	26.9	27.1
LnGrp LOS	C	C	C	C	A	D	D	C	C	D	C	C
Approach Vol, veh/h		631			557			953			1000	
Approach Delay, s/veh		25.2			29.5			31.6			28.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.7	26.9	14.2	21.8	11.5	29.1	14.0	22.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	8.8	19.3	9.1	11.2	7.0	18.8	8.9	16.2				
Green Ext Time (p_c), s	0.2	2.5	0.2	1.1	0.1	2.6	0.2	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			28.9									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
5: State Ave & 128th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (vph)	17	6	23	97	1	38	2	829	136	57	820	0
Future Volume (vph)	17	6	23	97	1	38	2	829	136	57	820	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	200		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		476			540			714			620	
Travel Time (s)		13.0			14.7			12.2			10.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	8%	0%	0%	1%	0%	0%	0%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	13.0	13.0		25.0	25.0		10.0	17.0		10.0	22.0	
Total Split (s)	35.0	35.0		25.0	25.0		25.0	55.0		25.0	55.0	
Total Split (%)	25.0%	25.0%		17.9%	17.9%		17.9%	39.3%		17.9%	39.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

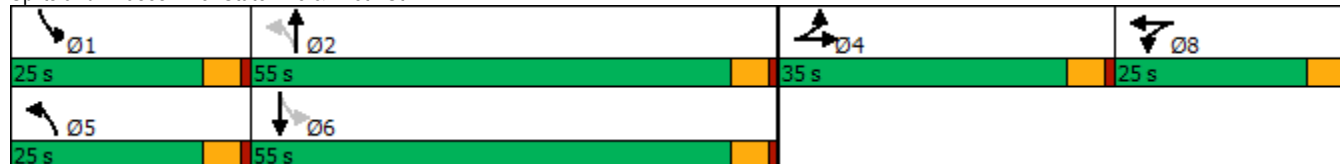
Cycle Length: 140

Actuated Cycle Length: 75.4

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: State Ave & 128th St NE



# HCM 6th Signalized Intersection Summary

## 5: State Ave & 128th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↔		↗	↕↔	
Traffic Volume (veh/h)	17	6	23	97	1	38	2	829	136	57	820	0
Future Volume (veh/h)	17	6	23	97	1	38	2	829	136	57	820	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1900	1900	1885	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	18	6	24	103	1	40	2	882	145	61	872	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	8	0	0	1	0	0	0	2	0	0	2	0
Cap, veh/h	49	16	65	138	1	54	307	1194	196	313	1577	0
Arrive On Green	0.08	0.08	0.08	0.11	0.11	0.11	0.00	0.39	0.39	0.06	0.44	0.00
Sat Flow, veh/h	643	214	857	1252	12	486	1810	3053	502	1810	3647	0
Grp Volume(v), veh/h	48	0	0	144	0	0	2	513	514	61	872	0
Grp Sat Flow(s),veh/h/ln	1714	0	0	1750	0	0	1810	1777	1778	1810	1777	0
Q Serve(g_s), s	1.4	0.0	0.0	4.3	0.0	0.0	0.0	13.5	13.5	1.1	9.8	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.0	4.3	0.0	0.0	0.0	13.5	13.5	1.1	9.8	0.0
Prop In Lane	0.37		0.50	0.72		0.28	1.00		0.28	1.00		0.00
Lane Grp Cap(c), veh/h	130	0	0	193	0	0	307	695	695	313	1577	0
V/C Ratio(X)	0.37	0.00	0.00	0.75	0.00	0.00	0.01	0.74	0.74	0.20	0.55	0.00
Avail Cap(c_a), veh/h	945	0	0	643	0	0	967	1633	1634	878	3266	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.9	0.0	0.0	23.5	0.0	0.0	10.5	14.2	14.2	10.5	11.2	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	2.2	0.0	0.0	0.0	1.2	1.2	0.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.8	0.0	0.0	0.0	4.5	4.5	0.4	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	0.0	0.0	25.6	0.0	0.0	10.5	15.3	15.3	10.9	11.4	0.0
LnGrp LOS	C	A	A	C	A	A	B	B	B	B	B	A
Approach Vol, veh/h		48			144			1029			933	
Approach Delay, s/veh		25.2			25.6			15.3			11.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	26.3		9.1	5.1	29.1		11.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	50.0		30.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	3.1	15.5		3.4	2.0	11.8		6.3				
Green Ext Time (p_c), s	0.2	5.8		0.2	0.0	5.4		0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	14.5											
HCM 6th LOS	B											

Lanes, Volumes, Timings  
6: State Ave & 116th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖	↗	↖	↖↗		↖	↖↗		↖	↖	↗
Traffic Volume (vph)	504	199	413	94	155	45	320	400	70	61	381	435
Future Volume (vph)	504	199	413	94	155	45	320	400	70	61	381	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	175		0	450		0	450		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		790			763			665			684	
Travel Time (s)		21.5			20.8			11.3			11.7	
Confl. Peds. (#/hr)			1			4			2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	1%	3%	0%	0%	2%	2%	2%	0%	1%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4									6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	5.0	5.0		7.0	10.0		5.0	10.0	10.0
Minimum Split (s)	31.5	31.5	12.0	39.5	39.5		12.0	30.0		10.0	15.0	31.5
Total Split (s)	39.5	39.5	25.0	24.5	24.5		25.0	25.0		25.0	25.0	39.5
Total Split (%)	34.6%	34.6%	21.9%	21.5%	21.5%		21.9%	21.9%		21.9%	21.9%	34.6%
Yellow Time (s)	3.5	3.5	4.0	3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	5.0	4.5	4.5		5.0	5.0		5.0	5.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	None

Intersection Summary

Area Type: Other

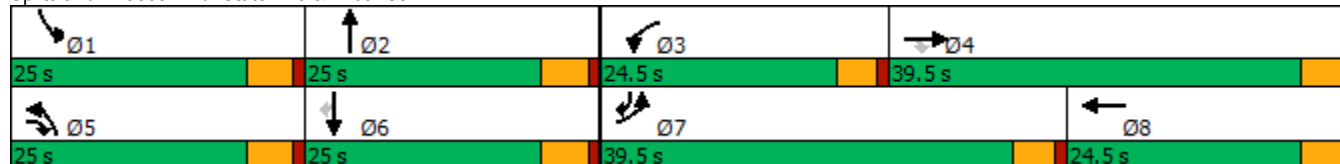
Cycle Length: 114

Actuated Cycle Length: 93.3

Natural Cycle: 135

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: State Ave & 116th St NE



# HCM 6th Signalized Intersection Summary

## 6: State Ave & 116th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗↘	↑	↗	↗	↗↘		↗	↗↘		↗	↑	↗
Traffic Volume (veh/h)	504	199	413	94	155	45	320	400	70	61	381	435
Future Volume (veh/h)	504	199	413	94	155	45	320	400	70	61	381	435
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1885	1856	1900	1900	1870	1870	1870	1900	1885	1870
Adj Flow Rate, veh/h	536	212	439	100	165	48	340	426	74	65	405	463
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	1	1	3	0	0	2	2	2	0	1	2
Cap, veh/h	655	476	740	141	396	112	376	1207	208	85	441	672
Arrive On Green	0.19	0.25	0.25	0.08	0.14	0.14	0.21	0.40	0.40	0.05	0.23	0.23
Sat Flow, veh/h	3456	1885	1594	1767	2774	782	1781	3029	522	1810	1885	1585
Grp Volume(v), veh/h	536	212	439	100	106	107	340	249	251	65	405	463
Grp Sat Flow(s),veh/h/ln	1728	1885	1594	1767	1805	1751	1781	1777	1775	1810	1885	1585
Q Serve(g_s), s	12.7	8.1	17.4	4.7	4.5	4.8	15.9	8.4	8.5	3.0	17.9	20.0
Cycle Q Clear(g_c), s	12.7	8.1	17.4	4.7	4.5	4.8	15.9	8.4	8.5	3.0	17.9	20.0
Prop In Lane	1.00		1.00	1.00		0.45	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	655	476	740	141	258	250	376	708	707	85	441	672
V/C Ratio(X)	0.82	0.44	0.59	0.71	0.41	0.43	0.90	0.35	0.36	0.77	0.92	0.69
Avail Cap(c_a), veh/h	1416	772	990	414	423	410	417	708	707	424	441	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	26.9	16.9	38.3	33.3	33.4	32.9	18.0	18.0	40.3	31.9	20.0
Incr Delay (d2), s/veh	1.9	0.5	0.6	2.5	0.4	0.4	20.3	0.2	0.2	5.4	23.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	3.7	6.2	2.1	2.0	2.1	8.6	3.2	3.2	1.4	10.6	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	27.4	17.5	40.8	33.7	33.9	53.2	18.2	18.2	45.6	55.7	22.8
LnGrp LOS	D	C	B	D	C	C	D	B	B	D	E	C
Approach Vol, veh/h		1187			313			840			933	
Approach Delay, s/veh		27.2			36.0			32.4			38.7	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	39.0	11.3	26.1	23.0	25.0	20.7	16.7				
Change Period (Y+Rc), s	5.0	5.0	4.5	4.5	5.0	5.0	4.5	4.5				
Max Green Setting (Gmax), s	20.0	20.0	20.0	35.0	20.0	20.0	35.0	20.0				
Max Q Clear Time (g_c+I1), s	5.0	10.5	6.7	19.4	17.9	22.0	14.7	6.8				
Green Ext Time (p_c), s	0.0	1.6	0.1	2.1	0.1	0.0	1.5	0.6				

### Intersection Summary

HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.  
 User approved changes to right turn type.

Lanes, Volumes, Timings  
7: 51st Ave NE & 136th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	0	357	0	0	4	247	307	0	0	293	101
Future Volume (vph)	245	0	357	0	0	4	247	307	0	0	293	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	175		0	0		75
Storage Lanes	0		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		451			363			572			389	
Travel Time (s)		8.8			7.1			11.1			7.6	
Confl. Peds. (#/hr)			1	1		1	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	67%	4%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Prot		pm+ov			Perm	pm+pt	NA			NA	pm+ov
Protected Phases	4		5	8	8		5	2			6	4
Permitted Phases			4			8	2					6
Detector Phase	4		5	8	8	8	5	2			6	4
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	5.0
Minimum Split (s)	24.0		10.0	12.0	12.0	12.0	10.0	23.0			26.0	24.0
Total Split (s)	25.0		20.0	25.0	25.0	25.0	20.0	30.0			25.0	25.0
Total Split (%)	26.3%		21.1%	26.3%	26.3%	26.3%	21.1%	31.6%			26.3%	26.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None		None	None	None	None	None	Min			Min	None

Intersection Summary

Area Type: Other

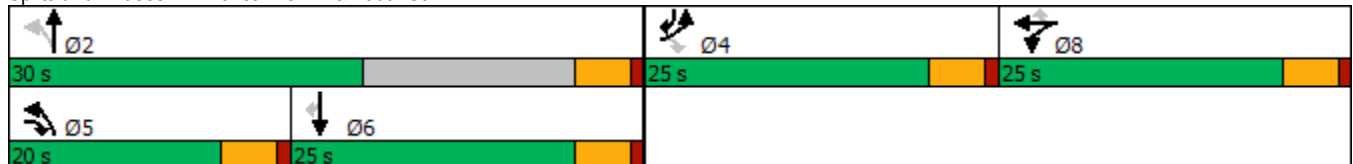
Cycle Length: 95

Actuated Cycle Length: 58.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 51st Ave NE & 136th St NE





HCM 6th Signalized Intersection Summary  
7: 51st Ave NE & 136th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	0	357	0	0	4	247	307	0	0	293	101
Future Volume (veh/h)	245	0	357	0	0	4	247	307	0	0	293	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	0	1885	1900	1900	907	1841	1856	0	0	1870	1900
Adj Flow Rate, veh/h	258	0	376	0	0	4	260	323	0	0	308	106
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	67	4	3	0	0	2	0
Cap, veh/h	0	0	0	0	15	6	670	1143	0	0	500	429
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.01	0.16	0.62	0.00	0.00	0.27	0.27
Sat Flow, veh/h		0		0	1900	767	1753	1856	0	0	1870	1607
Grp Volume(v), veh/h		0.0		0	0	4	260	323	0	0	308	106
Grp Sat Flow(s),veh/h/ln				0	1900	767	1753	1856	0	0	1870	1607
Q Serve(g_s), s				0.0	0.0	0.1	2.3	2.2	0.0	0.0	3.8	1.4
Cycle Q Clear(g_c), s				0.0	0.0	0.1	2.3	2.2	0.0	0.0	3.8	1.4
Prop In Lane				0.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	15	6	670	1143	0	0	500	429
V/C Ratio(X)				0.00	0.00	0.68	0.39	0.28	0.00	0.00	0.62	0.25
Avail Cap(c_a), veh/h				0	1430	578	1378	1746	0	0	1408	1210
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				0.0	0.0	13.1	4.7	2.4	0.0	0.0	8.5	7.6
Incr Delay (d2), s/veh				0.0	0.0	70.2	0.1	0.0	0.0	0.0	0.5	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.9	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	83.3	4.9	2.4	0.0	0.0	9.0	7.7
LnGrp LOS				A	A	F	A	A	A	A	A	A
Approach Vol, veh/h					4			583			414	
Approach Delay, s/veh					83.3			3.5			8.7	
Approach LOS					F			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		21.4			9.3	12.1		5.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		25.0			15.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s		4.2			4.3	5.8		2.1				
Green Ext Time (p_c), s		1.1			0.3	1.1		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					6.0							
HCM 6th LOS					A							
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
 8: 51st Ave NE & 132nd St NE

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	207	369	57	234	390
Future Volume (vph)	61	207	369	57	234	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	35		35			35
Link Distance (ft)	568		444			412
Travel Time (s)	11.1		8.6			8.0
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles (%)	0%	3%	2%	2%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	21.2
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
Traffic Vol, veh/h	61	207	369	57	234	390
Future Vol, veh/h	61	207	369	57	234	390
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles, %	0	3	2	2	2	0
Mvmt Flow	66	225	405	63	266	443
Number of Lanes	1	0	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	15.1	24.5	21.6
HCM LOS	C	C	C

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	23%	100%	0%
Vol Thru, %	87%	0%	0%	100%
Vol Right, %	13%	77%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	426	268	234	390
LT Vol	0	61	234	0
Through Vol	369	0	0	390
RT Vol	57	207	0	0
Lane Flow Rate	468	291	266	443
Geometry Grp	5	2	7	7
Degree of Util (X)	0.753	0.496	0.491	0.751
Departure Headway (Hd)	5.794	6.131	6.644	6.101
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	623	586	540	589
Service Time	3.849	4.193	4.405	3.861
HCM Lane V/C Ratio	0.751	0.497	0.493	0.752
HCM Control Delay	24.5	15.1	15.7	25.1
HCM Lane LOS	C	C	C	D
HCM 95th-tile Q	6.7	2.7	2.7	6.6

Lanes, Volumes, Timings  
9: 51st Ave NE & 122nd PI NE

04/25/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	137	109	400	412	30
Future Volume (vph)	35	137	109	400	412	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	4%			-6%	-5%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			35	35	
Link Distance (ft)	560			821	628	
Travel Time (s)	15.3			16.0	12.2	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases			2			
Detector Phase	7		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5		9.5	9.5	21.5	
Total Split (s)	9.5		14.5	24.5	24.5	
Total Split (%)	19.6%		29.9%	50.5%	50.5%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	None	None	

Intersection Summary

Area Type: Other

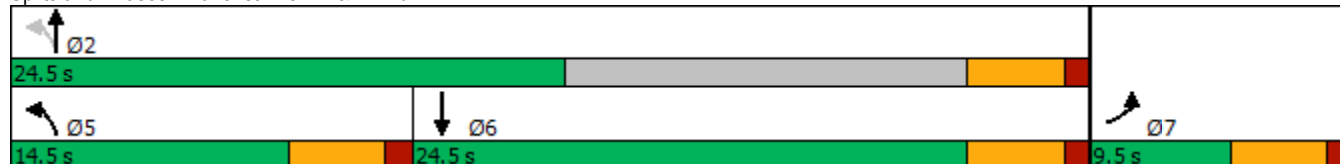
Cycle Length: 48.5

Actuated Cycle Length: 34

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 51st Ave NE & 122nd PI NE



HCM 6th Signalized Intersection Summary  
 9: 51st Ave NE & 122nd PI NE

04/25/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	137	109	400	412	30
Future Volume (veh/h)	35	137	109	400	412	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00			1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1806	1806	2106	2121	2082	2097
Adj Flow Rate, veh/h	40	157	125	460	474	34
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	2	1	1	0
Cap, veh/h	47	186	551	1234	662	47
Arrive On Green	0.15	0.15	0.10	0.58	0.34	0.34
Sat Flow, veh/h	316	1242	2006	2121	1919	138
Grp Volume(v), veh/h	198	0	125	460	0	508
Grp Sat Flow(s),veh/h/ln	1566	0	2006	2121	0	2057
Q Serve(g_s), s	4.1	0.0	1.1	3.9	0.0	7.2
Cycle Q Clear(g_c), s	4.1	0.0	1.1	3.9	0.0	7.2
Prop In Lane	0.20	0.79	1.00			0.07
Lane Grp Cap(c), veh/h	234	0	551	1234	0	709
V/C Ratio(X)	0.85	0.00	0.23	0.37	0.00	0.72
Avail Cap(c_a), veh/h	234	0	945	1267	0	1229
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	5.8	3.7	0.0	9.5
Incr Delay (d2), s/veh	23.9	0.0	0.1	0.2	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.2	0.5	0.0	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.8	0.0	5.9	3.9	0.0	10.9
LnGrp LOS	D	A	A	A	A	B
Approach Vol, veh/h	198			585	508	
Approach Delay, s/veh	37.8			4.3	10.9	
Approach LOS	D			A	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		24.0		9.5	7.9	16.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0		5.0	10.0	20.0
Max Q Clear Time (g_c+I1), s		5.9		6.1	3.1	9.2
Green Ext Time (p_c), s		2.4		0.0	0.1	2.3
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			12.1			
HCM 6th LOS			B			
<b>Notes</b>						
User approved volume balancing among the lanes for turning movement.						

2029 With Project  
(Horizon Year)

Lanes, Volumes, Timings  
1: Smokey Point Blvd & 156th St NE

04/25/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1	281	16	10	29	278	794	12	23	902	86
Future Volume (vph)	35	1	281	16	10	29	278	794	12	23	902	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-6%			0%			0%			0%	
Storage Length (ft)	200		200	200		0	200		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			40			40	
Link Distance (ft)		612			381			1355			1050	
Travel Time (s)		16.7			7.4			23.1			17.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	0%	1%	0%	0%	3%	1%	2%	8%	17%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	25.0	25.0	12.0	25.0		12.0	25.0		12.0	25.0	
Total Split (s)	20.0	25.0	25.0	20.0	25.0		20.0	45.0		15.0	45.0	
Total Split (%)	18.2%	22.7%	22.7%	18.2%	22.7%		18.2%	40.9%		13.6%	40.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 76.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Smokey Point Blvd & 156th St NE



HCM 6th Signalized Intersection Summary  
 1: Smokey Point Blvd & 156th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	1	281	16	10	29	278	794	12	23	902	86
Future Volume (veh/h)	35	1	281	16	10	29	278	794	12	23	902	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2091	2136	2121	1900	1900	1856	1885	1870	1781	1648	1870	1900
Adj Flow Rate, veh/h	37	1	296	17	11	31	293	836	13	24	949	91
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	1	0	0	3	1	2	8	17	2	0
Cap, veh/h	425	409	344	335	74	209	390	1678	26	332	1258	121
Arrive On Green	0.05	0.19	0.19	0.03	0.17	0.17	0.12	0.47	0.47	0.04	0.38	0.38
Sat Flow, veh/h	1991	2136	1797	1810	439	1238	1795	3581	56	1570	3275	314
Grp Volume(v), veh/h	37	1	296	17	0	42	293	415	434	24	515	525
Grp Sat Flow(s),veh/h/ln	1991	2136	1797	1810	0	1677	1795	1777	1860	1570	1777	1812
Q Serve(g_s), s	1.1	0.0	11.6	0.6	0.0	1.6	6.6	11.8	11.8	0.7	18.3	18.3
Cycle Q Clear(g_c), s	1.1	0.0	11.6	0.6	0.0	1.6	6.6	11.8	11.8	0.7	18.3	18.3
Prop In Lane	1.00		1.00	1.00		0.74	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	425	409	344	335	0	283	390	833	872	332	682	696
V/C Ratio(X)	0.09	0.00	0.86	0.05	0.00	0.15	0.75	0.50	0.50	0.07	0.75	0.75
Avail Cap(c_a), veh/h	735	588	495	658	0	461	542	978	1024	490	978	997
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	23.8	28.5	23.7	0.0	25.8	14.4	13.4	13.4	12.6	19.4	19.4
Incr Delay (d2), s/veh	0.0	0.0	7.6	0.0	0.0	0.1	2.1	0.6	0.5	0.0	2.4	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	5.4	0.2	0.0	0.6	2.3	4.1	4.3	0.2	7.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	23.8	36.0	23.7	0.0	25.9	16.6	13.9	13.9	12.6	21.8	21.8
LnGrp LOS	C	C	D	C	A	C	B	B	B	B	C	C
Approach Vol, veh/h		334			59			1142			1064	
Approach Delay, s/veh		34.5			25.2			14.6			21.6	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	39.1	7.0	18.9	13.8	32.9	8.7	17.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	40.0	15.0	20.0	15.0	40.0	15.0	20.0				
Max Q Clear Time (g_c+I1), s	2.7	13.8	2.6	13.6	8.6	20.3	3.1	3.6				
Green Ext Time (p_c), s	0.0	6.6	0.0	0.3	0.2	7.6	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.3									
HCM 6th LOS			C									



Lanes, Volumes, Timings  
2: Smokey Point Blvd & 152nd St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	19	122	5	291	4	786	196	392	803	23
Future Volume (vph)	17	5	19	122	5	291	4	786	196	392	803	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	125		0	150		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		385			654			718			1355	
Travel Time (s)		7.5			12.7			12.2			23.1	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	4%	0%	2%	0%	2%	4%	1%	2%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	7.0		4.0	7.0	
Minimum Split (s)	9.0	25.0		9.0	25.0		9.0	22.0		9.0	26.0	
Total Split (s)	21.0	21.0		21.0	25.0		21.0	45.0		21.0	45.0	
Total Split (%)	18.8%	18.8%		18.8%	22.3%		18.8%	40.2%		18.8%	40.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

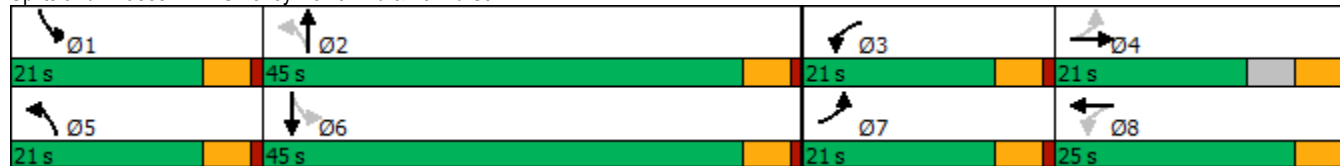
Cycle Length: 112

Actuated Cycle Length: 73.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Smokey Point Blvd & 152nd St NE



HCM 6th Signalized Intersection Summary  
2: Smokey Point Blvd & 152nd St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	5	19	122	5	291	4	786	196	392	803	23
Future Volume (veh/h)	17	5	19	122	5	291	4	786	196	392	803	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1841	1900	1870	1900	1870	1841	1885	1870	1900
Adj Flow Rate, veh/h	18	5	20	128	5	306	4	827	206	413	845	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	4	0	2	0	2	4	1	2	0
Cap, veh/h	146	50	202	416	6	342	321	990	246	449	1849	53
Arrive On Green	0.02	0.15	0.15	0.08	0.22	0.22	0.00	0.35	0.35	0.18	0.52	0.52
Sat Flow, veh/h	1810	332	1329	1753	26	1588	1810	2817	702	1795	3529	100
Grp Volume(v), veh/h	18	0	25	128	0	311	4	522	511	413	425	444
Grp Sat Flow(s),veh/h/ln	1810	0	1661	1753	0	1614	1810	1777	1742	1795	1777	1852
Q Serve(g_s), s	0.7	0.0	1.1	4.9	0.0	15.6	0.1	22.4	22.4	12.6	12.5	12.5
Cycle Q Clear(g_c), s	0.7	0.0	1.1	4.9	0.0	15.6	0.1	22.4	22.4	12.6	12.5	12.5
Prop In Lane	1.00		0.80	1.00		0.98	1.00		0.40	1.00		0.05
Lane Grp Cap(c), veh/h	146	0	252	416	0	347	321	624	612	449	931	970
V/C Ratio(X)	0.12	0.00	0.10	0.31	0.00	0.90	0.01	0.84	0.84	0.92	0.46	0.46
Avail Cap(c_a), veh/h	465	0	319	613	0	388	661	854	837	477	931	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	30.4	24.9	0.0	31.8	17.3	24.8	24.8	19.1	12.4	12.4
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.2	0.0	19.8	0.0	4.8	4.9	22.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	2.0	0.0	7.7	0.0	9.4	9.3	7.2	4.4	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	0.0	30.4	25.1	0.0	51.6	17.3	29.6	29.7	41.2	12.7	12.7
LnGrp LOS	C	A	C	C	A	D	B	C	C	D	B	B
Approach Vol, veh/h		43			439			1037			1282	
Approach Delay, s/veh		30.2			43.9			29.6			21.9	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.7	34.2	11.6	17.7	5.4	48.6	6.4	22.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	16.0	40.0	16.0	16.0	16.0	40.0	16.0	20.0				
Max Q Clear Time (g_c+I1), s	14.6	24.4	6.9	3.1	2.1	14.5	2.7	17.6				
Green Ext Time (p_c), s	0.2	4.8	0.1	0.0	0.0	4.3	0.0	0.3				

Intersection Summary

HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
3: 51st Ave NE & 152nd St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	362	186	54	187	24	126	278	121	35	253	54
Future Volume (vph)	83	362	186	54	187	24	126	278	121	35	253	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		125	125		125	0		0	125		125
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		871			769			861			867	
Travel Time (s)		14.8			13.1			16.8			16.9	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	10%	1%	3%	6%	4%	0%	4%	3%	3%	0%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	25.0	25.0	10.0	25.0	25.0	25.0	25.0	25.0	10.0	25.0	25.0
Total Split (s)	10.0	25.0	25.0	10.0	25.0	25.0	25.0	25.0	25.0	10.0	35.0	35.0
Total Split (%)	14.3%	35.7%	35.7%	14.3%	35.7%	35.7%	35.7%	35.7%	35.7%	14.3%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None

Intersection Summary

Area Type: Other

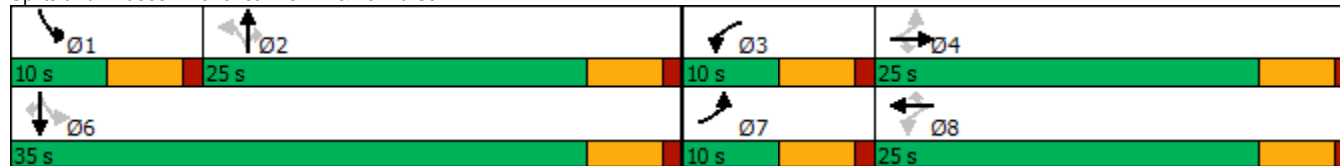
Cycle Length: 70

Actuated Cycle Length: 44.8

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: 51st Ave NE & 152nd St NE



HCM 6th Signalized Intersection Summary  
 3: 51st Ave NE & 152nd St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	362	186	54	187	24	126	278	121	35	253	54
Future Volume (veh/h)	83	362	186	54	187	24	126	278	121	35	253	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1885	1856	1811	1841	1900	1841	1856	1856	1900	1885	1870
Adj Flow Rate, veh/h	86	373	192	56	193	25	130	287	125	36	261	56
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	10	1	3	6	4	0	4	3	3	0	1	2
Cap, veh/h	451	793	344	361	714	325	411	449	378	333	740	620
Arrive On Green	0.07	0.22	0.22	0.06	0.20	0.20	0.24	0.24	0.24	0.04	0.39	0.39
Sat Flow, veh/h	1668	3582	1555	1725	3497	1590	1042	1856	1563	1810	1885	1579
Grp Volume(v), veh/h	86	373	192	56	193	25	130	287	125	36	261	56
Grp Sat Flow(s),veh/h/ln	1668	1791	1555	1725	1749	1590	1042	1856	1563	1810	1885	1579
Q Serve(g_s), s	1.8	4.1	5.0	1.1	2.1	0.6	4.9	6.3	3.0	0.6	4.4	1.0
Cycle Q Clear(g_c), s	1.8	4.1	5.0	1.1	2.1	0.6	4.9	6.3	3.0	0.6	4.4	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	451	793	344	361	714	325	411	449	378	333	740	620
V/C Ratio(X)	0.19	0.47	0.56	0.15	0.27	0.08	0.32	0.64	0.33	0.11	0.35	0.09
Avail Cap(c_a), veh/h	513	1578	685	455	1541	701	618	818	689	460	1246	1044
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	15.4	15.7	13.0	15.2	14.6	14.9	15.4	14.2	11.3	9.7	8.7
Incr Delay (d2), s/veh	0.2	0.4	1.4	0.2	0.2	0.1	0.4	1.5	0.5	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.4	1.6	0.4	0.7	0.2	1.0	2.4	0.9	0.2	1.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	15.8	17.1	13.2	15.4	14.7	15.3	16.9	14.7	11.4	10.0	8.7
LnGrp LOS	B	B	B	B	B	B	B	B	B	B	B	A
Approach Vol, veh/h		651			274			542			353	
Approach Delay, s/veh		15.8			14.9			16.0			10.0	
Approach LOS		B			B			B			A	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	6.8	16.0	7.5	15.0		22.8	8.3	14.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	20.0	5.0	20.0		30.0	5.0	20.0				
Max Q Clear Time (g_c+I1), s	2.6	8.3	3.1	7.0		6.4	3.8	4.1				
Green Ext Time (p_c), s	0.0	2.1	0.0	2.4		1.6	0.0	1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.6									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
4: Smokey Point Blvd & 136th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	234	158	199	244	88	111	595	202	184	593	266
Future Volume (vph)	208	234	158	199	244	88	111	595	202	184	593	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	225		0	275		0	175		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		178			861			811			837	
Travel Time (s)		3.5			16.8			13.8			14.3	
Confl. Peds. (#/hr)			1	1					1			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	6%	2%	2%	3%	2%	1%	2%	3%	3%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	10.0	34.0	34.0	10.0	12.0		10.0	35.0		10.0	12.0	
Total Split (s)	20.0	40.0	40.0	25.0	30.0		35.0	35.0		30.0	35.0	
Total Split (%)	14.8%	29.6%	29.6%	18.5%	22.2%		25.9%	25.9%		22.2%	25.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

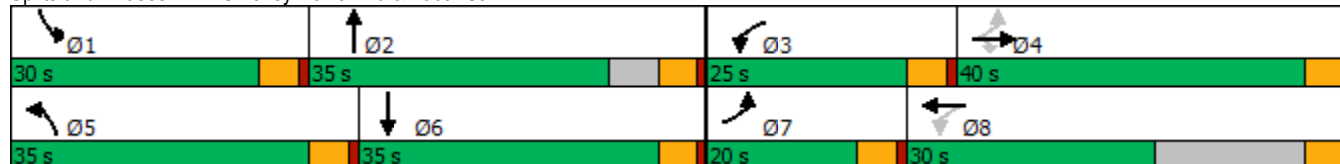
Cycle Length: 135

Actuated Cycle Length: 102.2

Natural Cycle: 90
























Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Smokey Point Blvd & 136th St NE



HCM 6th Signalized Intersection Summary  
 4: Smokey Point Blvd & 136th St NE

04/25/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	234	158	199	244	88	111	595	202	184	593	266
Future Volume (veh/h)	208	234	158	199	244	88	111	595	202	184	593	266
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1811	1870	1870	1856	1870	1885	1870	1856	1856
Adj Flow Rate, veh/h	221	249	168	212	260	94	118	633	215	196	631	283
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	2	6	2	2	3	2	1	2	3	3
Cap, veh/h	333	421	356	389	295	107	150	739	251	236	783	351
Arrive On Green	0.12	0.23	0.23	0.12	0.23	0.23	0.09	0.28	0.28	0.13	0.33	0.33
Sat Flow, veh/h	1795	1870	1583	1725	1311	474	1767	2603	883	1781	2366	1061
Grp Volume(v), veh/h	221	249	168	212	0	354	118	432	416	196	470	444
Grp Sat Flow(s),veh/h/ln	1795	1870	1583	1725	0	1784	1767	1777	1710	1781	1763	1665
Q Serve(g_s), s	7.7	9.9	7.6	7.6	0.0	15.9	5.4	19.1	19.1	8.9	20.2	20.2
Cycle Q Clear(g_c), s	7.7	9.9	7.6	7.6	0.0	15.9	5.4	19.1	19.1	8.9	20.2	20.2
Prop In Lane	1.00		1.00	1.00		0.27	1.00		0.52	1.00		0.64
Lane Grp Cap(c), veh/h	333	421	356	389	0	402	150	504	485	236	584	551
V/C Ratio(X)	0.66	0.59	0.47	0.54	0.00	0.88	0.78	0.86	0.86	0.83	0.81	0.81
Avail Cap(c_a), veh/h	446	788	667	602	0	537	639	642	618	536	637	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	28.8	27.9	21.2	0.0	31.1	37.2	28.1	28.1	35.1	25.3	25.3
Incr Delay (d2), s/veh	0.9	0.5	0.4	0.4	0.0	10.3	3.4	7.6	8.0	2.9	6.2	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.3	2.8	3.0	0.0	7.7	2.4	8.6	8.3	3.9	8.7	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	29.3	28.3	21.6	0.0	41.3	40.6	35.7	36.1	38.0	31.5	31.9
LnGrp LOS	C	C	C	C	A	D	D	D	D	D	C	C
Approach Vol, veh/h		638			566			966			1110	
Approach Delay, s/veh		26.9			34.0			36.5			32.8	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	28.6	14.8	23.7	12.1	32.5	14.8	23.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	25.0	30.0	20.0	35.0	30.0	30.0	15.0	25.0				
Max Q Clear Time (g_c+I1), s	10.9	21.1	9.6	11.9	7.4	22.2	9.7	17.9				
Green Ext Time (p_c), s	0.2	2.4	0.2	1.1	0.1	2.4	0.1	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			32.9									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
5: State Ave & 128th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	17	6	23	97	1	39	2	840	136	62	864	0
Future Volume (vph)	17	6	23	97	1	39	2	840	136	62	864	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	200		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40				40
Link Distance (ft)		476			540			714				620
Travel Time (s)		13.0			14.7			12.2				10.6
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	6%	0%	0%	1%	0%	0%	0%	2%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	13.0	13.0		25.0	25.0		10.0	17.0		10.0	22.0	
Total Split (s)	35.0	35.0		25.0	25.0		25.0	55.0		25.0	55.0	
Total Split (%)	25.0%	25.0%		17.9%	17.9%		17.9%	39.3%		17.9%	39.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other

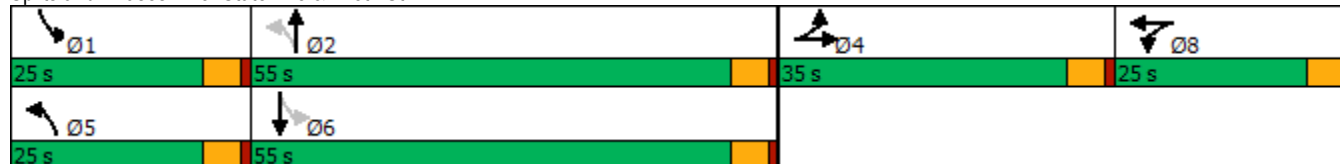
Cycle Length: 140

Actuated Cycle Length: 76.1

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: State Ave & 128th St NE



# HCM 6th Signalized Intersection Summary

## 5: State Ave & 128th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↗		↗	↕↗	
Traffic Volume (veh/h)	17	6	23	97	1	39	2	840	136	62	864	0
Future Volume (veh/h)	17	6	23	97	1	39	2	840	136	62	864	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1900	1885	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	18	6	24	103	1	41	2	894	145	66	919	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	0	1	0	0	0	2	0	0	2	0
Cap, veh/h	49	16	65	138	1	55	294	1204	195	314	1594	0
Arrive On Green	0.08	0.08	0.08	0.11	0.11	0.11	0.00	0.39	0.39	0.06	0.45	0.00
Sat Flow, veh/h	643	214	857	1242	12	495	1810	3060	496	1810	3647	0
Grp Volume(v), veh/h	48	0	0	145	0	0	2	519	520	66	919	0
Grp Sat Flow(s),veh/h/ln	1714	0	0	1749	0	0	1810	1777	1780	1810	1777	0
Q Serve(g_s), s	1.5	0.0	0.0	4.4	0.0	0.0	0.0	13.8	13.8	1.1	10.6	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	4.4	0.0	0.0	0.0	13.8	13.8	1.1	10.6	0.0
Prop In Lane	0.37		0.50	0.71		0.28	1.00		0.28	1.00		0.00
Lane Grp Cap(c), veh/h	129	0	0	194	0	0	294	699	700	314	1594	0
V/C Ratio(X)	0.37	0.00	0.00	0.75	0.00	0.00	0.01	0.74	0.74	0.21	0.58	0.00
Avail Cap(c_a), veh/h	932	0	0	634	0	0	944	1610	1612	865	3220	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.3	0.0	0.0	23.8	0.0	0.0	10.6	14.3	14.3	10.6	11.3	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	2.2	0.0	0.0	0.0	1.2	1.2	0.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.8	0.0	0.0	0.0	4.6	4.6	0.4	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.6	0.0	0.0	26.0	0.0	0.0	10.6	15.5	15.5	11.0	11.6	0.0
LnGrp LOS	C	A	A	C	A	A	B	B	B	B	B	A
Approach Vol, veh/h		48			145			1041			985	
Approach Delay, s/veh		25.6			26.0			15.5			11.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	26.7		9.2	5.2	29.7		11.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	50.0		30.0	20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s	3.1	15.8		3.5	2.0	12.6		6.4				
Green Ext Time (p_c), s	0.2	5.9		0.2	0.0	5.8		0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	14.6											
HCM 6th LOS	B											



Lanes, Volumes, Timings  
6: State Ave & 116th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	508	199	413	94	155	46	320	405	70	66	398	452
Future Volume (vph)	508	199	413	94	155	46	320	405	70	66	398	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		300	175		0	450		0	450		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		790			763			665			684	
Travel Time (s)		21.5			20.8			11.3			11.7	
Confl. Peds. (#/hr)			1			4			2			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	2%	1%	3%	0%	0%	2%	2%	1%	0%	1%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4									6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	5.0	5.0		7.0	10.0		5.0	10.0	10.0
Minimum Split (s)	31.5	31.5	12.0	39.5	39.5		12.0	30.0		10.0	15.0	31.5
Total Split (s)	39.5	39.5	25.0	24.5	24.5		25.0	25.0		25.0	25.0	39.5
Total Split (%)	34.6%	34.6%	21.9%	21.5%	21.5%		21.9%	21.9%		21.9%	21.9%	34.6%
Yellow Time (s)	3.5	3.5	4.0	3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	5.0	4.5	4.5		5.0	5.0		5.0	5.0	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	None

Intersection Summary

Area Type: Other

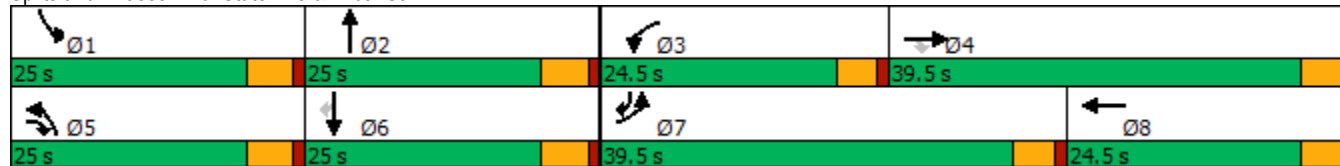
Cycle Length: 114

Actuated Cycle Length: 93.6

Natural Cycle: 135

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: State Ave & 116th St NE



# HCM 6th Signalized Intersection Summary

## 6: State Ave & 116th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗↘	↑	↗	↘	↗↘		↗	↗↘		↗	↑	↗
Traffic Volume (veh/h)	508	199	413	94	155	46	320	405	70	66	398	452
Future Volume (veh/h)	508	199	413	94	155	46	320	405	70	66	398	452
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1885	1856	1900	1900	1870	1870	1885	1900	1885	1870
Adj Flow Rate, veh/h	540	212	439	100	165	49	340	431	74	70	423	481
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	1	3	0	0	2	2	1	0	1	2
Cap, veh/h	658	473	740	141	388	111	376	1198	204	91	441	676
Arrive On Green	0.19	0.25	0.25	0.08	0.14	0.14	0.21	0.39	0.39	0.05	0.23	0.23
Sat Flow, veh/h	3428	1870	1594	1767	2760	794	1781	3035	518	1810	1885	1585
Grp Volume(v), veh/h	540	212	439	100	106	108	340	251	254	70	423	481
Grp Sat Flow(s),veh/h/ln	1714	1870	1594	1767	1805	1749	1781	1777	1776	1810	1885	1585
Q Serve(g_s), s	12.9	8.2	17.4	4.7	4.6	4.8	15.9	8.5	8.6	3.3	18.9	20.0
Cycle Q Clear(g_c), s	12.9	8.2	17.4	4.7	4.6	4.8	15.9	8.5	8.6	3.3	18.9	20.0
Prop In Lane	1.00		1.00	1.00		0.45	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	658	473	740	141	253	246	376	701	701	91	441	676
V/C Ratio(X)	0.82	0.45	0.59	0.71	0.42	0.44	0.90	0.36	0.36	0.77	0.96	0.71
Avail Cap(c_a), veh/h	1405	766	990	414	423	409	417	701	701	424	441	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.1	26.9	16.9	38.3	33.5	33.6	32.9	18.2	18.3	40.1	32.3	20.2
Incr Delay (d2), s/veh	2.0	0.5	0.6	2.5	0.4	0.5	20.3	0.2	0.2	5.0	32.2	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	3.7	6.2	2.1	2.0	2.1	8.6	3.3	3.3	1.5	12.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	27.4	17.5	40.8	33.9	34.1	53.2	18.5	18.5	45.0	64.5	23.5
LnGrp LOS	D	C	B	D	C	C	D	B	B	D	E	C
Approach Vol, veh/h		1191			314			845			974	
Approach Delay, s/veh		27.2			36.2			32.4			42.8	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	38.7	11.3	26.1	23.0	25.0	20.9	16.5				
Change Period (Y+Rc), s	5.0	5.0	4.5	4.5	5.0	5.0	4.5	4.5				
Max Green Setting (Gmax), s	20.0	20.0	20.0	35.0	20.0	20.0	35.0	20.0				
Max Q Clear Time (g_c+I1), s	5.3	10.6	6.7	19.4	17.9	22.0	14.9	6.8				
Green Ext Time (p_c), s	0.1	1.6	0.1	2.1	0.1	0.0	1.5	0.6				

### Intersection Summary

HCM 6th Ctrl Delay	34.0
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.  
 User approved changes to right turn type.

Lanes, Volumes, Timings  
7: 51st Ave NE & 136th St NE

04/25/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	0	380	0	0	4	253	309	0	0	300	103
Future Volume (vph)	252	0	380	0	0	4	253	309	0	0	300	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	175		0	0		75
Storage Lanes	0		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		451			363			572			389	
Travel Time (s)		8.8			7.1			11.1			7.6	
Confl. Peds. (#/hr)			1	1		1	1					1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	1%	0%	0%	75%	4%	3%	0%	0%	2%	0%
Shared Lane Traffic (%)												
Turn Type	Prot		pm+ov			Perm	pm+pt	NA			NA	pm+ov
Protected Phases	4		5	8	8		5	2			6	4
Permitted Phases			4			8	2					6
Detector Phase	4		5	8	8	8	5	2			6	4
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	5.0
Minimum Split (s)	24.0		10.0	12.0	12.0	12.0	10.0	23.0			26.0	24.0
Total Split (s)	25.0		20.0	25.0	25.0	25.0	20.0	30.0			25.0	25.0
Total Split (%)	26.3%		21.1%	26.3%	26.3%	26.3%	21.1%	31.6%			26.3%	26.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None		None	None	None	None	None	Min			Min	None

Intersection Summary

Area Type: Other

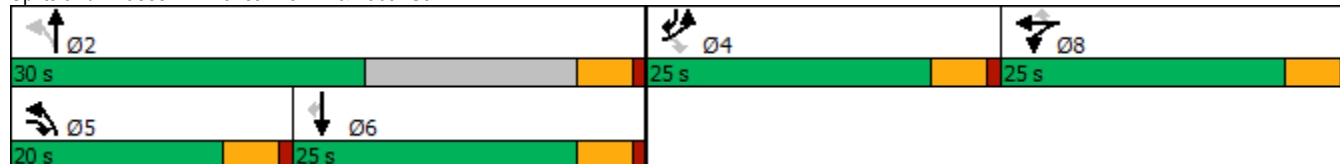
Cycle Length: 95

Actuated Cycle Length: 59.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 51st Ave NE & 136th St NE



HCM 6th Signalized Intersection Summary  
 7: 51st Ave NE & 136th St NE

04/25/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	0	380	0	0	4	253	309	0	0	300	103
Future Volume (veh/h)	252	0	380	0	0	4	253	309	0	0	300	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	0	1885	1900	1900	788	1841	1856	0	0	1870	1900
Adj Flow Rate, veh/h	265	0	400	0	0	4	266	325	0	0	316	108
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	75	4	3	0	0	2	0
Cap, veh/h	0	0	0	0	15	5	667	1147	0	0	504	433
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.01	0.16	0.62	0.00	0.00	0.27	0.27
Sat Flow, veh/h		0		0	1900	667	1753	1856	0	0	1870	1607
Grp Volume(v), veh/h		0.0		0	0	4	266	325	0	0	316	108
Grp Sat Flow(s),veh/h/ln				0	1900	667	1753	1856	0	0	1870	1607
Q Serve(g_s), s				0.0	0.0	0.2	2.4	2.2	0.0	0.0	4.0	1.4
Cycle Q Clear(g_c), s				0.0	0.0	0.2	2.4	2.2	0.0	0.0	4.0	1.4
Prop In Lane				0.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	15	5	667	1147	0	0	504	433
V/C Ratio(X)				0.00	0.00	0.78	0.40	0.28	0.00	0.00	0.63	0.25
Avail Cap(c_a), veh/h				0	1423	499	1369	1737	0	0	1400	1203
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				0.0	0.0	13.2	4.8	2.4	0.0	0.0	8.6	7.6
Incr Delay (d2), s/veh				0.0	0.0	100.3	0.1	0.0	0.0	0.0	0.5	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.2	0.2	0.0	0.0	0.0	1.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	113.6	4.9	2.4	0.0	0.0	9.1	7.7
LnGrp LOS				A	A	F	A	A	A	A	A	A
Approach Vol, veh/h					4			591			424	
Approach Delay, s/veh					113.6			3.5			8.7	
Approach LOS					F			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		21.5			9.3	12.2		5.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		25.0			15.0	20.0		20.0				
Max Q Clear Time (g_c+I1), s		4.2			4.4	6.0		2.2				
Green Ext Time (p_c), s		1.1			0.3	1.1		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay					6.1							
HCM 6th LOS					A							
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
 8: 51st Ave NE & 132nd St NE

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	208	376	57	239	415
Future Volume (vph)	61	208	376	57	239	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	35		35			35
Link Distance (ft)	568		444			412
Travel Time (s)	11.1		8.6			8.0
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles (%)	0%	2%	3%	2%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	23.5
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	61	208	376	57	239	415
Future Vol, veh/h	61	208	376	57	239	415
Peak Hour Factor	0.92	0.92	0.91	0.91	0.88	0.88
Heavy Vehicles, %	0	2	3	2	2	1
Mvmt Flow	66	226	413	63	272	472
Number of Lanes	1	0	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	15.5	26.3	24.8
HCM LOS	C	D	C

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	23%	100%	0%
Vol Thru, %	87%	0%	0%	100%
Vol Right, %	13%	77%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	433	269	239	415
LT Vol	0	61	239	0
Through Vol	376	0	0	415
RT Vol	57	208	0	0
Lane Flow Rate	476	292	272	472
Geometry Grp	5	2	7	7
Degree of Util (X)	0.775	0.504	0.504	0.806
Departure Headway (Hd)	5.86	6.2	6.679	6.153
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	614	579	538	585
Service Time	3.919	4.266	4.445	3.919
HCM Lane V/C Ratio	0.775	0.504	0.506	0.807
HCM Control Delay	26.3	15.5	16.1	29.8
HCM Lane LOS	D	C	C	D
HCM 95th-tile Q	7.3	2.8	2.8	8

Lanes, Volumes, Timings  
9: 51st Ave NE & 122nd PI NE

04/25/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	37	137	109	404	427	37
Future Volume (vph)	37	137	109	404	427	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	4%			-6%	-5%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	25			35	35	
Link Distance (ft)	560			821	628	
Travel Time (s)	15.3			16.0	12.2	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	3%	0%	3%	1%	1%	3%
Shared Lane Traffic (%)						
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases			2			
Detector Phase	7		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5		9.5	9.5	21.5	
Total Split (s)	9.5		14.5	24.5	24.5	
Total Split (%)	19.6%		29.9%	50.5%	50.5%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	None	None	

Intersection Summary

Area Type: Other

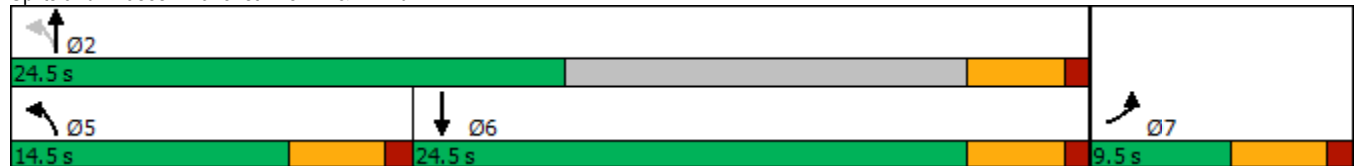
Cycle Length: 48.5

Actuated Cycle Length: 35

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 51st Ave NE & 122nd PI NE



HCM 6th Signalized Intersection Summary  
 9: 51st Ave NE & 122nd PI NE

04/25/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	137	109	404	427	37
Future Volume (veh/h)	37	137	109	404	427	37
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00			1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1761	1806	2091	2121	2082	2052
Adj Flow Rate, veh/h	43	157	125	464	491	43
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	0	3	1	1	3
Cap, veh/h	48	175	540	1251	672	59
Arrive On Green	0.15	0.15	0.10	0.59	0.36	0.36
Sat Flow, veh/h	327	1195	1991	2121	1887	165
Grp Volume(v), veh/h	201	0	125	464	0	534
Grp Sat Flow(s),veh/h/ln	1530	0	1991	2121	0	2052
Q Serve(g_s), s	4.4	0.0	1.1	3.9	0.0	7.7
Cycle Q Clear(g_c), s	4.4	0.0	1.1	3.9	0.0	7.7
Prop In Lane	0.21	0.78	1.00			0.08
Lane Grp Cap(c), veh/h	224	0	540	1251	0	731
V/C Ratio(X)	0.90	0.00	0.23	0.37	0.00	0.73
Avail Cap(c_a), veh/h	224	0	921	1251	0	1202
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	5.8	3.7	0.0	9.6
Incr Delay (d2), s/veh	33.8	0.0	0.1	0.2	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.2	0.5	0.0	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.2	0.0	5.9	3.9	0.0	11.0
LnGrp LOS	D	A	A	A	A	B
Approach Vol, veh/h	201			589	534	
Approach Delay, s/veh	48.2			4.3	11.0	
Approach LOS	D			A	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		24.6		9.5	8.0	16.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0		5.0	10.0	20.0
Max Q Clear Time (g_c+I1), s		5.9		6.4	3.1	9.7
Green Ext Time (p_c), s		2.4		0.0	0.1	2.4
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			13.7			
HCM 6th LOS			B			
<b>Notes</b>						
User approved volume balancing among the lanes for turning movement.						



Lanes, Volumes, Timings  
 10: (1) Site Access & 152nd St NE

04/25/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	589	4	18	404	14	67
Future Volume (vph)	589	4	18	404	14	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	35			35	30	
Link Distance (ft)	401			416	332	
Travel Time (s)	7.8			8.1	7.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	25%	22%	2%	7%	8%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	589	4	18	404	14	67
Future Vol, veh/h	589	4	18	404	14	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	25	22	2	7	8
Mvmt Flow	640	4	20	439	15	73

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	644	0	1121
Stage 1	-	-	-	-	642
Stage 2	-	-	-	-	479
Critical Hdwy	-	-	4.32	-	6.47
Critical Hdwy Stg 1	-	-	-	-	5.47
Critical Hdwy Stg 2	-	-	-	-	5.47
Follow-up Hdwy	-	-	2.398	-	3.563
Pot Cap-1 Maneuver	-	-	852	-	223
Stage 1	-	-	-	-	515
Stage 2	-	-	-	-	613
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	852	-	216
Mov Cap-2 Maneuver	-	-	-	-	216
Stage 1	-	-	-	-	515
Stage 2	-	-	-	-	594

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	17
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	387	-	-	852	-
HCM Lane V/C Ratio	0.228	-	-	0.023	-
HCM Control Delay (s)	17	-	-	9.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Lanes, Volumes, Timings  
 11: Smokey Point Blvd & (2) Site Access

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	13	973	5	4	940
Future Volume (vph)	22	13	973	5	4	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	457		472			472
Travel Time (s)	10.4		8.0			8.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	8%	2%	20%	25%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 11: Smokey Point Blvd & (2) Site Access

04/25/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	22	13	973	5	4	940
Future Vol, veh/h	22	13	973	5	4	940
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	8	2	20	25	2
Mvmt Flow	24	14	1058	5	4	1022

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1580	532	0	0	1063
Stage 1	1061	-	-	-	-
Stage 2	519	-	-	-	-
Critical Hdwy	6.98	7.06	-	-	4.6
Critical Hdwy Stg 1	5.98	-	-	-	-
Critical Hdwy Stg 2	5.98	-	-	-	-
Follow-up Hdwy	3.59	3.38	-	-	2.45
Pot Cap-1 Maneuver	93	477	-	-	531
Stage 1	279	-	-	-	-
Stage 2	542	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	92	477	-	-	531
Mov Cap-2 Maneuver	204	-	-	-	-
Stage 1	279	-	-	-	-
Stage 2	538	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	259	531	-
HCM Lane V/C Ratio	-	-	0.147	0.008	-
HCM Control Delay (s)	-	-	21.3	11.8	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Lanes, Volumes, Timings  
 12: Smokey Point Blvd & (3) Site Access

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	41	13	965	11	4	958
Future Volume (vph)	41	13	965	11	4	958
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	453		542			472
Travel Time (s)	10.3		9.2			8.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	8%	2%	18%	25%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 12: Smokey Point Blvd & (3) Site Access

04/25/2023

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕↕		↔	↕↕
Traffic Vol, veh/h	41	13	965	11	4	958
Future Vol, veh/h	41	13	965	11	4	958
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	8	2	18	25	2
Mvmt Flow	45	14	1049	12	4	1041

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1584	531	0	0	1061
Stage 1	1055	-	-	-	-
Stage 2	529	-	-	-	-
Critical Hdwy	6.94	7.06	-	-	4.6
Critical Hdwy Stg 1	5.94	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-
Follow-up Hdwy	3.57	3.38	-	-	2.45
Pot Cap-1 Maneuver	94	477	-	-	532
Stage 1	285	-	-	-	-
Stage 2	541	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	93	477	-	-	532
Mov Cap-2 Maneuver	207	-	-	-	-
Stage 1	285	-	-	-	-
Stage 2	537	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	240	532	-
HCM Lane V/C Ratio	-	-	0.245	0.008	-
HCM Control Delay (s)	-	-	24.8	11.8	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.9	0	-

Lanes, Volumes, Timings  
 13: Smokey Point Blvd & (4) Site Access

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	13	963	6	2	997
Future Volume (vph)	22	13	963	6	2	997
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	398		91			542
Travel Time (s)	9.0		1.6			9.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	8%	2%	17%	0%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 13: Smokey Point Blvd & (4) Site Access

04/25/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	↕
Traffic Vol, veh/h	22	13	963	6	2	997
Future Vol, veh/h	22	13	963	6	2	997
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	8	2	17	0	2
Mvmt Flow	24	14	1047	7	2	1084

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1597	527	0	0	1054
Stage 1	1051	-	-	-	-
Stage 2	546	-	-	-	-
Critical Hdwy	6.98	7.06	-	-	4.1
Critical Hdwy Stg 1	5.98	-	-	-	-
Critical Hdwy Stg 2	5.98	-	-	-	-
Follow-up Hdwy	3.59	3.38	-	-	2.2
Pot Cap-1 Maneuver	91	480	-	-	668
Stage 1	282	-	-	-	-
Stage 2	525	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	91	480	-	-	668
Mov Cap-2 Maneuver	204	-	-	-	-
Stage 1	282	-	-	-	-
Stage 2	523	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	259	668	-
HCM Lane V/C Ratio	-	-	0.147	0.003	-
HCM Control Delay (s)	-	-	21.3	10.4	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-



Lanes, Volumes, Timings  
 14: Smokey Point Blvd & (5) Site Access

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	22	947	5	6	1013
Future Volume (vph)	16	22	947	5	6	1013
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	384		291			91
Travel Time (s)	8.7		5.0			1.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	9%	2%	20%	17%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
 14: Smokey Point Blvd & (5) Site Access

04/25/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT		T	TT
Traffic Vol, veh/h	16	22	947	5	6	1013
Future Vol, veh/h	16	22	947	5	6	1013
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	9	2	20	17	3
Mvmt Flow	17	24	1029	5	7	1101

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1597	517	0	0	1034	0
Stage 1	1032	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.92	7.08	-	-	4.44	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.56	3.39	-	-	2.37	-
Pot Cap-1 Maneuver	93	485	-	-	585	-
Stage 1	296	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	92	485	-	-	585	-
Mov Cap-2 Maneuver	210	-	-	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	515	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.2	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	313	585	-
HCM Lane V/C Ratio	-	-	0.132	0.011	-
HCM Control Delay (s)	-	-	18.2	11.2	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Lanes, Volumes, Timings  
 15: Smokey Point Blvd & (6) Site Access

04/25/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	9	943	1	2	1027
Future Volume (vph)	6	9	943	1	2	1027
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	25	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	30		40			40
Link Distance (ft)	364		519			291
Travel Time (s)	8.3		8.8			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	11%	2%	0%	0%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other  
 Control Type: Unsignalized

HCM 6th TWSC  
15: Smokey Point Blvd & (6) Site Access

04/25/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕↔		↔	↕↕
Traffic Vol, veh/h	6	9	943	1	2	1027
Future Vol, veh/h	6	9	943	1	2	1027
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	25	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	11	2	0	0	3
Mvmt Flow	7	10	1025	1	2	1116

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1588	513	0	0	1026	0
Stage 1	1026	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.8	7.12	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.41	-	-	2.2	-
Pot Cap-1 Maneuver	101	483	-	-	685	-
Stage 1	311	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	101	483	-	-	685	-
Mov Cap-2 Maneuver	222	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	538	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	329	685	-
HCM Lane V/C Ratio	-	-	0.05	0.003	-
HCM Control Delay (s)	-	-	16.5	10.3	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

# Appendix C

## Trip Generation Calculations

# Undi Commerce Park

## Weekday Trip Generation Estimate

Land Use	Size / Units	ITE LUC <sup>2</sup>	Trip Rate <sup>1</sup>	Directional Split <sup>1</sup>		Vehicle Trip Generation		
				Enter	Exit	Enter	Exit	Total
<b>DAILY</b>								
<b>Proposed Uses:</b>								
Industrial Park	815,484 GFA	130	3.37	50%	50%	1,374	1,374	2,748
<b>Less Existing Use:</b>								
Office	7,560 SF	710	EQN	50%	50%	-44	-43	-87
<b>Gross Daily Trips Generated =</b>						1,374	1,374	2,748
<i>Less Existing Trips =</i>						-44	-43	-87
<b>Total Proposed Net Daily Trips =</b>						<b>1,330</b>	<b>1,331</b>	<b>2,661</b>
<b>AM PEAK HOUR</b>								
<b>Proposed Uses:</b>								
Industrial Park	815,484 GFA	130	0.40	81%	19%	264	62	326
<b>Less Existing Use:</b>								
Office	7,560 SF	710	1.16	86%	14%	-8	-1	-9
<b>Gross AM Peak Hour Trips Generated =</b>						264	62	326
<i>Less Existing Trips =</i>						-8	-1	-9
<b>Total Proposed Net AM Peak Hour Trips =</b>						<b>256</b>	<b>61</b>	<b>317</b>
<b>PM PEAK HOUR</b>								
<b>Proposed Uses:</b>								
Industrial Park	815,484 GFA	130	0.40	21%	79%	68	258	326
<b>Less Existing Use:</b>								
Office	7,560 SF	710	EQN	16%	84%	-2	-8	-10
<b>Gross PM Peak Hour Trips Generated =</b>						68	258	326
<i>Less Existing Trips =</i>						-2	-8	-10
<b>Total Proposed Net PM Peak Hour Trips =</b>						<b>66</b>	<b>250</b>	<b>316</b>

**Notes:**

<sup>1</sup> GFA = Gross Floor Area.

<sup>2</sup> Land Use Code and trip rates based on ITE *Trip Generation Manual*, 10th Edition, 2017.

<sup>3</sup> Truck trip rates based on ITE *Trip Generation Manual*, 10th Edition Supplement, 2020.

# Appendix D

City of Marysville Model Distribution

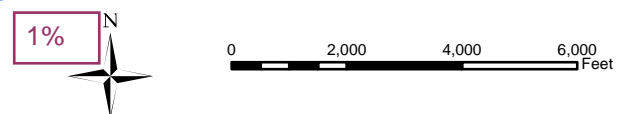
# MIC SOUTH - EXISTING



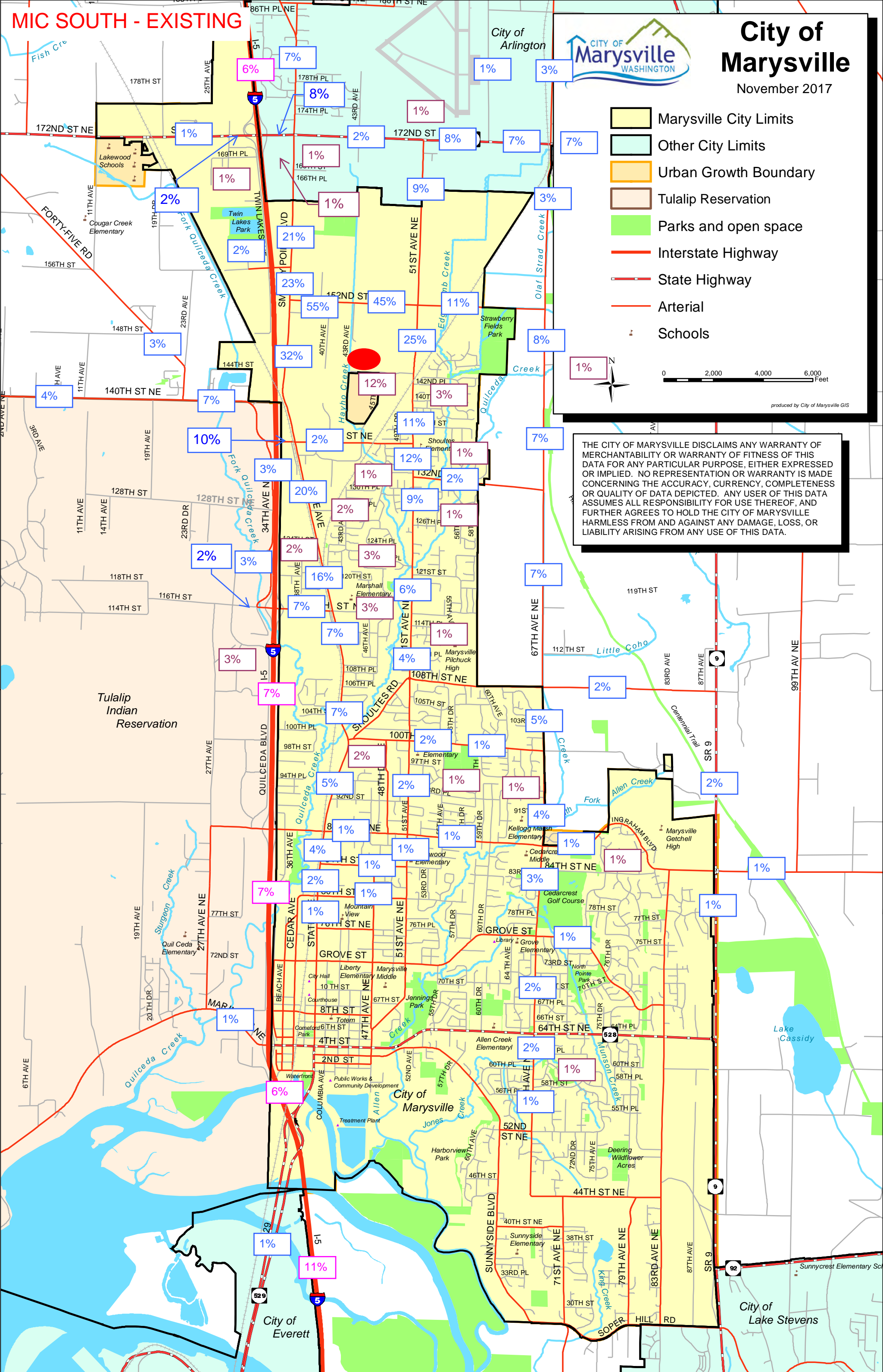
# City of Marysville

November 2017

- Marysville City Limits
- Other City Limits
- Urban Growth Boundary
- Tulalip Reservation
- Parks and open space
- Interstate Highway
- State Highway
- Arterial
- Schools



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Tulalip Indian Reservation

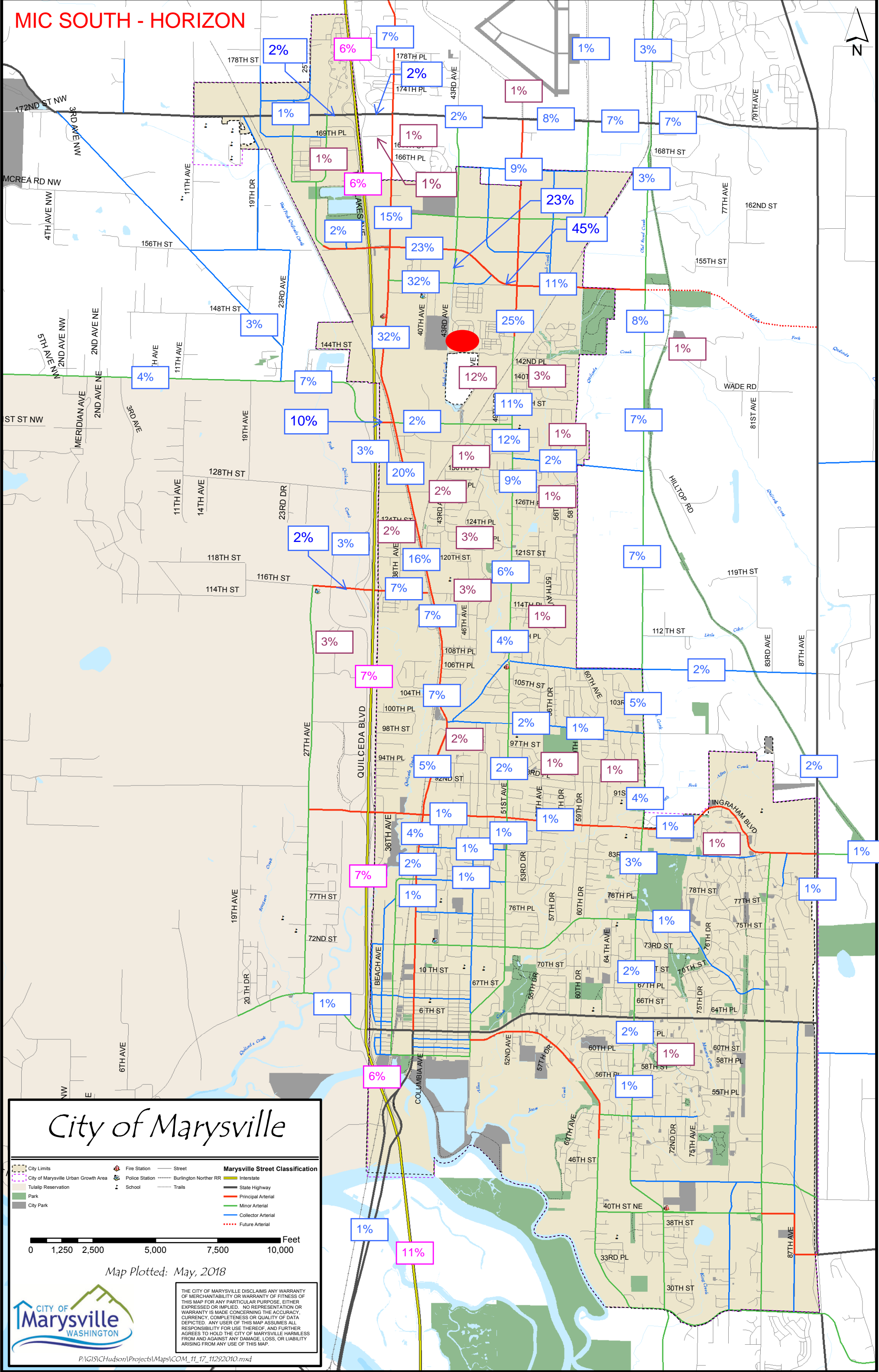
City of Marysville

City of Everett

City of Lake Stevens



# MIC SOUTH - HORIZON



## City of Marysville

			<b>Marysville Street Classification</b>

0 1,250 2,500 5,000 7,500 10,000 Feet

Map Plotted: May, 2018

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# Appendix E

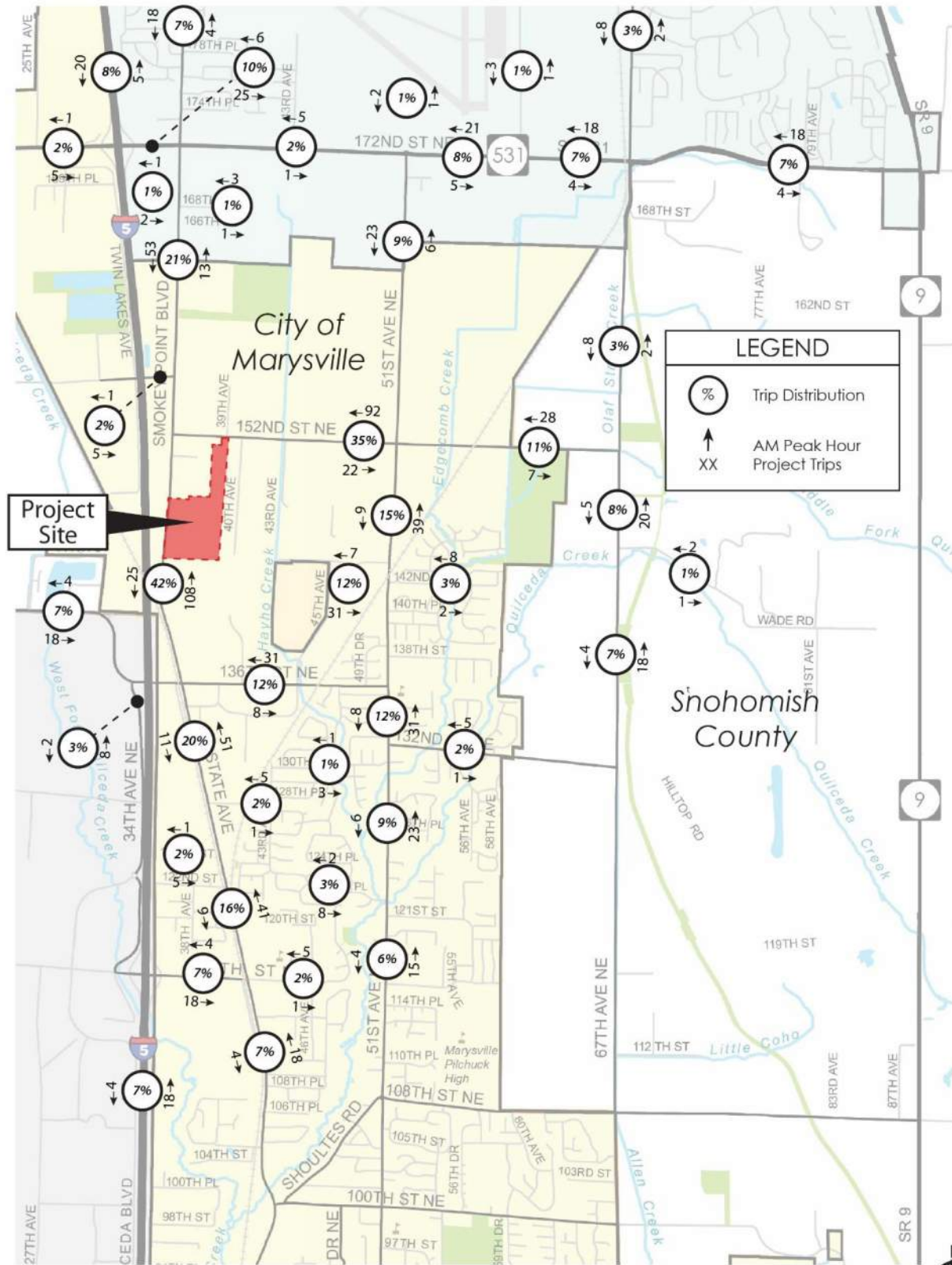
## Snohomish County Key Intersection Impacts

**Table E1**  
**AM Peak Hour Trip Assignment at Snohomish County Key Intersections**

Key Intersection ID#	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
67	0	3	0	0	1	0	0	0	0	2	0	0
71	0	9	0	0	2	2	0	0	0	9	0	0
75	0	18	0	2	4	0	0	0	8	0	0	0
81	0	0	0	0	0	5	0	26	0	1	7	0
82	0	0	0	0	0	5	0	13	0	1	3	0
83	0	0	0	0	0	0	0	18	0	0	4	0
84	2	0	5	0	0	0	20	0	0	0	0	8
85	0	4	0	0	18	0	0	2	0	0	8	0
98	0	0	0	0	0	2	0	3	0	0	1	0
296	0	0	1	0	0	0	5	0	0	0	0	0
298	8	0	0	0	0	0	0	0	0	0	0	2
300	0	0	0	5	0	0	0	0	1	0	0	0
370	0	0	0	0	3	0	0	0	0	0	0	0
466	1	0	0	0	0	0	0	0	0	0	0	5
475	0	0	9	0	0	0	2	0	0	0	0	0

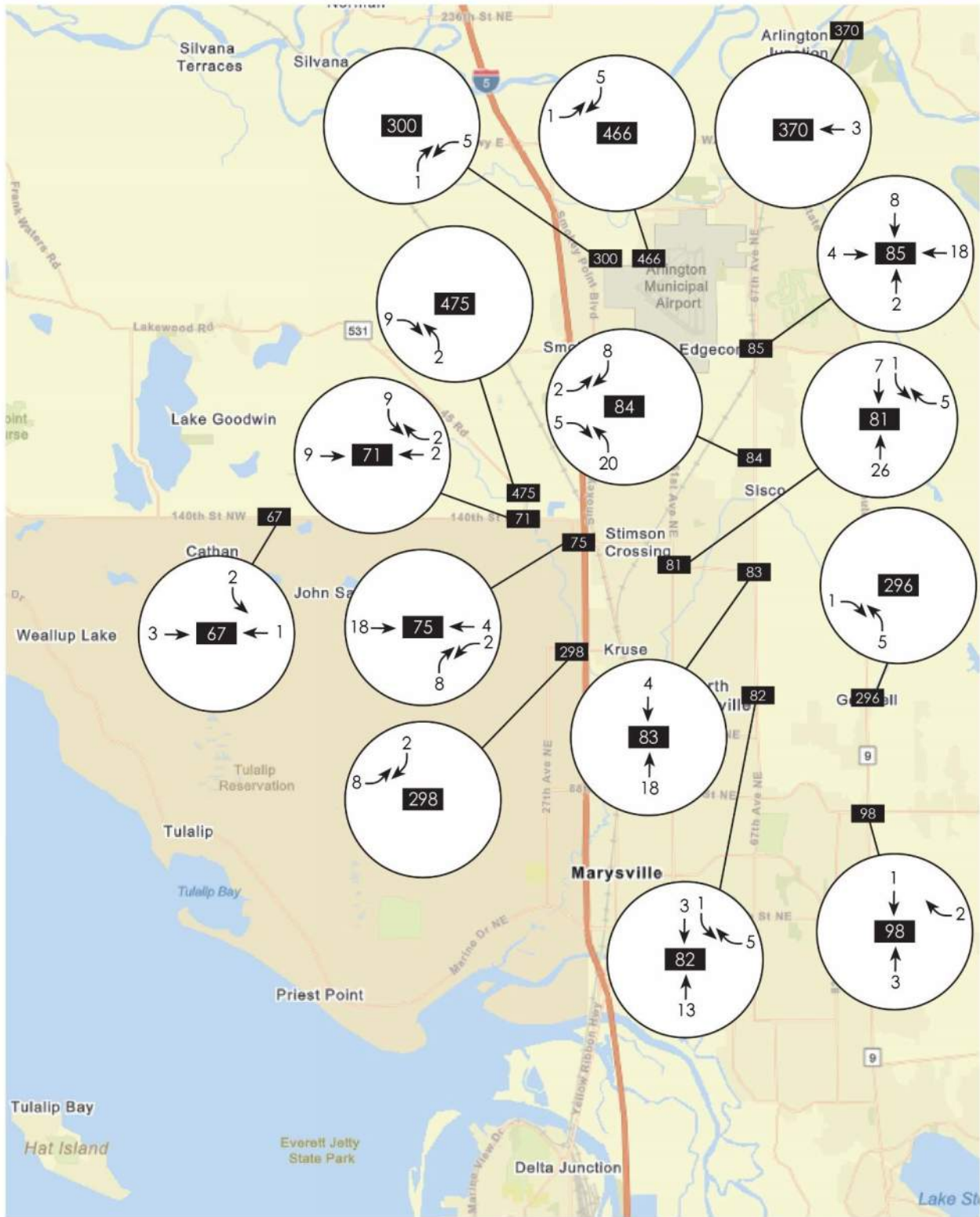
**Table E2**  
**PM Peak Hour Trip Assignment at Snohomish County Key Intersections**

Key Intersection ID#	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
67	0	1	0	0	3	2	0	0	0	1	0	0
71	0	3	0	0	10	7	0	0	0	2	0	0
75	0	5	0	7	17	0	0	0	2	0	0	0
81	0	0	0	0	0	1	0	7	0	5	25	0
82	0	0	0	0	0	1	0	4	0	5	12	0
83	0	0	0	0	0	0	0	5	0	0	17	0
84	8	0	20	0	0	0	6	0	0	0	0	2
85	0	17	0	0	4	0	0	8	0	0	2	0
98	0	0	0	0	0	0	0	1	0	2	3	0
296	0	0	5	0	0	0	1	0	0	0	0	0
298	2	0	0	0	0	0	0	0	0	0	0	7
300	0	0	0	1	0	0	0	0	4	0	0	0
466	4	0	0	0	0	0	0	0	0	0	0	1
475	0	0	2	0	0	0	7	0	0	0	0	0



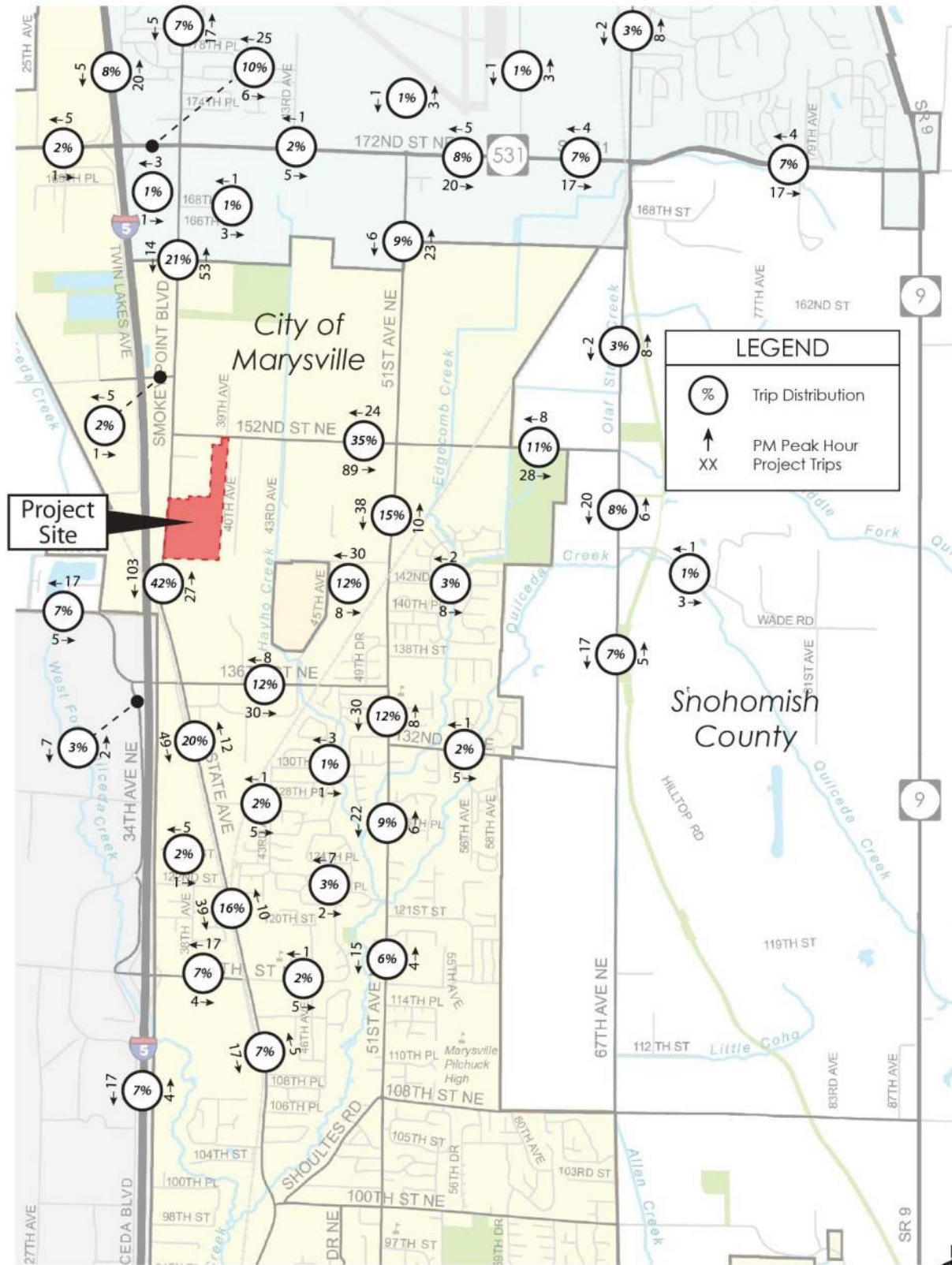
Appendix E1: AM Peak Hour Project Trip Distribution and Assignment





**Appendx E2:** AM Peak Hour Project Trip Assignment at Snohomish County Key Intersections

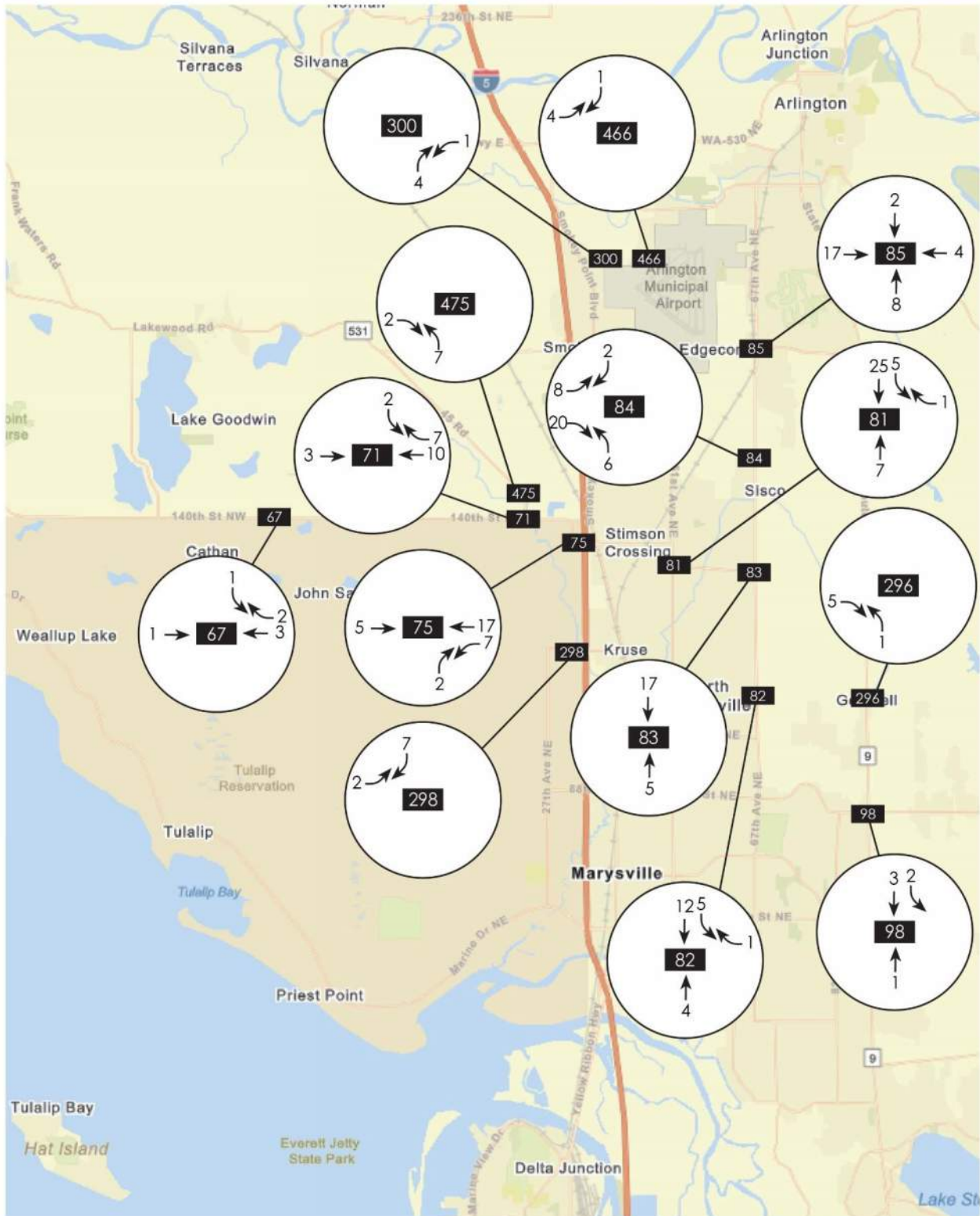




**Appendix E3: PM Peak Hour Project Trip Distribution and Assignment**

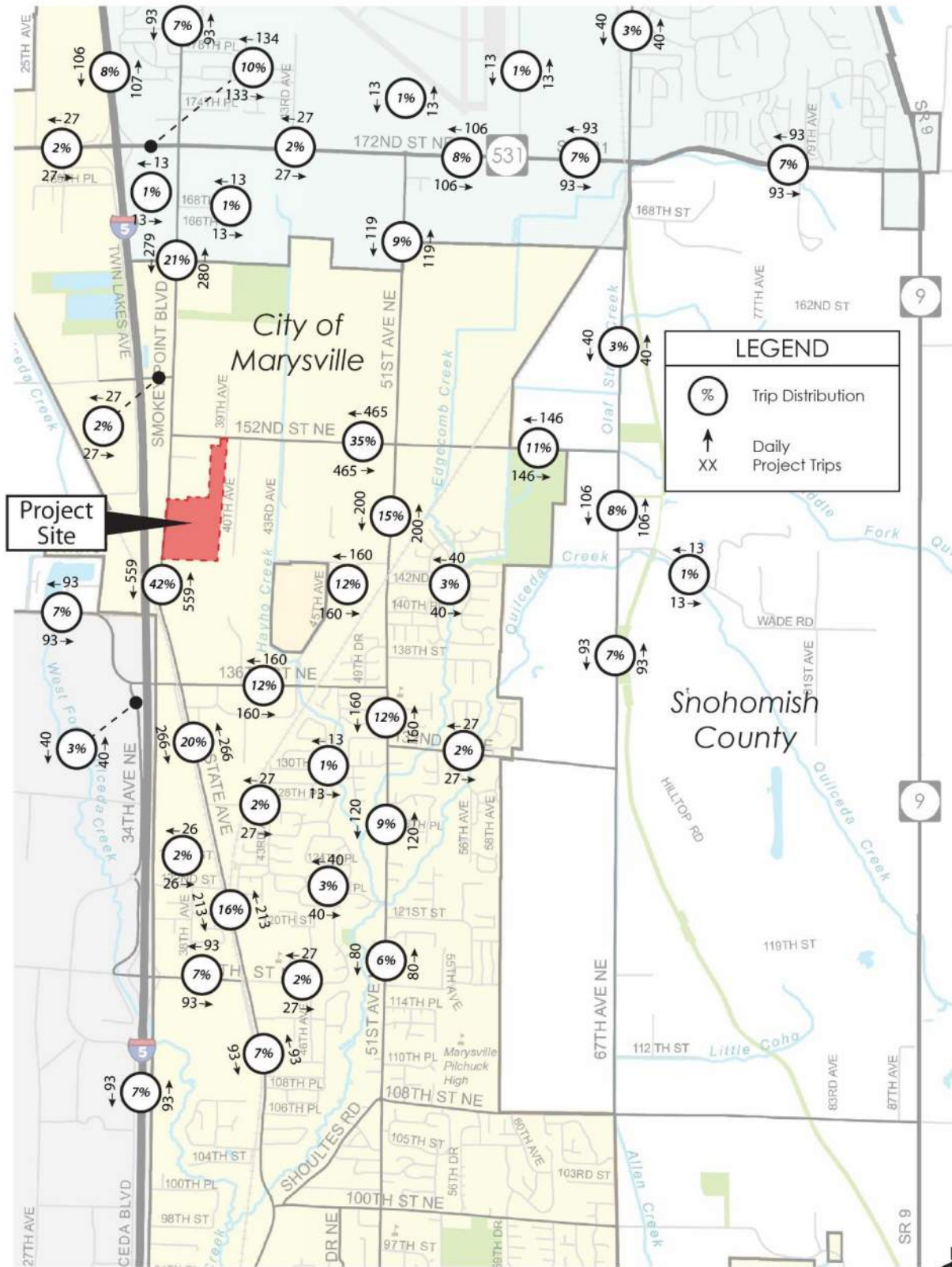


NOT TO SCALE



**Appendix E4:** PM Peak Hour Project Trip Assignment at Snohomish County Key Intersections





Appendix E5: Daily Project Trip Distribution and Assignment