

 **TRAFFIC IMPACT ANALYSIS**

PIONEER POINT

JURISDICTION: CITY OF ARLINGTON

Prepared for:
Lavoy, Inc.
1602 4th Street
Marysville, Washington 98270

Prepared by:
Kimley»»Horn

January 2026
KH 090224144
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Prepared for:

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Marysville, Washington 98270



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TABLE OF CONTENTS

1. DEVELOPMENT IDENTIFICATION	2
2. METHODOLOGY	2
3. TRIP GENERATION	4
4. TRIP DISTRIBUTION	4
5. SNOHOMISH COUNTY KEY INTERSECTIONS	4
6. INTERSECTION LEVEL OF SERVICE ANALYSIS.....	6
6.1 Intersection Volumes.....	6
6.2 Level of Service Calculations	10
7. SITE ACCESS.....	10
8. TRAFFIC MITIGATION FEES	10
8.1 City of Arlington	10
8.2 Snohomish County.....	11
8.3 Washington State Department of Transportation.....	11
9. CONCLUSIONS	11

LIST OF FIGURES

Figure 1: Site Vicinity Map	3
Figure 2: Development Trip Distribution – PM Peak-Hour.....	5
Figure 3: 2024 Existing Turning Movements – PM Peak-Hour.....	7
Figure 4: 2031 No-Build Turning Movements – PM Peak-Hour	8
Figure 5: 2031 Build Turning Movements – PM Peak-Hour	9

LIST OF TABLES

Table 1: Trip Generation Summary.....	4
Table 2: Key Intersection Volumes – PM Peak Hour.....	4
Table 3: Level of Service Summary – PM Peak-Hour	10

LIST OF APPENDICES

SITE PLAN.....	A
COUNT DATA.....	B
TURNING MOVEMENT CALCULATIONS	C
LEVEL OF SERVICE ANALYSIS.....	D

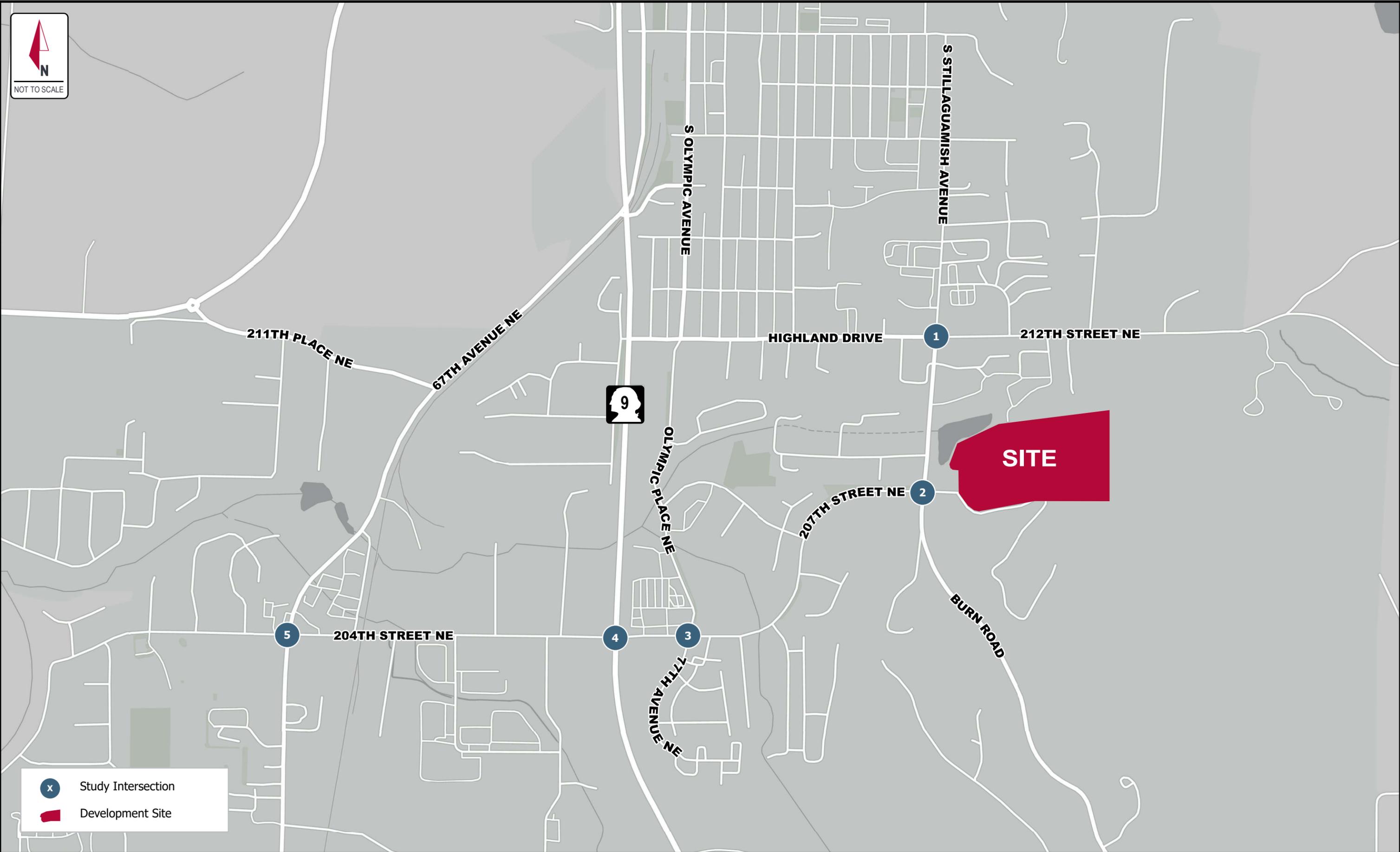
1. DEVELOPMENT IDENTIFICATION

Kimley-Horn and Associates, Inc. (Kimley-Horn) has been retained to analyze the traffic impacts of the proposed Pioneer Point Development (Development). This report is intended to provide the City of Arlington (City) with the necessary traffic generation, trip distribution, level of service analysis, and mitigation fee determination to facilitate their review of the Development. Chun-hao (Howard) Chen, 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 Institute of Transportation Engineers (ITE).

The Development is proposed to construct 25 single-family detached homes. The Development is located along 207th Street NE, east of S Stillaguamish Avenue, on parcels 31051200301000 and 31051200301400. The site is currently listed as unoccupied and vacant per the *Snohomish County Online Property Information (SCOPI)* web map. The Development proposes to access the City street network via access to 207th Street NE. A site vicinity map is included in **Figure 1** and a site plan has been provided in **Appendix A**.

2. METHODOLOGY

Trip generation calculations for the Development have been performed using data contained in the ITE's *Trip Generation Manual, 12th Edition (2025)*. The distribution of trips generated by the site is based on a previously approved trip distribution for residential developments in the area. The City has an interlocal agreement with Snohomish County (County) that provides for reciprocal mitigation fees. The City also has an interlocal agreement with the Washington State Department of Transportation (WSDOT) that provides for mitigation fees to WSDOT for impacts to WSDOT improvement projects. WSDOT improvement projects and their associated fees are based on the most recent Exhibit C list. City developments are required to pay for any WSDOT improvement project on the Exhibit C list impacted with three or more directional PM peak-hour trips or based on the area wide mitigation fee.



3. TRIP GENERATION

The trip generation calculations for the Development are based on the average trip generation rates for ITE Land Use Code (LUC) 210, Single-Family Detached Housing. The trip generation of the Development is summarized in **Table 1**.

Table 1: Trip Generation Summary

25 Units Single-Family Detached Housing ITE LUC 210	Average Daily Trips (ADTs)			AM Peak-Hour Trips			PM Peak-Hour Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
Generation Rate	9.09 trips per unit			0.70 trips per unit			0.93 trips per unit		
Splits	50%	50%	100%	27%	73%	100%	62%	38%	100%
Trips	113.63	113.62	227.25	4.73	12.77	17.50	14.42	8.83	23.25

The Development is anticipated to generate approximately 227 new ADTs with approximately 18 new AM peak-hour trips and 23 new PM peak-hour trips.

4. TRIP DISTRIBUTION

The trip distribution is based on approved distributions for surrounding uses and surrounding land uses. The anticipated trip distribution is:

- 35% to and from the south along SR-9
- 30% to and from the north
 - 15% along S Stillaguamish Avenue
 - 15% along Highland Drive
- 25% to and from the west
 - 15% from the south along 67th Avenue NE
 - 10% from the north along 67th Avenue NE
- 10% to and from north along Olympic Place NE

A detailed trip distribution for the PM Peak-hour is displayed in **Figure 2**.

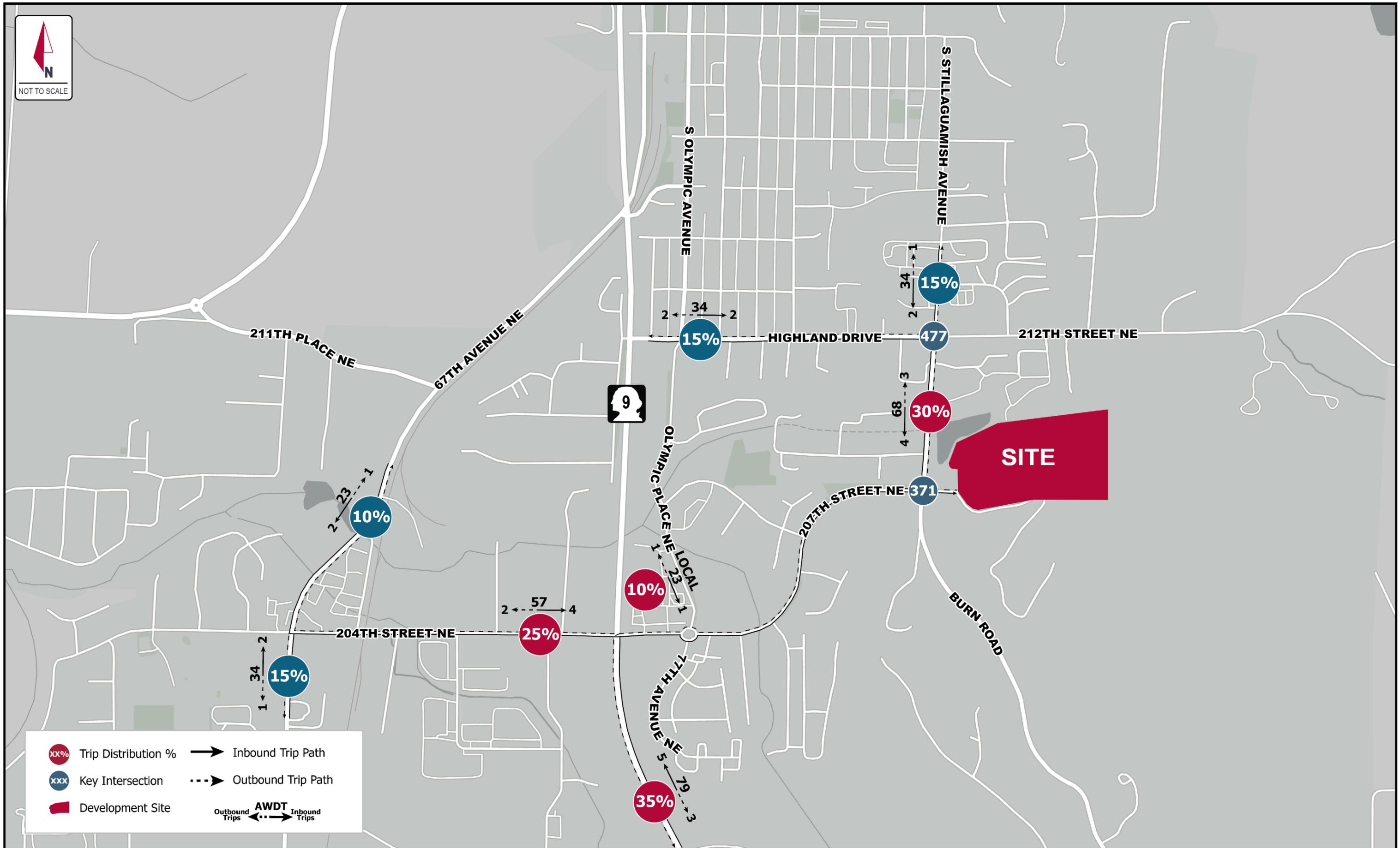
5. SNOHOMISH COUNTY KEY INTERSECTIONS

The interlocal agreement between the City and County requires detailed development trip turning movement data at County key intersections impacted with three or more directional trips on an approach or departure. The trips generated by the Development will impact two key intersections during the PM peak-hour. The PM peak-hour key intersection impacts are shown in tabular form in **Table 2**.

Table 2: Key Intersection Volumes – PM Peak Hour

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#371: S Stillaguamish Avenue at Highland Drive	0	10	0	0	6	3	0	0	0	4	0	0
#477: S Stillaguamish Avenue at 207 th Street NE	0	0	2	0	0	0	1	2	0	0	2	0

The key intersection impacts are also shown graphically in **Figure 2**.



● Trip Distribution % \rightarrow Inbound Trip Path
● Key Intersection \dashrightarrow Outbound Trip Path
■ Development Site **AWDT**
← Outbound Trips → Inbound Trips

6. INTERSECTION LEVEL OF SERVICE ANALYSIS

There are five intersections that have been identified for analysis:

1. S Stillaguamish Avenue at Highland Drive
2. S Stillaguamish Avenue at 207th Street NE
3. 77th Avenue NE/ Olympic Place NE at 204th Street NE
4. SR-9 at 204th Street NE
5. 67th Avenue NE at 204th Street NE

The study intersections identified have been analyzed for the weekday PM peak-hour.

6.1 Intersection Volumes

The existing PM peak-hour turning movements at the study intersections were collected by the independent count firm Traffic Data Gathering (TDG) in December 2024. The existing turning movements at the study intersections are shown in **Figure 3**. The existing count data is included in **Appendix B**.

The future analysis has been performed for the year 2031, which represents a conservative 7-year horizon period for full build-out of the Development. The 2031 no-build turning movements have been calculated by applying a 2.0% annually compounding growth rate applied to the existing turning movements and adding trips generated by the following pipeline development:

- Harmony at Arlington – Kimley-Horn (December 2024)

The 2031 no-build turning movements at the study intersections are shown in **Figure 4**. The pipeline project distribution is included with the existing count data in **Appendix C**.

The 2031 future with development turning movements at the study intersections have been calculated by adding the trips generated by the Development to the 2031 no-build turning movements. The 2031 future with development turning movements are shown in **Figure 5**. The turning movement calculations are included in **Appendix C**.

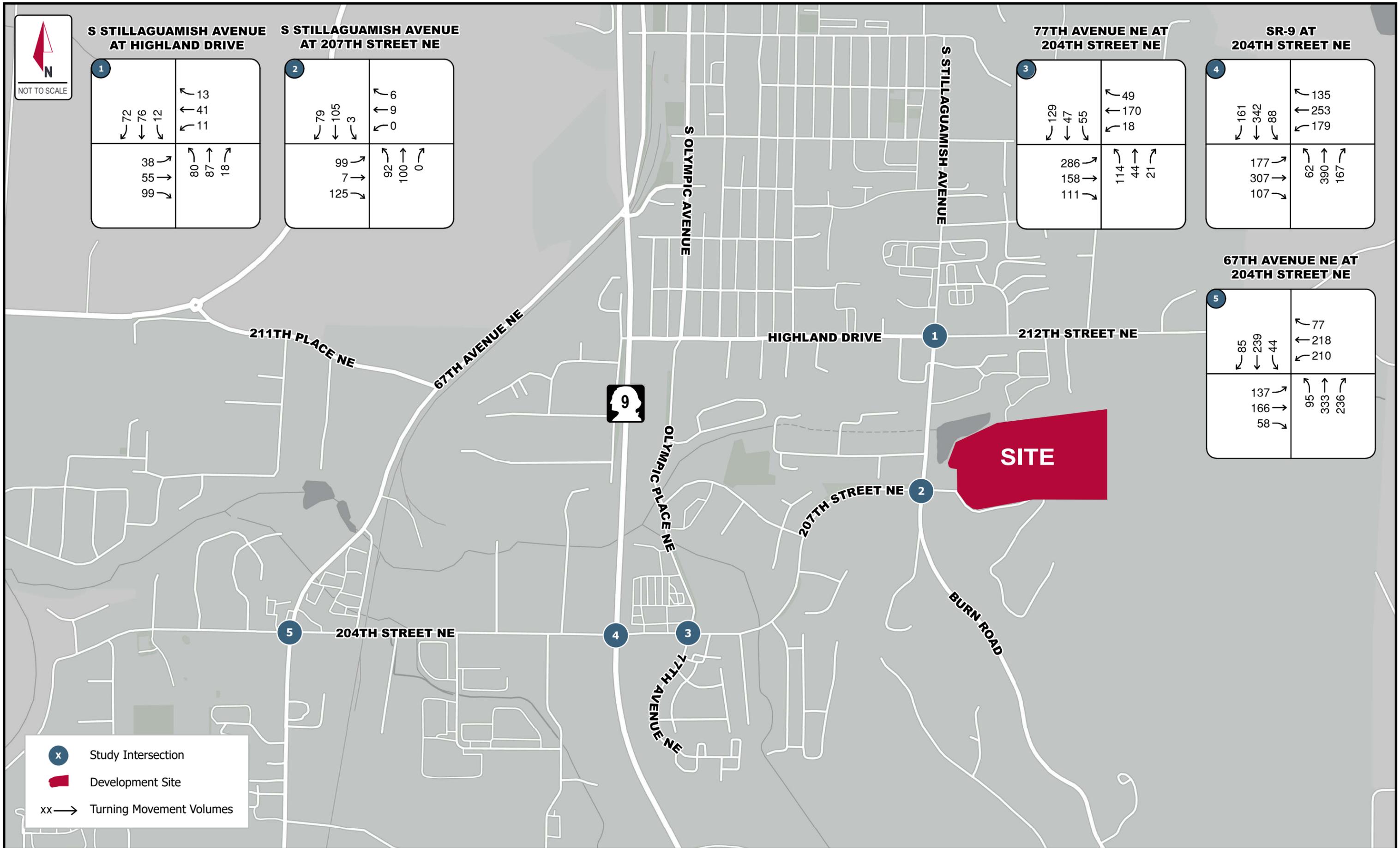
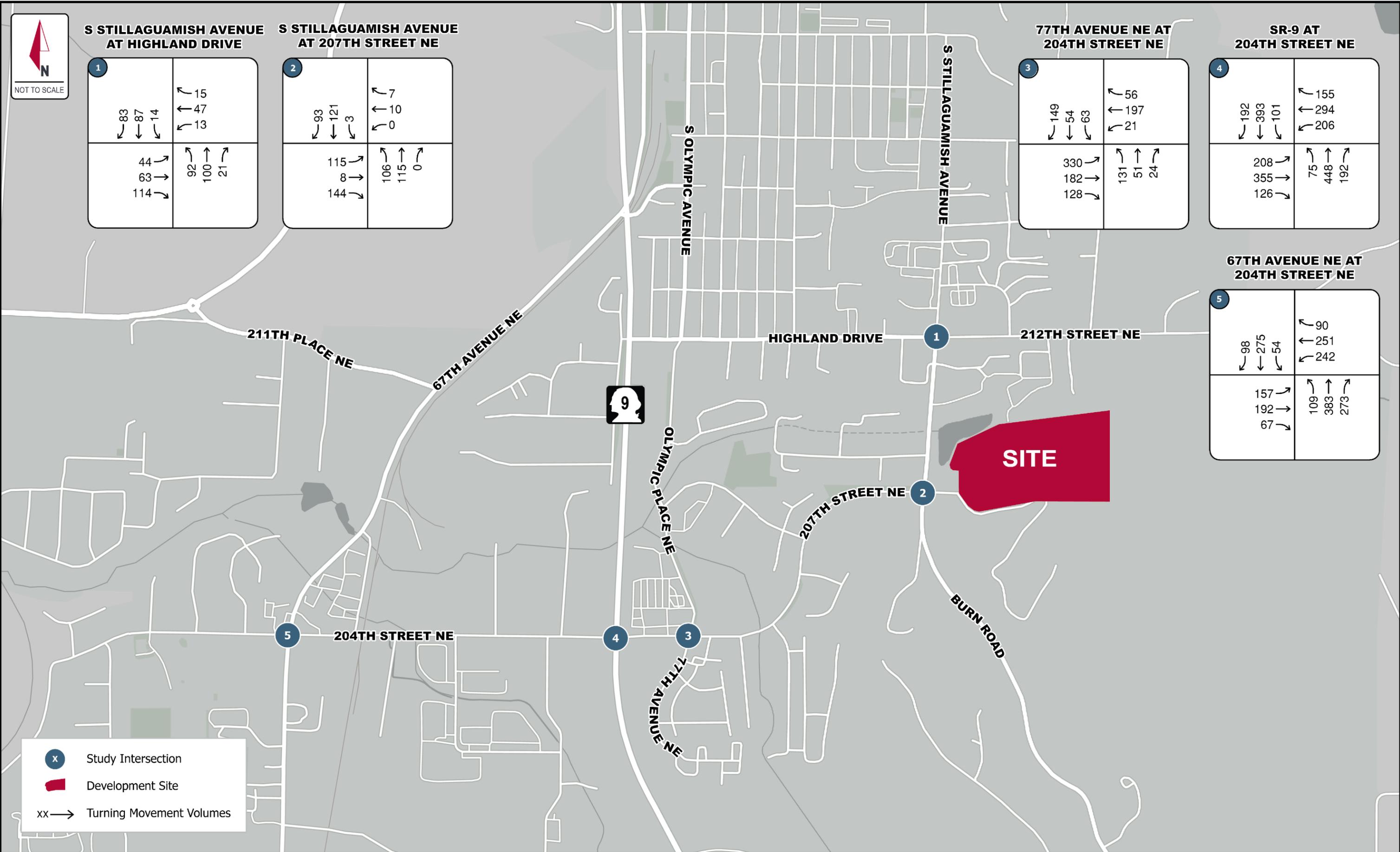
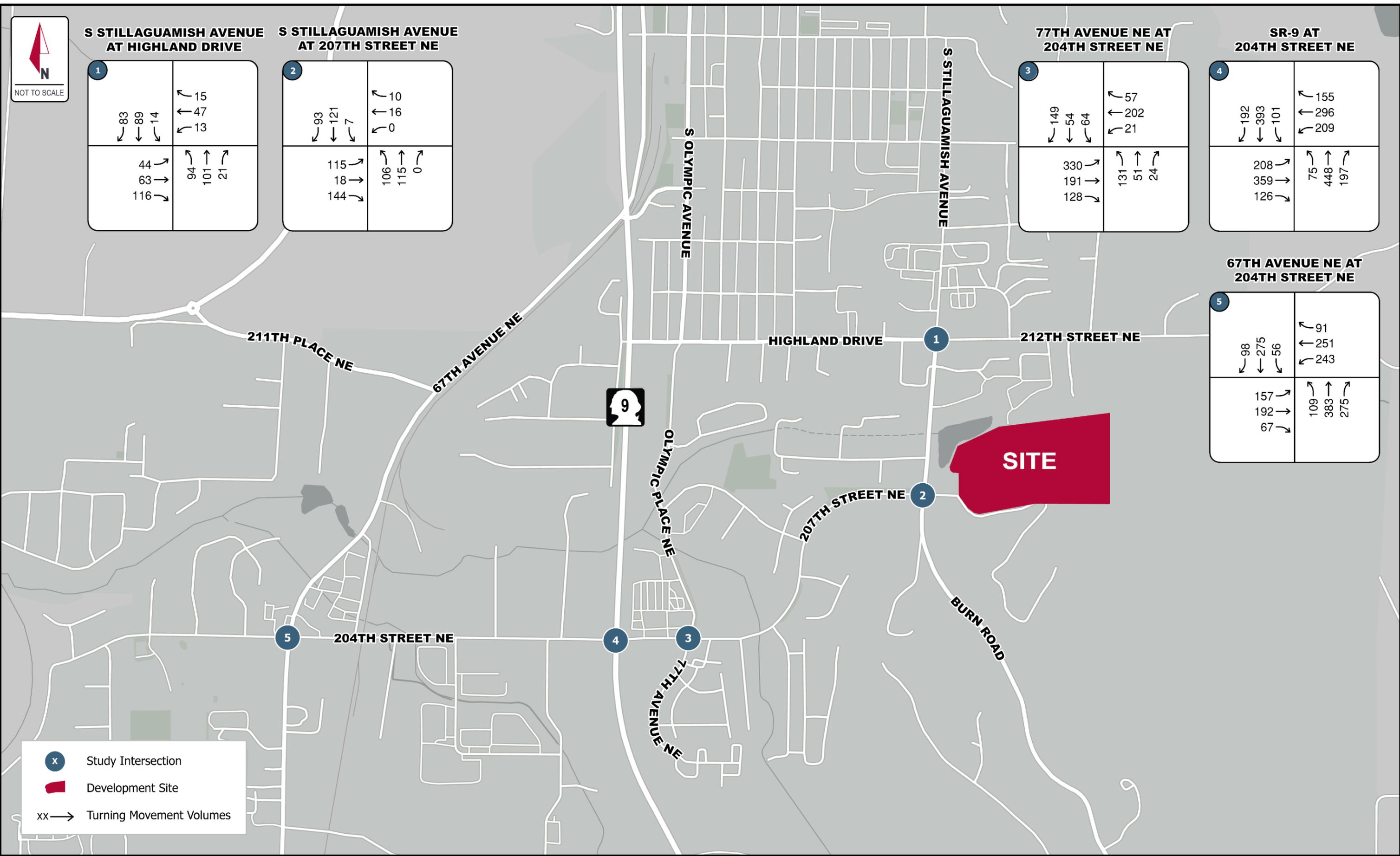


FIGURE 3: 2024 EXISTING TURNING MOVEMENTS - PM PEAK HOUR
 PIONEER POINT - CITY OF ARLINGTON, WA (KH 090224144)





6.2 Level of Service Calculations

The level of service calculations have been performed utilizing the existing channelization, existing intersection control, pipeline project, signal timing data provided by the City and WSDOT, peak-hour factors, and heavy vehicle factors from the existing turning movement counts. The existing, 2031 no-build, and 2031 future with development calculations are summarized for the PM peak-hour in **Table 3**.

Table 3: Level of Service Summary – PM Peak-Hour

Intersections	Control	Existing Conditions		2031 Conditions			
				No-Build		Future with Development	
		LOS	Delay	LOS	Delay	LOS	Delay
1. S Stillaguamish Avenue at Highland Drive	All-Way Stop-Control	A	9.2 sec	A	9.8 sec	A	9.9 sec
2. S Stillaguamish Avenue at 207 th Street NE	All-Way Stop-Control	A	9.5 sec	B	10.1 sec	B	10.3 sec
3. 77 th Avenue at 204 th Street NE	Roundabout	A	7.7 sec	A	8.0 sec	A	8.0 sec
4. SR-9 at 204 th Street NE	Signal	D	43.1 sec	D	51.7 sec	D	52.6 sec
5. 67 th Avenue NE at 204 th Street NE	Signal	C	31.0 sec	D	36.2 sec	D	36.3 sec

The analysis shows that the study intersections currently operate at LOS D or better during the PM peak-hour, and are anticipated to continue operating at LOS D or better under the 2031 no-build and future with development conditions. The intersection LOS calculations are provided in **Appendix D**. The City of Arlington has established an acceptable level of service of LOS D. Therefore, no mitigation measure is proposed at the study intersections.

7. SITE ACCESS

The Development will consist of 21 units accessed via three private drive aisles along 207th Street NE, while an additional 4 units will feature individual driveways along 207th Street NE. There is no posted speed limit along 207th Street NE, therefore an assumed speed limit of 25 miles per hour (mph) has been used for sight distance analysis. The [City of Arlington Design and Construction Standards and Specifications](#), Section 2-3 Roadway Geometrics recognizes the guidelines published by the American Association of State Highway and Transportation Officials (AASHTO) for safe stopping and enter sight distance requirements. The stopping and intersection sight distances are 155 feet and 280 feet, respectively, for a 25-mph assumed speed. The Development’s private drive aisles are expected to have adequate stopping and entering sight distance in each direction to satisfy the AASHTO requirements.

8. TRAFFIC MITIGATION FEES

The City collects traffic mitigation fees based on the number of new PM peak-hour trips generated by a development. The City also has interlocal agreements with the County and WSDOT for traffic mitigation fees.

8.1 City of Arlington

The City currently has a traffic mitigation fee of \$3,355 per PM peak-hour trip based on the [City of Arlington Impact and Mitigation Fees](#) worksheet. The Development is anticipated to generate 23 new PM peak-hour trips. The Development is not located within the Cascade Industrial Center Planned Action Area and should not incur any additional traffic mitigation fees. This results in City traffic mitigation fees of \$77,165.00.

It is important to note that City traffic mitigation fees do not vest to the time of application. It is possible that the City fees will increase between the time of this report and when the traffic mitigation fees are required to be paid.

8.2 Snohomish County

The City has an interlocal agreement with the County that provides for mitigation payments for impacts to County improvement projects. County fees are based on impacts to improvement projects included in the *Transportation Needs Report (TNR)*. There are not any County projects on the *TNR* that will be impacted by three directional PM peak-hour trips generated by the Development. County traffic mitigation fees should therefore not be a condition of approval for the Development.

8.3 Washington State Department of Transportation

The WSDOT improvement projects and their associated fees are based on the most recent Exhibit C list, which is part of the interlocal agreement between the County and WSDOT. City developments are required to pay for WSDOT improvement projects on the Exhibit C list impacted with ten or more PM peak-hour trips. There are not any WSDOT improvement projects that are anticipated to be impacted by ten PM peak-hour trips and therefore WSDOT traffic mitigation fees should not be a condition of approval for the Development.

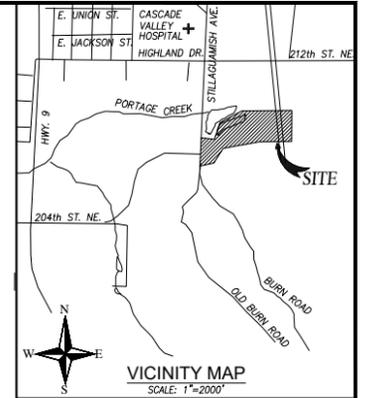
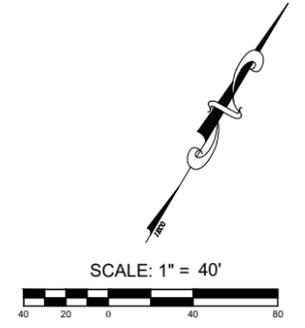
9. CONCLUSIONS

The Development is proposed to construct 25 single-family detached homes. The Development is located along 207th Street NE, east of S Stillaguamish Avenue, and is currently listed as unoccupied and vacant per the *SCOP* web map. The Development proposes to access the City street network via 207th Street NE. The Development is anticipated to generate approximately 227 new ADTs with approximately 18 new AM peak-hour trips and 23 new PM peak-hour trips. The analysis shows that the study intersections currently operate at LOS D or better during the PM peak-hour, and will continue to operate at LOS D or better during the 2031 no-build and future with development conditions. The access location appears to have adequate sight distance, based on a preliminary evaluation.

The Development is anticipated to have City traffic mitigation fees totaling \$77,165.00 based on the current City Impact and Mitigation Fees worksheet. County or WSDOT fees should not be required since the impacts will not reach the County and WSDOT thresholds.

APPENDIX A
SITE PLAN

NE 1/4, SW 1/4, SEC. 12, T. 31 N., R.05 E., W.M.
CITY OF ARLINGTON, WASHINGTON



- LEGEND**
- ⊕ EXISTING MONUMENT (AS SHOWN)
 - ⊗ SECTION 1/4 CORNER NOT FOUND
 - ⊗ SECTION CORNER NOT FOUND
 - FOUND REBAR/CAP OR I.P. (IRON PIPE)
 - (C) CALCULATED
 - (P) PLAT
 - (M) MEASURED
 - R.O.W. RIGHT-OF-WAY
 - P.O.B. POINT OF BEGINNING
 - CL CENTERLINE
 - CLF CHAIN LINK FENCE
 - WDF WOOD FENCE
 - W.S. WATER SURFACE
 - EDP EDGE OF PAVEMENT
 - BOW BACK OF WALK
 - CB STORM DRAIN CATCH BASIN (CB)
 - SDM STORM DRAIN MANHOLE (SDMH)
 - SSM SANITARY SEWER MANHOLE (SSMH)
 - SSC SANITARY SEWER CLEAN OUT (SSC)
 - P POWER POLE
 - GP GUY POLE
 - WM WATER METER
 - WV WATER VALVE
 - MB MAILBOX
 - UPA UTILITY POLE ANCHOR
 - FH FIRE HYDRANT (2 NOZZLE)
 - NGPA TYPE 1 NGPA SIGN
 - PROPOSED WATER
 - PROPOSED SANITARY SEWER
 - PROPOSED STORM DRAINAGE
 - PROPERTY LINE
 - EXISTING FENCE LINE
 - EDGE OF PAVEMENT
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - PRE-EXISTING DRAINAGE PATTERN
 - USEABLE OPEN SPACE
 - UNUSABLE OPEN SPACE
 - MINI PARK

OPEN SPACE CALCULATIONS

MINI PARK REQUIREMENT (PER 20.52.010):
 AREA REQUIRED = 65SF X 3.2 (PERSONS PER DU) X 25 = 5,200 SF
 7,666 SF PROVIDED IN THE FORM OF A TOT-LOT.

OPEN SPACE REQUIREMENT (PER 20.52.030):
 DEVELOPED AREA OF SITE = 704,234 SF
 NET PROJECT AREA:
 704,234 - 52,639 - 48,676 - 26,702 - 19,919
 = 17,411 - 99,128 = 439,759 SF
 AREA REQUIRED FOR OPEN SPACE = 5% X 439,759 = 21,988 SF
 33,442 SF PROVIDED IN THE FORM OF PRESERVED WOODED AREA.

PARKING INDEX

REQUIRED PER UNIT	TOTAL REQUIRED	TOTAL PROVIDED
2/UNITS PLUS 1/2 UNITS	75	79

EQUIPMENT AND PROCEDURE

BASIS OF BEARING:
SHORT PLAT (A.F. #9405255013)

BM
 EX. SSMH
 RIM=156.09
 I.E.=142.98

ENGINEER / CONTACT

INSIGHT ENGINEERING COMPANY
 P.O. BOX 1478
 EVERETT, WA 98206
 CONTACT: BRIAN R. KALAB, P.E.
 PH: (425) 303-9363
 FAX: (425) 303-9362
 EMAIL: INFO@INSIGHTENGINEERING.NET

SURVEYOR

THE WEST GROUP, INC.
 2120 HEWITT AVE.
 EVERETT, WA 98201
 CONTACT: DAVID WEST
 (425) 252-7088

APPLICANT/OWNER

LAWY INC.
 1602 4TH ST
 MARYSVILLE, WA 98270
 PH: (425) 770-0888

LEGAL DESCRIPTION

LOTS 1, 3 AND 4, CITY OF ARLINGTON SHORT PLAT RECORDED IN VOLUME 1 OF SHORT PLATS, PAGE(S) 208 AND 209, UNDER AUDITOR'S FILE NO. 9405255013, RECORDS OF SNOHOMISH COUNTY, BEING A PORTION OF THE WEST HALF OF THE SOUTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 NORTH, RANGE 5 EAST, W.M.

EXCEPT ANY PORTION WITHIN PORTAGE CREEK ESTATES, PHASE 1, A RESIDENTIAL CONDOMINIUM, SECOND ALTERATION TO PORTAGE CREEK HOMES CONDOMINIUM, ACCORDING TO THE RESTATES DECLARATION RECORDED UNDER AUDITOR'S FILE NO. 201902060163, RECORDS OF SNOHOMISH COUNTY, WASHINGTON WHICH RESTATES THE DECLARATION RECORDED UNDER AUDITOR'S FILE NUMBER 201701060210 RECORDS OF SNOHOMISH COUNTY, WASHINGTON, AND THE RESTATED SURVEY MAP AND PLANS RECORDED UNDER AUDITOR'S FILE NO. 201902060001, SAID INSTRUMENT BEING A RESTATMENT TO THE SURVEY MAP AND PLANS RECORDED UNDER AUDITOR'S FILE NO. 2017010605001 RECORDS OF SNOHOMISH COUNTY AND ANY AMENDMENTS THERETO.

SITUATE IN THE COUNTY OF SNOHOMISH, STATE OF WASHINGTON.



INSIGHT ENGINEERING CO.
 P.O. BOX - 1478
 EVERETT, WA 98206
 (425) 303-9363 (425) 303-9362 FAX
 INFO@INSIGHTENGINEERING.NET

SITE ADDRESS: 8500 BLOCK OF 207TH ST NE
 ARLINGTON, WA 98223

TAX ACCOUNT NO.'S: 31051200301000, 31051200301400, 31051200301500

NW 1/4, SW 1/4 SEC. 12, T. 31 N., R.05 E., W.M.
PIONEER POINT

DWG FILENAME: AMC DESIGNED BY: DATE: 12-03-2020 SCALE: 1"=40' JOB NO.: 17-0828

PRELIMINARY SITE PLAN A-51

NOTES:

1. ALL GARAGE WILL BE COLLECTED FROM INDIVIDUAL DWGS FROM EACH UNIT.

SITE DATA

SITE AREA	= 704,234 SF = 16.17 AC
ZONING CLASSIFICATION	= RHC
AIRPORT PROTECTION DISTRICT SUB DISTRICT	= D
USE CLASSIFICATION	= SINGLE FAMILY CONDO
NET DENSITY	= 24 / 1.89 = 25.93 DU/AC
GROSS DENSITY	= 24 UNITS / 16.17 AC = 1.48 UNITS/AC
BUILDING HEIGHT	= 30' (MAX. 45')
LOT COVERAGE	= 33,000 SF / 704,234 SF = 4.7% (MAX. = 75%)
UTILITIES	= CITY OF ARLINGTON
WATER	= CITY OF ARLINGTON
SEWER	= CITY OF ARLINGTON
SCHOOL	ARLINGTON SCHOOL DISTRICT 16
FIRE DISTRICT	NORTH COUNTY REGIONAL FIRE AUTHORITY

LOT DENSITY PER 20.048.020

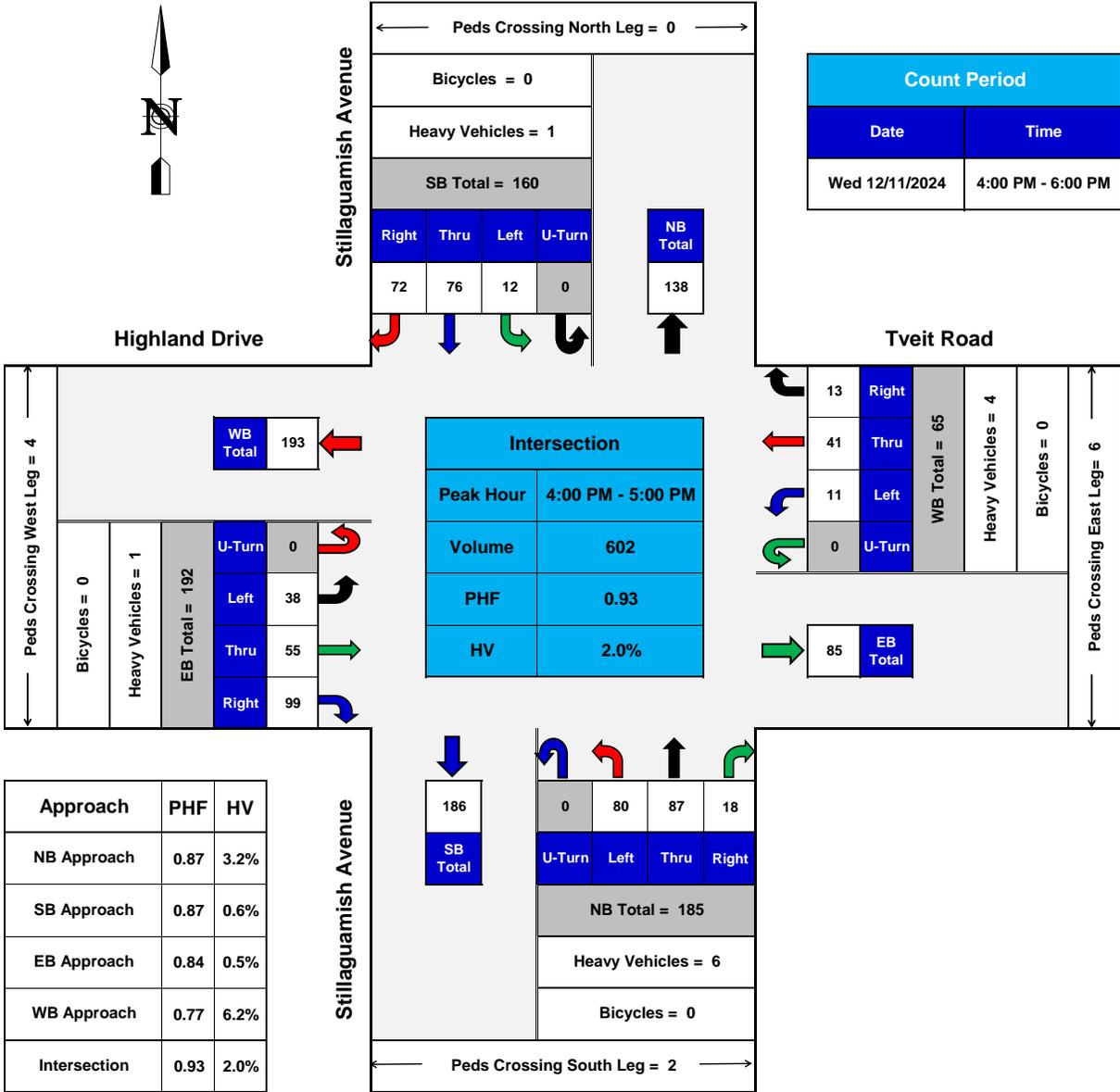
ONE LOT PER 4,300 SF
 704,234 / 4,300 = 164 LOTS MAX.
 WE ARE PROPOSING 24

REV. NO.	DESCRIPTION	INITIALS	DATE



APPENDIX B
COUNT DATA

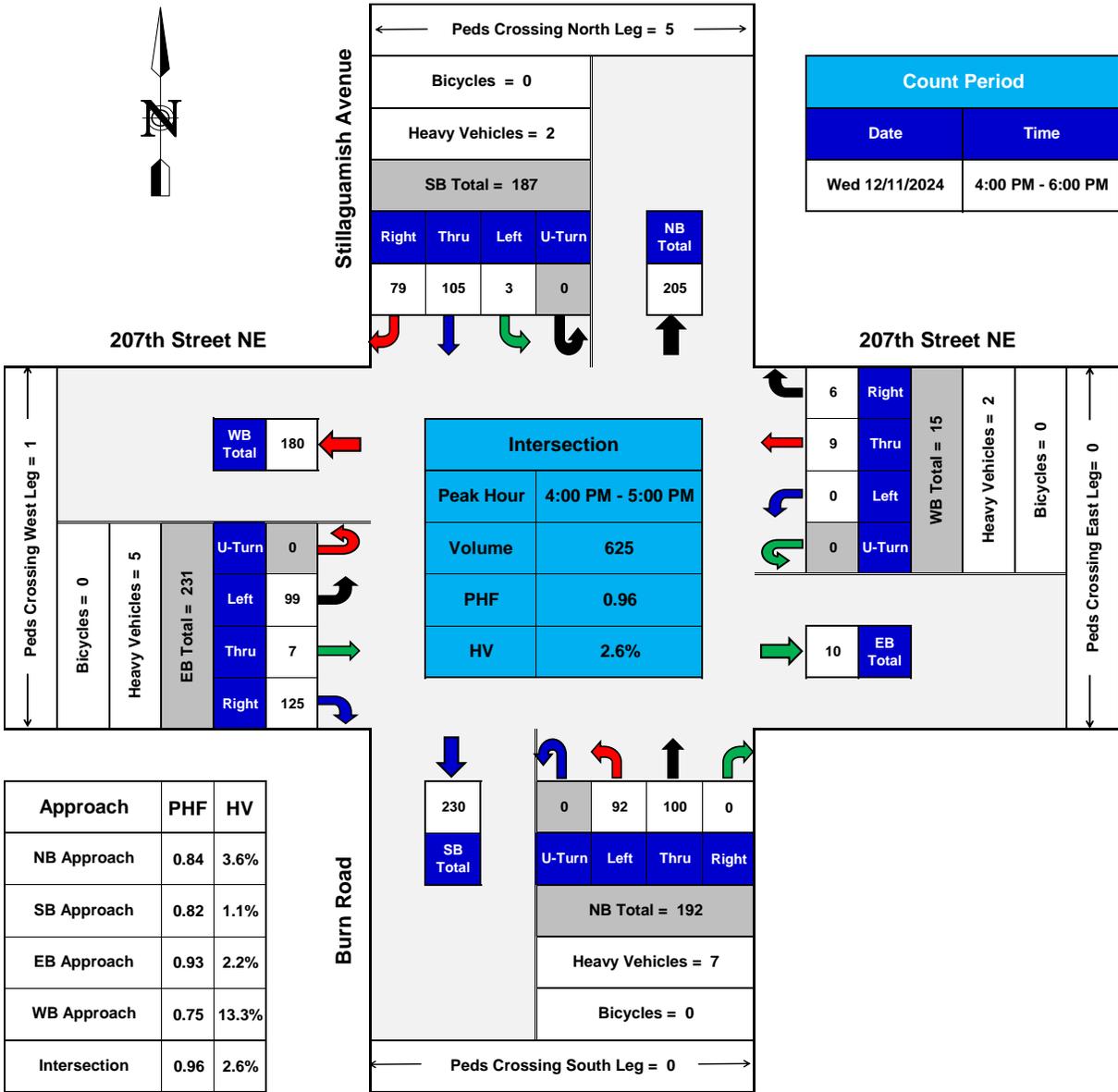
Stillaguamish Avenue @ Highland Drive Arlington, WA



**TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY**



Stillaguamish Avenue @ 207th Street NE Arlington, WA

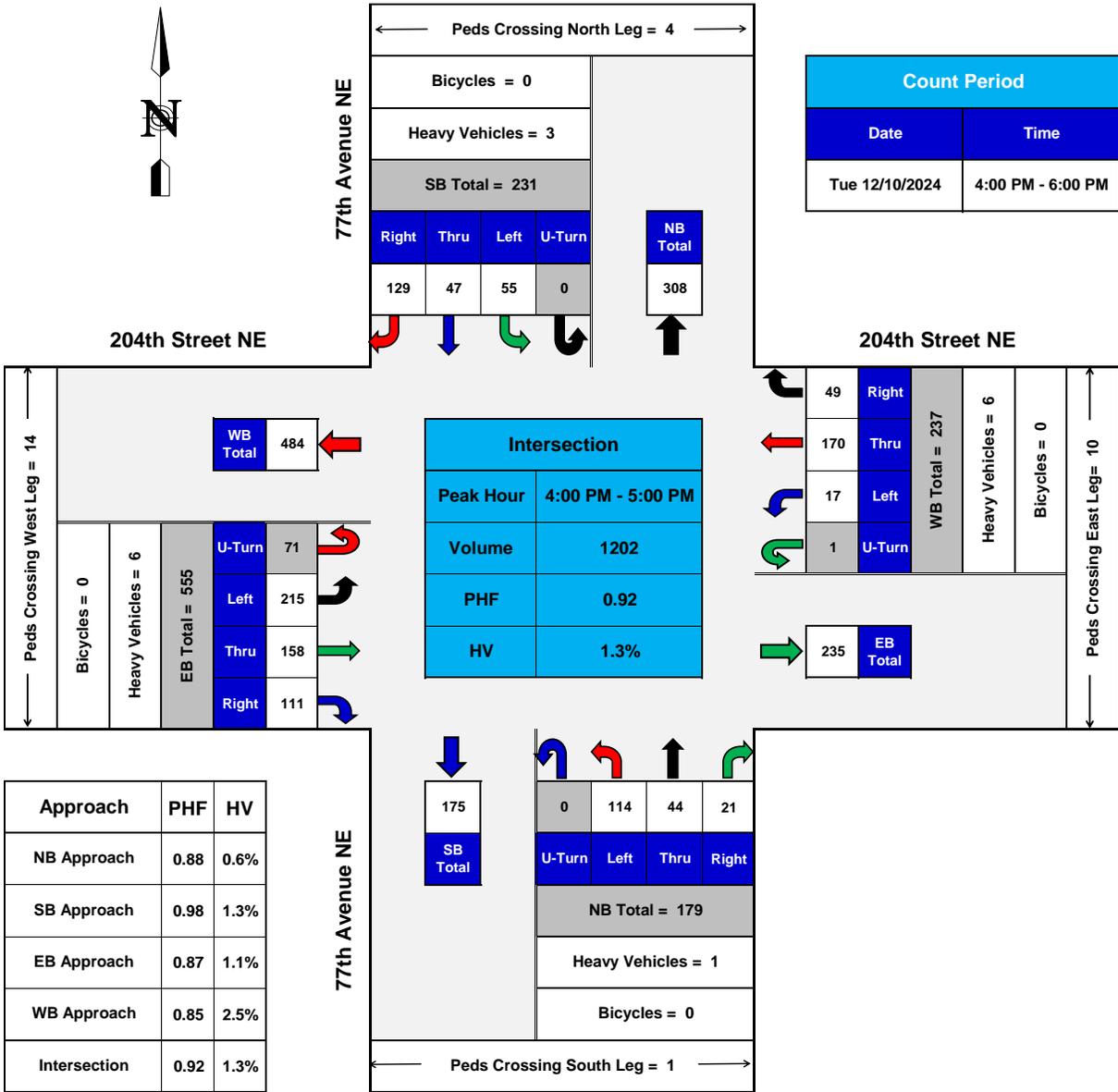


PHF = Peak Hour Factor
HV = Heavy Vehicles

TURNING MOVEMENTS DIAGRAM PEAK HOUR SUMMARY



77th Avenue NE @ 204th Street NE
Arlington, WA

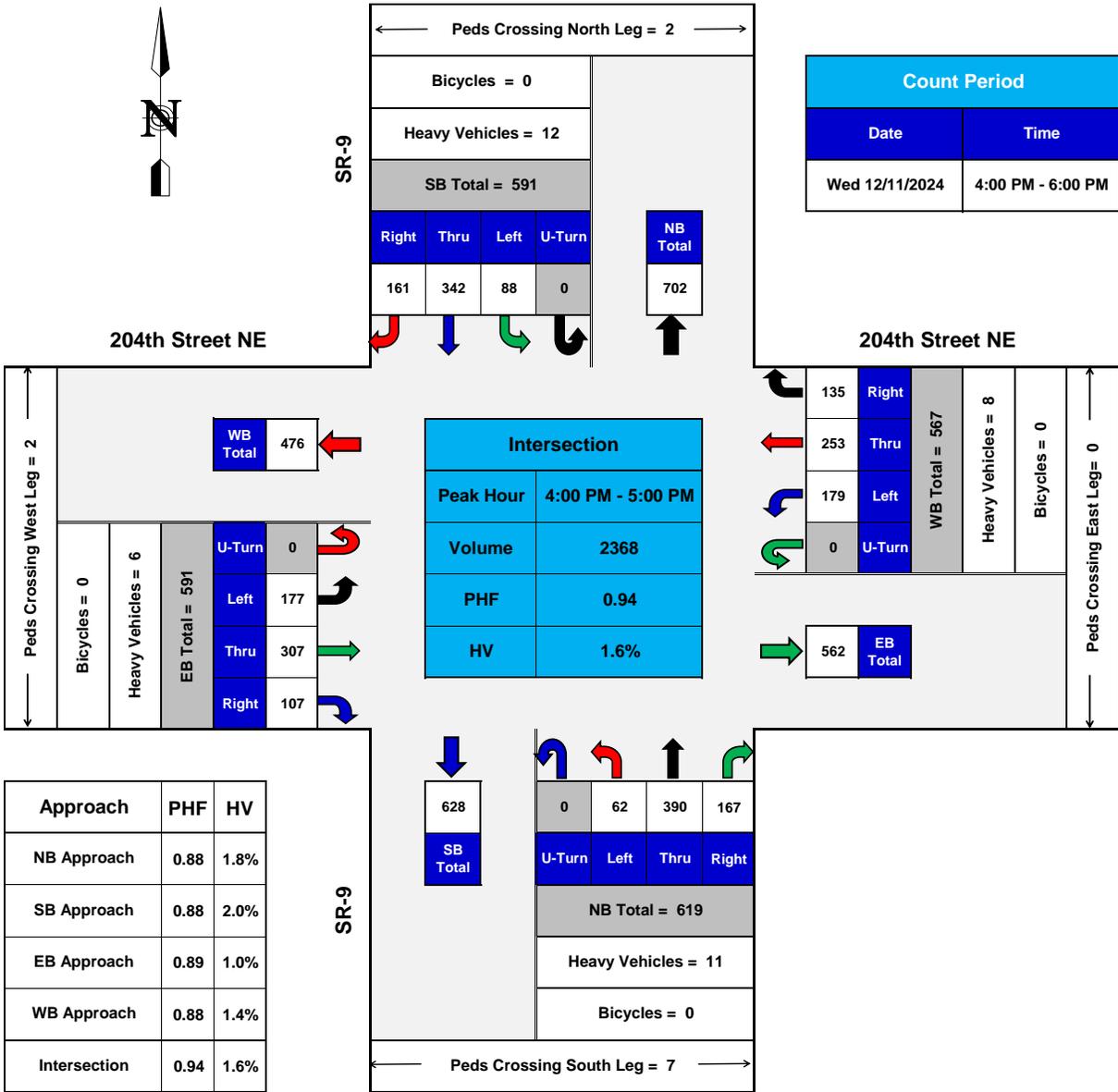


PHF = Peak Hour Factor
 HV = Heavy Vehicles

TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY



SR-9 @ 204th Street NE
Arlington, WA

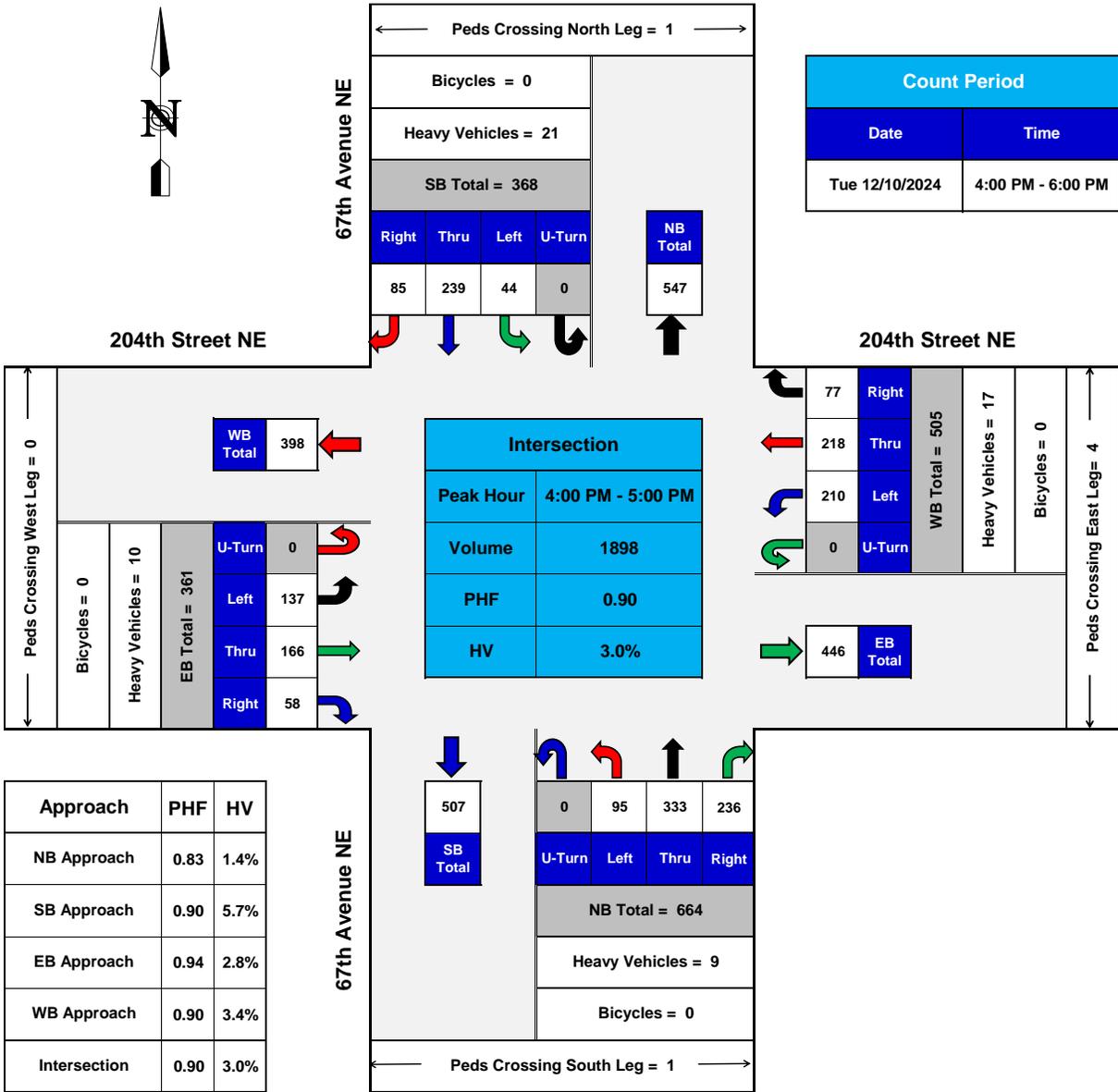


PHF = Peak Hour Factor
 HV = Heavy Vehicles

TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY



67th Avenue NE @ 204th Street NE
Arlington, WA



TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY



APPENDIX C
TURNING MOVEMENT CALCULATIONS

1 Stillaguamish Ave @ Highland

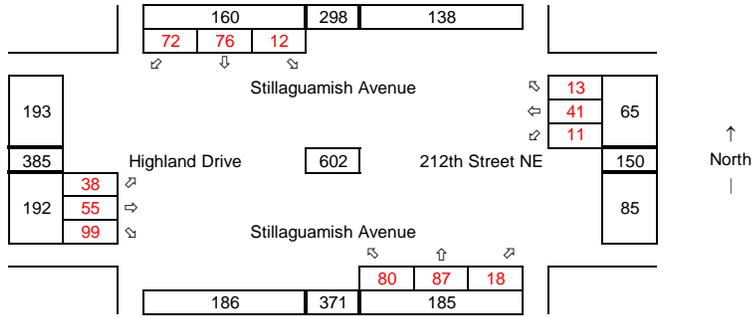
Synchro ID: 1

Existing Volumes

Average Weekday
PM Peak-Hour

Year: 12/11/2024

Data Source: TDG



Baseline Volumes

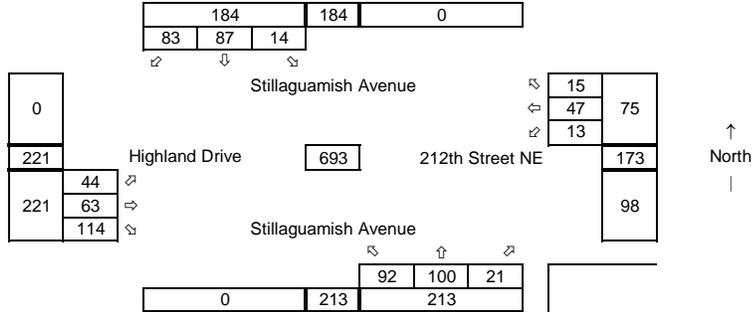
Average Weekday
PM Peak-Hour

Year: 2031

Growth Rate = 2.0%

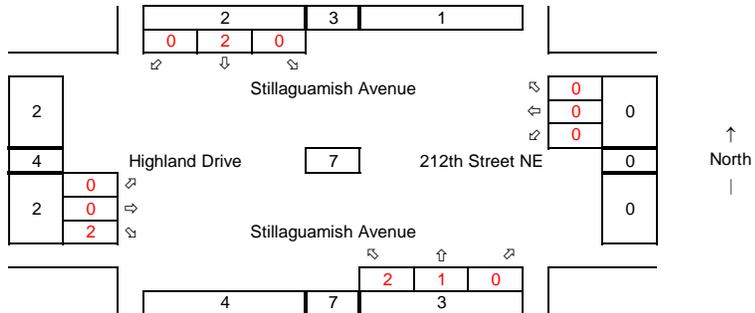
Years of Growth = 7

Total Growth = 1.1487



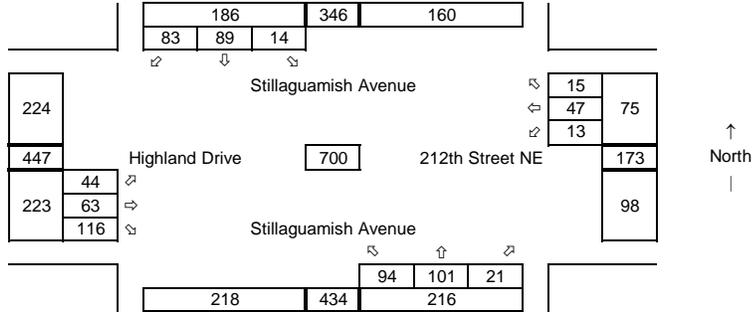
Development Volumes

Average Weekday
PM Peak-Hour



Future w Dev Volumes

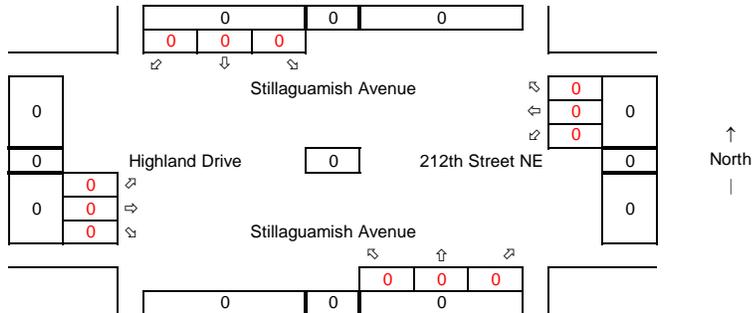
Average Weekday
PM Peak-Hour



Pipeline Volumes

Average Weekday
PM Peak-Hour

Harmony at Arlington

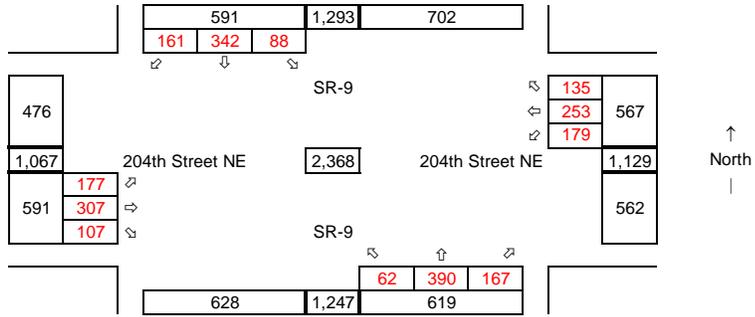


4 SR-9 @ 204th St NE

Synchro ID: 4
Existing Volumes
 Average Weekday
 PM Peak-Hour

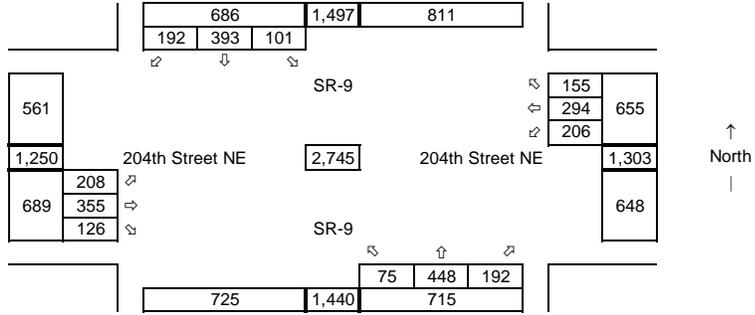
Year: 12/11/2024

Data Source: TDG

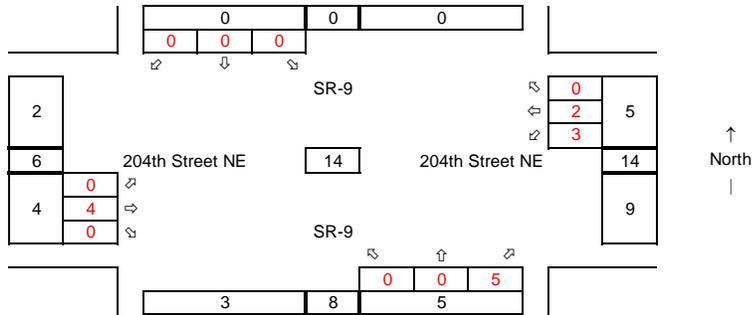


Baseline Volumes
 Average Weekday
 PM Peak-Hour

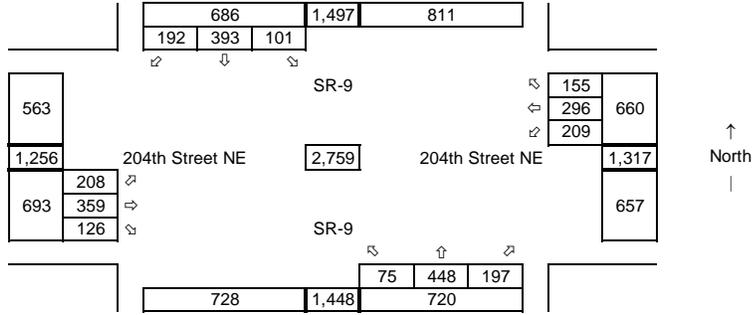
Year: 2031
 Growth Rate = 2.0%
 Years of Growth = 7
 Total Growth = 1.1487



Development Volumes
 Average Weekday
 PM Peak-Hour

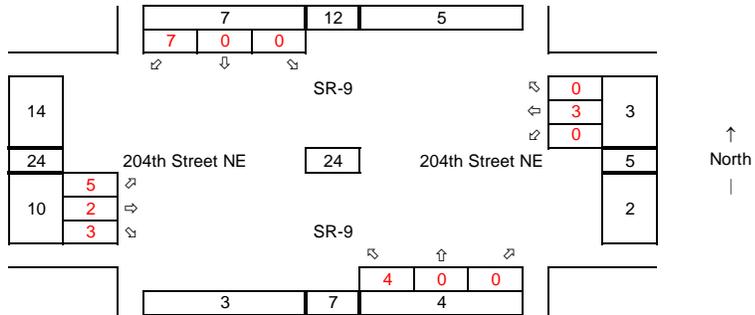


Future w Dev Volumes
 Average Weekday
 PM Peak-Hour



Pipeline Volumes
 Average Weekday
 PM Peak-Hour

Harmony at Arlington

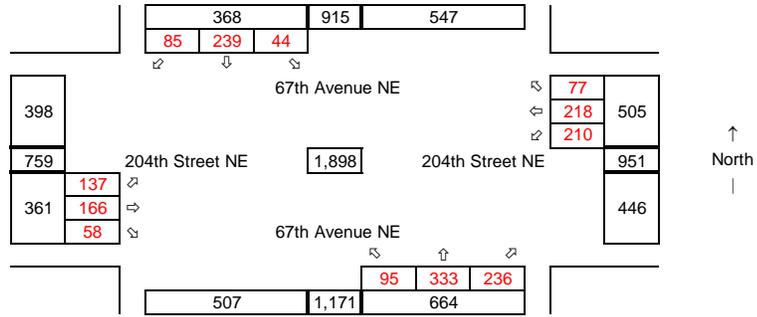


5 67th Ave NE @ 204th St NE

Synchro ID: 5
Existing Volumes
 Average Weekday
 PM Peak-Hour

Year: 12/11/2024

Data Source: TDG



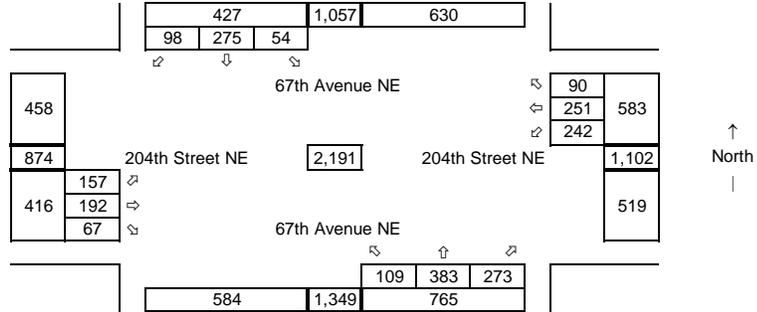
Baseline Volumes
 Average Weekday
 PM Peak-Hour

Year: 2031

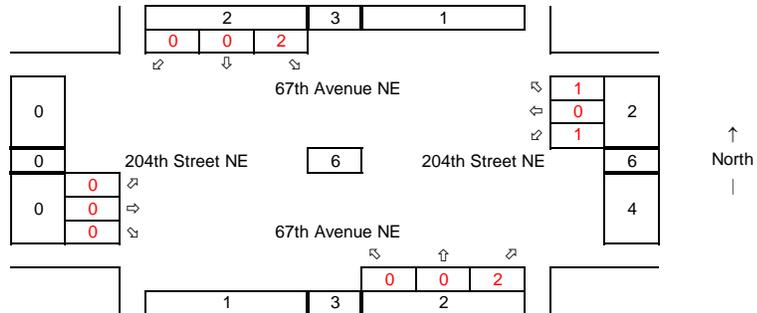
Growth Rate = 2.0%

Years of Growth = 7

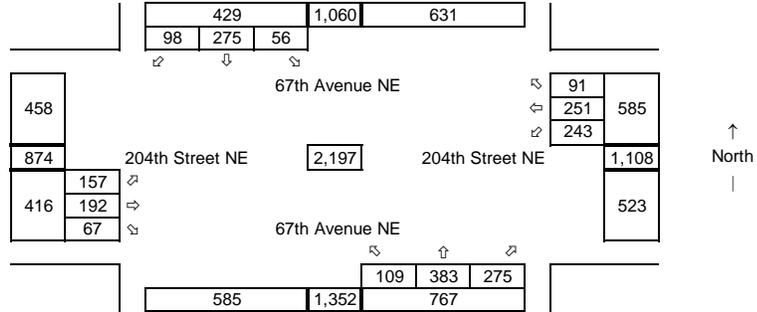
Total Growth = 1.1487



Development Volumes
 Average Weekday
 PM Peak-Hour

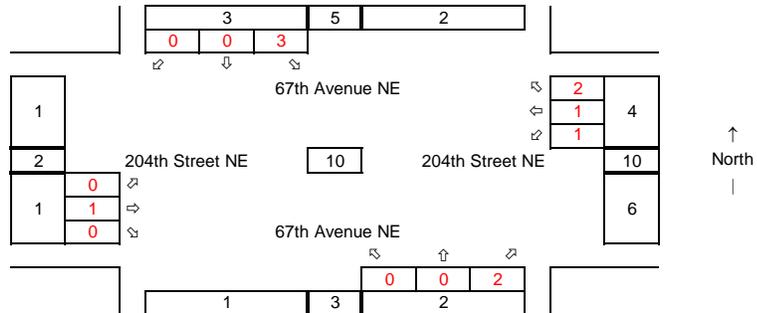


Future w Dev Volumes
 Average Weekday
 PM Peak-Hour



Pipeline Volumes
 Average Weekday
 PM Peak-Hour

Harmony at Arlington



APPENDIX D
LEVEL OF SERVICE ANALYSIS

1: S Stillaguamish Avenue & E Highland Drive/212th Street NE

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘			↕	
Traffic Vol, veh/h	38	55	99	11	41	13	80	87	18	12	76	72
Future Vol, veh/h	38	55	99	11	41	13	80	87	18	12	76	72
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, %	1	1	1	6	6	6	3	3	3	1	1	1
Mvmt Flow	41	59	106	12	44	14	86	94	19	13	82	77
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	9.4	8.7	9.3	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	20%	17%	8%
Vol Thru, %	0%	83%	29%	63%	48%
Vol Right, %	0%	17%	52%	20%	45%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	105	192	65	160
LT Vol	80	0	38	11	12
Through Vol	0	87	55	41	76
RT Vol	0	18	99	13	72
Lane Flow Rate	86	113	206	70	172
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.14	0.165	0.266	0.099	0.224
Departure Headway (Hd)	5.872	5.247	4.64	5.083	4.681
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	607	680	770	700	760
Service Time	3.639	3.013	2.695	3.153	2.747
HCM Lane V/C Ratio	0.142	0.166	0.268	0.1	0.226
HCM Control Delay, s/veh	9.6	9.1	9.4	8.7	9.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.5	0.6	1.1	0.3	0.9

2: Burn Road/S Stillaguamish Avenue & 207th Street NE/207th Place NE

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷			↷		↶	↷		↶	↷	
Traffic Vol, veh/h	99	7	125	0	9	6	92	100	0	3	105	79
Future Vol, veh/h	99	7	125	0	9	6	92	100	0	3	105	79
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, %	2	2	2	13	13	13	4	4	4	1	1	1
Mvmt Flow	103	7	130	0	9	6	96	104	0	3	109	82
Number of Lanes	1	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	9.4	9.1	9.5	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	5%	60%	0%	57%
Vol Right, %	0%	0%	0%	95%	40%	0%	43%
Sign Control	Stop						
Traffic Vol by Lane	92	100	99	132	15	3	184
LT Vol	92	0	99	0	0	3	0
Through Vol	0	100	0	7	9	0	105
RT Vol	0	0	0	125	6	0	79
Lane Flow Rate	96	104	103	138	16	3	192
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.158	0.157	0.173	0.186	0.025	0.005	0.272
Departure Headway (Hd)	5.935	5.431	6.052	4.882	5.817	5.916	5.109
Convergence, Y/N	Yes						
Cap	602	657	591	730	610	602	700
Service Time	3.696	3.192	3.813	2.642	3.903	3.677	2.87
HCM Lane V/C Ratio	0.159	0.158	0.174	0.189	0.026	0.005	0.274
HCM Control Delay, s/veh	9.8	9.2	10.1	8.8	9.1	8.7	9.8
HCM Lane LOS	A	A	B	A	A	A	A
HCM 95th-tile Q	0.6	0.6	0.6	0.7	0.1	0	1.1

MOVEMENT SUMMARY

 Site: 101 [Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] ft				
South: 77th Avenue NE															
3	L2	All MCs	124	1.0	124	1.0	0.223	12.5	LOS B	1.2	31.2	0.62	0.69	0.62	32.5
8	T1	All MCs	48	1.0	48	1.0	0.223	6.6	LOS A	1.2	31.2	0.62	0.69	0.62	33.2
18	R2	All MCs	23	1.0	23	1.0	0.223	7.0	LOS A	1.2	31.2	0.62	0.69	0.62	32.8
Approach			195	1.0	195	1.0	0.223	10.4	LOS B	1.2	31.2	0.62	0.69	0.62	32.7
East: 204th Street NE															
1	L2	All MCs	20	3.0	20	3.0	0.263	12.3	LOS B	1.5	37.3	0.58	0.59	0.58	34.0
6	T1	All MCs	185	3.0	185	3.0	0.263	6.2	LOS A	1.5	37.3	0.58	0.59	0.58	34.7
16	R2	All MCs	53	3.0	53	3.0	0.263	6.1	LOS A	1.5	37.3	0.58	0.59	0.58	34.5
Approach			258	3.0	258	3.0	0.263	6.6	LOS A	1.5	37.3	0.58	0.59	0.58	34.6
North: Olympic Place Ne															
7	L2	All MCs	60	1.0	60	1.0	0.245	11.3	LOS B	1.3	33.3	0.50	0.60	0.50	33.9
4	T1	All MCs	51	1.0	51	1.0	0.245	5.4	LOS A	1.3	33.3	0.50	0.60	0.50	34.7
14	R2	All MCs	140	1.0	140	1.0	0.245	5.8	LOS A	1.3	33.3	0.50	0.60	0.50	34.2
Approach			251	1.0	251	1.0	0.245	7.0	LOS A	1.3	33.3	0.50	0.60	0.50	34.3
West: 204th Street NE															
5	L2	All MCs	311	1.0	311	1.0	0.472	10.6	LOS B	3.4	84.7	0.40	0.55	0.40	33.5
2	T1	All MCs	172	1.0	172	1.0	0.472	4.5	LOS A	3.4	84.7	0.40	0.55	0.40	34.2
12	R2	All MCs	121	1.0	121	1.0	0.472	4.4	LOS A	3.4	84.7	0.40	0.55	0.40	34.0
Approach			603	1.0	603	1.0	0.472	7.6	LOS A	3.4	84.7	0.40	0.55	0.40	33.8
All Vehicles			1307	1.4	1307	1.4	0.472	7.7	LOS A	3.4	84.7	0.49	0.59	0.49	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: K:\SNO_TPTO\2024\24-144 Pioneer Point Arlington\Intersection Analysis\Sidra\77thAve_204thSt.sip9

Lanes, Volumes, Timings
4: SR-9 & 204th Street NE

EXISTING CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	307	107	179	253	135	62	390	167	88	342	161
Future Volume (vph)	177	307	107	179	253	135	62	390	167	88	342	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	150		300	250		0	250		450
Storage Lanes	1		1	1		1	1		0	1		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		0.96	0.99		0.98	1.00					0.98
Fr _t			0.850			0.850		0.955				0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1881	1599	1770	1779	0	1770	1863	1583
Fl _t Permitted	0.329			0.188			0.950			0.950		
Satd. Flow (perm)	617	1881	1542	351	1881	1560	1765	1779	0	1770	1863	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111			144		18				171
Link Speed (mph)		30			25			45				45
Link Distance (ft)		2791			607			1872				1997
Travel Time (s)		63.4			16.6			28.4				30.3
Confl. Peds. (#/hr)	2		7	7		2	2					2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	327	114	190	269	144	66	593	0	94	364	171
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.5	37.1	37.1	10.5	38.9	38.9	10.5	41.7		10.5	44.7	44.7
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	20.0	65.0		20.0	65.0	65.0
Total Split (%)	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	13.8%	44.8%		13.8%	44.8%	44.8%
Yellow Time (s)	3.5	3.1	3.1	3.5	3.9	3.9	3.5	4.7		3.5	4.7	4.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.1	5.1	5.5	5.9	5.9	5.5	6.7		5.5	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Recall Mode	None	C-Max		None	C-Max	C-Max						
Act Effct Green (s)	47.1	31.2	31.2	47.6	30.6	30.6	10.7	62.2		12.2	66.2	66.2
Actuated g/C Ratio	0.32	0.22	0.22	0.33	0.21	0.21	0.07	0.43		0.08	0.46	0.46
v/c Ratio	0.57	0.81	0.27	0.68	0.68	0.33	0.51	0.77		0.63	0.43	0.21
Control Delay (s/veh)	39.6	70.3	10.7	45.6	62.5	9.4	77.4	43.0		82.7	30.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	39.6	70.3	10.7	45.6	62.5	9.4	77.4	43.0		82.7	30.5	4.3
LOS	D	E	B	D	E	A	E	D		F	C	A
Approach Delay (s/veh)		50.3			44.5			46.4			31.2	
Approach LOS		D			D			D			C	

Lanes, Volumes, Timings
4: SR-9 & 204th Street NE

EXISTING CONDITIONS

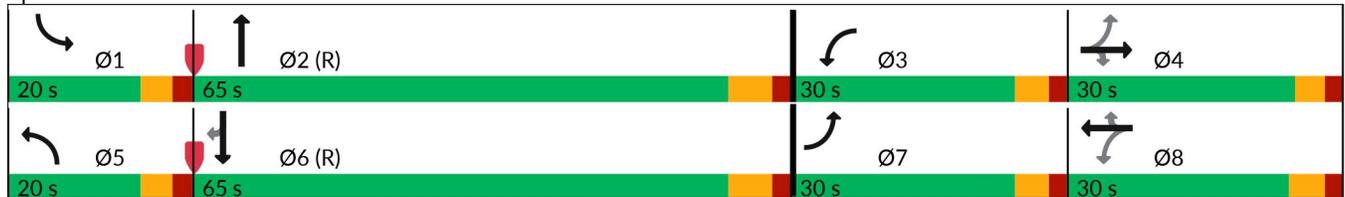


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	124	293	2	126	234	0	62	481		88	246	0
Queue Length 95th (ft)	188	#505	59	191	#376	61	113	661		150	356	47
Internal Link Dist (ft)		2711			527			1792			1917	
Turn Bay Length (ft)	300		200	150		300	250			250		450
Base Capacity (vph)	419	404	418	369	397	443	177	773		177	850	797
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.45	0.81	0.27	0.51	0.68	0.33	0.37	0.77		0.53	0.43	0.21

Intersection Summary

Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 9.5 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay (s/veh): 43.1 Intersection LOS: D
 Intersection Capacity Utilization 82.8% 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: 4: SR-9 & 204th Street NE



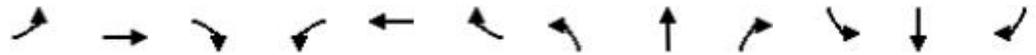
Lanes, Volumes, Timings
5: 67th Avenue NE & 204th Street NE

EXISTING CONDITIONS

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	166	58	210	218	77	95	333	236	44	239	85
Future Volume (vph)	137	166	58	210	218	77	95	333	236	44	239	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	200		0	250		200	200		0
Storage Lanes	1		0	1		0	1		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99				0.97	1.00		
Fr _t		0.961			0.961				0.850		0.961	
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1763	0	1752	1763	0	1787	1881	1599	1703	1723	0
Fl _t Permitted	0.237			0.392			0.415			0.418		
Satd. Flow (perm)	437	1763	0	722	1763	0	781	1881	1556	747	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			16				262		19	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1326			2791			1461			1875	
Travel Time (s)		25.8			54.4			28.5			36.5	
Confl. Peds. (#/hr)	1		1	1		1			4	4		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	248	0	233	328	0	106	370	262	49	360	0
Turn Type	D.P+P	NA		D.P+P	NA		D.P+P	NA	Perm	D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	8			4			6		2	2		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.2	38.2		10.2	34.2		10.5	35.5	35.5	10.5	28.5	
Total Split (s)	15.0	30.0		15.0	30.0		15.0	45.0	45.0	15.0	45.0	
Total Split (%)	14.3%	28.6%		14.3%	28.6%		14.3%	42.9%	42.9%	14.3%	42.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	1.2	1.2		1.2	1.2		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)	5.2	5.2		5.2	5.2		5.5	5.5	5.5	5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	32.4	22.6		32.4	22.7		51.2	45.7	45.7	52.3	42.4	
Actuated g/C Ratio	0.31	0.22		0.31	0.22		0.49	0.44	0.44	0.50	0.40	
v/c Ratio	0.60	0.63		0.73	0.83		0.23	0.45	0.32	0.11	0.51	
Control Delay (s/veh)	33.6	42.4		40.6	56.0		14.0	25.1	3.9	13.2	26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	33.6	42.4		40.6	56.0		14.0	25.1	3.9	13.2	26.2	
LOS	C	D		D	E		B	C	A	B	C	
Approach Delay (s/veh)		39.0			49.6			16.0			24.6	
Approach LOS		D			D			B			C	

Lanes, Volumes, Timings
 5: 67th Avenue NE & 204th Street NE

EXISTING CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	70	142		113	201		35	187	0	16	186	
Queue Length 95th (ft)	119	227		#186	#333		64	284	51	36	283	
Internal Link Dist (ft)		1246			2711			1381			1795	
Turn Bay Length (ft)	150			200			250		200	200		
Base Capacity (vph)	257	428		319	428		477	818	824	465	707	
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	0.59	0.58		0.73	0.77		0.22	0.45	0.32	0.11	0.51	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 9.5 (9%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay (s/veh): 31.0 Intersection LOS: C
 Intersection Capacity Utilization 71.4% 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: 5: 67th Avenue NE & 204th Street NE



1: S Stillaguamish Avenue & E Highland Drive/212th Street NE

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘			↕	
Traffic Vol, veh/h	44	63	114	13	47	15	92	100	21	14	87	83
Future Vol, veh/h	44	63	114	13	47	15	92	100	21	14	87	83
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, %	1	1	1	6	6	6	3	3	3	1	1	1
Mvmt Flow	47	68	123	14	51	16	99	108	23	15	94	89
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	10.1	9.1	9.7	9.7
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	20%	17%	8%
Vol Thru, %	0%	83%	29%	63%	47%
Vol Right, %	0%	17%	52%	20%	45%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	121	221	75	184
LT Vol	92	0	44	13	14
Through Vol	0	100	63	47	87
RT Vol	0	21	114	15	83
Lane Flow Rate	99	130	238	81	198
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.166	0.195	0.317	0.119	0.266
Departure Headway (Hd)	6.028	5.4	4.806	5.29	4.848
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	590	657	741	669	732
Service Time	3.82	3.192	2.88	3.387	2.94
HCM Lane V/C Ratio	0.168	0.198	0.321	0.121	0.27
HCM Control Delay, s/veh	10	9.5	10.1	9.1	9.7
HCM Lane LOS	A	A	B	A	A
HCM 95th-tile Q	0.6	0.7	1.4	0.4	1.1

2: Burn Road/S Stillaguamish Avenue & 207th Street NE/207th Place NE

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷			↕		↶	↷		↶	↷	
Traffic Vol, veh/h	115	8	144	0	10	7	106	115	0	3	121	93
Future Vol, veh/h	115	8	144	0	10	7	106	115	0	3	121	93
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, %	2	2	2	13	13	13	4	4	4	1	1	1
Mvmt Flow	120	8	150	0	10	7	110	120	0	3	126	97
Number of Lanes	1	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	9.9	9.4	10	10.6
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	5%	59%	0%	57%
Vol Right, %	0%	0%	0%	95%	41%	0%	43%
Sign Control	Stop						
Traffic Vol by Lane	106	115	115	152	17	3	214
LT Vol	106	0	115	0	0	3	0
Through Vol	0	115	0	8	10	0	121
RT Vol	0	0	0	144	7	0	93
Lane Flow Rate	110	120	120	158	18	3	223
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.187	0.186	0.207	0.222	0.03	0.005	0.326
Departure Headway (Hd)	6.093	5.588	6.217	5.046	6.167	6.077	5.265
Convergence, Y/N	Yes						
Cap	584	636	573	705	584	584	675
Service Time	3.881	3.375	4.002	2.83	4.167	3.864	3.052
HCM Lane V/C Ratio	0.188	0.189	0.209	0.224	0.031	0.005	0.33
HCM Control Delay, s/veh	10.3	9.7	10.6	9.3	9.4	8.9	10.6
HCM Lane LOS	B	A	B	A	A	A	B
HCM 95th-tile Q	0.7	0.7	0.8	0.8	0.1	0	1.4

MOVEMENT SUMMARY

 Site: 101 [2031 Baseline (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] ft				
South: 77th Avenue NE															
3	L2	All MCs	142	1.0	142	1.0	0.259	13.0	LOS B	1.6	39.2	0.68	0.71	0.68	32.3
8	T1	All MCs	55	1.0	55	1.0	0.259	7.1	LOS A	1.6	39.2	0.68	0.71	0.68	33.0
18	R2	All MCs	26	1.0	26	1.0	0.259	7.4	LOS A	1.6	39.2	0.68	0.71	0.68	32.6
Approach			224	1.0	224	1.0	0.259	10.9	LOS B	1.6	39.2	0.68	0.71	0.68	32.5
East: 204th Street NE															
1	L2	All MCs	23	3.0	23	3.0	0.302	12.7	LOS B	1.8	46.1	0.64	0.62	0.64	33.8
6	T1	All MCs	214	3.0	214	3.0	0.302	6.6	LOS A	1.8	46.1	0.64	0.62	0.64	34.5
16	R2	All MCs	61	3.0	61	3.0	0.302	6.5	LOS A	1.8	46.1	0.64	0.62	0.64	34.3
Approach			298	3.0	298	3.0	0.302	7.0	LOS A	1.8	46.1	0.64	0.62	0.64	34.4
North: Olympic Place Ne															
7	L2	All MCs	68	1.0	68	1.0	0.277	11.5	LOS B	1.6	39.7	0.54	0.61	0.54	33.8
4	T1	All MCs	59	1.0	59	1.0	0.277	5.6	LOS A	1.6	39.7	0.54	0.61	0.54	34.6
14	R2	All MCs	162	1.0	162	1.0	0.277	6.0	LOS A	1.6	39.7	0.54	0.61	0.54	34.1
Approach			289	1.0	289	1.0	0.277	7.2	LOS A	1.6	39.7	0.54	0.61	0.54	34.2
West: 204th Street NE															
5	L2	All MCs	359	1.0	359	1.0	0.525	10.7	LOS B	4.0	101.6	0.45	0.56	0.45	33.4
2	T1	All MCs	198	1.0	198	1.0	0.525	4.6	LOS A	4.0	101.6	0.45	0.56	0.45	34.1
12	R2	All MCs	139	1.0	139	1.0	0.525	4.5	LOS A	4.0	101.6	0.45	0.56	0.45	33.9
Approach			696	1.0	696	1.0	0.525	7.8	LOS A	4.0	101.6	0.45	0.56	0.45	33.7
All Vehicles			1507	1.4	1507	1.4	0.525	8.0	LOS A	4.0	101.6	0.54	0.60	0.54	33.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: K:\SNO_TPTO\2024\24-144 Pioneer Point Arlington\Intersection Analysis\Sidra\77thAve_204thSt.sip9

Lanes, Volumes, Timings
4: SR-9 & 204th Street NE

2031 NO-BUILD CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	355	126	206	294	155	75	448	192	101	393	192
Future Volume (vph)	208	355	126	206	294	155	75	448	192	101	393	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	150		300	250		0	250		450
Storage Lanes	1		1	1		1	1		0	1		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		0.96	0.99		0.98	1.00					0.98
Fr _t			0.850			0.850		0.955				0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1881	1599	1770	1779	0	1770	1863	1583
Fl _t Permitted	0.234			0.132			0.950			0.950		
Satd. Flow (perm)	439	1881	1542	247	1881	1560	1766	1779	0	1770	1863	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111			165			18			204
Link Speed (mph)		30			20			45				45
Link Distance (ft)		2791			607			1872				1997
Travel Time (s)		63.4			20.7			28.4				30.3
Confl. Peds. (#/hr)	2		7	7		2	2					2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	221	378	134	219	313	165	80	681	0	107	418	204
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.5	37.1	37.1	10.5	38.9	38.9	10.5	41.7		10.5	44.7	44.7
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	20.0	65.0		20.0	65.0	65.0
Total Split (%)	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	13.8%	44.8%		13.8%	44.8%	44.8%
Yellow Time (s)	3.5	3.1	3.1	3.5	3.9	3.9	3.5	4.7		3.5	4.7	4.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.1	5.1	5.5	5.9	5.9	5.5	6.7		5.5	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Recall Mode	None	C-Max		None	C-Max	C-Max						
Act Effct Green (s)	49.1	31.1	31.1	48.9	30.2	30.2	11.5	60.1		12.7	61.3	61.3
Actuated g/C Ratio	0.34	0.21	0.21	0.34	0.21	0.21	0.08	0.41		0.09	0.42	0.42
v/c Ratio	0.69	0.94	0.32	0.79	0.80	0.36	0.57	0.91		0.69	0.53	0.26
Control Delay (s/veh)	44.6	87.3	15.2	57.5	71.0	9.6	79.7	56.8		86.4	34.8	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	44.6	87.3	15.2	57.5	71.0	9.6	79.7	56.8		86.4	34.8	4.3
LOS	D	F	B	E	E	A	E	E		F	C	A
Approach Delay (s/veh)		61.2			52.2			59.2			33.8	
Approach LOS		E			D			E			C	

Lanes, Volumes, Timings
4: SR-9 & 204th Street NE

2031 NO-BUILD CONDITIONS

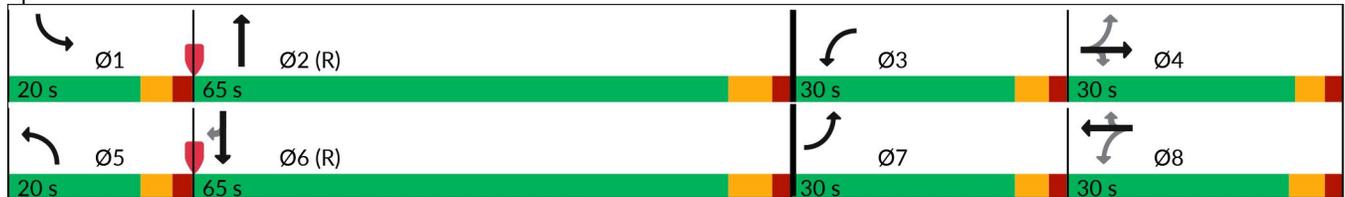


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	149	357	18	150	285	0	75	607		101	297	0
Queue Length 95th (ft)	221	#635	82	245	#505	66	131	#873		169	418	51
Internal Link Dist (ft)		2711			527			1792			1917	
Turn Bay Length (ft)	300		200	150		300	250			250		450
Base Capacity (vph)	388	403	417	350	391	455	177	747		177	787	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.57	0.94	0.32	0.63	0.80	0.36	0.45	0.91		0.60	0.53	0.26

Intersection Summary

Area Type: Other
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 9.5 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay (s/veh): 51.7 Intersection LOS: D
 Intersection Capacity Utilization 91.6% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: SR-9 & 204th Street NE



Lanes, Volumes, Timings
5: 67th Avenue NE & 204th Street NE

2031 NO-BUILD CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	192	67	242	251	90	109	383	273	54	275	98
Future Volume (vph)	157	192	67	242	251	90	109	383	273	54	275	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	200		0	250		200	200		0
Storage Lanes	1		0	1		0	1		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99				0.97	1.00		
Fr _t		0.961			0.960				0.850		0.961	
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1763	0	1752	1761	0	1787	1881	1599	1703	1723	0
Fl _t Permitted	0.172			0.338			0.344			0.348		
Satd. Flow (perm)	317	1763	0	623	1761	0	647	1881	1556	622	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			16				303			20
Link Speed (mph)		35			35			35				35
Link Distance (ft)		1326			2791			1461				1875
Travel Time (s)		25.8			54.4			28.5				36.5
Confl. Peds. (#/hr)	1		1	1		1			4	4		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	287	0	269	379	0	121	426	303	60	415	0
Turn Type	D.P+P	NA		D.P+P	NA		D.P+P	NA	Perm	D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	8			4			6		2	2		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.2	38.2		10.2	34.2		10.5	35.5	35.5	10.5	28.5	
Total Split (s)	15.0	30.0		15.0	30.0		15.0	45.0	45.0	15.0	45.0	
Total Split (%)	14.3%	28.6%		14.3%	28.6%		14.3%	42.9%	42.9%	14.3%	42.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	1.2	1.2		1.2	1.2		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)	5.2	5.2		5.2	5.2		5.5	5.5	5.5	5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	33.9	24.1		33.9	24.1		49.7	43.9	43.9	50.8	40.7	
Actuated g/C Ratio	0.32	0.23		0.32	0.23		0.47	0.42	0.42	0.48	0.39	
v/c Ratio	0.74	0.69		0.88	0.91		0.30	0.54	0.37	0.16	0.61	
Control Delay (s/veh)	43.5	44.3		56.9	65.1		15.2	27.7	4.0	13.8	29.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	43.5	44.3		56.9	65.1		15.2	27.7	4.0	13.8	29.6	
LOS	D	D		E	E		B	C	A	B	C	
Approach Delay (s/veh)		44.0			61.7			17.5			27.6	
Approach LOS		D			E			B			C	

Lanes, Volumes, Timings
5: 67th Avenue NE & 204th Street NE

2031 NO-BUILD CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	81	170		134	243		40	225	0	20	224	
Queue Length 95th (ft)	#162	266		#219	#418		72	335	55	43	336	
Internal Link Dist (ft)		1246			2711			1381			1795	
Turn Bay Length (ft)	150			200			250		200	200		
Base Capacity (vph)	236	428		306	428		412	786	827	403	679	
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	0.67		0.88	0.89		0.29	0.54	0.37	0.15	0.61	

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 9.5 (9%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay (s/veh): 36.2 Intersection LOS: D
 Intersection Capacity Utilization 75.1% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: 67th Avenue NE & 204th Street NE



Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘			↕	
Traffic Vol, veh/h	44	63	116	13	47	15	94	101	21	14	89	83
Future Vol, veh/h	44	63	116	13	47	15	94	101	21	14	89	83
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, %	1	1	1	6	6	6	3	3	3	1	1	1
Mvmt Flow	47	68	125	14	51	16	101	109	23	15	96	89
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	10.2	9.2	9.8	9.8
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	20%	17%	8%
Vol Thru, %	0%	83%	28%	63%	48%
Vol Right, %	0%	17%	52%	20%	45%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	94	122	223	75	186
LT Vol	94	0	44	13	14
Through Vol	0	101	63	47	89
RT Vol	0	21	116	15	83
Lane Flow Rate	101	131	240	81	200
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.172	0.197	0.321	0.121	0.27
Departure Headway (Hd)	6.136	5.41	4.814	5.408	4.962
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	588	656	739	666	728
Service Time	3.836	3.209	2.899	3.413	2.962
HCM Lane V/C Ratio	0.172	0.2	0.325	0.122	0.275
HCM Control Delay, s/veh	10.1	9.6	10.2	9.2	9.8
HCM Lane LOS	B	A	B	A	A
HCM 95th-tile Q	0.6	0.7	1.4	0.4	1.1

2: Burn Road/S Stillaguamish Avenue & 207th Street NE/207th Place NE

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↗		↖	↗	
Traffic Vol, veh/h	115	18	144	0	16	10	106	115	0	7	121	93
Future Vol, veh/h	115	18	144	0	16	10	106	115	0	7	121	93
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, %	2	2	2	13	13	13	4	4	4	1	1	1
Mvmt Flow	120	19	150	0	17	10	110	120	0	7	126	97
Number of Lanes	1	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	10.1	9.5	10.1	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	11%	62%	0%	57%
Vol Right, %	0%	0%	0%	89%	38%	0%	43%
Sign Control	Stop						
Traffic Vol by Lane	106	115	115	162	26	7	214
LT Vol	106	0	115	0	0	7	0
Through Vol	0	115	0	18	16	0	121
RT Vol	0	0	0	144	10	0	93
Lane Flow Rate	110	120	120	169	27	7	223
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.192	0.191	0.208	0.24	0.047	0.013	0.33
Departure Headway (Hd)	6.258	5.753	6.353	5.222	6.227	6.236	5.428
Convergence, Y/N	Yes						
Cap	576	628	569	692	577	577	667
Service Time	3.959	3.454	4.053	2.922	4.238	3.941	3.128
HCM Lane V/C Ratio	0.191	0.191	0.211	0.244	0.047	0.012	0.334
HCM Control Delay, s/veh	10.4	9.8	10.7	9.6	9.5	9	10.8
HCM Lane LOS	B	A	B	A	A	A	B
HCM 95th-tile Q	0.7	0.7	0.8	0.9	0.1	0	1.4

MOVEMENT SUMMARY

 Site: 101 [2031 Future (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] ft				
South: 77th Avenue NE															
3	L2	All MCs	142	1.0	142	1.0	0.262	13.0	LOS B	1.6	39.8	0.69	0.71	0.69	32.3
8	T1	All MCs	55	1.0	55	1.0	0.262	7.1	LOS A	1.6	39.8	0.69	0.71	0.69	33.0
18	R2	All MCs	26	1.0	26	1.0	0.262	7.5	LOS A	1.6	39.8	0.69	0.71	0.69	32.6
Approach			224	1.0	224	1.0	0.262	10.9	LOS B	1.6	39.8	0.69	0.71	0.69	32.5
East: 204th Street NE															
1	L2	All MCs	23	3.0	23	3.0	0.309	12.7	LOS B	1.9	47.4	0.64	0.62	0.64	33.8
6	T1	All MCs	220	3.0	220	3.0	0.309	6.6	LOS A	1.9	47.4	0.64	0.62	0.64	34.5
16	R2	All MCs	62	3.0	62	3.0	0.309	6.5	LOS A	1.9	47.4	0.64	0.62	0.64	34.3
Approach			304	3.0	304	3.0	0.309	7.0	LOS A	1.9	47.4	0.64	0.62	0.64	34.4
North: Olympic Place Ne															
7	L2	All MCs	70	1.0	70	1.0	0.279	11.5	LOS B	1.6	40.2	0.55	0.61	0.55	33.8
4	T1	All MCs	59	1.0	59	1.0	0.279	5.6	LOS A	1.6	40.2	0.55	0.61	0.55	34.6
14	R2	All MCs	162	1.0	162	1.0	0.279	6.0	LOS A	1.6	40.2	0.55	0.61	0.55	34.1
Approach			290	1.0	290	1.0	0.279	7.3	LOS A	1.6	40.2	0.55	0.61	0.55	34.1
West: 204th Street NE															
5	L2	All MCs	359	1.0	359	1.0	0.532	10.7	LOS B	4.1	104.3	0.46	0.56	0.46	33.4
2	T1	All MCs	208	1.0	208	1.0	0.532	4.7	LOS A	4.1	104.3	0.46	0.56	0.46	34.1
12	R2	All MCs	139	1.0	139	1.0	0.532	4.6	LOS A	4.1	104.3	0.46	0.56	0.46	33.9
Approach			705	1.0	705	1.0	0.532	7.7	LOS A	4.1	104.3	0.46	0.56	0.46	33.7
All Vehicles			1524	1.4	1524	1.4	0.532	8.0	LOS A	4.1	104.3	0.55	0.60	0.55	33.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: K:\SNO_TPTO\2024\24-144 Pioneer Point Arlington\Intersection Analysis\Sidra\77thAve_204thSt.sip9

Lanes, Volumes, Timings
4: SR-9 & 204th Street NE

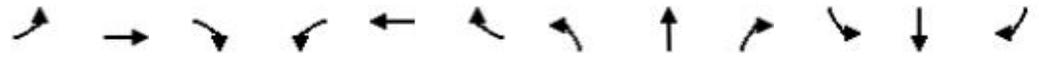
2031 FUTURE WITH DEVELOPMENT CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	359	126	209	296	155	75	448	197	101	393	192
Future Volume (vph)	208	359	126	209	296	155	75	448	197	101	393	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	150		300	250		0	250		450
Storage Lanes	1		1	1		1	1		0	1		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		0.96	0.99		0.98	1.00					0.98
Fr _t			0.850			0.850		0.954				0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1881	1599	1770	1777	0	1770	1863	1583
Fl _t Permitted	0.231			0.132			0.950			0.950		
Satd. Flow (perm)	434	1881	1542	247	1881	1560	1766	1777	0	1770	1863	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111			165			18			204
Link Speed (mph)		30			20			45				45
Link Distance (ft)		2791			607			1872				1997
Travel Time (s)		63.4			20.7			28.4				30.3
Confl. Peds. (#/hr)	2		7	7		2	2					2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	221	382	134	222	315	165	80	477	210	107	418	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	221	382	134	222	315	165	80	687	0	107	418	204
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings
4: SR-9 & 204th Street NE

2031 FUTURE WITH DEVELOPMENT CONDITIONS

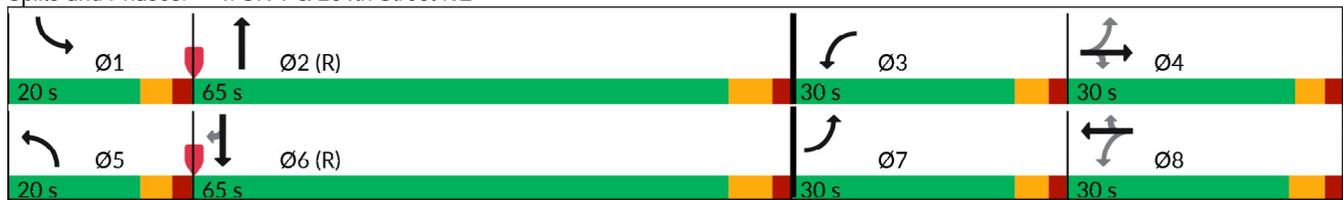


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	10.5	37.1	37.1	10.5	38.9	38.9	10.5	41.7		10.5	44.7	44.7
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	20.0	65.0		20.0	65.0	65.0
Total Split (%)	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	13.8%	44.8%		13.8%	44.8%	44.8%
Maximum Green (s)	24.5	24.9	24.9	24.5	24.1	24.1	14.5	58.3		14.5	58.3	58.3
Yellow Time (s)	3.5	3.1	3.1	3.5	3.9	3.9	3.5	4.7		3.5	4.7	4.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.1	5.1	5.5	5.9	5.9	5.5	6.7		5.5	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	4.0
Recall Mode	None	C-Max		None	C-Max	C-Max						
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Don't Walk (s)		25.0	25.0		26.0	26.0		28.0			29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effct Green (s)	48.9	30.9	30.9	49.1	30.2	30.2	11.5	60.1		12.7	61.3	61.3
Actuated g/C Ratio	0.34	0.21	0.21	0.34	0.21	0.21	0.08	0.41		0.09	0.42	0.42
v/c Ratio	0.69	0.95	0.32	0.80	0.81	0.36	0.57	0.92		0.69	0.53	0.26
Control Delay (s/veh)	44.8	90.4	15.2	58.0	71.4	9.6	79.7	58.2		86.4	34.8	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	44.8	90.4	15.2	58.0	71.4	9.6	79.7	58.2		86.4	34.8	4.3
LOS	D	F	B	E	E	A	E	E		F	C	A
Approach Delay (s/veh)		63.1			52.6			60.4			33.8	
Approach LOS		E			D			E			C	

Intersection Summary

Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	145
Offset:	9.5 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay (s/veh):	52.6
Intersection LOS:	D
Intersection Capacity Utilization:	92.3%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 4: SR-9 & 204th Street NE



PIONEER POINT
KIMLEY-HORN & ASSOCIATES, INC.

PM PEAK
Synchro 12 Report

Lanes, Volumes, Timings
5: 67th Avenue NE & 204th Street NE

2031 FUTURE WITH DEVELOPMENT CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	192	67	243	251	91	109	383	275	56	275	98
Future Volume (vph)	157	192	67	243	251	91	109	383	275	56	275	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	200		0	250		200	200		0
Storage Lanes	1		0	1		0	1		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99				0.97	1.00		
Fr _t		0.961			0.960				0.850		0.961	
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1763	0	1752	1761	0	1787	1881	1599	1703	1723	0
Fl _t Permitted	0.170			0.338			0.344			0.348		
Satd. Flow (perm)	313	1763	0	623	1761	0	647	1881	1556	622	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			16				306			20
Link Speed (mph)		35			35			35				35
Link Distance (ft)		1326			2791			1461				1875
Travel Time (s)		25.8			54.4			28.5				36.5
Confl. Peds. (#/hr)	1		1	1		1			4	4		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	6%	6%	6%
Adj. Flow (vph)	174	213	74	270	279	101	121	426	306	62	306	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	287	0	270	380	0	121	426	306	62	415	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left		Thru
Leading Detector (ft)	20	100		20	100		20	100	20	20		100
Trailing Detector (ft)	0	0		0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20		6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings
5: 67th Avenue NE & 204th Street NE

2031 FUTURE WITH DEVELOPMENT CONDITIONS



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	D.P+P	NA		D.P+P	NA		D.P+P	NA	Perm	D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	8			4			6		2	2		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	10.2	38.2		10.2	34.2		10.5	35.5	35.5	10.5	28.5	
Total Split (s)	15.0	30.0		15.0	30.0		15.0	45.0	45.0	15.0	45.0	
Total Split (%)	14.3%	28.6%		14.3%	28.6%		14.3%	42.9%	42.9%	14.3%	42.9%	
Maximum Green (s)	9.8	24.8		9.8	24.8		9.5	39.5	39.5	9.5	39.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5	4.5	4.5	4.5	
All-Red Time (s)	1.2	1.2		1.2	1.2		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)	5.2	5.2		5.2	5.2		5.5	5.5	5.5	5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Walk Time (s)		8.0			8.0			8.0	8.0		8.0	
Flash Don't Walk (s)		25.0			21.0			22.0	22.0		15.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	33.9	24.1		33.9	24.1		49.7	43.9	43.9	50.8	40.7	
Actuated g/C Ratio	0.32	0.23		0.32	0.23		0.47	0.42	0.42	0.48	0.39	
v/c Ratio	0.74	0.69		0.88	0.91		0.30	0.54	0.37	0.16	0.61	
Control Delay (s/veh)	43.8	44.3		57.4	65.5		15.2	27.7	4.0	13.8	29.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	43.8	44.3		57.4	65.5		15.2	27.7	4.0	13.8	29.6	
LOS	D	D		E	E		B	C	A	B	C	
Approach Delay (s/veh)		44.1			62.1			17.4			27.5	
Approach LOS		D			E			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	105
Offset:	9.5 (9%), Referenced to phase 2:NBSB and 6:NBSB, Start of Green
Natural Cycle:	95
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay (s/veh):	36.3
Intersection LOS:	D
Intersection Capacity Utilization:	75.1%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 5: 67th Avenue NE & 204th Street NE



PIONEER POINT
KIMLEY-HORN & ASSOCIATES, INC.

PM PEAK
Synchro 12 Report