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SAIA Marysville Traffic Impact Analysis

Jurisdiction: City of Marysville

June 2022

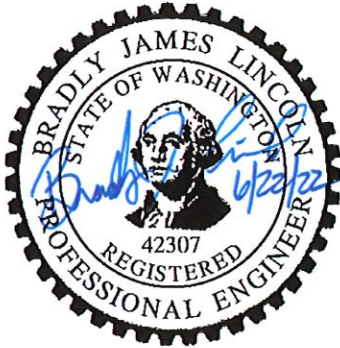


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1. DEVELOPMENT IDENTIFICATION

Kimley-Horn and Associates, Inc. has been retained to provide a traffic impact analysis for the proposed SAIA Marysville. This report is intended to provide the City of Marysville, Snohomish County, and the Washington State Department of Transportation (WSDOT) with the necessary trip generation, trip distribution and level of service information to facilitate their reviews of the development. The SAIA Marysville is located in the northeast corner of State Avenue at 128th Street NE. A site vicinity map is included in Figure 1. The development is proposed to consist of up to a 35,000 square-foot (SF) truck terminal. The development is proposed to have two accesses to State Avenue, which were previously reviewed and approved.

Brad Lincoln, responsible for this report and traffic analysis, is a licensed professional engineer (Civil) in the State of Washington and member of the Washington State section of ITE.

2. METHODOLOGY

The analysis contained in this report is based on the City of Marysville traffic impact analysis guidelines, which requires the analysis of intersections impacted with 25 or more PM peak-hour trips. The trip generation calculations are based on average trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition (2021)*. The trip distribution is based on the approved distributions provided by the City of Marysville for the *136th Street Industrial* area.

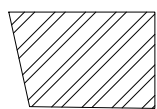
The level of service analysis at the study intersections has been performed in accordance with the *Highway Capacity Manual (HCM) 6th Edition*. Congestion is generally measured in terms of level of service (LOS). Road facilities and intersections are rated between LOS A and LOS F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. A summary of the level of service criteria is included in Table 1.



SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

LEGEND



DEVELOPMENT SITE



STUDY INTERSECTION

FIGURE 1
VICINITY MAP

Table 1: Level of Service Criteria

Level of ¹ Service	Expected Delay	Intersection Control Delay (Seconds per Vehicle)	
		Unsignalized Intersections	Signalized Intersections
A	Little/No Delay	≤10	≤10
B	Short Delays	>10 and ≤15	>10 and ≤20
C	Average Delays	>15 and ≤25	>20 and ≤35
D	Long Delays	>25 and ≤35	>35 and ≤55
E	Very Long Delays	>35 and ≤50	>55 and ≤80
F	Extreme Delays ²	>50	>80

The level of service at two-way stop-controlled intersections is based on the average delay for the stop approach with the highest delay. The level of service at all-way stop-controlled intersections, roundabouts, and signalized intersections is based on the average delay for all vehicles. The level of service analysis has been performed utilizing the *Synchro 11.1, Build 1* software for signalized and stop-controlled intersections. The City of Marysville identifies acceptable level of service as LOS E for stop-controlled and signalized intersections along the Smokey Point Boulevard/State Avenue corridor.

3. TRIP GENERATION

Trip generation calculations for the proposed SAIA Marysville development have been performed using the Institute of Transportation Engineer’s (ITE) *Trip Generation Manual, 11th Edition (2021)*. The average rates for ITE Land Use Code 030, Intermodal Truck terminal, have been used for the trip generation calculations. The trip generation of the 35,000 SF of the SAIA Marysville development is summarized in Table 1.

¹ **Source:** *Highway Capacity Manual 6th Edition*.

LOS A: Free-flow traffic conditions, with minimal delay to stopped vehicles (no vehicle is delayed longer than one cycle at signalized intersection).

LOS B: Generally stable traffic flow conditions.

LOS C: Occasional back-ups may develop, but delay to vehicles is short term and still tolerable.

LOS D: During short periods of the peak hour, delays to approaching vehicles may be substantial but are tolerable during times of less demand (i.e. vehicles delayed one cycle or less at signal).

LOS E: Intersections operate at or near capacity, with long queues developing on all approaches and long delays.

LOS F: Jammed conditions on all approaches with excessively long delays and vehicles unable to move at times.

² When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection.

Table 2: Trip Generation Summary

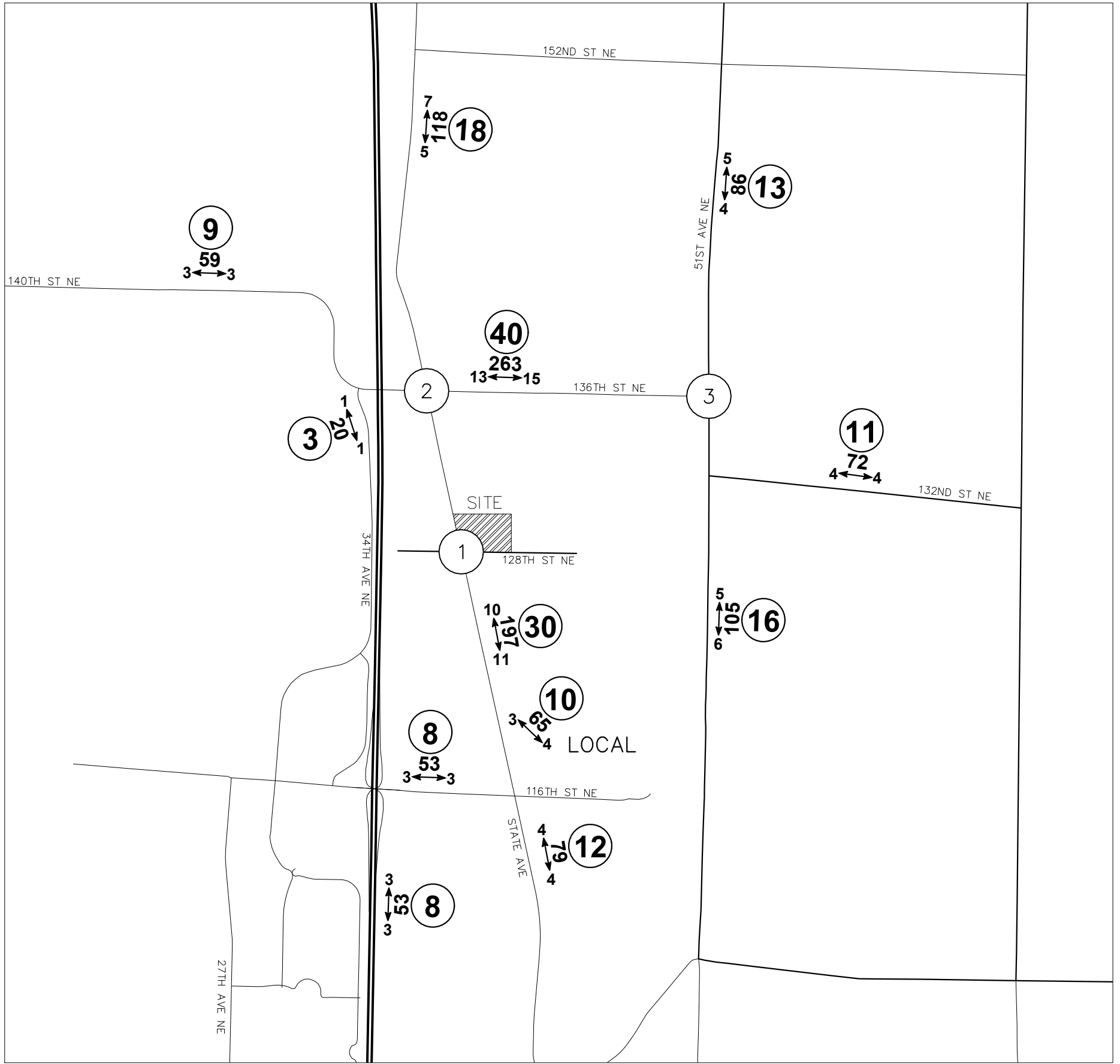
35,000 SF Truck Terminal (ITE LUC 030)	Average Daily Trips			AM Peak-Hour Trips			PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Generation Rate	18.80 trips per 1,000 SF			1.97 trips per 1,000 SF			1.87 trips per 1,000 SF		
Splits	50%	50%	50%	47%	53%	100%	52%	48%	100%
Trips	329.00	329.00	658.00	32.41	36.54	68.95	34.03	31.42	65.45

The SAIA Marysville development is anticipated to generate 658 daily trips with approximately 69 AM peak-hour trips and approximately 65 PM peak-hour trips.

4. TRIP DISTRIBUTION

The trip distribution for the SAIA Marysville is based on distributions provided by the City of Marysville for new developments in the site vicinity based on the *136th Street Industrial* distributions. The trip distribution is the same for the 2024 Opening Year and 2030 Horizon Year conditions in the site vicinity. It is anticipated that 48% of the trips generated by the development will travel along State Avenue, eighteen percent to and from the north and thirty percent to and from the south. Approximately 40% of the trips generated by the development will travel to and from the east along 136th Street NE. The remaining 12% of the trips generated by the development are expected to travel to and from the west of Interstate-5, three percent along 34th Avenue NE and nine percent along 140th Street NE. Detailed trip distributions are shown in Figure 2 and Figure 3 for the AM and PM peak-hours, respectively.

The interlocal agreement between the City of Marysville and Snohomish County requires detailed development trip turning movement data at Snohomish County key intersections impacted with three or more directional trips on an approach or departure. The trips generated by the SAIA Marysville will impact 2 key intersections during the weekday AM and PM peak-hours. The turning movement volumes at the key intersections are shown in graphical and tabular form in the attachments.



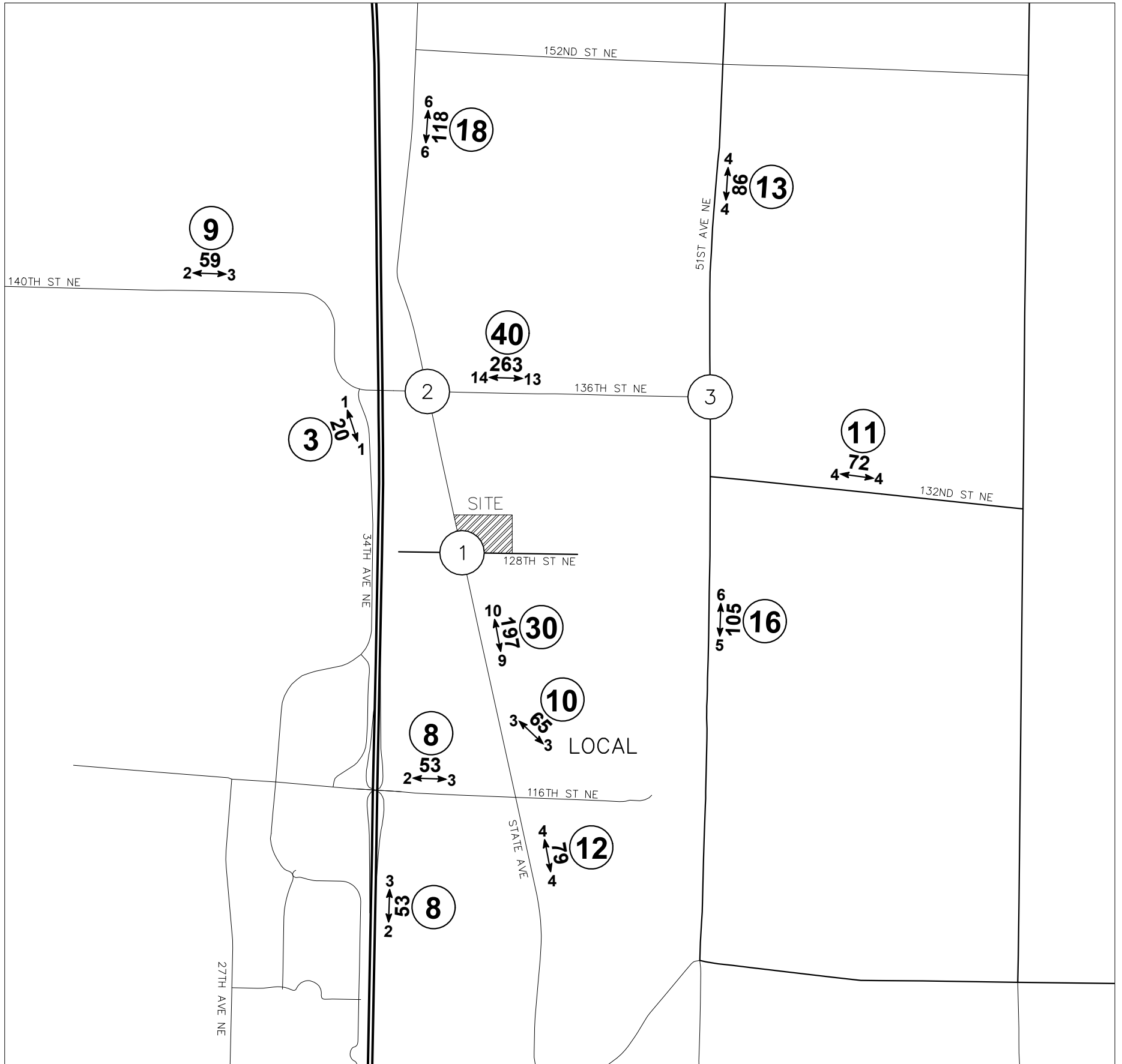
SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

LEGEND

- AWDT** NEW DAILY TRAFFIC
- AM** NEW PEAK-HOUR TRIPS
- PEAK**
- (XX)** TRIP DISTRIBUTION
- (XX)** STUDY INTERSECTION

FIGURE 2
TRIP DISTRIBUTION
AM PEAK-HOUR



SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

LEGEND

- AWDT** NEW DAILY TRAFFIC
- PM** NEW PEAK-HOUR TRIPS
- PEAK**
- (XX)** TRIP DISTRIBUTION
- (XX)** STUDY INTERSECTION

FIGURE 3
TRIP DISTRIBUTION
PM PEAK-HOUR

5. INTERSECTION LEVEL OF SERVICE ANALYSIS

The City of Marysville typically requires analysis at intersections impacted with 25 peak-hour trips. Intersection analysis has been performed at the following intersections:

1. State Avenue at 128th Street NE – Signal
2. Smokey Point Boulevard at 136th Street NE – Signal
3. 51st Avenue NE at 136th Street NE – Signal

The study intersections have been analyzed for the 2022 existing conditions, the 2024 Opening Year conditions, and the 2030 Horizon Year conditions during the weekday PM peak- hour. The study intersection locations are shown in Figure 1.

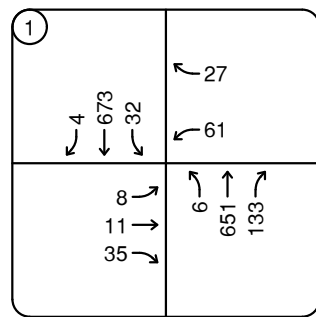
5.1 Turning Movement Calculations

The existing PM peak-hour turning movements at the study intersections were collected by the independent count firm Traffic Data Gathering (TDG) in June 2022. The 2024 and 2030 baseline turning movements at the study intersections have been calculated by applying a 3% annually compounding growth rate to the 2022 existing turning movements.

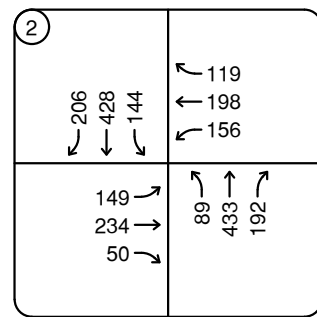
The 2024 and 2030 future with development turning movements at the study intersections have been calculated by adding the trips generated by the development to the 2024 and 2030 baseline turning movements. The following figures identify the turning movements for each scenario:

- Figure 4: 2022 Existing Turning Movements
- Figure 5: 2024 Baseline Turning Movements
- Figure 6: 2024 Opening Year Turning Movements
- Figure 7: 2030 Baseline Turning Movements
- Figure 8: 2030 Horizon Year Turning Movements

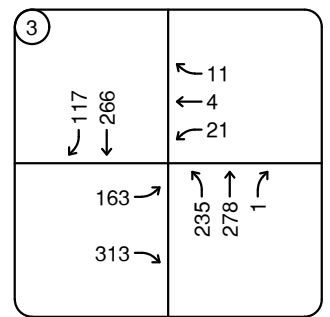
The turning movement counts and calculations are shown in the attachments.



STATE AVE @
128TH ST NE



SMOKEY POINT BLVD @
136TH ST NE



51ST AVE NE @
136TH ST NE



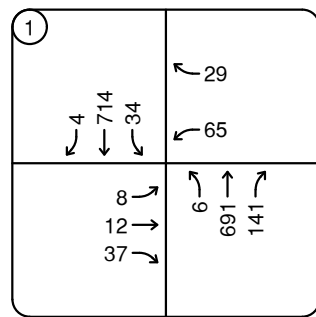
SAIA MARYSVILLE
35,000 SF INTERMODAL
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CITY OF MARYSVILLE

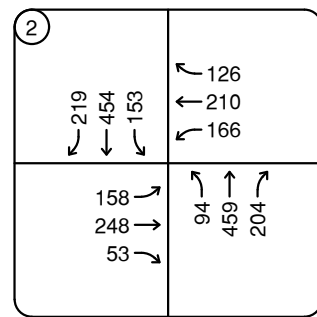
LEGEND

- ⓧ STUDY INTERSECTION
- XX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

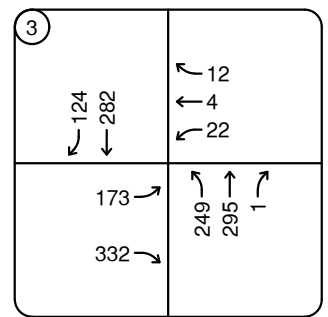
FIGURE 4
2022 EXISTING
TURNING MOVEMENTS



STATE AVE @
128TH ST NE



SMOKEY POINT BLVD @
136TH ST NE



51ST AVE NE @
136TH ST NE



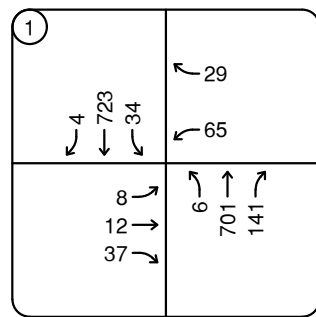
SAIA MARYSVILLE
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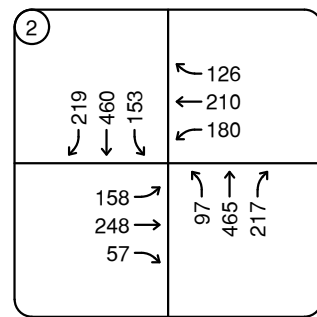
LEGEND

- (xx) STUDY INTERSECTION
- xx → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

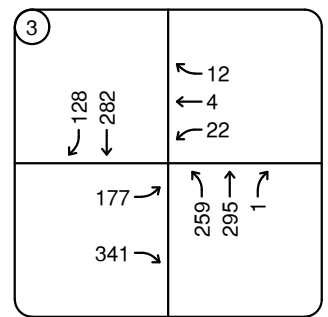
FIGURE 5
2024 BASELINE
TURNING MOVEMENTS



STATE AVE @
128TH ST NE



SMOKEY POINT BLVD @
136TH ST NE



51ST AVE NE @
136TH ST NE



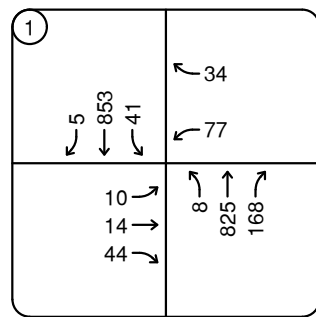
SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

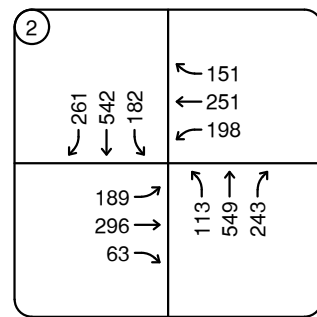
LEGEND

- (xx) STUDY INTERSECTION
- xx → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

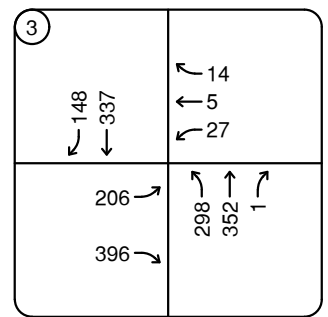
FIGURE 6
2024 OPENING YEAR
TURNING MOVEMENTS



STATE AVE @
128TH ST NE



SMOKEY POINT BLVD @
136TH ST NE



51ST AVE NE @
136TH ST NE



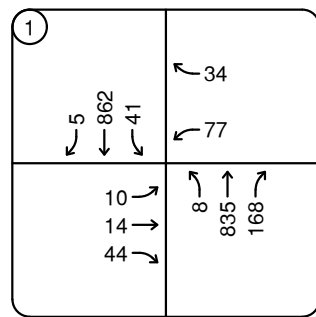
SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

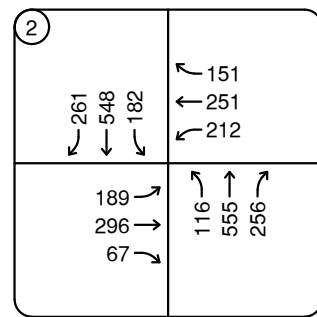
LEGEND

- (xx) STUDY INTERSECTION
- xx → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

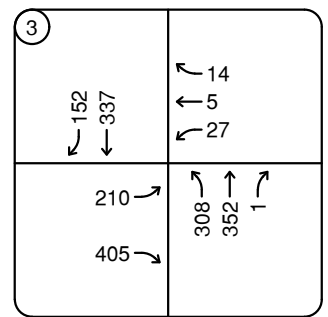
FIGURE 7
2030 BASELINE
TURNING MOVEMENTS



STATE AVE @
128TH ST NE



SMOKEY POINT BLVD @
136TH ST NE



51ST AVE NE @
136TH ST NE



SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

LEGEND

- ⓧ STUDY INTERSECTION
- XX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 8
2030 HORIZON YEAR
TURNING MOVEMENTS

5.2 2024 Opening Year Level of Service Calculations

The level of service calculations have been performed utilizing the existing channelization, existing intersection control, peak-hour factors, and heavy vehicle factors from the 2022 turning movement counts. The parameters have been used for the 2022 existing, 2024 baseline, and 2024 future with development conditions.

The intersection level of service analysis shows that the study intersections currently operate at LOS C or better during the PM peak-hour. The study intersections are expected to continue operating at LOS C or better under the 2024 Opening Year scenario. The PM peak-hour level of service analysis is summarized in Table 3.

Table 3: Level of Service Summary – 2024 Opening Year

Intersection	Control	2022 Existing Conditions		2024 Baseline Conditions		2024 Opening Year Conditions	
		LOS	Delay	LOS	Delay	LOS	Delay
1. State Avenue at 128 th Street NE	Signal	A	9.7 sec	B	10.3 sec	B	10.3 sec
2. Smokey Point Boulevard at 136 th St NE	Signal	C	27.8 sec	C	29.6 sec	C	29.8 sec
3. 51 st Avenue NE at 136 th Street NE	Signal	B	10.6 sec	B	10.9 sec	B	11.1 sec

Level of service analysis was also conducted for the 2030 horizon year as is required by the City of Marysville TIA guidelines. The study intersections are expected to operate at acceptable LOS D or better under the 2030 Horizon Year scenario. The PM peak-hour level of service analysis is summarized in Table 4.

Table 4: Level of Service Summary – 2030 Horizon Year

Intersection	Control	2022 Existing Conditions		2024 Baseline Conditions		2024 Horizon Year Conditions	
		LOS	Delay	LOS	Delay	LOS	Delay
1. State Avenue at 128 th Street NE	Signal	B	10.3 sec	B	13.3 sec	B	13.3 sec
2. Smokey Point Boulevard at 136 th St NE	Signal	C	29.6 sec	D	36.7 sec	D	37.4 sec
3. 51 st Avenue NE at 136 th Street NE	Signal	B	10.9 sec	B	13.0 sec	B	13.4 sec

The level of service calculations are included in the attachments.

6. TRAFFIC MITIGATION FEES

The City of Marysville has an interlocal agreement with Snohomish County that provides for the payment of traffic mitigation fees to Snohomish County for City of Marysville developments. The City of Marysville also has an understanding with WSDOT for the payment of traffic mitigation fees.

6.1 City of Marysville

The City of Marysville traffic mitigation fees have been calculated using the commercial rate of \$2,220 per PM peak-hour trip. The SAIA Marysville development is anticipated to generate 65.45 new PM peak-hour trips, which results in a total traffic mitigation fee of \$145,299.00.

6.2 Snohomish County

The City of Marysville and Snohomish County have an interlocal agreement that provides for the payment of traffic mitigation for impacts to Snohomish County roadways by City of Marysville developments. Traffic mitigation fees are based on predetermined area impacts or impacts to actual improvement projects. The SAIA Marysville is located in CI-MA-2, which has a predetermined impact to Snohomish County roadways of 20%. The current Snohomish County fee for developments located in the City of Marysville is \$157 per daily trip for commercial developments. The generation of 658.00 new daily trips will result in a Snohomish County traffic mitigation fee of \$20,661.20.

6.3 Washington State Department of Transportation

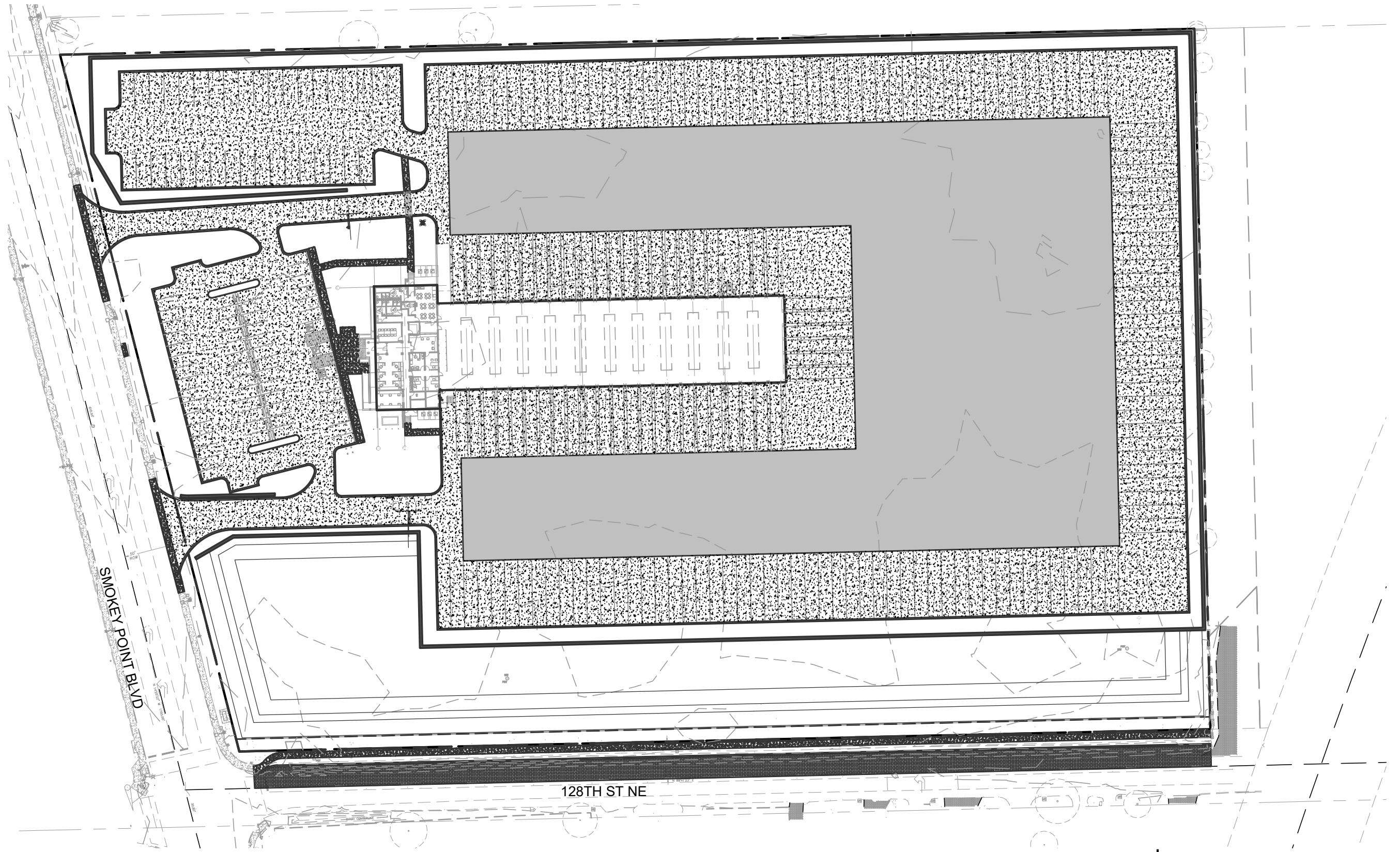
There are not any WSDOT improvements in the site vicinity that are anticipated to be significantly impacted by trips generated by the SAIA Marysville development. Payment of WSDOT traffic mitigation fees should therefore not be a condition of the SAIA Marysville.

7. CONCLUSIONS

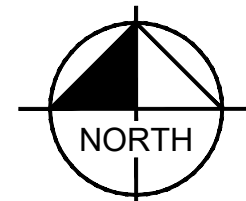
The SAIA Marysville development is proposed to consist of 35,000 SF of intermodal truck terminal. The development is anticipated to generate 658 new average daily trips with approximately 69 new AM peak-hour trips and approximately 65 new PM peak-hour trips. The study intersections are all anticipated to operate at acceptable levels of service under the 2024 Opening Year and 2030 Horizon Year conditions. The development will have City of Marysville traffic mitigation fees of \$145,299.00 and Snohomish County traffic mitigation fees of \$20,661.20. WSDOT traffic mitigation fees should not be a condition of the SAIA Marysville development.

Site Plan

Path: \\wimley-horn\MT_SEA\SEA_Civil\SEA_DS\090046000 - SAIA Marysville\CAD\Exhibits\2022-06-21 - Traffic Study Site Plan\Traffic Study Site Plan-090046000.dwg

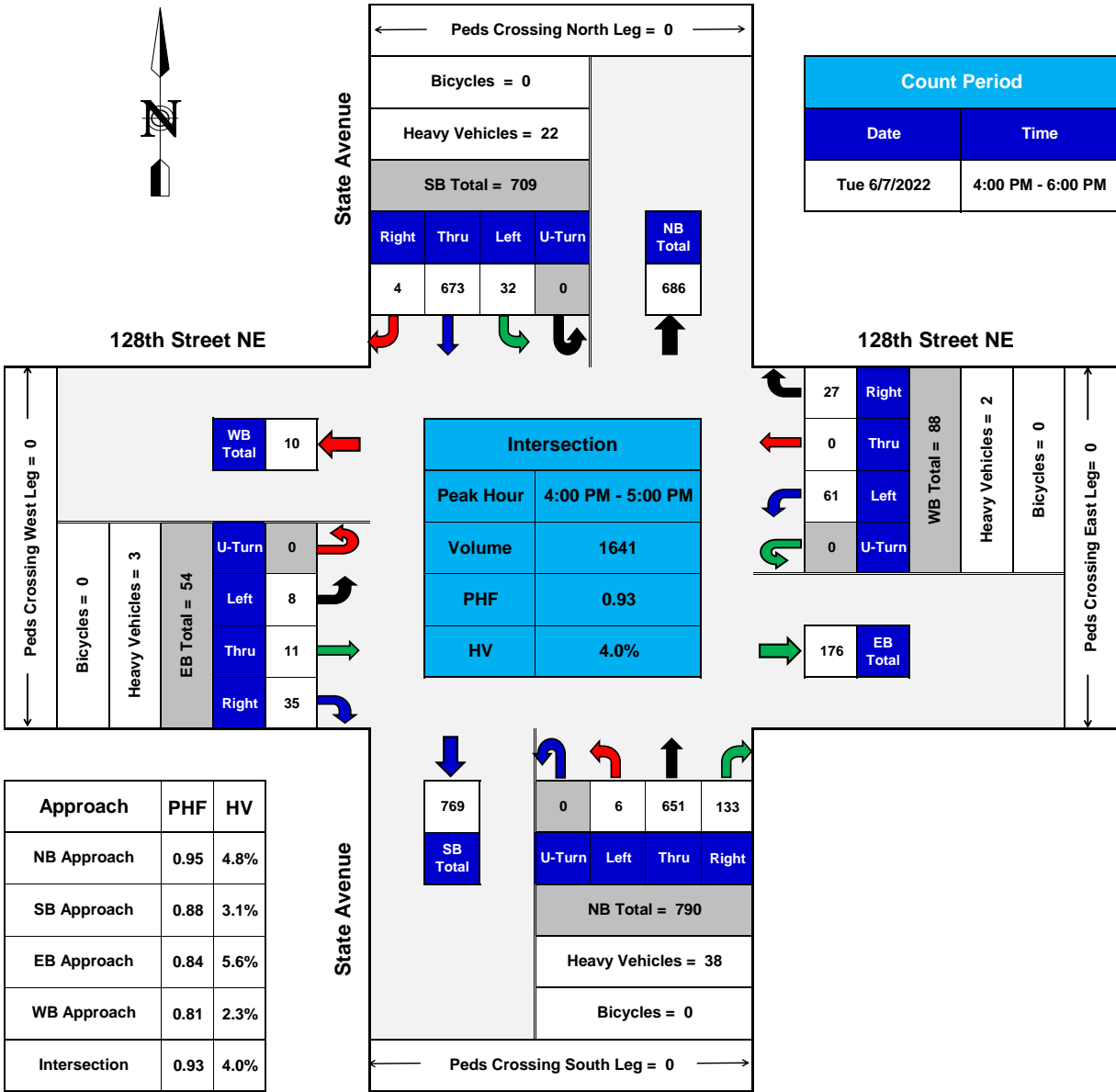


SAIA MARYSVILLE SITE PLAN
SCALE: 1"=80'



Count Data

**State Avenue @ 128th Street NE
Marysville, WA**



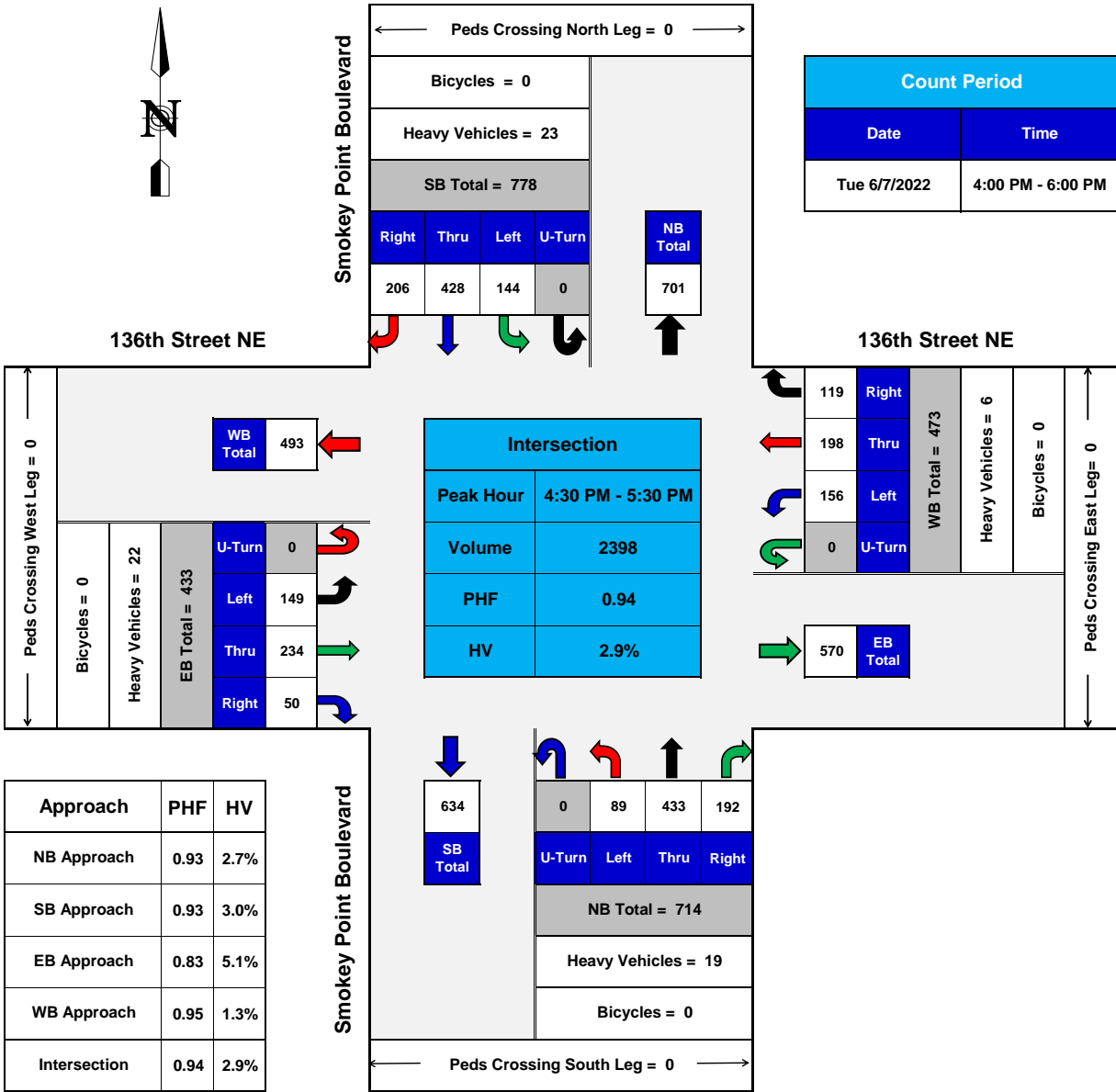
PHF = Peak Hour Factor
HV = Heavy Vehicles

**TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY**



Smokey Point Boulevard @ 136th Street NE

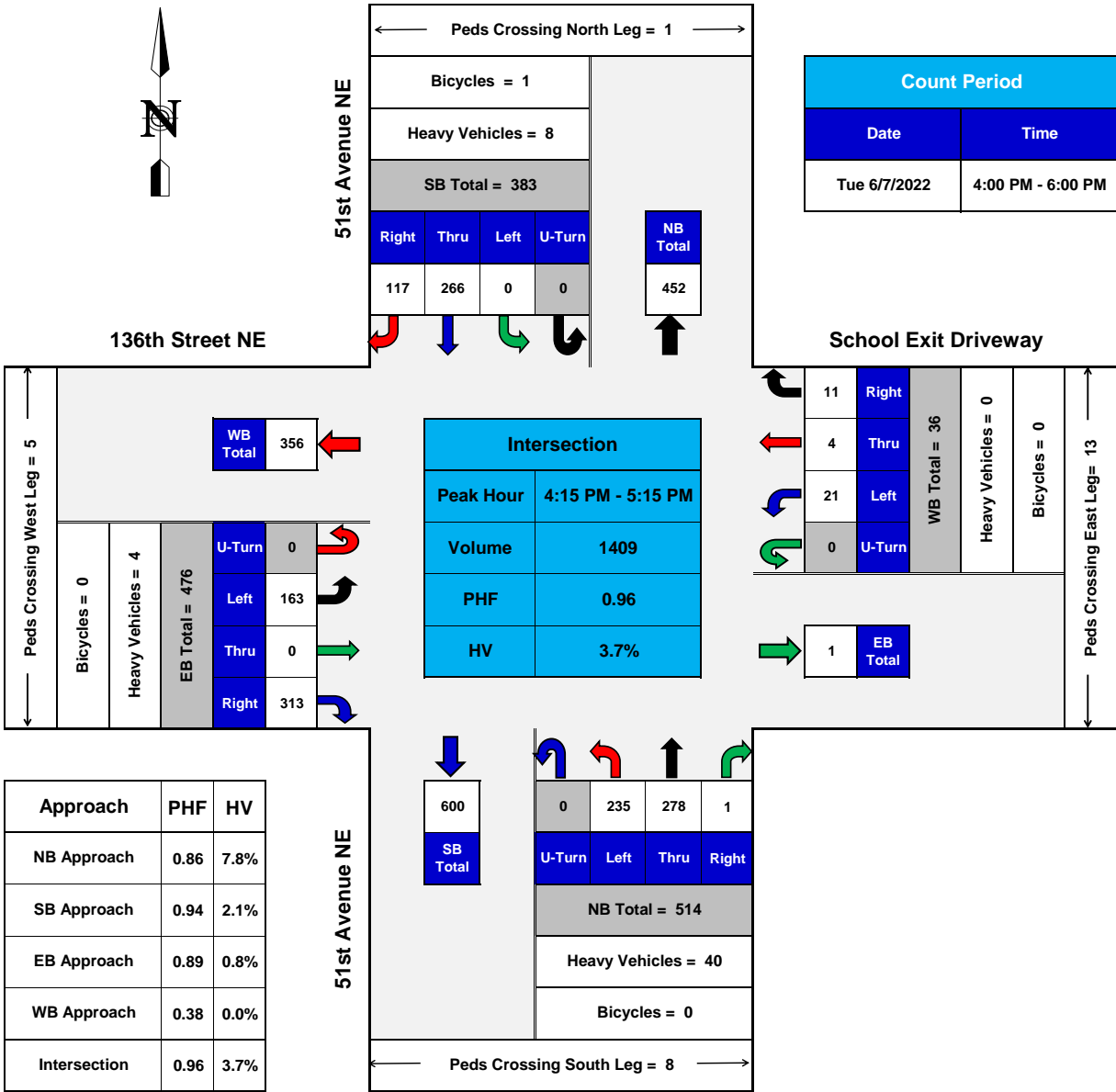
Marysville, WA



TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY



51st Avenue NE @ 136th Street NE
Marysville, WA



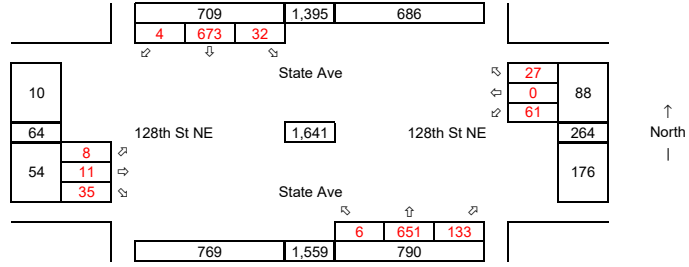
TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY



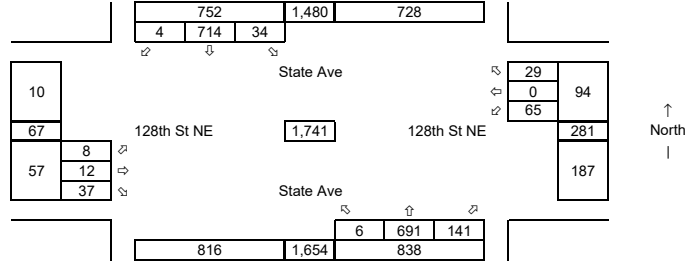
Turning Movement Calculations

1 State Ave at 128th

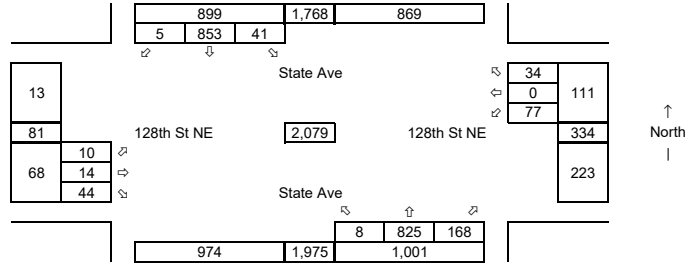
Synchro ID: 1
Existing
 Average Weekday
 PM Peak-Hour
 Year: **6/7/2022**
 Data Source: **IDAX**



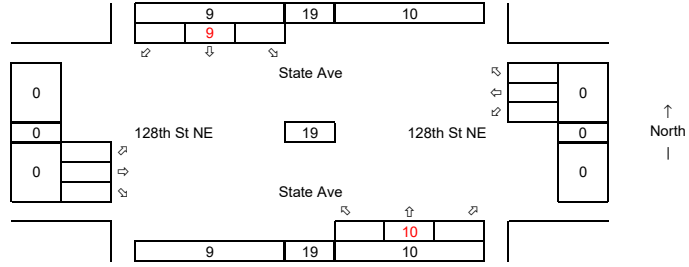
2024 Baseline
 Average Weekday
 PM Peak-Hour
 Year: **2024**
 Growth Rate = **3.0%**
 Years of Growth = 2
 Total Growth = 1.0609



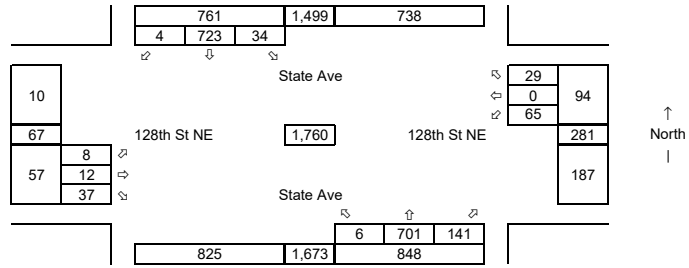
2030 Baseline
 Average Weekday
 PM Peak-Hour
 Year: **2030**
 Growth Rate = **3.0%**
 Years of Growth = 8
 Total Growth = 1.2668



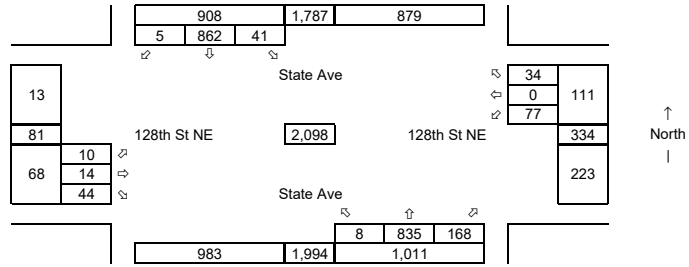
Development
 Average Weekday
 PM Peak-Hour



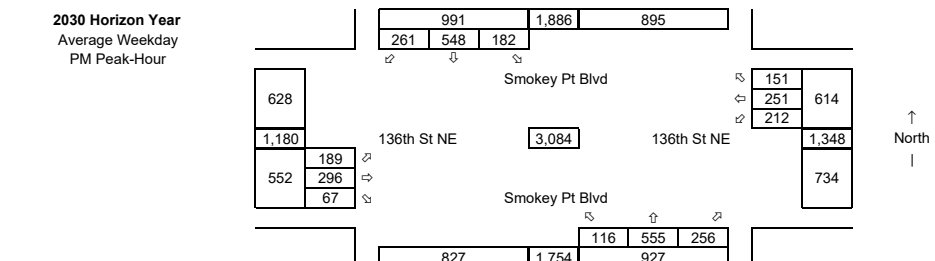
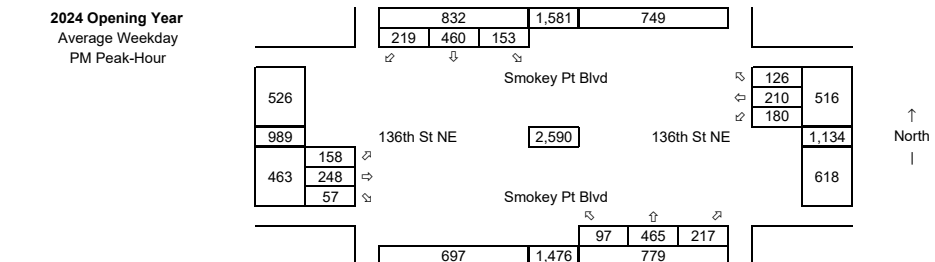
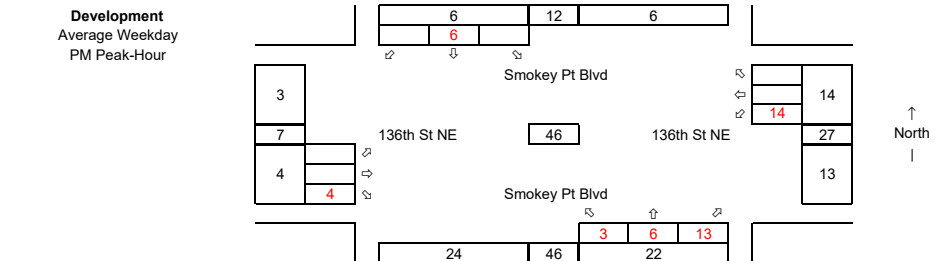
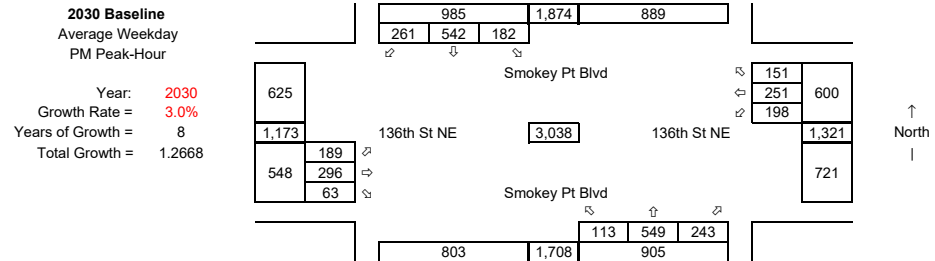
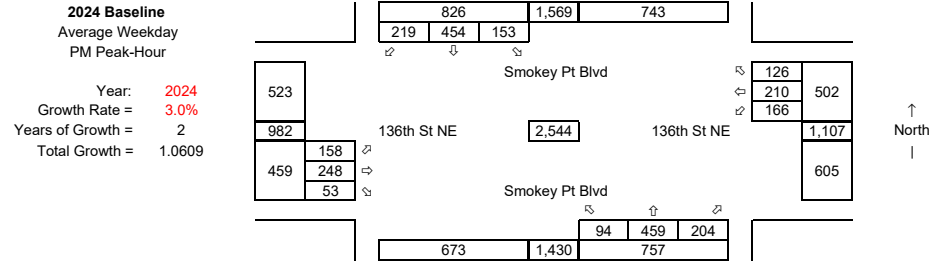
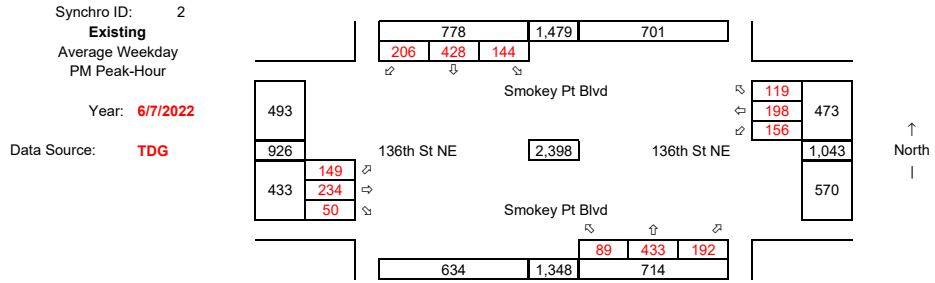
2024 Opening Year
 Average Weekday
 PM Peak-Hour



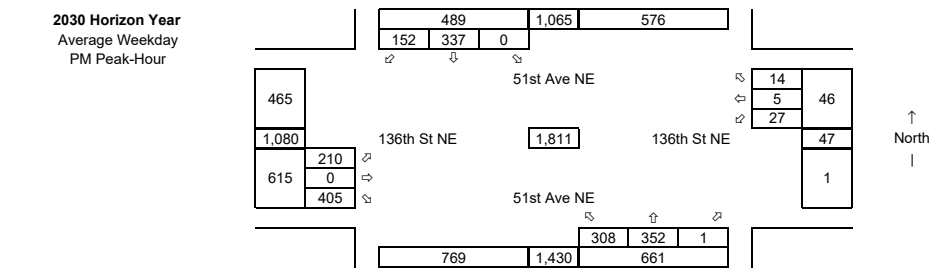
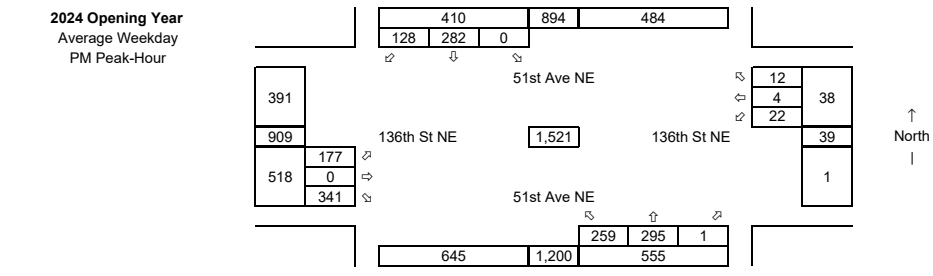
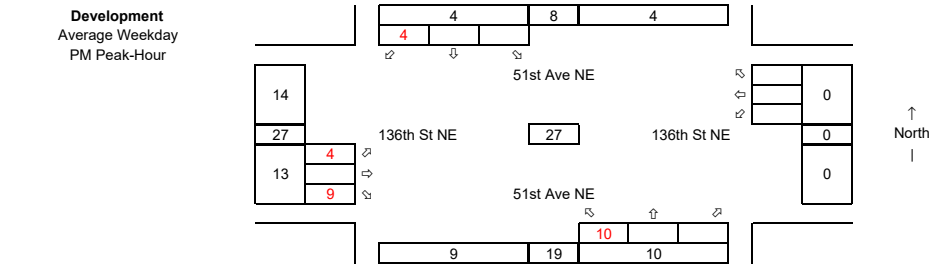
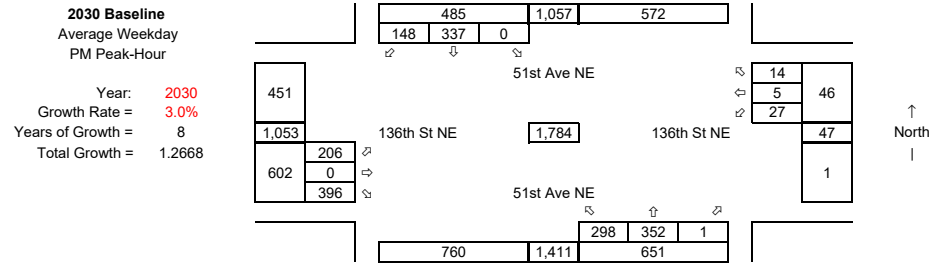
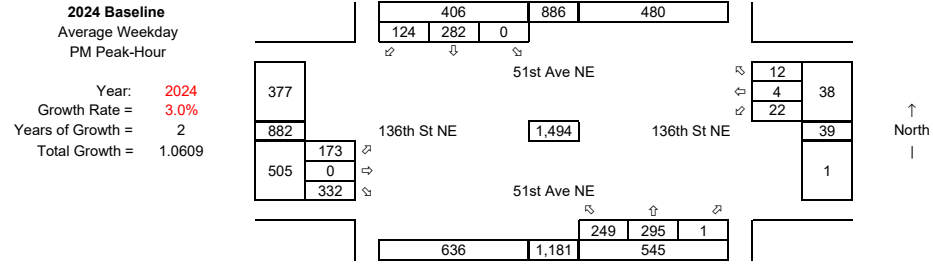
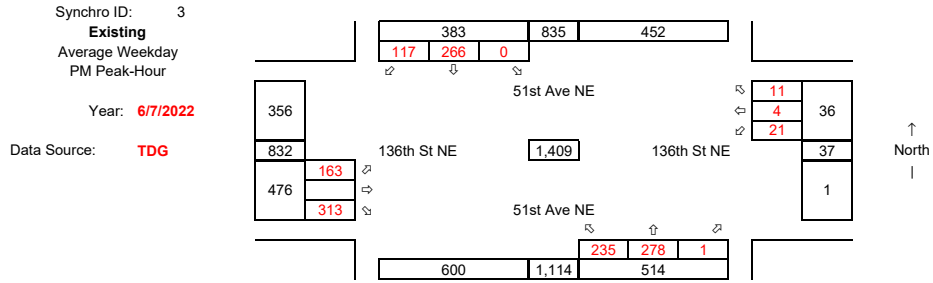
2030 Horizon Year
 Average Weekday
 PM Peak-Hour



2 Smokey Pt at 136th





















3 136th at 51st



Level of Service Calculations

Lanes, Volumes, Timings
1: State Avenue & 128th Street NE

06/08/2022

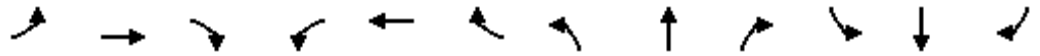
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	11	35	61	0	27	6	651	133	32	673	4
Future Volume (vph)	8	11	35	61	0	27	6	651	133	32	673	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	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		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00			1.00	
Frt		0.913			0.959			0.975			0.999	
Flt Protected		0.992			0.966		0.950			0.950		
Satd. Flow (prot)	0	1655	0	0	1692	0	1736	3369	0	1736	3467	0
Flt Permitted		0.992			0.628		0.367			0.287		
Satd. Flow (perm)	0	1655	0	0	1100	0	670	3369	0	524	3467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			101			20				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1088			1243			4124				2821
Travel Time (s)		24.7			28.3			93.7				64.1
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	95	0	6	843	0	34	728	0
Turn Type	Split	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8		4	3		5	2		1	6	
Permitted Phases				3			2			6		
Detector Phase	8	8		4	3		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		8.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	25.0		10.0	23.0		10.0	23.0	
Total Split (s)	10.0	10.0		30.0	20.0		20.0	50.0		20.0	50.0	
Total Split (%)	7.7%	7.7%		23.1%	15.4%		15.4%	38.5%		15.4%	38.5%	
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				Lag	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Max		None	Max	
Act Effect Green (s)		5.1			6.6		52.3	50.7		54.6	54.8	
Actuated g/C Ratio		0.07			0.09		0.68	0.66		0.71	0.71	
v/c Ratio		0.41			0.51		0.01	0.38		0.08	0.30	
Control Delay		28.6			17.6		5.3	9.9		5.4	7.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		28.6			17.6		5.3	9.9		5.4	7.1	
LOS		C			B		A	A		A	A	
Approach Delay		28.6			17.6			9.8			7.1	

2022 Existing Conditions
CRT [KH 090046000]

Timing Plan: PM Peak-Hour

Lanes, Volumes, Timings
 1: State Avenue & 128th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C				B				A		
Queue Length 50th (ft)		10			0		1	115		5	64	
Queue Length 95th (ft)		49			40		5	193		16	161	
Internal Link Dist (ft)		1008			1163			4044			2741	
Turn Bay Length (ft)							200			200		
Base Capacity (vph)		143			296		687	2215		612	2452	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.41			0.32		0.01	0.38		0.06	0.30	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	77.4
Natural Cycle:	105
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	9.7
Intersection LOS:	A
Intersection Capacity Utilization:	46.6%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 1: State Avenue & 128th Street NE

Ø1	Ø2	Ø3	Ø4	Ø8
20 s	50 s	20 s	30 s	10 s
Ø5	Ø6			
20 s	50 s			

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	234	50	156	198	119	89	433	192	144	428	206
Future Volume (vph)	149	234	50	156	198	119	89	433	192	144	428	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	200		0	300		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.99	1.00							0.99	
Frt			0.850		0.944			0.954			0.951	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1741	0	1752	3344	0	1752	3307	0
Flt Permitted	0.269			0.393			0.323			0.255		
Satd. Flow (perm)	496	1845	1547	724	1741	0	596	3344	0	470	3307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		25			50			55	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		981			4740			2821			4424	
Travel Time (s)		22.3			107.7			64.1			100.5	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												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%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	249	53	166	338	0	95	665	0	153	674	0
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)	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	23.0		10.0	35.0		10.0	23.0	
Total Split (s)	15.0	35.0	35.0	30.0	40.0		35.0	35.0		30.0	30.0	
Total Split (%)	11.5%	26.9%	26.9%	23.1%	30.8%		26.9%	26.9%		23.1%	23.1%	
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	Max		None	Max	
Act Effect Green (s)	29.2	19.9	19.9	31.1	20.9		37.9	30.4		42.6	34.6	
Actuated g/C Ratio	0.32	0.22	0.22	0.34	0.23		0.42	0.34		0.47	0.38	
v/c Ratio	0.55	0.61	0.12	0.45	0.80		0.27	0.57		0.43	0.52	
Control Delay	26.3	39.2	0.5	22.7	45.3		16.3	26.7		18.0	23.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.3	39.2	0.5	22.7	45.3		16.3	26.7		18.0	23.7	
LOS	C	D	A	C	D		B	C		B	C	
Approach Delay		30.3			37.8			25.4			22.6	

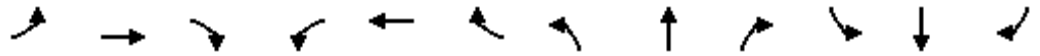
2022 Existing Conditions
CRT [KH 090046000]

Timing Plan: PM Peak-Hour

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022

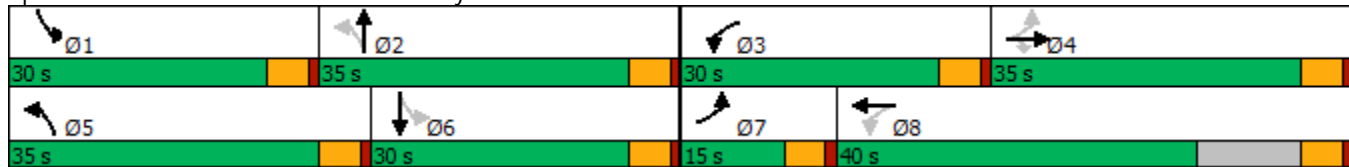


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C						D			C		
Queue Length 50th (ft)	59	127	0	62	170		28	150		46	147	
Queue Length 95th (ft)	108	225	0	112	281		66	256		99	248	
Internal Link Dist (ft)		901			4660			2741			4344	
Turn Bay Length (ft)	150		150	200			300			300		
Base Capacity (vph)	306	621	615	571	892		685	1159		593	1303	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.40	0.09	0.29	0.38		0.14	0.57		0.26	0.52	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	90.2
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	27.8
Intersection LOS:	C
Intersection Capacity Utilization:	68.7%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 2: State Avenue/Smokey Point Boulevard & 136th Street NE



Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	0	313	21	4	11	235	278	1	0	266	117
Future Volume (vph)	163	0	313	21	4	11	235	278	1	0	266	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		25	150		0	0		75
Storage Lanes	1		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98		1.00	0.98		1.00				0.98
Frt			0.850			0.850		0.999				0.850
Flt Protected	0.950				0.959		0.950					
Satd. Flow (prot)	1736	0	1553	0	1752	1553	1736	1825	0	0	1827	1553
Flt Permitted	0.740				0.959		0.463					
Satd. Flow (perm)	1349	0	1516	0	1749	1516	846	1825	0	0	1827	1520
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			326			109						122
Link Speed (mph)		30			30			30				30
Link Distance (ft)		4740			361			1354				2819
Travel Time (s)		107.7			8.2			30.8				64.1
Confl. Peds. (#/hr)	1		2	2			1					
Confl. Bikes (#/hr)							3			4		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	0	326	0	26	11	245	291	0	0	277	122
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases	4		4	8		8	2					6
Detector Phase	4		4	8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	7.0
Minimum Split (s)	23.0		23.0	22.5	22.5	22.5	10.0	23.0			26.0	26.0
Total Split (s)	25.0		25.0	35.0	35.0	35.0	10.0	35.0			25.0	25.0
Total Split (%)	35.7%		35.7%	50.0%	50.0%	50.0%	14.3%	50.0%			35.7%	35.7%
Yellow Time (s)	4.0		4.0	3.0	3.0	3.0	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
Total Lost Time (s)	5.0		5.0		4.0	4.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode	None		None	None	None	None	None	Max			Max	Max
Act Effect Green (s)	10.8		10.8		11.8	11.8	31.2	31.2			21.1	21.1
Actuated g/C Ratio	0.21		0.21		0.23	0.23	0.60	0.60			0.41	0.41
v/c Ratio	0.61		0.57		0.07	0.03	0.41	0.27			0.37	0.18
Control Delay	28.2		6.8		15.3	0.1	8.2	6.6			13.7	3.7
Queue Delay	0.0		0.0		0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	28.2		6.8		15.3	0.1	8.2	6.6			13.7	3.7
LOS	C		A		B	A	A	A			B	A
Approach Delay		14.2			10.8			7.3			10.6	

2022 Existing Conditions
CRT [KH 090046000]

Timing Plan: PM Peak-Hour

Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022

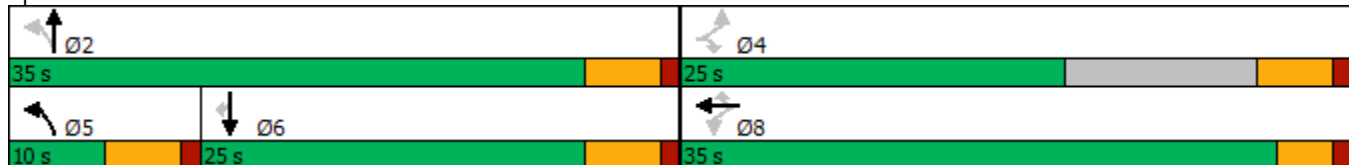


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			B			A			B		
Queue Length 50th (ft)	47		0		6	0	29	35			56	0
Queue Length 95th (ft)	96		49		21	0	75	88			124	27
Internal Link Dist (ft)		4660			281			1274			2739	
Turn Bay Length (ft)	150					25	150					75
Base Capacity (vph)	782		1016		1048	952	593	1093			741	689
Starvation Cap Reductn	0		0		0	0	0	0			0	0
Spillback Cap Reductn	0		0		0	0	0	0			0	0
Storage Cap Reductn	0		0		0	0	0	0			0	0
Reduced v/c Ratio	0.22		0.32		0.02	0.01	0.41	0.27			0.37	0.18

Intersection Summary

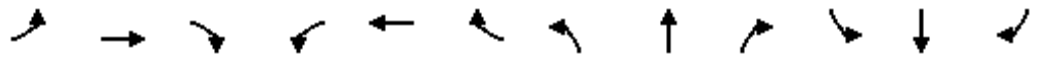
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	52
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	10.6
Intersection LOS:	B
Intersection Capacity Utilization	54.4%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: 51st Avenue NE & 136th Street NE/School Exit



Lanes, Volumes, Timings
1: State Avenue & 128th Street NE

06/08/2022



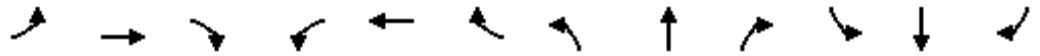
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↗		↗	↕↗	
Traffic Volume (vph)	8	12	37	65	0	29	6	691	141	34	714	4
Future Volume (vph)	8	12	37	65	0	29	6	691	141	34	714	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (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		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00			1.00	
Frt		0.913			0.959			0.975			0.999	
Flt Protected		0.993			0.967		0.950			0.950		
Satd. Flow (prot)	0	1656	0	0	1694	0	1736	3369	0	1736	3467	0
Flt Permitted		0.993			0.584		0.346			0.266		
Satd. Flow (perm)	0	1656	0	0	1023	0	632	3369	0	486	3467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			101			20				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1088			1243			4124				2821
Travel Time (s)		24.7			28.3			93.7				64.1
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	101	0	6	895	0	37	772	0
Turn Type	Split	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8		4	3		5	2		1	6	
Permitted Phases				3			2			6		
Detector Phase	8	8		4	3		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		8.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	25.0		10.0	23.0		10.0	23.0	
Total Split (s)	10.0	10.0		30.0	20.0		20.0	50.0		20.0	50.0	
Total Split (%)	7.7%	7.7%		23.1%	15.4%		15.4%	38.5%		15.4%	38.5%	
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				Lag	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Max		None	Max	
Act Effect Green (s)		5.1			7.0		52.1	50.5		54.4	54.6	
Actuated g/C Ratio		0.07			0.09		0.67	0.65		0.70	0.70	
v/c Ratio		0.43			0.55		0.01	0.41		0.09	0.32	
Control Delay		29.1			19.8		5.7	10.5		5.8	7.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		29.1			19.8		5.7	10.5		5.8	7.6	
LOS		C			B		A	B		A	A	
Approach Delay		29.1			19.8			10.4			7.5	

2024 BASELINE CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings
 1: State Avenue & 128th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			B			B			A	
Queue Length 50th (ft)		11			0		1	125		5	68	
Queue Length 95th (ft)		52			45		6	218		18	178	
Internal Link Dist (ft)		1008			1163			4044			2741	
Turn Bay Length (ft)							200			200		
Base Capacity (vph)		145			281		664	2200		589	2437	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.43			0.36		0.01	0.41		0.06	0.32	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	77.6
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	10.3
Intersection LOS:	B
Intersection Capacity Utilization	48.6%
ICU Level of Service	A
Analysis Period (min)	15
























Splits and Phases: 1: State Avenue & 128th Street NE

20 s	50 s	20 s	30 s	10 s
20 s	50 s			

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	248	53	166	210	126	94	459	204	153	454	219
Future Volume (vph)	158	248	53	166	210	126	94	459	204	153	454	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	200		0	300		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.99	1.00							0.99	
Frt			0.850		0.944			0.954				0.951
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1741	0	1752	3344	0	1752	3307	0
Flt Permitted	0.264			0.370			0.271			0.229		
Satd. Flow (perm)	487	1845	1547	682	1741	0	500	3344	0	422	3307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		25			51			55	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		981			4740			2821			4424	
Travel Time (s)		22.3			107.7			64.1			100.5	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												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%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	264	56	177	357	0	100	705	0	163	716	0
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)	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	23.0		10.0	35.0		10.0	23.0	
Total Split (s)	15.0	35.0	35.0	30.0	40.0		35.0	35.0		30.0	30.0	
Total Split (%)	11.5%	26.9%	26.9%	23.1%	30.8%		26.9%	26.9%		23.1%	23.1%	
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	Max		None	Max	
Act Effct Green (s)	30.5	21.1	21.1	33.0	22.3		38.2	30.4		42.5	32.5	
Actuated g/C Ratio	0.33	0.23	0.23	0.36	0.24		0.41	0.33		0.46	0.35	
v/c Ratio	0.58	0.63	0.12	0.48	0.81		0.32	0.62		0.48	0.60	
Control Delay	27.5	40.0	0.5	23.2	45.9		17.8	28.8		19.9	26.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.5	40.0	0.5	23.2	45.9		17.8	28.8		19.9	26.5	
LOS	C	D	A	C	D		B	C		B	C	
Approach Delay		31.2			38.4			27.4			25.3	

2024 BASELINE CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022

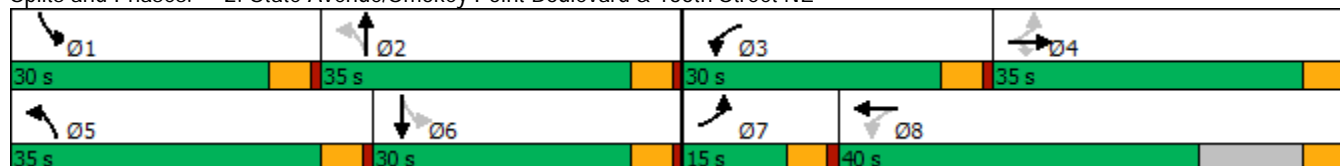


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C						D			C		
Queue Length 50th (ft)	63	138	0	67	184		30	168		51	164	
Queue Length 95th (ft)	115	241	0	120	299		71	286		110	277	
Internal Link Dist (ft)	901			4660			2741			4344		
Turn Bay Length (ft)	150		150		200		300		300			
Base Capacity (vph)	303	607	605	565	872		657	1134		572	1199	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.55	0.43	0.09	0.31	0.41		0.15	0.62		0.28	0.60	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 92.4
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 29.6
 Intersection LOS: C
 Intersection Capacity Utilization 71.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: State Avenue/Smokey Point Boulevard & 136th Street NE



Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	0	332	22	4	12	249	295	1	0	282	124
Future Volume (vph)	173	0	332	22	4	12	249	295	1	0	282	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		25	150		0	0		75
Storage Lanes	1		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98		1.00	0.98		1.00				0.98
Frt			0.850			0.850						0.850
Flt Protected	0.950				0.959		0.950					
Satd. Flow (prot)	1736	0	1553	0	1752	1553	1736	1827	0	0	1827	1553
Flt Permitted	0.740				0.959		0.445					
Satd. Flow (perm)	1349	0	1516	0	1749	1516	813	1827	0	0	1827	1520
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			346			109						126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		4740			361			1354				2819
Travel Time (s)		107.7			8.2			30.8				64.1
Confl. Peds. (#/hr)	1		2	2			1					
Confl. Bikes (#/hr)						3			4			1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	180	0	346	0	27	13	259	308	0	0	294	129
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases	4		4	8		8	2					6
Detector Phase	4		4	8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	7.0
Minimum Split (s)	23.0		23.0	22.5	22.5	22.5	10.0	23.0			26.0	26.0
Total Split (s)	25.0		25.0	35.0	35.0	35.0	10.0	35.0			25.0	25.0
Total Split (%)	35.7%		35.7%	50.0%	50.0%	50.0%	14.3%	50.0%			35.7%	35.7%
Yellow Time (s)	4.0		4.0	3.0	3.0	3.0	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
Total Lost Time (s)	5.0		5.0		4.0	4.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode	None		None	None	None	None	None	Max			Max	Max
Act Effct Green (s)	11.2		11.2		12.2	12.2	31.2	31.2			21.1	21.1
Actuated g/C Ratio	0.21		0.21		0.23	0.23	0.60	0.60			0.40	0.40
v/c Ratio	0.62		0.58		0.07	0.03	0.45	0.28			0.40	0.19
Control Delay	28.5		6.8		15.2	0.2	9.0	6.9			14.2	3.9
Queue Delay	0.0		0.0		0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	28.5		6.8		15.2	0.2	9.0	6.9			14.2	3.9
LOS	C		A		B	A	A	A			B	A
Approach Delay		14.2			10.3			7.9			11.1	

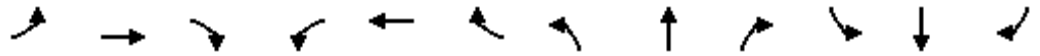
2024 BASELINE CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022

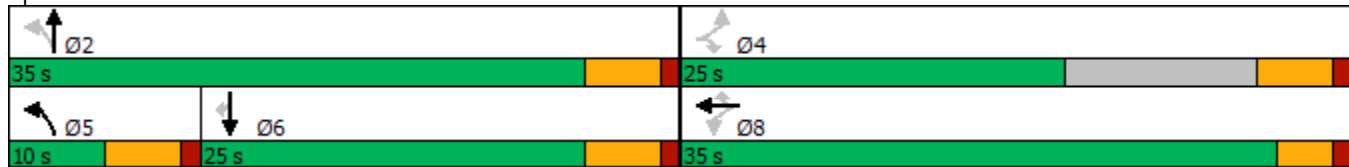


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			B			A			B		
Queue Length 50th (ft)	51		0		6	0	32	39			61	1
Queue Length 95th (ft)	102		50		21	0	81	96			135	29
Internal Link Dist (ft)		4660			281			1274			2739	
Turn Bay Length (ft)	150					25	150					75
Base Capacity (vph)	775		1019		1039	945	572	1086			735	687
Starvation Cap Reductn	0		0		0	0	0	0			0	0
Spillback Cap Reductn	0		0		0	0	0	0			0	0
Storage Cap Reductn	0		0		0	0	0	0			0	0
Reduced v/c Ratio	0.23		0.34		0.03	0.01	0.45	0.28			0.40	0.19

Intersection Summary




















Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	52.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization:	56.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 3: 51st Avenue NE & 136th Street NE/School Exit



Lanes, Volumes, Timings
1: State Avenue & 128th Street NE

06/08/2022

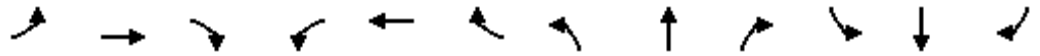
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	12	37	65	0	29	6	701	141	34	723	4
Future Volume (vph)	8	12	37	65	0	29	6	701	141	34	723	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	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		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00			1.00	
Frt		0.913			0.959			0.975			0.999	
Flt Protected		0.993			0.967		0.950			0.950		
Satd. Flow (prot)	0	1656	0	0	1694	0	1736	3369	0	1736	3467	0
Flt Permitted		0.993			0.584		0.342			0.262		
Satd. Flow (perm)	0	1656	0	0	1023	0	625	3369	0	479	3467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			101			20				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1088			1243			4124				2821
Travel Time (s)		24.7			28.3			93.7				64.1
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	101	0	6	906	0	37	781	0
Turn Type	Split	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8		4	3		5	2		1	6	
Permitted Phases				3			2			6		
Detector Phase	8	8		4	3		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		8.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	25.0		10.0	23.0		10.0	23.0	
Total Split (s)	10.0	10.0		30.0	20.0		20.0	50.0		20.0	50.0	
Total Split (%)	7.7%	7.7%		23.1%	15.4%		15.4%	38.5%		15.4%	38.5%	
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				Lag	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Max		None	Max	
Act Effect Green (s)		5.1			7.0		52.1	50.5		54.4	54.6	
Actuated g/C Ratio		0.07			0.09		0.67	0.65		0.70	0.70	
v/c Ratio		0.43			0.55		0.01	0.41		0.09	0.32	
Control Delay		29.1			19.8		5.7	10.5		5.8	7.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		29.1			19.8		5.7	10.5		5.8	7.6	
LOS		C			B		A	B		A	A	
Approach Delay		29.1			19.8			10.5			7.5	

2024 OPENING YEAR CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings
 1: State Avenue & 128th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			B			B			A	
Queue Length 50th (ft)		11			0		1	127		5	70	
Queue Length 95th (ft)		52			45		6	222		18	181	
Internal Link Dist (ft)		1008			1163			4044			2741	
Turn Bay Length (ft)							200			200		
Base Capacity (vph)		145			281		661	2200		586	2437	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.43			0.36		0.01	0.41		0.06	0.32	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	77.6
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.55
Intersection Signal Delay:	10.3
Intersection LOS:	B
Intersection Capacity Utilization	48.6%
ICU Level of Service	A
Analysis Period (min)	15

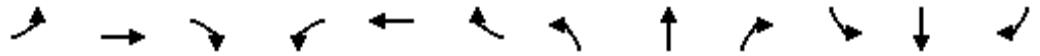
Splits and Phases: 1: State Avenue & 128th Street NE

20 s	50 s	20 s	30 s	10 s
20 s	50 s			

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	248	57	180	210	126	97	465	217	153	460	219
Future Volume (vph)	158	248	57	180	210	126	97	465	217	153	460	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	200		0	300		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.99	1.00							0.99	
Frt			0.850		0.944			0.952				0.952
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1741	0	1752	3337	0	1752	3311	0
Flt Permitted	0.271			0.351			0.266			0.217		
Satd. Flow (perm)	500	1845	1547	647	1741	0	491	3337	0	400	3311	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		25			55			54	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		981			4740			2821			4424	
Travel Time (s)		22.3			107.7			64.1			100.5	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												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%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	264	61	191	357	0	103	726	0	163	722	0
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)	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	23.0		10.0	35.0		10.0	23.0	
Total Split (s)	15.0	35.0	35.0	30.0	40.0		35.0	35.0		30.0	30.0	
Total Split (%)	11.5%	26.9%	26.9%	23.1%	30.8%		26.9%	26.9%		23.1%	23.1%	
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	Max		None	Max	
Act Effect Green (s)	29.9	20.5	20.5	33.4	22.3		38.4	30.4		42.4	32.4	
Actuated g/C Ratio	0.32	0.22	0.22	0.36	0.24		0.42	0.33		0.46	0.35	
v/c Ratio	0.58	0.65	0.13	0.52	0.81		0.33	0.64		0.50	0.60	
Control Delay	27.7	41.3	0.6	24.0	45.9		17.9	29.1		20.2	26.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.7	41.3	0.6	24.0	45.9		17.9	29.1		20.2	26.8	
LOS	C	D	A	C	D		B	C		C	C	
Approach Delay		31.6			38.3			27.7			25.6	

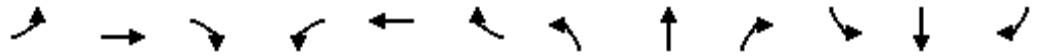
2024 OPENING YEAR CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022

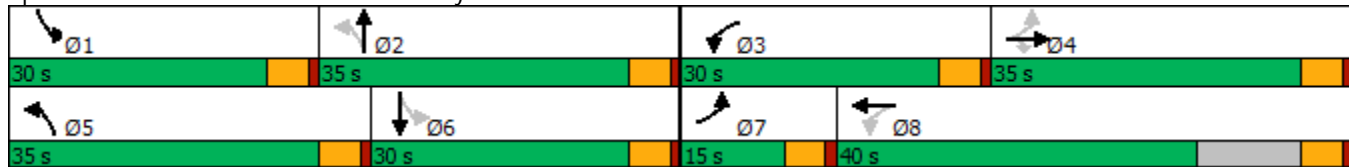


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			C			C		
Queue Length 50th (ft)	63	139	0	73	184		31	174		51	167	
Queue Length 95th (ft)	115	245	0	129	300		73	295		110	282	
Internal Link Dist (ft)	901			4660			2741			4344		
Turn Bay Length (ft)	150		150	200			300			300		
Base Capacity (vph)	303	607	605	560	872		656	1135		567	1196	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.55	0.43	0.10	0.34	0.41		0.16	0.64		0.29	0.60	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	92.4
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	29.8
Intersection LOS:	C
Intersection Capacity Utilization:	72.4%
ICU Level of Service:	C
Analysis Period (min):	15

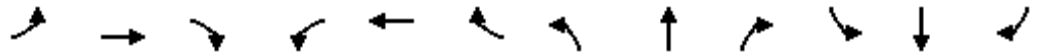
Splits and Phases: 2: State Avenue/Smokey Point Boulevard & 136th Street NE



Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	0	341	22	4	12	259	295	1	0	282	128
Future Volume (vph)	177	0	341	22	4	12	259	295	1	0	282	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		25	150		0	0		75
Storage Lanes	1		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98		1.00	0.98		1.00				0.98
Frt			0.850			0.850						0.850
Flt Protected	0.950				0.959		0.950					
Satd. Flow (prot)	1736	0	1553	0	1752	1553	1736	1827	0	0	1827	1553
Flt Permitted	0.740				0.959		0.444					
Satd. Flow (perm)	1349	0	1516	0	1749	1516	811	1827	0	0	1827	1520
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			355			109						130
Link Speed (mph)		30			30			30				30
Link Distance (ft)		4740			361			1354				2819
Travel Time (s)		107.7			8.2			30.8				64.1
Confl. Peds. (#/hr)	1		2	2			1					
Confl. Bikes (#/hr)							3			4		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	0	355	0	27	13	270	308	0	0	294	133
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases	4		4	8		8	2					6
Detector Phase	4		4	8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	7.0
Minimum Split (s)	23.0		23.0	22.5	22.5	22.5	10.0	23.0			26.0	26.0
Total Split (s)	25.0		25.0	35.0	35.0	35.0	10.0	35.0			25.0	25.0
Total Split (%)	35.7%		35.7%	50.0%	50.0%	50.0%	14.3%	50.0%			35.7%	35.7%
Yellow Time (s)	4.0		4.0	3.0	3.0	3.0	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
Total Lost Time (s)	5.0		5.0		4.0	4.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode	None		None	None	None	None	None	Max			Max	Max
Act Effct Green (s)	11.4		11.4		12.4	12.4	31.2	31.2			21.1	21.1
Actuated g/C Ratio	0.22		0.22		0.24	0.24	0.59	0.59			0.40	0.40
v/c Ratio	0.63		0.59		0.07	0.03	0.48	0.28			0.40	0.19
Control Delay	28.7		6.7		15.1	0.1	9.5	7.0			14.4	3.9
Queue Delay	0.0		0.0		0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	28.7		6.7		15.1	0.1	9.5	7.0			14.4	3.9
LOS	C		A		B	A	A	A			B	A
Approach Delay		14.2			10.2			8.2			11.1	

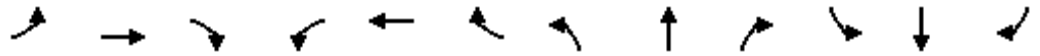
2024 OPENING YEAR CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022

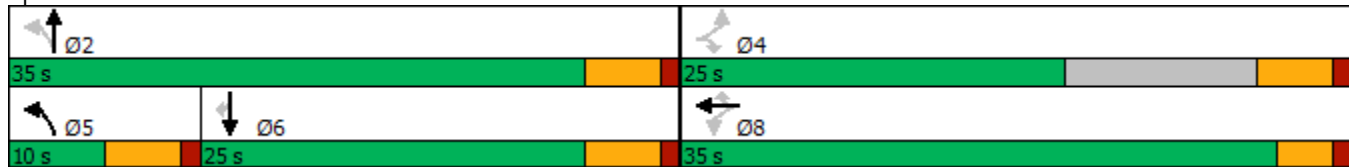


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			B			A			B		
Queue Length 50th (ft)	52		0		6	0	34	39			62	1
Queue Length 95th (ft)	103		51		21	0	86	98			136	30
Internal Link Dist (ft)		4660			281			1274			2739	
Turn Bay Length (ft)	150					25	150					75
Base Capacity (vph)	773		1020		1036	942	568	1082			733	687
Starvation Cap Reductn	0		0		0	0	0	0			0	0
Spillback Cap Reductn	0		0		0	0	0	0			0	0
Storage Cap Reductn	0		0		0	0	0	0			0	0
Reduced v/c Ratio	0.24		0.35		0.03	0.01	0.48	0.28			0.40	0.19

Intersection Summary




















Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	52.6
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	11.1
Intersection LOS:	B
Intersection Capacity Utilization:	57.3%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 3: 51st Avenue NE & 136th Street NE/School Exit



Lanes, Volumes, Timings
1: State Avenue & 128th Street NE

06/08/2022

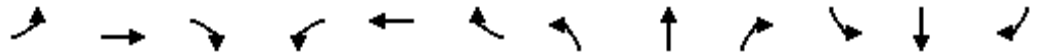
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	14	44	77	0	34	8	825	168	41	853	5
Future Volume (vph)	10	14	44	77	0	34	8	825	168	41	853	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	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		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00			1.00	
Frt		0.913			0.958			0.975			0.999	
Flt Protected		0.993			0.967		0.950			0.950		
Satd. Flow (prot)	0	1656	0	0	1692	0	1736	3369	0	1736	3467	0
Flt Permitted		0.993			0.393		0.279			0.199		
Satd. Flow (perm)	0	1656	0	0	688	0	510	3369	0	364	3467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			101			20				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1088			1243			4124				2821
Travel Time (s)		24.7			28.3			93.7				64.1
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	0	0	120	0	9	1068	0	44	922	0
Turn Type	Split	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8		4	3		5	2		1	6	
Permitted Phases				3			2			6		
Detector Phase	8	8		4	3		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		8.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	25.0		10.0	23.0		10.0	23.0	
Total Split (s)	10.0	10.0		30.0	20.0		20.0	50.0		20.0	50.0	
Total Split (%)	7.7%	7.7%		23.1%	15.4%		15.4%	38.5%		15.4%	38.5%	
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				Lag	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Max		None	Max	
Act Effect Green (s)		5.0			8.6		51.5	48.7		54.0	52.9	
Actuated g/C Ratio		0.06			0.11		0.63	0.60		0.66	0.65	
v/c Ratio		0.50			0.74		0.02	0.53		0.13	0.41	
Control Delay		32.3			37.6		6.5	13.0		7.0	9.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.3			37.6		6.5	13.0		7.0	9.2	
LOS		C			D		A	B		A	A	
Approach Delay		32.3			37.6			13.0			9.1	

2030 BASELINE CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings
 1: State Avenue & 128th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			B			A	
Queue Length 50th (ft)		13			9		1	177		7	98	
Queue Length 95th (ft)		#66			#82		7	292		22	233	
Internal Link Dist (ft)		1008			1163			4044			2741	
Turn Bay Length (ft)							200			200		
Base Capacity (vph)		146			210		571	2025		500	2254	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.50			0.57		0.02	0.53		0.09	0.41	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 81.3
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 13.3
 Intersection LOS: B
 Intersection Capacity Utilization 55.4%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Avenue & 128th Street NE

20 s	50 s	20 s	30 s	10 s
20 s	50 s			

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	296	63	198	251	151	113	549	243	182	542	261
Future Volume (vph)	189	296	63	198	251	151	113	549	243	182	542	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	200		0	300		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.99	1.00							0.99	
Frt			0.850		0.944			0.954				0.951
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1741	0	1752	3344	0	1752	3307	0
Flt Permitted	0.203			0.291			0.175			0.132		
Satd. Flow (perm)	374	1845	1547	537	1741	0	323	3344	0	243	3307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		26			50			55	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		981			4740			2821			4424	
Travel Time (s)		22.3			107.7			64.1			100.5	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												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%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	315	67	211	428	0	120	843	0	194	855	0
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)	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	23.0		10.0	35.0		10.0	23.0	
Total Split (s)	15.0	35.0	35.0	30.0	40.0		35.0	35.0		30.0	30.0	
Total Split (%)	11.5%	26.9%	26.9%	23.1%	30.8%		26.9%	26.9%		23.1%	23.1%	
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	Max		None	Max	
Act Effect Green (s)	34.4	24.7	24.7	39.0	27.2		39.3	30.4		44.7	33.1	
Actuated g/C Ratio	0.35	0.25	0.25	0.39	0.27		0.40	0.31		0.45	0.33	
v/c Ratio	0.76	0.69	0.14	0.58	0.86		0.47	0.80		0.68	0.75	
Control Delay	40.2	43.3	0.6	25.7	50.3		23.2	38.1		31.5	34.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.2	43.3	0.6	25.7	50.3		23.2	38.1		31.5	34.0	
LOS	D	D	A	C	D		C	D		C	C	
Approach Delay		37.3			42.2			36.3			33.6	

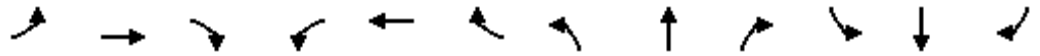
2030 BASELINE CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022

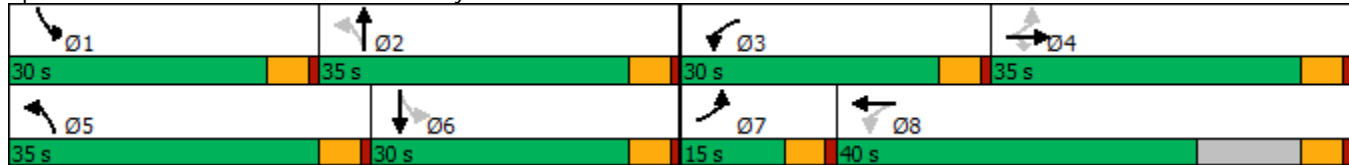


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			D			D			C		
Queue Length 50th (ft)	80	180	0	85	242		42	244		71	237	
Queue Length 95th (ft)	#188	307	0	147	383		88	#425		153	#377	
Internal Link Dist (ft)	901			4660			2741			4344		
Turn Bay Length (ft)	150		150	200			300			300		
Base Capacity (vph)	271	565	572	537	814		591	1059		500	1138	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.74	0.56	0.12	0.39	0.53		0.20	0.80		0.39	0.75	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 99.2
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 36.7
 Intersection LOS: D
 Intersection Capacity Utilization 82.6%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

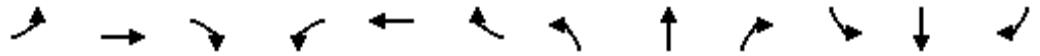
Splits and Phases: 2: State Avenue/Smokey Point Boulevard & 136th Street NE



Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	0	396	27	5	14	298	352	1	0	337	148
Future Volume (vph)	206	0	396	27	5	14	298	352	1	0	337	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		25	150		0	0		75
Storage Lanes	1		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98		1.00	0.98		1.00				0.98
Frt			0.850			0.850						0.850
Flt Protected	0.950				0.959		0.950					
Satd. Flow (prot)	1736	0	1553	0	1752	1553	1736	1827	0	0	1827	1553
Flt Permitted	0.736				0.959		0.384					
Satd. Flow (perm)	1342	0	1516	0	1749	1516	702	1827	0	0	1827	1520
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			393			109						126
Link Speed (mph)		30			30			30				30
Link Distance (ft)		4740			361			1354				2819
Travel Time (s)		107.7			8.2			30.8				64.1
Confl. Peds. (#/hr)	1		2	2			1					
Confl. Bikes (#/hr)							3			4		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	0	413	0	33	15	310	368	0	0	351	154
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases	4		4	8		8	2					6
Detector Phase	4		4	8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	7.0
Minimum Split (s)	23.0		23.0	22.5	22.5	22.5	10.0	23.0			26.0	26.0
Total Split (s)	25.0		25.0	35.0	35.0	35.0	10.0	35.0			25.0	25.0
Total Split (%)	35.7%		35.7%	50.0%	50.0%	50.0%	14.3%	50.0%			35.7%	35.7%
Yellow Time (s)	4.0		4.0	3.0	3.0	3.0	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
Total Lost Time (s)	5.0		5.0		4.0	4.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode	None		None	None	None	None	None	Max			Max	Max
Act Effect Green (s)	12.8		12.8		13.8	13.8	31.2	31.2			21.1	21.1
Actuated g/C Ratio	0.24		0.24		0.26	0.26	0.58	0.58			0.39	0.39
v/c Ratio	0.68		0.63		0.07	0.03	0.62	0.35			0.49	0.23
Control Delay	29.7		7.3		14.7	0.1	15.0	8.3			16.6	5.3
Queue Delay	0.0		0.0		0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	29.7		7.3		14.7	0.1	15.0	8.3			16.6	5.3
LOS	C		A		B	A	B	A			B	A
Approach Delay		15.0			10.2			11.3			13.1	

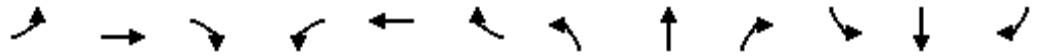
2030 BASELINE CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022

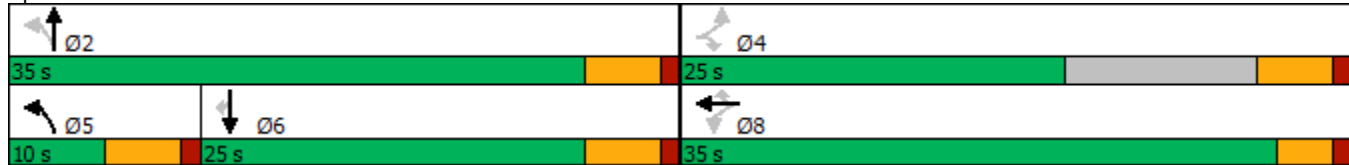


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			B			B			B		
Queue Length 50th (ft)	62		5		8	0	44	54			81	5
Queue Length 95th (ft)	120		59		24	0	#127	130			175	40
Internal Link Dist (ft)		4660			281			1274			2739	
Turn Bay Length (ft)	150					25	150					75
Base Capacity (vph)	749		1019		1008	920	500	1054			713	670
Starvation Cap Reductn	0		0		0	0	0	0			0	0
Spillback Cap Reductn	0		0		0	0	0	0			0	0
Storage Cap Reductn	0		0		0	0	0	0			0	0
Reduced v/c Ratio	0.29		0.41		0.03	0.02	0.62	0.35			0.49	0.23

Intersection Summary




















Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 54.1
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 13.0
 Intersection LOS: B
 Intersection Capacity Utilization 64.0%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: 51st Avenue NE & 136th Street NE/School Exit



Lanes, Volumes, Timings
1: State Avenue & 128th Street NE

06/08/2022

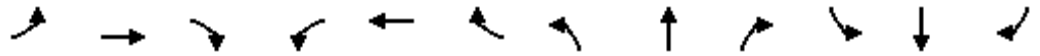
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	14	44	77	0	34	8	835	168	41	862	5
Future Volume (vph)	10	14	44	77	0	34	8	835	168	41	862	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	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		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00			1.00	
Frt		0.913			0.958			0.975			0.999	
Flt Protected		0.993			0.967		0.950			0.950		
Satd. Flow (prot)	0	1656	0	0	1692	0	1736	3369	0	1736	3467	0
Flt Permitted		0.993			0.393		0.275			0.196		
Satd. Flow (perm)	0	1656	0	0	688	0	502	3369	0	358	3467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			101			20				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1088			1243			4124				2821
Travel Time (s)		24.7			28.3			93.7				64.1
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)									1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	0	0	120	0	9	1079	0	44	932	0
Turn Type	Split	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8		4	3		5	2		1	6	
Permitted Phases				3			2			6		
Detector Phase	8	8		4	3		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		8.0	5.0		5.0	7.0		5.0	7.0	
Minimum Split (s)	23.0	23.0		23.0	25.0		10.0	23.0		10.0	23.0	
Total Split (s)	10.0	10.0		30.0	20.0		20.0	50.0		20.0	50.0	
Total Split (%)	7.7%	7.7%		23.1%	15.4%		15.4%	38.5%		15.4%	38.5%	
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				Lag	Lead		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?				Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Max		None	Max	
Act Effect Green (s)		5.0			8.6		51.5	48.7		54.0	52.9	
Actuated g/C Ratio		0.06			0.11		0.63	0.60		0.66	0.65	
v/c Ratio		0.50			0.74		0.02	0.53		0.13	0.41	
Control Delay		32.3			37.6		6.5	13.1		7.0	9.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.3			37.6		6.5	13.1		7.0	9.3	
LOS		C			D		A	B		A	A	
Approach Delay		32.3			37.6			13.1			9.2	

2028 HORIZON YEAR CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings
 1: State Avenue & 128th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			D			B			A	
Queue Length 50th (ft)		13			9		1	180		7	100	
Queue Length 95th (ft)		#66			#82		7	297		22	237	
Internal Link Dist (ft)		1008			1163			4044			2741	
Turn Bay Length (ft)							200			200		
Base Capacity (vph)		146			210		567	2025		497	2254	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.50			0.57		0.02	0.53		0.09	0.41	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 81.3
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 13.3
 Intersection LOS: B
 Intersection Capacity Utilization 55.4%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

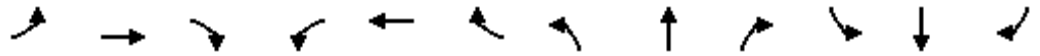
Splits and Phases: 1: State Avenue & 128th Street NE

20 s	50 s	20 s	30 s	10 s
20 s	50 s			

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	296	67	212	251	151	116	555	256	182	548	261
Future Volume (vph)	189	296	67	212	251	151	116	555	256	182	548	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	200		0	300		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.99	1.00							0.99	
Frt			0.850		0.944			0.953				0.952
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1741	0	1752	3340	0	1752	3311	0
Flt Permitted	0.210			0.275			0.170			0.122		
Satd. Flow (perm)	387	1845	1547	507	1741	0	314	3340	0	225	3311	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143		26			54			54	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		981			4740			2821			4424	
Travel Time (s)		22.3			107.7			64.1			100.5	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												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%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	315	71	226	428	0	123	862	0	194	861	0
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)	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	23.0		10.0	35.0		10.0	23.0	
Total Split (s)	15.0	35.0	35.0	30.0	40.0		35.0	35.0		30.0	30.0	
Total Split (%)	11.5%	26.9%	26.9%	23.1%	30.8%		26.9%	26.9%		23.1%	23.1%	
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	Max		None	Max	
Act Effect Green (s)	33.8	24.1	24.1	39.7	27.3		39.5	30.4		44.6	33.0	
Actuated g/C Ratio	0.34	0.24	0.24	0.40	0.27		0.40	0.31		0.45	0.33	
v/c Ratio	0.76	0.71	0.15	0.62	0.86		0.48	0.81		0.69	0.76	
Control Delay	40.2	44.8	0.6	26.8	49.9		23.7	39.0		33.7	34.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.2	44.8	0.6	26.8	49.9		23.7	39.0		33.7	34.6	
LOS	D	D	A	C	D		C	D		C	C	
Approach Delay		37.9			41.9			37.1			34.5	

2028 HORIZON YEAR CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

2: State Avenue/Smokey Point Boulevard & 136th Street NE

06/08/2022

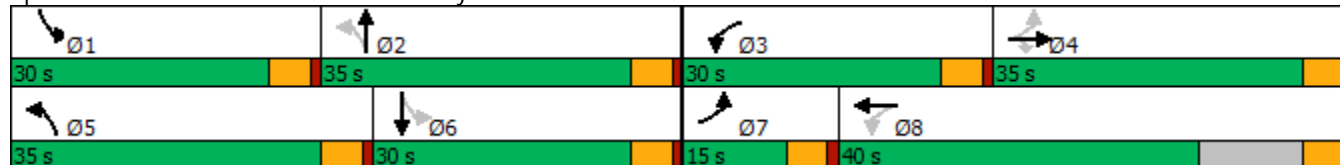


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			D			D			C		
Queue Length 50th (ft)	80	181	0	92	242		43	251		71	240	
Queue Length 95th (ft)	#186	311	0	157	383		92	#446		161	#408	
Internal Link Dist (ft)	901			4660			2741			4344		
Turn Bay Length (ft)	150		150	200			300			300		
Base Capacity (vph)	272	564	572	532	812		588	1058		495	1134	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.74	0.56	0.12	0.42	0.53		0.21	0.81		0.39	0.76	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 99.4
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 37.4
 Intersection LOS: D
 Intersection Capacity Utilization 83.2%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: State Avenue/Smokey Point Boulevard & 136th Street NE



Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	0	405	27	5	14	308	352	1	0	337	152
Future Volume (vph)	210	0	405	27	5	14	308	352	1	0	337	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		25	150		0	0		75
Storage Lanes	1		1	0		1	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98		1.00	0.98		1.00				0.98
Frt			0.850			0.850						0.850
Flt Protected	0.950				0.959		0.950					
Satd. Flow (prot)	1736	0	1553	0	1752	1553	1736	1827	0	0	1827	1553
Flt Permitted	0.736				0.959		0.383					
Satd. Flow (perm)	1342	0	1516	0	1749	1516	700	1827	0	0	1827	1520
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			393			109						130
Link Speed (mph)		30			30			30				30
Link Distance (ft)		4740			361			1354				2819
Travel Time (s)		107.7			8.2			30.8				64.1
Confl. Peds. (#/hr)	1		2	2			1					
Confl. Bikes (#/hr)							3			4		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	0	422	0	33	15	321	368	0	0	351	158
Turn Type	Perm		Perm	Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2				6
Permitted Phases	4		4	8		8	2					6
Detector Phase	4		4	8	8	8	5	2				6
Switch Phase												
Minimum Initial (s)	5.0		5.0	7.0	7.0	7.0	5.0	7.0			7.0	7.0
Minimum Split (s)	23.0		23.0	22.5	22.5	22.5	10.0	23.0			26.0	26.0
Total Split (s)	25.0		25.0	35.0	35.0	35.0	10.0	35.0			25.0	25.0
Total Split (%)	35.7%		35.7%	50.0%	50.0%	50.0%	14.3%	50.0%			35.7%	35.7%
Yellow Time (s)	4.0		4.0	3.0	3.0	3.0	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
Total Lost Time (s)	5.0		5.0		4.0	4.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode	None		None	None	None	None	None	Max			Max	Max
Act Effct Green (s)	13.0		13.0		14.0	14.0	31.2	31.2			21.1	21.1
Actuated g/C Ratio	0.24		0.24		0.26	0.26	0.57	0.57			0.39	0.39
v/c Ratio	0.68		0.64		0.07	0.03	0.64	0.35			0.49	0.24
Control Delay	29.8		7.7		14.7	0.1	16.2	8.4			16.7	5.3
Queue Delay	0.0		0.0		0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	29.8		7.7		14.7	0.1	16.2	8.4			16.7	5.3
LOS	C		A		B	A	B	A			B	A
Approach Delay		15.3			10.1			12.0			13.2	

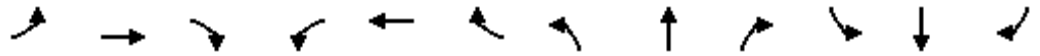
2028 HORIZON YEAR CONDITIONS
CRT [KH 090046000]

Timing Plan: PM PEAK-HOUR

Lanes, Volumes, Timings

3: 51st Avenue NE & 136th Street NE/School Exit

06/08/2022

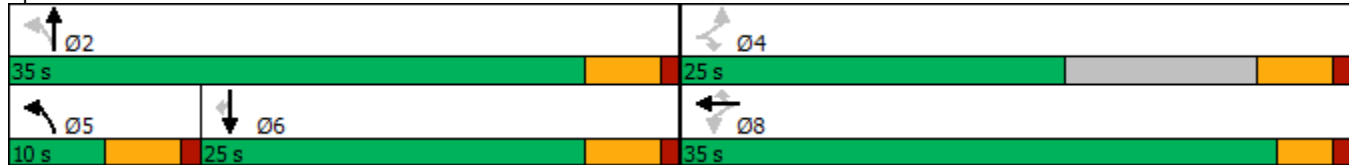


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			B			B			B		
Queue Length 50th (ft)	64		7		8	0	47	54			81	5
Queue Length 95th (ft)	122		63		24	0	#139	131			176	41
Internal Link Dist (ft)		4660			281			1274			2739	
Turn Bay Length (ft)	150					25	150					75
Base Capacity (vph)	746		1017		1005	917	498	1049			711	671
Starvation Cap Reductn	0		0		0	0	0	0			0	0
Spillback Cap Reductn	0		0		0	0	0	0			0	0
Storage Cap Reductn	0		0		0	0	0	0			0	0
Reduced v/c Ratio	0.29		0.41		0.03	0.02	0.64	0.35			0.49	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 54.3
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 13.4
 Intersection LOS: B
 Intersection Capacity Utilization 64.8%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: 51st Avenue NE & 136th Street NE/School Exit



WSDOT Exhibit C List

LIST OF PROGRAMMED
WSDOT PROJECTS IN
SNOHOMISH COUNTY
AS OF Nov. 2008

County ID#	TSA	SR	MP1	MP2	Title/Description	Design/Construction year	Total Cost (M)	TOTAL CAPACITY (ADT)	PRESENT VOLUME	RESERVE CAPACITY (ADT)	TRUE CONTRIBUTION PER ADT	50% TRIP END DEDUCTION	TAX DEDUCTION	Proportionate Share Per Development Generated ADT
DOT-11	D	5	186.42	186.42	128th ST SW Interchange - Construct Loop Ramps / HOV Bypass	2014	\$13.30	99,000	65,000	34,000	\$391.18	\$195.15	\$40.98	\$154.17
DOT-01	A	5	205.85	205.85	172nd Street NE (SR 531) interchange improvements, SB loop ramp, bridge widening	2009	\$41.00	90,000	34,900	55,100	\$744.10	\$372.05	\$63.25	\$308.80
DOT-30	E	9	1.66	4.04	212th Street SE to 176th Street SE, widen to 5 lanes	2011	\$80.80	54,000	21,000	33,000	2,448.48	\$1,224.24	\$183.64	\$1,040.60
DOT-56	B	9	16.48	17.49	Lundeen Parkway to SR-92, Widen to 4 lanes & RT-LT lanes	2009	\$38.90	54,000	24,000	30,000	\$1,296.67	\$648.34	\$123.18	\$525.16
DOT-37	B	9	17.96	17.96	SR-9 at 60th Street NE, add LT & RT lanes at Tee intersection	2011	\$2.95	54,000	36,000	18,000	\$163.89	\$81.95	\$13.91	\$67.94
DOT-22	A	9	18.88	19.46	SR 9/SR 528 intersection improvements, Signal & Channelization	2010	\$17.13	54,000	36,000	18,000	\$951.67	\$475.83	\$80.89	\$394.94
DOT-57	A	9	20.51	20.59	SR-9/84th Street NE intersection improvements, LT & RT lanes	2011	\$17.13	54,000	12,000	42,000	\$407.88	\$203.93	\$55.06	\$148.87
DOT-58	A	9	26.00	26.09	SR-9/SR-531/172nd St. NE intersection improvement, Roundabout	2011	\$15.60	54,000	11,000	43,000	\$362.80	\$181.40	\$45.87	\$135.53
DOT-33	B	92	1.46	1.46	SR-92 at 113th Avenue NE, Roundabout	2009	\$2.36	54,000	19,600	34,000	\$68.60	\$34.30	\$6.52	\$27.78
DOT-31	B	92	1.73	1.73	SR-92 at Callow/Grade Road, turn lanes to SR-92	2009	\$1.90	54,000	19,600	34,400	\$55.24	\$27.62	\$5.25	\$22.37
DOT-46	C	203	22.36	22.38	SR-203 at North High Rock/Tualco Roads, Re-align cross street for I/S and add LT & RT lanes on SR-203	2009	\$3.34	18,000	13,000	5,000	\$688.00	\$344.00	\$73.48	\$270.52
DOT-36	C	203	23.01	23.01	Ben Howard Rd channelization, LT lanes on SR-203	2009	\$1.07	54,000	13,000	41,000	\$26.10	\$13.05	\$2.87	\$10.18
DOT-16	E	522	13.82	16.61	Paradise Lake Road I/C, Stage 3, new interchange	2010	\$27.95	81,000	48,000	33,000	\$847.03	\$423.52	\$63.53	\$359.99
DOT-17	E	522	16.80	20.41	Paradise Lake Road to Snohomish River, Bridge, Stage 2, widen to 4 lanes	2009	\$33.48	80,000	21,900	58,100	\$576.25	\$288.13	\$43.22	\$244.91
DOT-28	C	522	20.50	24.68	Snohomish River Bridge to SR 2, widen to 4 lanes	2010	\$171.98	80,000	20,000	60,000	\$2,866.33	\$1,433.17	\$315.30	\$1,117.87

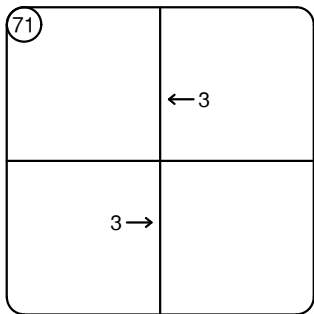
LIST OF PROGRAMMED
WSDOT PROJECTS IN
SNOHOMISH COUNTY
AS OF Nov. 2008

County ID#	TSA SR	MP1	MP2 Title/Description	Design/Construction year	Total Cost (M)	TOTAL CAPACITY (ADT)	PRESENT VOLUME	RESERVE CAPACITY (ADT)	TRUE CONTRIBUTION PER ADT	50% TRIP END DEDUCTION	TAX DEDUCTION	Proportionate Share Per Development Generated ADT
DOT-19	F 524	5.87	9.50 24th Avenue SE to I-405, widen to 5 Lanes	2012	\$33.34	54,000	15,300	38,700	\$861.50	\$430.75	\$77.54	\$353.21
DOT-20	F 524	5.87	9.50 I-405 to Royal Ann Road, widen to 5 Lanes	2011	\$71.06	54,000	15,300	38,700	\$1,836.18	\$918.09	\$165.26	\$752.83
DOT-60	E 524	6.79	Larch Way intersection, LT lanes, signal	2009	\$2.59	54,000	15,300	38,700	\$66.93	\$33.47	\$5.02	\$28.45
DOT-59	D 525	6.25	SR-525/68th St. SW intersection improvements, NBRT, NBLT & SBLT	2011	\$3.70	25,700	17,000	8,700	\$425.29	\$212.64	\$89.31	\$123.33
DOT-49	A 530	17.30	SR-530 at Old 99, Roundabout	2011	\$8.00	18,000	10,000	8,000	\$1,000.00	\$500.00	\$85.00	\$415.00
DOT-62	A 530	19.71	211th Place NE, Intersection Roundabout	2011	\$6.10	24,000	15,000	9,000	\$677.78	\$338.89	\$57.61	\$281.28
DOT-52	A 531	1.95	SR-531/Jct. Freestad Road	2011	\$1.55	18,000	7,900	10,100	\$140.14	\$70.07	\$11.92	\$58.15
DOT-05	A 531	7.00	8.59 43rd Ave. NE to 67th Ave. NE, NE, Widen to 5 lanes (Arlington)	2014	\$20.78	54,000	11,000	43,000	\$483.14	\$241.57	\$41.07	\$200.50
			270th St. NW Vic. To 72nd Ave. NW, EB Climbing Lane, intersection improvements & signal.	2009	\$19.00	54,000	16,000	38,000	500	\$250.00	\$28.75	\$221.25
DOT-53	A 532	5.25	64th Ave. NW to 12th Ave. NW, Climbing lane & LT Lanes	2010	\$22.40	54,000	17,000	37,000	\$605.41	\$302.70	\$33.75	\$268.95
			TAX DEDUCTIONS									
			TSA A = 17%									
			TSA B = 19%									
			TSA C = 22%									
			TSA D = 21%									
			TSA E = 15%									
			TSA F = 18%									

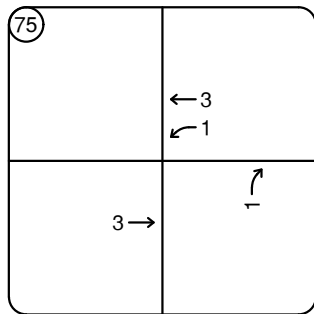
Snohomish County Key Intersections



AM PEAK-HOUR

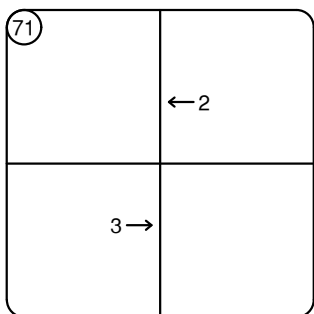


23RD AVE NE @
140TH ST NE

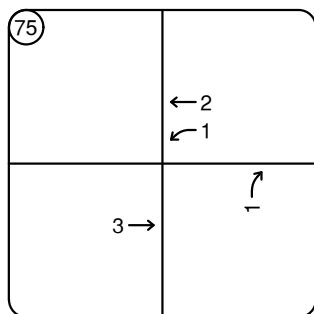


34TH AVE NE @
STIMSON RD

PM PEAK-HOUR



23RD AVE NE @
140TH ST NE



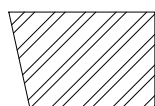
34TH AVE NE @
STIMSON RD



SAIA MARYSVILLE
35,000 SF INTERMODAL
TRUCK TERMINAL

CITY OF MARYSVILLE

LEGEND



DEVELOPMENT SITE



KEY INTERSECTION

FIGURE A
SNOHOMISH COUNTY
KEY INTERSECTION
MAP

Table A: AM Peak-Hour Key Intersection Volumes

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#71: 23 rd Ave NE at 140 th St NE	0	3	0	0	3	0	0	0	0	0	0	0
#75: 34 th Ave NE at Stimson Rd	0	3	0	1	3	0	0	0	1	0	0	0

Table B: PM Peak-Hour Key Intersection Volumes

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#71: 23 rd Ave NE at 140 th St NE	0	3	0	0	2	0	0	0	0	0	0	0
#75: 34 th Ave NE at Stimson Rd	0	3	0	1	2	0	0	0	1	0	0	0