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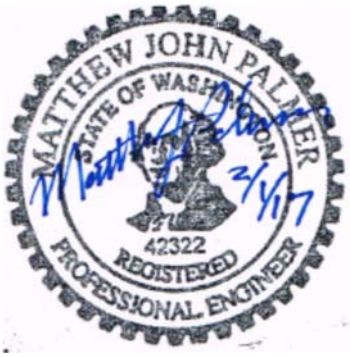
Willows Preparatory School
90% CUP Submittal
Traffic Impact Analysis

Jurisdiction: City of Redmond

February 2017



GTC #14-119

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1. INTRODUCTION

Gibson Traffic Consultants, Inc. (GTC) has been requested to provide the 60% Conditional Use Permit traffic analysis for Willows Preparatory School (WPS) located at 15603 NE 124th Street in Redmond for the conversion from 21,000 SF church to a private school. The site vicinity is shown in Figure 1. The private school would serve grades 5th and 8th and would have 300 students in Phase 1 with occupancy in 2018. There is also a 40-student dorm for the students that is proposed for occupancy in 2022. The school hours are from 8:45 AM to 3:15 PM with no after school care at this location. It is anticipated that a quarter of the students would shuttle to/from Bellevue Children's Academy (BCA) as younger sibling would be attending BCA and it would be more convenient for the parents.

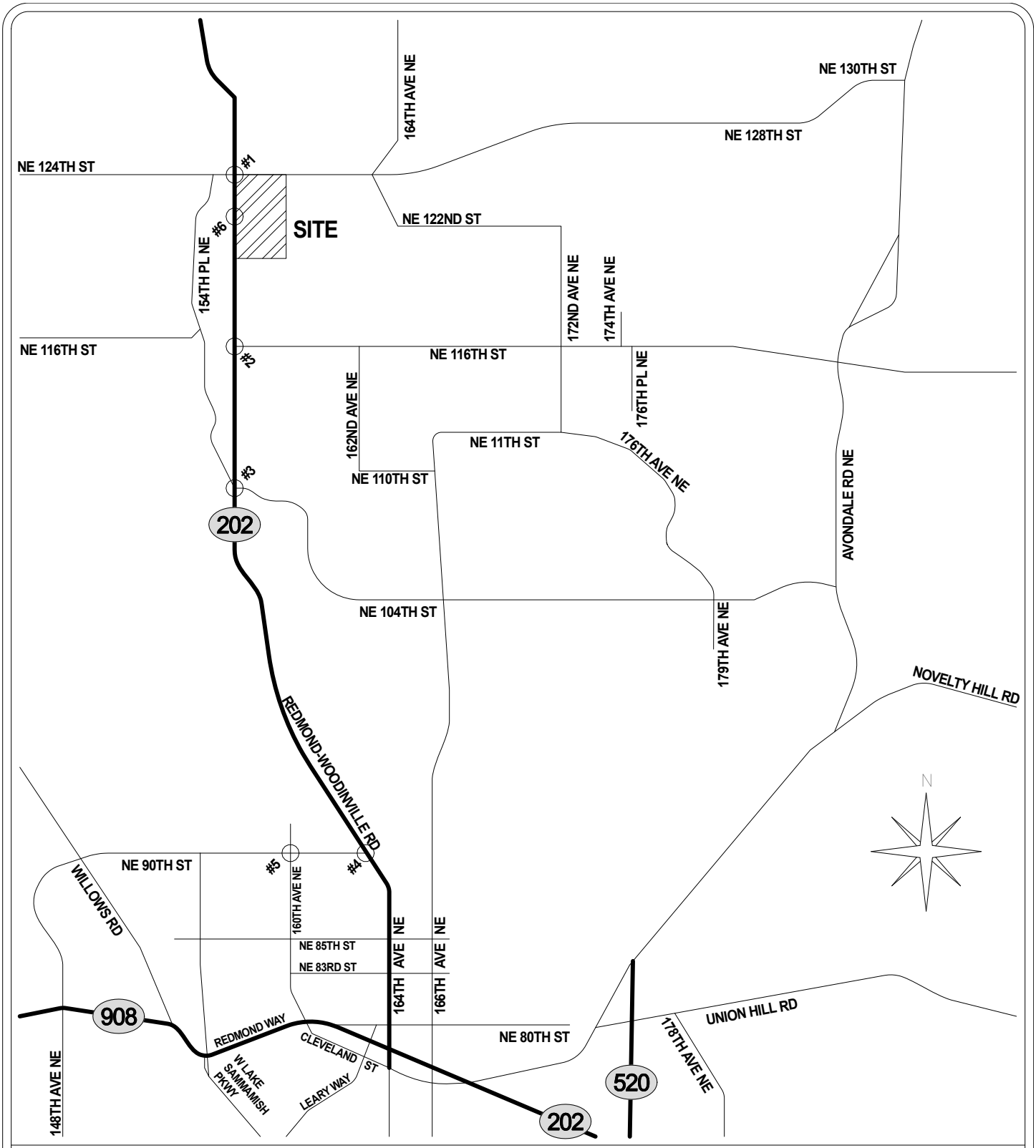
The scoping and analysis methodology for the WPS is based on conversations with Min Luo, PE Senior Transportation Engineer at the City of Redmond. This report summarizes GTC's traffic analysis and findings that include:

1) Proposed site development and access
2) Existing site conditions
3) Trip generation, trip distribution, and trip assignment of the development trips
4) Existing and future without development volumes and LOS
5) Future with development volumes and LOS

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

2. PROPOSED SITE DEVELOPMENT & ACCESS

Currently there are 3 accesses along SR-202/Redmond Road that will continue to be utilized for access to the site. The north and middle accesses are right-in/right-out only accesses and the south access is a full access. For the level of service analysis all the accesses have been combined as a single access as parents and staff can circulate on-site and will use accesses that will allow them to make the movements they desire. The north access will provide the most direct access to 24 staff parking spaces, the middle access serves 125 parking spaces and will be utilized for the primary student drop-off/pick-up, the south access provides access to 225 overflow parking spaces and the ability to make left-turns into and out of the site onto SR-202. The site will have a total of 374 parking spaces.



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TRAFFIC IMPACT STUDY
GTC #14-119

WILLOWS PREPARATORY SCHOOL
(300 STUDENTS)

CITY OF REDMOND

LEGEND

DEVELOPMENT SITE

STUDY INTERSECTIONS

FIGURE 1

SITE VICINITY MAP

3. METHODOLOGY & ANALYSIS SCOPING

The peak-hour level of service (LOS) analysis was performed using the methodology described in the 2010 *Highway Capacity Manual* (HCM) and the *Synchro 9.1 Build 909* software developed by Trafficware. At the time of the count collections, 100 students were enrolled at the existing WPS. The turning movement counts were performed by Idax Data in October 2016. The AM peak-hour is between 7:00 and 9:00 AM, the School PM peak-hour is between 2:00 and 4:00 PM and the PM peak hour is between 4:00 and 6:00 PM.

Traffic congestion on roadways is generally measured in terms of LOS at critical intersections. In accordance with the 2010 *Highway Capacity Manual*, roadway facilities and intersections are rated between LOS A and F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. The level of service at signalized intersections and all-way stop-controlled intersections are based on the average stopped delay for all entering vehicles. The level of service at two-way stop-controlled intersections is based on stopped delay times for the critical approach or movement(s). Geometric characteristics and conflicting traffic movements are taken into consideration when determining level of service values. A summary of the level of service criteria has been included in Table 1.

Table 1: Level of Service Criteria for Intersections

Level of Service[1]	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

[1] **Source:** *Highway Capacity Manual* 2010.

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.

GTC utilized a 2% annually compounding growth rate to account for background traffic growth in the site vicinity, based on the scoping discussions. Also, to encompass the addition of the dormitory even though the classroom building will be constructed/occupied by 2018, 2022 was utilized as the horizon year.

The study intersections are listed below:

1. SR-202 at NE 124th Street - Signalized
2. SR-202 at NE 116th Street - Signalized
3. SR-202 at NE 109th Street - Signalized
4. SR-202 at NE 90th Street - Signalized
5. 160th Avenue NE at NE 90th Street - Signalized
6. SR-202 at Combined Access - Unsignalized

Analysis at the study intersections was performed for the AM peak-hour (7:00 AM to 9:00 AM), the School PM peak-hour (2:00 PM to 4:00 PM), and the PM peak-hour (4:00 PM to 6:00 PM).

4. EXISTING CONDITIONS

4.1 Transit Service

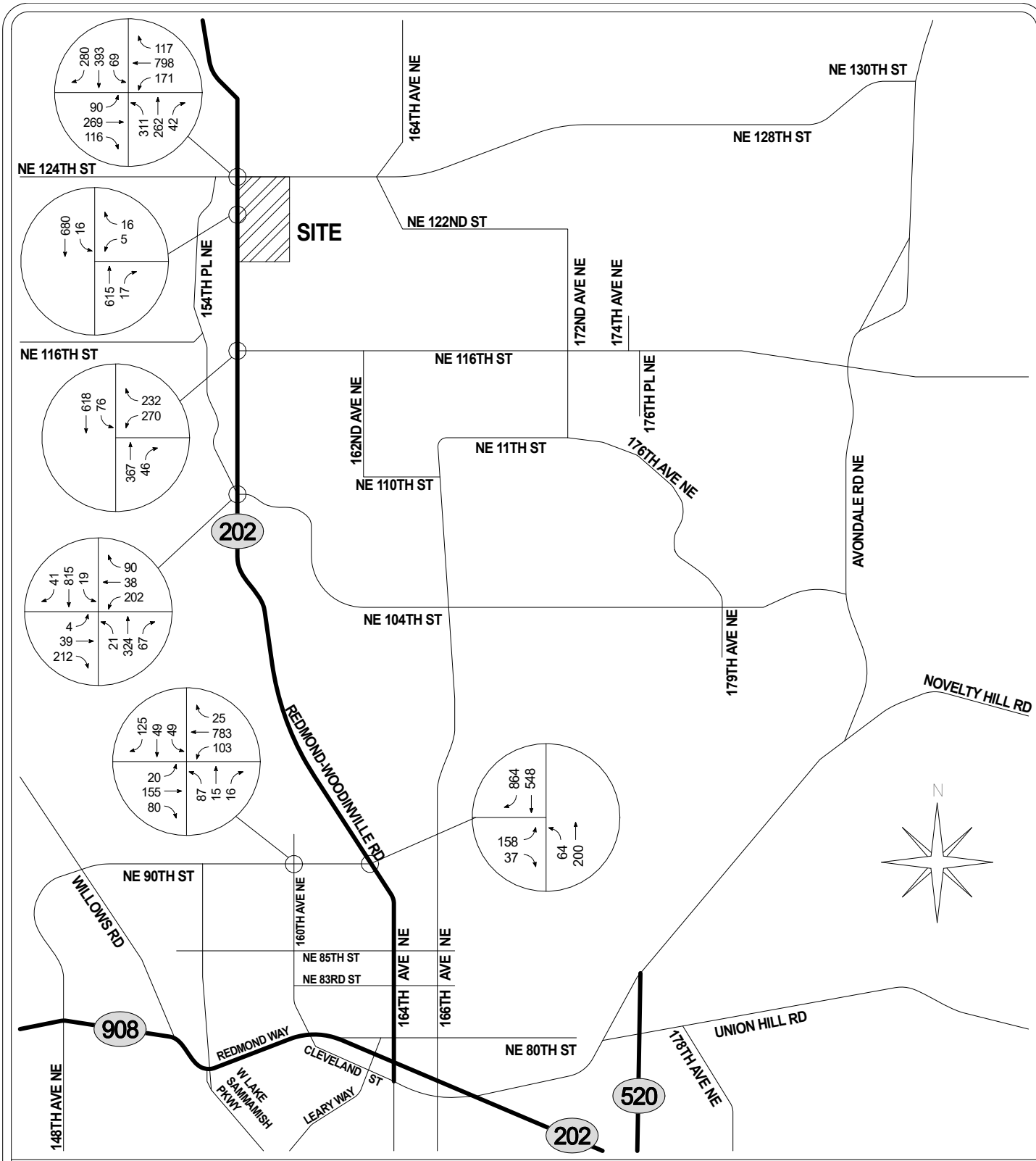
King County Metro Transit provides public transit service within King County. There is a Metro Transit stop at the intersection of SR-202 and NE 116th Street which serves transit route 931. Route 931 provides service from Downtown Seattle to Redmond Transit Center.

4.2 Roadway Network

SR-202 is a 2-lane principal arterial south of the site with curb, gutter, sidewalk, along the improved portions of the roadway. SR-202 has a posted speed limit of 40 MPH. There are channelization improvements at the intersection of NE 124th Street which provides left-turn and right-turn channelization.

4.3 2016 Existing Volumes and Level of Service

Existing turning movement counts at the study intersections were obtained by the independent count firm, Idax Data Solutions in October 2016. The existing peak-hour turning movement volumes for the study intersections during the AM peak-hour (7:00AM to 9:00 AM) are shown in Figure 2. The existing School PM peak-hour (2:00PM to 4:00 PM) turning movements are shown in Figure 3. The PM peak-hour (4:00PM to 6:00 PM) turning movements are shown in Figure 4. Most the study intersections operate at LOS D or better during the study time periods under the existing conditions. The exception is the intersection of SR-202 at NE 124th Street, which currently operates at LOS E during the PM peak-hour. The existing level of service for the AM peak-hour is summarized in Table 2, the School PM peak-hour is summarized in Table 3 and the PM peak-hour is summarized in Table 4. The existing level of service calculations are included in the attachments.



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(300 STUDENTS)

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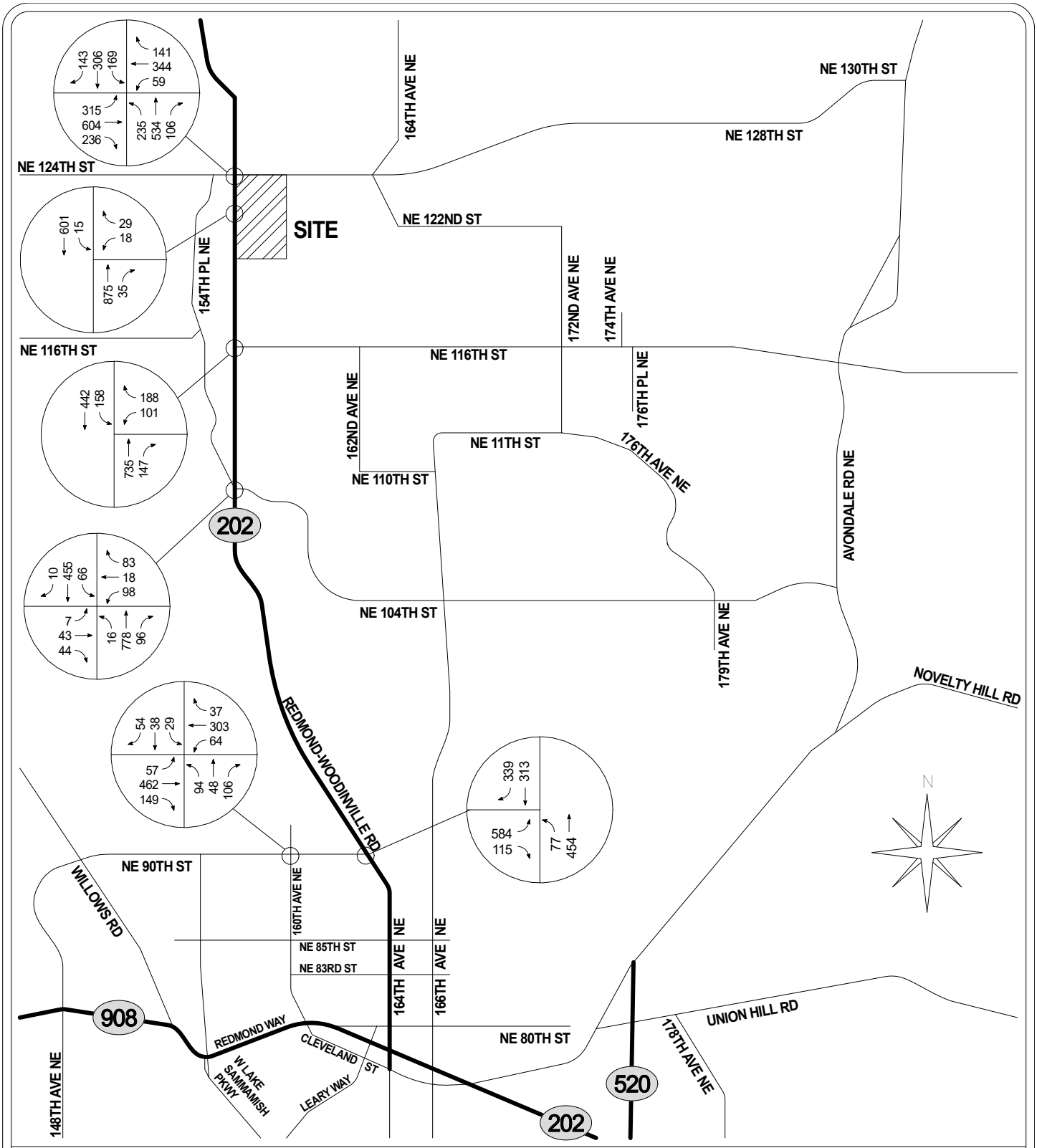
XXX → AM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 2

EXISTING TRAFFIC VOLUMES AM PEAK-HOUR



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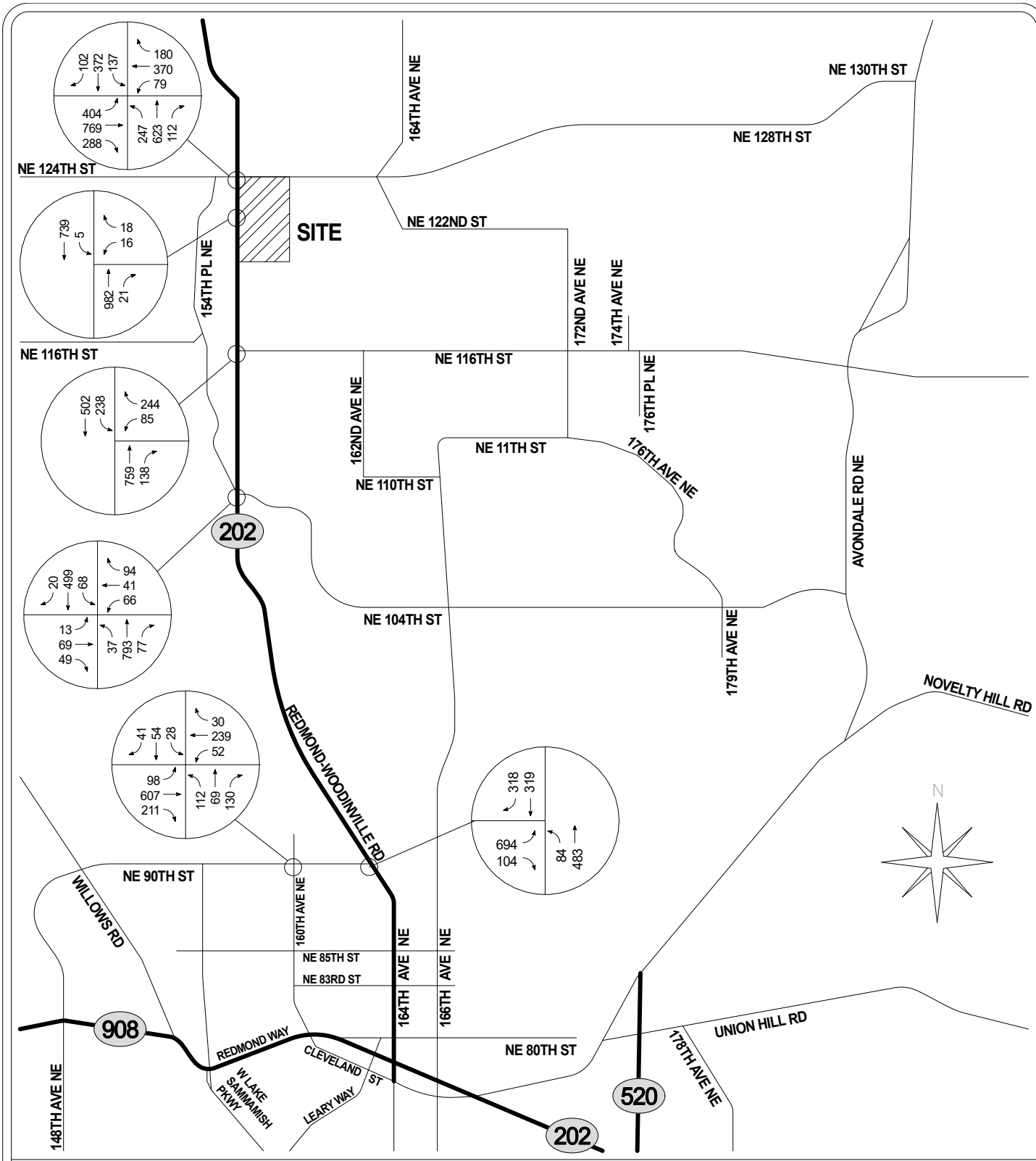
XXX → SCHOOL PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 3

EXISTING TRAFFIC VOLUMES SCHOOL PM PEAK-HOUR



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XXX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 4

EXISTING TRAFFIC VOLUMES PM PEAK-HOUR

Table 2: 2016 Existing Level of Service Summary – AM Peak-Hour

Intersections	2016 Existing Conditions	
	LOS	Delay
1. SR-202 at NE 124th Street	D	37.3 sec
2. SR-202 at NE 116th Street	B	12.4 sec
3. SR-202 at NE 109th Street	D	38.8 sec
4. SR-202 at NE 90th Street	A	9.2 sec
5. 160th Avenue NE NE 90th Street	C	24.9 sec
6. SR-202 at Site Access	C	15.2 sec

Table 3: 2016 Existing Level of Service Summary – School PM Peak-Hour

Intersections	2016 Existing Conditions	
	LOS	Delay
1. SR-202 at NE 124th Street	D	47.8 sec
2. SR-202 at NE 116th Street	B	14.5 sec
3. SR-202 at NE 109th Street	C	25.1 sec
4. SR-202 at NE 90th Street	C	21.2 sec
5. 160th Avenue NE NE 90th Street	B	19.3 sec
6. SR-202 at Site Access	C	21.4 sec

Table 4: 2016 Existing Level of Service Summary – PM Peak-Hour

Intersections	2016 Existing Conditions	
	LOS	Delay
1. SR-202 at NE 124th Street	E	58.3 sec
2. SR-202 at NE 116th Street	A	9.9 sec
3. SR-202 at NE 109th Street	C	29.3 sec
4. SR-202 at NE 90th Street	C	24.5 sec
5. 160th Avenue NE NE 90th Street	B	19.3 sec
6. SR-202 at Site Access	C	21.4 sec

5. FUTURE CONDITIONS

5.1 Trip Generation

Trip generation for the project will consist of the tenant improvement/additional building of the existing 21,000 SF from church to private school (k-8). There will still be a church building, approximately 8,780 SF remaining on the site that will share parking with the school during church worship service times which fall outside of the school operational times. Institute of Transportation Engineers' (ITE) *Trip Generation, 9th Edition (2012)* Land Use Code 534, private school (k-8) and Land Use Code 565, church, were utilized. The average trip generation rates per 1,000 square feet have been used for the church and per student rates are utilized for the school. The trip generation for the WPS is summarized in Table 5.

Table 5: Trip Generation Summary

WPS		AM Peak-Hour Trips			School PM Trips			PM Peak-Hour Trips		
		Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Private School Pre-K to 8th Grade (LUC 534) 300 Students	Rate	0.90 per Student			0.58 per Student			0.32 per Student		
	Splits	55%	45%	100%	47%	53%	100%	49%	51%	100%
	Trips	149	121	270	85	95	180	47	49	96
Church (LUC 565) 21,000 SF Removed	Rate	0.56 per 1,000 SF/GFA			0.36 per 1,000 SF/GFA			0.55 per 1,000 SF/GFA		
	Splits	62%	38%	100%	62%	38%	100%	48%	52%	100%
	Trips	-7	-5	-12	-5	-3	-8	-6	-6	-12
TOTAL		142	116	258	80	92	172	41	43	84

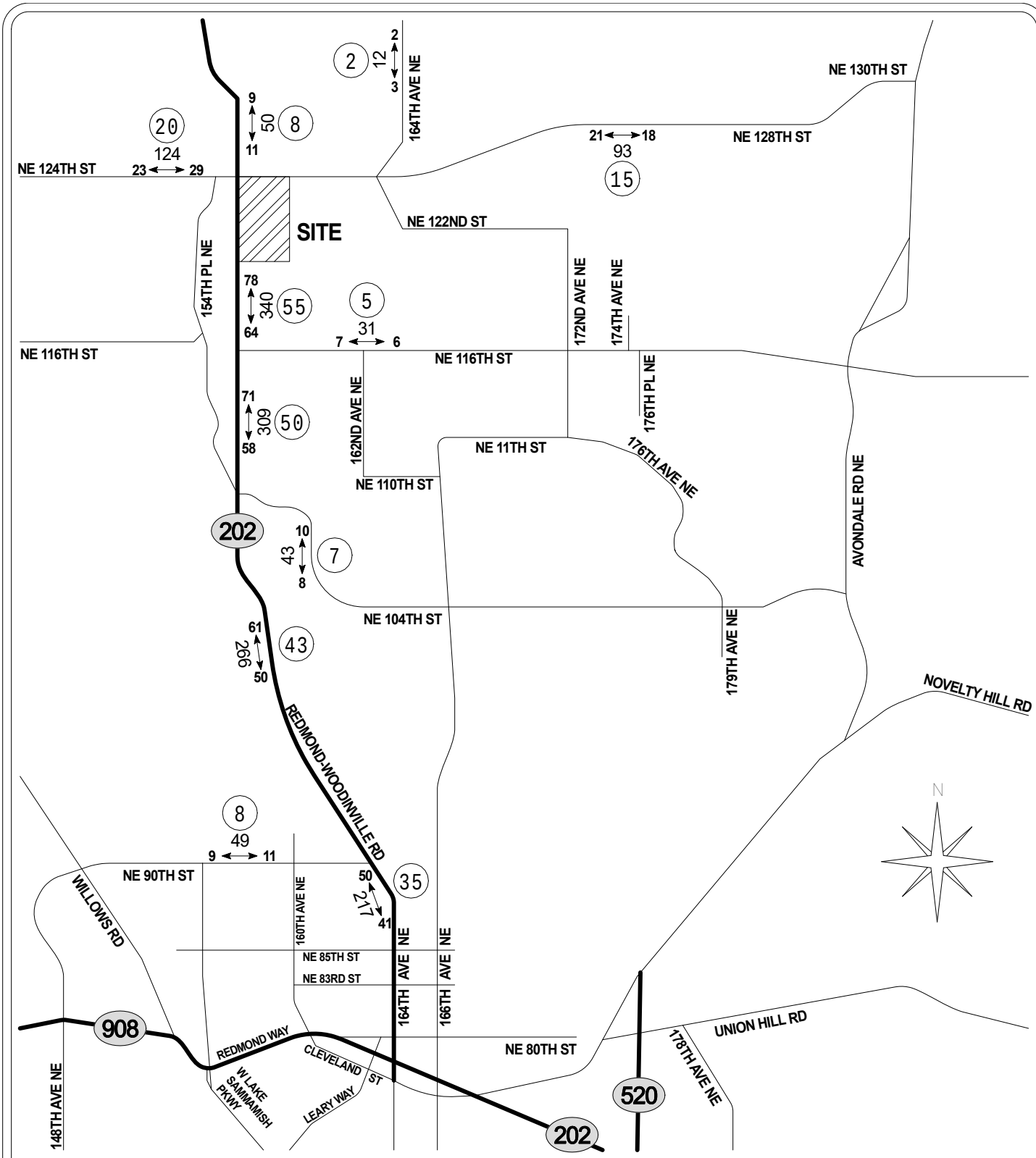
Note: The trip generation for the church during the School PM peak-hour is based on 65% of the PM peak-hour rate of 0.55 trip per 1,000 SF. The WPS is anticipated to generate a total of 618 daily trips when the credit for the church is considered.

Under the existing zoning of R-1 and R-4 the site could be redeveloped into 60 residential dwelling units. These units would potentially produce 571 daily trips with 45 occurring during the AM peak-hour (11 inbound/34 outbound) and 60 occurring during the PM peak-hour (38 inbound/22 outbound). The residential use of the site would be less intensive than the proposed conditional use permit from a transportation position and the future with development level of service analysis/results would improve compared to the WPS analysis. The school will generate 213 additional AM peak-hour trips and 24 PM peak-hour trips compared to the existing zoning. The 2022 level of service at the study intersections under the existing zoning is summarized in section 5.5 below for the AM peak-hour and PM peak-hour.

5.2 Trip Distribution

The same distribution of trips as anticipated with Building A is anticipated with Phase 1 of the CUP. It is anticipated that 70-80 of the 300 students will be arriving via bus from BCA in the City of Bellevue. This is similar to the existing busing ratio for the school. Another 20% of the students (60 students) would come from Bellevue zip codes, 39% (117 students) would come from Redmond zip codes. The remaining students would be coming from Kirkland and Woodinville. Using addresses of existing students mapped it is anticipated that 55% of the trips would be to/from the south and 45% to/from the north on SR-202. As the primary drop-off/pick-up access is right-in/right-out only, the majority of trips will be arriving from the south. Detailed trip distributions are shown in Figure 5 for the AM peak-hour, Figure 6 for the School PM peak-hour and Figure 7 for the PM peak-hour.

Trip distributions for the AM peak-hour and PM peak-hour for the existing zoning are included in the attachments with the existing zoning analysis. The trip distributions are based on the existing counts and the residential/commercial areas around the site.



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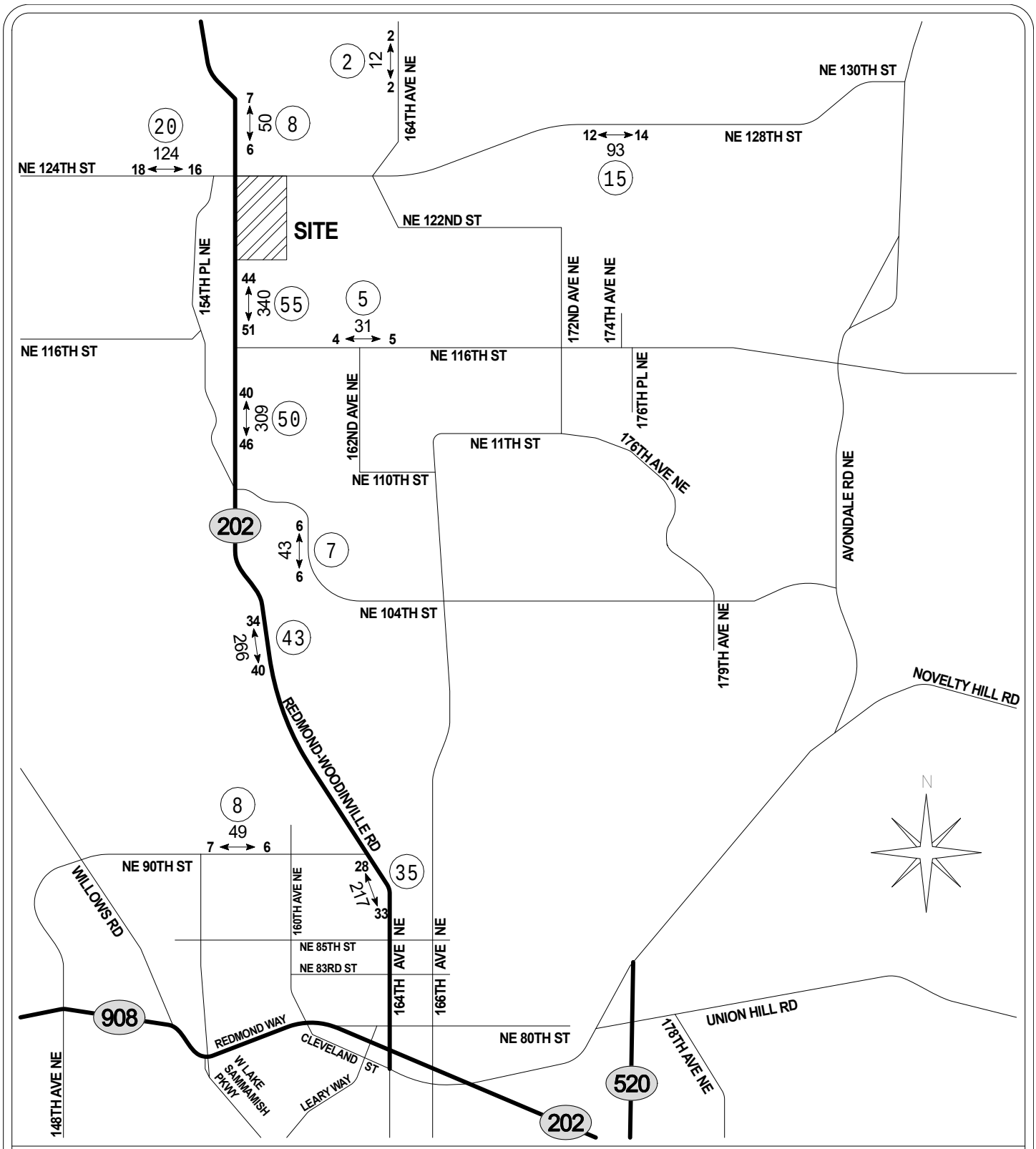
AWDT
AM ↔ PEAK — NEW DAILY TRIPS; NEW AM PEAK-HOUR TRIPS

(25) TRIP DISTRIBUTION %

FIGURE 5
DEVELOPMENT TRIP DISTRIBUTION AM PEAK-HOUR



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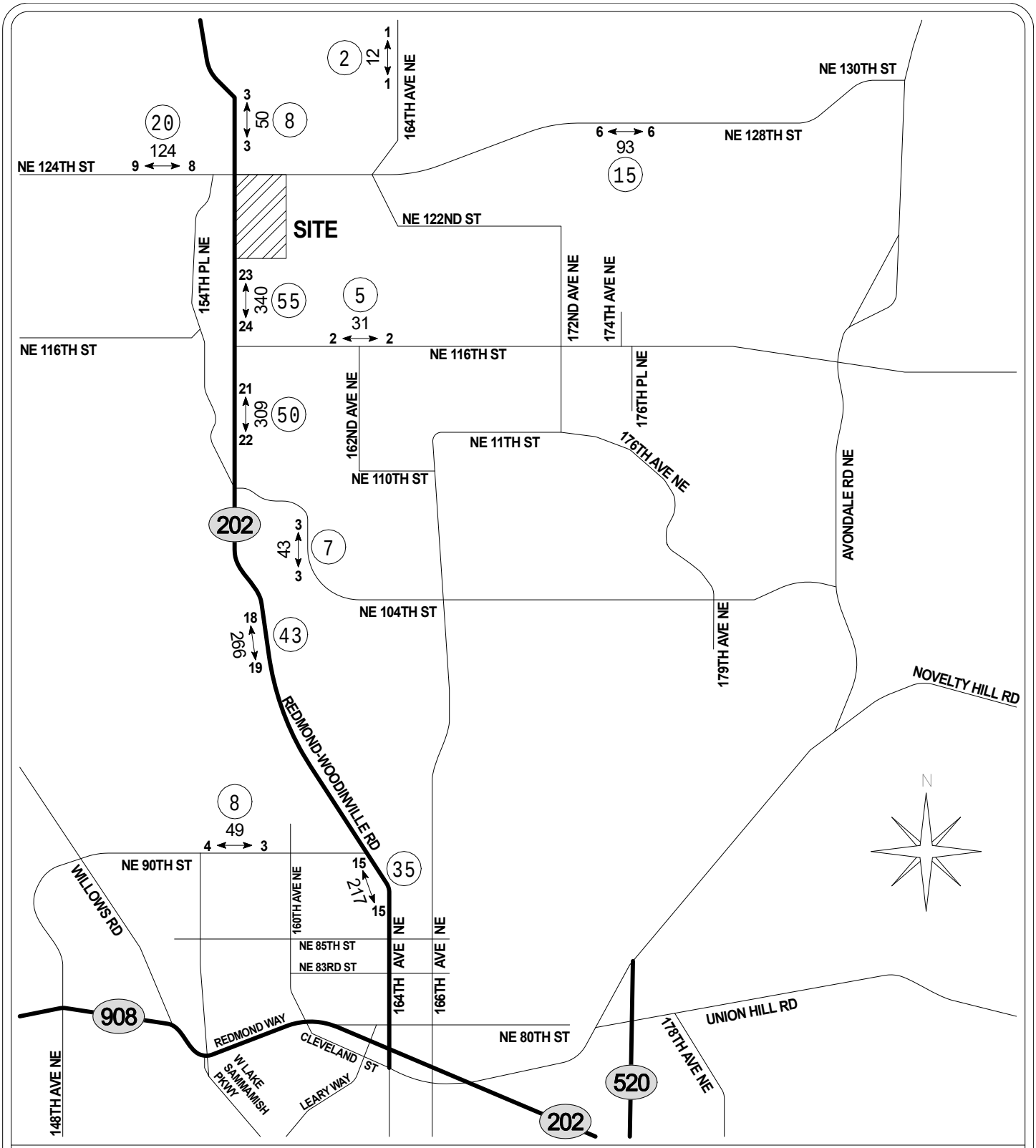
AWDT — NEW DAILY TRIPS

AM ↔ PEAK — NEW AM PEAK-HOUR TRIPS

(25) — TRIP DISTRIBUTION %

FIGURE 6

DEVELOPMENT TRIP DISTRIBUTION SCHOOL PM PEAK-HOUR



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AWDT — NEW DAILY TRIPS

PM ↔ PEAK — NEW AM PEAK-HOUR TRIPS

(25) — TRIP DISTRIBUTION %

FIGURE 7

DEVELOPMENT TRIP DISTRIBUTION PM PEAK-HOUR

5.3 2022 Future Baseline Volumes and Level of Service

The year 2022 was selected as the horizon year for the future analysis to encompass the addition of the dormitory even though the classroom building will be constructed/occupied by 2018, 2022 was utilized as the horizon year.

The 2022 baseline (future without project) volumes have been calculated by applying a 2% annually compounding growth rate to the existing volumes. The 2022 baseline turning movement volumes for the AM, School PM and PM peak-hours are shown in Figure 8, Figure 9 and Figure 10, respectively.

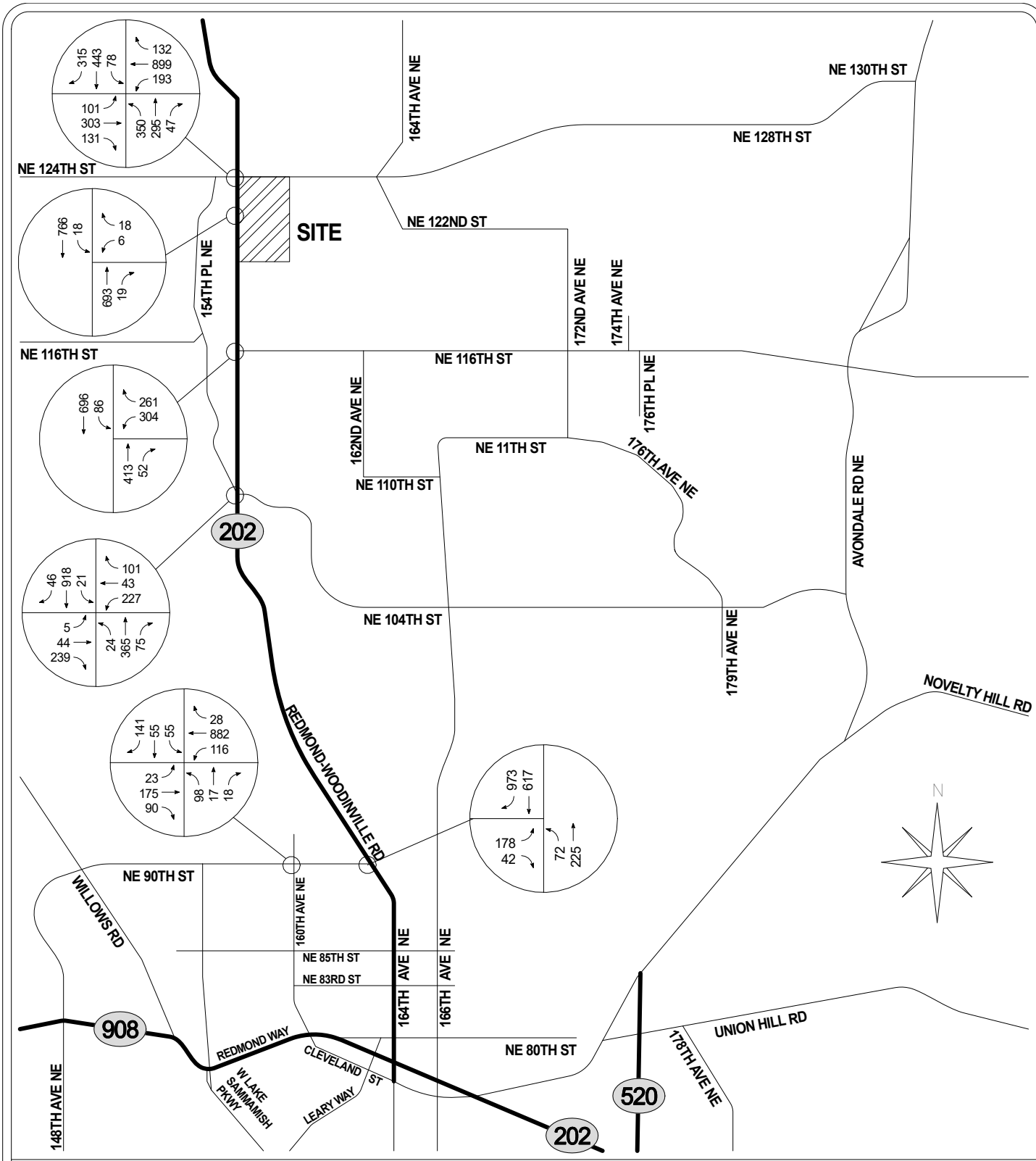
Under the 2022 baseline conditions most the study intersections will operate at LOS D or better. However, the intersection of SR-202 at NE 124th Street, is anticipated to operate at LOS E during the School PM peak-hour and the PM peak-hour under the 2022 baseline conditions. The 2022 future baseline level of service results for the AM peak-hour are summarized in Table 6, the School PM peak-hour are summarized in Table 7 and the PM peak-hour are summarized in Table 8.

5.4 2022 Future with School Volumes and Level of Service

The 2022 future with development turning movement volumes are calculated by adding the additional school trips to the 2022 baseline turning movement volumes. The 2022 future turning movement volumes for the AM, School PM and PM peak-hour are shown in Figure 11, Figure 12 and Figure 13, respectively.

The level of service analysis shows that many the study intersections will continue to operate at LOS D or better with the additional school trips. However, the intersection of SR-202 at NE 124th Street, is anticipated to operate at LOS E during the School PM peak-hour and LOS F during the PM peak-hour under the 2022 future conditions. Also, looking at the site access as a combined access results in LOS E during the AM peak-hour and LOS F during the School PM peak-hour; however, it's anticipated that parents would utilize the middle and south access points and would have less of an impact compared to the combined access analysis. The 2022 future level of service results for the AM, School PM and PM peak-hour are summarized in Table 6, Table 7 and Table 8, respectively.

The school impact to the intersection of SR-202 at NE 124th Street during the School PM peak-hour represents 2.10% (77 trips/3,671 trips) of the traffic through the intersection. During the PM peak-hour the schools impact to the intersection drops to 0.88% (37 trips/4,185 trips). This intersection has an improvement project identified in the 2013 Transportation Master Plan which would add one lane in each direction (northbound and southbound) from 160th Avenue NE extension to NE 124th Street. Mitigation fees paid to the City could be applied to this project.



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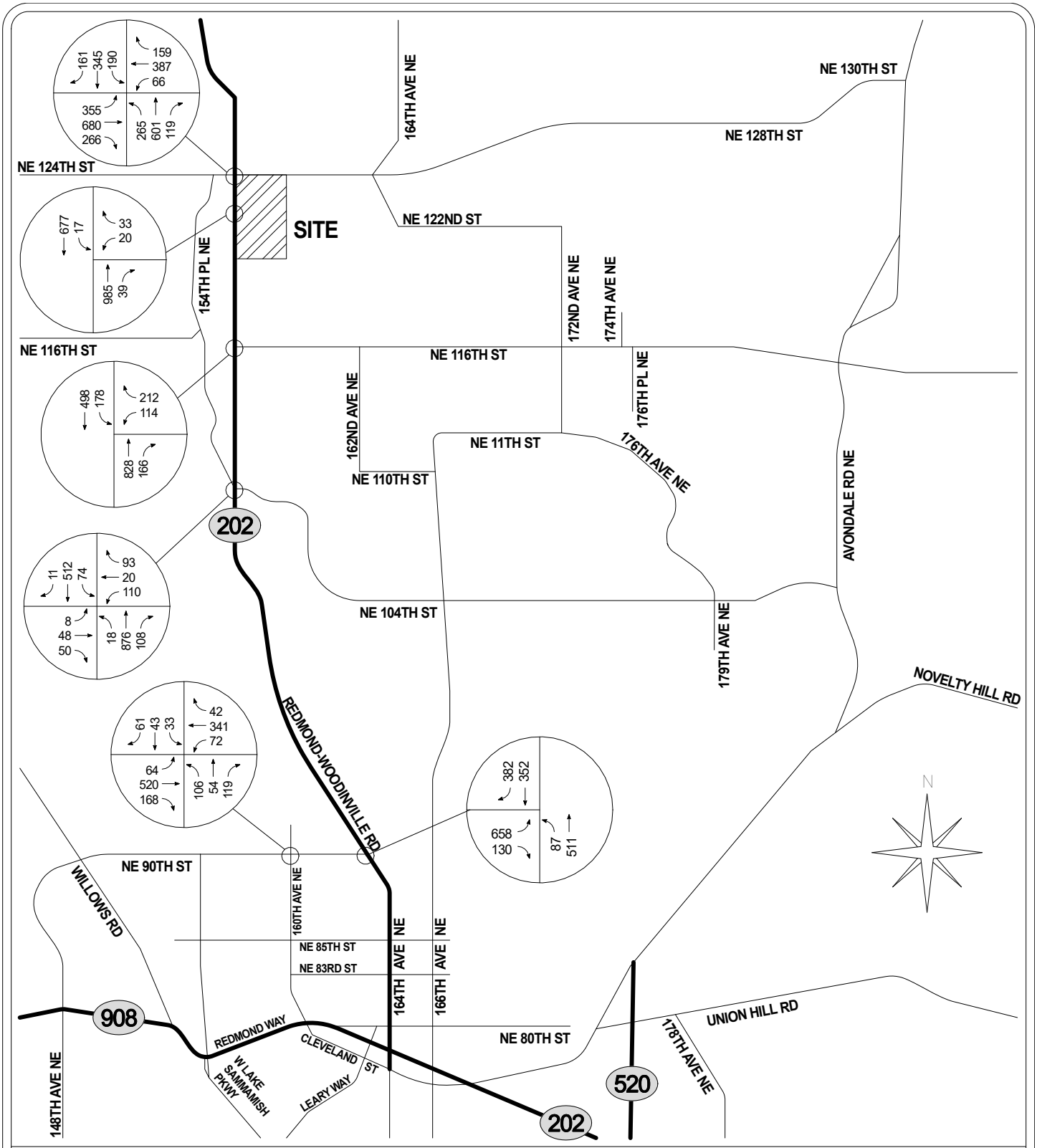
XXX → AM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 8

2022 BASELINE TRAFFIC VOLUMES AM PEAK-HOUR



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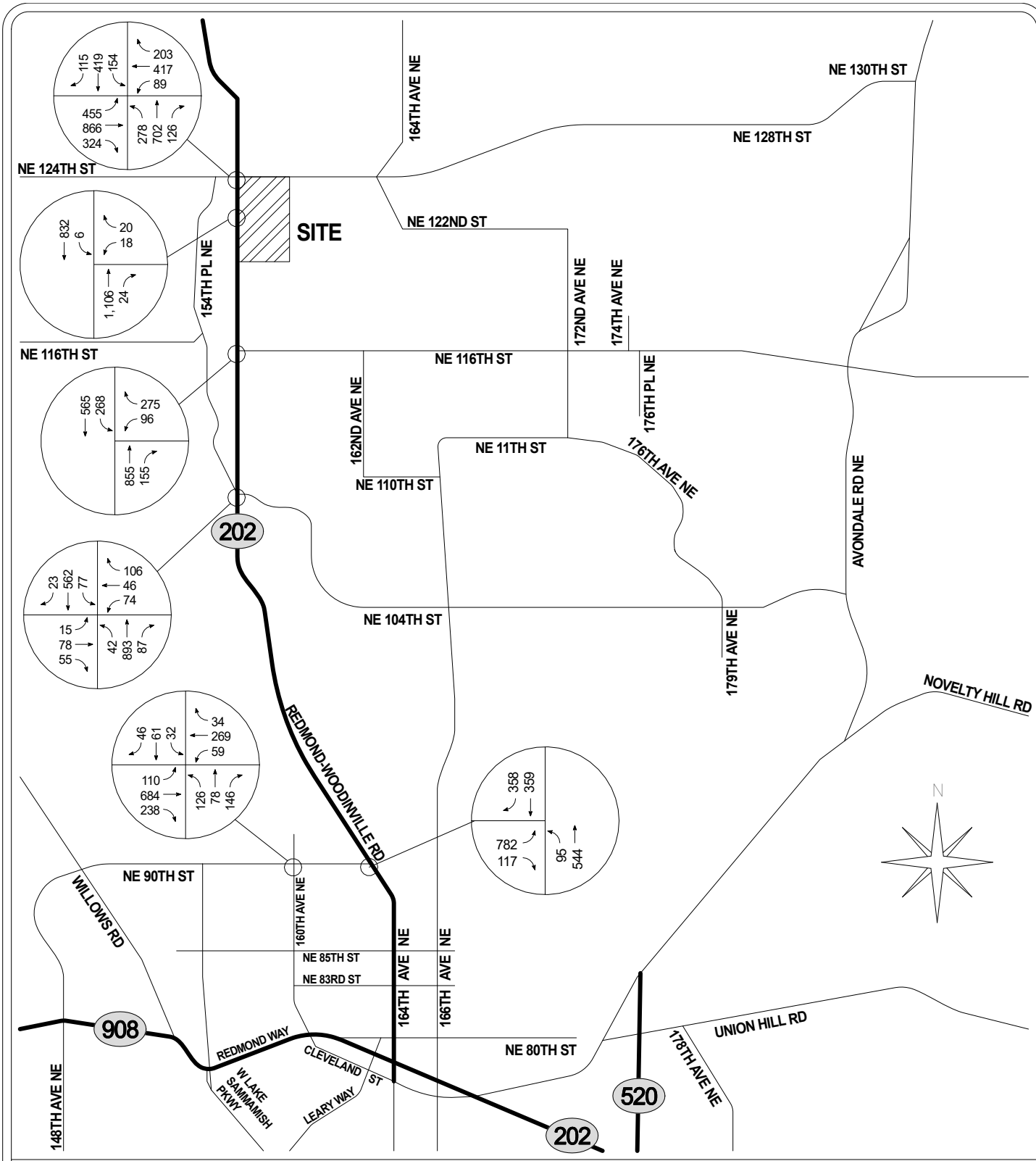
XXX → SCHOOL PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 9

2022 BASELINE TRAFFIC VOLUMES SCHOOL PM PEAK-HOUR



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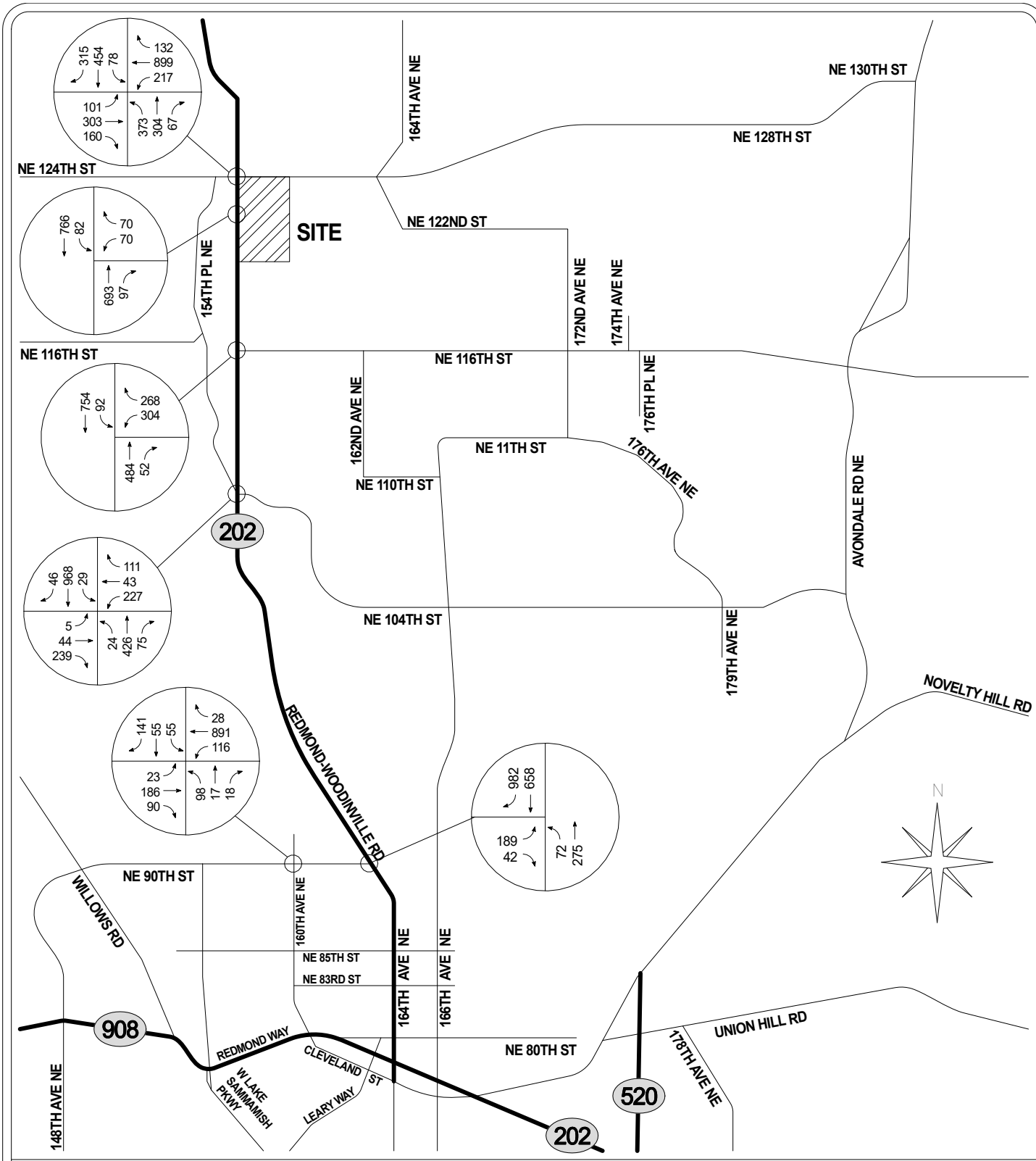
XXX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 10

2022 BASELINE TRAFFIC VOLUMES PM PEAK-HOUR



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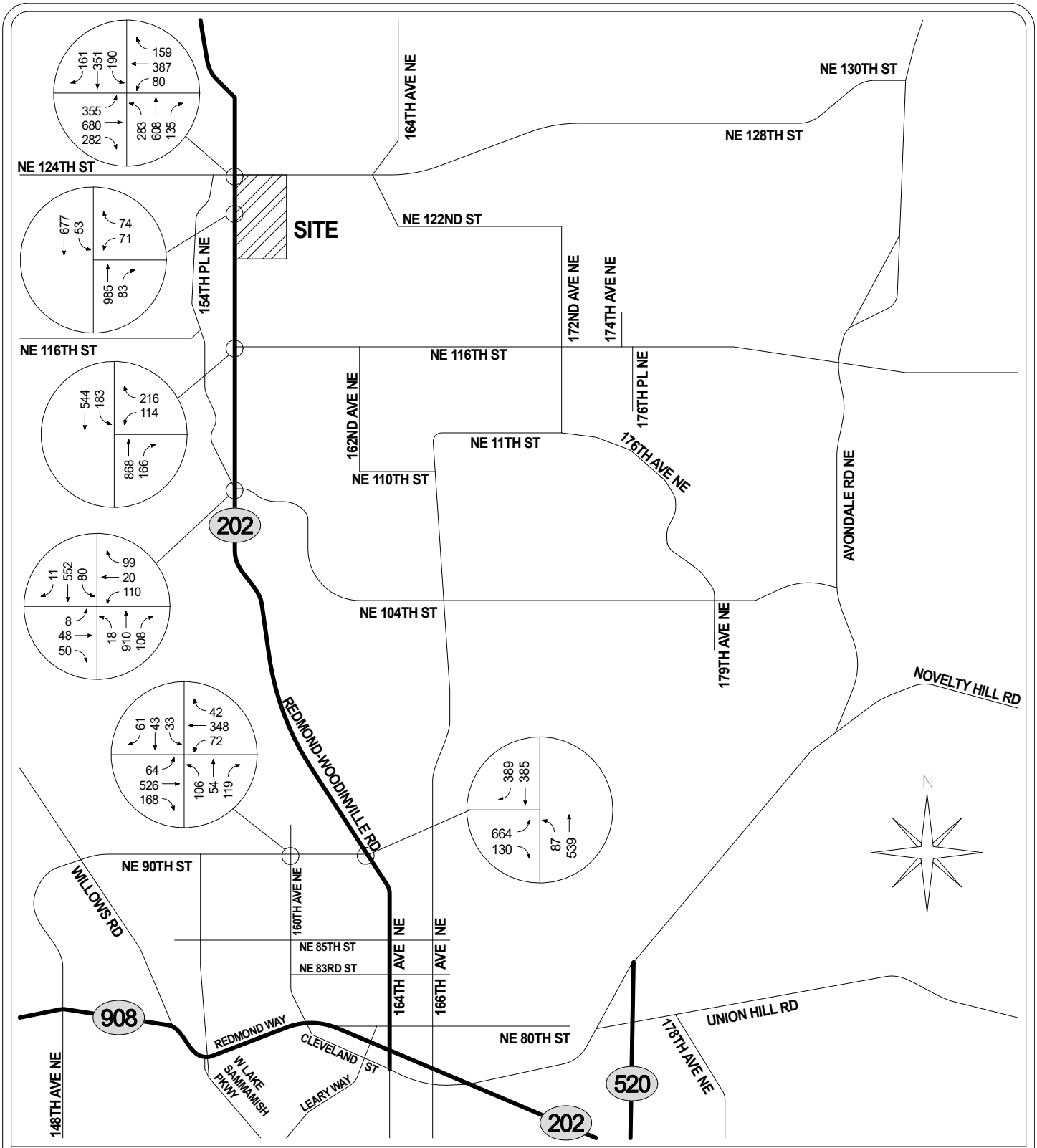
XXX → AM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 11

2022 FUTURE WITH PROJECT TRAFFIC VOLUMES AM PEAK-HOUR



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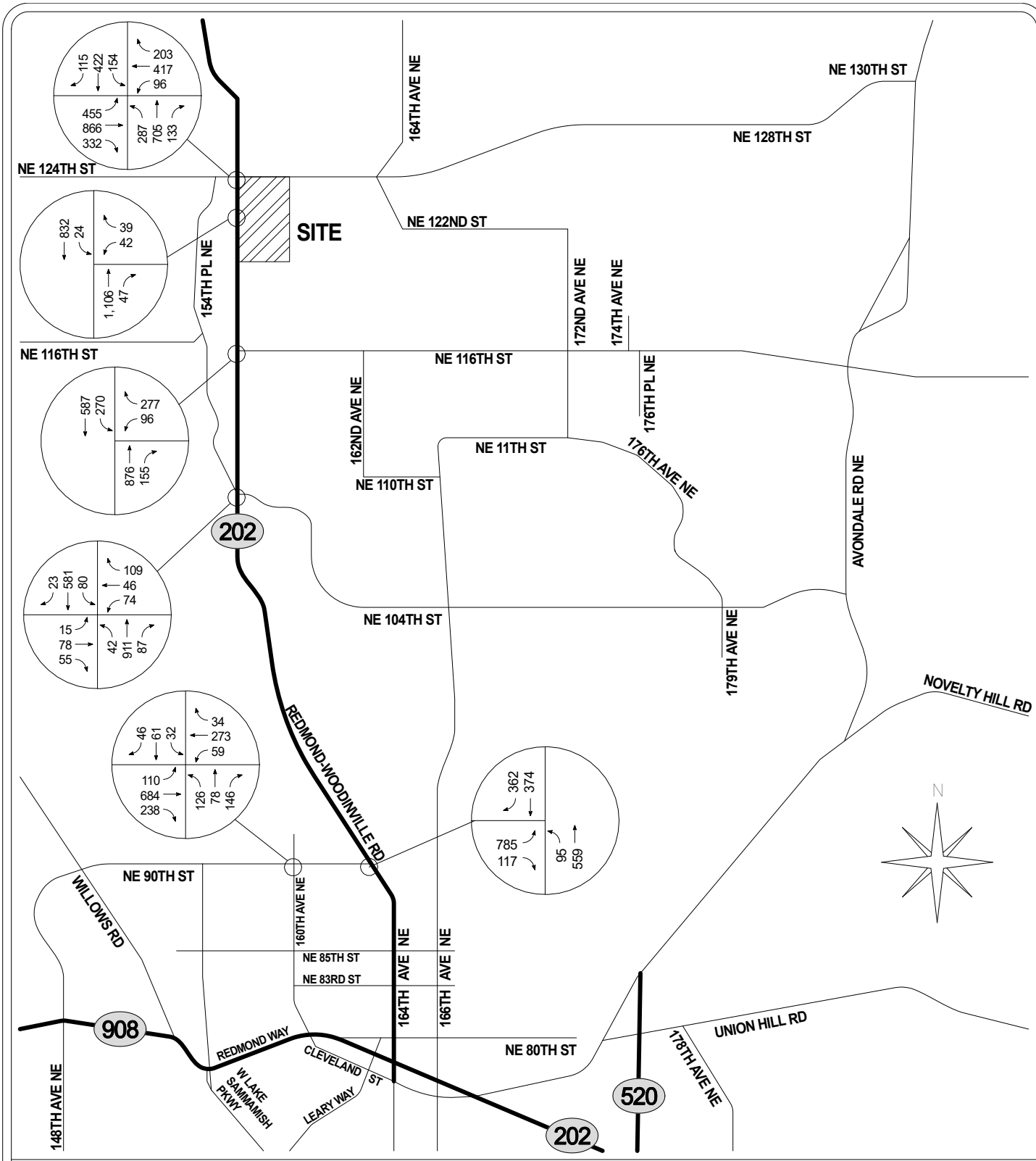
XXX → SCHOOL PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 12

2022 FUTURE WITH PROJECT TRAFFIC VOLUMES SCHOOL PM PEAK-HOUR



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XXX → PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 13

2022 FUTURE WITH PROJECT TRAFFIC VOLUMES PM PEAK-HOUR

Table 6: 2022 Baseline and Future Level of Service Summary – AM Peak-Hour

Intersections	2016 Existing Conditions		2022 Future Conditions			
			without School		with School	
	LOS	Delay	LOS	Delay	LOS	Delay
1. SR-202 at NE 124th Street	D	37.3 sec	D	45.8 sec	D	47.0 sec
2. SR-202 at NE 116th Street	B	12.4 sec	B	14.1 sec	B	15.2 sec
3. SR-202 at NE 109th Street	D	38.8 sec	D	48.9 sec	D	52.2 sec
4. SR-202 at NE 90th Street	A	9.2 sec	B	10.3 sec	B	11.2 sec
5. 160th Avenue NE NE 90th Street	C	24.9 sec	C	27.7 sec	C	28.5 sec
6. SR-202 at Site Access	C	15.2 sec	C	16.9 sec	E	40.6 sec

Table 7: 2022 Baseline and Future Level of Service Summary – School PM Peak-Hour

Intersections	2016 Existing Conditions		2022 Future Conditions			
			without School		with School	
	LOS	Delay	LOS	Delay	LOS	Delay
1. SR-202 at NE 124th Street	D	47.8 sec	E	61.2 sec	E	62.5 sec
2. SR-202 at NE 116th Street	B	14.5 sec	C	21.6 sec	C	24.4 sec
3. SR-202 at NE 109th Street	C	25.1 sec	C	30.0 sec	C	34.2 sec
4. SR-202 at NE 90th Street	C	21.2 sec	C	24.2 sec	C	25.4 sec
5. 160th Avenue NE NE 90th Street	B	19.3 sec	C	20.6 sec	C	20.7 sec
6. SR-202 at Site Access	C	21.4 sec	D	25.7 sec	F	55.8 sec

Table 8: 2022 Baseline and Future Level of Service Summary – PM Peak-Hour

Intersections	2016 Existing Conditions		2022 Future Conditions			
			without School		with School	
	LOS	Delay	LOS	Delay	LOS	Delay
1. SR-202 at NE 124th Street	E	58.3 sec	E	79.1 sec	F	80.2 sec
2. SR-202 at NE 116th Street	A	9.9 sec	B	11.9 sec	B	12.5 sec
3. SR-202 at NE 109th Street	C	29.3 sec	D	43.6 sec	D	46.3 sec
4. SR-202 at NE 90th Street	C	24.5 sec	C	29.1 sec	C	29.9 sec
5. 160th Avenue NE NE 90th Street	B	19.3 sec	C	23.1 sec	C	23.2 sec
6. SR-202 at Site Access	C	21.4 sec	D	25.4 sec	D	34.2 sec

The level of service calculations are included in the attachments.

5.5 Existing Zoning 2022 Future Volumes and Level of Service

The 2022 future with the existing R-1 and R-4 zoning (assuming a build-out of 60 residential units) turning movement volumes are calculated by adding the additional trips to the 2022 baseline turning movement volumes. The 2022 future turning movement volumes for the AM and PM peak-hour are included in the existing zoning analysis in the attachments.

The level of service analysis shows that many the study intersections will continue to operate at LOS D or better with a small change in delay under the existing zoning. However, the intersection of SR-202 at NE 124th Street, is still anticipated to operate at LOS F during the PM peak-hour under the 2022 future conditions. The 2022 future with existing zoning build-out level of service results for the AM and PM peak-hour are summarized in Table 9 and Table 10, respectively.

Table 9: Existing Zoning 2022 Future Level of Service Summary – AM Peak-Hour

Intersections	2016 Existing Conditions		2022 Future Conditions			
			with School		with 60 Units	
	LOS	Delay	LOS	Delay	LOS	Delay
1. SR-202 at NE 124th Street	D	37.3 sec	D	47.0 sec	D	46.1 sec
2. SR-202 at NE 116th Street	B	12.4 sec	B	15.2 sec	B	14.4 sec
3. SR-202 at NE 109th Street	D	38.8 sec	D	52.2 sec	D	49.9 sec
4. SR-202 at NE 90th Street	A	9.2 sec	B	11.2 sec	B	10.5 sec
5. 160th Avenue NE NE 90th Street	C	24.9 sec	C	28.5 sec	C	28.3 sec
6. SR-202 at Site Access	C	15.2 sec	E	40.6 sec	C	20.0 sec

Table 10: Existing Zoning 2022 Future Level of Service Summary – PM Peak-Hour

Intersections	2016 Existing Conditions		2022 Future Conditions			
			with School		with 60 Units	
	LOS	Delay	LOS	Delay	LOS	Delay
1. SR-202 at NE 124th Street	E	58.3 sec	F	80.2 sec	F	80.0 sec
2. SR-202 at NE 116th Street	A	9.9 sec	B	12.5 sec	B	12.3 sec
3. SR-202 at NE 109th Street	C	29.3 sec	D	46.3 sec	D	46.2 sec
4. SR-202 at NE 90th Street	C	24.5 sec	C	29.9 sec	C	29.8 sec
5. 160th Avenue NE NE 90th Street	B	19.3 sec	C	23.2 sec	C	23.4 sec
6. SR-202 at Site Access	C	21.4 sec	D	34.2 sec	D	29.2 sec

5.6 2022 Future Year Parking Demand

Per the City of Redmond zoning code, grade schools (k-12) are required to provide adequate parking to accommodate peak use with no minimum or maximum identified. Parking generation for the WPS Phase I of the CUP expansion is based on data collected at the school on Tuesday, December 9, 2015 after 8:45 AM. The entire site will have 374 parking spaces of which 24 parking spaces are provided in the immediate vicinity to Phase I of the CUP. There are currently 15 staff and 97 students on-site during the parking counts. Total existing on-site parking demand during the AM peak period is 16 vehicles or a demand 0.165 parked vehicles per student.

With 300 students proposed in Phase I there would be an on-site parking demand of 50 spaces during typical school operations. With the current students on the site and demand for 16 existing spaces; there will be a total parking demand for the site of 66 spaces. These spaces will be accommodated by the 24 new spaces to the north of the Phase I building and spaces within easy walking distance located around Building A which includes another 63 parking spaces for a total of 87 spaces. There are another 247 parking spaces in parking lot on the south and east side of the adjacent site and another 40 shared spaces on the south side of the church building to remain.

The possible peak use of the site would be a whole school assembly with all 400 students on the site. National data identifies an average vehicle occupancy for social and recreational purposes as being 2.1 persons per vehicle. This would equate to 190 vehicles on-site, typically parking lots are deemed full with 85-90% utilization; this would require 224 spaces to be at 85% occupancy. This will be supported by the additional 247 spaces to the south and east on the site.

There is a church on the site that will remain in operation and has services at 5:30 PM on Saturday, 9:30 AM and 11:00 AM on Sunday. During these times the school is not in operation and the parking spaces on the site can be utilized by the Church.

5.7 Drop-Off/Pick-up Queuing Analysis

In addition to the parking spaces there is approximately 350 feet of drop-off/pick-up space from the Entry Plaza to SR-202, with space for approximately 4 vehicles for drop-off/pick-up simultaneously. The preferred traffic circulation plan is provided in T2.0. With 4 vehicles capable of being serviced simultaneously it's anticipated the proposed parent loop would provide adequate queuing space to limit impacts to the City street system as the anticipated queuing would be 220 feet.

This projected queuing is based on 121 vehicles (parent traffic to the site) arriving in a 20-minute period and having a service rate of 15 seconds to drop-off a student. The 15 seconds is the measured time for a vehicle to stop, drop-off the student, start moving again based on video observations. The queue identified as the additional queue beyond the area required for the vehicles being served simultaneously. It was assumed that the length required to service X vehicles was 22 feet multiplied by (2*X-1). There will be enough width for vehicles to by-pass those dropping off/picking up thus allowing vehicles to enter the designated loading area while another vehicle loads. The width would also allow for double stacking if queuing becomes a problem.

If there ever becomes an issue with impacts to SR-202 a secondary circulation plan is also shown on T2.0. This would involve parents entering the south access and looping around the site. This would provide over 1,400 feet of queuing distance before impacting SR-202.

The school drop-off/pick-up is streamlined to provide quick service times for each vehicle. This is accomplished by parents arriving at assigned times, no early arrivals to wait in queue that would impact SR-202. Each car has a placard with the students last name that gets radioed into the pick-up location so that the student is ready to enter the vehicle quickly when it reaches the pick-up location.

6. TRAFFIC MITIGATION

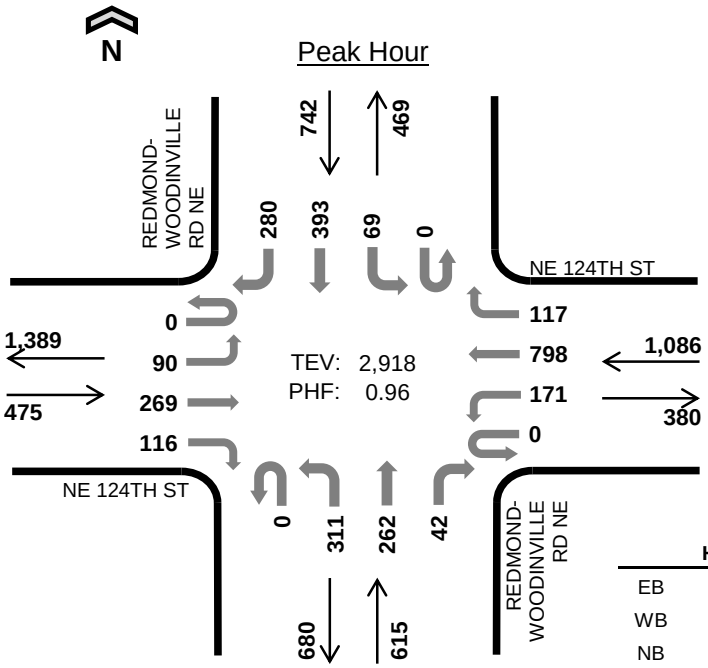
The majority of the study intersections operate at LOS D or better during the AM peak-hour, School PM peak-hour and PM peak-hour with the additional trips from the WPS remodel. Only the intersection of SR-202 at NE 124th Street anticipated to operate at LOS E or worse during the School PM peak-hour and PM peak-hour. The school impact to the intersection of SR-202 at NE 124th Street during the School PM peak-hour represents 2.10% (77 trips/3,671 trips) of the traffic through the intersection. During the PM peak-hour the schools impact to the intersection drops to 0.88% (37 trips/4,185 trips).

The Redmond Municipal Code defines an elementary school as an educational institution that serves students between kindergarten and high school; for Phase 1 of the CUP the fee per student is $470.61 from the Impact Fee Schedule. With 300 students, this would equate to $141,183 before credit for the existing church which is $63,840; therefore, the net traffic impact fee is $77,343.

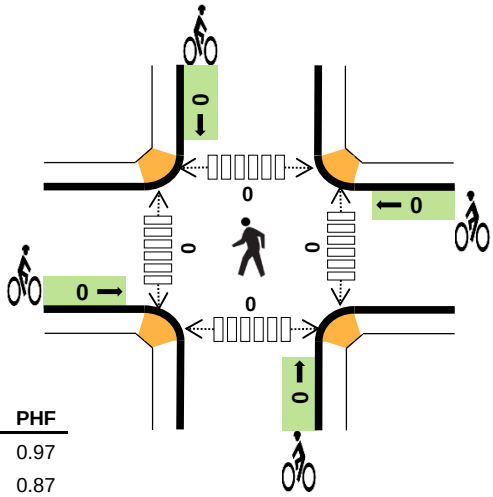
Count Data – AM Peak-Hour

REDMOND-WOODINVILLE RD NE
NE 124TH ST

Date: Thu, Oct 27, 2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	7.6%	0.97
WB	2.4%	0.87
NB	3.1%	0.87
SB	5.4%	0.90
TOTAL	4.1%	0.96



Two-Hour Count Summaries

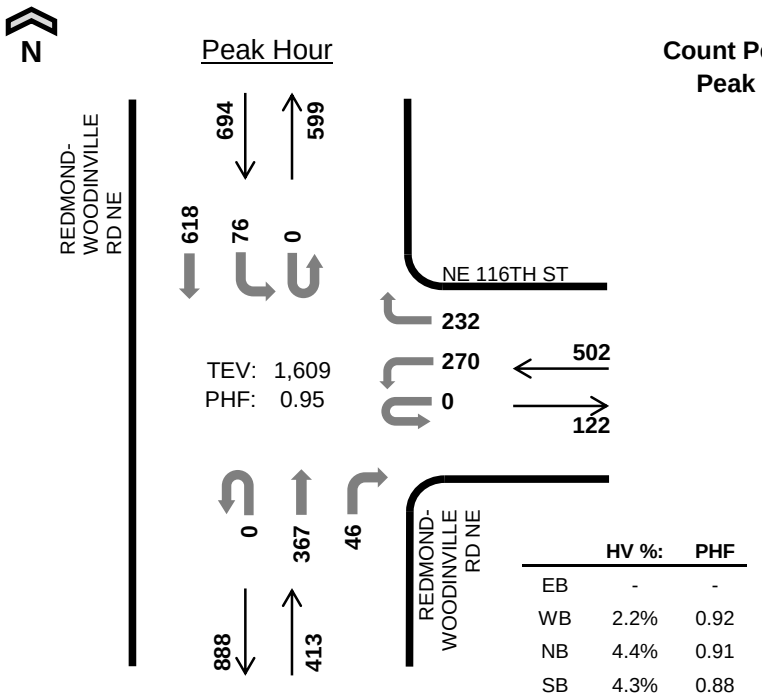
Interval Start	NE 124TH ST Eastbound				NE 124TH ST Westbound				REDMOND-WOODINVILLE RD NE Northbound				REDMOND-WOODINVILLE RD NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	13	27	39	0	30	157	21	0	52	36	2	0	16	141	46	580	0
7:15 AM	0	11	45	28	0	39	180	16	0	56	44	3	0	10	150	62	644	0
7:30 AM	0	11	45	34	0	50	213	24	0	66	50	6	0	14	138	56	707	0
7:45 AM	**0**	**24**	**70**	**29**	**0**	**59**	**225**	**27**	**0**	**80**	**73**	**6**	**0**	**16**	**94**	**53**	**756**	2,687
8:00 AM	**0**	**16**	**73**	**25**	**0**	**32**	**186**	**28**	**0**	**63**	**76**	**10**	**0**	**12**	**112**	**81**	**714**	2,821
8:15 AM	**0**	**20**	**59**	**41**	**0**	**35**	**182**	**30**	**0**	**100**	**61**	**16**	**0**	**20**	**98**	**75**	**737**	2,914
8:30 AM	**0**	**30**	**67**	**21**	**0**	**45**	**205**	**32**	**0**	**68**	**52**	**10**	**0**	**21**	**89**	**71**	**711**	**2,918**
8:45 AM	0	20	60	3	0	27	221	31	0	76	48	5	0	23	89	84	687	2,849
Count Total	0	145	446	220	0	317	1,569	209	0	561	440	58	0	132	911	528	5,536	0
Peak Hour	**0**	**90**	**269**	**116**	**0**	**171**	**798**	**117**	**0**	**311**	**262**	**42**	**0**	**69**	**393**	**280**	**2,918**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

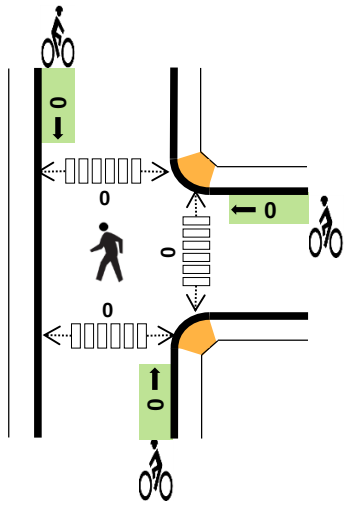
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	5	2	10	*22*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	3	11	5	3	*22*	0	2	0	0	*2*	0	0	0	0	*0*
7:30 AM	4	6	2	6	*18*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**5**	**5**	**4**	**7**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**13**	**7**	**4**	**9**	***33***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**7**	**9**	**7**	**16**	***39***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**11**	**5**	**4**	**8**	***28***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	6	11	6	9	*32*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	54	59	34	68	*215*	0	2	0	0	*2*	0	0	0	0	*0*
Peak Hour	**36**	**26**	**19**	**40**	***121***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

REDMOND-WOODINVILLE RD NE
NE 116TH ST

Date: Thu, Oct 27, 2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	-	-
WB	2.2%	0.92
NB	4.4%	0.91
SB	4.3%	0.88
TOTAL	3.7%	0.95



Two-Hour Count Summaries

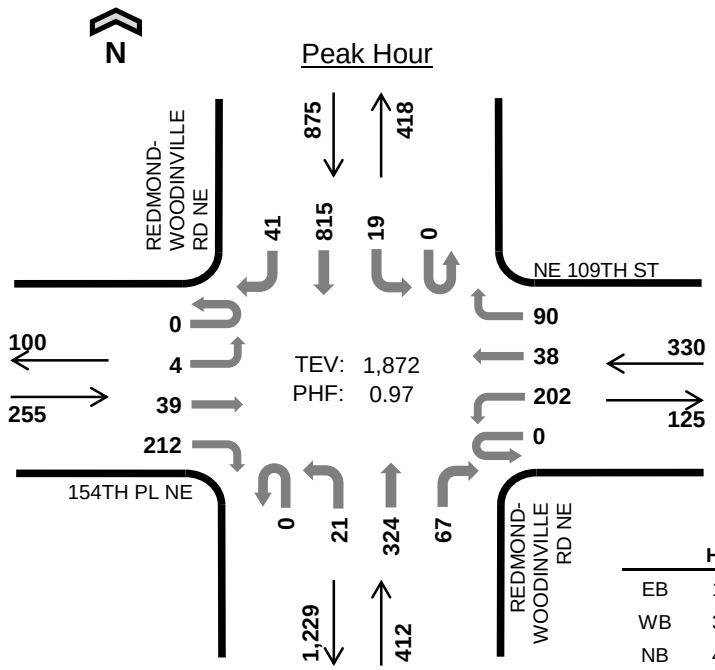
Interval Start	0				NE 116TH ST				REDMOND-WOODINVILLE RD NE				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	40	0	27	0	0	53	10	0	36	178	0	344	0
7:15 AM	0	0	0	0	0	46	0	40	0	0	78	17	0	16	205	0	402	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**65**	**0**	**50**	**0**	**0**	**74**	**10**	**0**	**22**	**175**	**0**	**396**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**72**	**0**	**58**	**0**	**0**	**98**	**9**	**0**	**20**	**151**	**0**	**408**	1,550
8:00 AM	**0**	**0**	**0**	**0**	**0**	**69**	**0**	**52**	**0**	**0**	**94**	**15**	**0**	**13**	**139**	**0**	**382**	1,588
8:15 AM	**0**	**0**	**0**	**0**	**0**	**64**	**0**	**72**	**0**	**0**	**101**	**12**	**0**	**21**	**153**	**0**	**423**	**1,609**
8:30 AM	0	0	0	0	0	69	0	62	0	0	86	15	0	19	141	0	392	1,605
8:45 AM	0	0	0	0	0	70	0	55	0	0	73	14	0	34	148	0	394	1,591
Count Total	0	0	0	0	0	495	0	416	0	0	657	102	0	181	1,290	0	3,141	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**270**	**0**	**232**	**0**	**0**	**367**	**46**	**0**	**76**	**618**	**0**	**1,609**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

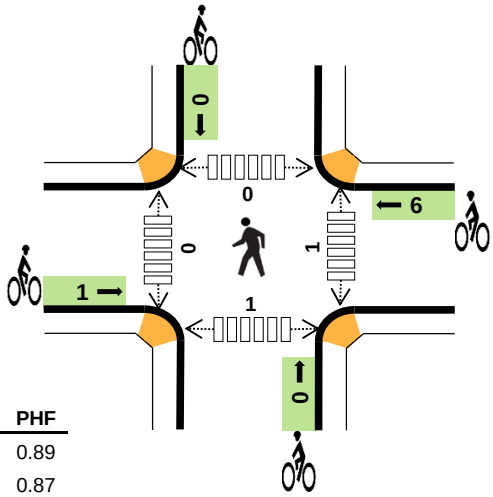
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	2	9	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**0**	**2**	**4**	**8**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**0**	**3**	**7**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**5**	**5**	**3**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**4**	**6**	**12**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	0	2	4	7	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	5	5	4	*14*	0	0	0	1	*1*	0	0	0	0	*0*
Count Total	0	20	31	51	*102*	0	0	0	1	*1*	0	0	0	0	*0*
Peak Hr	**0**	**11**	**18**	**30**	***59***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

REDMOND-WOODINVILLE RD NE
154TH PL NE

Date: Thu, Oct 27, 2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	1.2%	0.89
WB	3.3%	0.87
NB	4.6%	0.94
SB	2.6%	0.97
TOTAL	3.0%	0.97



Two-Hour Count Summaries

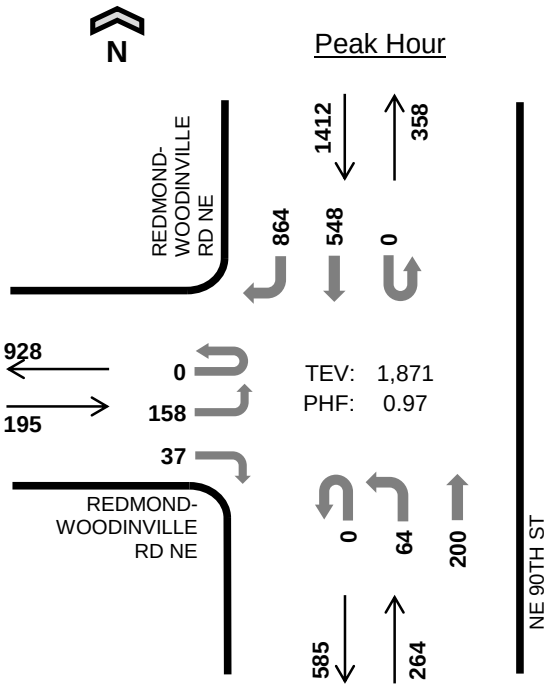
Interval Start	154TH PL NE				NE 109TH ST				REDMOND-WOODINVILLE RD NE				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	19	24	0	24	10	23	0	5	48	12	0	14	186	3	370	0
7:15 AM	0	1	14	24	0	43	4	19	0	2	70	23	0	8	240	7	455	0
7:30 AM	**0**	**1**	**11**	**53**	**0**	**64**	**10**	**21**	**0**	**2**	**59**	**23**	**0**	**5**	**213**	**4**	**466**	0
7:45 AM	**0**	**2**	**8**	**47**	**0**	**50**	**16**	**22**	**0**	**8**	**92**	**10**	**0**	**5**	**208**	**13**	**481**	1,772
8:00 AM	**0**	**1**	**13**	**58**	**0**	**37**	**3**	**21**	**0**	**6**	**89**	**13**	**0**	**5**	**195**	**9**	**450**	1,852
8:15 AM	**0**	**0**	**7**	**54**	**0**	**51**	**9**	**26**	**0**	**5**	**84**	**21**	**0**	**4**	**199**	**15**	**475**	**1,872**
8:30 AM	0	2	7	63	0	55	12	17	0	2	68	5	0	1	207	8	447	1,853
8:45 AM	0	1	6	52	0	43	11	17	0	5	73	10	0	3	210	9	440	1,812
Count Total	0	10	85	375	0	367	75	166	0	35	583	117	0	45	1,658	68	3,584	0
Peak Hour	**0**	**4**	**39**	**212**	**0**	**202**	**38**	**90**	**0**	**21**	**324**	**67**	**0**	**19**	**815**	**41**	**1,872**	**0**

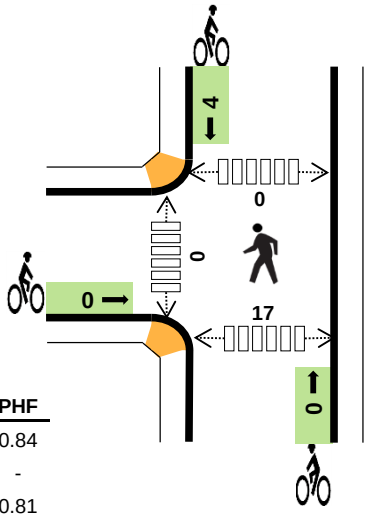
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	3	8	*12*	0	1	0	0	*1*	0	0	0	0	*0*
7:15 AM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**2**	**3**	**4**	**4**	***13***	**1**	**4**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**5**	**3**	**4**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**2**	**8**	**6**	***16***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**1**	**1**	**4**	**9**	***15***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**1**	***2***
8:30 AM	3	1	4	7	*15*	1	2	0	0	*3*	0	0	0	0	*0*
8:45 AM	0	2	4	8	*14*	0	1	0	0	*1*	3	0	0	3	*6*
Count Total	6	16	32	47	*101*	2	10	0	0	*12*	4	0	0	4	*8*
Peak Hour	**3**	**11**	**19**	**23**	***56***	**1**	**6**	**0**	**0**	***7***	**1**	**0**	**0**	**1**	***2***

NE 90TH ST
REDMOND-WOODINVILLE RD NE

Date: Thu, Oct 27, 2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	6.2%	0.84
WB	-	-
NB	4.5%	0.81
SB	1.8%	0.92
TOTAL	2.7%	0.97

Two-Hour Count Summaries

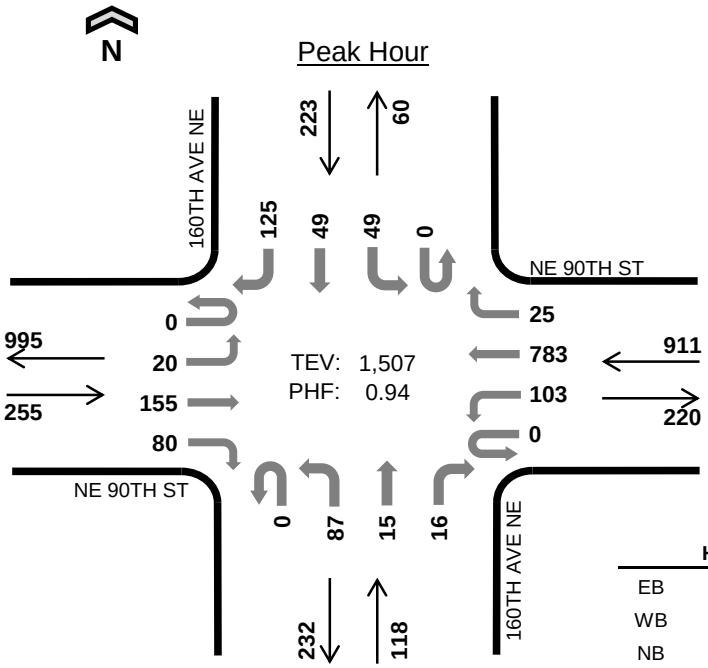
Interval Start	REDMOND-WOODINVILLE RD NE				0				NE 90TH ST				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	33	0	9	0	0	0	0	0	14	41	0	0	0	124	144	365	0
7:15 AM	0	40	0	7	0	0	0	0	0	15	50	0	0	0	153	154	419	0
7:30 AM	0	37	0	8	0	0	0	0	0	13	33	0	0	0	151	192	434	0
7:45 AM	**0**	**36**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**19**	**62**	**0**	**0**	**0**	**146**	**210**	**482**	1,700
8:00 AM	**0**	**42**	**0**	**12**	**0**	**0**	**0**	**0**	**0**	**20**	**53**	**0**	**0**	**0**	**134**	**211**	**472**	1,807
8:15 AM	**0**	**48**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**14**	**46**	**0**	**0**	**0**	**126**	**203**	**447**	1,835
8:30 AM	**0**	**32**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**11**	**39**	**0**	**0**	**0**	**142**	**240**	**470**	**1,871**
8:45 AM	0	54	0	8	0	0	0	0	0	22	33	0	0	0	135	211	463	1,852
Count Total	0	322	0	69	0	0	0	0	0	128	357	0	0	0	1,111	1,565	3,552	0
Peak Hour	**0**	**158**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**64**	**200**	**0**	**0**	**0**	**548**	**864**	**1,871**	**0**

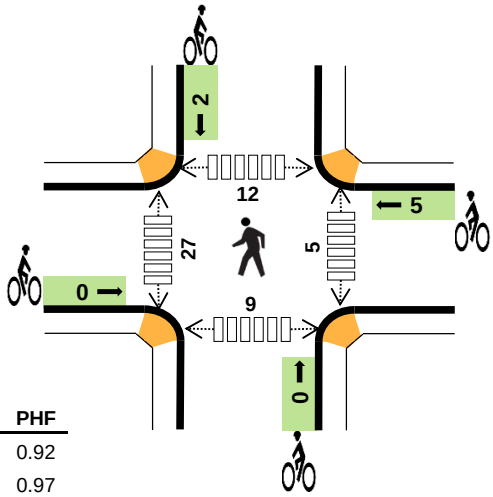
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	0	0	11	*13*	0	0	0	0	*0*	0	1	0	1	*2*
7:15 AM	0	0	2	3	*5*	0	0	0	2	*2*	0	0	0	1	*1*
7:30 AM	3	0	2	6	*11*	0	0	0	0	*0*	0	0	0	2	*2*
7:45 AM	**2**	**0**	**1**	**5**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**6**	*6*
8:00 AM	**5**	**0**	**4**	**6**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	*3*
8:15 AM	**3**	**0**	**4**	**6**	***13***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**4**	*4*
8:30 AM	**2**	**0**	**3**	**9**	***14***	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**0**	**4**	***4***
8:45 AM	3	0	6	10	*19*	0	0	0	2	*2*	0	2	0	1	*3*
Count Total	20	0	22	56	*98*	0	0	0	8	*8*	0	3	0	22	*25*
Peak Hr	**12**	**0**	**12**	**26**	***50***	**0**	**0**	**0**	**4**	***4***	**0**	**0**	**0**	**17**	***17***

160TH AVE NE
NE 90TH ST

Date: Thu, Oct 27, 2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	9.0%	0.92
WB	2.2%	0.97
NB	5.1%	0.72
SB	1.3%	0.87
TOTAL	3.5%	0.94

Two-Hour Count Summaries

Interval Start	NE 90TH ST Eastbound				NE 90TH ST Westbound				160TH AVE NE Northbound				160TH AVE NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	28	13	0	17	136	2	0	15	4	4	0	11	7	14	254	0
7:15 AM	0	5	33	21	0	17	126	0	0	17	9	2	0	17	15	18	280	0
7:30 AM	0	2	30	11	0	9	150	13	0	12	8	2	0	11	7	27	282	0
7:45 AM	0	1	38	24	0	22	167	12	0	27	7	4	0	9	13	25	349	1,165
8:00 AM	**0**	**5**	**41**	**22**	**0**	**33**	**192**	**3**	**0**	**18**	**5**	**4**	**0**	**13**	**9**	**28**	**373**	1,284
8:15 AM	**0**	**6**	**39**	**18**	**0**	**20**	**196**	**4**	**0**	**19**	**3**	**3**	**0**	**14**	**10**	**29**	**361**	1,365
8:30 AM	**0**	**5**	**34**	**16**	**0**	**19**	**203**	**14**	**0**	**21**	**2**	**2**	**0**	**8**	**14**	**34**	**372**	1,455
8:45 AM	**0**	**4**	**41**	**24**	**0**	**31**	**192**	**4**	**0**	**29**	**5**	**7**	**0**	**14**	**16**	**34**	**401**	**1,507**
Count Total	0	31	284	149	0	168	1,362	52	0	158	43	28	0	97	91	209	2,672	0
Peak Hour	**0**	**20**	**155**	**80**	**0**	**103**	**783**	**25**	**0**	**87**	**15**	**16**	**0**	**49**	**49**	**125**	**1,507**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

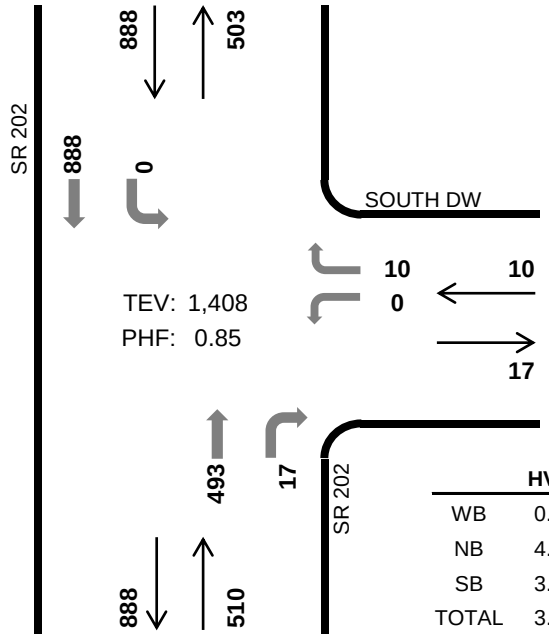
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	3	3	1	*10*	0	0	0	0	*0*	0	7	0	1	*8*
7:15 AM	5	1	4	0	*10*	0	2	0	0	*2*	0	5	0	2	*7*
7:30 AM	3	4	2	0	*9*	0	0	1	0	*1*	2	9	0	0	*11*
7:45 AM	5	4	2	0	*11*	0	0	1	1	*2*	2	4	1	2	*9*
8:00 AM	**4**	**4**	**1**	**2**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**2**	**2**	*7*
8:15 AM	**7**	**4**	**2**	**1**	***14***	**0**	**0**	**0**	**2**	***2***	**1**	**4**	**3**	**3**	*11*
8:30 AM	**7**	**3**	**1**	**0**	***11***	**0**	**3**	**0**	**0**	***3***	**1**	**13**	**3**	**3**	*20*
8:45 AM	**5**	**9**	**2**	**0**	***16***	**0**	**2**	**0**	**0**	***2***	**3**	**7**	**4**	**1**	***15***
Count Total	39	32	17	4	*92*	0	7	2	3	*12*	9	52	13	14	*88*
Peak Hour	**23**	**20**	**6**	**3**	***52***	**0**	**5**	**0**	**2**	***7***	**5**	**27**	**12**	**9**	***53***

SR 202
SOUTH DW

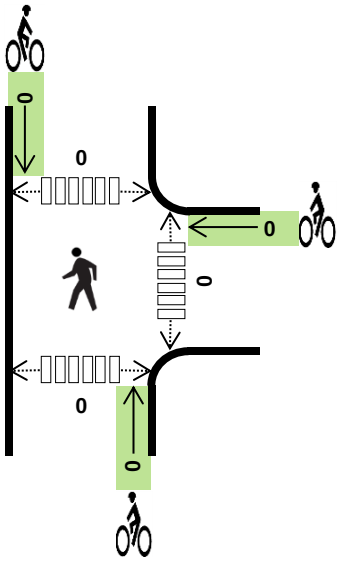
Date: Tue, Dec 09, 2014
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

N

Peak Hour



	HV %:	PHF
WB	0.0%	0.63
NB	4.3%	0.86
SB	3.0%	0.85
TOTAL	3.5%	0.85



Two-Hour Count Summaries

Interval Start	SOUTH DW Eastbound			SOUTH DW Westbound			SR 202 Northbound			SR 202 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	76	0	0	226	0	302	
7:15 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**127**	**3**	**0**	**238**	**0**	**370**	
7:30 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**141**	**8**	**0**	**262**	**0**	**415**	
7:45 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**114**	**1**	**0**	**198**	**0**	**315**	1,402
8:00 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**111**	**5**	**0**	**190**	**0**	**308**	**1,408**
8:15 AM	0	0	0	0	0	5	0	125	12	0	221	0	363	1,401
8:30 AM	0	0	0	0	0	19	0	121	26	0	200	0	366	1,352
8:45 AM	0	0	0	0	0	7	0	119	5	0	145	0	276	1,313
Count Total	0	0	0	0	0	41	0	934	60	0	1,680	0	2,715	
Peak Hr	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**493**	**17**	**0**	**888**	**0**	**1,408**	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

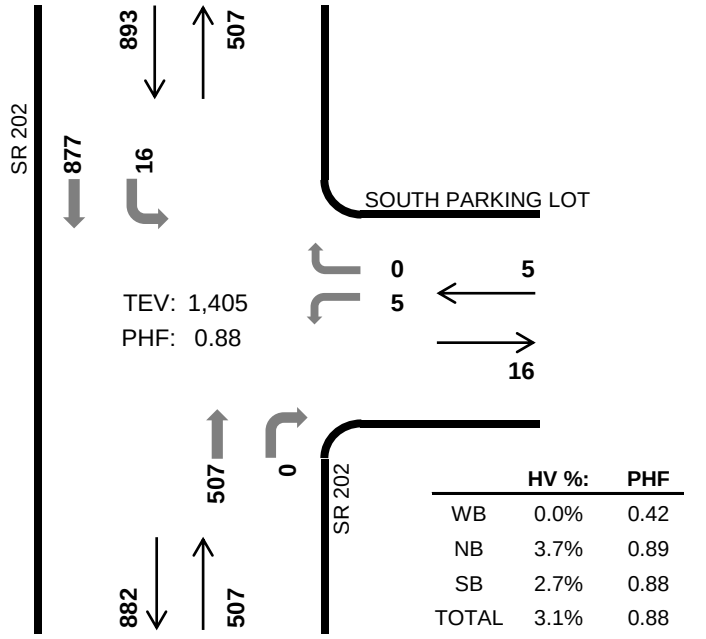
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	4	9	*13*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**0**	**5**	**4**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
7:30 AM	**0**	**0**	**6**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
7:45 AM	**0**	**0**	**4**	**9**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:00 AM	**0**	**0**	**7**	**9**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	0	0	4	9	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	0	1	7	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	1	2	10	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	1	33	62	*96*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**22**	**27**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

SR 202
SOUTH PARKING LOT

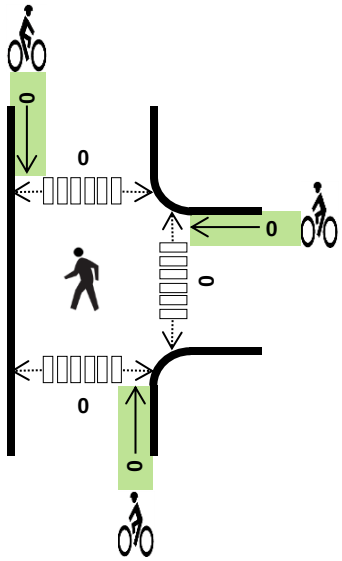
Date: Tue, Dec 09, 2014
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

N

Peak Hour



	HV %:	PHF
WB	0.0%	0.42
NB	3.7%	0.89
SB	2.7%	0.88
TOTAL	3.1%	0.88



Two-Hour Count Summaries

Interval Start	SOUTH PARKING LOT Eastbound			SOUTH PARKING LOT Westbound			SR 202 Northbound			SR 202 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	76	0	2	225	0	303	
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**135**	**0**	**4**	**232**	**0**	**371**	
7:30 AM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**143**	**0**	**6**	**248**	**0**	**400**	
7:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**114**	**0**	**3**	**197**	**0**	**315**	1,389
8:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**115**	**0**	**3**	**200**	**0**	**319**	**1,405**
8:15 AM	0	0	0	9	0	1	0	128	1	4	209	0	352	1,386
8:30 AM	0	0	0	7	0	0	0	143	0	3	180	0	333	1,319
8:45 AM	0	0	0	0	0	0	0	119	0	1	163	0	283	1,287
Count Total	0	0	0	21	0	1	0	973	1	26	1,654	0	2,676	
Peak Hr	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**507**	**0**	**16**	**877**	**0**	**1,405**	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	3	8	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**0**	**5**	**3**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
7:30 AM	**0**	**0**	**5**	**4**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
7:45 AM	**0**	**0**	**3**	**10**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:00 AM	**0**	**0**	**6**	**7**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	0	0	5	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	0	3	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	0	3	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	0	33	37	*70*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**19**	**24**	***43***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

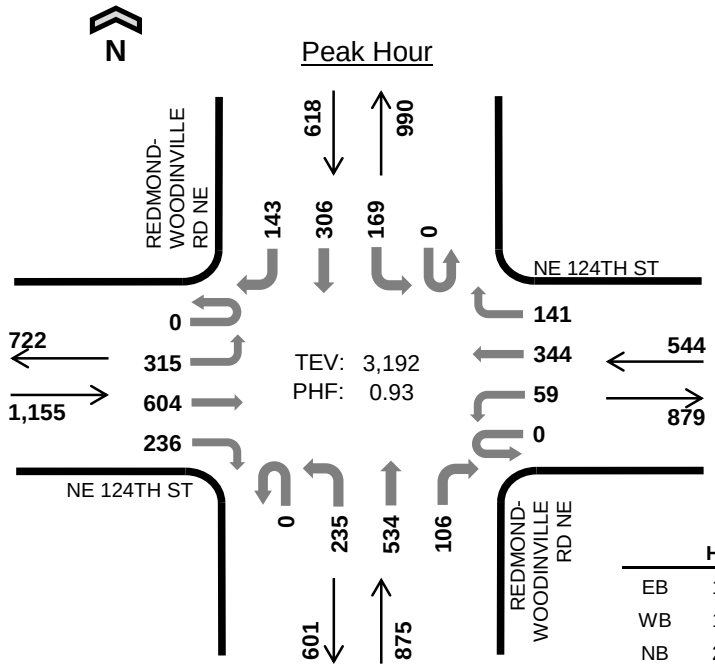
Mark Skaggs: 425 - 250 - 0777

mark.skaggs@idaxdata.com

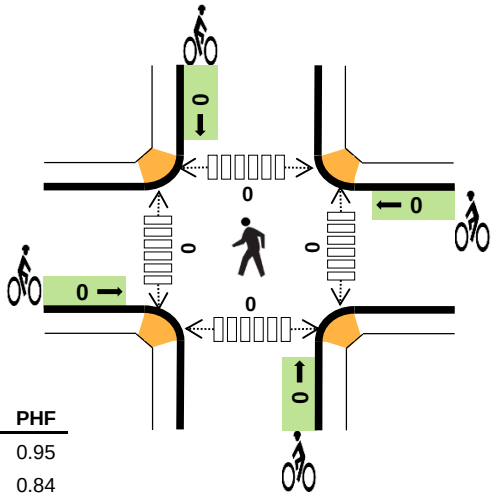
Count Data – School PM Peak-Hour

REDMOND-WOODINVILLE RD NE
NE 124TH ST

Date: Thu, Oct 27, 2016
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM



	HV %:	PHF
EB	1.7%	0.95
WB	1.8%	0.84
NB	2.5%	0.96
SB	2.6%	0.95
TOTAL	2.1%	0.93



Two-Hour Count Summaries

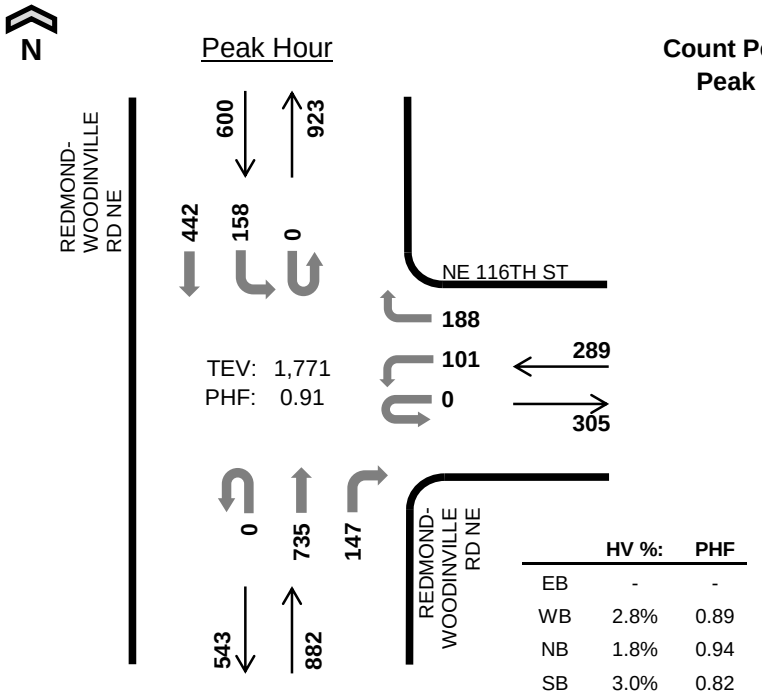
Interval Start	NE 124TH ST Eastbound				NE 124TH ST Westbound				REDMOND-WOODINVILLE RD NE Northbound				REDMOND-WOODINVILLE RD NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	51	97	54	0	10	77	23	0	41	64	25	0	29	73	39	583	0
2:15 PM	0	32	105	54	0	8	88	35	0	67	74	22	0	25	73	42	625	0
2:30 PM	0	63	99	59	0	8	83	26	0	54	97	21	0	37	93	40	680	0
2:45 PM	0	65	129	54	0	18	98	34	0	51	138	24	0	46	79	29	765	2,653
3:00 PM	**0**	**66**	**139**	**49**	**0**	**9**	**79**	**34**	**0**	**64**	**121**	**20**	**0**	**44**	**70**	**46**	**741**	2,811
3:15 PM	**0**	**71**	**163**	**60**	**0**	**13**	**68**	**25**	**0**	**66**	**113**	**35**	**0**	**48**	**60**	**35**	**757**	2,943
3:30 PM	**0**	**97**	**149**	**59**	**0**	**19**	**95**	**41**	**0**	**56**	**145**	**27**	**0**	**39**	**80**	**33**	**840**	3,103
3:45 PM	**0**	**81**	**153**	**68**	**0**	**18**	**102**	**41**	**0**	**49**	**155**	**24**	**0**	**38**	**96**	**29**	**854**	**3,192**
Count Total	0	526	1,034	457	0	103	690	259	0	448	907	198	0	306	624	293	5,845	0
Peak Hour	**0**	**315**	**604**	**236**	**0**	**59**	**344**	**141**	**0**	**235**	**534**	**106**	**0**	**169**	**306**	**143**	**3,192**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

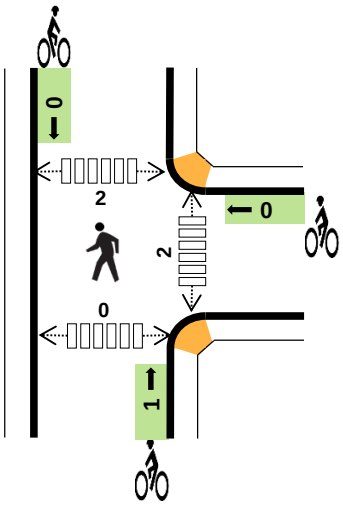
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	5	3	2	5	*15*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	6	3	4	3	*16*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	4	4	5	5	*18*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	8	9	6	3	*26*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	**8**	**5**	**4**	**4**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:15 PM	**6**	**0**	**5**	**6**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:30 PM	**2**	**3**	**7**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:45 PM	**4**	**2**	**6**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	43	29	39	32	*143*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**20**	**10**	**22**	**16**	***68***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

REDMOND-WOODINVILLE RD NE
NE 116TH ST

Date: Thu, Oct 27, 2016
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM



	HV %:	PHF
EB	-	-
WB	2.8%	0.89
NB	1.8%	0.94
SB	3.0%	0.82
TOTAL	2.4%	0.91



Two-Hour Count Summaries

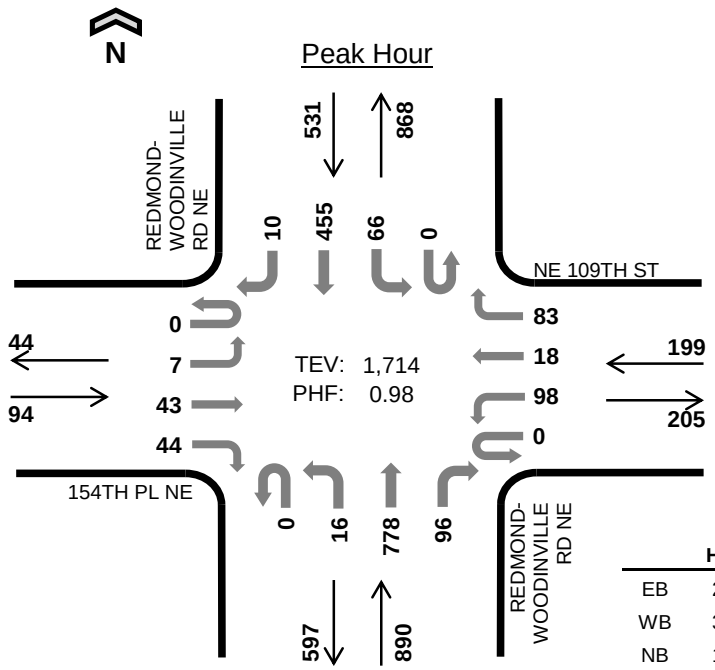
Interval Start	0				NE 116TH ST				REDMOND-WOODINVILLE RD NE				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	15	0	30	0	0	101	27	0	37	96	0	306	0
2:15 PM	0	0	0	0	0	13	0	34	0	0	145	12	0	32	109	0	345	0
2:30 PM	0	0	0	0	0	23	0	38	0	0	135	33	0	43	97	0	369	0
2:45 PM	0	0	0	0	0	18	0	41	0	0	169	29	0	57	105	0	419	1,439
3:00 PM	**0**	**0**	**0**	**0**	**0**	**36**	**0**	**45**	**0**	**0**	**164**	**39**	**0**	**30**	**88**	**0**	**402**	1,535
3:15 PM	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**45**	**0**	**0**	**203**	**27**	**0**	**37**	**100**	**0**	**431**	1,621
3:30 PM	**0**	**0**	**0**	**0**	**0**	**18**	**0**	**55**	**0**	**0**	**173**	**41**	**0**	**36**	**127**	**0**	**450**	1,702
3:45 PM	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**43**	**0**	**0**	**195**	**40**	**0**	**55**	**127**	**0**	**488**	**1,771**
Count Total	0	0	0	0	0	170	0	331	0	0	1,285	248	0	327	849	0	3,210	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**101**	**0**	**188**	**0**	**0**	**735**	**147**	**0**	**158**	**442**	**0**	**1,771**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

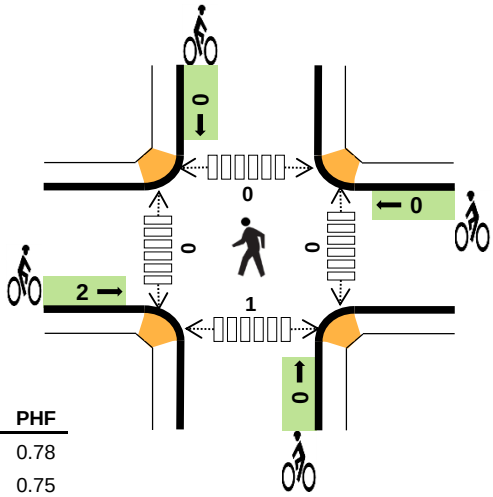
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	2	3	4	*9*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	5	2	4	*11*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	2	6	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	3	5	4	*12*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	**0**	**1**	**2**	**4**	***7***	**0**	**0**	**1**	**0**	***1***	**2**	**0**	**2**	**0**	*4*
3:15 PM	**0**	**3**	**5**	**5**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:30 PM	**0**	**1**	**5**	**6**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:45 PM	**0**	**3**	**4**	**3**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	0	20	32	33	*85*	0	0	1	0	*1*	2	0	2	0	*4*
Peak Hr	**0**	**8**	**16**	**18**	***42***	**0**	**0**	**1**	**0**	***1***	**2**	**0**	**2**	**0**	***4***

REDMOND-WOODINVILLE RD NE
154TH PL NE

Date: Thu, Oct 27, 2016
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM



	HV %:	PHF
EB	2.1%	0.78
WB	3.5%	0.75
NB	1.2%	0.96
SB	2.6%	0.86
TOTAL	2.0%	0.98



Two-Hour Count Summaries

Interval Start	154TH PL NE				NE 109TH ST				REDMOND-WOODINVILLE RD NE				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	12	9	0	33	0	18	0	3	105	25	0	16	95	2	318	0
2:15 PM	0	0	12	9	0	14	2	19	0	3	141	23	0	9	108	2	342	0
2:30 PM	0	4	13	4	0	18	5	23	0	11	158	18	0	16	104	3	377	0
2:45 PM	0	2	8	5	0	8	4	20	0	6	168	27	0	13	108	2	371	1,408
3:00 PM	**0**	**2**	**9**	**13**	**0**	**38**	**4**	**24**	**0**	**4**	**183**	**26**	**0**	**13**	**114**	**3**	**433**	1,523
3:15 PM	**0**	**3**	**7**	**6**	**0**	**26**	**2**	**18**	**0**	**5**	**205**	**22**	**0**	**23**	**90**	**1**	**408**	1,589
3:30 PM	**0**	**0**	**12**	**18**	**0**	**19**	**6**	**22**	**0**	**3**	**201**	**21**	**0**	**16**	**114**	**3**	**435**	1,647
3:45 PM	**0**	**2**	**15**	**7**	**0**	**15**	**6**	**19**	**0**	**4**	**189**	**27**	**0**	**14**	**137**	**3**	**438**	**1,714**
Count Total	0	13	88	71	0	171	29	163	0	39	1,350	189	0	120	870	19	3,122	0
Peak Hour	**0**	**7**	**43**	**44**	**0**	**98**	**18**	**83**	**0**	**16**	**778**	**96**	**0**	**66**	**455**	**10**	**1,714**	**0**

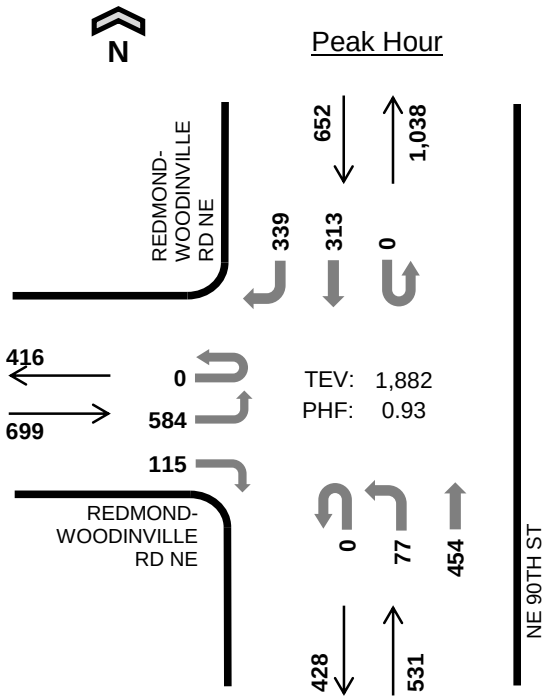
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

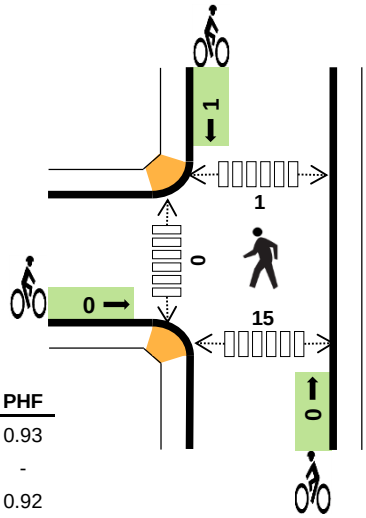
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	4	4	4	1	*13*	0	0	0	1	*1*	0	0	0	3	*3*
2:15 PM	1	1	6	6	*14*	0	0	0	0	*0*	0	0	0	1	*1*
2:30 PM	0	3	5	3	*11*	0	0	0	0	*0*	0	0	0	4	*4*
2:45 PM	1	1	7	1	*10*	0	0	0	0	*0*	0	0	0	2	*2*
3:00 PM	**1**	**5**	**3**	**4**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:15 PM	**0**	**1**	**3**	**6**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:30 PM	**1**	**0**	**3**	**3**	***7***	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	*0*
3:45 PM	**0**	**1**	**2**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***
Count Total	8	16	33	25	*82*	2	0	0	1	*3*	0	0	0	11	*11*
Peak Hour	**2**	**7**	**11**	**14**	***34***	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**1**	***1***

NE 90TH ST
REDMOND-WOODINVILLE RD NE

Date: Thu, Oct 27, 2016
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM

Peak Hour





	HV %:	PHF
EB	1.7%	0.93
WB	-	-
NB	1.7%	0.92
SB	2.0%	0.84
TOTAL	1.8%	0.93

Two-Hour Count Summaries

Interval Start	REDMOND-WOODINVILLE RD NE				0				NE 90TH ST				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	100	0	18	0	0	0	0	0	17	67	0	0	0	67	72	341	0
2:15 PM	0	103	0	28	0	0	0	0	0	8	86	0	0	0	86	58	369	0
2:30 PM	0	113	0	23	0	0	0	0	0	15	104	0	0	0	81	74	410	0
2:45 PM	0	98	0	24	0	0	0	0	0	18	121	0	0	0	80	69	410	1,530
3:00 PM	**0**	**133**	**0**	**25**	**0**	**0**	**0**	**0**	**0**	**19**	**96**	**0**	**0**	**0**	**74**	**71**	**418**	1,607
3:15 PM	**0**	**152**	**0**	**32**	**0**	**0**	**0**	**0**	**0**	**17**	**111**	**0**	**0**	**0**	**71**	**86**	**469**	1,707
3:30 PM	**0**	**159**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**20**	**123**	**0**	**0**	**0**	**71**	**85**	**487**	1,784
3:45 PM	**0**	**140**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**21**	**124**	**0**	**0**	**0**	**97**	**97**	**508**	**1,882**
Count Total	0	998	0	208	0	0	0	0	0	135	832	0	0	0	627	612	3,412	0
Peak Hour	**0**	**584**	**0**	**115**	**0**	**0**	**0**	**0**	**0**	**77**	**454**	**0**	**0**	**0**	**313**	**339**	**1,882**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

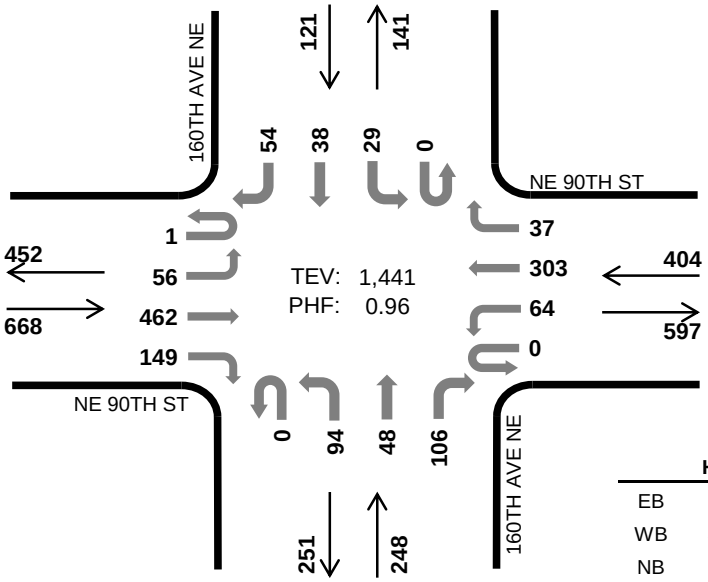
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	2	0	1	4	*7*	0	0	0	0	*0*	0	0	0	1	*1*
2:15 PM	7	0	4	6	*17*	0	0	0	0	*0*	0	0	0	1	*1*
2:30 PM	3	0	2	6	*11*	0	0	0	0	*0*	0	1	0	3	*4*
2:45 PM	1	0	5	2	*8*	0	0	0	3	*3*	0	0	0	8	*8*
3:00 PM	**1**	**0**	**2**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
3:15 PM	**6**	**0**	**2**	**7**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
3:30 PM	**1**	**0**	**4**	**4**	***9***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**7**	*8*
3:45 PM	**4**	**0**	**1**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**4**	***4***
Count Total	25	0	21	31	*77*	0	0	0	4	*4*	0	1	1	28	*30*
Peak Hr	**12**	**0**	**9**	**13**	***34***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**15**	***16***

160TH AVE NE
NE 90TH ST

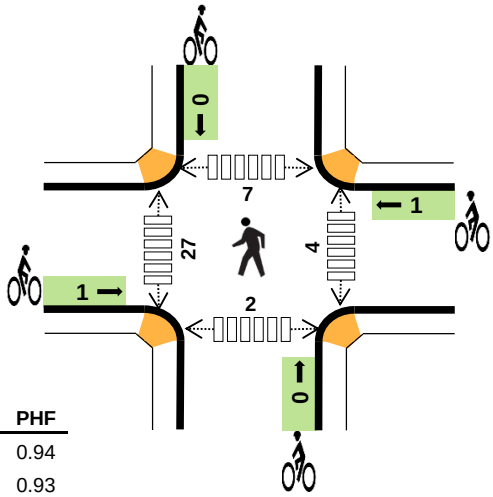
Date: Thu, Oct 27, 2016
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM

N

Peak Hour



	HV %:	PHF
EB	2.4%	0.94
WB	4.0%	0.93
NB	2.8%	0.83
SB	3.3%	0.78
TOTAL	3.0%	0.96



Two-Hour Count Summaries

Interval Start	NE 90TH ST Eastbound				NE 90TH ST Westbound				160TH AVE NE Northbound				160TH AVE NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	16	57	36	0	17	75	6	0	19	3	16	0	10	8	8	271	0
2:15 PM	0	7	79	15	0	13	50	3	0	15	9	14	0	10	12	6	233	0
2:30 PM	0	4	87	38	0	13	66	13	0	15	14	22	0	7	6	4	289	0
2:45 PM	0	10	68	24	0	10	76	4	0	14	8	17	0	7	7	13	258	1,051
3:00 PM	**1**	**16**	**116**	**23**	**0**	**16**	**82**	**5**	**0**	**17**	**16**	**26**	**0**	**3**	**5**	**15**	**341**	1,121
3:15 PM	**0**	**14**	**118**	**44**	**0**	**14**	**60**	**12**	**0**	**27**	**8**	**26**	**0**	**11**	**13**	**15**	**362**	1,250
3:30 PM	**0**	**15**	**120**	**42**	**0**	**19**	**75**	**12**	**0**	**20**	**10**	**23**	**0**	**4**	**7**	**14**	**361**	1,322
3:45 PM	**0**	**11**	**108**	**40**	**0**	**15**	**86**	**8**	**0**	**30**	**14**	**31**	**0**	**11**	**13**	**10**	**377**	**1,441**
Count Total	1	93	753	262	0	117	570	63	0	157	82	175	0	63	71	85	2,492	0
Peak Hour	**1**	**56**	**462**	**149**	**0**	**64**	**303**	**37**	**0**	**94**	**48**	**106**	**0**	**29**	**38**	**54**	**1,441**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

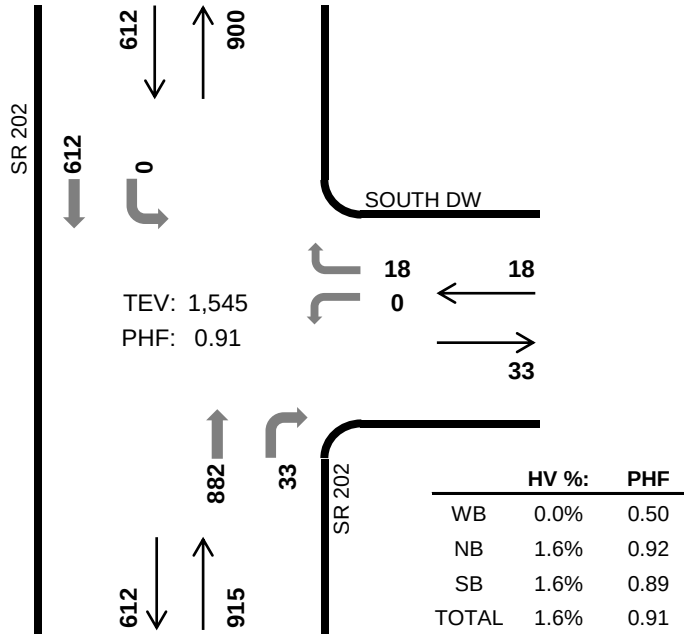
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	3	1	1	0	*5*	0	0	0	0	*0*	3	3	0	0	*6*
2:15 PM	4	4	1	1	*10*	0	0	0	0	*0*	3	13	2	1	*19*
2:30 PM	2	2	3	1	*8*	0	0	0	0	*0*	0	27	2	2	*31*
2:45 PM	2	1	2	0	*5*	0	0	0	0	*0*	0	5	0	2	*7*
3:00 PM	**3**	**0**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**6**	**0**	**1**	*7*
3:15 PM	**5**	**7**	**2**	**2**	***16***	**0**	**0**	**0**	**0**	***0***	**1**	**5**	**1**	**1**	*8*
3:30 PM	**4**	**7**	**1**	**0**	***12***	**0**	**1**	**0**	**0**	***1***	**2**	**9**	**3**	**0**	*14*
3:45 PM	**4**	**2**	**3**	**2**	***11***	**1**	**0**	**0**	**0**	***1***	**1**	**7**	**3**	**0**	***11***
Count Total	27	24	14	6	*71*	1	1	0	0	*2*	10	75	11	7	*103*
Peak Hour	**16**	**16**	**7**	**4**	***43***	**1**	**1**	**0**	**0**	***2***	**4**	**27**	**7**	**2**	***40***

SR 202
SOUTH DW

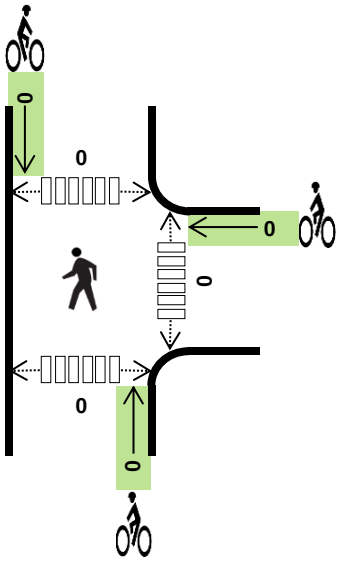
Date: Tue, Dec 09, 2014
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM

N

Peak Hour



	HV %:	PHF
WB	0.0%	0.50
NB	1.6%	0.92
SB	1.6%	0.89
TOTAL	1.6%	0.91



Two-Hour Count Summaries

Interval Start	SOUTH DW Eastbound			SOUTH DW Westbound			SR 202 Northbound			SR 202 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	140	0	0	166	0	306	
2:15 PM	0	0	0	0	0	0	0	177	0	0	126	0	303	
2:30 PM	0	0	0	0	0	2	0	172	1	0	136	0	311	
2:45 PM	0	0	0	0	0	0	0	217	3	0	156	0	376	1,296
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**192**	**11**	**0**	**140**	**0**	**343**	1,333
3:15 PM	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**221**	**15**	**0**	**148**	**0**	**393**	1,423
3:30 PM	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**222**	**4**	**0**	**152**	**0**	**384**	1,496
3:45 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**247**	**3**	**0**	**172**	**0**	**425**	**1,545**
Count Total	0	0	0	0	0	20	0	1,588	37	0	1,196	0	2,841	
Peak Hr	**0**	**0**	**0**	**0**	**0**	**18**	**0**	**882**	**33**	**0**	**612**	**0**	**1,545**	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

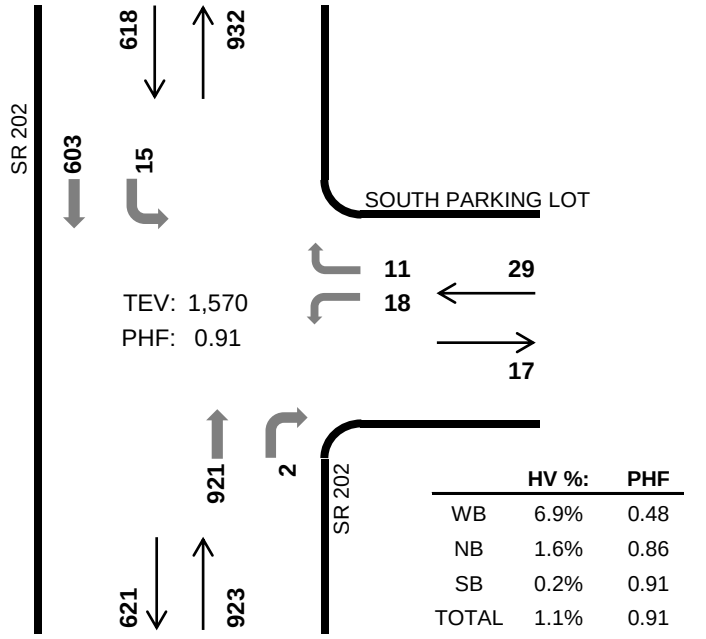
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	3	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	0	8	2	*10*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	0	8	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	6	4	*10*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	**0**	**0**	**2**	**6**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:15 PM	**0**	**0**	**7**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:30 PM	**0**	**0**	**2**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:45 PM	**0**	**0**	**4**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	0	0	40	19	*59*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**15**	**10**	***25***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

SR 202
SOUTH PARKING LOT

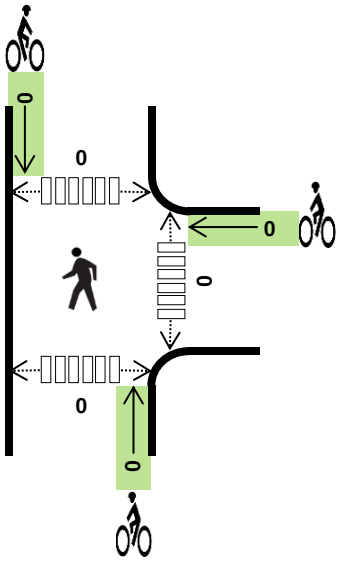
Date: Tue, Dec 09, 2014
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 3:00 PM to 4:00 PM

N

Peak Hour



	HV %:	PHF
WB	6.9%	0.48
NB	1.6%	0.86
SB	0.2%	0.91
TOTAL	1.1%	0.91



Two-Hour Count Summaries

Interval Start	SOUTH PARKING LOT Eastbound			SOUTH PARKING LOT Westbound			SR 202 Northbound			SR 202 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	134	0	0	147	0	281	
2:15 PM	0	0	0	1	0	2	0	179	0	2	134	0	318	
2:30 PM	0	0	0	1	0	1	0	176	0	2	127	0	307	
2:45 PM	0	0	0	1	0	1	0	216	1	2	158	0	379	1,285
3:00 PM	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**196**	**0**	**5**	**131**	**0**	**335**	1,339
3:15 PM	**0**	**0**	**0**	**11**	**0**	**4**	**0**	**233**	**0**	**4**	**166**	**0**	**418**	1,439
3:30 PM	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**226**	**1**	**3**	**149**	**0**	**385**	1,517
3:45 PM	**0**	**0**	**0**	**1**	**0**	**4**	**0**	**266**	**1**	**3**	**157**	**0**	**432**	**1,570**
Count Total	0	0	0	21	0	15	0	1,626	3	21	1,169	0	2,855	
Peak Hr	**0**	**0**	**0**	**18**	**0**	**11**	**0**	**921**	**2**	**15**	**603**	**0**	**1,570**	

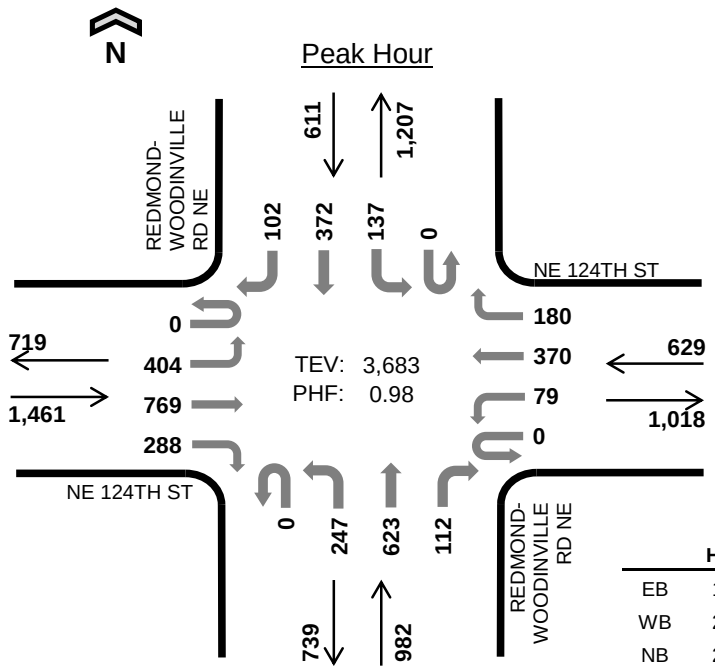
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	3	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	0	0	8	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	0	5	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	3	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	**0**	**1**	**2**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:15 PM	**0**	**1**	**7**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:30 PM	**0**	**0**	**2**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:45 PM	**0**	**0**	**4**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	0	2	34	2	*38*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**0**	**2**	**15**	**1**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

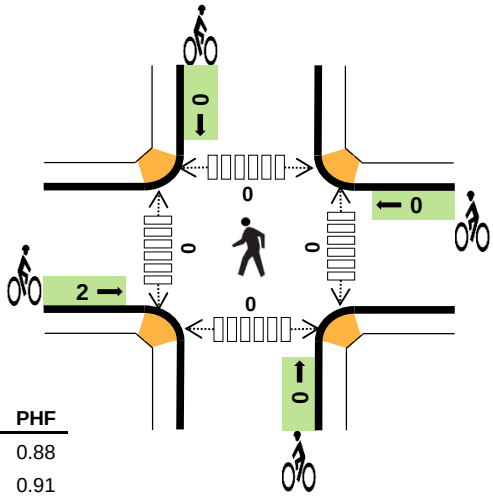
Count Data – PM Peak-Hour

REDMOND-WOODINVILLE RD NE
NE 124TH ST

Date: Thu, Oct 27, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	1.6%	0.88
WB	2.7%	0.91
NB	2.0%	0.97
SB	1.6%	0.95
TOTAL	1.9%	0.98



Two-Hour Count Summaries

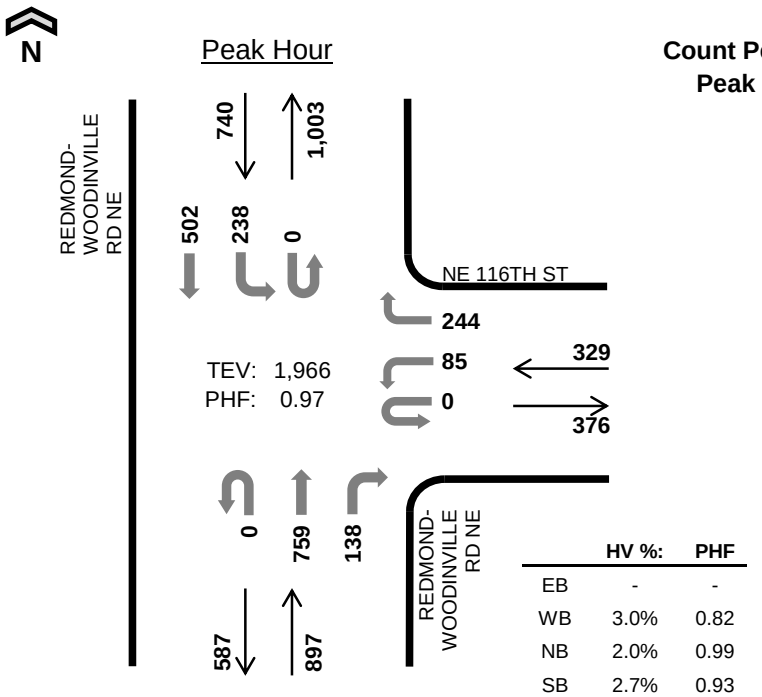
Interval Start	NE 124TH ST Eastbound				NE 124TH ST Westbound				REDMOND-WOODINVILLE RD NE Northbound				REDMOND-WOODINVILLE RD NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	97	203	76	0	11	75	46	0	76	161	36	0	32	90	28	931	0
4:15 PM	**0**	**97**	**182**	**72**	**0**	**23**	**108**	**37**	**0**	**65**	**149**	**26**	**0**	**26**	**96**	**33**	**914**	0
4:30 PM	**0**	**97**	**182**	**61**	**0**	**27**	**98**	**48**	**0**	**66**	**156**	**29**	**0**	**34**	**92**	**29**	**919**	0
4:45 PM	**0**	**100**	**189**	**64**	**0**	**15**	**91**	**53**	**0**	**53**	**156**	**29**	**0**	**42**	**92**	**26**	**910**	3,674
5:00 PM	**0**	**110**	**216**	**91**	**0**	**14**	**73**	**42**	**0**	**63**	**162**	**28**	**0**	**35**	**92**	**14**	**940**	**3,683**
5:15 PM	0	93	191	61	0	14	83	41	0	50	160	21	0	49	94	19	876	3,645
5:30 PM	0	96	202	0	0	9	81	64	0	57	151	33	0	38	78	19	828	3,554
5:45 PM	0	101	177	0	0	13	98	41	0	59	138	38	0	38	88	28	819	3,463
Count Total	0	791	1,542	425	0	126	707	372	0	489	1,233	240	0	294	722	196	7,137	0
Peak Hour	**0**	**404**	**769**	**288**	**0**	**79**	**370**	**180**	**0**	**247**	**623**	**112**	**0**	**137**	**372**	**102**	**3,683**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

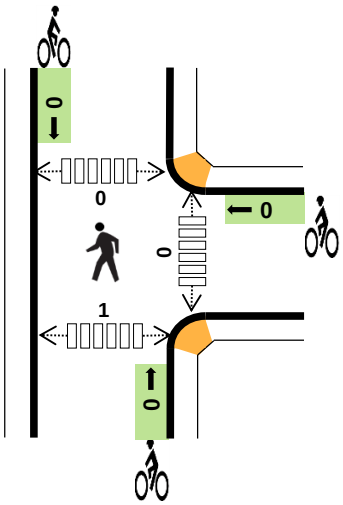
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	5	8	3	*20*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**10**	**9**	**6**	**1**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**8**	**0**	**6**	**5**	***19***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**2**	**3**	**3**	**2**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**3**	**5**	**5**	**2**	***15***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
5:15 PM	2	4	2	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	3	1	4	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	2	1	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	33	29	35	19	*116*	2	0	0	0	*2*	0	0	0	0	*0*
Peak Hour	**23**	**17**	**20**	**10**	***70***	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***

REDMOND-WOODINVILLE RD NE
NE 116TH ST

Date: Thu, Oct 27, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	-	-
WB	3.0%	0.82
NB	2.0%	0.99
SB	2.7%	0.93
TOTAL	2.4%	0.97



Two-Hour Count Summaries

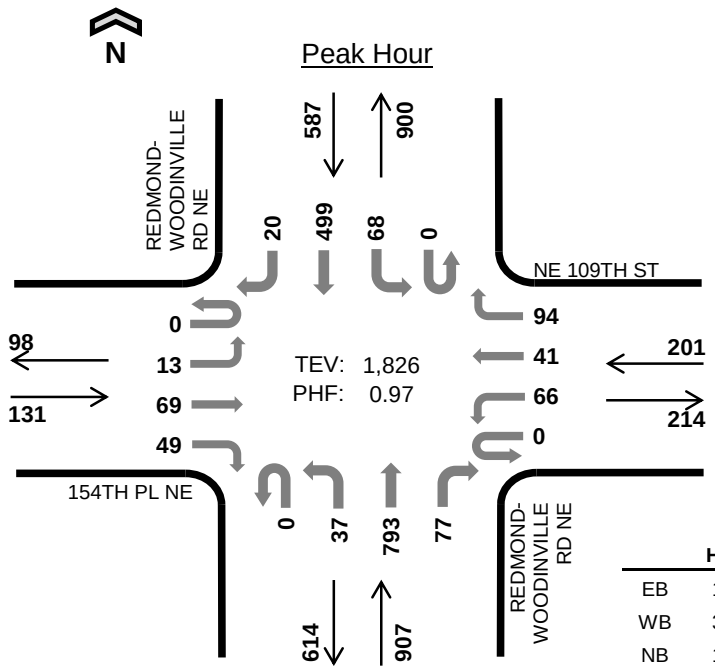
Interval Start	0				NE 116TH ST				REDMOND-WOODINVILLE RD NE				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	15	0	51	0	0	201	35	0	57	108	0	467	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**25**	**0**	**53**	**0**	**0**	**190**	**35**	**0**	**64**	**136**	**0**	**503**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**62**	**0**	**0**	**190**	**37**	**0**	**50**	**116**	**0**	**471**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**57**	**0**	**0**	**198**	**27**	**0**	**59**	**128**	**0**	**485**	1,926
5:00 PM	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**72**	**0**	**0**	**181**	**39**	**0**	**65**	**122**	**0**	**507**	**1,966**
5:15 PM	0	0	0	0	0	27	0	64	0	0	166	33	0	70	125	0	485	1,948
5:30 PM	0	0	0	0	0	25	0	69	0	0	178	41	0	63	111	0	487	1,964
5:45 PM	0	0	0	0	0	25	0	36	0	0	160	49	0	70	100	0	440	1,919
Count Total	0	0	0	0	0	177	0	464	0	0	1,464	296	0	498	946	0	3,845	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**85**	**0**	**244**	**0**	**0**	**759**	**138**	**0**	**238**	**502**	**0**	**1,966**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

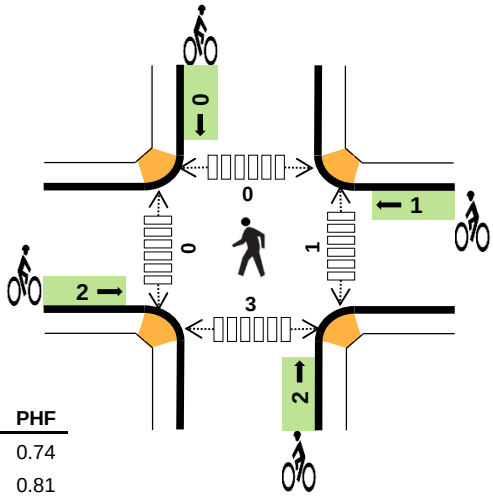
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	5	2	*9*	0	0	0	1	*1*	0	0	0	0	*0*
4:15 PM	**0**	**4**	**5**	**4**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**0**	**2**	**6**	**7**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:45 PM	**0**	**2**	**3**	**3**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**2**	**4**	**6**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	0	0	3	5	*8*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	1	3	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	1	6	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	13	30	37	*80*	0	0	0	1	*1*	0	0	0	1	*1*
Peak Hr	**0**	**10**	**18**	**20**	***48***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***

REDMOND-WOODINVILLE RD NE
154TH PL NE

Date: Thu, Oct 27, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	1.5%	0.74
WB	3.0%	0.81
NB	1.3%	0.96
SB	2.2%	0.93
TOTAL	1.8%	0.97



Two-Hour Count Summaries

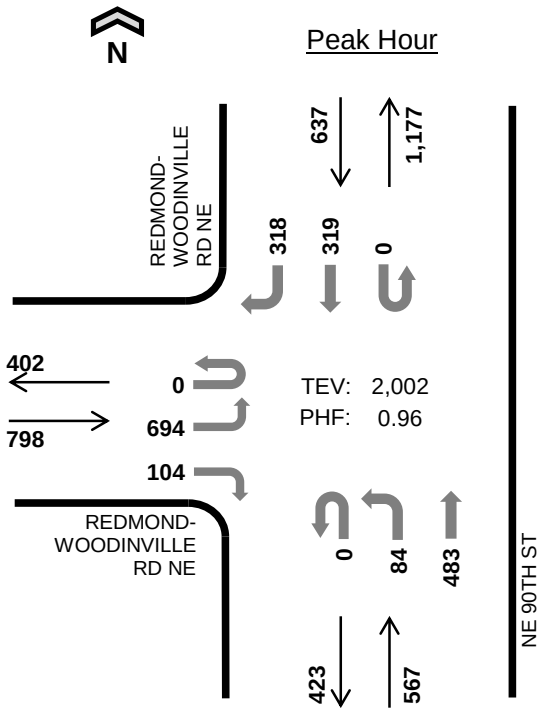
Interval Start	154TH PL NE				NE 109TH ST				REDMOND-WOODINVILLE RD NE				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	15	13	0	21	5	30	0	14	215	23	0	13	107	0	457	0
4:15 PM	**0**	**3**	**17**	**7**	**0**	**16**	**15**	**31**	**0**	**14**	**189**	**19**	**0**	**21**	**132**	**4**	**468**	0
4:30 PM	**0**	**2**	**10**	**15**	**0**	**21**	**11**	**26**	**0**	**7**	**212**	**17**	**0**	**16**	**122**	**10**	**469**	0
4:45 PM	**0**	**1**	**20**	**12**	**0**	**13**	**9**	**17**	**0**	**12**	**189**	**18**	**0**	**14**	**113**	**2**	**420**	1,814
5:00 PM	**0**	**7**	**22**	**15**	**0**	**16**	**6**	**20**	**0**	**4**	**203**	**23**	**0**	**17**	**132**	**4**	**469**	**1,826**
5:15 PM	0	8	23	17	0	12	10	22	0	6	188	18	0	17	130	2	453	1,811
5:30 PM	0	5	24	7	0	14	11	14	0	8	177	22	0	32	102	3	419	1,761
5:45 PM	0	6	27	6	0	20	6	24	0	11	178	20	0	25	93	3	419	1,760
Count Total	0	33	158	92	0	133	73	184	0	76	1,551	160	0	155	931	28	3,574	0
Peak Hour	**0**	**13**	**69**	**49**	**0**	**66**	**41**	**94**	**0**	**37**	**793**	**77**	**0**	**68**	**499**	**20**	**1,826**	**0**

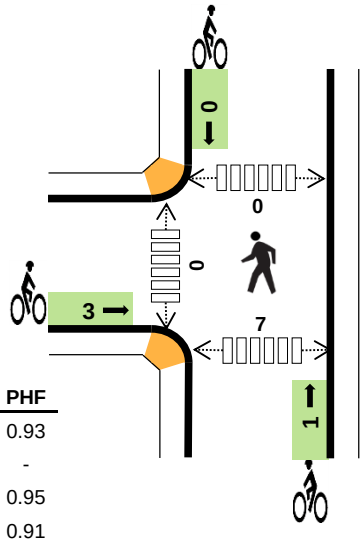
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	6	1	*9*	0	0	1	0	*1*	0	0	0	0	*0*
4:15 PM	**0**	**3**	**3**	**4**	***10***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	*2*
4:30 PM	**1**	**3**	**2**	**4**	***10***	**1**	**1**	**1**	**0**	***3***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**0**	**3**	**0**	***4***	**1**	**0**	**1**	**0**	***2***	**0**	**0**	**0**	**2**	*2*
5:00 PM	**0**	**0**	**4**	**5**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	1	1	3	2	*7*	2	0	1	0	*3*	0	0	0	0	*0*
5:30 PM	2	0	2	1	*5*	1	1	0	0	*2*	0	0	0	0	*0*
5:45 PM	0	1	1	1	*3*	1	0	0	0	*1*	0	0	0	0	*0*
Count Total	5	10	24	18	*57*	6	2	4	0	*12*	1	0	0	3	*4*
Peak Hour	**2**	**6**	**12**	**13**	***33***	**2**	**1**	**2**	**0**	***5***	**1**	**0**	**0**	**3**	***4***

NE 90TH ST
REDMOND-WOODINVILLE RD NE

Date: Thu, Oct 27, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	1.0%	0.93
WB	-	-
NB	3.0%	0.95
SB	1.7%	0.91
TOTAL	1.8%	0.96

Two-Hour Count Summaries

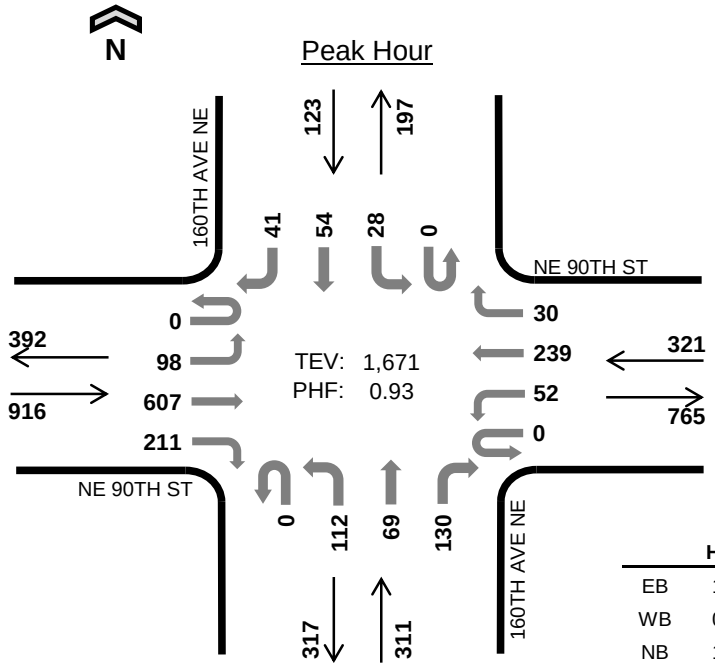
Interval Start	REDMOND-WOODINVILLE RD NE				0				NE 90TH ST				REDMOND-WOODINVILLE RD NE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**178**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**18**	**132**	**0**	**0**	**0**	**68**	**72**	**488**	0
4:15 PM	**0**	**156**	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**27**	**117**	**0**	**0**	**0**	**78**	**78**	**482**	0
4:30 PM	**0**	**178**	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**20**	**120**	**0**	**0**	**0**	**73**	**93**	**510**	0
4:45 PM	**0**	**182**	**0**	**32**	**0**	**0**	**0**	**0**	**0**	**19**	**114**	**0**	**0**	**0**	**100**	**75**	**522**	**2,002**
5:00 PM	0	182	0	22	0	0	0	0	0	17	106	0	0	0	64	74	465	1,979
5:15 PM	0	175	0	27	0	0	0	0	0	15	105	0	0	0	94	85	501	1,998
5:30 PM	0	188	0	30	0	0	0	0	0	14	93	0	0	0	72	75	472	1,960
5:45 PM	0	169	0	23	0	0	0	0	0	17	90	0	0	0	56	83	438	1,876
Count Total	0	1,408	0	206	0	0	0	0	0	147	877	0	0	0	605	635	3,878	0
Peak Hour	**0**	**694**	**0**	**104**	**0**	**0**	**0**	**0**	**0**	**84**	**483**	**0**	**0**	**0**	**319**	**318**	**2,002**	**0**

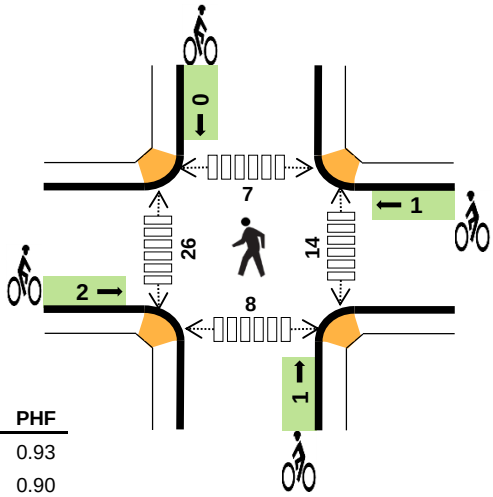
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**4**	**0**	**7**	**3**	***14***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**1**	*1*
4:15 PM	**1**	**0**	**6**	**2**	***9***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**2**	*2*
4:30 PM	**3**	**0**	**0**	**2**	***5***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**2**	*2*
4:45 PM	**0**	**0**	**4**	**4**	***8***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**2**	***2***
5:00 PM	4	0	0	5	*9*	0	0	0	0	*0*	0	0	0	4	*4*
5:15 PM	0	0	2	4	*6*	1	0	0	0	*1*	0	0	0	4	*4*
5:30 PM	1	0	1	5	*7*	1	0	0	1	*2*	0	4	0	4	*8*
5:45 PM	0	0	1	3	*4*	0	0	0	0	*0*	0	0	0	8	*8*
Count Total	13	0	21	28	*62*	5	0	1	1	*7*	0	4	0	27	*31*
Peak Hr	**8**	**0**	**17**	**11**	***36***	**3**	**0**	**1**	**0**	***4***	**0**	**0**	**0**	**7**	***7***

160TH AVE NE
NE 90TH ST

Date: Thu, Oct 27, 2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	1.2%	0.93
WB	0.9%	0.90
NB	1.9%	0.82
SB	0.8%	0.79
TOTAL	1.3%	0.93

Two-Hour Count Summaries

Interval Start	NE 90TH ST Eastbound				NE 90TH ST Westbound				160TH AVE NE Northbound				160TH AVE NE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	15	149	36	0	8	64	13	0	28	10	36	0	7	5	8	379	0
4:15 PM	0	17	150	42	0	7	77	14	0	20	18	20	0	10	8	14	397	0
4:30 PM	0	24	152	38	0	16	64	14	0	25	12	31	0	7	13	8	404	0
4:45 PM	**0**	**20**	**154**	**47**	**0**	**14**	**53**	**9**	**0**	**18**	**17**	**28**	**0**	**7**	**13**	**5**	**385**	1,565
5:00 PM	**0**	**16**	**144**	**54**	**0**	**11**	**66**	**6**	**0**	**38**	**22**	**35**	**0**	**6**	**18**	**8**	**424**	1,610
5:15 PM	**0**	**27**	**152**	**68**	**0**	**15**	**66**	**8**	**0**	**27**	**16**	**31**	**0**	**7**	**15**	**17**	**449**	1,662
5:30 PM	**0**	**35**	**157**	**42**	**0**	**12**	**54**	**7**	**0**	**29**	**14**	**36**	**0**	**8**	**8**	**11**	**413**	**1,671**
5:45 PM	0	18	115	28	0	19	68	8	0	31	16	21	0	7	9	11	351	1,637
Count Total	0	172	1,173	355	0	102	512	79	0	216	125	238	0	59	89	82	3,202	0
Peak Hour	**0**	**98**	**607**	**211**	**0**	**52**	**239**	**30**	**0**	**112**	**69**	**130**	**0**	**28**	**54**	**41**	**1,671**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

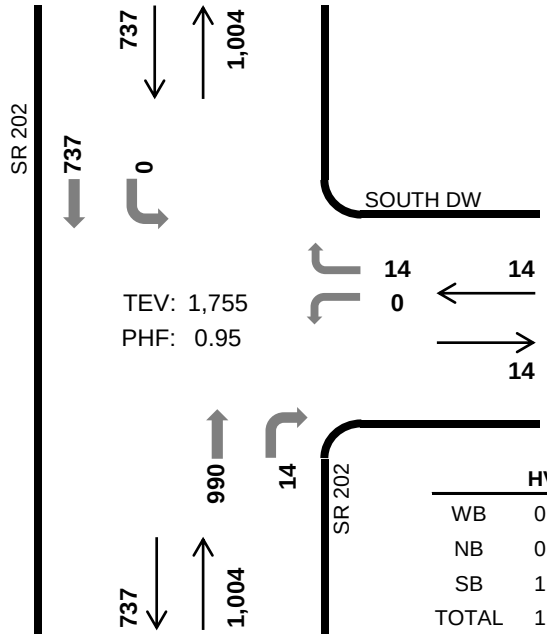
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	6	6	2	0	*14*	1	0	0	0	*1*	3	5	1	5	*14*
4:15 PM	2	3	1	0	*6*	0	0	0	0	*0*	5	5	4	3	*17*
4:30 PM	4	2	4	2	*12*	0	0	0	0	*0*	3	4	2	2	*11*
4:45 PM	**2**	**1**	**2**	**0**	***5***	**0**	**0**	**1**	**0**	***1***	**5**	**2**	**3**	**1**	*11*
5:00 PM	**4**	**1**	**1**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**6**	**9**	**1**	**3**	*19*
5:15 PM	**3**	**0**	**2**	**0**	***5***	**2**	**1**	**0**	**0**	***3***	**1**	**3**	**1**	**1**	*6*
5:30 PM	**2**	**1**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**2**	**12**	**2**	**3**	***19***
5:45 PM	1	1	1	0	*3*	0	0	0	0	*0*	2	6	0	2	*10*
Count Total	24	15	14	3	*56*	3	1	1	0	*5*	27	46	14	20	*107*
Peak Hour	**11**	**3**	**6**	**1**	***21***	**2**	**1**	**1**	**0**	***4***	**14**	**26**	**7**	**8**	***55***

SR 202
SOUTH DW

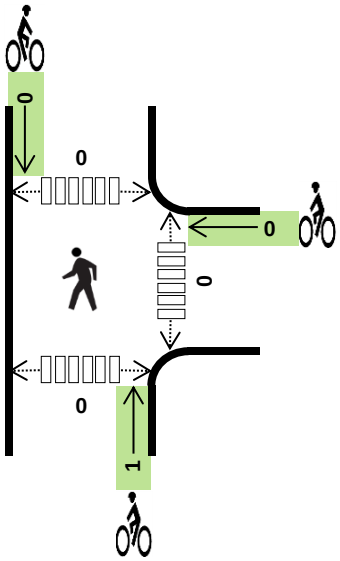
Date: Tue, Dec 09, 2014
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

N

Peak Hour



	HV %:	PHF
WB	0.0%	0.50
NB	0.7%	0.98
SB	1.8%	0.88
TOTAL	1.1%	0.95



Two-Hour Count Summaries

Interval Start	SOUTH DW Eastbound			SOUTH DW Westbound			SR 202 Northbound			SR 202 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	255	7	0	155	0	418	
4:15 PM	0	0	0	0	0	2	0	241	5	0	167	0	415	
4:30 PM	0	0	0	0	0	4	0	220	7	0	189	0	420	
4:45 PM	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**241**	**3**	**0**	**209**	**0**	**460**	1,713
5:00 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**252**	**5**	**0**	**177**	**0**	**437**	1,732
5:15 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**251**	**3**	**0**	**179**	**0**	**436**	1,753
5:30 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**246**	**3**	**0**	**172**	**0**	**422**	**1,755**
5:45 PM	0	0	0	0	0	1	0	241	8	0	172	0	422	1,717
Count Total	0	0	0	0	0	22	0	1,947	41	0	1,420	0	3,430	
Peak Hr	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**990**	**14**	**0**	**737**	**0**	**1,755**	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

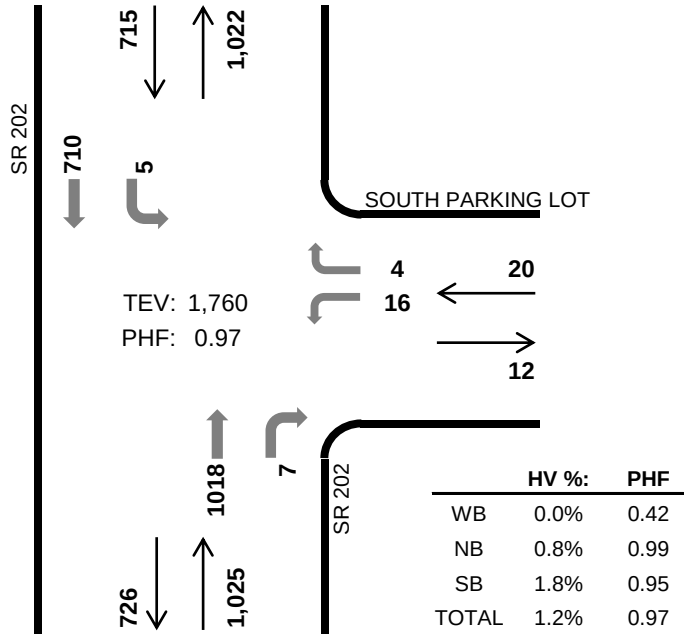
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	9	2	*11*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	1	5	2	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	5	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**0**	**0**	**3**	**4**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	**0**	**0**	**1**	**4**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	**0**	**0**	**2**	**2**	***4***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
5:30 PM	**0**	**0**	**1**	**3**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	0	0	0	4	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	1	26	23	*50*	0	0	1	0	*1*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**7**	**13**	***20***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***

SR 202
SOUTH PARKING LOT

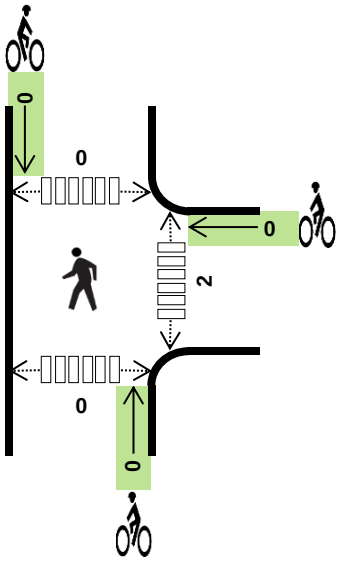
Date: Tue, Dec 09, 2014
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

N

Peak Hour



	HV %:	PHF
WB	0.0%	0.42
NB	0.8%	0.99
SB	1.8%	0.95
TOTAL	1.2%	0.97



Two-Hour Count Summaries

Interval Start	SOUTH PARKING LOT Eastbound			SOUTH PARKING LOT Westbound			SR 202 Northbound			SR 202 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	5	0	2	0	248	1	1	147	0	404	
4:15 PM	0	0	0	2	0	0	0	249	3	3	155	0	412	
4:30 PM	0	0	0	7	0	3	0	221	3	5	174	0	413	
4:45 PM	**0**	**0**	**0**	**10**	**0**	**2**	**0**	**247**	**6**	**3**	**186**	**0**	**454**	1,683
5:00 PM	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**257**	**0**	**1**	**177**	**0**	**440**	1,719
5:15 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**258**	**0**	**1**	**177**	**0**	**438**	1,745
5:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**256**	**1**	**0**	**170**	**0**	**428**	**1,760**
5:45 PM	0	0	0	4	0	1	0	232	6	4	167	0	414	1,720
Count Total	0	0	0	34	0	10	0	1,968	20	18	1,353	0	3,403	
Peak Hr	**0**	**0**	**0**	**16**	**0**	**4**	**0**	**1,018**	**7**	**5**	**710**	**0**	**1,760**	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	7	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	5	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	1	6	3	*10*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**0**	**0**	**3**	**4**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	**0**	**0**	**2**	**4**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	**0**	**0**	**2**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
5:30 PM	**0**	**0**	**1**	**3**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	0	0	0	4	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	1	26	22	*49*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hr	**0**	**0**	**8**	**13**	***21***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***

Mark Skaggs: 425 - 250 - 0777

mark.skaggs@idaxdata.com

Turning Movement Calculations
AM Peak-Hour

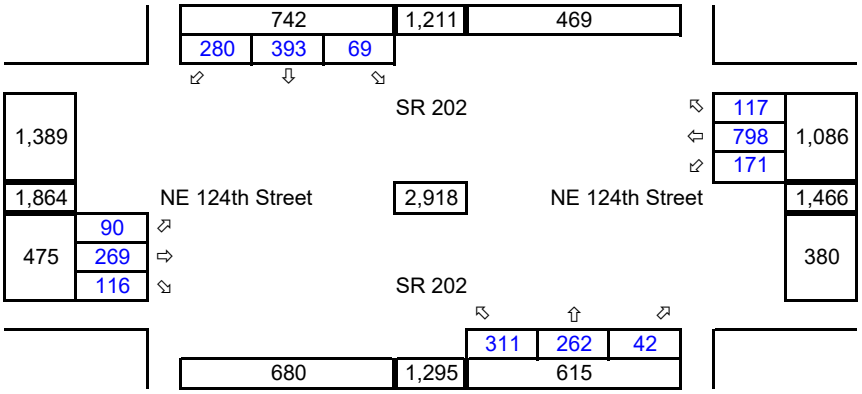
#1 SR-202 @ NE 124th St

Synchro ID: 1

Existing
Average Weekday
AM Peak-Hour

Date **10/27/2016**

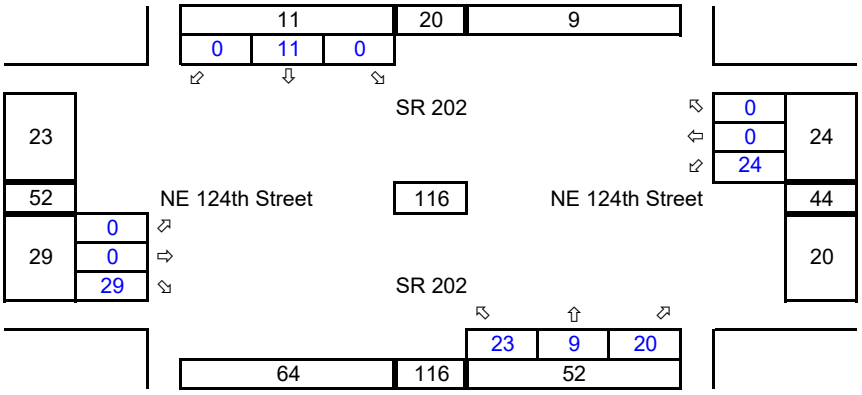
Data Source: **idax**



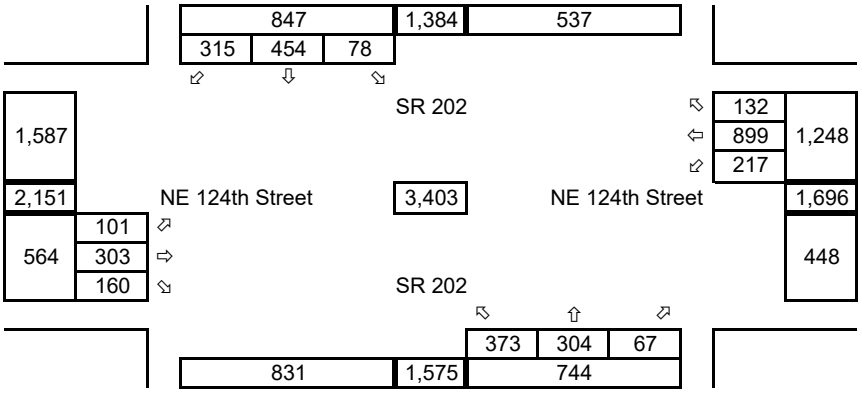
Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

Total Development Trips
Average Weekday
AM Peak-Hour



Future with Project
Average Weekday
AM Peak-Hour



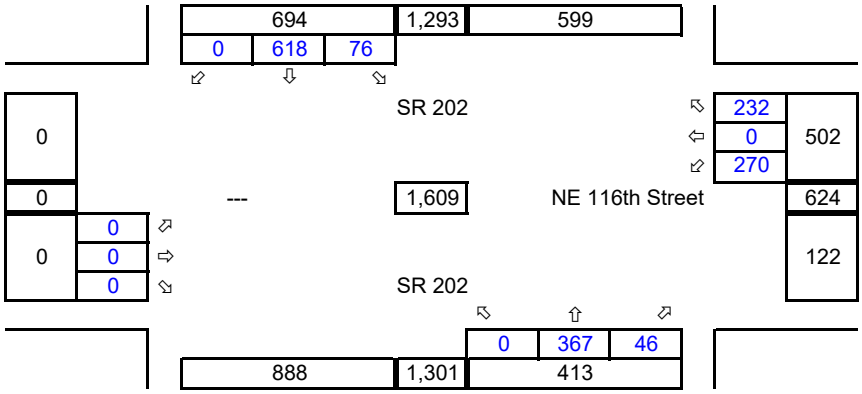
#2 SR-202 @ NE 116th St

Synchro ID: 2

Existing
Average Weekday
AM Peak-Hour

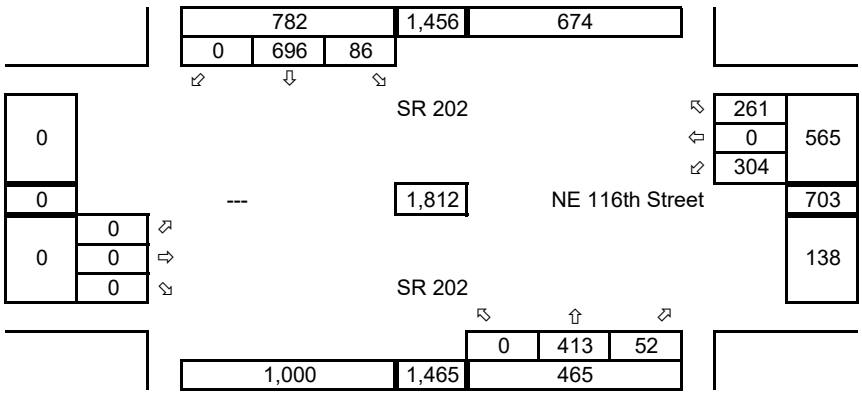
Date **10/27/2016**

Data Source: **idax**

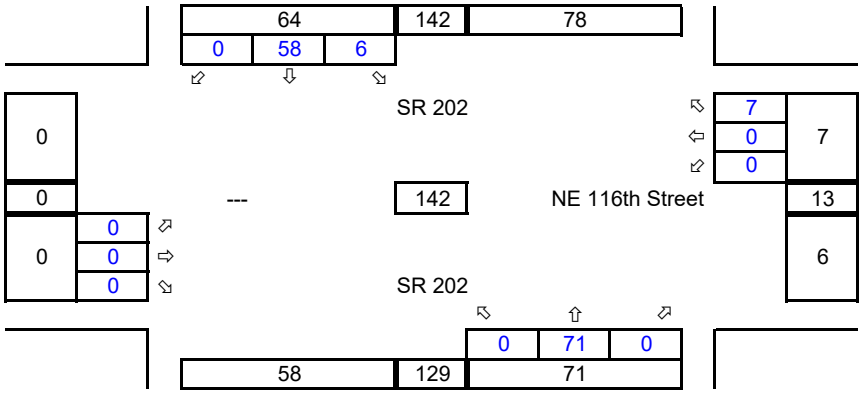


Future w/o Development
Average Weekday
AM Peak-Hour

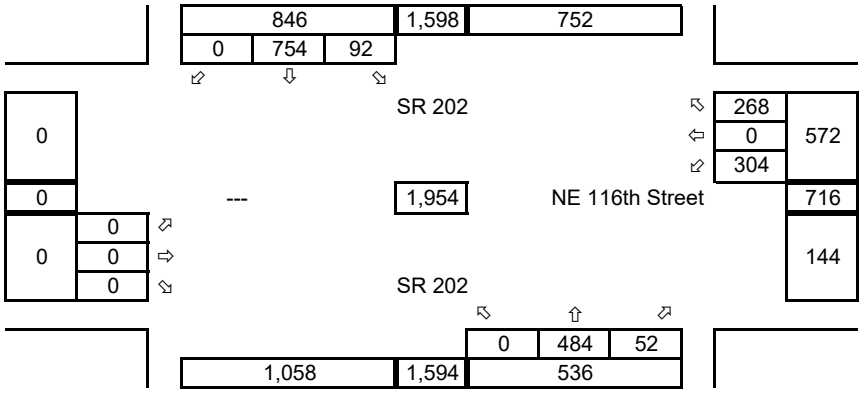
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
AM Peak-Hour



Future with Project
Average Weekday
AM Peak-Hour



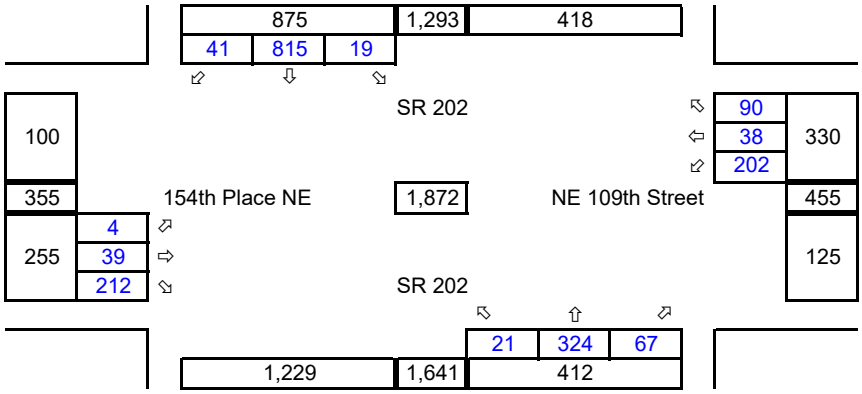
#3 SR-202 @ 154th Pl NE

Synchro ID: 3

Existing
Average Weekday
AM Peak-Hour

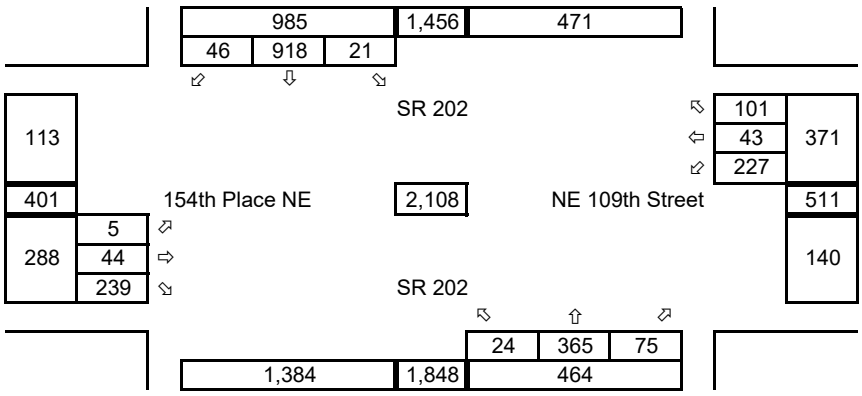
Date **10/27/2016**

Data Source: **idax**

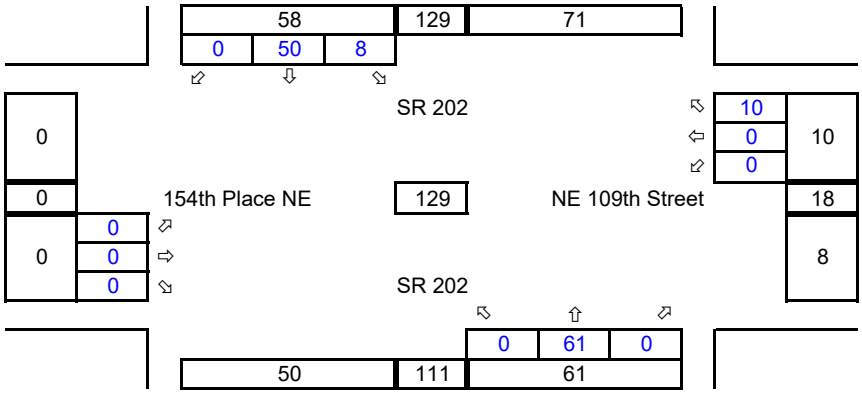


Future w/o Development
Average Weekday
AM Peak-Hour

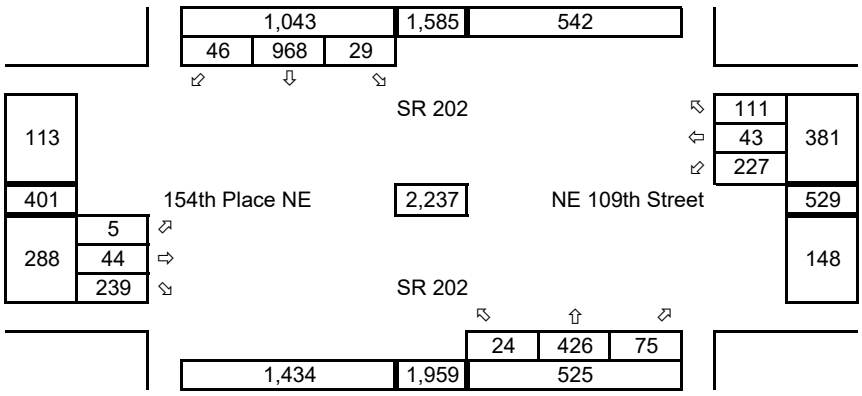
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
AM Peak-Hour



Future with Project
Average Weekday
AM Peak-Hour



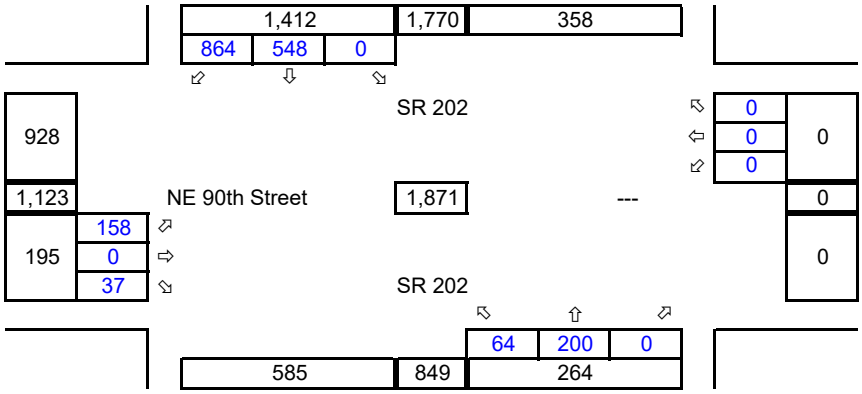
#4 SR-202 @ NE 90th St

Synchro ID: 4

Existing
Average Weekday
AM Peak-Hour

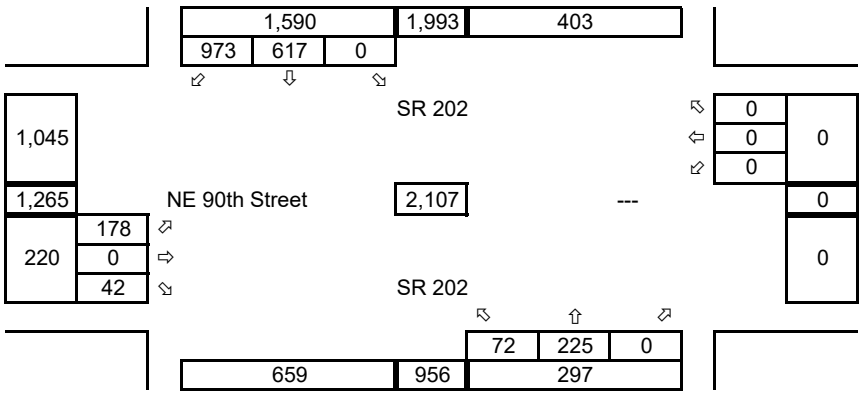
Date **10/27/2016**

Data Source: **idax**

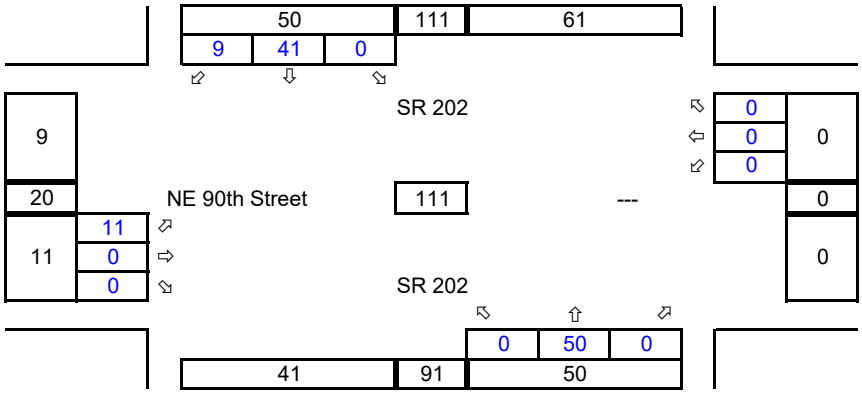


Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
AM Peak-Hour



Future with Project
Average Weekday
AM Peak-Hour

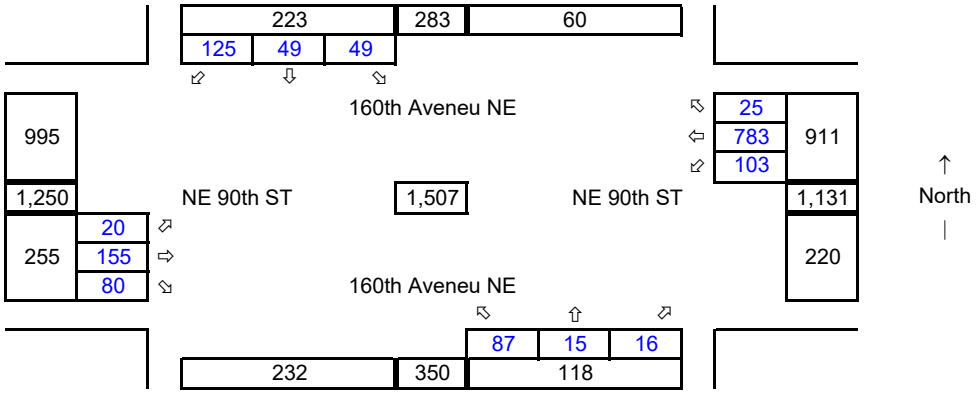
#5 160th Ave NE @ NE 90th St

Synchro ID: 5

Existing
Average Weekday
AM Peak-Hour

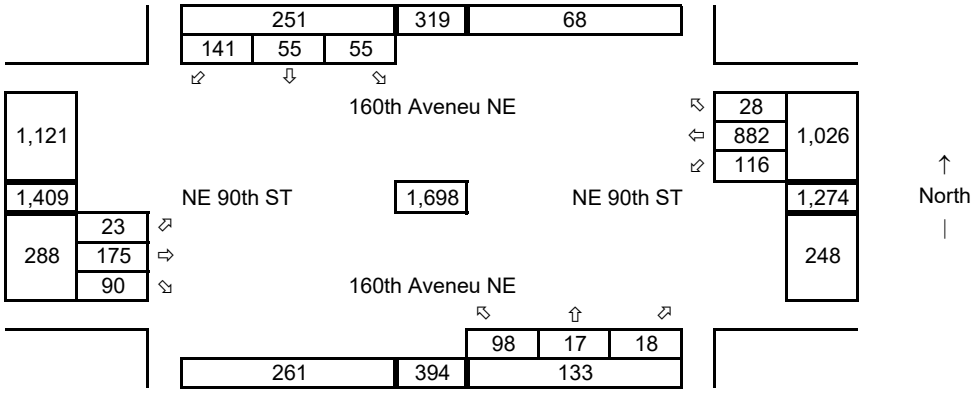
Date **10/27/2016**

Data Source: **idax**

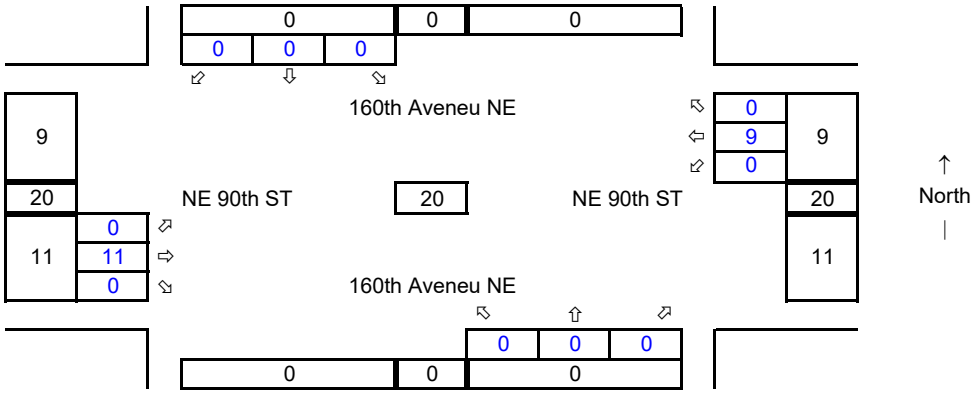


Future w/o Development
Average Weekday
AM Peak-Hour

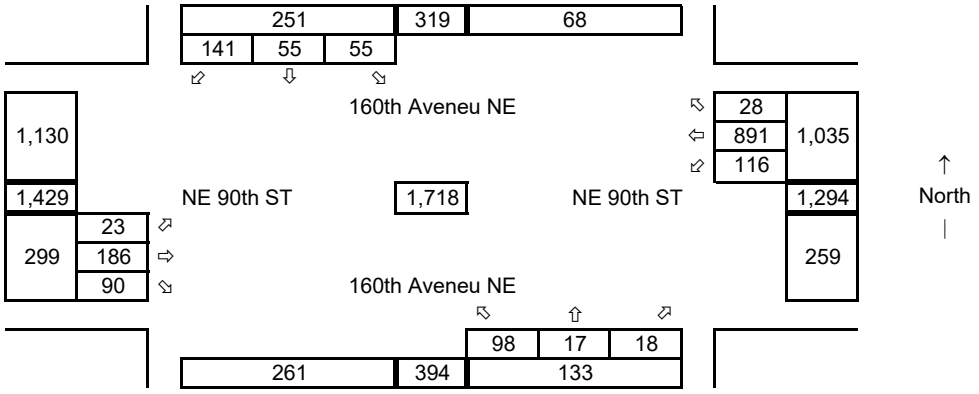
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
AM Peak-Hour



Future with Project
Average Weekday
AM Peak-Hour



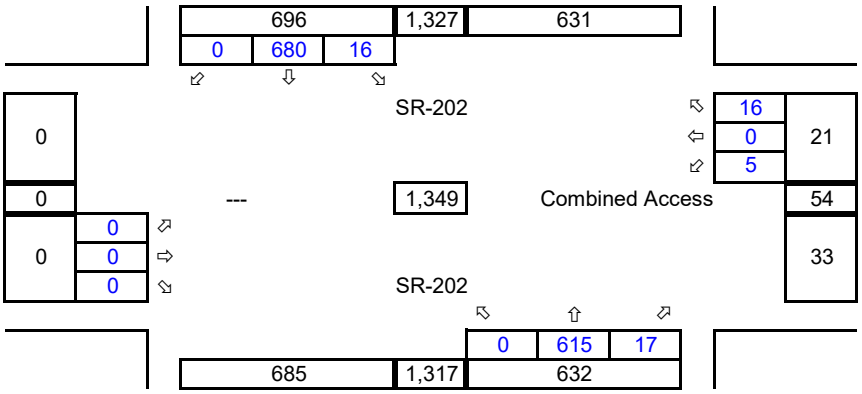
#6 SR-202 @ Site Access

Synchro ID: 6

Existing
Average Weekday
AM Peak-Hour

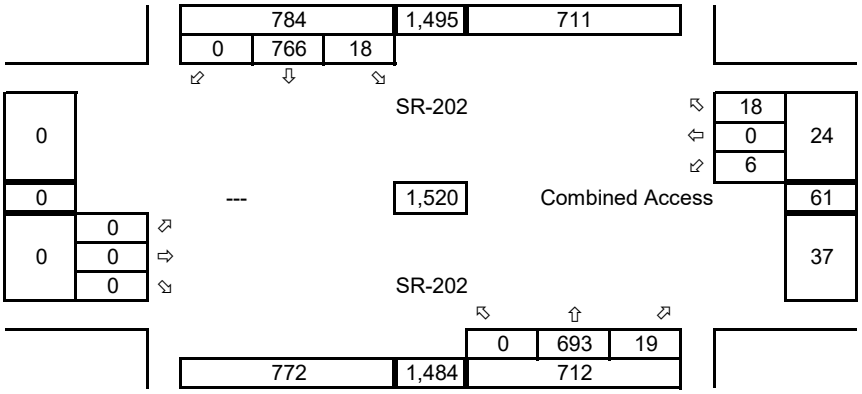
Date **10/27/2016**

Data Source: **idax**

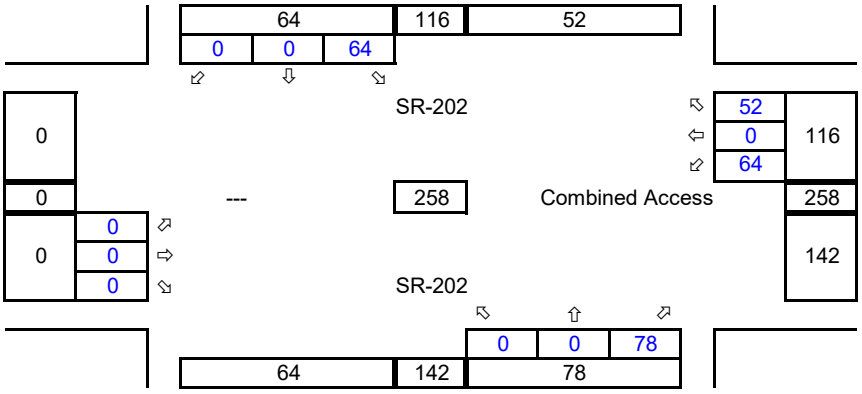


Future w/o Development
Average Weekday
AM Peak-Hour

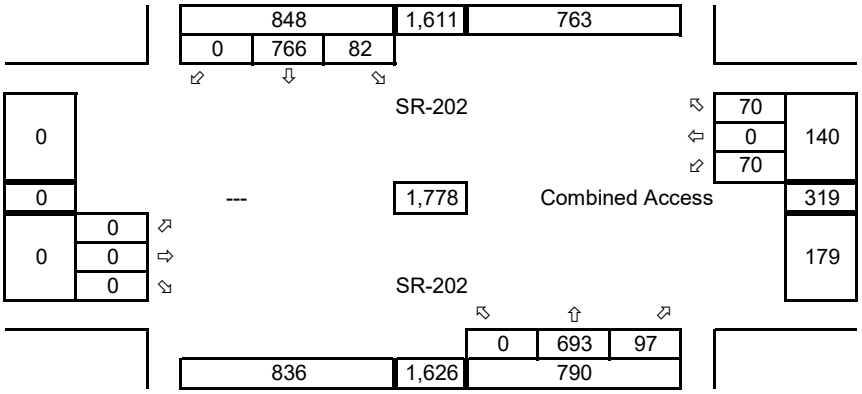
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
AM Peak-Hour



Future with Project
Average Weekday
AM Peak-Hour



Turning Movement Calculations
School PM Peak-Hour

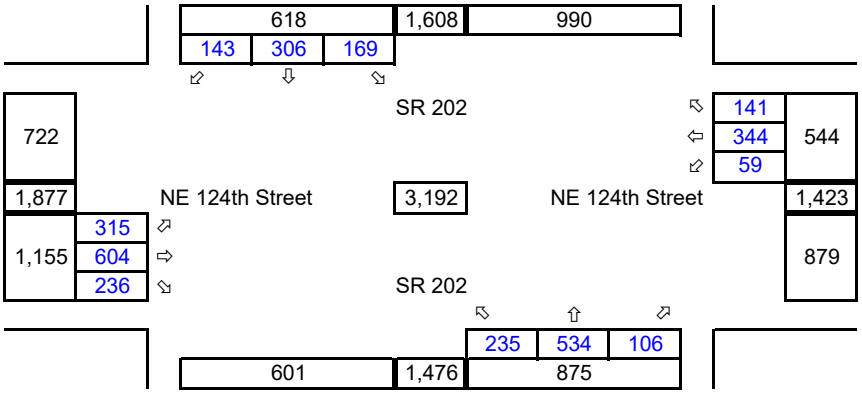
#1 SR-202 @ NE 124th St

Synchro ID: 1

Existing
Average Weekday
School PM Peak-Hour

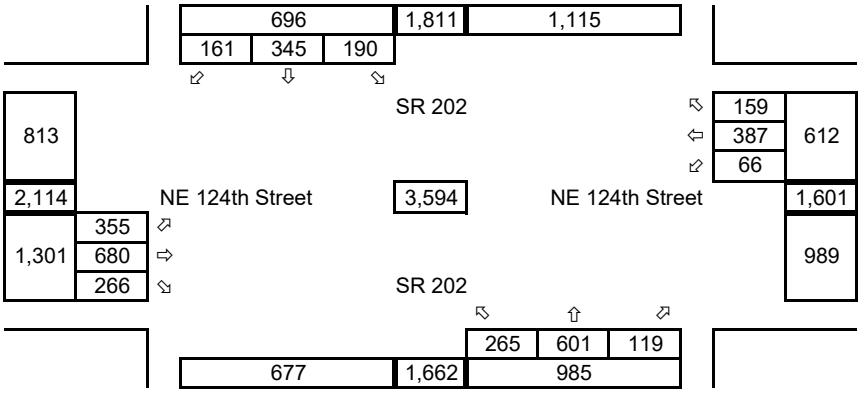
Date **10/27/2016**

Data Source: **idax**

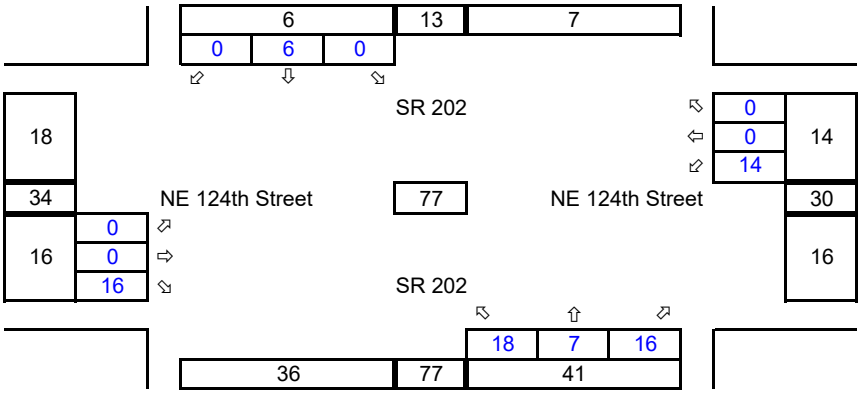


Future w/o Development
Average Weekday
School PM Peak-Hour

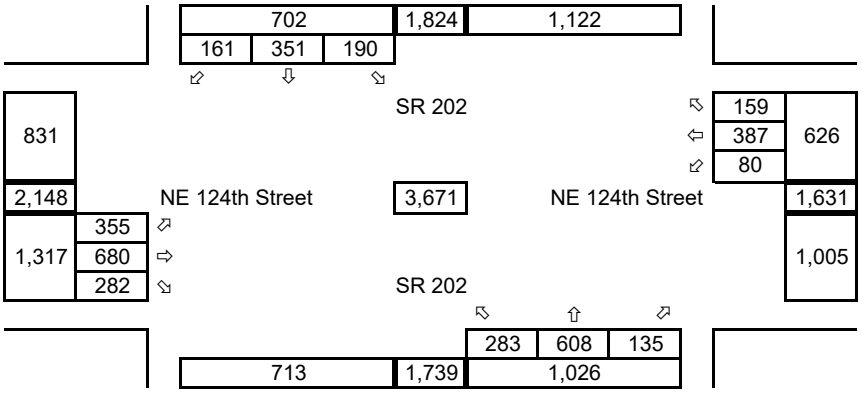
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
School PM Peak-Hour



Future with Project
Average Weekday
School PM Peak-Hour



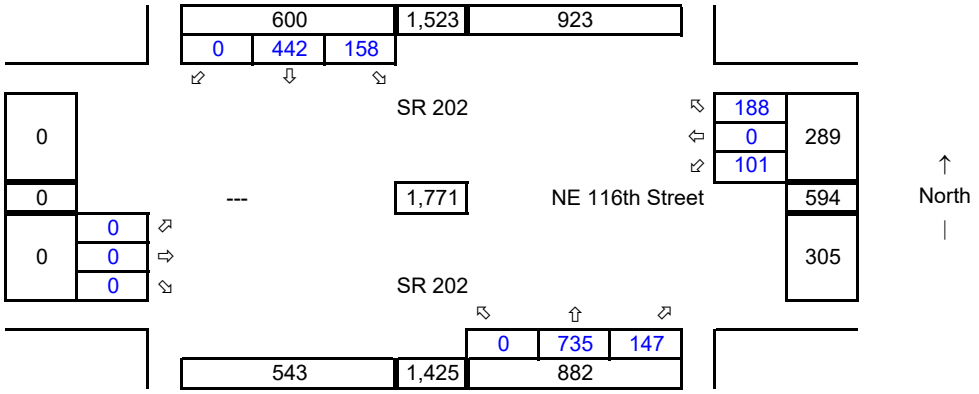
#2 SR-202 @ NE 116th St

Synchro ID: 2

Existing
Average Weekday
School PM Peak-Hour

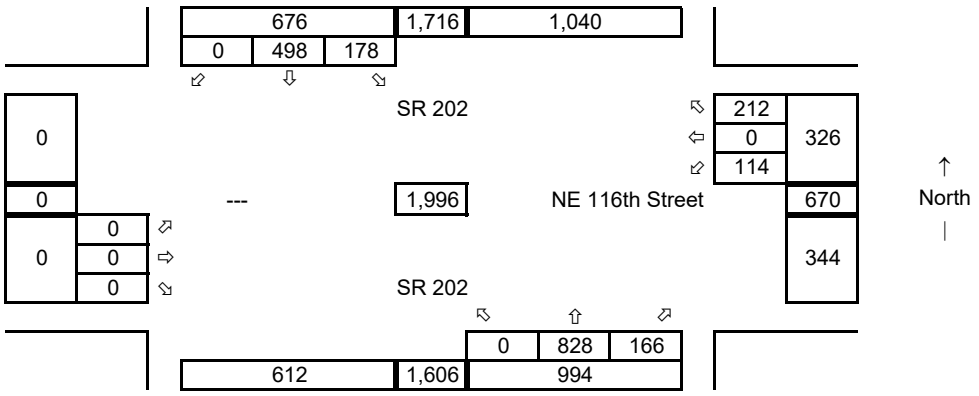
Date **10/27/2016**

Data Source: **idax**

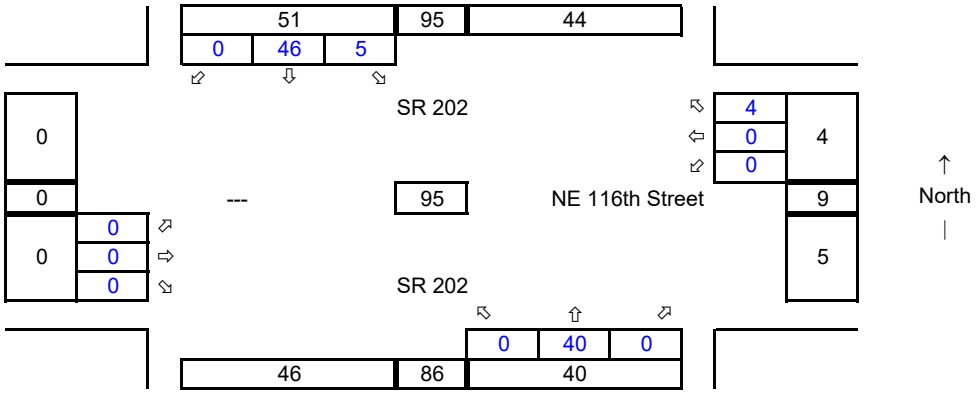


Future w/o Development
Average Weekday
School PM Peak-Hour

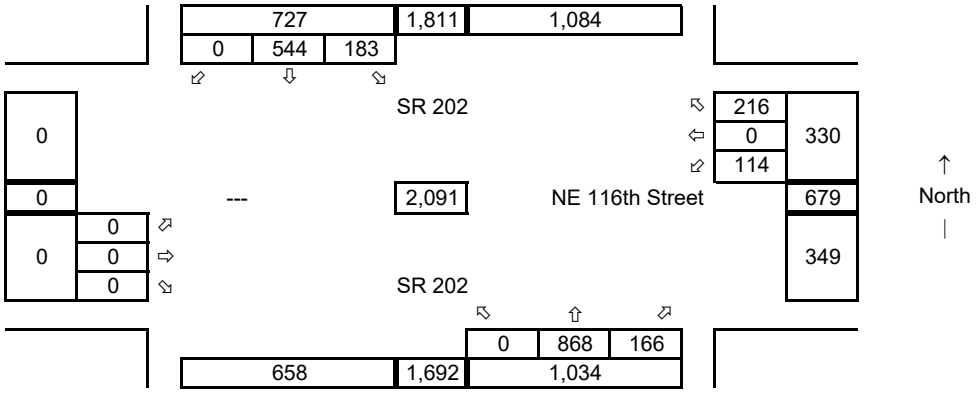
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
School PM Peak-Hour



Future with Project
Average Weekday
School PM Peak-Hour



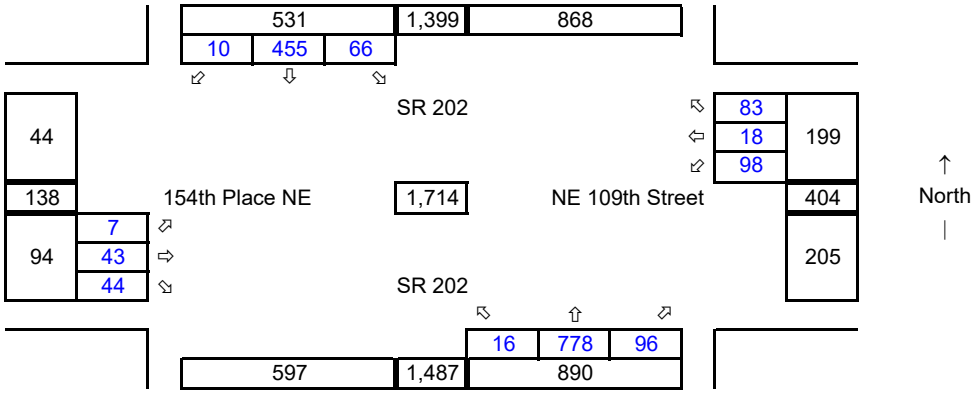
#3 SR-202 @ 154th Pl NE

Synchro ID: 3

Existing
Average Weekday
School PM Peak-Hour

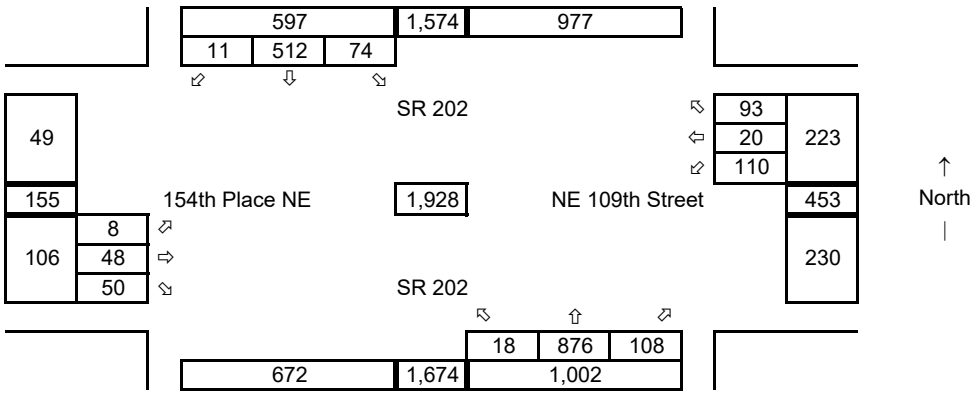
Date **10/27/2016**

Data Source: **idax**

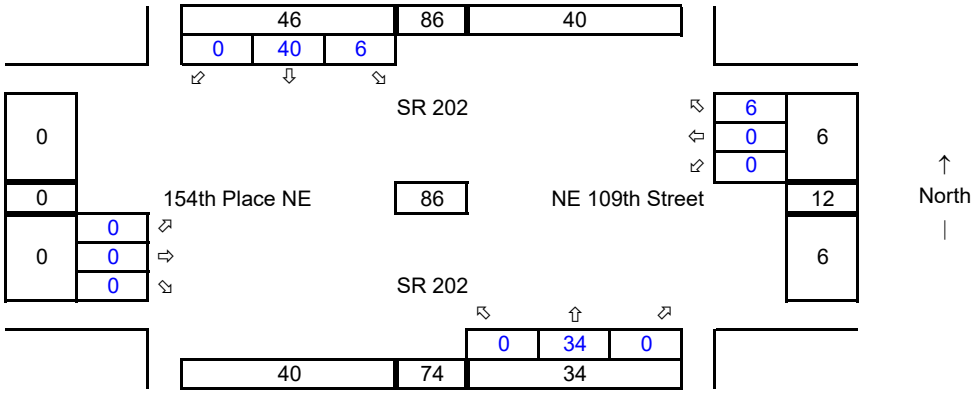


Future w/o Development
Average Weekday
School PM Peak-Hour

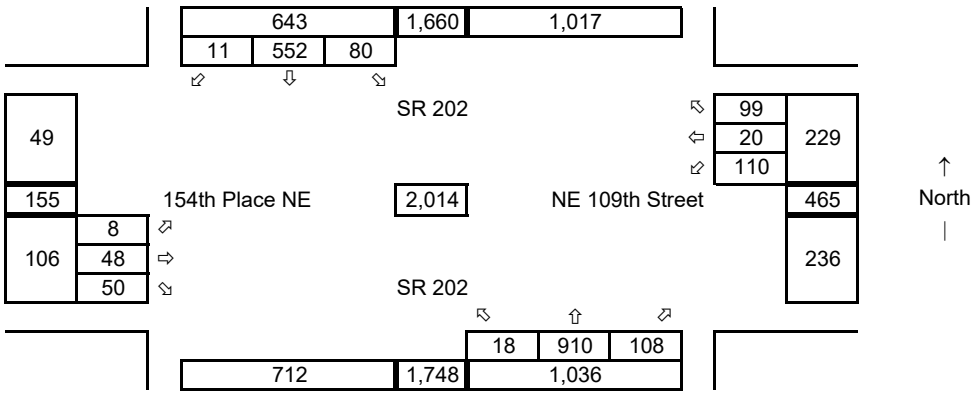
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
School PM Peak-Hour



Future with Project
Average Weekday
School PM Peak-Hour



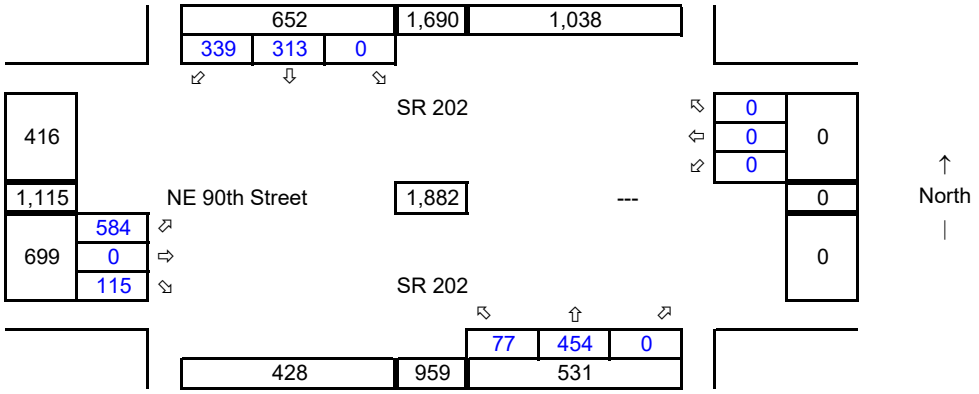
#4 SR-202 @ NE 90th St

Synchro ID: 4

Existing
Average Weekday
School PM Peak-Hour

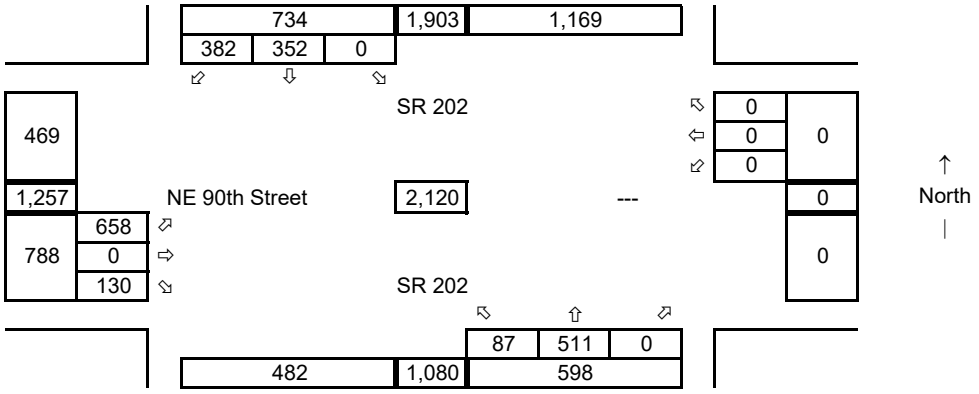
Date **10/27/2016**

Data Source: **idax**

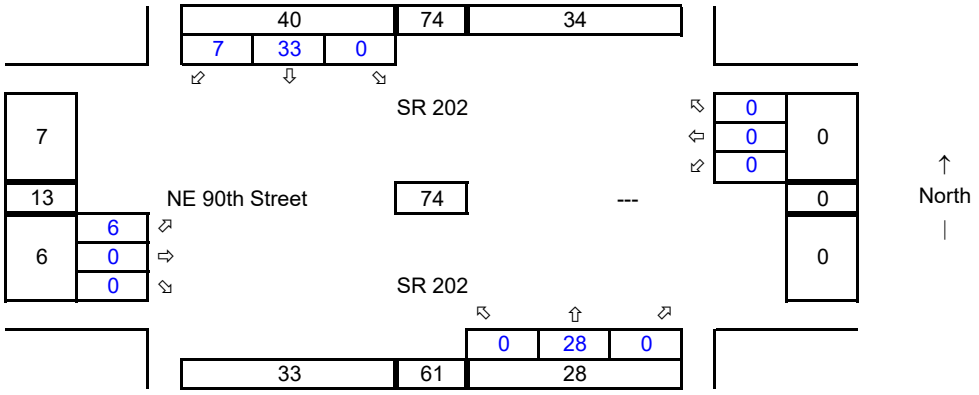


Future w/o Development
Average Weekday
School PM Peak-Hour

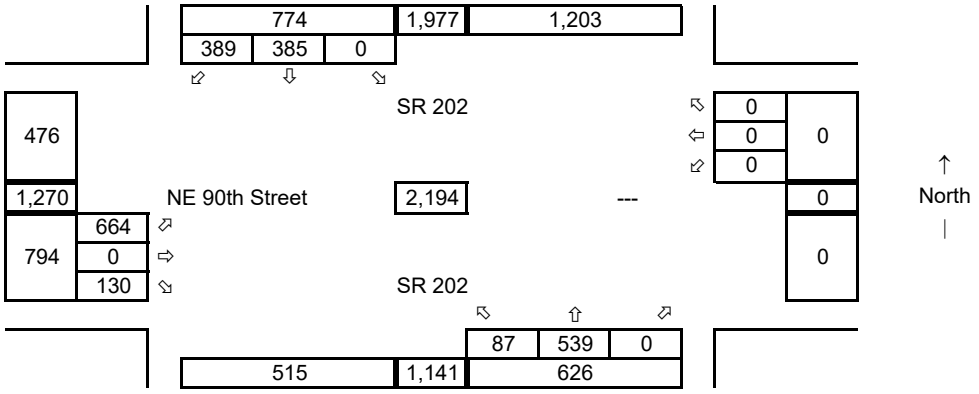
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
School PM Peak-Hour



Future with Project
Average Weekday
School PM Peak-Hour



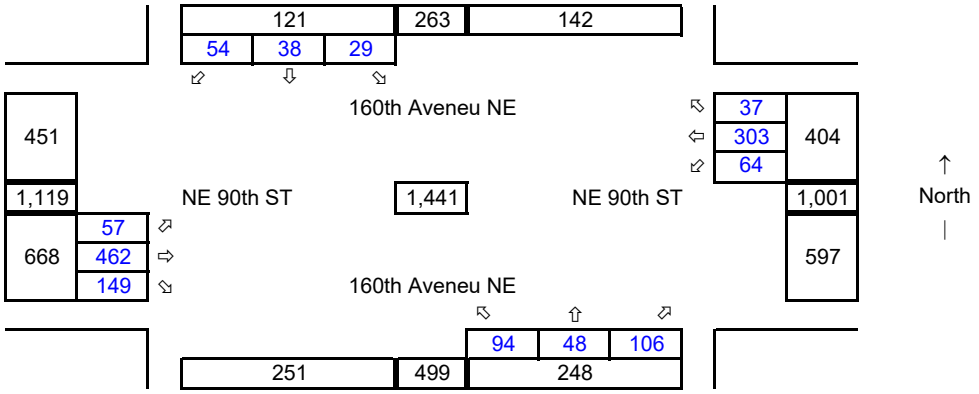
#5 160th Ave NE @ NE 90th St

Synchro ID: 5

Existing
Average Weekday
School PM Peak-Hour

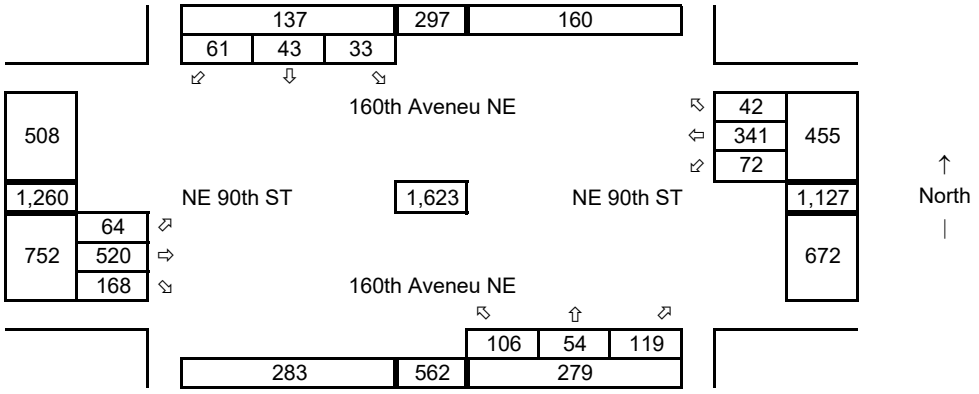
Date **10/27/2016**

Data Source: **idax**

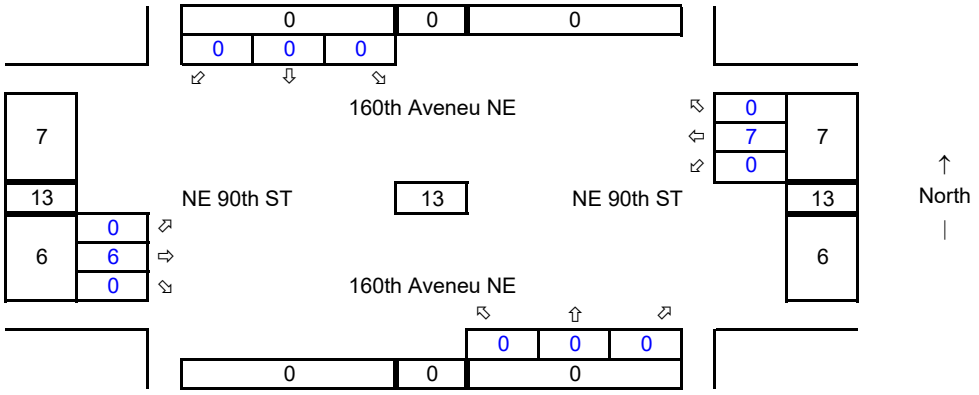


Future w/o Development
Average Weekday
School PM Peak-Hour

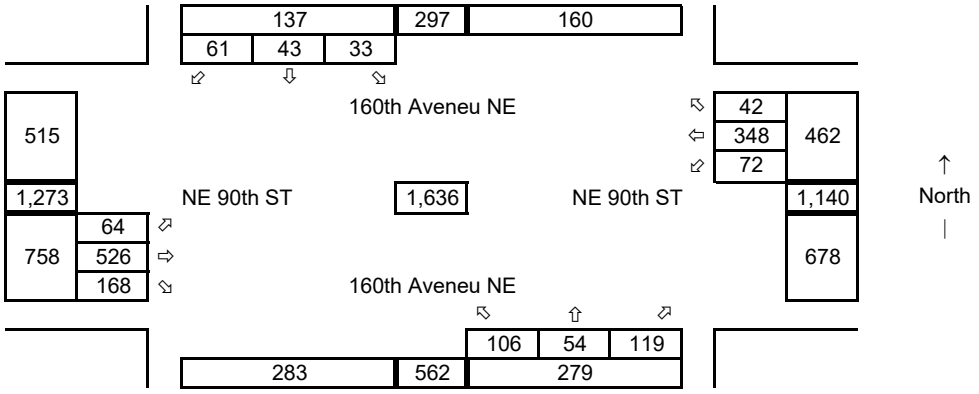
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
School PM Peak-Hour



Future with Project
Average Weekday
School PM Peak-Hour



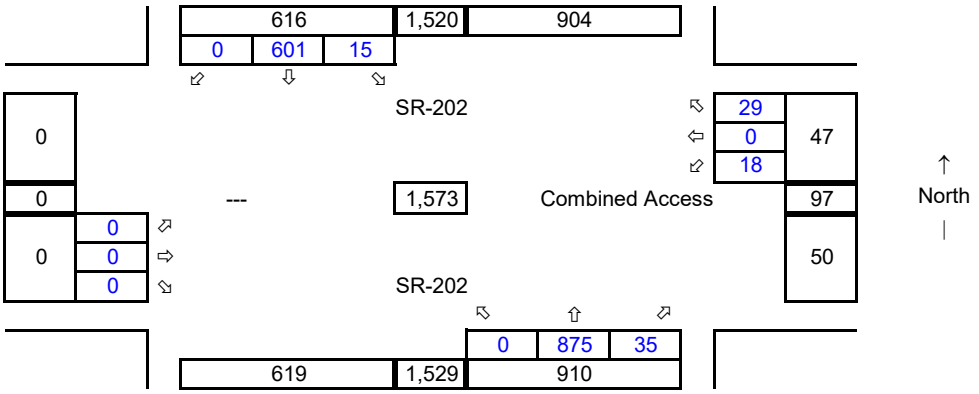
#6 SR-202 @ Site Access

Synchro ID: 6

Existing
Average Weekday
School PM Peak-Hour

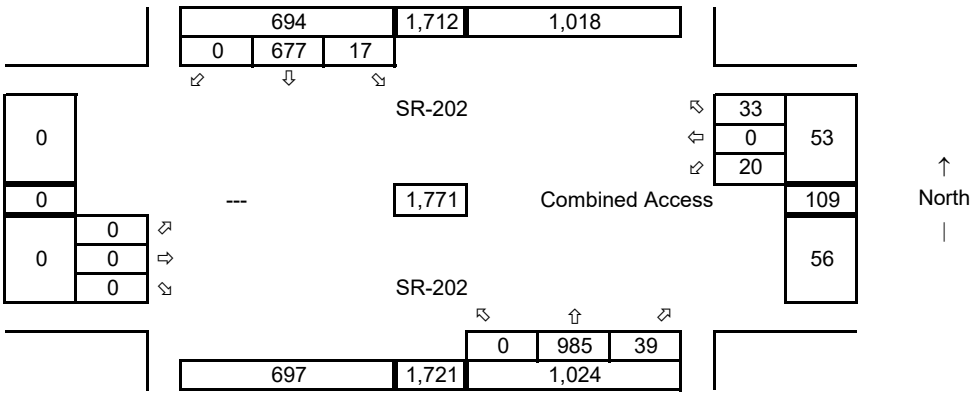
Date **10/27/2016**

Data Source: **idax**

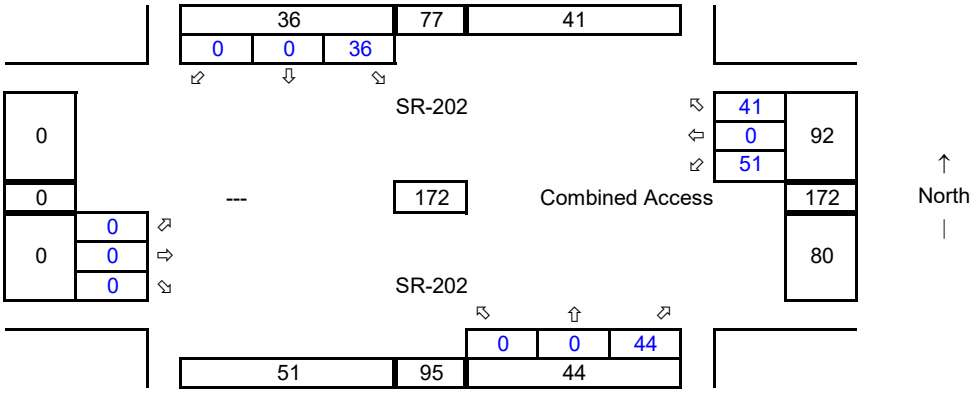


Future w/o Development
Average Weekday
School PM Peak-Hour

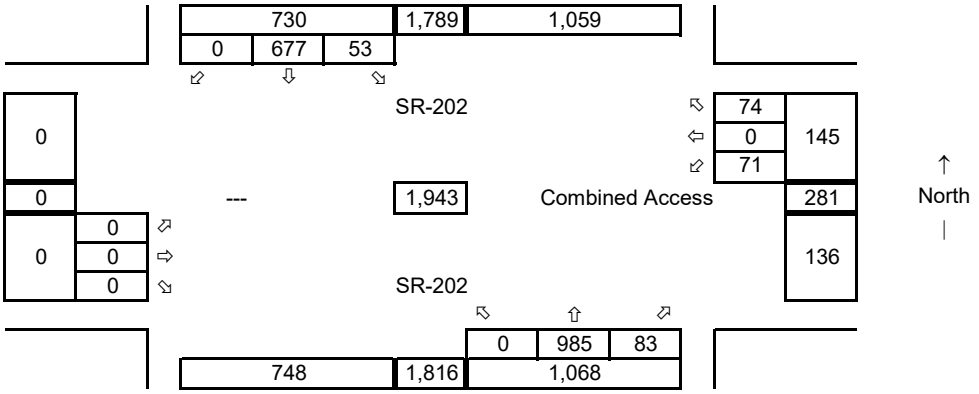
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
School PM Peak-Hour



Future with Project
Average Weekday
School PM Peak-Hour



Turning Movement Calculations
PM Peak-Hour

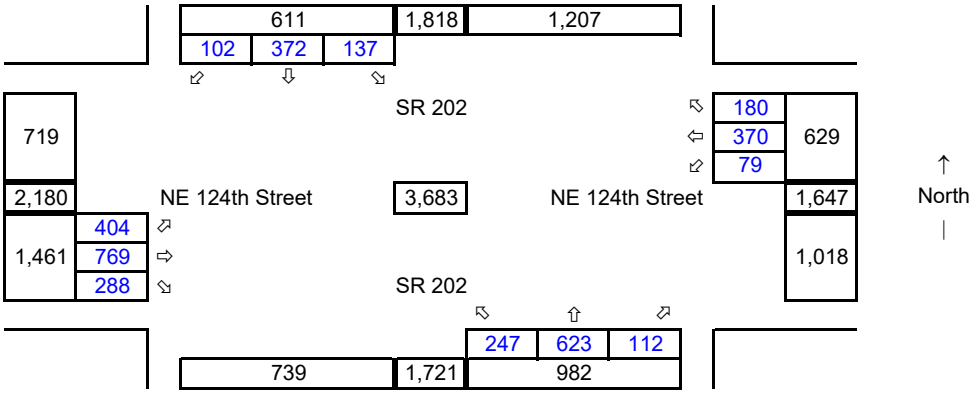
#1 SR-202 @ NE 124th St

Synchro ID: 1

Existing
Average Weekday
PM Peak-Hour

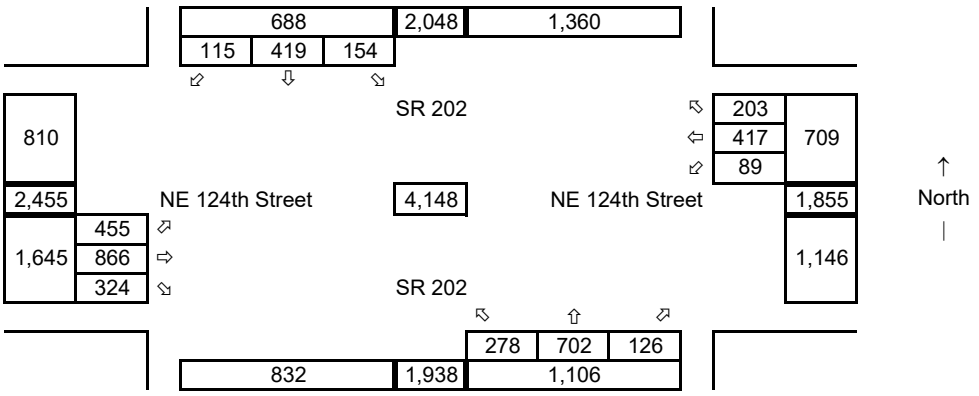
Date **10/27/2016**

Data Source: **idax**

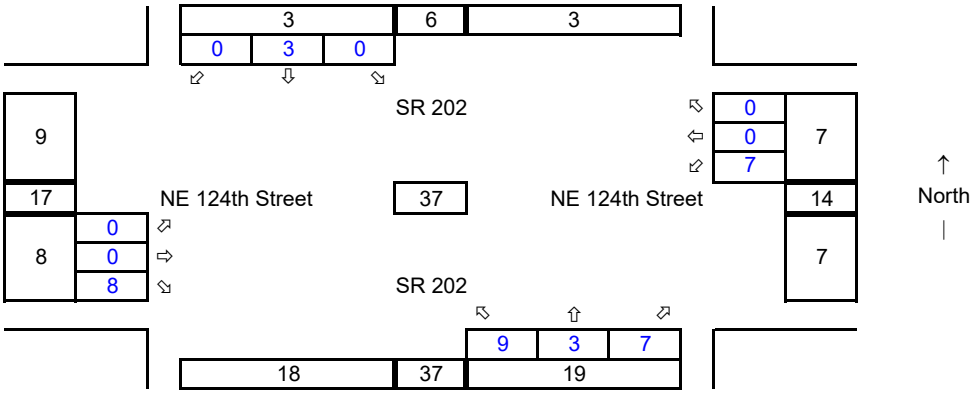


Future w/o Development
Average Weekday
PM Peak-Hour

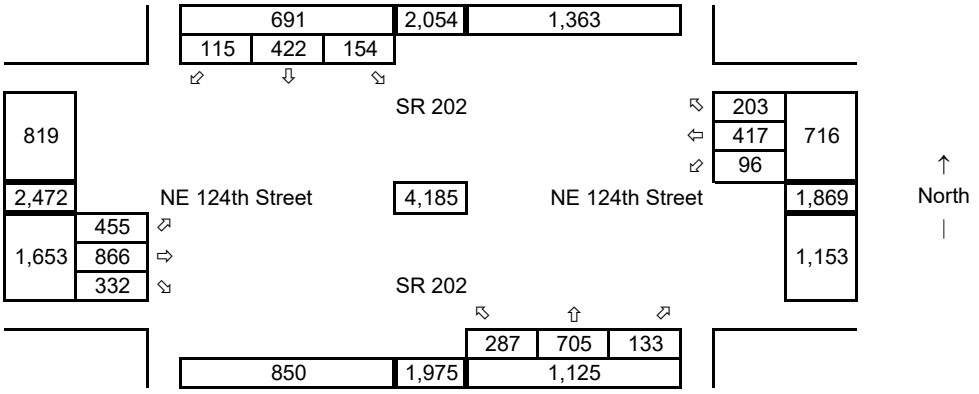
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
PM Peak-Hour



Future with Project
Average Weekday
PM Peak-Hour



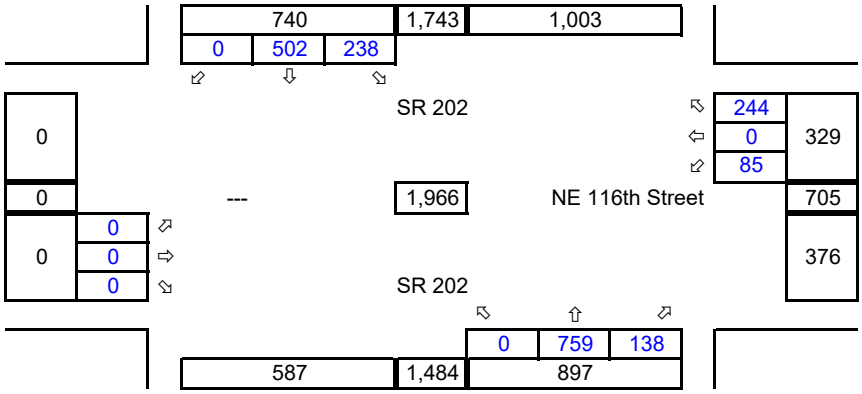
#2 SR-202 @ NE 116th St

Synchro ID: 2

Existing
Average Weekday
PM Peak-Hour

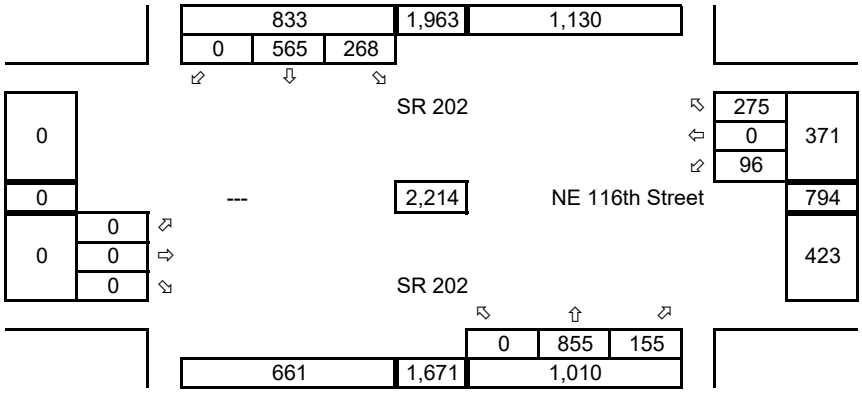
Date **10/27/2016**

Data Source: **idax**

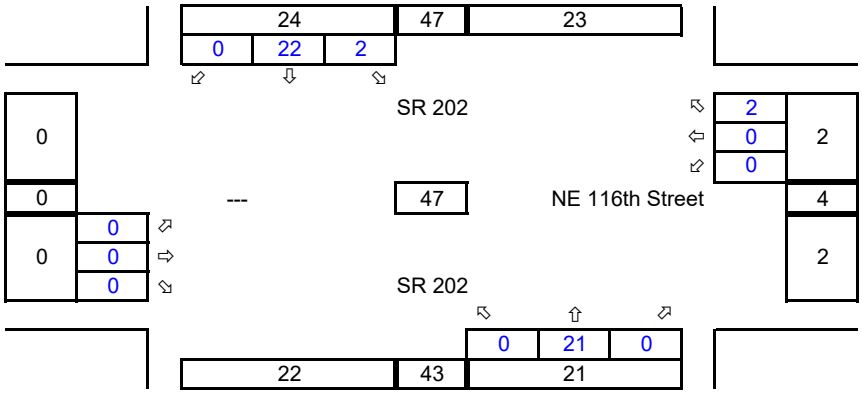


Future w/o Development
Average Weekday
PM Peak-Hour

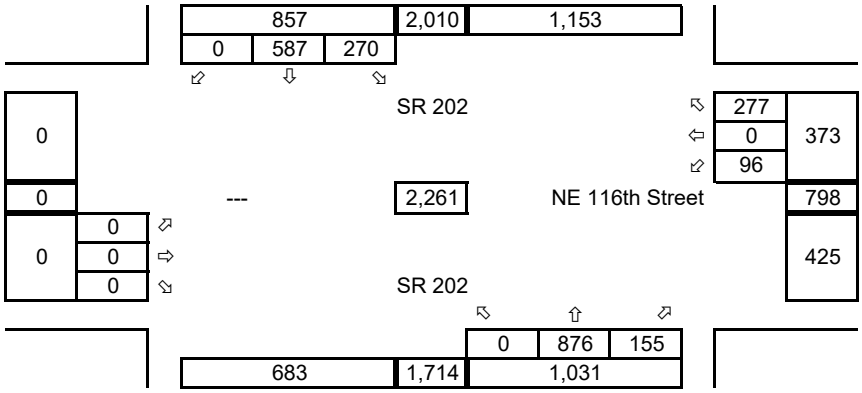
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
PM Peak-Hour



Future with Project
Average Weekday
PM Peak-Hour



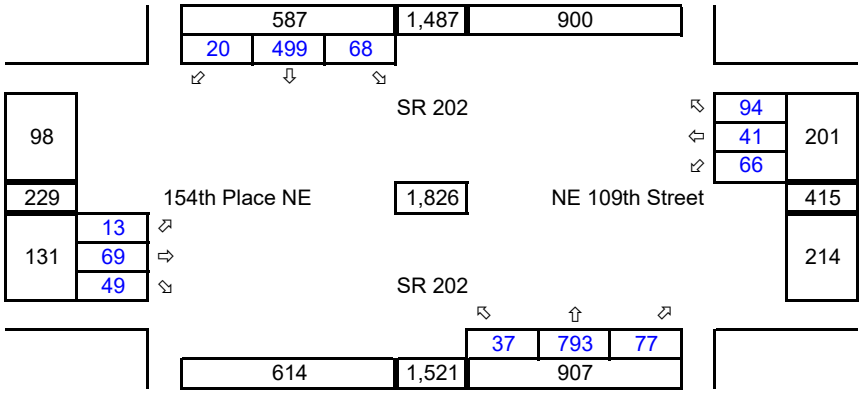
#3 SR-202 @ 154th Pl NE

Synchro ID: 3

Existing
Average Weekday
PM Peak-Hour

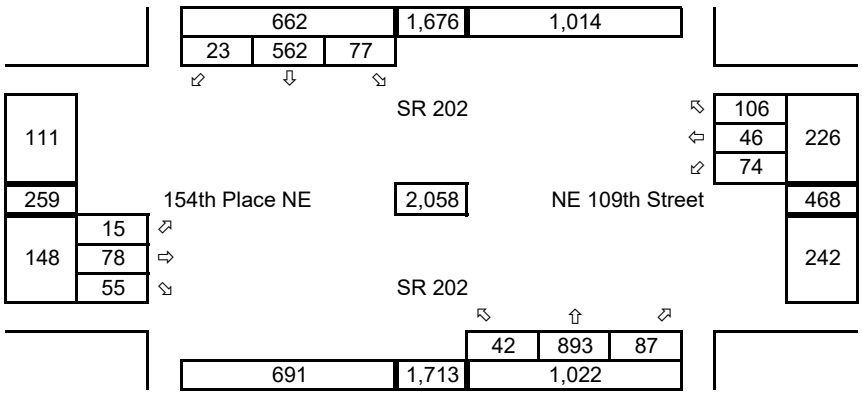
Date **10/27/2016**

Data Source: **idax**

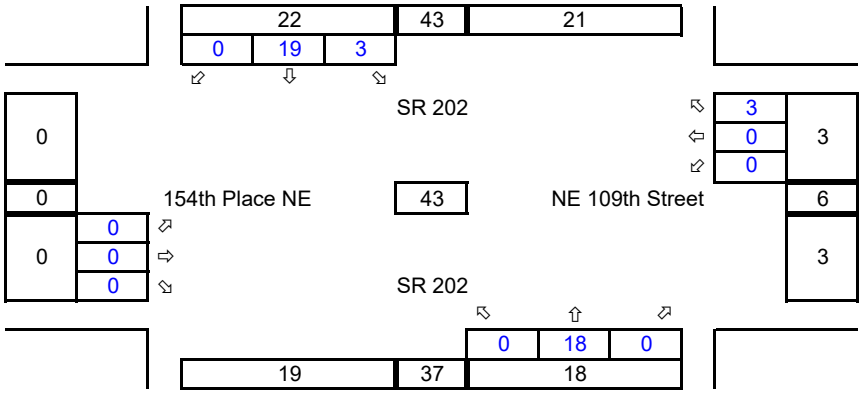


Future w/o Development
Average Weekday
PM Peak-Hour

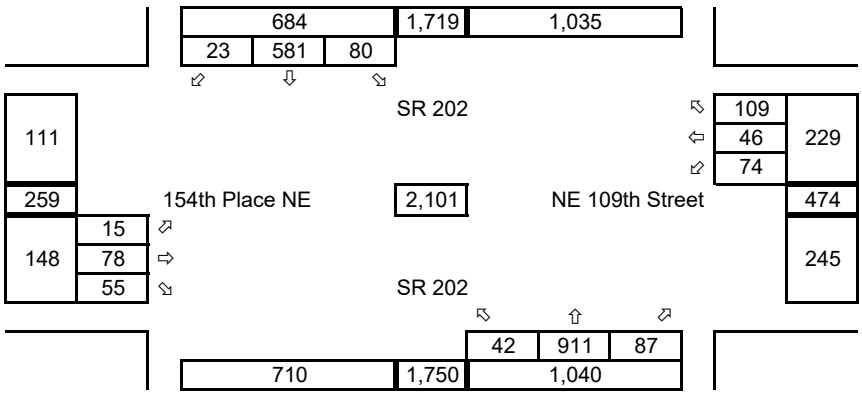
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
PM Peak-Hour



Future with Project
Average Weekday
PM Peak-Hour



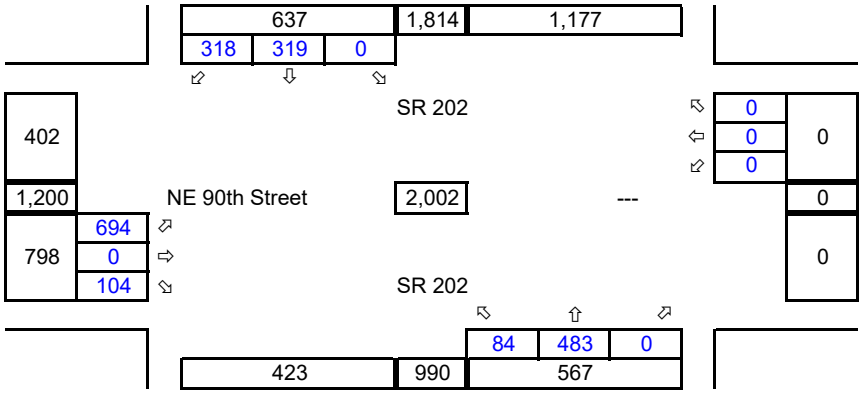
#4 SR-202 @ NE 90th St

Synchro ID: 4

Existing
Average Weekday
PM Peak-Hour

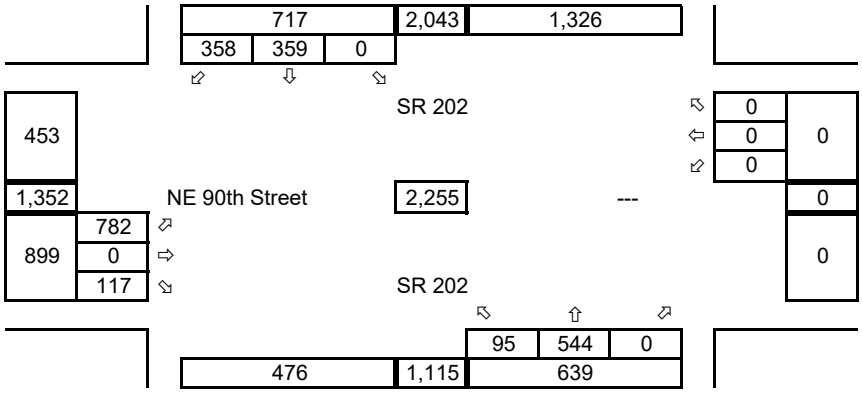
Date **10/27/2016**

Data Source: **idax**

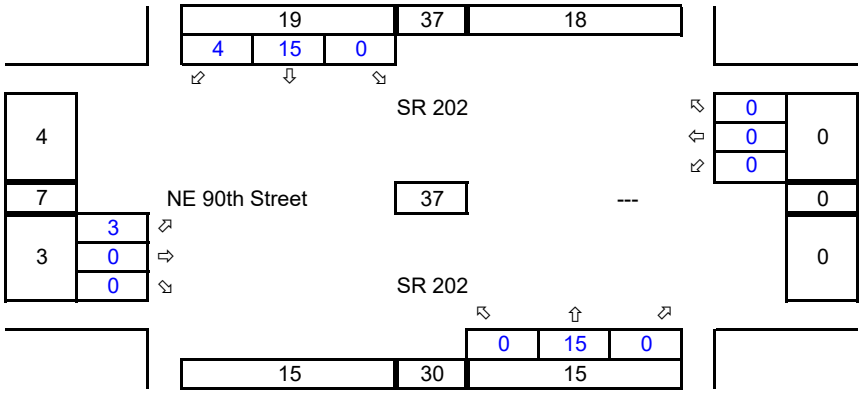


Future w/o Development
Average Weekday
PM Peak-Hour

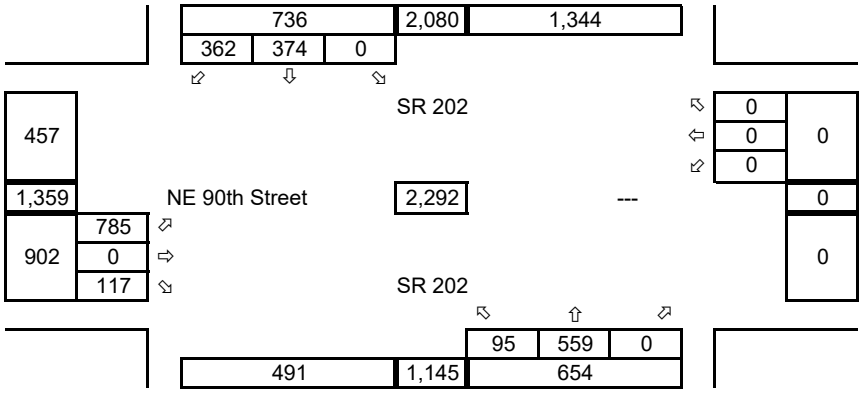
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
PM Peak-Hour



Future with Project
Average Weekday
PM Peak-Hour



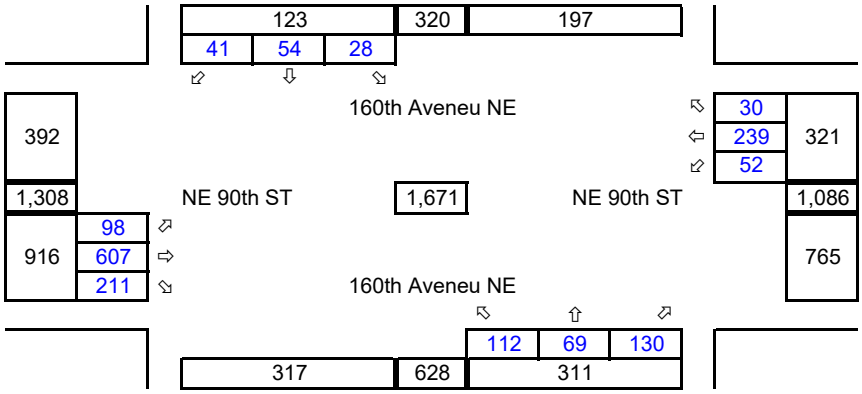
#5 160th Ave NE @ NE 90th St

Synchro ID: 5

Existing
Average Weekday
PM Peak-Hour

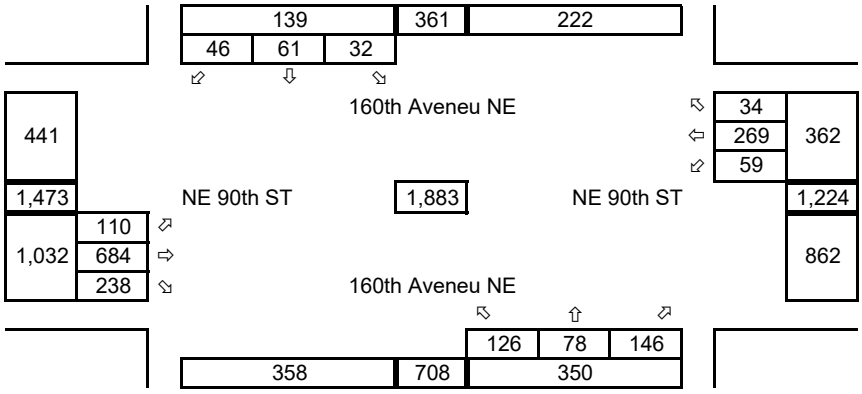
Date **10/27/2016**

Data Source: **idax**

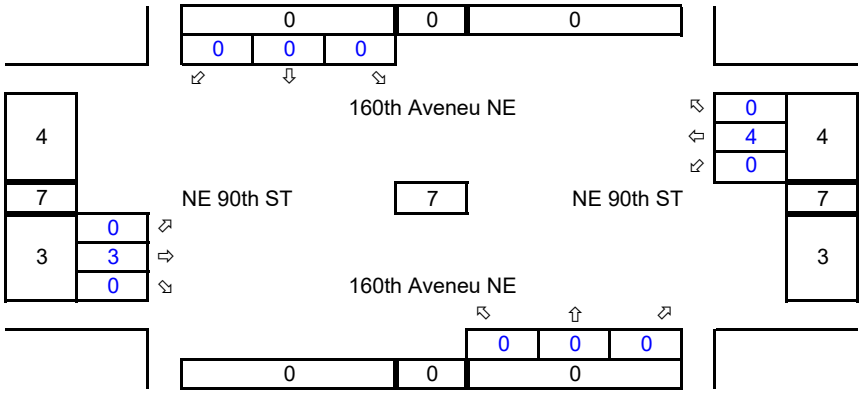


Future w/o Development
Average Weekday
PM Peak-Hour

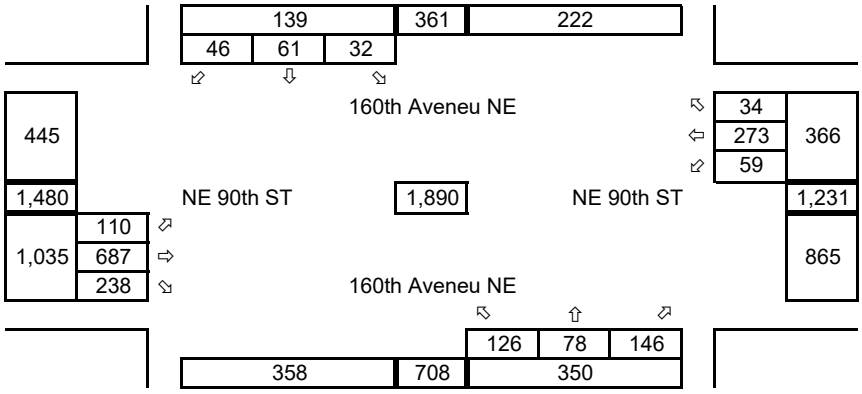
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
PM Peak-Hour



Future with Project
Average Weekday
PM Peak-Hour



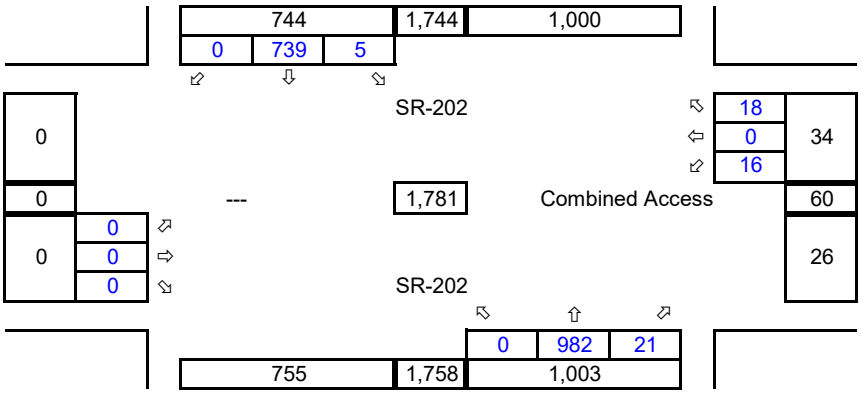
#6 SR-202 @ Site Access

Synchro ID: 6

Existing
Average Weekday
PM Peak-Hour

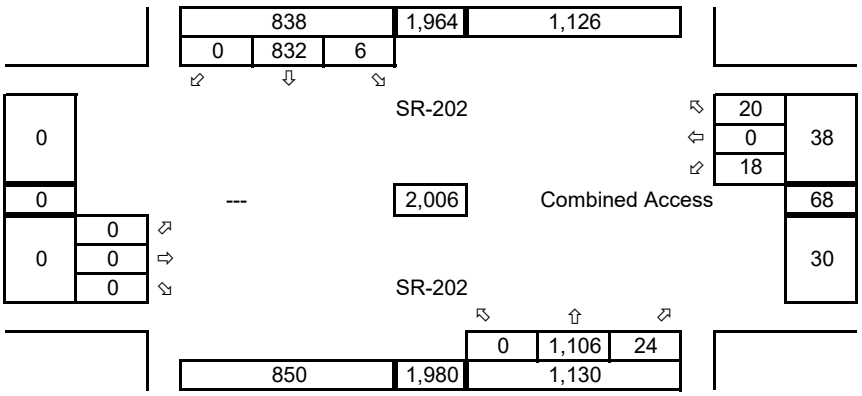
Date **10/27/2016**

Data Source: **idax**

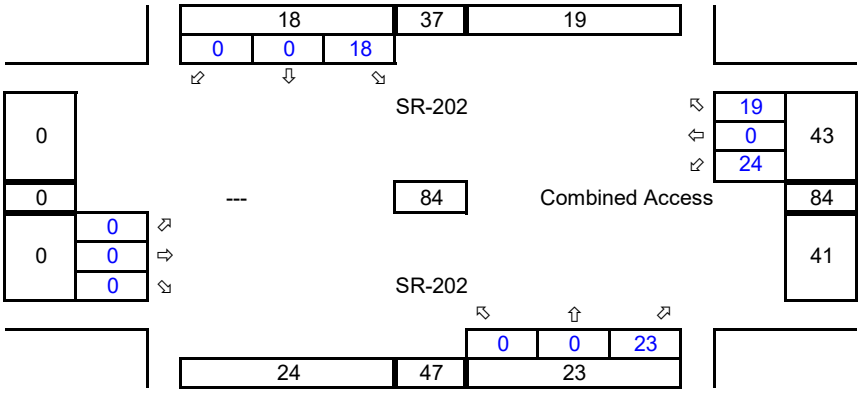


Future w/o Development
Average Weekday
PM Peak-Hour

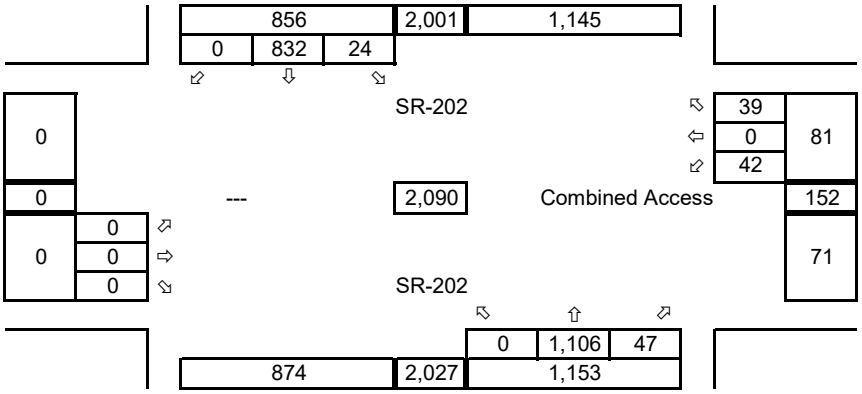
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262



Total Development Trips
Average Weekday
PM Peak-Hour



Future with Project
Average Weekday
PM Peak-Hour



2016 Existing Level of Service Analysis
AM Peak-Hour

H:\2014\14-119\CUP Phase\Synchro\Existing AM.syn

1: SR-202 & NE 124th St

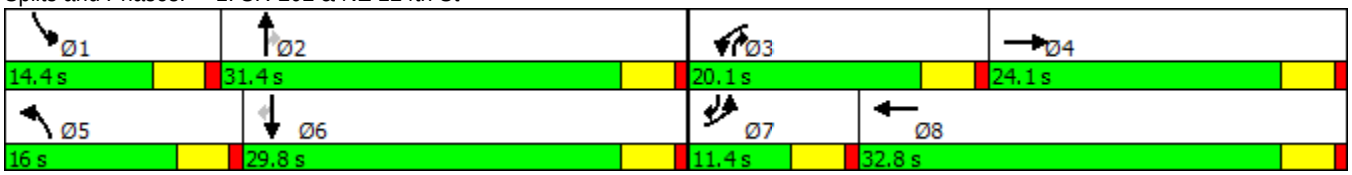
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	269	116	171	798	117	311	262	42	69	393	280
Future Volume (vph)	90	269	116	171	798	117	311	262	42	69	393	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3315	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1736	3315	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		69			19				73			127
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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%
Adj. Flow (vph)	94	280	121	178	831	122	324	273	44	72	409	292
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	401	0	178	953	0	324	273	44	72	409	292
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	11.4	24.1		20.1	32.8		16.0	31.4	20.1	14.4	29.8	11.4
Total Split (%)	12.7%	26.8%		22.3%	36.4%		17.8%	34.9%	22.3%	16.0%	33.1%	12.7%
Maximum Green (s)	6.9	19.6		15.6	28.3		11.5	26.9	15.6	9.9	25.3	6.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	6.9	21.1		13.3	27.5		11.2	30.2	48.0	8.4	25.3	36.7
Actuated g/C Ratio	0.08	0.24		0.15	0.31		0.13	0.34	0.54	0.09	0.28	0.41
v/c Ratio	0.70	0.48		0.69	0.89		0.76	0.44	0.05	0.44	0.79	0.41
Control Delay	69.0	26.7		49.9	41.0		50.9	27.3	1.2	46.7	42.2	12.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	69.0	26.7		49.9	41.0		50.9	27.3	1.2	46.7	42.2	12.3
LOS	E	C		D	D		D	C	A	D	D	B
Approach Delay		34.7			42.4			37.4			31.3	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	53	85		96	263		93	126	0	39	215	61
Queue Length 95th (ft)	#131	133		162	#377		#151	204	8	81	#359	126
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	135	839		304	1097		436	621	911	193	520	716
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.48		0.59	0.87		0.74	0.44	0.05	0.37	0.79	0.41

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 88.9
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 37.3 — Intersection LOS: D
Intersection Capacity Utilization 75.3% — 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: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	270	232	367	46	76	618
Future Volume (vph)	270	232	367	46	76	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.494	
Satd. Flow (perm)	1736	1553	1827	1553	902	1827
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		244		48		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	284	244	386	48	80	651
Shared Lane Traffic (%)						
Lane Group Flow (vph)	284	244	386	48	80	651
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	31.0	31.0	59.0	59.0	59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%	65.6%	65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5	54.5	54.5	54.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	14.3	14.3	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.29	0.29	0.51	0.51	0.51	0.51
v/c Ratio	0.57	0.39	0.42	0.06	0.17	0.70
Control Delay	22.0	5.1	9.2	2.7	8.0	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	22.0	5.1	9.2	2.7	8.0	14.1
LOS	C	A	A	A	A	B
Approach Delay	14.2		8.5			13.5
Approach LOS	B		A			B
Queue Length 50th (ft)	64	0	55	0	10	115
Queue Length 95th (ft)	185	48	147	13	37	297
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	1028	1019	1707	1454	843	1707
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	0.28	0.24	0.23	0.03	0.09	0.38

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 49.6
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 12.4 — Intersection LOS: B
Intersection Capacity Utilization 55.0% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: SR-202 & NE 116th St

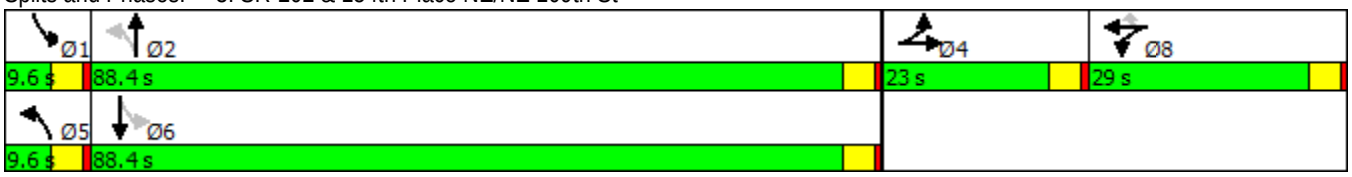
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	39	212	202	38	90	21	324	67	19	815	41
Future Volume (vph)	4	39	212	202	38	90	21	324	67	19	815	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00	0.97		1.00		1.00		
Frt		0.888				0.850		0.974			0.993	
Flt Protected		0.999			0.960		0.950			0.950		
Satd. Flow (prot)	0	1600	0	0	1771	1568	1752	1789	0	1752	1832	0
Flt Permitted		0.999			0.960		0.074			0.427		
Satd. Flow (perm)	0	1600	0	0	1767	1515	137	1789	0	787	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		136				76		11			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)			1			6						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	4	40	219	208	39	93	22	334	69	20	840	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	263	0	0	247	93	22	403	0	20	882	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	23.0	23.0		29.0	29.0	29.0	9.6	88.4		9.6	88.4	
Total Split (%)	15.3%	15.3%		19.3%	19.3%	19.3%	6.4%	58.9%		6.4%	58.9%	
Maximum Green (s)	18.5	18.5		24.5	24.5	24.5	5.1	83.9		5.1	83.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		15.3			21.9	21.9	68.0	65.4		68.0	65.4	
Actuated g/C Ratio		0.13			0.18	0.18	0.56	0.54		0.56	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.82			0.78	0.28	0.15	0.42		0.04	0.90	
Control Delay		49.5			70.2	19.2	13.2	18.6		11.3	39.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		49.5			70.2	19.2	13.2	18.6		11.3	39.4	
LOS		D			E	B	B	B		B	D	
Approach Delay		49.5			56.3			18.3			38.7	
Approach LOS		D			E			B			D	
Queue Length 50th (ft)		115			218	13	8	211		7	708	
Queue Length 95th (ft)		#276			#390	68	20	290		18	934	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		377			386	390	149	1277		481	1305	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.70			0.64	0.24	0.15	0.32		0.04	0.68	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 122.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 38.8 Intersection LOS: D
Intersection Capacity Utilization 85.3% 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: 3: SR-202 & 154th Place NE/NE 109th St



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	158	37	64	200	548	864
Future Volume (vph)	158	37	64	200	548	864
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	1845	1568
Flt Permitted	0.950		0.350			
Satd. Flow (perm)	1752	1471	646	1845	1845	1533
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		38				891
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		17				
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	163	38	66	206	565	891
Shared Lane Traffic (%)						
Lane Group Flow (vph)	163	38	66	206	565	891
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	22.6	22.6	9.6	67.4	57.8	57.8
Total Split (%)	25.1%	25.1%	10.7%	74.9%	64.2%	64.2%
Maximum Green (s)	18.1	18.1	5.1	62.9	53.3	53.3
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	13.3	13.3	65.8	65.8	58.0	58.0
Actuated g/C Ratio	0.15	0.15	0.75	0.75	0.66	0.66

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
v/c Ratio	0.62	0.15	0.12	0.15	0.47	0.68
Control Delay	44.6	11.7	4.1	3.9	10.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	11.7	4.1	3.9	10.2	3.7
LOS	D	B	A	A	B	A
Approach Delay	38.4			4.0	6.2	
Approach LOS	D			A	A	
Queue Length 50th (ft)	82	0	8	26	145	0
Queue Length 95th (ft)	143	26	22	57	258	47
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	360	333	546	1377	1213	1313
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	0.45	0.11	0.12	0.15	0.47	0.68

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 88.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 9.2 — Intersection LOS: A
Intersection Capacity Utilization 65.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: SR-202 & NE 90th St

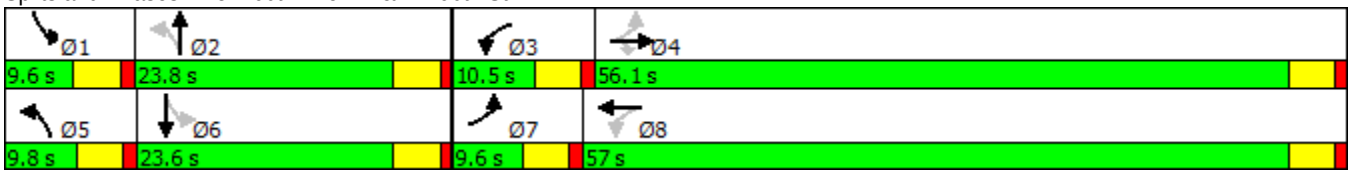
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	155	80	103	783	25	87	15	16	49	49	125
Future Volume (vph)	20	155	80	103	783	25	87	15	16	49	49	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96	0.98	1.00		0.95	0.98		0.99	0.93	
Frt			0.850		0.995			0.923			0.892	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	1736	1815	0	1736	1657	0	1736	1516	0
Flt Permitted	0.096			0.607			0.512			0.736		
Satd. Flow (perm)	175	1827	1484	1088	1815	0	889	1657	0	1327	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115		2			17			114	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	12		9	9		12	27		5	5		27
Confl. Bikes (#/hr)						5						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 (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	21	165	85	110	833	27	93	16	17	52	52	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	165	85	110	860	0	93	33	0	52	185	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	56.1	56.1	10.5	57.0		9.8	23.8		9.6	23.6	
Total Split (%)	9.6%	56.1%	56.1%	10.5%	57.0%		9.8%	23.8%		9.6%	23.6%	
Maximum Green (s)	5.1	51.6	51.6	6.0	52.5		5.3	19.3		5.1	19.1	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	43.7	39.9	39.9	46.5	44.5		25.1	22.3		23.9	20.1	
Actuated g/C Ratio	0.52	0.47	0.47	0.55	0.53		0.30	0.26		0.28	0.24	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.11	0.19	0.11	0.17	0.90		0.29	0.07		0.13	0.41	
Control Delay	9.0	14.3	1.5	9.0	33.0		27.6	20.9		25.1	17.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.0	14.3	1.5	9.0	33.0		27.6	20.9		25.1	17.7	
LOS	A	B	A	A	C		C	C		C	B	
Approach Delay		9.9			30.3			25.9			19.3	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	5	53	0	26	362		36	7		20	32	
Queue Length 95th (ft)	14	91	13	48	#745		85	35		54	105	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	188	1167	990	646	1181		319	449		400	446	
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	0.11	0.14	0.09	0.17	0.73		0.29	0.07		0.13	0.41	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 84.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 24.9 Intersection LOS: C
Intersection Capacity Utilization 81.7% 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: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	0.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	16	615	17	16	680
Future Vol, veh/h	5	16	615	17	16	680
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	51	51	86	86	86	86
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	10	31	715	20	19	791

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1543	715	0	0	715	0
Stage 1	715	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	128	434	-	-	881	-
Stage 1	488	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	125	434	-	-	881	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	488	-	-	-	-	-
Stage 2	423	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	263	434	881	-
HCM Lane V/C Ratio	-	-	0.037	0.072	0.021	-
HCM Control Delay (s)	-	-	19.2	13.9	9.2	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	0.1	-

2016 Existing Level of Service Analysis
School PM Peak-Hour

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1: SR-202 & NE 124th St

Willows Preparatory School (14-119)

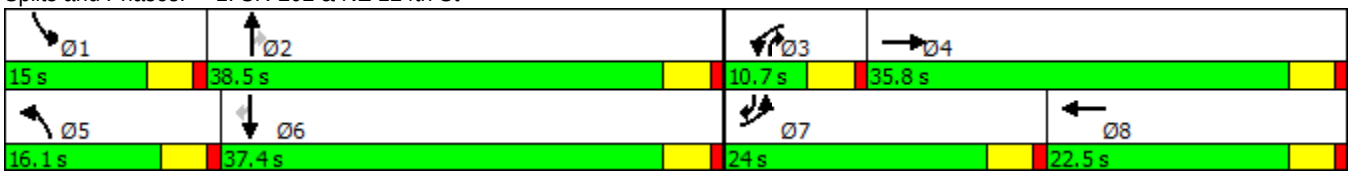
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	604	236	59	344	141	235	534	106	169	306	143
Future Volume (vph)	315	604	236	59	344	141	235	534	106	169	306	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.956				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3391	0	1770	3383	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3391	0	1770	3383	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			54				115			66
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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
Adj. Flow (vph)	339	649	254	63	370	152	253	574	114	182	329	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	339	903	0	63	522	0	253	574	114	182	329	154
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	24.0	35.8		10.7	22.5		16.1	38.5	10.7	15.0	37.4	24.0
Total Split (%)	24.0%	35.8%		10.7%	22.5%		16.1%	38.5%	10.7%	15.0%	37.4%	24.0%
Maximum Green (s)	19.5	31.3		6.2	18.0		11.6	34.0	6.2	10.5	32.9	19.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	19.5	30.4		6.1	17.0		11.0	34.0	44.6	10.5	33.5	57.5
Actuated g/C Ratio	0.20	0.31		0.06	0.17		0.11	0.34	0.45	0.11	0.34	0.58
v/c Ratio	0.97	0.83		0.58	0.84		0.67	0.90	0.15	0.97	0.52	0.16
Control Delay	83.3	37.8		67.3	48.3		51.5	50.1	3.6	105.6	30.4	6.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.3	37.8		67.3	48.3		51.5	50.1	3.6	105.6	30.4	6.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	D		E	D		D	D	A	F	C	A
Approach Delay		50.2			50.4			44.8			45.4	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	217	261		40	152		80	345	0	118	169	24
Queue Length 95th (ft)	#395	341		#96	#227		122	#550	30	#255	257	53
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	348	1113		110	659		402	639	778	187	630	947
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.81		0.57	0.79		0.63	0.90	0.15	0.97	0.52	0.16

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 99
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 47.8 Intersection LOS: D
Intersection Capacity Utilization 83.9% 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: 1: SR-202 & NE 124th St



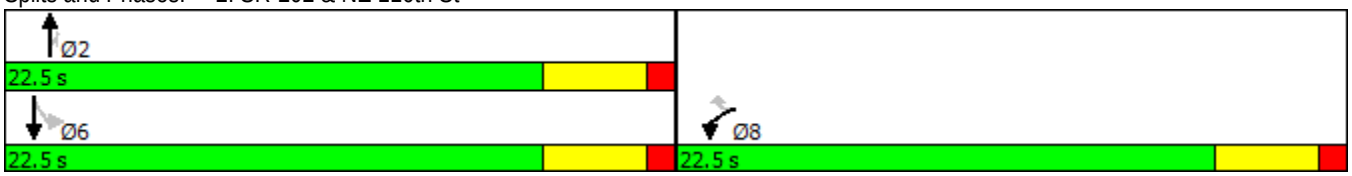
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	101	188	735	147	158	442
Future Volume (vph)	101	188	735	147	158	442
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98		0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.209	
Satd. Flow (perm)	1770	1548	1863	1546	389	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		73		162		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)		2		2	2	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	111	207	808	162	174	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	207	808	162	174	486
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	8.7	8.7	22.4	22.4	22.4	22.4
Actuated g/C Ratio	0.23	0.23	0.60	0.60	0.60	0.60
v/c Ratio	0.27	0.50	0.72	0.16	0.75	0.43

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Control Delay	12.5	12.0	16.2	2.1	40.3	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	12.0	16.2	2.1	40.3	8.0
LOS	B	B	B	A	D	A
Approach Delay	12.2		13.9			16.5
Approach LOS	B		B			B
Queue Length 50th (ft)	17	21	114	0	25	52
Queue Length 95th (ft)	42	58	#354	20	#127	139
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	857	787	1119	993	233	1119
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	0.13	0.26	0.72	0.16	0.75	0.43

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 37.2
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 64.9% 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: 2: SR-202 & NE 116th St



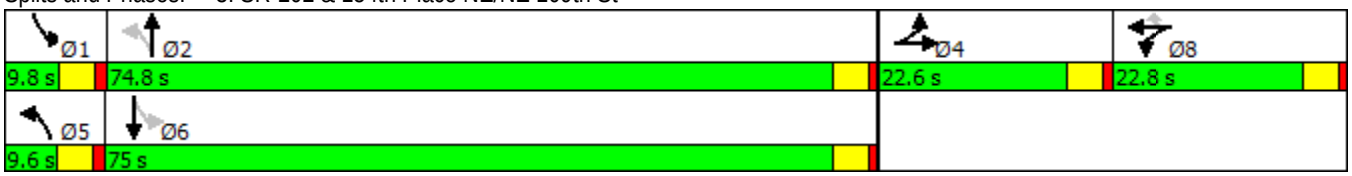
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	43	44	98	18	83	16	778	96	66	455	10
Future Volume (vph)	7	43	44	98	18	83	16	778	96	66	455	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.937				0.850		0.984			0.997	
Flt Protected		0.996			0.959		0.950			0.950		
Satd. Flow (prot)	0	1715	0	0	1786	1583	1770	1833	0	1770	1857	0
Flt Permitted		0.996			0.959		0.429			0.120		
Satd. Flow (perm)	0	1715	0	0	1786	1583	799	1833	0	224	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28				88		7			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	7	44	45	100	18	85	16	794	98	67	464	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	0	0	118	85	16	892	0	67	474	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.6	22.6		22.8	22.8	22.8	9.6	74.8		9.8	75.0	
Total Split (%)	17.4%	17.4%		17.5%	17.5%	17.5%	7.4%	57.5%		7.5%	57.7%	
Maximum Green (s)	18.1	18.1		18.3	18.3	18.3	5.1	70.3		5.3	70.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		10.0			12.9	12.9	61.9	58.2		64.0	62.3	
Actuated g/C Ratio		0.10			0.13	0.13	0.62	0.59		0.64	0.63	
v/c Ratio		0.48			0.51	0.30	0.03	0.83		0.29	0.41	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		45.4			55.0	12.8	7.9	27.8		10.9	13.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.4			55.0	12.8	7.9	27.8		10.9	13.0	
LOS		D			E	B	A	C		B	B	
Approach Delay		45.4			37.3			27.5			12.8	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)		44			76	0	3	484		15	135	
Queue Length 95th (ft)		109			154	45	13	#905		38	311	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		364			360	389	552	1318		234	1336	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.26			0.33	0.22	0.03	0.68		0.29	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 99.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 25.1 Intersection LOS: C
Intersection Capacity Utilization 75.2% 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: 3: SR-202 & 154th Place NE/NE 109th St



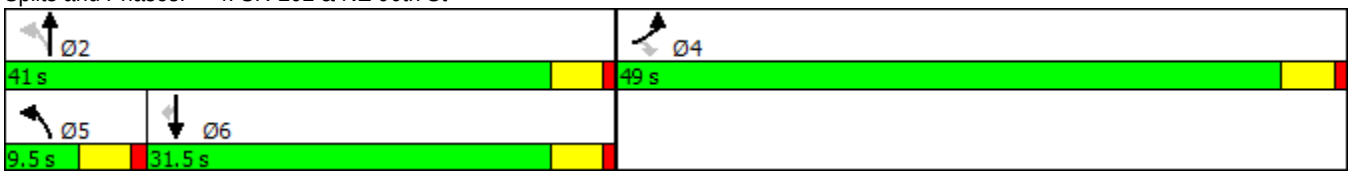
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	584	115	77	454	313	339
Future Volume (vph)	584	115	77	454	313	339
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.371			
Satd. Flow (perm)	1765	1493	691	1863	1863	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		84				365
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)	1	15				
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	628	124	83	488	337	365
Shared Lane Traffic (%)						
Lane Group Flow (vph)	628	124	83	488	337	365
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	49.0	49.0	9.5	41.0	31.5	31.5
Total Split (%)	54.4%	54.4%	10.6%	45.6%	35.0%	35.0%
Maximum Green (s)	44.5	44.5	5.0	36.5	27.0	27.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	32.1	32.1	36.9	36.9	29.6	29.6
Actuated g/C Ratio	0.41	0.41	0.47	0.47	0.38	0.38
v/c Ratio	0.86	0.19	0.21	0.55	0.48	0.45

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	33.7	5.9	15.6	19.8	24.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	5.9	15.6	19.8	24.6	4.7
LOS	C	A	B	B	C	A
Approach Delay	29.1			19.2	14.3	
Approach LOS	C			B	B	
Queue Length 50th (ft)	267	11	22	165	130	0
Queue Length 95th (ft)	401	40	58	326	253	62
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	1019	895	396	880	704	813
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	0.62	0.14	0.21	0.55	0.48	0.45

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 78.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 21.2 — Intersection LOS: C
Intersection Capacity Utilization 64.3% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: SR-202 & NE 90th St



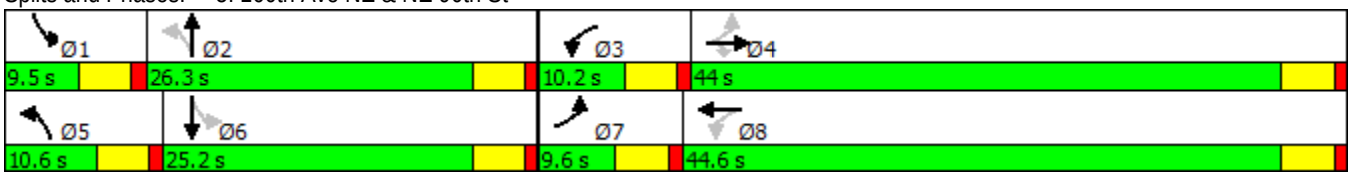
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	462	149	64	303	37	94	48	106	29	38	54
Future Volume (vph)	57	462	149	64	303	37	94	48	106	29	38	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97	1.00	1.00		0.94	0.98		0.99	0.95	
Frt			0.850		0.984			0.897			0.912	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1808	0	1752	1621	0	1752	1598	0
Flt Permitted	0.419			0.211			0.623			0.656		
Satd. Flow (perm)	766	1845	1528	389	1808	0	1083	1621	0	1201	1598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		9			110			56	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		2	2		7	27		4	4		27
Confl. Bikes (#/hr)			1			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 (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	59	481	155	67	316	39	98	50	110	30	40	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	481	155	67	355	0	98	160	0	30	96	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	44.0	44.0	10.2	44.6		10.6	26.3		9.5	25.2	
Total Split (%)	10.7%	48.9%	48.9%	11.3%	49.6%		11.8%	29.2%		10.6%	28.0%	
Maximum Green (s)	5.1	39.5	39.5	5.7	40.1		6.1	21.8		5.0	20.7	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.7	25.0	25.0	30.4	27.4		29.1	27.0		26.1	22.5	
Actuated g/C Ratio	0.40	0.35	0.35	0.42	0.38		0.40	0.37		0.36	0.31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.16	0.76	0.25	0.24	0.51		0.20	0.24		0.06	0.18	
Control Delay	11.5	29.6	4.1	12.7	20.3		18.1	10.5		17.3	13.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.5	29.6	4.1	12.7	20.3		18.1	10.5		17.3	13.9	
LOS	B	C	A	B	C		B	B		B	B	
Approach Delay		22.4			19.1			13.4			14.7	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	15	201	0	17	131		28	14		8	14	
Queue Length 95th (ft)	32	302	34	35	204		73	73		30	58	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	378	1077	956	278	1074		495	674		474	535	
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	0.16	0.45	0.16	0.24	0.33		0.20	0.24		0.06	0.18	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 72.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 19.3 Intersection LOS: B
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 5: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	1.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	29	875	35	15	601
Future Vol, veh/h	18	29	875	35	15	601
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	90	90
Heavy Vehicles, %	6	6	2	2	2	2
Mvmt Flow	36	58	983	39	17	668

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1684	983	0	0	983	0
Stage 1	983	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	101	297	-	-	703	-
Stage 1	356	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	297	-	-	703	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	356	-	-	-	-	-
Stage 2	473	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.4	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	229	297	703	-
HCM Lane V/C Ratio	-	-	0.157	0.195	0.024	-
HCM Control Delay (s)	-	-	23.6	20	10.2	-
HCM Lane LOS	-	-	C	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.7	0.1	-

2016 Existing Level of Service Analysis
PM Peak-Hour

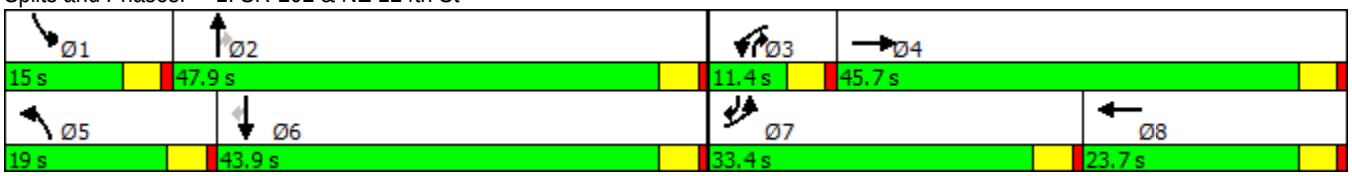
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	769	288	79	370	180	247	623	112	137	372	102
Future Volume (vph)	404	769	288	79	370	180	247	623	112	137	372	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.959			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3374	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3374	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			59				95			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	412	785	294	81	378	184	252	636	114	140	380	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	412	1079	0	81	562	0	252	636	114	140	380	104
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	33.4	45.7		11.4	23.7		19.0	47.9	11.4	15.0	43.9	33.4
Total Split (%)	27.8%	38.1%		9.5%	19.8%		15.8%	39.9%	9.5%	12.5%	36.6%	27.8%
Maximum Green (s)	28.9	41.2		6.9	19.2		14.5	43.4	6.9	10.5	39.4	28.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.9	41.2		6.9	19.2		13.2	43.4	54.8	10.5	40.7	74.1
Actuated g/C Ratio	0.24	0.34		0.06	0.16		0.11	0.36	0.46	0.09	0.34	0.62
v/c Ratio	0.97	0.91		0.80	0.96		0.67	0.95	0.15	0.91	0.60	0.10
Control Delay	81.7	47.8		103.7	72.6		60.4	61.4	5.7	106.4	38.1	5.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.7	47.8		103.7	72.6		60.4	61.4	5.7	106.4	38.1	5.2
LOS	F	D		F	E		E	E	A	F	D	A
Approach Delay		57.2			76.6			54.8			48.0	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)	317	401		63	207		97	474	8	109	246	14
Queue Length 95th (ft)	#520	#531		#153	#322		141	#709	41	#233	354	38
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	426	1190		101	588		414	673	774	154	632	998
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.91		0.80	0.96		0.61	0.95	0.15	0.91	0.60	0.10

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 58.3 — Intersection LOS: E
Intersection Capacity Utilization 93.8% — 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: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	244	759	138	238	502
Future Volume (vph)	85	244	759	138	238	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.269	
Satd. Flow (perm)	1765	1583	1863	1583	501	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		252		142		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	88	252	782	142	245	518
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	252	782	142	245	518
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	67.5	67.5	67.5	67.5
Total Split (%)	25.0%	25.0%	75.0%	75.0%	75.0%	75.0%
Maximum Green (s)	18.0	18.0	63.0	63.0	63.0	63.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	8.8	8.8	33.9	33.9	33.9	33.9
Actuated g/C Ratio	0.17	0.17	0.64	0.64	0.64	0.64
v/c Ratio	0.30	0.53	0.65	0.13	0.76	0.43
Control Delay	27.0	9.2	8.4	1.0	23.9	5.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	9.2	8.4	1.0	23.9	5.5
LOS	C	A	A	A	C	A
Approach Delay	13.8		7.2			11.4
Approach LOS	B		A			B
Queue Length 50th (ft)	20	0	102	0	36	55
Queue Length 95th (ft)	86	64	232	12	#166	123
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	672	757	1765	1507	475	1765
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	0.13	0.33	0.44	0.09	0.52	0.29

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 52.7
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 9.9 Intersection LOS: A
Intersection Capacity Utilization 69.1% 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: 2: SR-202 & NE 116th St

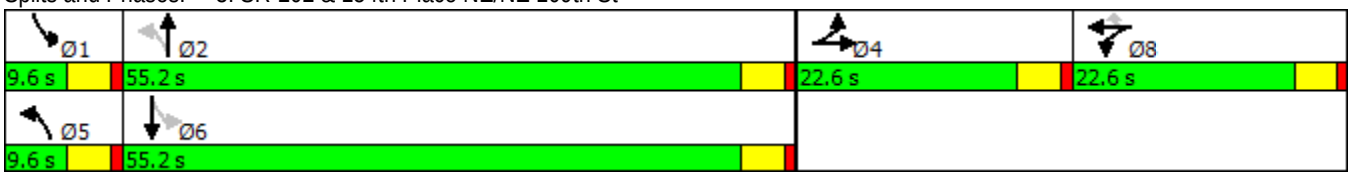
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	69	49	66	41	94	37	793	77	68	499	20
Future Volume (vph)	13	69	49	66	41	94	37	793	77	68	499	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.98		1.00				
Frt		0.949				0.850		0.987			0.994	
Flt Protected		0.995			0.970		0.950			0.950		
Satd. Flow (prot)	0	1737	0	0	1807	1583	1770	1835	0	1770	1852	0
Flt Permitted		0.995			0.970		0.353			0.081		
Satd. Flow (perm)	0	1737	0	0	1798	1548	658	1835	0	151	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				104		6			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			3	3					1	1		
Confl. Bikes (#/hr)			2			1			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	13	71	51	68	42	97	38	818	79	70	514	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	110	97	38	897	0	70	535	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.6	22.6		22.6	22.6	22.6	9.6	55.2		9.6	55.2	
Total Split (%)	20.5%	20.5%		20.5%	20.5%	20.5%	8.7%	50.2%		8.7%	50.2%	
Maximum Green (s)	18.1	18.1		18.1	18.1	18.1	5.1	50.7		5.1	50.7	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		11.5			11.2	11.2	56.3	52.3		57.2	54.3	
Actuated g/C Ratio		0.12			0.12	0.12	0.59	0.54		0.60	0.57	
v/c Ratio		0.59			0.52	0.36	0.09	0.90		0.40	0.51	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		44.2			50.2	11.2	9.4	35.4		15.9	17.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.2			50.2	11.2	9.4	35.4		15.9	17.5	
LOS		D			D	B	A	D		B	B	
Approach Delay		44.2			32.0			34.3			17.3	
Approach LOS		D			C			C			B	
Queue Length 50th (ft)		65			65	0	8	482		15	207	
Queue Length 95th (ft)		131			125	42	26	#909		42	378	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		348			342	378	444	1001		176	1047	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.39			0.32	0.26	0.09	0.90		0.40	0.51	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 96.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 29.3 Intersection LOS: C
Intersection Capacity Utilization 76.0% 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: 3: SR-202 & 154th Place NE/NE 109th St



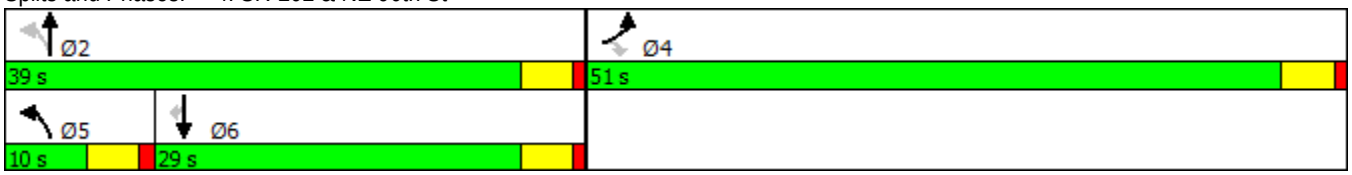
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	694	104	84	483	319	318
Future Volume (vph)	694	104	84	483	319	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.96				
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.341			
Satd. Flow (perm)	1770	1521	635	1863	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		67				331
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		7				
Confl. Bikes (#/hr)		3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	723	108	88	503	332	331
Shared Lane Traffic (%)						
Lane Group Flow (vph)	723	108	88	503	332	331
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	51.0	51.0	10.0	39.0	29.0	29.0
Total Split (%)	56.7%	56.7%	11.1%	43.3%	32.2%	32.2%
Maximum Green (s)	46.5	46.5	5.5	34.5	24.5	24.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	37.0	37.0	34.9	34.9	27.2	27.2
Actuated g/C Ratio	0.46	0.46	0.43	0.43	0.34	0.34
v/c Ratio	0.89	0.15	0.25	0.63	0.53	0.44

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	34.8	5.8	18.5	24.3	29.0	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	5.8	18.5	24.3	29.0	5.3
LOS	C	A	B	C	C	A
Approach Delay	31.1			23.4	17.2	
Approach LOS	C			C	B	
Queue Length 50th (ft)	319	11	27	200	145	0
Queue Length 95th (ft)	481	36	64	353	260	62
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	1028	911	351	802	625	751
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	0.70	0.12	0.25	0.63	0.53	0.44

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 81
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 24.5 — Intersection LOS: C
Intersection Capacity Utilization 71.4% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: SR-202 & NE 90th St



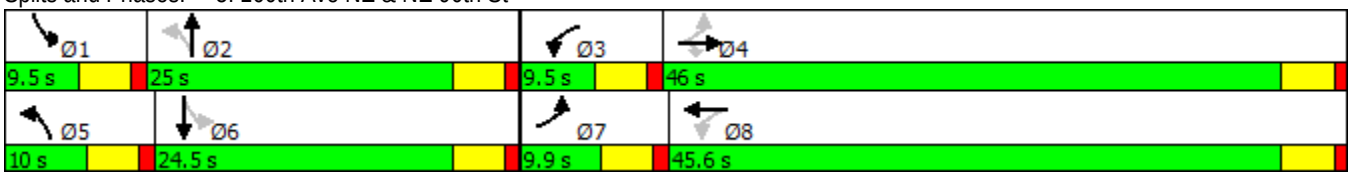
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	607	211	52	239	30	112	69	130	28	54	41
Future Volume (vph)	98	607	211	52	239	30	112	69	130	28	54	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.96		1.00		0.94	0.96		0.98	0.96	
Frt			0.850		0.983			0.902			0.935	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1841	0	1787	1635	0	1787	1695	0
Flt Permitted	0.472			0.137			0.626			0.609		
Satd. Flow (perm)	879	1881	1533	258	1841	0	1112	1635	0	1119	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227		9			98			39	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		8	8		7	26		14	14		26
Confl. Bikes (#/hr)			2			1			1			
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%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	105	653	227	56	257	32	120	74	140	30	58	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	653	227	56	289	0	120	214	0	30	102	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.9	46.0	46.0	9.5	45.6		10.0	25.0		9.5	24.5	
Total Split (%)	11.0%	51.1%	51.1%	10.6%	50.7%		11.1%	27.8%		10.6%	27.2%	
Maximum Green (s)	5.4	41.5	41.5	5.0	41.1		5.5	20.5		5.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	36.0	33.1	33.1	34.4	30.7		27.4	25.5		25.0	21.3	
Actuated g/C Ratio	0.47	0.43	0.43	0.45	0.40		0.36	0.33		0.33	0.28	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.22	0.80	0.29	0.25	0.39		0.27	0.35		0.07	0.20	
Control Delay	10.8	28.0	3.2	12.2	17.7		22.0	16.5		20.1	19.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.8	28.0	3.2	12.2	17.7		22.0	16.5		20.1	19.8	
LOS	B	C	A	B	B		C	B		C	B	
Approach Delay		20.5			16.8			18.5			19.8	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	26	295	0	13	99		43	42		10	26	
Queue Length 95th (ft)	49	436	38	30	158		90	122		31	72	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	482	1080	977	222	1051		450	611		412	500	
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	0.22	0.60	0.23	0.25	0.27		0.27	0.35		0.07	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 76.3
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 19.3 — Intersection LOS: B
Intersection Capacity Utilization 70.6% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	18	982	21	5	739
Future Vol, veh/h	16	18	982	21	5	739
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	98	98	92	92
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	32	36	1002	21	5	803

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1816	1002	0	0	1002	0
Stage 1	1002	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	87	297	-	-	691	-
Stage 1	358	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	86	297	-	-	691	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	436	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.4	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	218	297	691	-
HCM Lane V/C Ratio	-	-	0.147	0.121	0.008	-
HCM Control Delay (s)	-	-	24.3	18.8	10.3	-
HCM Lane LOS	-	-	C	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.4	0	-

2022 Baseline Level of Service Analysis
AM Peak-Hour

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1: SR-202 & NE 124th St

Willows Preparatory School (14-119)

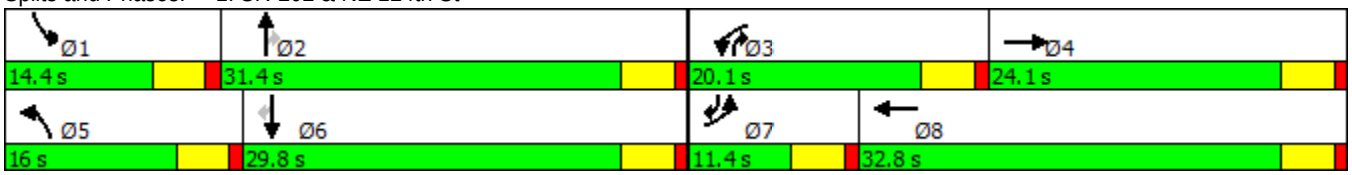
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	303	131	193	899	132	350	295	47	78	443	315
Future Volume (vph)	101	303	131	193	899	132	350	295	47	78	443	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3315	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1736	3315	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		68			19				73			127
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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%
Adj. Flow (vph)	105	316	136	201	936	138	365	307	49	81	461	328
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	452	0	201	1074	0	365	307	49	81	461	328
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	11.4	24.1		20.1	32.8		16.0	31.4	20.1	14.4	29.8	11.4
Total Split (%)	12.7%	26.8%		22.3%	36.4%		17.8%	34.9%	22.3%	16.0%	33.1%	12.7%
Maximum Green (s)	6.9	19.6		15.6	28.3		11.5	26.9	15.6	9.9	25.3	6.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	6.9	21.2		14.0	28.3		11.5	30.2	48.8	8.6	25.3	36.7
Actuated g/C Ratio	0.08	0.24		0.16	0.31		0.13	0.34	0.54	0.10	0.28	0.41
v/c Ratio	0.79	0.54		0.74	0.99		0.85	0.50	0.06	0.49	0.90	0.46
Control Delay	79.8	28.8		53.5	56.9		58.0	28.7	1.5	48.4	53.9	14.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	79.8	28.8		53.5	56.9		58.0	28.7	1.5	48.4	53.9	14.0
LOS	E	C		D	E		E	C	A	D	D	B
Approach Delay		38.4			56.3			41.7			38.3	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	60	103		108	313		106	145	0	44	251	77
Queue Length 95th (ft)	#149	153		#195	#458		#180	230	10	90	#429	150
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	133	831		300	1083		430	614	900	190	513	708
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.54		0.67	0.99		0.85	0.50	0.05	0.43	0.90	0.46

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 45.8 — Intersection LOS: D
Intersection Capacity Utilization 83.0% — 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: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	304	261	413	52	86	696
Future Volume (vph)	304	261	413	52	86	696
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.450	
Satd. Flow (perm)	1736	1553	1827	1553	822	1827
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		275		55		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	320	275	435	55	91	733
Shared Lane Traffic (%)						
Lane Group Flow (vph)	320	275	435	55	91	733
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	31.0	31.0	59.0	59.0	59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%	65.6%	65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5	54.5	54.5	54.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	16.6	16.6	31.2	31.2	31.2	31.2
Actuated g/C Ratio	0.29	0.29	0.54	0.54	0.54	0.54
v/c Ratio	0.64	0.43	0.44	0.06	0.21	0.74
Control Delay	27.3	5.5	9.7	2.4	8.6	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	27.3	5.5	9.7	2.4	8.6	15.8
LOS	C	A	A	A	A	B
Approach Delay	17.2		8.9			15.0
Approach LOS	B		A			B
Queue Length 50th (ft)	89	0	74	0	13	159
Queue Length 95th (ft)	241	55	178	14	45	376
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	886	927	1616	1380	727	1616
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	0.36	0.30	0.27	0.04	0.13	0.45

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 57.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 14.1 — Intersection LOS: B
Intersection Capacity Utilization 61.0% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: SR-202 & NE 116th St

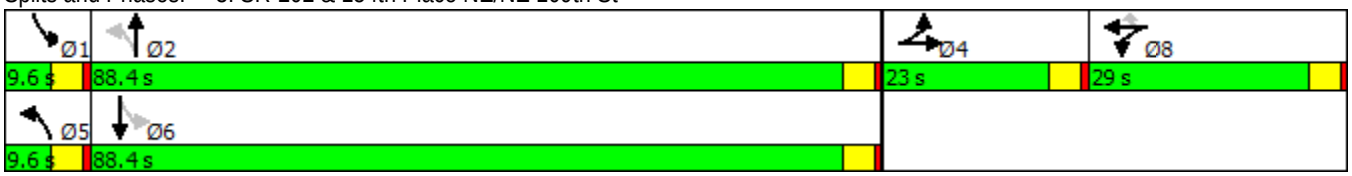
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	44	239	227	43	101	24	365	75	21	918	46
Future Volume (vph)	5	44	239	227	43	101	24	365	75	21	918	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00	0.97		1.00		1.00		
Frt		0.888				0.850		0.975			0.993	
Flt Protected		0.999			0.960		0.950			0.950		
Satd. Flow (prot)	0	1600	0	0	1771	1568	1752	1791	0	1752	1832	0
Flt Permitted		0.999			0.960		0.050			0.396		
Satd. Flow (perm)	0	1600	0	0	1767	1515	92	1791	0	730	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135				76		11			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)			1			6						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	5	45	246	234	44	104	25	376	77	22	946	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	296	0	0	278	104	25	453	0	22	993	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	23.0	23.0		29.0	29.0	29.0	9.6	88.4		9.6	88.4	
Total Split (%)	15.3%	15.3%		19.3%	19.3%	19.3%	6.4%	58.9%		6.4%	58.9%	
Maximum Green (s)	18.5	18.5		24.5	24.5	24.5	5.1	83.9		5.1	83.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		17.8			24.3	24.3	82.5	79.7		82.5	79.7	
Actuated g/C Ratio		0.13			0.17	0.17	0.59	0.57		0.59	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.93			0.91	0.32	0.22	0.45		0.05	0.96	
Control Delay		68.2			91.5	21.5	15.5	19.5		11.2	49.1	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		68.2			91.5	21.5	15.5	19.5		11.2	49.1	
LOS		E			F	C	B	B		B	D	
Approach Delay		68.2			72.4			19.3			48.3	
Approach LOS		E			E			B			D	
Queue Length 50th (ft)		165			274	24	9	246		8	902	
Queue Length 95th (ft)		#354			#459	81	21	336		20	#1237	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		329			311	329	114	1082		465	1104	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.90			0.89	0.32	0.22	0.42		0.05	0.90	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 140.8
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 48.9 Intersection LOS: D
Intersection Capacity Utilization 94.6% 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: 3: SR-202 & 154th Place NE/NE 109th St



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	178	42	72	225	617	973
Future Volume (vph)	178	42	72	225	617	973
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	1845	1568
Flt Permitted	0.950		0.306			
Satd. Flow (perm)	1752	1471	564	1845	1845	1533
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		43				990
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		17				
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	184	43	74	232	636	1003
Shared Lane Traffic (%)						
Lane Group Flow (vph)	184	43	74	232	636	1003
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	22.6	22.6	9.6	67.4	57.8	57.8
Total Split (%)	25.1%	25.1%	10.7%	74.9%	64.2%	64.2%
Maximum Green (s)	18.1	18.1	5.1	62.9	53.3	53.3
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	14.1	14.1	65.8	65.8	57.9	57.9
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.65	0.65

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
v/c Ratio	0.66	0.16	0.15	0.17	0.53	0.75
Control Delay	46.3	11.2	4.5	4.2	11.5	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	11.2	4.5	4.2	11.5	4.8
LOS	D	B	A	A	B	A
Approach Delay	39.7			4.3	7.4	
Approach LOS	D			A	A	
Queue Length 50th (ft)	94	0	9	32	181	2
Queue Length 95th (ft)	161	27	24	64	306	52
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	357	334	485	1365	1202	1344
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	0.52	0.13	0.15	0.17	0.53	0.75

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 88.9
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 10.3 — Intersection LOS: B
Intersection Capacity Utilization 71.9% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: SR-202 & NE 90th St

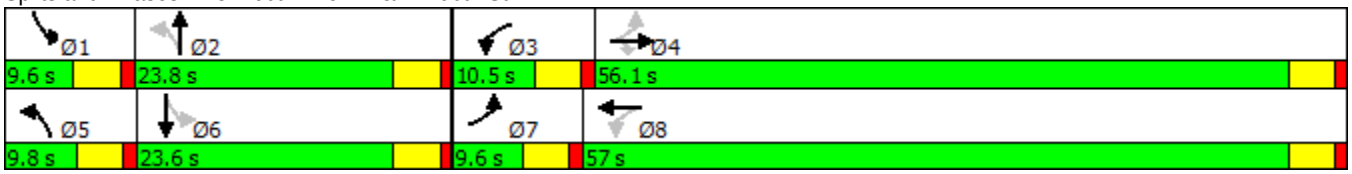
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	175	90	116	882	28	98	17	18	55	55	141
Future Volume (vph)	23	175	90	116	882	28	98	17	18	55	55	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96	0.98	1.00		0.95	0.98		0.99	0.93	
Frt			0.850		0.995			0.923			0.892	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	1736	1815	0	1736	1657	0	1736	1516	0
Flt Permitted	0.082			0.579			0.443			0.733		
Satd. Flow (perm)	150	1827	1484	1038	1815	0	772	1657	0	1321	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115		2			19			113	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	12		9	9		12	27		5	5		27
Confl. Bikes (#/hr)						5						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 (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	24	186	96	123	938	30	104	18	19	59	59	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	186	96	123	968	0	104	37	0	59	209	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	56.1	56.1	10.5	57.0		9.8	23.8		9.6	23.6	
Total Split (%)	9.6%	56.1%	56.1%	10.5%	57.0%		9.8%	23.8%		9.6%	23.6%	
Maximum Green (s)	5.1	51.6	51.6	6.0	52.5		5.3	19.3		5.1	19.1	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	50.9	45.8	45.8	55.0	52.8		23.5	19.4		23.2	19.3	
Actuated g/C Ratio	0.55	0.50	0.50	0.60	0.57		0.25	0.21		0.25	0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.14	0.21	0.12	0.19	0.93		0.41	0.10		0.17	0.52	
Control Delay	9.5	14.1	2.1	8.7	37.0		31.7	20.9		26.3	21.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.5	14.1	2.1	8.7	37.0		31.7	20.9		26.3	21.5	
LOS	A	B	A	A	D		C	C		C	C	
Approach Delay		10.0			33.8			28.8			22.6	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)	5	61	0	29	460		43	8		24	47	
Queue Length 95th (ft)	15	101	18	53	#900		94	37		59	128	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	170	1027	885	664	1039		252	363		355	405	
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	0.14	0.18	0.11	0.19	0.93		0.41	0.10		0.17	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 92.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 27.7 Intersection LOS: C
Intersection Capacity Utilization 87.8% 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: 5: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	0.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	18	693	19	18	766
Future Vol, veh/h	6	18	693	19	18	766
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	51	51	86	86	86	86
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	12	35	806	22	21	891

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1739	806	0	0	806	0
Stage 1	806	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	97	385	-	-	814	-
Stage 1	443	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	94	385	-	-	814	-
Mov Cap-2 Maneuver	228	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	376	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	228	385	814	-
HCM Lane V/C Ratio	-	-	0.052	0.092	0.026	-
HCM Control Delay (s)	-	-	21.6	15.3	9.5	-
HCM Lane LOS	-	-	C	C	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	0.1	-

2022 Baseline Level of Service Analysis
School PM Peak-Hour

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1: SR-202 & NE 124th St

Willows Preparatory School (14-119)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	680	266	66	387	159	265	601	119	190	345	161
Future Volume (vph)	355	680	266	66	387	159	265	601	119	190	345	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.956				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3391	0	1770	3383	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3391	0	1770	3383	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			54				115			65
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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
Adj. Flow (vph)	382	731	286	71	416	171	285	646	128	204	371	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	382	1017	0	71	587	0	285	646	128	204	371	173
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	24.0	35.8		10.7	22.5		16.1	38.5	10.7	15.0	37.4	24.0
Total Split (%)	24.0%	35.8%		10.7%	22.5%		16.1%	38.5%	10.7%	15.0%	37.4%	24.0%
Maximum Green (s)	19.5	31.3		6.2	18.0		11.6	34.0	6.2	10.5	32.9	19.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	19.5	31.0		6.2	17.7		11.3	34.0	44.7	10.5	33.2	57.2
Actuated g/C Ratio	0.20	0.31		0.06	0.18		0.11	0.34	0.45	0.11	0.33	0.57
v/c Ratio	1.10	0.93		0.65	0.91		0.74	1.02	0.17	1.10	0.60	0.18
Control Delay	118.5	46.5		73.4	56.2		55.0	74.3	4.6	138.3	32.7	6.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	118.5	46.5		73.4	56.2		55.0	74.3	4.6	138.3	32.7	6.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	D		E	E		E	E	A	F	C	A
Approach Delay		66.2			58.1			60.7			55.5	
Approach LOS		E			E			E			E	
Queue Length 50th (ft)	~279	311		45	177		91	~425	5	~148	196	30
Queue Length 95th (ft)	#461	#441		#112	#277		#139	#654	37	#291	294	62
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	346	1105		109	655		399	635	773	186	620	936
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.92		0.65	0.90		0.71	1.02	0.17	1.10	0.60	0.18

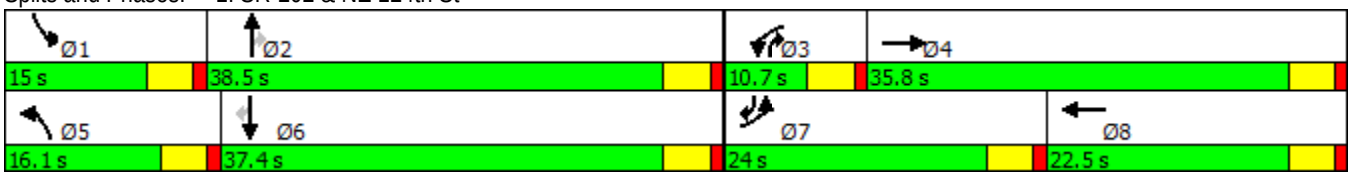
Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 99.7
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 61.2 — Intersection LOS: E
Intersection Capacity Utilization 92.6% — ICU Level of Service F
Analysis Period (min) 15

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

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

Splits and Phases: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	114	212	828	166	178	498
Future Volume (vph)	114	212	828	166	178	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98		0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.189	
Satd. Flow (perm)	1770	1548	1863	1546	352	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		51		182		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)		2		2	2	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	125	233	910	182	196	547
Shared Lane Traffic (%)						
Lane Group Flow (vph)	125	233	910	182	196	547
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	9.7	9.7	22.1	22.1	22.1	22.1
Actuated g/C Ratio	0.26	0.26	0.58	0.58	0.58	0.58
v/c Ratio	0.28	0.54	0.84	0.19	0.96	0.50

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Control Delay	12.0	13.7	23.4	2.2	79.3	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	13.7	23.4	2.2	79.3	9.8
LOS	B	B	C	A	E	A
Approach Delay	13.1		19.8			28.1
Approach LOS	B		B			C
Queue Length 50th (ft)	20	30	155	0	~49	67
Queue Length 95th (ft)	46	71	#436	23	#125	#182
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	842	763	1087	977	205	1087
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	0.15	0.31	0.84	0.19	0.96	0.50

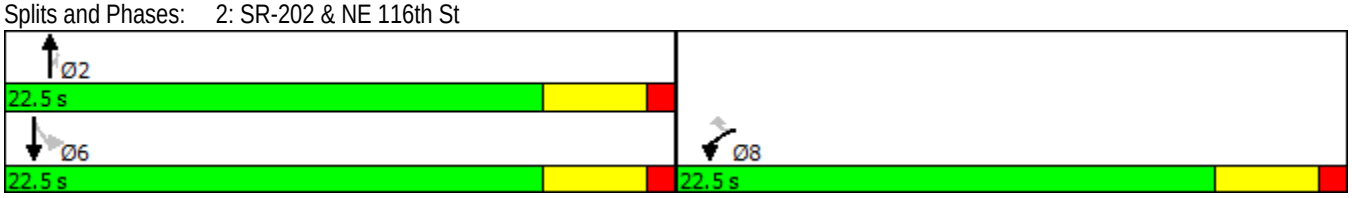
Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 37.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 21.6 Intersection LOS: C
Intersection Capacity Utilization 71.6% ICU Level of Service C
Analysis Period (min) 15

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

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

Splits and Phases: 2: SR-202 & NE 116th St



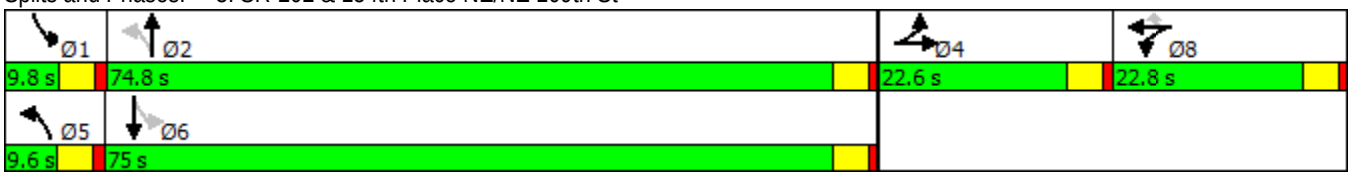
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	48	50	110	20	93	18	876	108	74	512	11
Future Volume (vph)	8	48	50	110	20	93	18	876	108	74	512	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.936				0.850		0.984			0.997	
Flt Protected		0.996			0.959		0.950			0.950		
Satd. Flow (prot)	0	1713	0	0	1786	1583	1770	1833	0	1770	1857	0
Flt Permitted		0.996			0.959		0.388			0.072		
Satd. Flow (perm)	0	1713	0	0	1786	1583	723	1833	0	134	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29				95		7			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	8	49	51	112	20	95	18	894	110	76	522	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	108	0	0	132	95	18	1004	0	76	533	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.6	22.6		22.8	22.8	22.8	9.6	74.8		9.8	75.0	
Total Split (%)	17.4%	17.4%		17.5%	17.5%	17.5%	7.4%	57.5%		7.5%	57.7%	
Maximum Green (s)	18.1	18.1		18.3	18.3	18.3	5.1	70.3		5.3	70.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		10.9			13.6	13.6	74.2	70.3		76.3	74.3	
Actuated g/C Ratio		0.09			0.12	0.12	0.64	0.61		0.66	0.64	
v/c Ratio		0.58			0.63	0.35	0.04	0.90		0.47	0.45	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		50.7			64.2	13.5	8.3	34.5		18.9	14.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		50.7			64.2	13.5	8.3	34.5		18.9	14.0	
LOS		D			E	B	A	C		B	B	
Approach Delay		50.7			43.0			34.0			14.7	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)		58			97	0	4	646		18	168	
Queue Length 95th (ft)		121			171	51	15	#1124		50	370	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		295			285	332	509	1126		163	1203	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.37			0.46	0.29	0.04	0.89		0.47	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 115.9
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 30.0 Intersection LOS: C
Intersection Capacity Utilization 81.9% 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: 3: SR-202 & 154th Place NE/NE 109th St



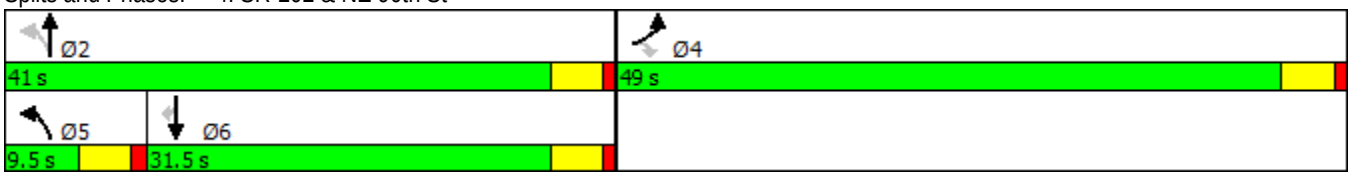
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	658	130	87	511	352	382
Future Volume (vph)	658	130	87	511	352	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.309			
Satd. Flow (perm)	1765	1493	576	1863	1863	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		84				398
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)	1	15				
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	708	140	94	549	378	411
Shared Lane Traffic (%)						
Lane Group Flow (vph)	708	140	94	549	378	411
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	49.0	49.0	9.5	41.0	31.5	31.5
Total Split (%)	54.4%	54.4%	10.6%	45.6%	35.0%	35.0%
Maximum Green (s)	44.5	44.5	5.0	36.5	27.0	27.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	36.9	36.9	36.8	36.8	29.5	29.5
Actuated g/C Ratio	0.45	0.45	0.44	0.44	0.36	0.36
v/c Ratio	0.90	0.20	0.29	0.66	0.57	0.51

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	36.6	6.5	18.2	24.6	28.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	6.5	18.2	24.6	28.7	5.6
LOS	D	A	B	C	C	A
Approach Delay	31.6			23.7	16.7	
Approach LOS	C			C	B	
Queue Length 50th (ft)	324	16	29	230	171	5
Queue Length 95th (ft)	#502	47	64	382	287	75
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	959	847	328	828	662	807
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	0.74	0.17	0.29	0.66	0.57	0.51

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 82.8
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 71.1% 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: 4: SR-202 & NE 90th St



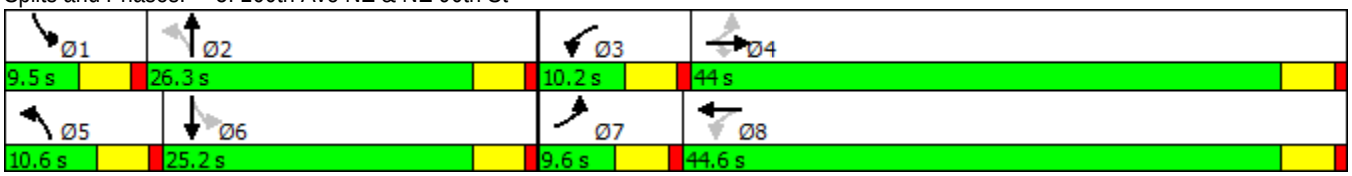
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	520	168	72	341	42	106	54	119	33	43	61
Future Volume (vph)	64	520	168	72	341	42	106	54	119	33	43	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97	1.00	1.00		0.94	0.98		0.99	0.95	
Frt			0.850		0.983			0.897			0.912	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1806	0	1752	1621	0	1752	1597	0
Flt Permitted	0.353			0.174			0.638			0.644		
Satd. Flow (perm)	646	1845	1528	321	1806	0	1111	1621	0	1179	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			175		9			117			64	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		2	2		7	27		4	4		27
Confl. Bikes (#/hr)			1			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 (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	67	542	175	75	355	44	110	56	124	34	45	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	542	175	75	399	0	110	180	0	34	109	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	44.0	44.0	10.2	44.6		10.6	26.3		9.5	25.2	
Total Split (%)	10.7%	48.9%	48.9%	11.3%	49.6%		11.8%	29.2%		10.6%	28.0%	
Maximum Green (s)	5.1	39.5	39.5	5.7	40.1		6.1	21.8		5.0	20.7	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	31.4	27.6	27.6	32.2	28.1		28.4	25.2		26.1	22.5	
Actuated g/C Ratio	0.42	0.37	0.37	0.43	0.38		0.38	0.34		0.35	0.30	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.19	0.80	0.26	0.30	0.59		0.23	0.29		0.08	0.21	
Control Delay	11.5	31.2	3.8	13.3	22.4		19.8	12.2		18.5	14.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.5	31.2	3.8	13.3	22.4		19.8	12.2		18.5	14.5	
LOS	B	C	A	B	C		B	B		B	B	
Approach Delay		23.4			20.9			15.1			15.4	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	17	237	0	19	152		35	24		10	17	
Queue Length 95th (ft)	35	354	36	39	234		81	84		33	63	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	350	1039	937	254	1036		477	622		452	524	
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	0.19	0.52	0.19	0.30	0.39		0.23	0.29		0.08	0.21	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 74.9
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 20.6 — Intersection LOS: C
Intersection Capacity Utilization 67.4% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	1.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	33	985	39	17	677
Future Vol, veh/h	20	33	985	39	17	677
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	90	90
Heavy Vehicles, %	6	6	2	2	2	2
Mvmt Flow	40	66	1107	44	19	752

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1897	1107	0	0	1107	0
Stage 1	1107	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	75	251	-	-	631	-
Stage 1	311	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	251	-	-	631	-
Mov Cap-2 Maneuver	197	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	427	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	197	251	631	-
HCM Lane V/C Ratio	-	-	0.203	0.263	0.03	-
HCM Control Delay (s)	-	-	27.9	24.4	10.9	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.7	1	0.1	-

2022 Baseline Level of Service Analysis
PM Peak-Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	866	324	89	417	203	278	702	126	154	419	115
Future Volume (vph)	455	866	324	89	417	203	278	702	126	154	419	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.959			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3374	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3374	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			59				95			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	464	884	331	91	426	207	284	716	129	157	428	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	1215	0	91	633	0	284	716	129	157	428	117
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	33.4	45.7		11.4	23.7		19.0	47.9	11.4	15.0	43.9	33.4
Total Split (%)	27.8%	38.1%		9.5%	19.8%		15.8%	39.9%	9.5%	12.5%	36.6%	27.8%
Maximum Green (s)	28.9	41.2		6.9	19.2		14.5	43.4	6.9	10.5	39.4	28.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.9	41.2		6.9	19.2		13.6	43.4	54.8	10.5	40.3	73.7
Actuated g/C Ratio	0.24	0.34		0.06	0.16		0.11	0.36	0.46	0.09	0.34	0.61
v/c Ratio	1.09	1.02		0.90	1.08		0.73	1.06	0.17	1.02	0.68	0.12
Control Delay	112.9	69.1		122.3	102.6		62.9	90.4	6.8	131.9	41.4	5.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.9	69.1		122.3	102.6		62.9	90.4	6.8	131.9	41.4	5.7
LOS	F	E		F	F		E	F	A	F	D	A
Approach Delay		81.2			105.1			73.9			55.7	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	~404	~512		71	~266		110	~611	14	~126	288	18
Queue Length 95th (ft)	#611	#651		#174	#387		157	#845	50	#267	408	43
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	426	1190		101	588		414	673	774	154	625	992
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.02		0.90	1.08		0.69	1.06	0.17	1.02	0.68	0.12

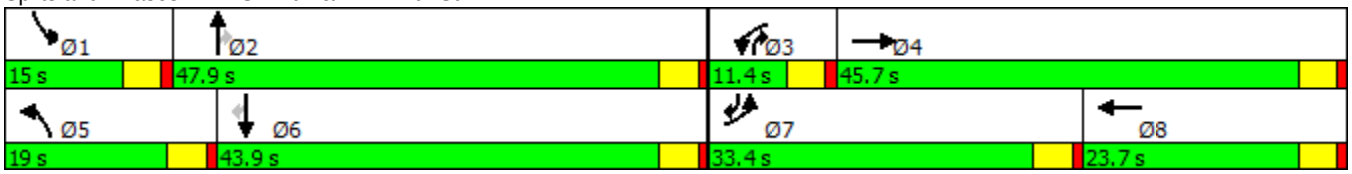
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 79.1 Intersection LOS: E
Intersection Capacity Utilization 103.7% ICU Level of Service G
Analysis Period (min) 15

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

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

Splits and Phases: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	275	855	155	268	565
Future Volume (vph)	96	275	855	155	268	565
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.255	
Satd. Flow (perm)	1765	1583	1863	1583	475	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		210		160		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	99	284	881	160	276	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	284	881	160	276	582
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	67.5	67.5	67.5	67.5
Total Split (%)	25.0%	25.0%	75.0%	75.0%	75.0%	75.0%
Maximum Green (s)	18.0	18.0	63.0	63.0	63.0	63.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	10.8	10.8	59.8	59.8	59.8	59.8
Actuated g/C Ratio	0.14	0.14	0.75	0.75	0.75	0.75
v/c Ratio	0.41	0.72	0.63	0.13	0.78	0.42
Control Delay	37.9	21.2	7.9	1.0	26.3	5.2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	21.2	7.9	1.0	26.3	5.2
LOS	D	C	A	A	C	A
Approach Delay	25.5		6.9			12.0
Approach LOS	C		A			B
Queue Length 50th (ft)	48	36	150	0	59	76
Queue Length 95th (ft)	94	114	368	16	#284	183
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	406	525	1488	1296	379	1488
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	0.24	0.54	0.59	0.12	0.73	0.39

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 79.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 11.9 Intersection LOS: B
Intersection Capacity Utilization 76.4% 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: 2: SR-202 & NE 116th St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	78	55	74	46	106	42	893	87	77	562	23
Future Volume (vph)	15	78	55	74	46	106	42	893	87	77	562	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.98		1.00				
Frt		0.949				0.850		0.987			0.994	
Flt Protected		0.995			0.970		0.950			0.950		
Satd. Flow (prot)	0	1737	0	0	1807	1583	1770	1835	0	1770	1852	0
Flt Permitted		0.995			0.970		0.293			0.074		
Satd. Flow (perm)	0	1737	0	0	1799	1548	546	1835	0	138	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				109		6			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			3	3					1	1		
Confl. Bikes (#/hr)			2			1			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	15	80	57	76	47	109	43	921	90	79	579	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	152	0	0	123	109	43	1011	0	79	603	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5	22.5	9.6	55.5		9.5	55.4	
Total Split (%)	20.5%	20.5%		20.5%	20.5%	20.5%	8.7%	50.5%		8.6%	50.4%	
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	5.1	51.0		5.0	50.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		12.4			11.9	11.9	55.7	51.8		56.5	53.7	
Actuated g/C Ratio		0.13			0.12	0.12	0.57	0.53		0.58	0.55	
v/c Ratio		0.63			0.55	0.38	0.11	1.03		0.48	0.59	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		46.9			51.2	12.2	10.3	62.8		21.7	20.1	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		46.9			51.2	12.2	10.3	62.8		21.7	20.1	
LOS		D			D	B	B	E		C	C	
Approach Delay		46.9			32.9			60.6			20.3	
Approach LOS		D			C			E			C	
Queue Length 50th (ft)		77			74	0	10	~704		18	258	
Queue Length 95th (ft)		149			138	48	30	#1107		#58	461	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		344			338	378	378	981		165	1025	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.44			0.36	0.29	0.11	1.03		0.48	0.59	

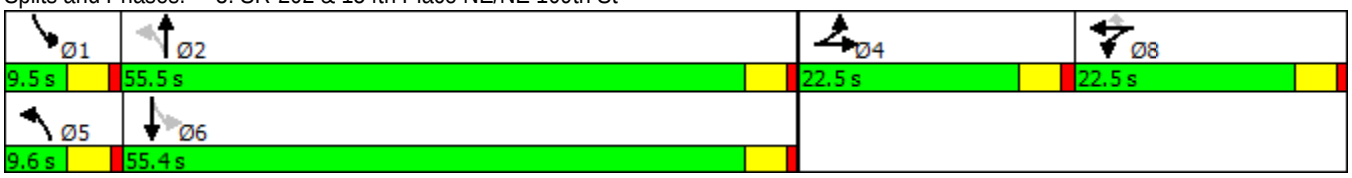
Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 97.1
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 43.6 Intersection LOS: D
Intersection Capacity Utilization 87.1% ICU Level of Service E
Analysis Period (min) 15

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

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

Splits and Phases: 3: SR-202 & 154th Place NE/NE 109th St



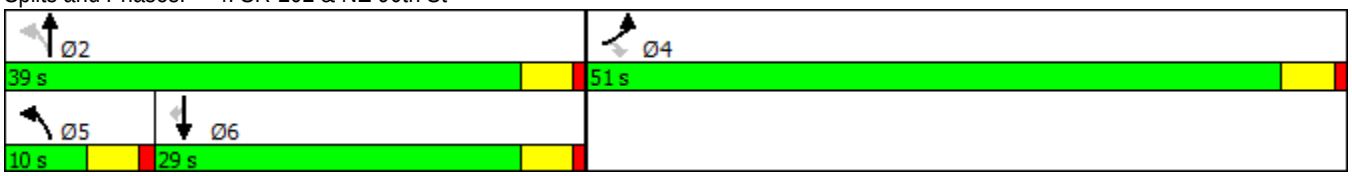
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	782	117	95	544	359	358
Future Volume (vph)	782	117	95	544	359	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.96				
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.269			
Satd. Flow (perm)	1770	1521	501	1863	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		67				351
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		7				
Confl. Bikes (#/hr)		3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	815	122	99	567	374	373
Shared Lane Traffic (%)						
Lane Group Flow (vph)	815	122	99	567	374	373
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	51.0	51.0	10.0	39.0	29.0	29.0
Total Split (%)	56.7%	56.7%	11.1%	43.3%	32.2%	32.2%
Maximum Green (s)	46.5	46.5	5.5	34.5	24.5	24.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	42.3	42.3	34.7	34.7	26.9	26.9
Actuated g/C Ratio	0.49	0.49	0.40	0.40	0.31	0.31
v/c Ratio	0.94	0.16	0.35	0.75	0.64	0.51

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	40.1	6.3	21.5	31.1	34.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	6.3	21.5	31.1	34.1	6.7
LOS	D	A	C	C	C	A
Approach Delay	35.7			29.7	20.4	
Approach LOS	D			C	C	
Queue Length 50th (ft)	394	15	36	280	193	9
Queue Length 95th (ft)	#650	42	70	#451	#305	80
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	962	857	283	751	583	736
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	0.85	0.14	0.35	0.75	0.64	0.51

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 86
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 29.1 Intersection LOS: C
Intersection Capacity Utilization 79.5% 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: 4: SR-202 & NE 90th St



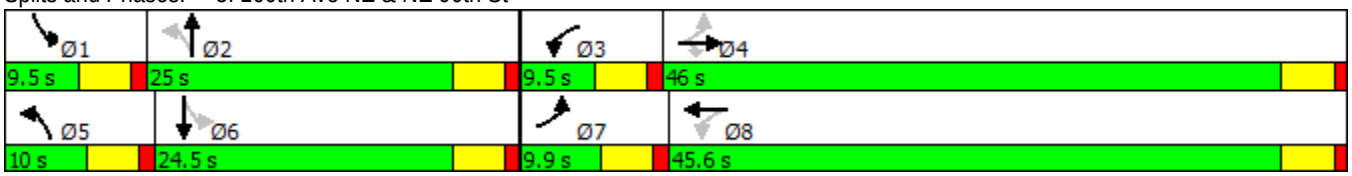
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	684	238	59	269	34	126	78	146	32	61	46
Future Volume (vph)	110	684	238	59	269	34	126	78	146	32	61	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.96		1.00		0.95	0.96		0.98	0.96	
Frt			0.850		0.983			0.902			0.936	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1841	0	1787	1635	0	1787	1698	0
Flt Permitted	0.458			0.110			0.607			0.550		
Satd. Flow (perm)	854	1881	1533	207	1841	0	1080	1635	0	1013	1698	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			256		9			97			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		8	8		7	26		14	14		26
Confl. Bikes (#/hr)			2			1			1			
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%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	118	735	256	63	289	37	135	84	157	34	66	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	735	256	63	326	0	135	241	0	34	115	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.9	46.0	46.0	9.5	45.6		10.0	25.0		9.5	24.5	
Total Split (%)	11.0%	51.1%	51.1%	10.6%	50.7%		11.1%	27.8%		10.6%	27.2%	
Maximum Green (s)	5.4	41.5	41.5	5.0	41.1		5.5	20.5		5.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	40.9	36.8	36.8	40.3	36.5		28.3	25.2		25.5	20.4	
Actuated g/C Ratio	0.49	0.44	0.44	0.48	0.44		0.34	0.30		0.30	0.24	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.25	0.89	0.31	0.32	0.40		0.33	0.43		0.10	0.26	
Control Delay	10.7	36.3	3.1	13.6	17.5		24.3	20.0		21.2	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	36.3	3.1	13.6	17.5		24.3	20.0		21.2	22.0	
LOS	B	D	A	B	B		C	C		C	C	
Approach Delay		25.9			16.9			21.5			21.8	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	29	357	0	15	114		55	70		13	36	
Queue Length 95th (ft)	54	#575	40	32	180		99	146		34	82	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	478	949	900	195	924		412	560		355	441	
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	0.25	0.77	0.28	0.32	0.35		0.33	0.43		0.10	0.26	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 83.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 77.1% 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: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	0.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	20	1106	24	6	832
Future Vol, veh/h	18	20	1106	24	6	832
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	98	98	92	92
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	36	40	1129	24	7	904

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2046	1129	0	0	1129	0
Stage 1	1129	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	62	251	-	-	619	-
Stage 1	312	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	61	251	-	-	619	-
Mov Cap-2 Maneuver	185	-	-	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	389	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.4	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	185	251	619	-
HCM Lane V/C Ratio	-	-	0.195	0.159	0.011	-
HCM Control Delay (s)	-	-	29.1	22	10.9	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.7	0.6	0	-

2022 Future Level of Service Analysis
AM Peak-Hour

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1: SR-202 & NE 124th St

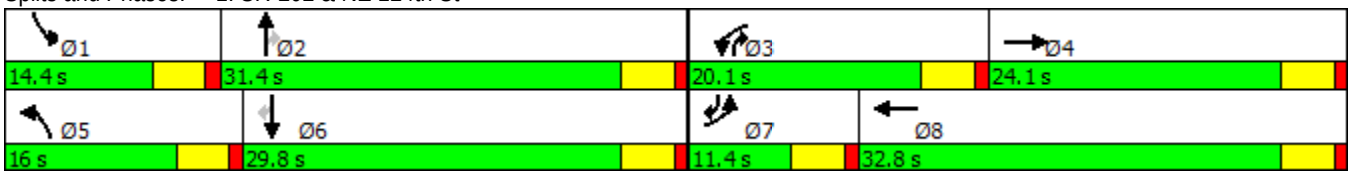
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	303	160	217	899	132	373	304	67	78	454	315
Future Volume (vph)	101	303	160	217	899	132	373	304	67	78	454	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3291	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1736	3291	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			19				73			127
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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%
Adj. Flow (vph)	105	316	167	226	936	138	389	317	70	81	473	328
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	483	0	226	1074	0	389	317	70	81	473	328
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	11.4	24.1		20.1	32.8		16.0	31.4	20.1	14.4	29.8	11.4
Total Split (%)	12.7%	26.8%		22.3%	36.4%		17.8%	34.9%	22.3%	16.0%	33.1%	12.7%
Maximum Green (s)	6.9	19.6		15.6	28.3		11.5	26.9	15.6	9.9	25.3	6.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	6.9	20.6		14.6	28.3		11.5	30.2	49.3	8.6	25.3	36.7
Actuated g/C Ratio	0.08	0.23		0.16	0.31		0.13	0.34	0.55	0.10	0.28	0.41
v/c Ratio	0.79	0.58		0.80	0.99		0.90	0.52	0.08	0.49	0.92	0.46
Control Delay	79.8	27.9		58.5	56.9		65.2	29.1	2.9	48.4	57.5	14.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	79.8	27.9		58.5	56.9		65.2	29.1	2.9	48.4	57.5	14.0
LOS	E	C		E	E		E	C	A	D	E	B
Approach Delay		37.2			57.2			44.8			40.5	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	60	103		123	313		113	151	0	44	260	77
Queue Length 95th (ft)	#149	156		#231	#458		#196	238	18	90	#445	150
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	133	828		300	1083		430	614	900	190	513	708
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.58		0.75	0.99		0.90	0.52	0.08	0.43	0.92	0.46

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 47.0 — Intersection LOS: D
Intersection Capacity Utilization 84.2% — 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: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	304	268	484	52	92	754
Future Volume (vph)	304	268	484	52	92	754
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.394	
Satd. Flow (perm)	1736	1553	1827	1553	720	1827
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		282		55		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	320	282	509	55	97	794
Shared Lane Traffic (%)						
Lane Group Flow (vph)	320	282	509	55	97	794
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	31.0	31.0	59.0	59.0	59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%	65.6%	65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5	54.5	54.5	54.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	17.4	17.4	34.2	34.2	34.2	34.2
Actuated g/C Ratio	0.28	0.28	0.56	0.56	0.56	0.56
v/c Ratio	0.65	0.44	0.50	0.06	0.24	0.78
Control Delay	29.2	5.7	10.6	2.4	9.3	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	29.2	5.7	10.6	2.4	9.3	17.5
LOS	C	A	B	A	A	B
Approach Delay	18.2		9.8			16.6
Approach LOS	B		A			B
Queue Length 50th (ft)	98	0	96	0	15	192
Queue Length 95th (ft)	246	56	217	14	49	432
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	831	890	1552	1328	611	1552
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	0.39	0.32	0.33	0.04	0.16	0.51

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 61.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 15.2 — Intersection LOS: B
Intersection Capacity Utilization 64.0% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: SR-202 & NE 116th St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	44	239	227	43	111	24	426	75	29	968	46
Future Volume (vph)	5	44	239	227	43	111	24	426	75	29	968	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00	0.97		1.00				
Frt		0.888				0.850		0.978			0.993	
Flt Protected		0.999			0.960		0.950			0.950		
Satd. Flow (prot)	0	1600	0	0	1771	1568	1752	1798	0	1752	1832	0
Flt Permitted		0.999			0.960		0.048			0.355		
Satd. Flow (perm)	0	1600	0	0	1767	1515	89	1798	0	655	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135				76		10			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)			1			6						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	5	45	246	234	44	114	25	439	77	30	998	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	296	0	0	278	114	25	516	0	30	1045	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	23.0	23.0		29.0	29.0	29.0	9.6	88.4		9.6	88.4	
Total Split (%)	15.3%	15.3%		19.3%	19.3%	19.3%	6.4%	58.9%		6.4%	58.9%	
Maximum Green (s)	18.5	18.5		24.5	24.5	24.5	5.1	83.9		5.1	83.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		17.8			24.4	24.4	87.0	84.0		87.0	84.0	
Actuated g/C Ratio		0.12			0.17	0.17	0.60	0.58		0.60	0.58	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.94			0.94	0.36	0.23	0.49		0.07	0.99	
Control Delay		72.0			98.1	24.4	15.7	20.5		11.4	55.1	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		72.0			98.1	24.4	15.7	20.5		11.4	55.1	
LOS		E			F	C	B	C		B	E	
Approach Delay		72.0			76.7			20.2			53.9	
Approach LOS		E			E			C			D	
Queue Length 50th (ft)		165			274	32	9	296		11	~1078	
Queue Length 95th (ft)		#354			#459	94	21	397		24	#1346	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		321			299	319	111	1044		430	1060	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.92			0.93	0.36	0.23	0.49		0.07	0.99	

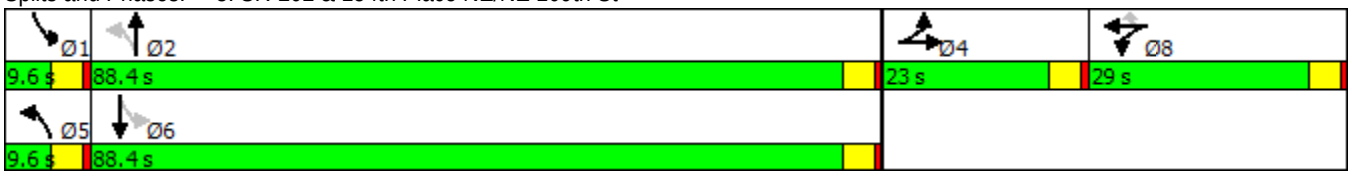
Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 145.3
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 52.2 Intersection LOS: D
Intersection Capacity Utilization 97.2% ICU Level of Service F
Analysis Period (min) 15

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

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

Splits and Phases: 3: SR-202 & 154th Place NE/NE 109th St



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	189	42	72	275	658	982
Future Volume (vph)	189	42	72	275	658	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	1845	1568
Flt Permitted	0.950		0.280			
Satd. Flow (perm)	1752	1471	517	1845	1845	1533
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		43				937
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		17				
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	195	43	74	284	678	1012
Shared Lane Traffic (%)						
Lane Group Flow (vph)	195	43	74	284	678	1012
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	22.6	22.6	9.6	67.4	57.8	57.8
Total Split (%)	25.1%	25.1%	10.7%	74.9%	64.2%	64.2%
Maximum Green (s)	18.1	18.1	5.1	62.9	53.3	53.3
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	14.6	14.6	65.8	65.8	58.0	58.0
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.65	0.65

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
v/c Ratio	0.68	0.16	0.16	0.21	0.57	0.76
Control Delay	47.2	11.1	4.7	4.5	12.3	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	11.1	4.7	4.5	12.3	5.8
LOS	D	B	A	A	B	A
Approach Delay	40.7			4.6	8.5	
Approach LOS	D			A	A	
Queue Length 50th (ft)	101	0	10	42	204	15
Queue Length 95th (ft)	170	27	24	78	340	93
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	355	332	451	1358	1196	1323
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	0.55	0.13	0.16	0.21	0.57	0.76

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 11.2 — Intersection LOS: B
Intersection Capacity Utilization 72.5% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: SR-202 & NE 90th St

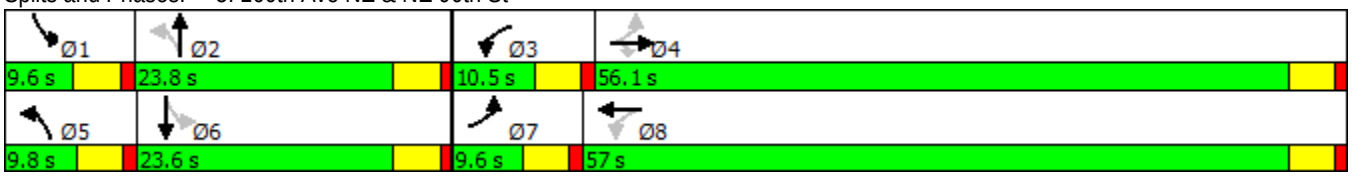
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	186	90	116	891	28	98	17	18	55	55	141
Future Volume (vph)	23	186	90	116	891	28	98	17	18	55	55	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96	0.98	1.00		0.95	0.98		0.99	0.93	
Frt			0.850		0.995			0.923			0.892	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	1736	1815	0	1736	1657	0	1736	1516	0
Flt Permitted	0.082			0.568			0.443			0.733		
Satd. Flow (perm)	150	1827	1484	1019	1815	0	772	1657	0	1321	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115		2			19			113	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	12		9	9		12	27		5	5		27
Confl. Bikes (#/hr)						5						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 (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	24	198	96	123	948	30	104	18	19	59	59	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	198	96	123	978	0	104	37	0	59	209	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	56.1	56.1	10.5	57.0		9.8	23.8		9.6	23.6	
Total Split (%)	9.6%	56.1%	56.1%	10.5%	57.0%		9.8%	23.8%		9.6%	23.6%	
Maximum Green (s)	5.1	51.6	51.6	6.0	52.5		5.3	19.3		5.1	19.1	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	50.9	45.8	45.8	55.0	52.8		23.5	19.4		23.2	19.3	
Actuated g/C Ratio	0.55	0.50	0.50	0.60	0.57		0.25	0.21		0.25	0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.14	0.22	0.12	0.19	0.94		0.41	0.10		0.17	0.52	
Control Delay	9.5	14.2	2.1	8.7	38.4		31.7	20.9		26.3	21.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.5	14.2	2.1	8.7	38.4		31.7	20.9		26.3	21.5	
LOS	A	B	A	A	D		C	C		C	C	
Approach Delay		10.2			35.1			28.8			22.6	
Approach LOS		B			D			C			C	
Queue Length 50th (ft)	5	65	0	29	469		43	8		24	47	
Queue Length 95th (ft)	15	107	18	53	#914		94	37		59	128	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	170	1027	885	654	1039		252	363		355	405	
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	0.14	0.19	0.11	0.19	0.94		0.41	0.10		0.17	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 92.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 28.5 Intersection LOS: C
Intersection Capacity Utilization 88.2% 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: 5: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	5.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	70	693	97	82	766
Future Vol, veh/h	70	70	693	97	82	766
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	51	51	86	86	86	86
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	137	137	806	113	95	891

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1887	806	0	0	806	0
Stage 1	806	-	-	-	-	-
Stage 2	1081	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	~ 78	385	-	-	814	-
Stage 1	443	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 69	385	-	-	814	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	290	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	40.6	0	1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	190	385	814	-
HCM Lane V/C Ratio	-	-	0.722	0.357	0.117	-
HCM Control Delay (s)	-	-	61.8	19.4	10	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	4.6	1.6	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2022 Future Level of Service Analysis
School PM Peak-Hour

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1: SR-202 & NE 124th St

Willows Preparatory School (14-119)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	680	282	80	387	159	283	608	135	190	351	161
Future Volume (vph)	355	680	282	80	387	159	283	608	135	190	351	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.956				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3383	0	1770	3383	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3383	0	1770	3383	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		66			54				115			65
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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
Adj. Flow (vph)	382	731	303	86	416	171	304	654	145	204	377	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	382	1034	0	86	587	0	304	654	145	204	377	173
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	24.0	35.8		10.7	22.5		16.1	38.5	10.7	15.0	37.4	24.0
Total Split (%)	24.0%	35.8%		10.7%	22.5%		16.1%	38.5%	10.7%	15.0%	37.4%	24.0%
Maximum Green (s)	19.5	31.3		6.2	18.0		11.6	34.0	6.2	10.5	32.9	19.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	19.5	31.2		6.2	17.9		11.4	34.0	44.7	10.5	33.1	57.1
Actuated g/C Ratio	0.20	0.31		0.06	0.18		0.11	0.34	0.45	0.11	0.33	0.57
v/c Ratio	1.11	0.94		0.79	0.90		0.78	1.03	0.19	1.10	0.61	0.19
Control Delay	119.2	47.8		90.4	55.2		57.8	78.2	5.5	139.1	33.2	6.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.2	47.8		90.4	55.2		57.8	78.2	5.5	139.1	33.2	6.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	D		F	E		E	E	A	F	C	A
Approach Delay		67.1			59.7			63.0			55.8	
Approach LOS		E			E			E			E	
Queue Length 50th (ft)	~279	317		55	177		98	~450	10	~148	201	30
Queue Length 95th (ft)	#461	#451		#140	#277		#157	#665	46	#291	300	62
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	345	1105		109	653		398	633	771	185	617	932
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.94		0.79	0.90		0.76	1.03	0.19	1.10	0.61	0.19

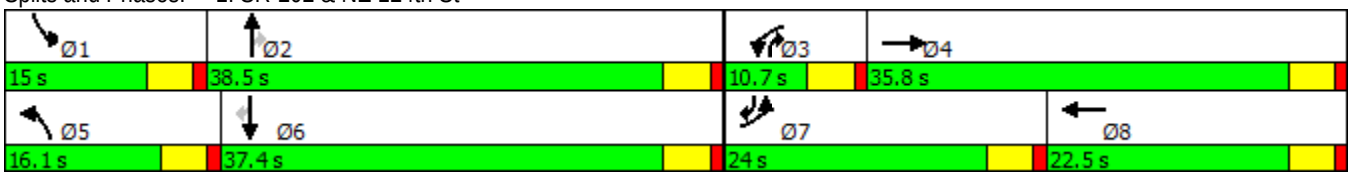
Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 99.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 62.5 — Intersection LOS: E
Intersection Capacity Utilization 93.0% — ICU Level of Service F
Analysis Period (min) 15

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

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

Splits and Phases: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	114	216	868	166	183	544
Future Volume (vph)	114	216	868	166	183	544
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98		0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.189	
Satd. Flow (perm)	1770	1548	1863	1546	352	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		44		182		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)		2		2	2	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	125	237	954	182	201	598
Shared Lane Traffic (%)						
Lane Group Flow (vph)	125	237	954	182	201	598
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	10.0	10.0	22.1	22.1	22.1	22.1
Actuated g/C Ratio	0.26	0.26	0.58	0.58	0.58	0.58
v/c Ratio	0.27	0.54	0.88	0.19	0.99	0.55

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Control Delay	11.8	14.1	27.6	2.2	86.9	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	14.1	27.6	2.2	86.9	11.6
LOS	B	B	C	A	F	B
Approach Delay	13.3		23.6			30.5
Approach LOS	B		C			C
Queue Length 50th (ft)	20	32	~191	0	~52	78
Queue Length 95th (ft)	46	74	#468	23	#131	#252
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	838	756	1080	972	204	1080
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	0.15	0.31	0.88	0.19	0.99	0.55

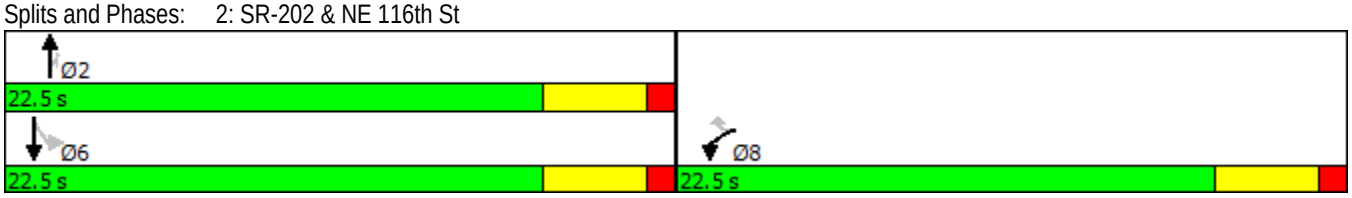
Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 38.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 24.4 Intersection LOS: C
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15

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

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

Splits and Phases: 2: SR-202 & NE 116th St



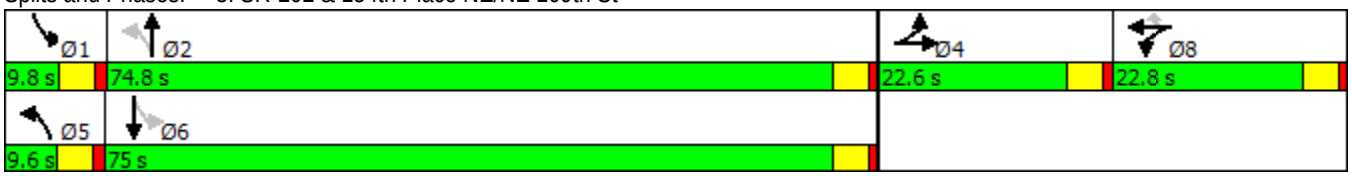
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	48	50	110	20	99	18	910	108	80	552	11
Future Volume (vph)	8	48	50	110	20	99	18	910	108	80	552	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.936				0.850		0.984			0.997	
Flt Protected		0.996			0.959		0.950			0.950		
Satd. Flow (prot)	0	1713	0	0	1786	1583	1770	1833	0	1770	1857	0
Flt Permitted		0.996			0.959		0.369			0.052		
Satd. Flow (perm)	0	1713	0	0	1786	1583	687	1833	0	97	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29				101		7			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	8	49	51	112	20	101	18	929	110	82	563	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	108	0	0	132	101	18	1039	0	82	574	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.6	22.6		22.8	22.8	22.8	9.6	74.8		9.8	75.0	
Total Split (%)	17.4%	17.4%		17.5%	17.5%	17.5%	7.4%	57.5%		7.5%	57.7%	
Maximum Green (s)	18.1	18.1		18.3	18.3	18.3	5.1	70.3		5.3	70.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		10.9			13.7	13.7	75.7	70.5		78.8	76.8	
Actuated g/C Ratio		0.09			0.12	0.12	0.64	0.59		0.66	0.65	
v/c Ratio		0.59			0.64	0.37	0.04	0.95		0.59	0.48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		51.1			65.3	13.4	8.3	41.8		34.2	14.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		51.1			65.3	13.4	8.3	41.8		34.2	14.5	
LOS		D			E	B	A	D		C	B	
Approach Delay		51.1			42.8			41.2			17.0	
Approach LOS		D			D			D			B	
Queue Length 50th (ft)		58			97	0	4	699		19	187	
Queue Length 95th (ft)		121			171	52	15	#1187		#95	410	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		287			276	330	485	1094		139	1203	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.38			0.48	0.31	0.04	0.95		0.59	0.48	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 118.5
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 34.2 Intersection LOS: C
Intersection Capacity Utilization 83.9% 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: 3: SR-202 & 154th Place NE/NE 109th St



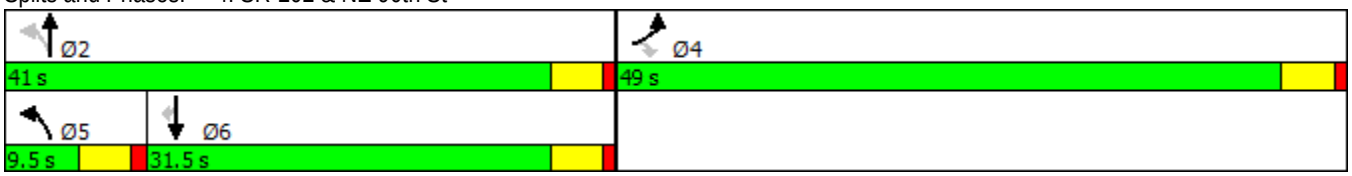
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	664	130	87	539	385	389
Future Volume (vph)	664	130	87	539	385	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.270			
Satd. Flow (perm)	1765	1493	503	1863	1863	1550
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		84				369
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)	1	15				
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	714	140	94	580	414	418
Shared Lane Traffic (%)						
Lane Group Flow (vph)	714	140	94	580	414	418
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	49.0	49.0	9.5	41.0	31.5	31.5
Total Split (%)	54.4%	54.4%	10.6%	45.6%	35.0%	35.0%
Maximum Green (s)	44.5	44.5	5.0	36.5	27.0	27.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	37.2	37.2	36.8	36.8	29.5	29.5
Actuated g/C Ratio	0.45	0.45	0.44	0.44	0.35	0.35
v/c Ratio	0.90	0.20	0.31	0.70	0.63	0.53

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	36.9	6.5	18.9	26.2	30.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	6.5	18.9	26.2	30.5	7.2
LOS	D	A	B	C	C	A
Approach Delay	31.9			25.2	18.8	
Approach LOS	C			C	B	
Queue Length 50th (ft)	329	16	30	252	195	19
Queue Length 95th (ft)	#516	47	64	412	#323	100
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	955	844	299	824	660	787
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	0.75	0.17	0.31	0.70	0.63	0.53

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 83.1
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 25.4 Intersection LOS: C
Intersection Capacity Utilization 73.1% 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: 4: SR-202 & NE 90th St



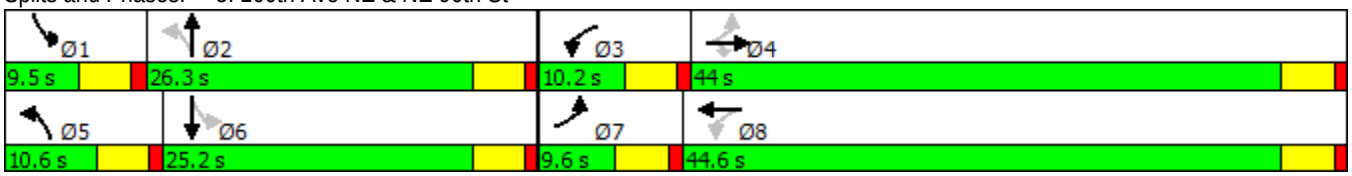
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	526	168	72	348	42	106	54	119	33	43	61
Future Volume (vph)	64	526	168	72	348	42	106	54	119	33	43	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97		1.00		0.94	0.98		0.99	0.95	
Frt			0.850		0.984			0.897			0.912	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1845	1568	1752	1808	0	1752	1621	0	1752	1597	0
Flt Permitted	0.346			0.170			0.638			0.644		
Satd. Flow (perm)	634	1845	1528	314	1808	0	1111	1621	0	1179	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			175		9			117			64	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		2	2		7	27		4	4		27
Confl. Bikes (#/hr)			1			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 (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	67	548	175	75	363	44	110	56	124	34	45	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	548	175	75	407	0	110	180	0	34	109	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	44.0	44.0	10.2	44.6		10.6	26.3		9.5	25.2	
Total Split (%)	10.7%	48.9%	48.9%	11.3%	49.6%		11.8%	29.2%		10.6%	28.0%	
Maximum Green (s)	5.1	39.5	39.5	5.7	40.1		6.1	21.8		5.0	20.7	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	31.6	27.9	27.9	32.5	28.4		28.4	25.2		26.1	22.5	
Actuated g/C Ratio	0.42	0.37	0.37	0.43	0.38		0.38	0.34		0.35	0.30	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.19	0.80	0.26	0.30	0.59		0.23	0.29		0.08	0.21	
Control Delay	11.5	31.3	3.8	13.4	22.5		19.9	12.3		18.5	14.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.5	31.3	3.8	13.4	22.5		19.9	12.3		18.5	14.5	
LOS	B	C	A	B	C		B	B		B	B	
Approach Delay		23.5			21.1			15.2			15.5	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	17	241	0	19	156		35	24		10	17	
Queue Length 95th (ft)	35	360	36	39	240		81	84		33	63	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	347	1035	934	252	1034		475	621		450	522	
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	0.19	0.53	0.19	0.30	0.39		0.23	0.29		0.08	0.21	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 20.7 — Intersection LOS: C
Intersection Capacity Utilization 67.7% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: 160th Ave NE & NE 90th St



Intersection

Int Delay, s/veh 7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	71	74	985	83	53	677
Future Vol, veh/h	71	74	985	83	53	677
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	89	89	90	90
Heavy Vehicles, %	6	6	2	2	2	2
Mvmt Flow	142	148	1107	93	59	752

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1977	1107	0	0	1107	0
Stage 1	1107	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	~ 66	251	-	-	631	-
Stage 1	311	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 60	251	-	-	631	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	365	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	55.8	0	0.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	180	251	631	-
HCM Lane V/C Ratio	-	-	0.789	0.59	0.093	-
HCM Control Delay (s)	-	-	74.2	38.1	11.3	-
HCM Lane LOS	-	-	F	E	B	-
HCM 95th %tile Q(veh)	-	-	5.3	3.4	0.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2022 Future Level of Service Analysis
PM Peak-Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	866	332	96	417	203	287	705	133	154	422	115
Future Volume (vph)	455	866	332	96	417	203	287	705	133	154	422	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.958			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3370	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3370	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			59				95			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	464	884	339	98	426	207	293	719	136	157	431	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	1223	0	98	633	0	293	719	136	157	431	117
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	33.4	45.7		11.4	23.7		19.0	47.9	11.4	15.0	43.9	33.4
Total Split (%)	27.8%	38.1%		9.5%	19.8%		15.8%	39.9%	9.5%	12.5%	36.6%	27.8%
Maximum Green (s)	28.9	41.2		6.9	19.2		14.5	43.4	6.9	10.5	39.4	28.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.9	41.2		6.9	19.2		13.7	43.4	54.8	10.5	40.2	73.6
Actuated g/C Ratio	0.24	0.34		0.06	0.16		0.11	0.36	0.46	0.09	0.34	0.61
v/c Ratio	1.09	1.03		0.97	1.08		0.75	1.07	0.18	1.02	0.69	0.12
Control Delay	112.9	70.9		138.6	102.6		63.8	91.8	7.3	131.9	41.7	5.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.9	70.9		138.6	102.6		63.8	91.8	7.3	131.9	41.7	5.7
LOS	F	E		F	F		E	F	A	F	D	A
Approach Delay		82.4			107.4			74.6			55.8	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	~404	~518		77	~266		113	~616	17	~126	290	18
Queue Length 95th (ft)	#611	#657		#189	#387		161	#851	54	#267	411	43
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	426	1190		101	588		414	673	774	154	623	991
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.03		0.97	1.08		0.71	1.07	0.18	1.02	0.69	0.12

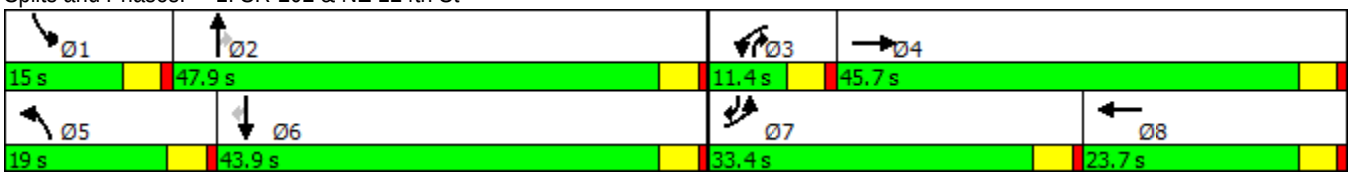
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 80.2 — Intersection LOS: F
Intersection Capacity Utilization 103.9% — ICU Level of Service G
Analysis Period (min) 15

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

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

Splits and Phases: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	277	876	155	270	587
Future Volume (vph)	96	277	876	155	270	587
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.248	
Satd. Flow (perm)	1765	1583	1863	1583	462	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		202		160		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	99	286	903	160	278	605
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	286	903	160	278	605
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	67.5	67.5	67.5	67.5
Total Split (%)	25.0%	25.0%	75.0%	75.0%	75.0%	75.0%
Maximum Green (s)	18.0	18.0	63.0	63.0	63.0	63.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	11.2	11.2	64.1	64.1	64.1	64.1
Actuated g/C Ratio	0.13	0.13	0.76	0.76	0.76	0.76
v/c Ratio	0.42	0.74	0.64	0.13	0.79	0.43
Control Delay	38.2	23.4	8.1	0.9	28.4	5.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	23.4	8.1	0.9	28.4	5.3
LOS	D	C	A	A	C	A
Approach Delay	27.2		7.1			12.6
Approach LOS	C		A			B
Queue Length 50th (ft)	48	41	162	0	65	83
Queue Length 95th (ft)	94	122	387	16	#292	194
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	378	497	1415	1241	350	1415
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	0.26	0.58	0.64	0.13	0.79	0.43

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 12.5 Intersection LOS: B
Intersection Capacity Utilization 77.6% 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: 2: SR-202 & NE 116th St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	78	55	74	46	109	42	911	87	80	581	23
Future Volume (vph)	15	78	55	74	46	109	42	911	87	80	581	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.98		1.00				
Frt		0.949				0.850		0.987			0.994	
Flt Protected		0.995			0.970		0.950			0.950		
Satd. Flow (prot)	0	1737	0	0	1807	1583	1770	1835	0	1770	1852	0
Flt Permitted		0.995			0.970		0.278			0.074		
Satd. Flow (perm)	0	1737	0	0	1799	1548	518	1835	0	138	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				112		6			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			3	3					1	1		
Confl. Bikes (#/hr)			2			1			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	15	80	57	76	47	112	43	939	90	82	599	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	152	0	0	123	112	43	1029	0	82	623	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5	22.5	9.6	55.5		9.5	55.4	
Total Split (%)	20.5%	20.5%		20.5%	20.5%	20.5%	8.7%	50.5%		8.6%	50.4%	
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	5.1	51.0		5.0	50.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		12.4			11.9	11.9	55.7	51.8		56.5	53.7	
Actuated g/C Ratio		0.13			0.12	0.12	0.57	0.53		0.58	0.55	
v/c Ratio		0.63			0.55	0.39	0.12	1.05		0.50	0.61	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		46.9			51.2	12.1	10.3	68.4		22.9	20.6	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		46.9			51.2	12.1	10.3	68.4		22.9	20.6	
LOS		D			D	B	B	E		C	C	
Approach Delay		46.9			32.6			66.0			20.9	
Approach LOS		D			C			E			C	
Queue Length 50th (ft)		77			74	0	10	~729		19	272	
Queue Length 95th (ft)		149			138	50	30	#1136		#65	483	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		344			339	381	363	981		165	1024	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.44			0.36	0.29	0.12	1.05		0.50	0.61	

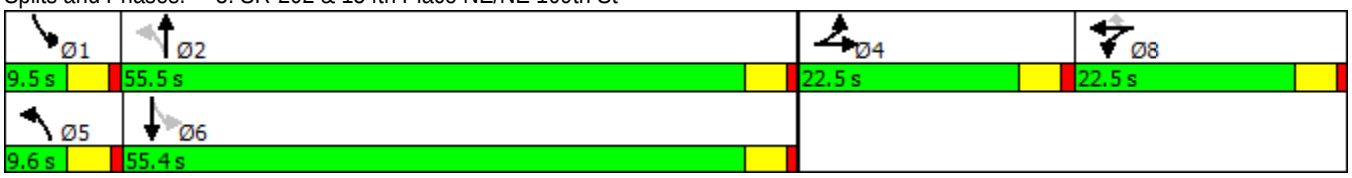
Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 97.1
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 46.3 Intersection LOS: D
Intersection Capacity Utilization 88.2% ICU Level of Service E
Analysis Period (min) 15

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

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

Splits and Phases: 3: SR-202 & 154th Place NE/NE 109th St



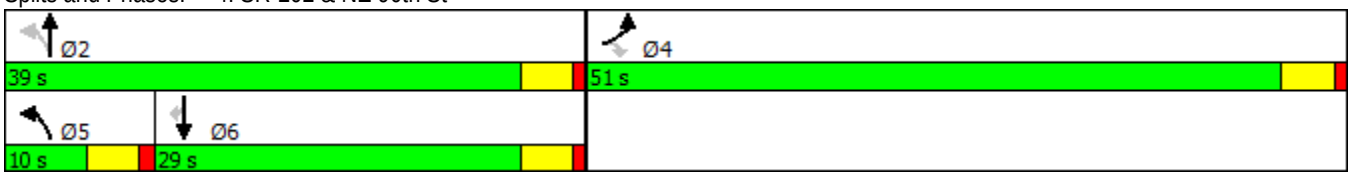
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	785	117	95	559	374	362
Future Volume (vph)	785	117	95	559	374	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.96				
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.250			
Satd. Flow (perm)	1770	1521	466	1863	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		67				340
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		7				
Confl. Bikes (#/hr)		3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	818	122	99	582	390	377
Shared Lane Traffic (%)						
Lane Group Flow (vph)	818	122	99	582	390	377
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	51.0	51.0	10.0	39.0	29.0	29.0
Total Split (%)	56.7%	56.7%	11.1%	43.3%	32.2%	32.2%
Maximum Green (s)	46.5	46.5	5.5	34.5	24.5	24.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	42.4	42.4	34.7	34.7	26.9	26.9
Actuated g/C Ratio	0.49	0.49	0.40	0.40	0.31	0.31
v/c Ratio	0.94	0.16	0.37	0.78	0.67	0.52

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	40.4	6.3	21.9	32.4	35.3	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	6.3	21.9	32.4	35.3	7.4
LOS	D	A	C	C	D	A
Approach Delay	36.0			30.8	21.6	
Approach LOS	D			C	C	
Queue Length 50th (ft)	396	15	36	291	204	16
Queue Length 95th (ft)	#654	42	70	#470	#338	90
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	960	855	271	749	582	728
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	0.85	0.14	0.37	0.78	0.67	0.52

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 86.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 29.9 Intersection LOS: C
Intersection Capacity Utilization 80.4% 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: 4: SR-202 & NE 90th St



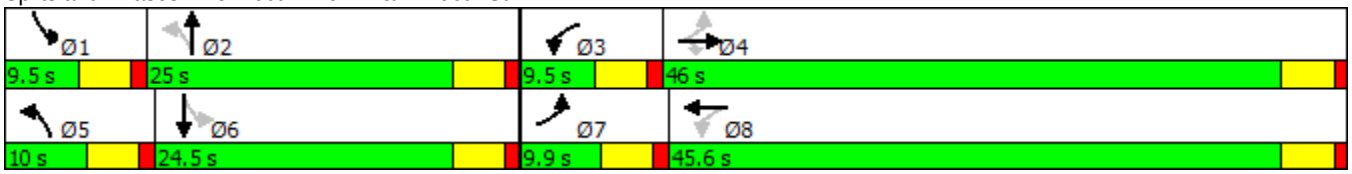
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	687	238	59	273	34	126	78	146	32	61	46
Future Volume (vph)	110	687	238	59	273	34	126	78	146	32	61	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.96		1.00		0.95	0.96		0.98	0.96	
Frt			0.850		0.983			0.902			0.936	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1841	0	1787	1635	0	1787	1698	0
Flt Permitted	0.453			0.109			0.607			0.549		
Satd. Flow (perm)	845	1881	1533	205	1841	0	1080	1635	0	1011	1698	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			256		9			97			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		8	8		7	26		14	14		26
Confl. Bikes (#/hr)			2			1			1			
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%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	118	739	256	63	294	37	135	84	157	34	66	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	739	256	63	331	0	135	241	0	34	115	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.9	46.0	46.0	9.5	45.6		10.0	25.0		9.5	24.5	
Total Split (%)	11.0%	51.1%	51.1%	10.6%	50.7%		11.1%	27.8%		10.6%	27.2%	
Maximum Green (s)	5.4	41.5	41.5	5.0	41.1		5.5	20.5		5.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	41.1	37.0	37.0	40.5	36.7		28.3	25.2		25.5	20.4	
Actuated g/C Ratio	0.49	0.44	0.44	0.48	0.44		0.34	0.30		0.30	0.24	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.25	0.89	0.31	0.32	0.41		0.33	0.43		0.10	0.26	
Control Delay	10.7	36.6	3.1	13.6	17.6		24.3	20.0		21.2	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	36.6	3.1	13.6	17.6		24.3	20.0		21.2	22.0	
LOS	B	D	A	B	B		C	C		C	C	
Approach Delay		26.1			17.0			21.6			21.8	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	29	360	0	15	117		55	70		13	36	
Queue Length 95th (ft)	54	#581	40	32	183		99	146		34	82	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	475	947	899	194	923		411	559		353	440	
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	0.25	0.78	0.28	0.32	0.36		0.33	0.43		0.10	0.26	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 83.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 23.2 Intersection LOS: C
Intersection Capacity Utilization 77.3% 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: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	2.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	39	1106	47	24	832
Future Vol, veh/h	42	39	1106	47	24	832
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	98	98	92	92
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	84	78	1129	48	26	904

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2086	1129	0	0	1129	0
Stage 1	1129	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	~ 59	251	-	-	619	-
Stage 1	312	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 57	251	-	-	619	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	34.2	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	178	251	619	-
HCM Lane V/C Ratio	-	-	0.472	0.311	0.042	-
HCM Control Delay (s)	-	-	42.1	25.7	11.1	-
HCM Lane LOS	-	-	E	D	B	-
HCM 95th %tile Q(veh)	-	-	2.2	1.3	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Single Channel Queuing

4 Vehicles

Willows Preparatory School
GTC #14-119

Single Channel Queuing Analysis

Arrivals	121 / 20 mins	λ
Service	320 / 20 mins	μ

Average number of cars in the system	$\lambda/(\mu-\lambda)$	0.60804		0.60804	vehicles
Average waiting time in the system	$1/(\mu-\lambda)$	0.005025	180	0.904523	minutes
Average number of cars in the queue	$\lambda\frown 2/\mu(\mu-\lambda)$	0.229915		0.229915	vehicles
Average waiting time in the queue	$\lambda/\mu(\mu-\lambda)$	0.0019	180	0.342023	minutes
Average system utilization	λ/μ	0.378125		38%	
Probability of no cars in system	$1-\lambda/\mu$	0.621875		62%	
Probability of n cars in system	$(1-\lambda/\mu)(\lambda/\mu)\frown$n				
- max queue available					

		$(1-\lambda/\mu)$	(λ/μ)^n	P(n)
P(0)	0	0.621875	1	0.621875
P(1)	1	0.621875	0.378125	0.235146
P(2)	2	0.621875	0.142978516	0.088915
P(3)	3	0.621875	0.054063751	0.033621

Probability of 3 or fewer Cars	97.96%
Probability of more than 3 Cars	2.04%

Transit Data

Metro Transit System Map View

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

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ATTACHMENT 15

Need more information or assistance?

- Visit Metro Online at kingcounty.gov/metro
- Call Metro's Customer Information Office, 206-553-3000, Mon-Fri except for major holidays [2016: Nov. 11, 24, 25, Dec. 26 (Christmas observed); 2017: Jan. 2 (New Year observed), 16, Feb. 20]
  - 6 am - 8 pm for trip planning assistance
  - 8 am - 5 pm for ORCA assistance and customer comments

Online Trip Planning

Use Metro's online Trip Planner to plan trips on scheduled service in King, Pierce and Snohomish counties. It provides details on transit stops, routes and schedules. Trip Planner itineraries do not include service disruptions and reroutes caused by weather, emergencies, traffic, events or construction.

Trip Planner includes Metro Transit, Pierce Transit, Community Transit, Everett Transit, ST Express buses, Link light rail, Sounder commuter rail, King County Water Taxi, Washington State Ferries, the Seattle Center Monorail, and Seattle Streetcar.

www.kingcounty.gov/tripplanner

Quick Timetable Tips

1. Locate the WEEKDAY, SATURDAY, or SUNDAY schedule block for the direction you want to go. Timepoints are listed from the beginning of the route (on the left) to the end (on the right).
2. Timepoints in the schedule block correspond with the timepoint dots on the map. If you are boarding at a stop between two timepoints, use the earlier time as a guide.
3. If there is a symbol (letter or character) after a time, look for the explanation under the heading Timetable Symbols.
4. Refer to the Special Service Information section for changes in routing, route number, or other unique aspects of service on this route.

Night Rider Tip

You can help drivers spot you when it is dark or during times of reduced visibility by wearing light-colored clothing and by standing in the most visible area of the bus stop. We don't want to miss you!

Night Stop Program

For your added safety at night, you may request to exit the bus at a location along your route other than a regular bus stop. To do so, please go to the front of the bus and ask your driver at least one block before your desired stop. Safety considerations will determine if the driver can comply with your request. Night Stop service is available only from 8 pm to 5 am and is for dropping off riders only. Night Stop is not provided in downtown Seattle.

Bike & Ride

Metro buses have bike racks that hold three bikes. The racks are easy to use at no extra cost. Just follow the simple instructions posted near the rack. You may load or unload your bike anytime at all regular Metro bus stops, including downtown Seattle and the transit tunnel.

Priority Seating

All Metro buses are wheelchair accessible. Designated seats in the front of buses are reserved for seniors and people with disabilities. If you are occupying one of these seats when a person with greater need boards, please offer it to that person. For more information about accessible service and bus-acceptable wheelchair/scooter specifications, call 206-553-3000.

Route 931 Service Information

Bothell accessible dial-a-ride transit (DART) offers you two transportation services: fixed and (limited) variable routing.

Route 931 provides service within Bothell via the UW/Bothell & Cascadia Community College (see map) at the following times:

- Mon-Fri (except holidays) 6 am - 8 pm

Route 931 also provides DART service (deviations from the fixed route by request) in those portions of Bothell that are shaded on the map.

Variable Routing

There are several ways in which you can make an off route trip within a DART service area. You can board the 931 van at any bus zone along the fixed routing and request the driver to make a deviation. If you want to be picked within a DART service area, you will need to call in a request for an off-route pick-up.

A limited number of off-route deviations, only, can be made on any given trip. The van can deviate from the fixed route to serve other locations within the service area, but can not necessarily provide door-to-door service due to safety and other operational considerations (narrow streets, cul-de-sacs, etc.). You may need to board/deboard at a location a block or more away from the location you requested.

Reservations

You can request off-route trips within the DART service area by calling the DART reservation office. You need to make your trip request at least two hours before you want to be picked up . If you are a regular rider you can make your reservations for 30 days at a time, up to 30 days in advance. Reservations will be taken on a first-come, first-served basis and can be made by calling **1-866-261-3278** (voice), or **1-800-246-1646** (TTY) during the following hours:

- Mon-Fri 5 am - 11 pm
- Sat 7:30 am - 9:30 pm
- Sun/Holidays 9:30 am - 6:30 pm

Leave a message at all other times.

Make reservations online at http://www.hope-link.org/programs/dart.htm

Scheduled Service / Fixed Routing

Route 931 DART service operates hourly past all Metro bus stops along the fixed routing (see schedule for times). Every trip passes through the Redmond Transit Center. There, you can transfer to Metro and Sound Transit routes serving Bellevue, Downtown Seattle, Eastgate, Duvall, Kirkland, Bear Creek and Kingsgate. For more information, call Metro's Rider Information at 206-553-3000.

Metro Customer Services

Metro has two customer service offices in downtown Seattle to serve you.

King Street Center
201 S Jackson St
Monday-Friday
8:30 am - 4:30 pm

Lost & Found
Monday-Friday
8:30 am - 1 pm
2 pm - 4:30 pm

Transit Tunnel
Westlake Station
Last four / first four business days each month
8:30 am - 4:30 pm

At both locations buy ORCA cards, bus passes, senior permits and taxi scrip, and get information about bus service. Only the King Street Center office registers applicants for disability permits and provides lost-item return service on weekdays.

Customer Service (general information, trip planning, comments and lost & found)
Seattle metro calling area 206-553-3000
Toll Free 1-800-542-7876
Hearing impaired ..... TTY Relay: 711
Metro Online / Online Trip Planner ..... www.kingcounty.gov/metro
Carpool/Vanpool 206-625-4500
Hearing Impaired ..... TTY Relay: 1-800-833-6388

Community Transit 1-800-562-1375
Pierce Transit 1-800-562-8109

RIDER ALERT
This symbol indicates a change in service. Watch for it in buses, at bus stops, and at timetable displays.

Interpreter
206-553-3000

Intérpretes Turjubaan Переводчик
Перекладач 통역사 የቃል አስተርጓሚ
翻譯員 Thông Dịch Viên ኢንተርፕሪተር

How To Pay

Upon boarding, pay your fare with exact change or a convenient regional ORCA card. ORCA cards are sold in downtown Seattle at Metro customer service offices in King Street Center and the Westlake tunnel station.

What To Pay

	1 Zone	2 Zone
Adults (19 and older), Off Peak	$2.50	$2.50
Adults (19 and older), Peak	$2.75	$3.25
ORCA LIFT Fare* all times	$1.50	$1.50
Youth (6-18 yrs), all times	$1.50	$1.50
RRFP cardholders (registered seniors, Medicare, disabled), all times	$1.00	$1.00
Children (thru age 5), all times	Four may ride free with person paying adult fare	

*Income Qualified

Cuánto pagar

	Zona 1	*Zona 2*
***Adultos** (19 años y mayor) fuera de hora pico*	*$2.50*	*$2.50*
***Adultos** (19 años y mayor) en hora pico*	*$2.75*	*$3.25*
*Tarifa **ORCA LIFT,*** a toda hora*	*$1.50*	*$1.50*
***Jóvenes** (6-18 años), a toda hora*	*$1.50*	*$1.50*
***Titulares de tarjetas RRFP** (personas mayores registradas, Medicare, discapacitados), a toda hora.*	*$1.00*	*$1.00*
***Niños** (hasta los 5 años), a toda hora.*	*Pueden viajar hasta cuatro con una persona que pague la tarifa de adulto.*	

*Ingresos que reúnan los requisitos

Pay As You Board

At all times, pay your fare as you board the bus, be it cash, ticket or with a convenient ORCA card.

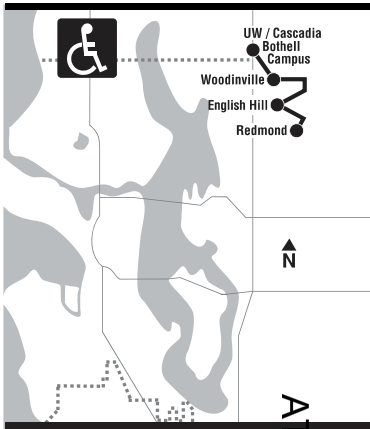
You may use transfers received on off-peak trips for peak-hour trips by paying the balance of the peak fare. Metro transfers are valid on Metro, only.

931

UW/Cascadia Bothell, Woodinville, Avondale Road, English Hill, Redmond

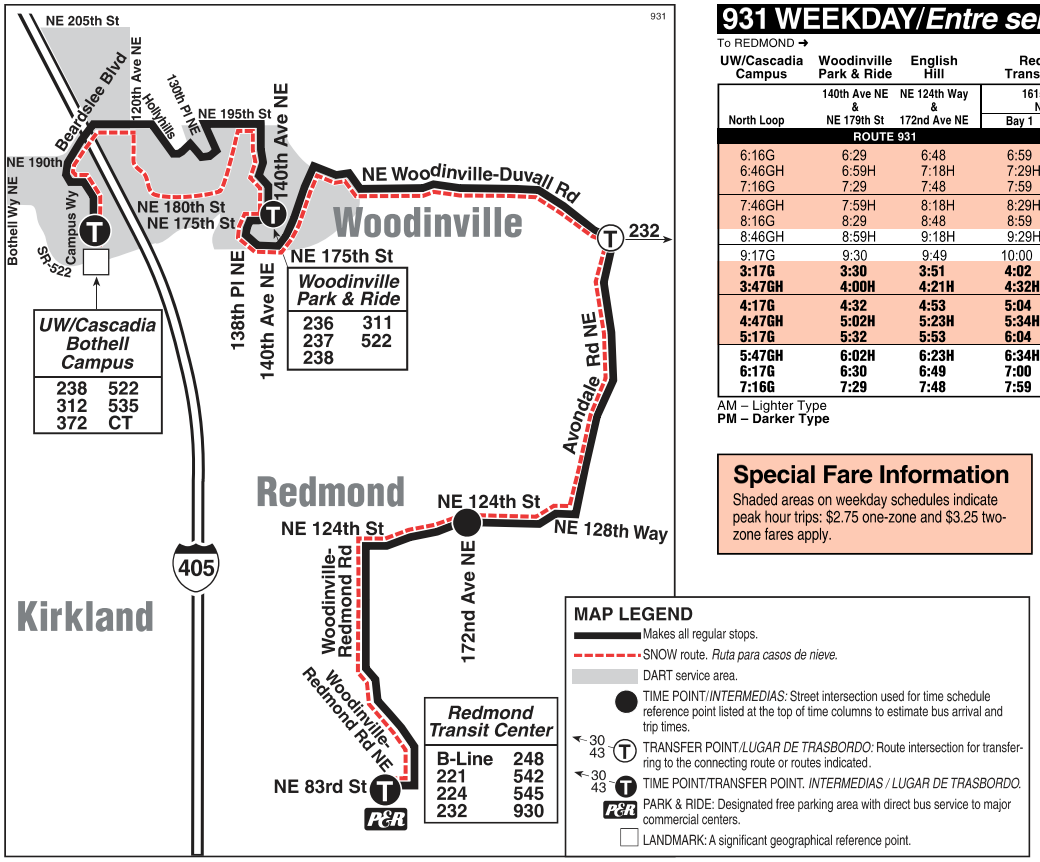
DART

September 10, 2016 thru March 10, 2017
10 de septiembre de 2016 a través de 10 de marzo de 2017



King County METRO
We'll Get You There

ATTACHMENT 15



931 WEEKDAY/*Entre semana*

To REDMOND ➔ — To DOWNTOWN SEATTLE ➔

UW/Cascadia Campus	Woodinville Park & Ride	English Hill	Redmond Transit Center		Montlake Station	Downtown Seattle
North Loop	140th Ave NE & NE 179th St	NE 124th Way & 172nd Ave NE	161st Ave NE & NE 83rd St		On SR-520 at Montlake Blvd	5th Ave & Pike St
			Bay 1	Bay 6		
ROUTE 931				ROUTE 545		
6:16G	6:29	6:48	6:59	7:08	7:30‡	7:45‡
6:46GH	6:59H	7:18H	7:29H	7:33	7:55‡	8:10‡
7:16G	7:29	7:48	7:59	8:04	8:29‡	8:46‡
7:46GH	7:59H	8:18H	8:29H	8:33	8:58‡	9:14‡
8:16G	8:29	8:48	8:59	9:09	9:33‡	9:49‡
8:46GH	8:59H	9:18H	9:29H	9:33	9:56‡	10:12‡
9:17G	9:30	9:49	10:00	10:09	10:32‡	10:45‡
3:17G	**3:30**	**3:51**	**4:02**	**4:12**	**4:47‡**	**5:08‡**
3:47GH	**4:00H**	**4:21H**	**4:32H**	**4:42**	**5:18‡**	**5:39‡**
4:17G	**4:32**	**4:53**	**5:04**	**5:12**	**5:48‡**	**6:09‡**
4:47GH	**5:02H**	**5:23H**	**5:34H**	**5:41**	**6:17‡**	**6:34‡**
5:17G	**5:32**	**5:53**	**6:04**	**6:11**	**6:46‡**	**7:01‡**
5:47GH	**6:02H**	**6:23H**	**6:34H**	**6:41**	**7:12‡**	**7:22‡**
6:17G	**6:30**	**6:49**	**7:00**	**7:13**	**7:40‡**	**7:50‡**
7:16G	**7:29**	**7:48**	**7:59**	**8:06**	**8:30‡**	**8:39‡**

AM – Lighter Type
PM – Darker Type

S0931931

Special Fare Information

Shaded areas on weekday schedules indicate peak hour trips: $2.75 one-zone and $3.25 two-zone fares apply.

Timetable Symbols

D - Continues to south campus by bookstore.
G - Begins on Campus Way across from bookstore 1-3 minutes earlier.
H - This trip does NOT operate on Nov. 11 & 25, Dec. 27-30, Jan. 16 and Feb. 20.

Símbolo del programa

‡ - Estimated time. *Tiempo estimado.*

Holiday Information/ *Información sobre feriados*

There is no service on this route on weekends or the following holidays. *No hay servicio en esta ruta los fines de semana ni el siguiente feriados:*

Thanksgiving *Día de acción de gracias*	Nov. 24 *el 24 de noviembre*
Christmas (observed) *Navidad (observado)*	Dec. 26 *el 26 de diciembre*
New Year (observed) *Año nuevo (observado)*	Jan. 2, 2017 *el 2 de enero de 2017*

931 WEEKDAY/*Entre semana*

To REDMOND ➔ — To WOODINVILLE ➔

Downtown Seattle	Montlake Station	Redmond Transit Center		English Hill	Woodinville Park & Ride	UW/Cascadia Campus
4th Ave S & S Jackson St	On SR-520 at Montlake Blvd	161st Ave NE & & NE 83rd St		NE 124th Wy & 172nd Ave NE	140th Av NE & NE 179th St	North Loop
		Bay 3	Bay 5			
ROUTE 545			ROUTE 931			
5:07	5:26‡	5:47‡	6:11	6:17	6:38	6:56D
5:37	5:56‡	6:17‡	6:41H	6:47H	7:08H	7:27DH
6:21	6:41‡	7:03‡	7:11	7:17	7:39	7:58D
6:48	7:08‡	7:30‡	7:41H	7:47H	8:09H	8:28DH
7:15	7:37‡	7:59‡	8:11	8:17	8:39	8:58D
7:43	8:07‡	8:30‡	8:41H	8:47H	9:09H	9:28DH
8:10	8:37‡	9:01‡	9:11	9:17	9:39	9:57D
2:21	**2:37‡**	**2:59‡**	**3:11**	**3:17**	**3:39**	**3:59D**
2:36	**2:52‡**	**3:15‡**	**3:41H**	**3:47H**	**4:10H**	**4:30DH**
3:06	**3:24‡**	**3:49‡**	**4:11**	**4:18**	**4:43**	**5:03D**
3:46	**4:06‡**	**4:31‡**	**4:44H**	**4:51H**	**5:16H**	**5:36DH**
4:15	**4:36‡**	**5:02‡**	**5:14**	**5:21**	**5:46**	**6:06D**
4:43	**5:07‡**	**5:34‡**	**5:44H**	**5:51H**	**6:16H**	**6:36DH**
5:17	**5:42‡**	**6:08‡**	**6:14**	**6:21**	**6:44**	**7:02D**
6:18	**6:40‡**	**7:05‡**	**7:11**	**7:17**	**7:39**	**7:57D**

AM – Lighter Type **PM – Darker Type**

N0931931

Snow/Emergency Service *Servicio de emergencia/ nieve*

During most snow conditions, this route will operate via the snow routing shown in this timetable. In the rare event that Metro declares an emergency, it will not operate. Visit kingcounty.gov/metro/snow and sign up for Transit Alerts to stay informed during adverse conditions.

Durante la mayoría de las nevadas, esta ruta operará por la ruta designada que se muestra en este programa. En el caso poco frecuente que Metro declare una emergencia, no operará. Visite kingcounty.gov/metro/snow y regístrese para obtener Alertas de Tránsito y mantenerse informado durante las condiciones adversas.

RIDER ALERT

This symbol indicates a change in service. Watch for it in buses, at bus stops, and at timetable displays.

VanShare *You know a good thing when you ride!*

Let VanShare bridge the gap in your commute. Starting a vanshare is simple. You just need five people including a volunteer driver. Use it to make the connection to your final destination from any transportation terminal.

To start a VanShare, phone us at 206-625-4500 or e-mail us at VanShare@kingcounty.gov. Link to our web page through Metro Online kingcounty.gov/metro

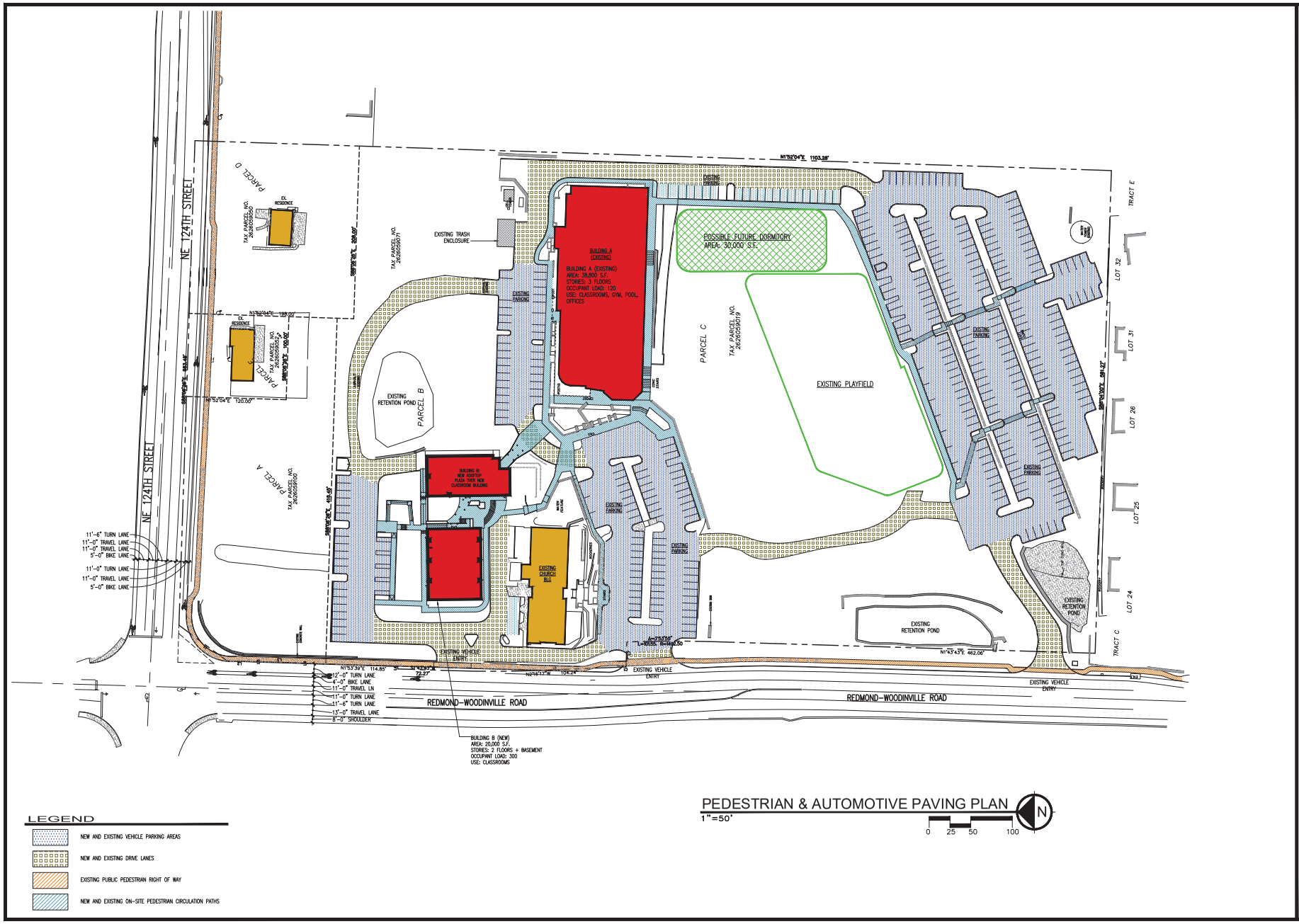
Accessible Formats

People with disabilities who need this information in accessible formats may call 206-477-6066 (voice) or TTY Relay: 711.

This paper uses minimum 30% post-consumer fibers; acid and chlorine free. Inks: Environmentally sensitive vegetable-based.

ATTACHMENT 15

Site Schematics



PEDESTRIAN & AUTOMOTIVE PAVING PLAN

1"=50'

0 25 50 100

N

LEGEND

- NEW AND EXISTING VEHICLE PARKING AREAS
- NEW AND EXISTING DRIVE LANES
- EXISTING PUBLIC PEDESTRIAN RIGHT OF WAY
- NEW AND EXISTING ON-SITE PEDESTRIAN CIRCULATION PATHS

S+L

S + L Architects, LLC
2731 163rd Ave SE Snohomish 98290
360.863.1032 c206.890.8348

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Architect Stamp:

REGISTERED ARCHITECT
SHINTARO GOTO
STATE OF WASHINGTON

Project Title:

WILLOWS PREPARATORY SCHOOL
DIVISION OF BCA

12280 Redmond-Woodinville Rd
REDMOND, WA 98052

Issue Date: November 2016

CONDITIONAL USE

Project Number: xxxx

Revisions:

Sheet Contents:

PEDESTRIAN AND AUTOMOTIVE PAVING PLAN

Sheet:

T1.1

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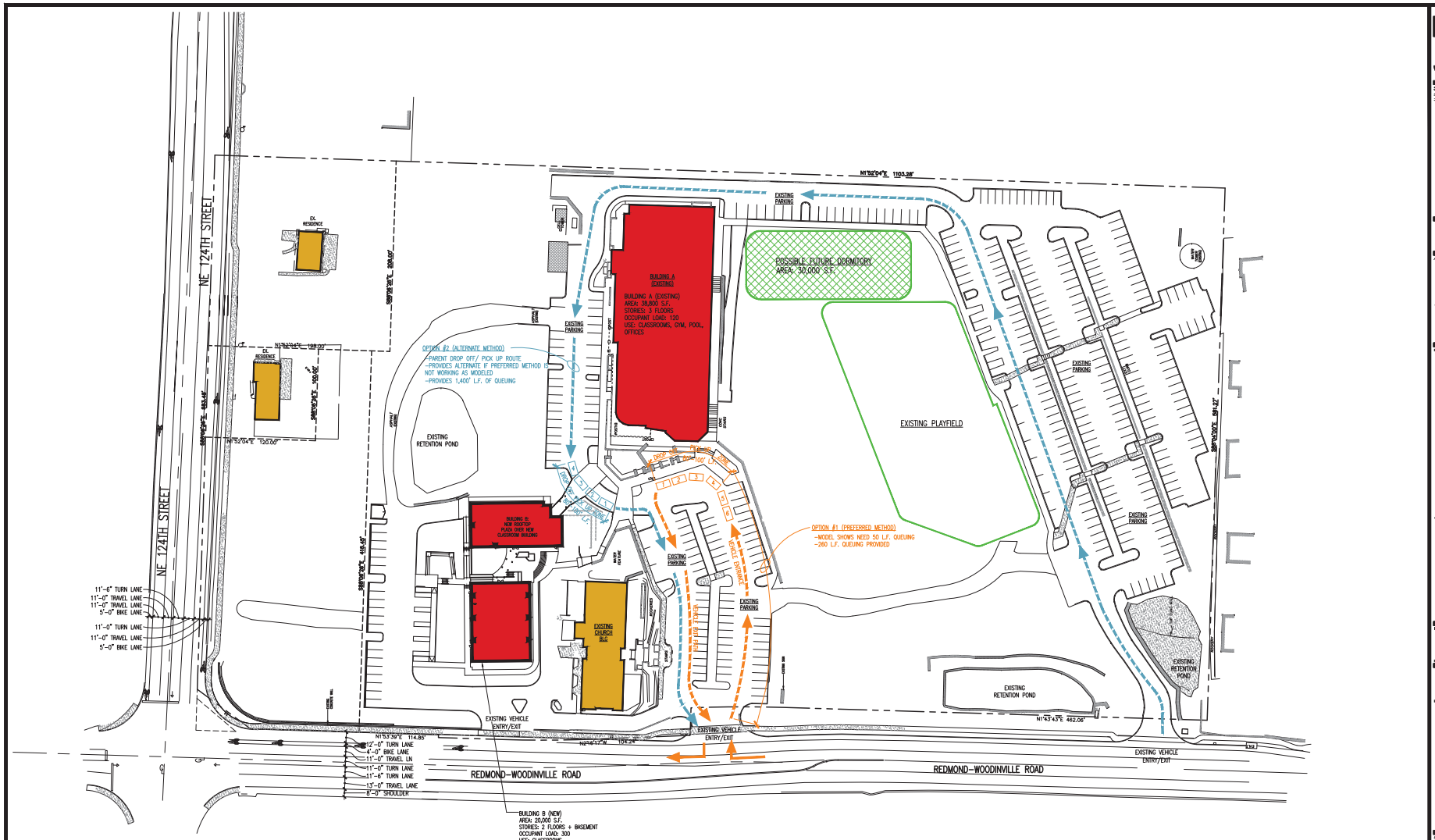
ATTACHMENT O



TRAFFIC MITIGATION PLAN

1. PARENTS WILL USE A PICK UP/DROP OFF PLAN THAT IS CURRENTLY BEING USED AT SISTER SCHOOL BELLEVUE CHILDREN'S ACADEMY IN BELLEVUE. THIS TRANSPORTATION PLAN HAS BEEN ACTIVE FOR 7 YEARS AND IS PROVEN TO BE VERY SUCCESSFUL. THE CITY OF BELLEVUE OFTEN RECOMMENDS THIS PLAN TO OTHER APPLICANTS TO MODEL AFTER
2. ROTATION PLAN IS STREAMLINED TO PROVIDE QUICK TURN AROUND TIMES FOR EACH AUTOMOBILE
   - PARENTS ARRIVE AT ASSIGNED TIMES, NO EARLY ARRIVALS AREA ALLOWED TO WAIT IN QUEUE LINE WHICH WOULD CAUSE TRAFFIC VOLUMES
   - EACH CAR USES A PLACARD ON DASHBOARD WITH STUDENT NAMES
   - STAFF IS STATIONED AT VEHICLE ENTRY POINT OFF OF REDMOND-WOODINVILLE ROAD USING 2-WAY RADIO COMMUNICATION TO STAFF AT PICK UP LOCATION.
   - STAFF ORGANIZES STUDENTS IN ORDER OF PARENT PICK UP SO THAT STUDENT IS READY TO ENTER AUTOMOBILE QUICKLY.
   - HIGHLY ORGANIZED AND EFFICIENT IN REDUCING QUEUING WAITE TIMES.

TRAFFIC CIRCULATION PLAN

1"=50'

0 25 50 100

N

S+L

S + L Architects, LLC
2731 163rd Ave SE Snohomish 98290
360.863.1032 c206.890.8348

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Revisions:

Sheet Contents:

TRAFFIC CIRCULATION PLAN

Sheet:

T2.1

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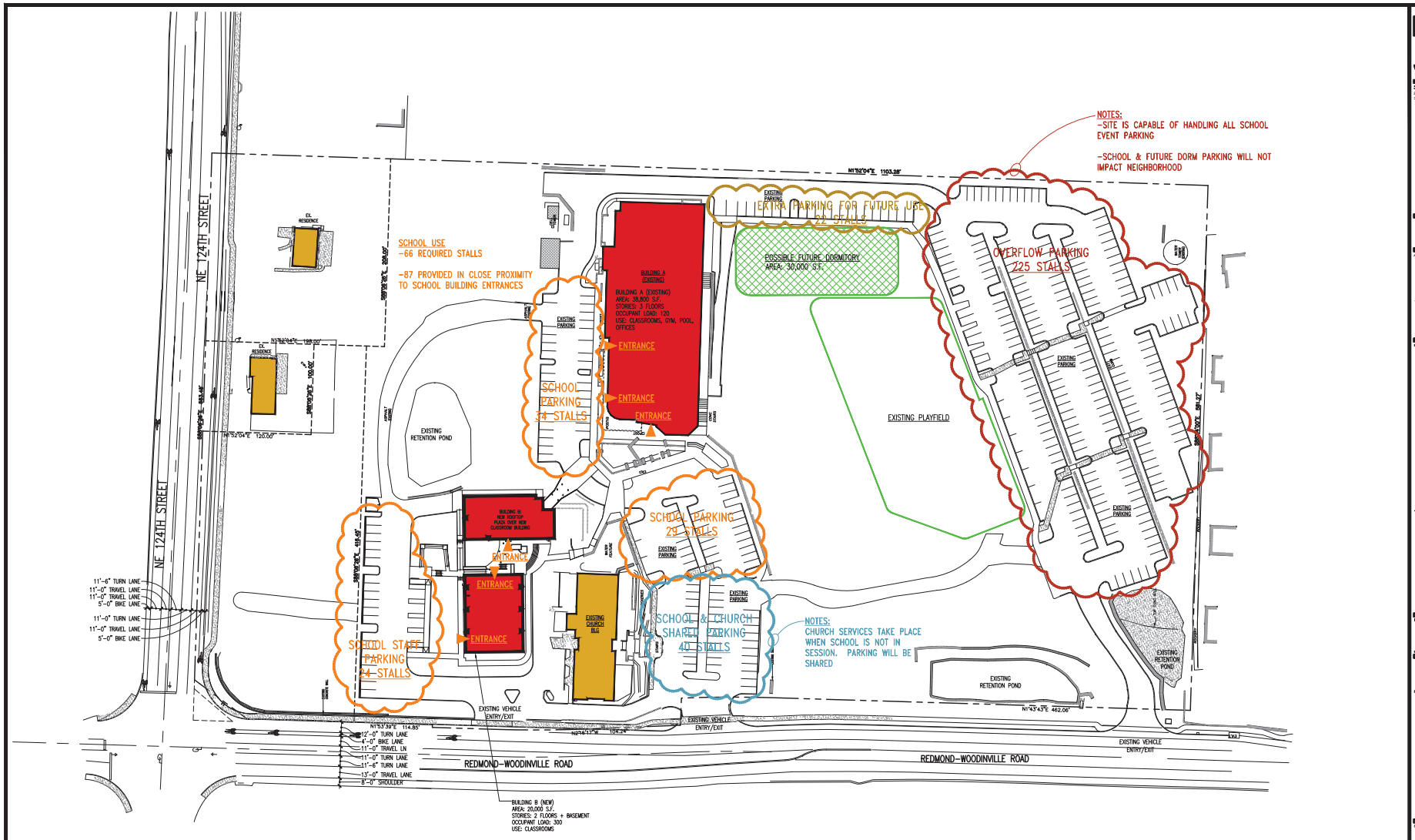
ATTACHMENT O



PARKING DATA (TOTAL PARKING AVAILABLE AFTER CONSTRUCTION OF FIRST SPE CLASSROOM)

PHASE	REGULAR STALL	ADA	TOTAL	NOTES
EXISTING	349	19	368	
PROPOSED	351	23	374	(18) STALLS REMOVED, 20 ADDED. (4) ADA STALLS ADDED

SCHOOL USE PARKING REQUIRED: 66 TOTAL STALLS; PROPOSED STALLS = 374

PARKING PLAN

1"=50'

0 25 50 100

S+L

S + L Architects, LLC
2731 163rd Ave SE Snohomish 98290
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12280 Redmond-Woodinville Rd
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CONDITIONAL USE

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Revisions:

Sheet Contents:

PARKING PLAN

Sheet:

T3.0

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ATTACHMENT O

Master Plan Improvements

ATTACHMENT 15

Transportation Master Plan

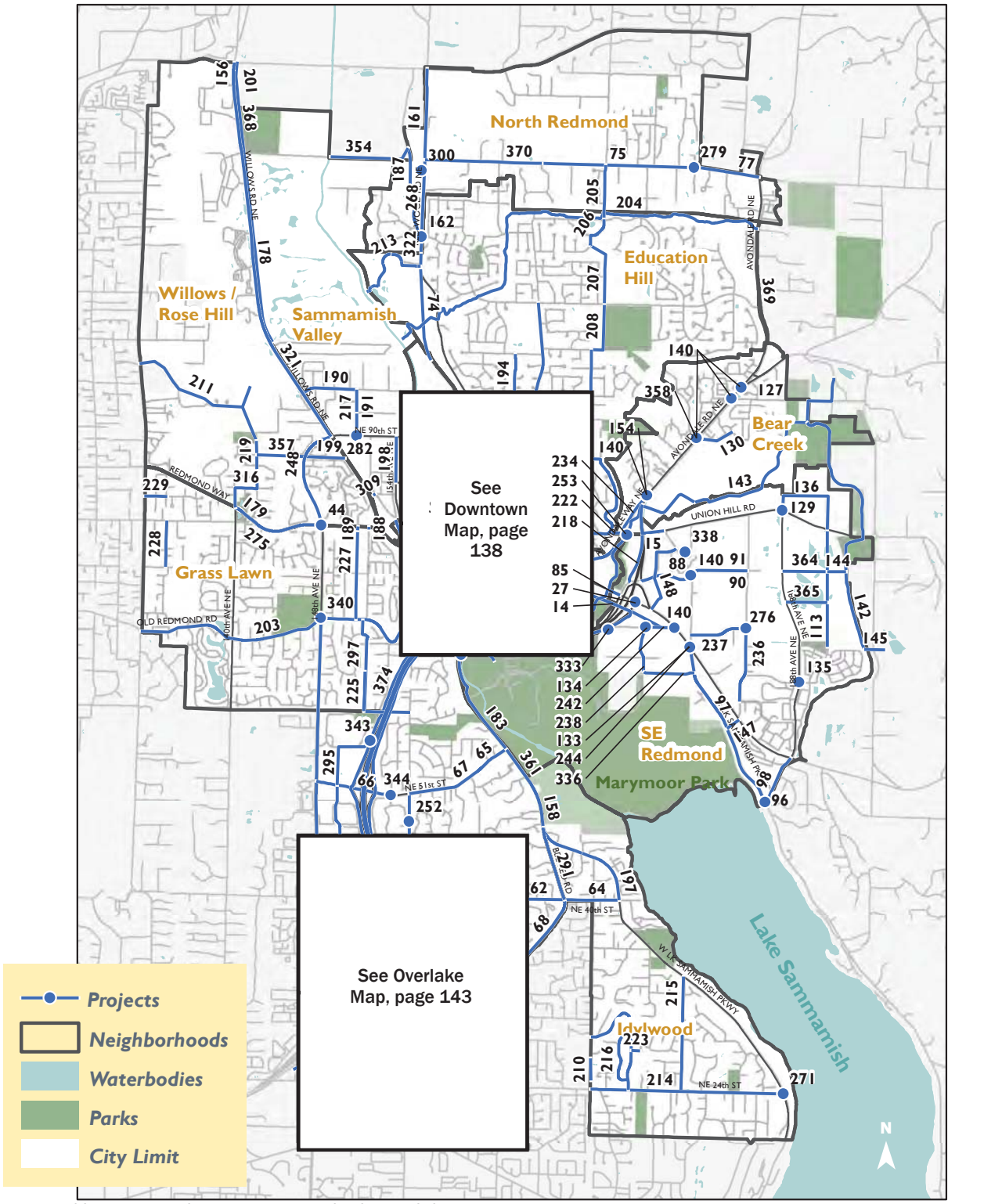
City of Redmond

August 2013

City of Redmond
WASHINGTON

Creating Choice. Connecting Community.

Unfunded Buildout Plan – Neighborhoods



Note: projects shown are conceptual only; actual alignments may vary.

Figure 63. Unfunded Buildout Plan – Neighborhoods

Table 20. Neighborhood projects (continued)

NEIGHBORHOOD PROJECTS					
Project ID	**Project Title**	**Location**	**Project Limits: From**	**Project Limits: To**	**Description**
147	185th Avenue NE-to-East Lake Sammamish Park Pedestrian Trail	185th Avenue NE	Redmond Way	East Lake Sammamish Parkway	Add pedestrian trail from south terminus of 185th Ave NE to East Lake Sammamish Parkway and East Lake Sammamish Trail.
148	180th Ave NE "Pedestrian Spine"	Pedestrian spine	178th Place NE	NE 70th Street	Construct a "Pedestrian Spine" or corridor that connects the future light rail station and Southeast Redmond retail commercial area and other transit facilities in the vicinity.
154	Avondale Rd and Avondale Way Safety and Access Improvements	Avondale Road at Avondale Way			Realign intersection replacing slip lane with a pedestrian bulbout with bike lane continuing through in existing location. Add right-turn only lane to replace slip lane. Install crosswalks linking bus stops together.
156	Willows Road Widening North	Willows Road	NE 116th St	NE 124th St	Widen Willows Road from NE 116th St to NE 124th St. Improvements include 2 through lanes in each direction, left-turn lanes, bike lanes, curb, gutter, sidewalks, transit amenities, street lights, storm drainage, underground power, right-of-way and easement acquisition.
158	West Lake Sammamish Parkway Interim Improvements	West Lake Sammamish Parkway	NE 51st St	Bel-Red Road	Provide interim nonmotorized facilities by striping the west side of West Lake Sammamish Parkway between NE 51st Street and Bel-Red Road to include a bicycle lane and pedestrian path. Provide additional signage and street pavement markings for bicycles on the east side of the street.
161	Redmond Woodinville Road Widening	Red-Wood Road	160th Ave NE Extension	NE 124th St	Widen Red-Wood Rd from intersection with new 160th Ave NE Extension near the Puget Power trail north to NE 124th St. Improvements include one through lane in each direction, left-turn and extended right-turn lanes if appropriate, access management, bike lanes, curb, gutter, sidewalks, street lights, storm drainage, underground power and right-of-way acquisition.
162	Redmond Woodinville Road and NE 109th St Turn Lane	Red-Wood Road at NE 109th St			Add a northbound right-turn lane.

Transportation Concurrency Application

CITY OF REDMOND TRANSPORTATION CONCURRENCY APPLICATION

This application provides the City of Redmond with the information needed to issue a certificate of concurrency for a development. Please complete the entire form and return it to the Redmond Engineering Services Division. After agreement is reached on the mobility unit demand for a development based on the land use type, size of development and table on the back of this application, the City will, if necessary, determine if enough mobility unit supply is available to issue a certificate of concurrency. If determining the mobility unit demand for a development requires an independent calculation a fee for the review will be required, payable at the City Hall Permit Center.

1. Applicant name and address: Yuka Shimizu
   14600 NE 24th Street
   Bellevue, WA 98007
2. Property location:
   a. Property address: 15603 NE 124th St, Redmond, WA 98052
   b. Development name: Willows Preparatory School - Building B (Phase I)
   c. Assessor's Parcel Number(s): 262605-9019
3. Type of development permit to be requested: Private School Grades 5-8

	Land Use Type (ITE Land Use Code)	Development Units	Mobility Unit Rate (see table on back)	Mobility Unit Demand	Notes
Proposed	Elementary School Building B (Phase I)	300 students	0.20	60	City Requested use of Elementary School
			Total Proposed:	60	
Existing	Church (ITE 560) + Remaining MU Credits from Building A	21,000 SF	1.30	27.30 + 23.54	
			Total Existing:	50.84	
Net New Mobility Unit Demand (Total Proposed minus Total Existing)				9.16	

Signature of Applicant:_____ Date:_____

For Official Use Only:

Mobility Unit Demand calculation reviewed: _____
Initials Date

Concurrency certificate required: □ Yes □ No Mobility Units available: □ Yes □ No

Application number: _____

N:\Concurrency Update 2007\Documentation\Admin Guidelines\Transportation Concurrency Application 9-09 11pt.doc

TABLE 1. Development Mobility Unit Calculator

Land Uses			ITE Land USE Code	Standard of Measure	Mobility Units/Land Use Unit		
					Downtown Urban Center	Overlake Urban Center	Rest of City
Residential		Single Family	210	dwelling	1.98	2.05	2.42
		Multiple Family	220	dwelling	1.39	1.44	1.7
		Residential Suites	N/A	residential suite	0.85	0.88	1.04
		Retirement Community	251	dwelling	0.64	0.66	0.78
		Nursing Home	620	bed	0.52	0.54	0.63
		Congregate Care/Asst Living	253	dwelling	0.4	0.41	0.49
		Hotel/Motel	310	room	1.86	1.93	2.28
Commercial	Services	Bank/Savings & Loan	912	sq ft/GFA	23.38	24.18	28.61
		Day Care	565	sq ft/GFA	17.81	18.42	21.8
		Library	590	sq ft/GFA	10.53	10.9	12.89
		Post Office	732	sq ft/GFA	16.19	16.75	19.82
		Service Station	944	fuel position	10.67	11.04	13.07
		Service Station/Minimart	945	fuel position	7.8	8.07	9.54
		Movie Theater	444,445	seat	0.11	0.12	0.14
		Carwash	947	stall	6.93	7.17	8.48
		Health Club/Racquet Club	492,493	sq ft/GFA	6.85	7.08	8.38
	Institutional	Elementary School	520	student	0.16	0.17	0.2
		High School	530	student	0.16	0.17	0.2
		Church/House of Worship	560	sq ft/GFA	1.06	1.09	1.3
		Hospital	610	sq ft/GFA	1.52	1.57	1.86
	Rest-aurant	Restaurant	931	sq ft/GFA	11.53	11.93	14.11
		Fast Food Restaurant	934	sq ft/GFA	31.41	32.49	38.45
	Retail Shopping Center	up to 99,999	820	sq ft/GLA	6.34	6.56	7.76
		100,000-199,999	820	sq ft/GLA	6.05	6.26	7.41
		200,000-299,999	820	sq ft/GLA	5.54	5.73	6.78
		300,000 and over	820	sq ft/GLA	5.34	5.52	6.53
		Supermarket	850	sq ft/GFA	13.68	14.15	16.74
		Convenience Market	851	sq ft/GFA	45.37	46.94	55.54
		Free Standing Discount Store	813, 815, 861, 863, 864	sq ft/GFA	4.51	4.66	5.52
		Miscellaneous Retail	820	sq ft/GFA	5.35	5.54	6.55
		Furniture Store	890	sq ft/GFA	0.52	0.54	0.64
		Car Sales - New/Used	841	sq ft/GFA	4.03	4.17	4.94
	Administrative Office	up to 99,999	710,715, 750	sq ft/GFA	6.58	6.81	8.06
		100,000-199,999	710,715, 750	sq ft/GFA	5.66	5.85	6.92
		200,000-299,999	710,715, 750	sq ft/GFA	4.94	5.11	6.04
		300,000 and over	710,715, 750	sq ft/GFA	4.63	4.79	5.67
		Medical Office/Clinic	720	sq ft/GFA	6.76	6.99	8.28
	Industrial	Light Industry/Manufacturing	110	sq ft/GFA	3.09	3.2	3.78
		Industrial Park	130	sq ft/GFA	2.71	2.8	3.31
		Warehousing/Storage	150	sq ft/GFA	1.02	1.05	1.25
		Mini Warehouse	151	sq ft/GFA	0.61	0.63	0.74

For uses with standard of measure in sq ft, mobility units are given per 1000 sq ft

Existing Zoning Analysis

Willows Preparatory School
GTC #14-119

Trip Generation for: Development Peak Weekday
(a.k.a.): Average Weekday Daily Trips (AWDT)

									NET EXTERNAL TRIPS BY TYPE												
									IN BOTH DIRECTIONS						DIRECTIONAL ASSIGNMENTS						
			Gross Trips				Internal Crossover		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW		
LAND USES	VARIABLE	ITE LU code	Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	Trips In+Out (Total)	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	In+Out (Total)	In	Out	In	Out	In	Out
Single Family Detached	60 units	210	9.52	50%	50%	571.20	0%	0.00	571.20	0%	0.00	0%	0.00	571.20	0.00	0.00	0.00	0.00	285.60	285.60
Total						571.20		0.00	571.20		0.00		0.00	571.20	0.00	0.00	0.00	0.00	285.60	285.60

ATTACHMENT 15

Willows Preparatory School
GTC #14-119

Trip Generation for: **Development Peak Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 7 and 9 AM**
(a.k.a.): **Weekday AM Peak Hour**

									NET EXTERNAL TRIPS BY TYPE											
									IN BOTH DIRECTIONS						DIRECTIONAL ASSIGNMENTS					
			Gross Trips				Internal Crossover		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW	
LAND USES	VARIABLE	ITE LU code	Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	Trips In+Out (Total)	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	In+Out (Total)	In	Out	In	Out	In	Out
Single Family Detached	60 units	210	0.75	25%	75%	45.00	0%	0.00	45.00	0%	0.00	0%	0.00	45.00	0.00	0.00	0.00	0.00	11.25	33.75
Total						45.00		0.00	45.00		0.00		0.00	45.00	0.00	0.00	0.00	0.00	11.25	33.75

ATTACHMENT 15

Willows Preparatory School
GTC #14-119

Trip Generation for: **Development Peak Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 4 and 6 PM**
(a.k.a.): **Weekday PM Peak Hour**

									NET EXTERNAL TRIPS BY TYPE											
									IN BOTH DIRECTIONS						DIRECTIONAL ASSIGNMENTS					
			Gross Trips				Internal Crossover		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW	
LAND USES	VARIABLE	ITE LU code	Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	Trips In+Out (Total)	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	In+Out (Total)	In	Out	In	Out	In	Out
Single Family Detached	60 units	210	1.00	63%	37%	60.00	0%	0.00	60.00	0%	0.00	0%	0.00	60.00	0.00	0.00	0.00	0.00	37.80	22.20
Total						60.00		0.00	60.00		0.00		0.00	60.00	0.00	0.00	0.00	0.00	37.80	22.20

ATTACHMENT 15

Willows Preparatory School
GTC #14-119

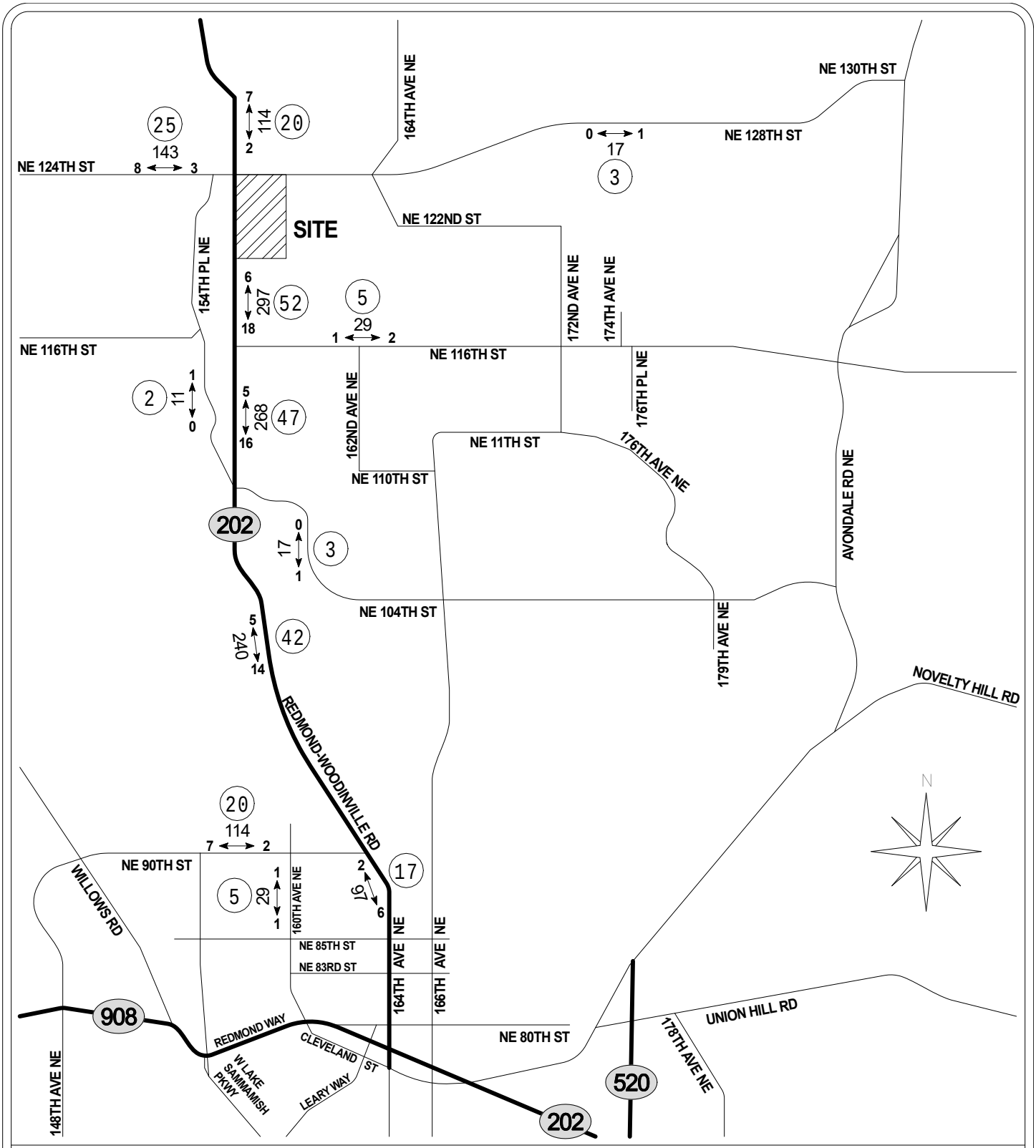
AM Peak-Hour

%	New ADT	New AM Peak Hour Trips			%	New ADT	New AM Peak Hour Trips		
		In	Out	Total			In	Out	Total
100%	571.20	11.25	33.75	45.00	100%	571.20	11.25	33.75	45.00
1%	5.71	0.11	0.34	0.45	51%	291.31	5.74	17.21	22.95
2%	11.42	0.23	0.68	0.90	52%	297.02	5.85	17.55	23.40
3%	17.14	0.34	1.01	1.35	53%	302.74	5.96	17.89	23.85
4%	22.85	0.45	1.35	1.80	54%	308.45	6.08	18.23	24.30
5%	**28.56**	**0.56**	**1.69**	**2.25**	**55%**	**314.16**	**6.19**	**18.56**	**24.75**
6%	34.27	0.68	2.03	2.70	56%	319.87	6.30	18.90	25.20
7%	39.98	0.79	2.36	3.15	57%	325.58	6.41	19.24	25.65
8%	45.70	0.90	2.70	3.60	58%	331.30	6.53	19.58	26.10
9%	51.41	1.01	3.04	4.05	59%	337.01	6.64	19.91	26.55
10%	**57.12**	**1.13**	**3.38**	**4.50**	**60%**	**342.72**	**6.75**	**20.25**	**27.00**
11%	62.83	1.24	3.71	4.95	61%	348.43	6.86	20.59	27.45
12%	68.54	1.35	4.05	5.40	62%	354.14	6.98	20.93	27.90
13%	74.26	1.46	4.39	5.85	63%	359.86	7.09	21.26	28.35
14%	79.97	1.58	4.73	6.30	64%	365.57	7.20	21.60	28.80
15%	**85.68**	**1.69**	**5.06**	**6.75**	**65%**	**371.28**	**7.31**	**21.94**	**29.25**
16%	91.39	1.80	5.40	7.20	66%	376.99	7.43	22.28	29.70
17%	97.10	1.91	5.74	7.65	67%	382.70	7.54	22.61	30.15
18%	102.82	2.03	6.08	8.10	68%	388.42	7.65	22.95	30.60
19%	108.53	2.14	6.41	8.55	69%	394.13	7.76	23.29	31.05
20%	**114.24**	**2.25**	**6.75**	**9.00**	**70%**	**399.84**	**7.88**	**23.63**	**31.50**
21%	119.95	2.36	7.09	9.45	71%	405.55	7.99	23.96	31.95
22%	125.66	2.48	7.43	9.90	72%	411.26	8.10	24.30	32.40
23%	131.38	2.59	7.76	10.35	73%	416.98	8.21	24.64	32.85
24%	137.09	2.70	8.10	10.80	74%	422.69	8.33	24.98	33.30
25%	**142.80**	**2.81**	**8.44**	**11.25**	**75%**	**428.40**	**8.44**	**25.31**	**33.75**
26%	148.51	2.93	8.78	11.70	76%	434.11	8.55	25.65	34.20
27%	154.22	3.04	9.11	12.15	77%	439.82	8.66	25.99	34.65
28%	159.94	3.15	9.45	12.60	78%	445.54	8.78	26.33	35.10
29%	165.65	3.26	9.79	13.05	79%	451.25	8.89	26.66	35.55
30%	**171.36**	**3.38**	**10.13**	**13.50**	**80%**	**456.96**	**9.00**	**27.00**	**36.00**
31%	177.07	3.49	10.46	13.95	81%	462.67	9.11	27.34	36.45
32%	182.78	3.60	10.80	14.40	82%	468.38	9.23	27.68	36.90
33%	188.50	3.71	11.14	14.85	83%	474.10	9.34	28.01	37.35
34%	194.21	3.83	11.48	15.30	84%	479.81	9.45	28.35	37.80
35%	**199.92**	**3.94**	**11.81**	**15.75**	**85%**	**485.52**	**9.56**	**28.69**	**38.25**
36%	205.63	4.05	12.15	16.20	86%	491.23	9.68	29.03	38.70
37%	211.34	4.16	12.49	16.65	87%	496.94	9.79	29.36	39.15
38%	217.06	4.28	12.83	17.10	88%	502.66	9.90	29.70	39.60
39%	222.77	4.39	13.16	17.55	89%	508.37	10.01	30.04	40.05
40%	**228.48**	**4.50**	**13.50**	**18.00**	**90%**	**514.08**	**10.13**	**30.38**	**40.50**
41%	234.19	4.61	13.84	18.45	91%	519.79	10.24	30.71	40.95
42%	239.90	4.73	14.18	18.90	92%	525.50	10.35	31.05	41.40
43%	245.62	4.84	14.51	19.35	93%	531.22	10.46	31.39	41.85
44%	251.33	4.95	14.85	19.80	94%	536.93	10.58	31.73	42.30
45%	**257.04**	**5.06**	**15.19**	**20.25**	**95%**	**542.64**	**10.69**	**32.06**	**42.75**
46%	262.75	5.18	15.53	20.70	96%	548.35	10.80	32.40	43.20
47%	268.46	5.29	15.86	21.15	97%	554.06	10.91	32.74	43.65
48%	274.18	5.40	16.20	21.60	98%	559.78	11.03	33.08	44.10
49%	279.89	5.51	16.54	22.05	99%	565.49	11.14	33.41	44.55
50%	**285.60**	**5.63**	**16.88**	**22.50**	**100%**	**571.20**	**11.25**	**33.75**	**45.00**

Willows Preparatory School
GTC #14-119

PM Peak-Hour

%	New ADT	New PM Peak Hour Trips			%	New ADT	New PM Peak Hour Trips		
		In	Out	Total			In	Out	Total
100%	571.20	37.80	22.20	60.00	100%	571.20	37.80	22.20	60.00
1%	5.71	0.38	0.22	0.60	51%	291.31	19.28	11.32	30.60
2%	11.42	0.76	0.44	1.20	52%	297.02	19.66	11.54	31.20
3%	17.14	1.13	0.67	1.80	53%	302.74	20.03	11.77	31.80
4%	22.85	1.51	0.89	2.40	54%	308.45	20.41	11.99	32.40
5%	**28.56**	**1.89**	**1.11**	**3.00**	**55%**	**314.16**	**20.79**	**12.21**	**33.00**
6%	34.27	2.27	1.33	3.60	56%	319.87	21.17	12.43	33.60
7%	39.98	2.65	1.55	4.20	57%	325.58	21.55	12.65	34.20
8%	45.70	3.02	1.78	4.80	58%	331.30	21.92	12.88	34.80
9%	51.41	3.40	2.00	5.40	59%	337.01	22.30	13.10	35.40
10%	**57.12**	**3.78**	**2.22**	**6.00**	**60%**	**342.72**	**22.68**	**13.32**	**36.00**
11%	62.83	4.16	2.44	6.60	61%	348.43	23.06	13.54	36.60
12%	68.54	4.54	2.66	7.20	62%	354.14	23.44	13.76	37.20
13%	74.26	4.91	2.89	7.80	63%	359.86	23.81	13.99	37.80
14%	79.97	5.29	3.11	8.40	64%	365.57	24.19	14.21	38.40
15%	**85.68**	**5.67**	**3.33**	**9.00**	**65%**	**371.28**	**24.57**	**14.43**	**39.00**
16%	91.39	6.05	3.55	9.60	66%	376.99	24.95	14.65	39.60
17%	97.10	6.43	3.77	10.20	67%	382.70	25.33	14.87	40.20
18%	102.82	6.80	4.00	10.80	68%	388.42	25.70	15.10	40.80
19%	108.53	7.18	4.22	11.40	69%	394.13	26.08	15.32	41.40
20%	**114.24**	**7.56**	**4.44**	**12.00**	**70%**	**399.84**	**26.46**	**15.54**	**42.00**
21%	119.95	7.94	4.66	12.60	71%	405.55	26.84	15.76	42.60
22%	125.66	8.32	4.88	13.20	72%	411.26	27.22	15.98	43.20
23%	131.38	8.69	5.11	13.80	73%	416.98	27.59	16.21	43.80
24%	137.09	9.07	5.33	14.40	74%	422.69	27.97	16.43	44.40
25%	**142.80**	**9.45**	**5.55**	**15.00**	**75%**	**428.40**	**28.35**	**16.65**	**45.00**
26%	148.51	9.83	5.77	15.60	76%	434.11	28.73	16.87	45.60
27%	154.22	10.21	5.99	16.20	77%	439.82	29.11	17.09	46.20
28%	159.94	10.58	6.22	16.80	78%	445.54	29.48	17.32	46.80
29%	165.65	10.96	6.44	17.40	79%	451.25	29.86	17.54	47.40
30%	**171.36**	**11.34**	**6.66**	**18.00**	**80%**	**456.96**	**30.24**	**17.76**	**48.00**
31%	177.07	11.72	6.88	18.60	81%	462.67	30.62	17.98	48.60
32%	182.78	12.10	7.10	19.20	82%	468.38	31.00	18.20	49.20
33%	188.50	12.47	7.33	19.80	83%	474.10	31.37	18.43	49.80
34%	194.21	12.85	7.55	20.40	84%	479.81	31.75	18.65	50.40
35%	**199.92**	**13.23**	**7.77**	**21.00**	**85%**	**485.52**	**32.13**	**18.87**	**51.00**
36%	205.63	13.61	7.99	21.60	86%	491.23	32.51	19.09	51.60
37%	211.34	13.99	8.21	22.20	87%	496.94	32.89	19.31	52.20
38%	217.06	14.36	8.44	22.80	88%	502.66	33.26	19.54	52.80
39%	222.77	14.74	8.66	23.40	89%	508.37	33.64	19.76	53.40
40%	**228.48**	**15.12**	**8.88**	**24.00**	**90%**	**514.08**	**34.02**	**19.98**	**54.00**
41%	234.19	15.50	9.10	24.60	91%	519.79	34.40	20.20	54.60
42%	239.90	15.88	9.32	25.20	92%	525.50	34.78	20.42	55.20
43%	245.62	16.25	9.55	25.80	93%	531.22	35.15	20.65	55.80
44%	251.33	16.63	9.77	26.40	94%	536.93	35.53	20.87	56.40
45%	**257.04**	**17.01**	**9.99**	**27.00**	**95%**	**542.64**	**35.91**	**21.09**	**57.00**
46%	262.75	17.39	10.21	27.60	96%	548.35	36.29	21.31	57.60
47%	268.46	17.77	10.43	28.20	97%	554.06	36.67	21.53	58.20
48%	274.18	18.14	10.66	28.80	98%	559.78	37.04	21.76	58.80
49%	279.89	18.52	10.88	29.40	99%	565.49	37.42	21.98	59.40
50%	**285.60**	**18.90**	**11.10**	**30.00**	**100%**	**571.20**	**37.80**	**22.20**	**60.00**



GIBSON TRAFFIC CONSULTANTS

TRAFFIC IMPACT STUDY
GTC #14-119

WILLOWS PREPARATORY SCHOOL
(300 STUDENTS)

CITY OF REDMOND

LEGEND

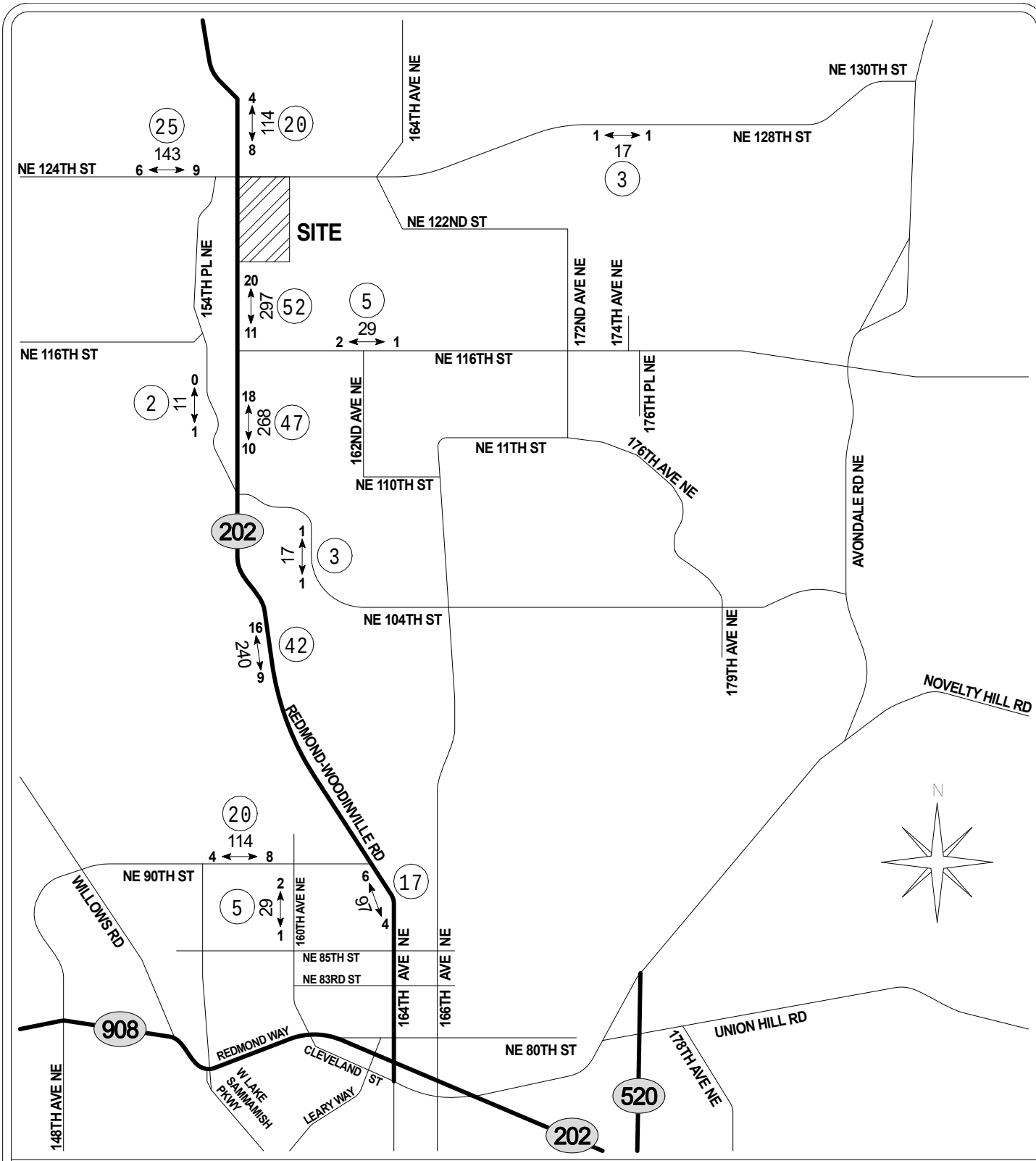
AWDT — NEW DAILY TRIPS

AM ↔ PEAK — NEW AM PEAK-HOUR TRIPS

(25) — TRIP DISTRIBUTION %

FIGURE A

EXISTING ZONING TRIP DISTRIBUTION AM PEAK-HOUR



GIBSON TRAFFIC CONSULTANTS

TRAFFIC IMPACT STUDY
GTC #14-119

WILLOWS PREPARATORY SCHOOL (300 STUDENTS)

CITY OF REDMOND

LEGEND

AWDT — NEW DAILY TRIPS

PM ↔ PEAK — NEW PM PEAK-HOUR TRIPS

(25) — TRIP DISTRIBUTION %

FIGURE B

EXISTING ZONING TRIP DISTRIBUTION PM PEAK-HOUR

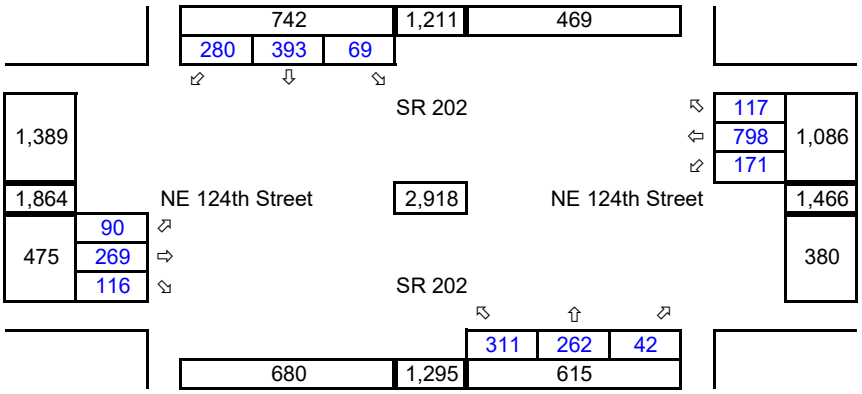
#1 SR-202 @ NE 124th St

Synchro ID: 1

Existing
Average Weekday
AM Peak-Hour

Date **10/27/2016**

Data Source: **idax**

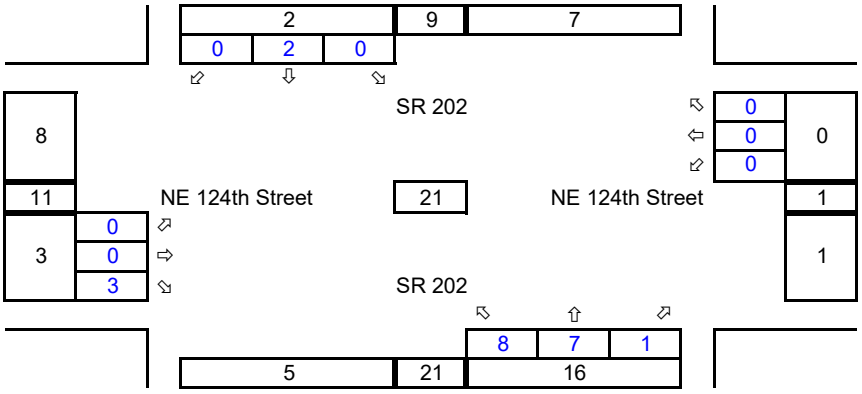


Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

Total Development Trips
Average Weekday
AM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
AM Peak-Hour

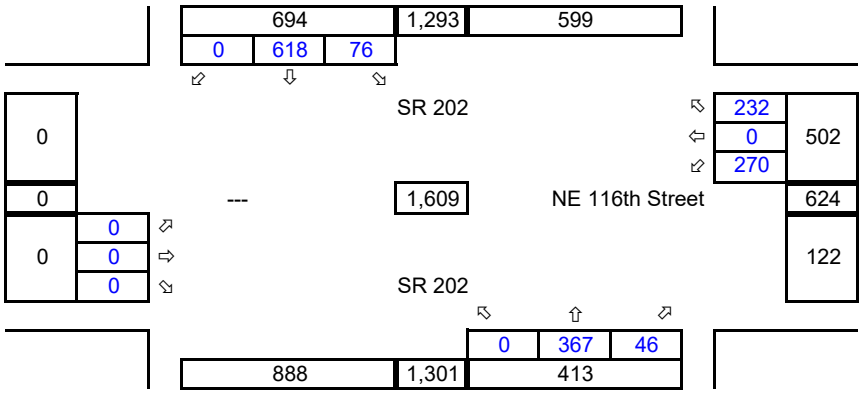
#2 SR-202 @ NE 116th St

Synchro ID: 2

Existing
Average Weekday
AM Peak-Hour

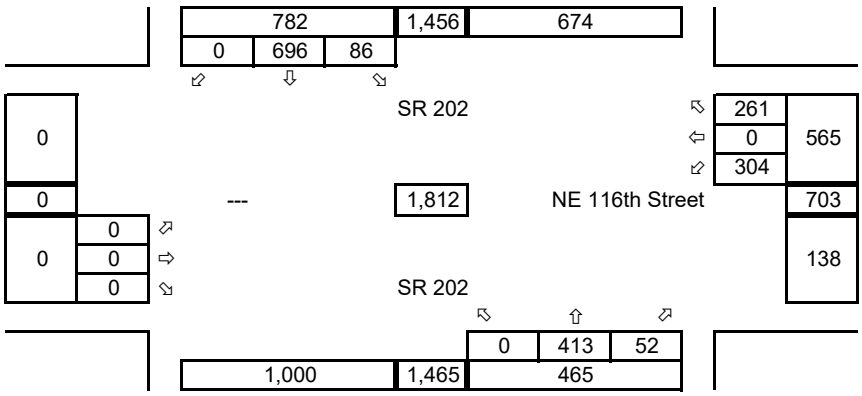
Date **10/27/2016**

Data Source: **idax**



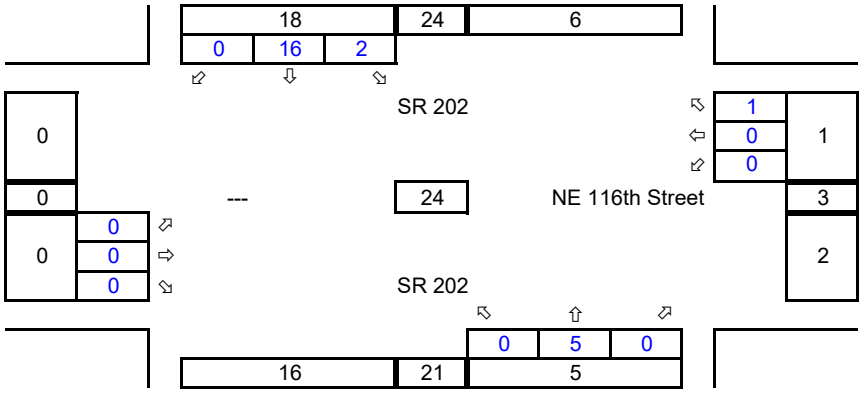
Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

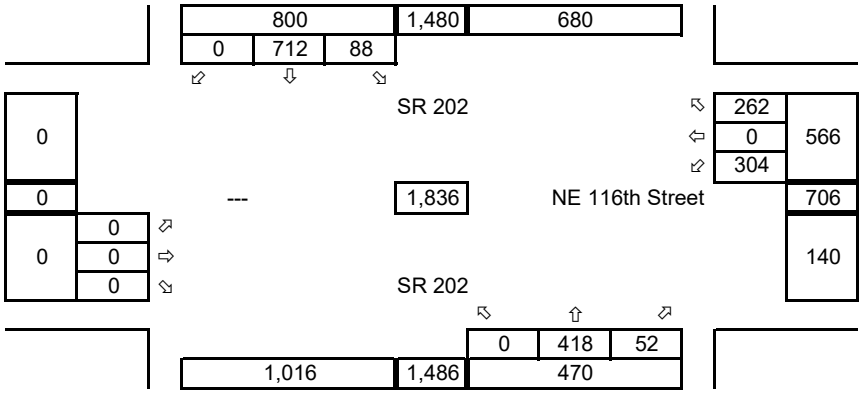


Total Development Trips
Average Weekday
AM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
AM Peak-Hour



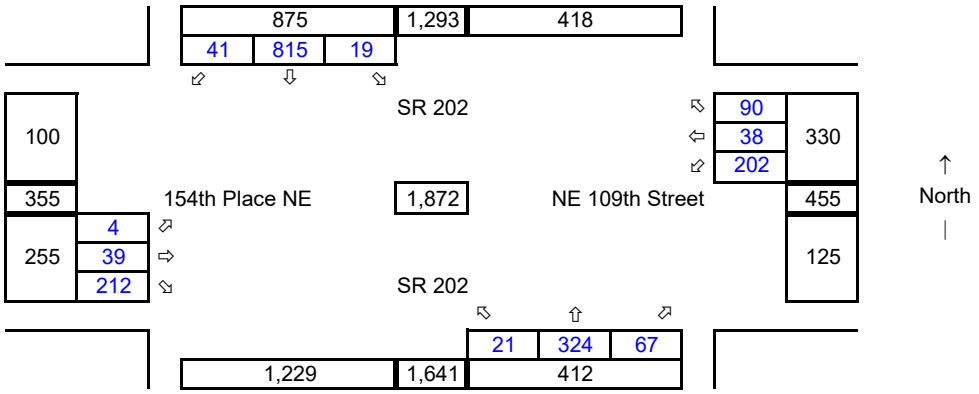
#3 SR-202 @ 154th Pl NE

Synchro ID: 3

Existing
Average Weekday
AM Peak-Hour

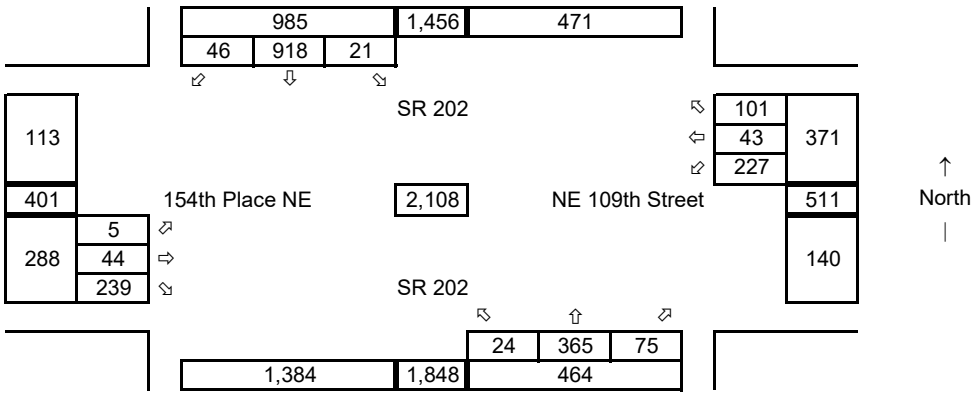
Date **10/27/2016**

Data Source: **idax**



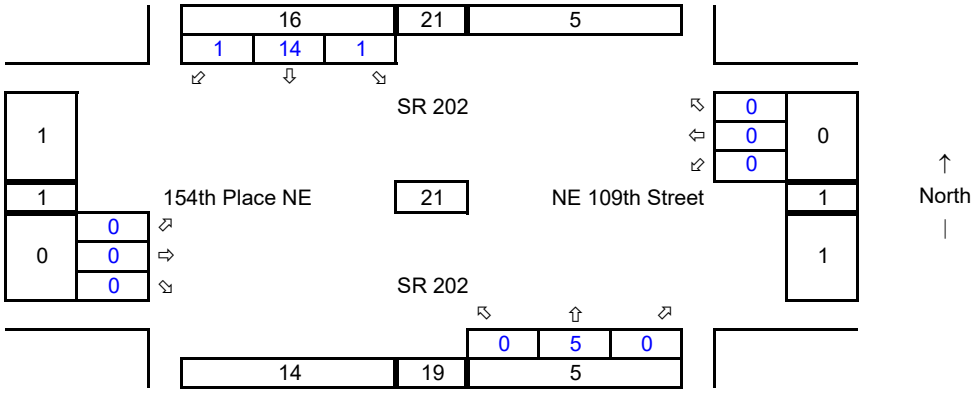
Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

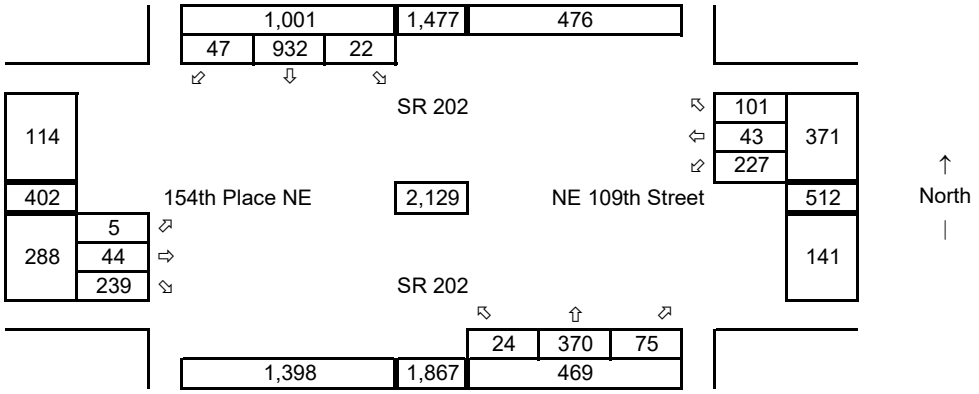


Total Development Trips
Average Weekday
AM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
AM Peak-Hour



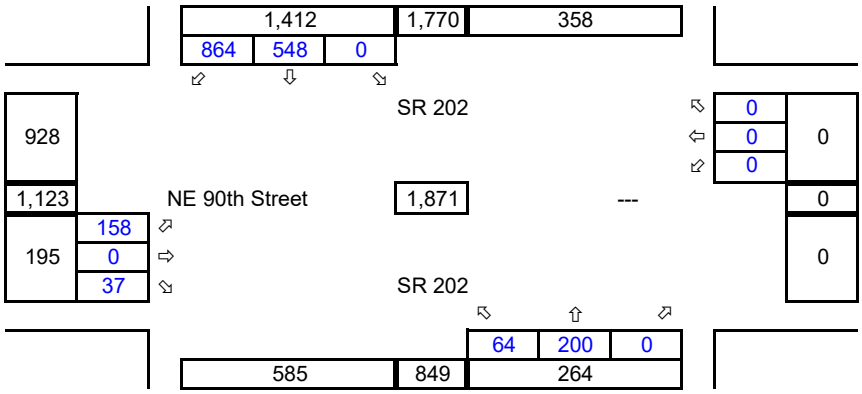
#4 SR-202 @ NE 90th St

Synchro ID: 4

Existing
Average Weekday
AM Peak-Hour

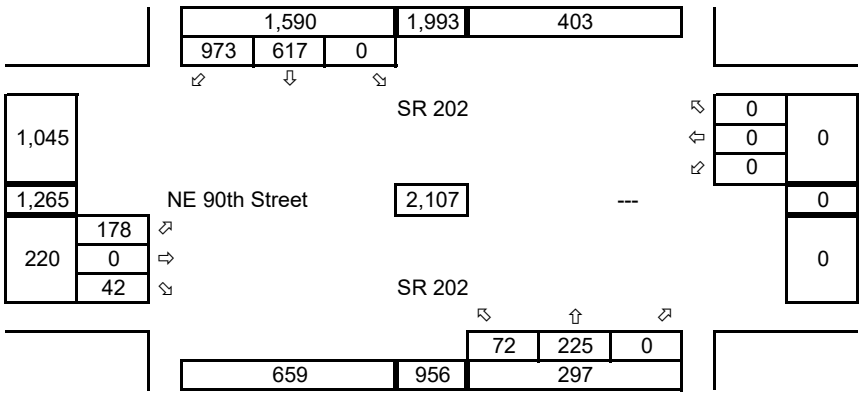
Date **10/27/2016**

Data Source: **idax**



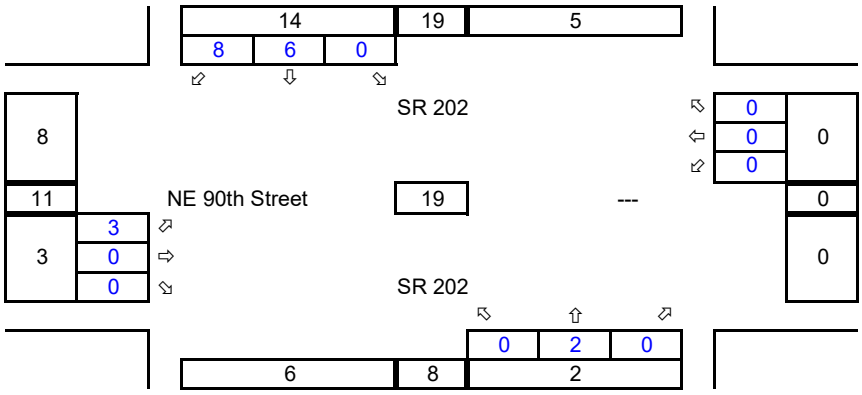
Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

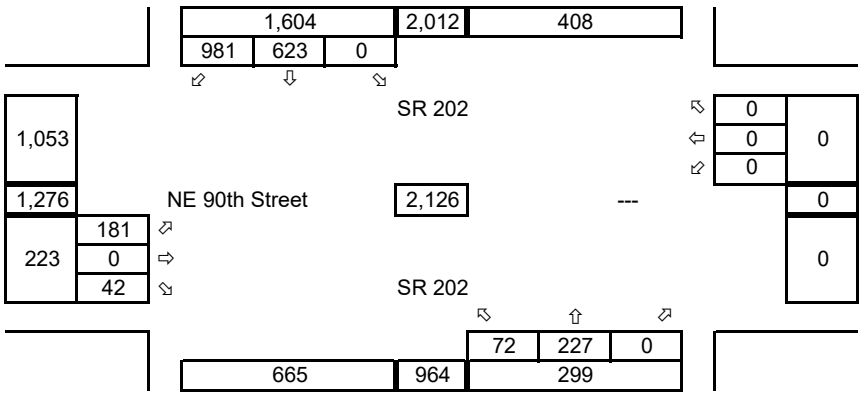


Total Development Trips
Average Weekday
AM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
AM Peak-Hour



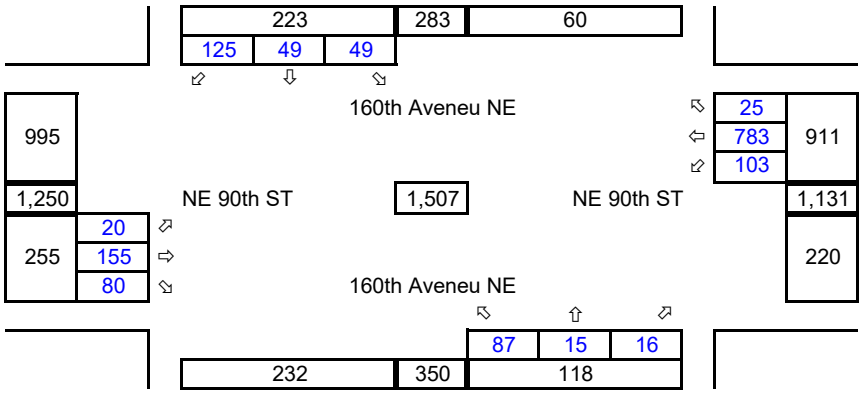
#5 160th Ave NE @ NE 90th St

Synchro ID: 5

Existing
Average Weekday
AM Peak-Hour

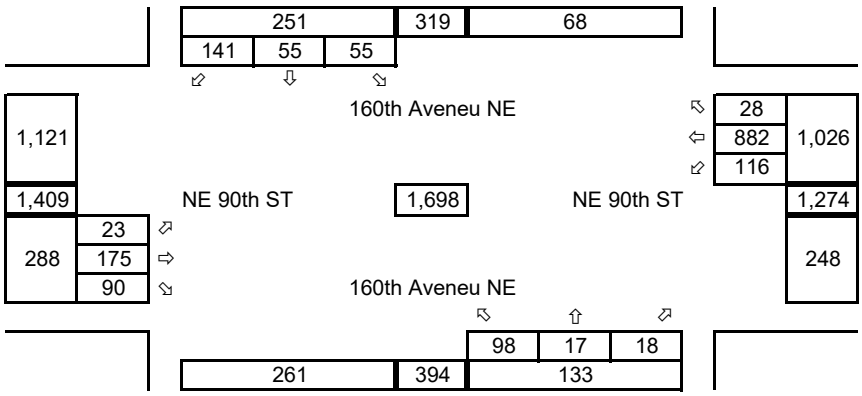
Date **10/27/2016**

Data Source: **idax**



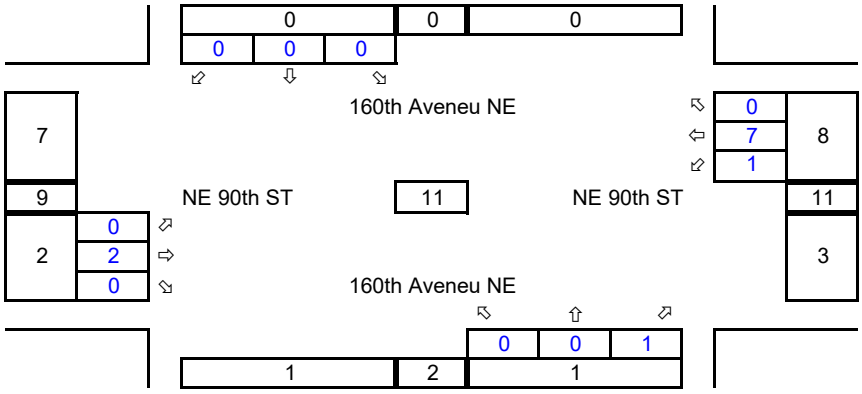
Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

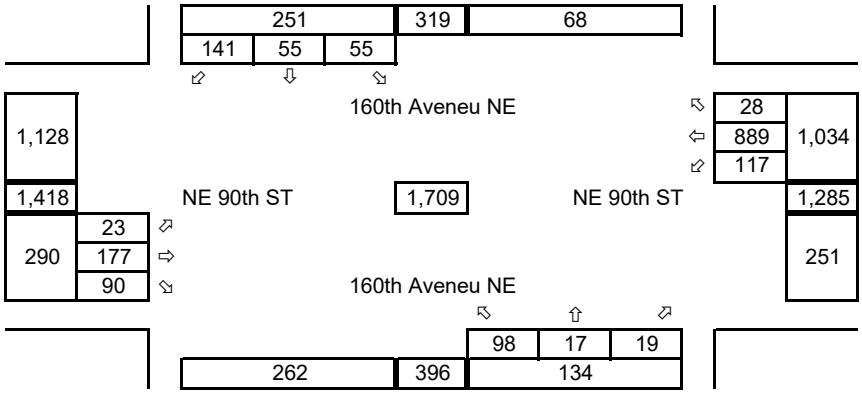


Total Development Trips
Average Weekday
AM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
AM Peak-Hour



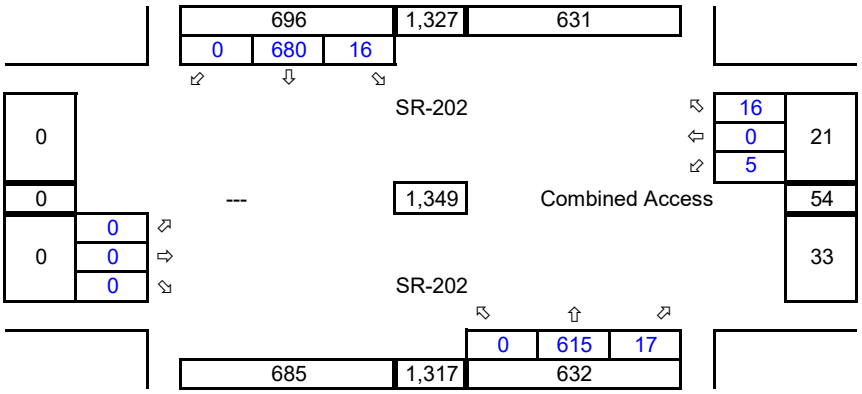
#6 SR-202 @ Site Access

Synchro ID: 6

Existing
Average Weekday
AM Peak-Hour

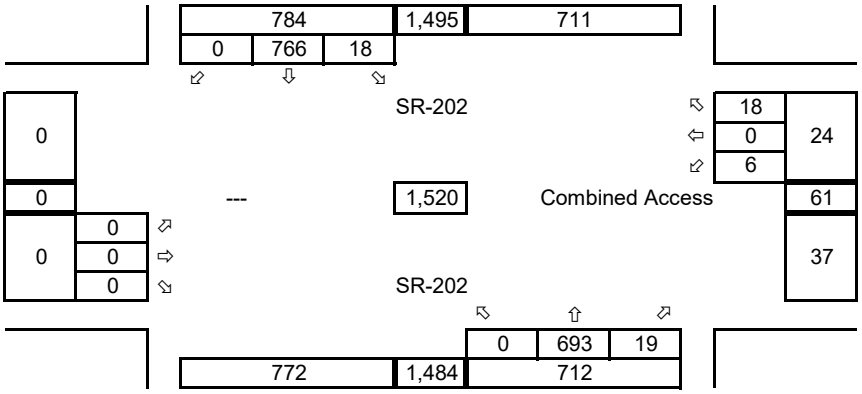
Date **10/27/2016**

Data Source: **idax**



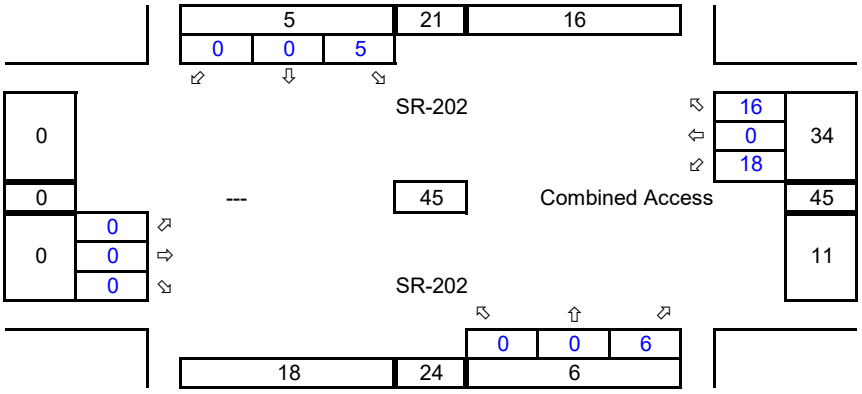
Future w/o Development
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

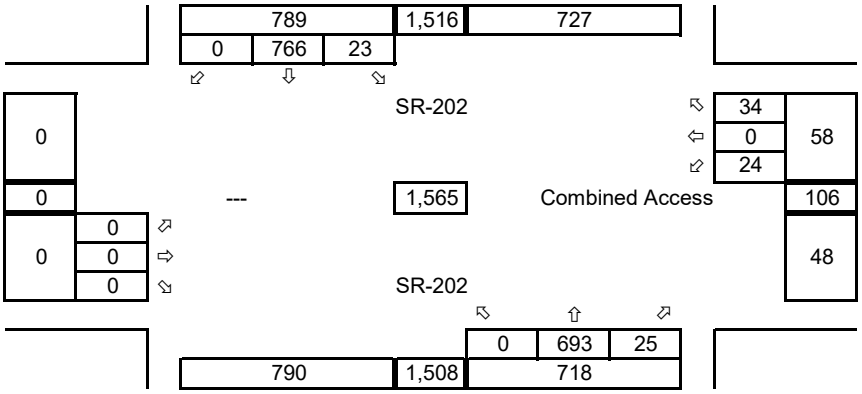


Total Development Trips
Average Weekday
AM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
AM Peak-Hour



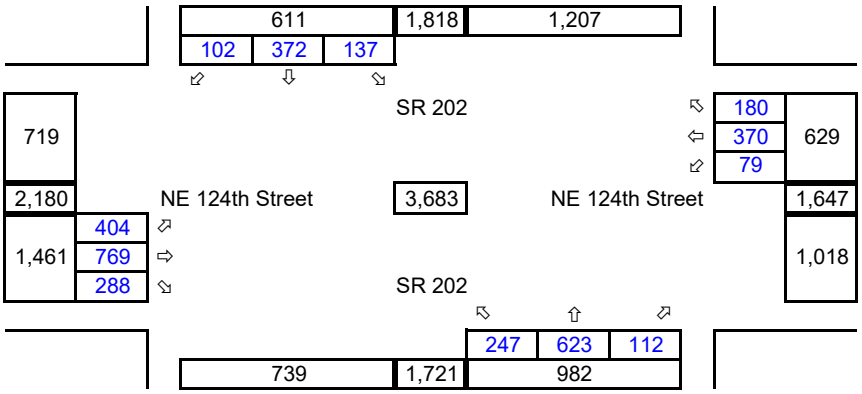
#1 SR-202 @ NE 124th St

Synchro ID: 1

Existing
Average Weekday
PM Peak-Hour

Date **10/27/2016**

Data Source: **idax**

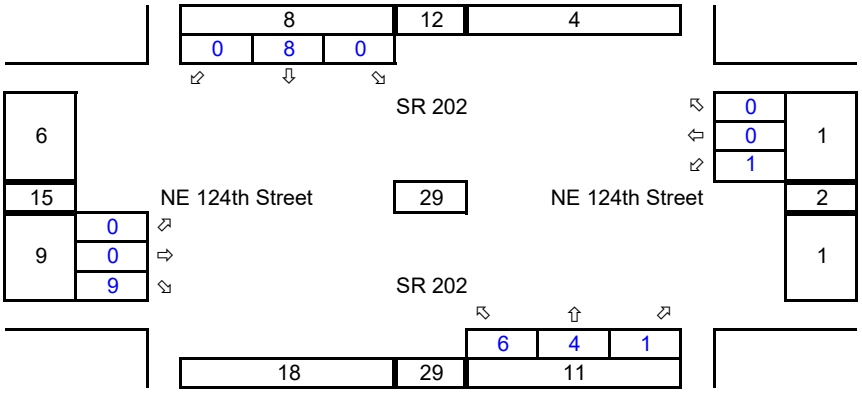


Future w/o Development
Average Weekday
PM Peak-Hour

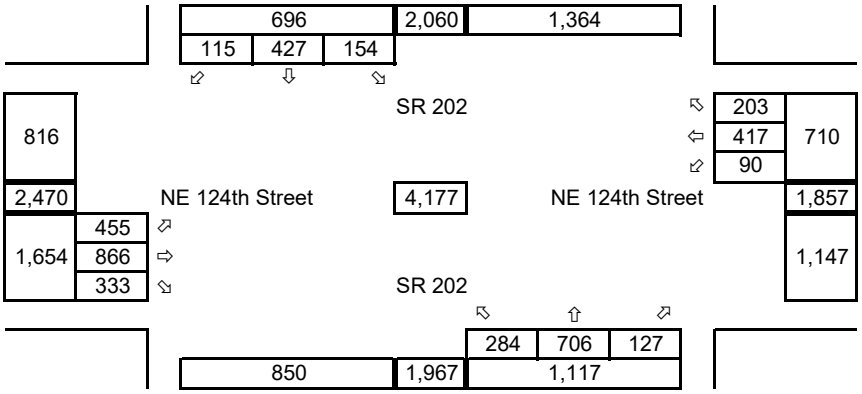
Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

Total Development Trips
Average Weekday
PM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
PM Peak-Hour



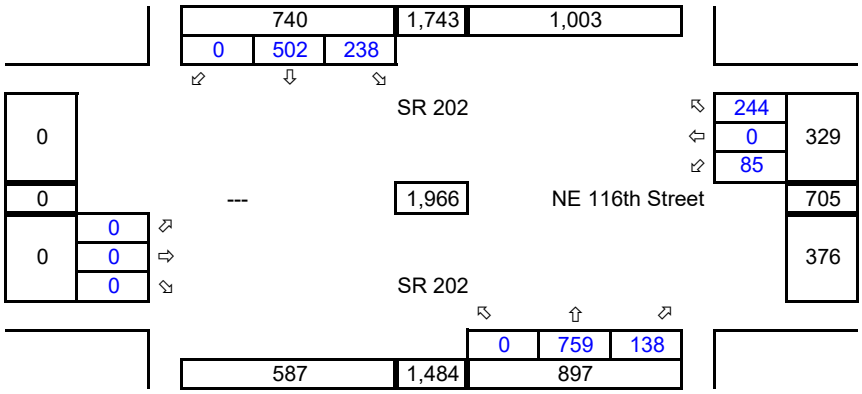
#2 SR-202 @ NE 116th St

Synchro ID: 2

Existing
Average Weekday
PM Peak-Hour

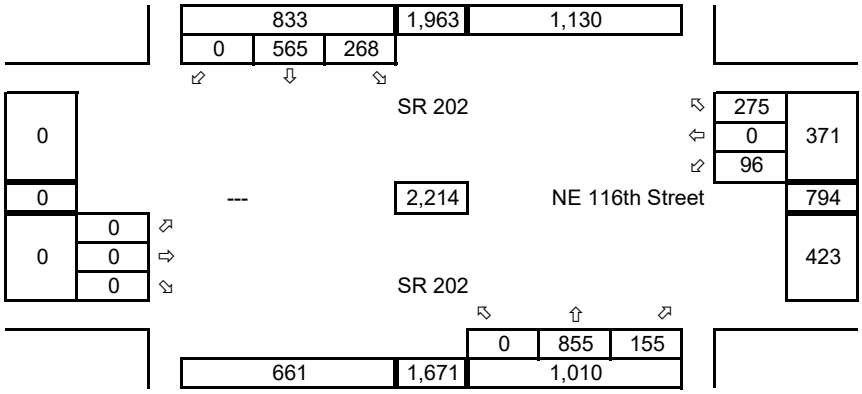
Date **10/27/2016**

Data Source: **idax**



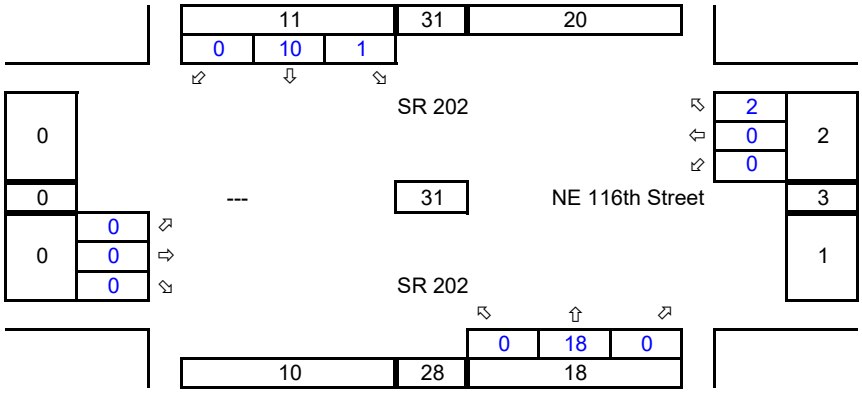
Future w/o Development
Average Weekday
PM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

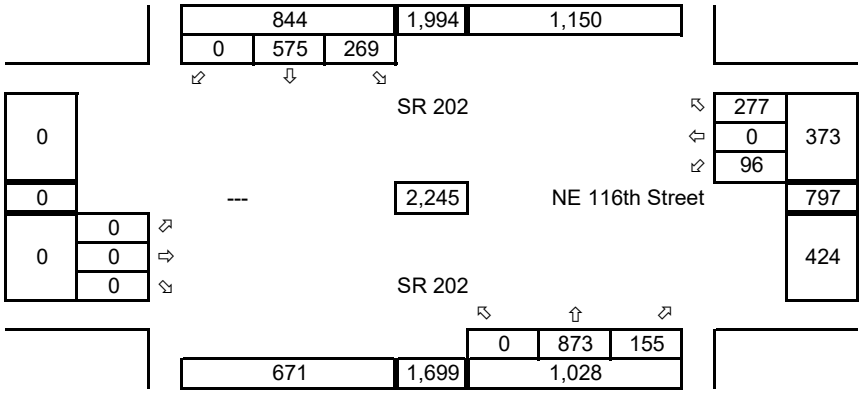


Total Development Trips
Average Weekday
PM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
PM Peak-Hour



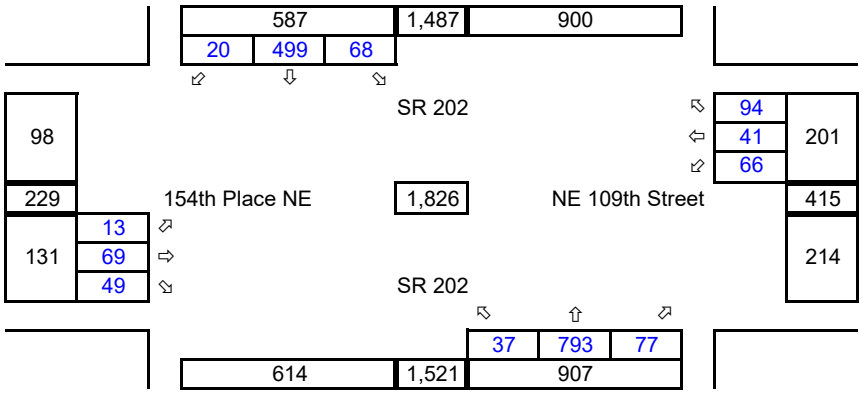
#3 SR-202 @ 154th Pl NE

Synchro ID: 3

Existing
Average Weekday
PM Peak-Hour

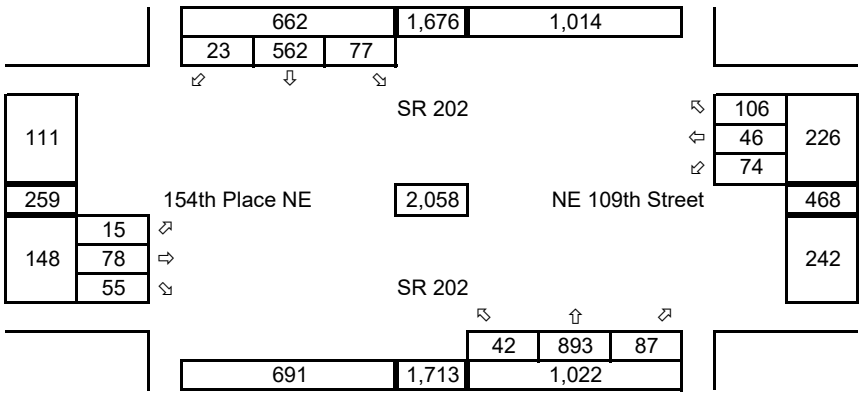
Date **10/27/2016**

Data Source: **idax**



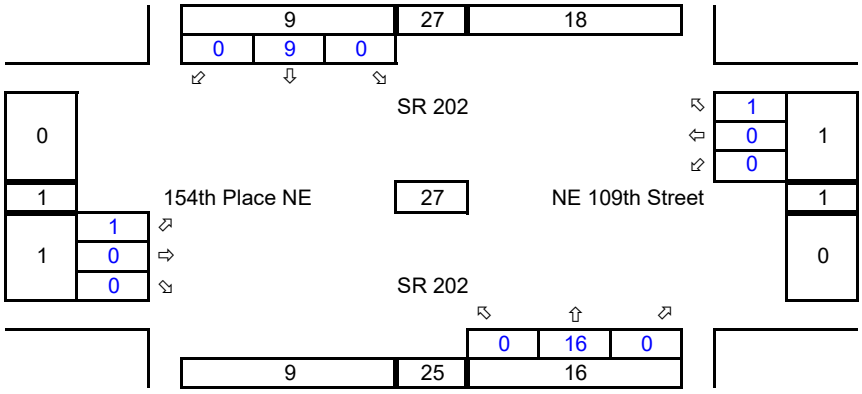
Future w/o Development
Average Weekday
PM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

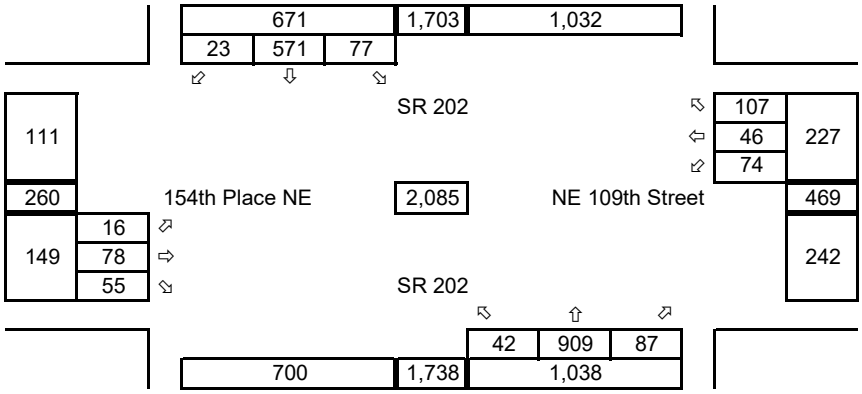


Total Development Trips
Average Weekday
PM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
PM Peak-Hour



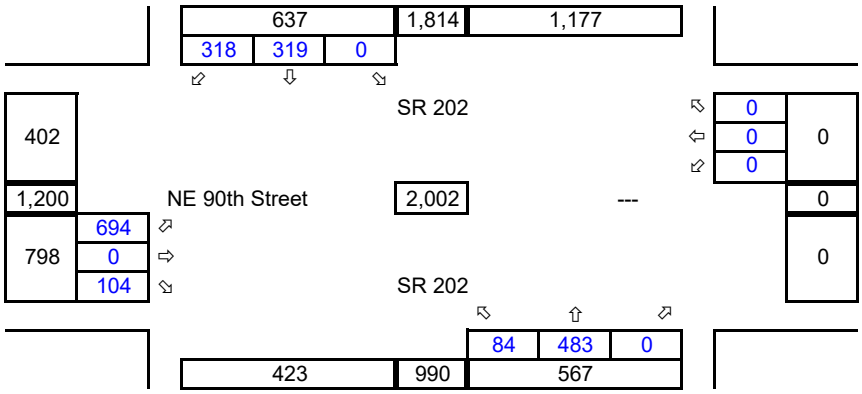
#4 SR-202 @ NE 90th St

Synchro ID: 4

Existing
Average Weekday
PM Peak-Hour

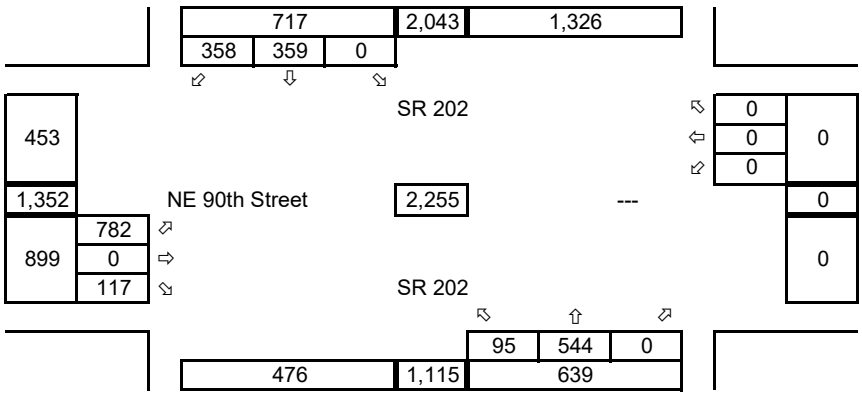
Date **10/27/2016**

Data Source: **idax**



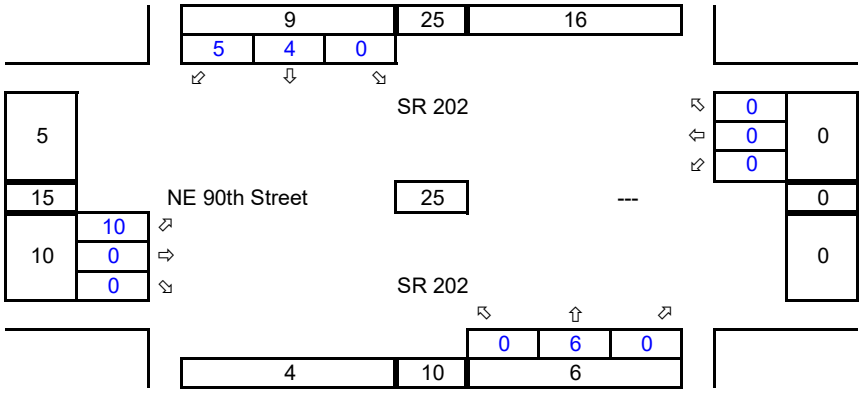
Future w/o Development
Average Weekday
PM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

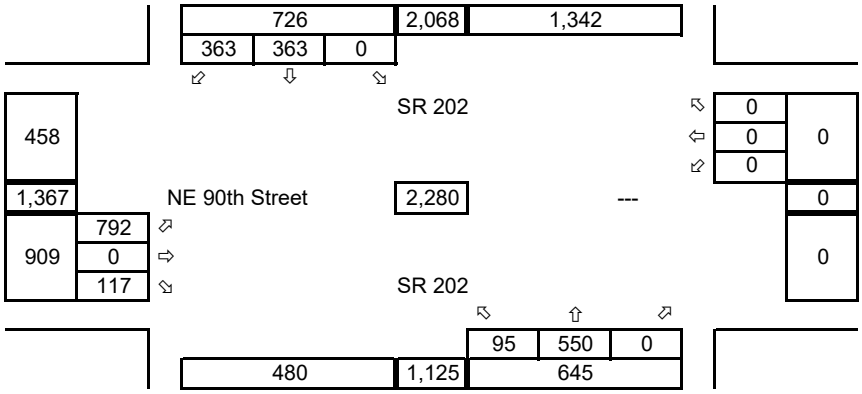


Total Development Trips
Average Weekday
PM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
PM Peak-Hour



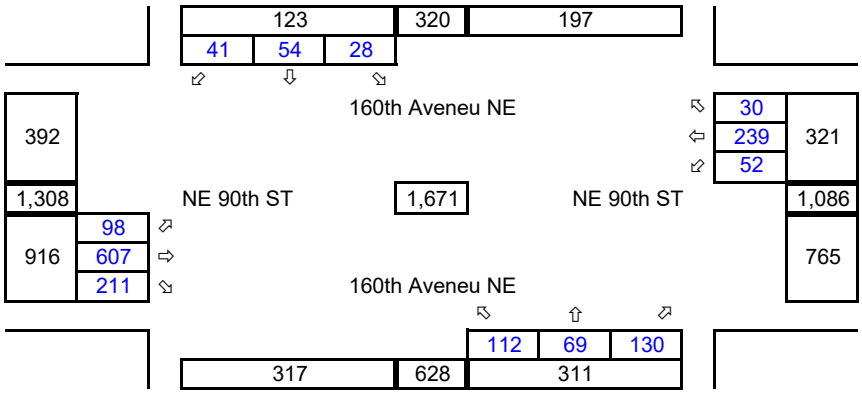
#5 160th Ave NE @ NE 90th St

Synchro ID: 5

Existing
Average Weekday
PM Peak-Hour

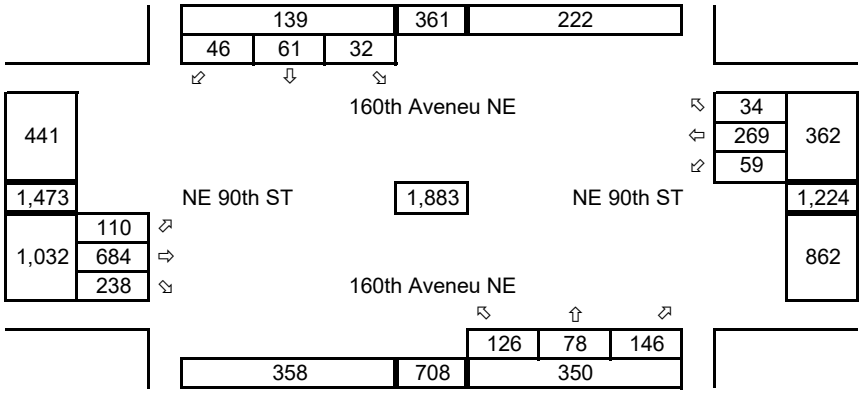
Date **10/27/2016**

Data Source: **idax**



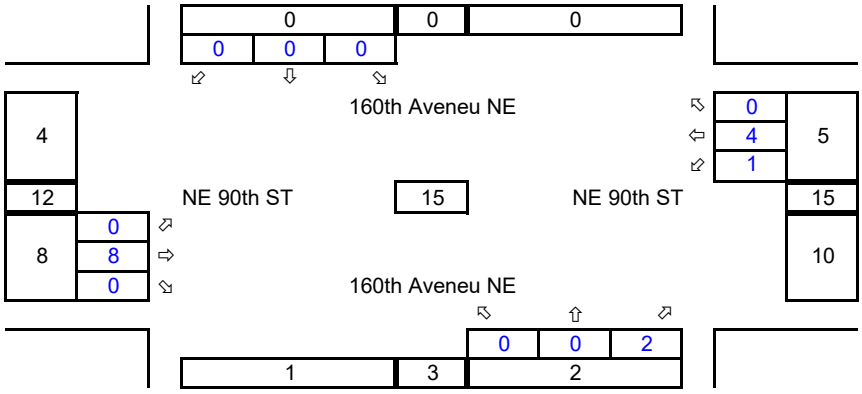
Future w/o Development
Average Weekday
PM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

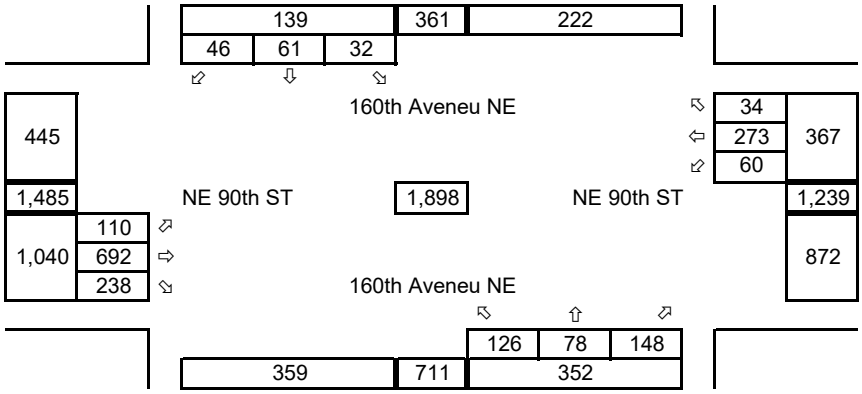


Total Development Trips
Average Weekday
PM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
PM Peak-Hour



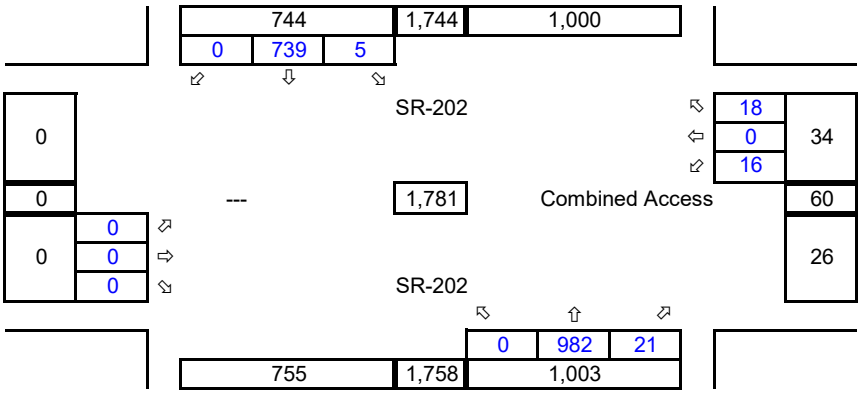
#6 SR-202 @ Site Access

Synchro ID: 6

Existing
Average Weekday
PM Peak-Hour

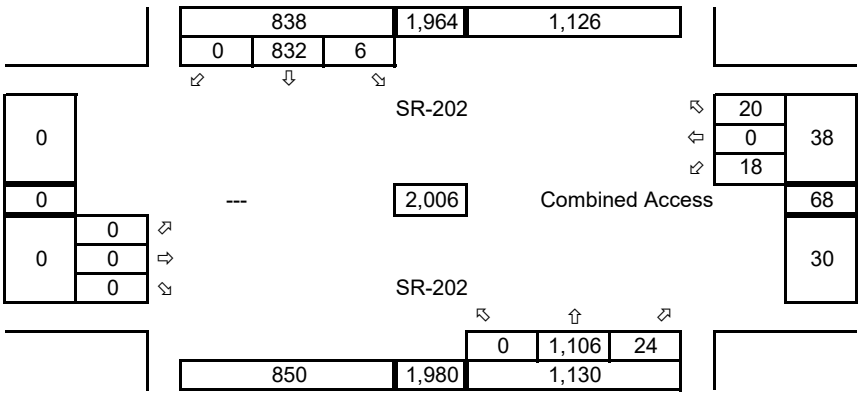
Date **10/27/2016**

Data Source: **idax**



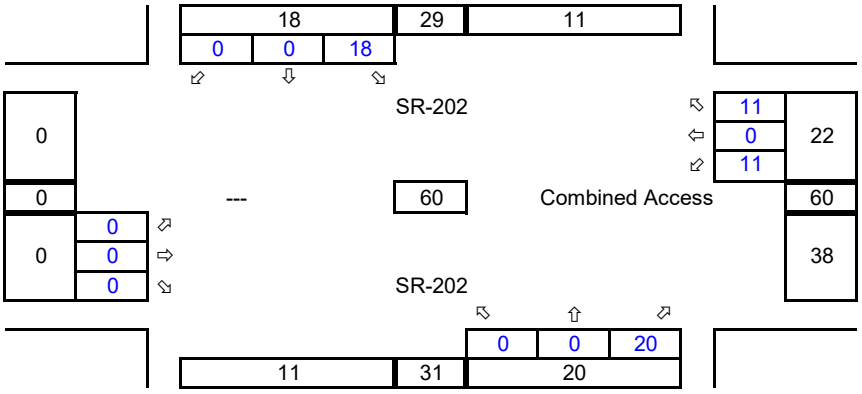
Future w/o Development
Average Weekday
PM Peak-Hour

Year: 2022
Growth Rate = 2.0%
Years of Growth = 6
Total Growth = 1.1262

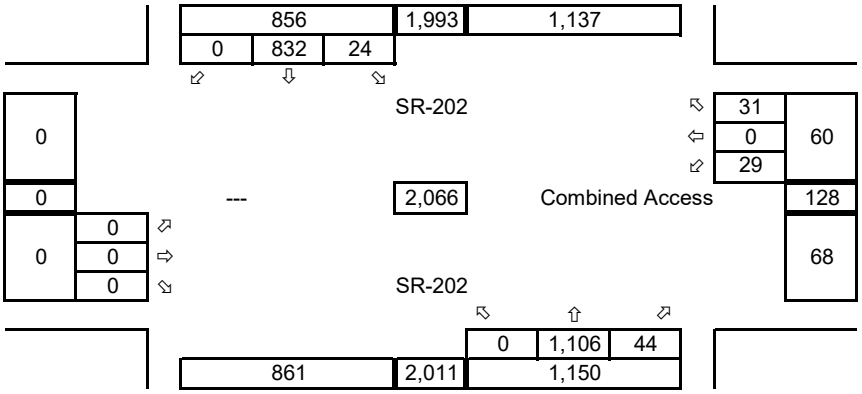


Total Development Trips
Average Weekday
PM Peak-Hour

Existing Zoning R1 & R4
60 Units



Future with Project
Average Weekday
PM Peak-Hour



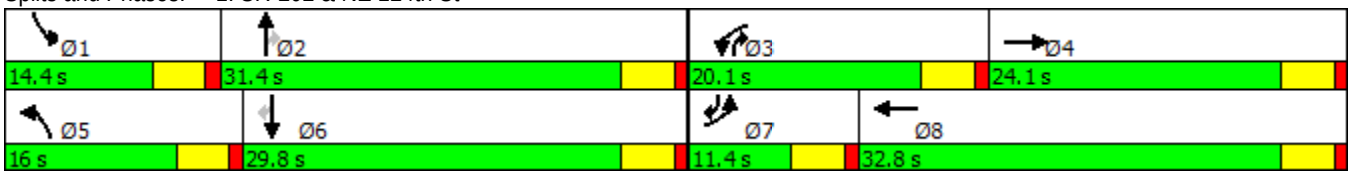
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	303	134	193	899	132	358	302	48	78	445	315
Future Volume (vph)	101	303	134	193	899	132	358	302	48	78	445	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.954			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3311	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1736	3311	0	1736	3405	0	3367	1827	1553	1736	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		72			19				73			127
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
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%
Adj. Flow (vph)	105	316	140	201	936	138	373	315	50	81	464	328
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	456	0	201	1074	0	373	315	50	81	464	328
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	11.4	24.1		20.1	32.8		16.0	31.4	20.1	14.4	29.8	11.4
Total Split (%)	12.7%	26.8%		22.3%	36.4%		17.8%	34.9%	22.3%	16.0%	33.1%	12.7%
Maximum Green (s)	6.9	19.6		15.6	28.3		11.5	26.9	15.6	9.9	25.3	6.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	6.9	21.2		14.0	28.3		11.5	30.2	48.8	8.6	25.3	36.7
Actuated g/C Ratio	0.08	0.24		0.16	0.31		0.13	0.34	0.54	0.10	0.28	0.41
v/c Ratio	0.79	0.55		0.74	0.99		0.87	0.51	0.06	0.49	0.90	0.46
Control Delay	79.8	28.6		53.5	56.9		60.1	29.0	1.5	48.4	54.8	14.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	79.8	28.6		53.5	56.9		60.1	29.0	1.5	48.4	54.8	14.0
LOS	E	C		D	E		E	C	A	D	D	B
Approach Delay		38.2			56.3			42.9			38.9	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	60	103		108	313		108	150	0	44	254	77
Queue Length 95th (ft)	#149	153		#195	#458		#186	237	10	90	#433	150
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	133	833		300	1083		430	614	900	190	513	708
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.55		0.67	0.99		0.87	0.51	0.06	0.43	0.90	0.46

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 46.1 Intersection LOS: D
Intersection Capacity Utilization 83.3% 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: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	304	262	418	52	88	712
Future Volume (vph)	304	262	418	52	88	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.446	
Satd. Flow (perm)	1736	1553	1827	1553	815	1827
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		276		55		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	320	276	440	55	93	749
Shared Lane Traffic (%)						
Lane Group Flow (vph)	320	276	440	55	93	749
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	31.0	31.0	59.0	59.0	59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%	65.6%	65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5	54.5	54.5	54.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	16.9	16.9	32.2	32.2	32.2	32.2
Actuated g/C Ratio	0.29	0.29	0.54	0.54	0.54	0.54
v/c Ratio	0.65	0.43	0.44	0.06	0.21	0.75
Control Delay	27.9	5.6	9.8	2.4	8.7	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	27.9	5.6	9.8	2.4	8.7	16.2
LOS	C	A	A	A	A	B
Approach Delay	17.6		9.0			15.4
Approach LOS	B		A			B
Queue Length 50th (ft)	92	0	76	0	14	167
Queue Length 95th (ft)	246	56	180	14	45	389
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	868	915	1592	1361	710	1592
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	0.37	0.30	0.28	0.04	0.13	0.47

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 59.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 14.4 — Intersection LOS: B
Intersection Capacity Utilization 61.8% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: SR-202 & NE 116th St

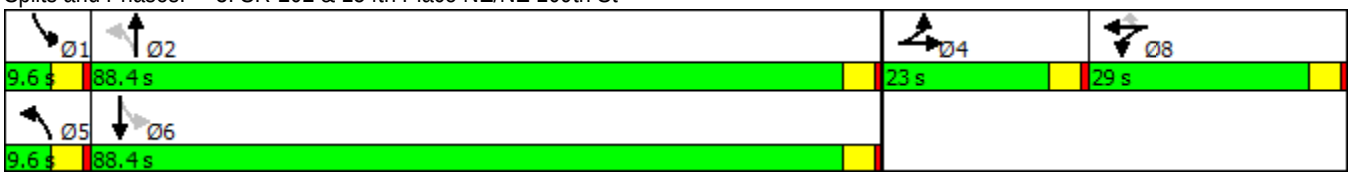
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	44	239	227	43	101	24	370	75	22	932	47
Future Volume (vph)	5	44	239	227	43	101	24	370	75	22	932	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00	0.97		1.00				
Frt		0.888				0.850		0.975			0.993	
Flt Protected		0.999			0.960		0.950			0.950		
Satd. Flow (prot)	0	1600	0	0	1771	1568	1752	1791	0	1752	1832	0
Flt Permitted		0.999			0.960		0.049			0.395		
Satd. Flow (perm)	0	1600	0	0	1767	1515	90	1791	0	729	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135				76		11			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			1	1					1	1		
Confl. Bikes (#/hr)			1			6						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	5	45	246	234	44	104	25	381	77	23	961	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	296	0	0	278	104	25	458	0	23	1009	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	23.0	23.0		29.0	29.0	29.0	9.6	88.4		9.6	88.4	
Total Split (%)	15.3%	15.3%		19.3%	19.3%	19.3%	6.4%	58.9%		6.4%	58.9%	
Maximum Green (s)	18.5	18.5		24.5	24.5	24.5	5.1	83.9		5.1	83.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		17.8			24.4	24.4	84.5	81.6		84.5	81.6	
Actuated g/C Ratio		0.12			0.17	0.17	0.59	0.57		0.59	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.93			0.92	0.32	0.22	0.45		0.05	0.96	
Control Delay		69.8			93.9	21.5	15.6	19.4		11.2	50.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		69.8			93.9	21.5	15.6	19.4		11.2	50.4	
LOS		E			F	C	B	B		B	D	
Approach Delay		69.8			74.2			19.2			49.5	
Approach LOS		E			E			B			D	
Queue Length 50th (ft)		165			274	24	9	250		8	934	
Queue Length 95th (ft)		#354			#459	81	21	339		20	#1272	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		325			305	324	112	1062		468	1083	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.91			0.91	0.32	0.22	0.43		0.05	0.93	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 142.9
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 49.9 Intersection LOS: D
Intersection Capacity Utilization 95.4% 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: 3: SR-202 & 154th Place NE/NE 109th St



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	181	42	72	227	623	981
Future Volume (vph)	181	42	72	227	623	981
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.94				0.98
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	1845	1568
Flt Permitted	0.950		0.302			
Satd. Flow (perm)	1752	1471	557	1845	1845	1533
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		43				989
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		17				
Confl. Bikes (#/hr)						4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	187	43	74	234	642	1011
Shared Lane Traffic (%)						
Lane Group Flow (vph)	187	43	74	234	642	1011
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	22.6	22.6	9.6	67.4	57.8	57.8
Total Split (%)	25.1%	25.1%	10.7%	74.9%	64.2%	64.2%
Maximum Green (s)	18.1	18.1	5.1	62.9	53.3	53.3
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	14.2	14.2	65.8	65.8	57.9	57.9
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.65	0.65

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
v/c Ratio	0.67	0.16	0.15	0.17	0.54	0.75
Control Delay	46.6	11.2	4.5	4.2	11.6	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	11.2	4.5	4.2	11.6	5.1
LOS	D	B	A	A	B	A
Approach Delay	40.0			4.3	7.6	
Approach LOS	D			A	A	
Queue Length 50th (ft)	96	0	9	32	184	4
Queue Length 95th (ft)	163	27	24	64	312	55
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	356	334	480	1363	1200	1343
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	0.53	0.13	0.15	0.17	0.54	0.75

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 10.5 — Intersection LOS: B
Intersection Capacity Utilization 72.4% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: SR-202 & NE 90th St

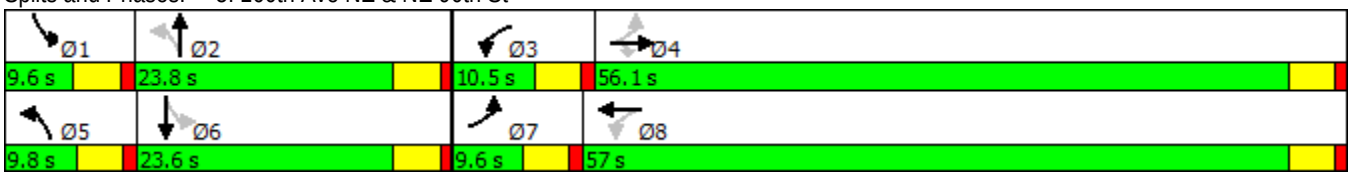
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	177	90	117	889	28	98	17	19	55	55	141
Future Volume (vph)	23	177	90	117	889	28	98	17	19	55	55	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96	0.98	1.00		0.95	0.98		0.99	0.93	
Frt			0.850		0.995			0.921			0.892	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1553	1736	1815	0	1736	1653	0	1736	1516	0
Flt Permitted	0.082			0.577			0.443			0.732		
Satd. Flow (perm)	150	1827	1484	1035	1815	0	772	1653	0	1320	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115		2			20			113	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	12		9	9		12	27		5	5		27
Confl. Bikes (#/hr)						5						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 (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	24	188	96	124	946	30	104	18	20	59	59	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	188	96	124	976	0	104	38	0	59	209	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	56.1	56.1	10.5	57.0		9.8	23.8		9.6	23.6	
Total Split (%)	9.6%	56.1%	56.1%	10.5%	57.0%		9.8%	23.8%		9.6%	23.6%	
Maximum Green (s)	5.1	51.6	51.6	6.0	52.5		5.3	19.3		5.1	19.1	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	50.9	45.8	45.8	55.0	52.8		23.5	19.4		23.2	19.3	
Actuated g/C Ratio	0.55	0.50	0.50	0.60	0.57		0.25	0.21		0.25	0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.14	0.21	0.12	0.19	0.94		0.41	0.10		0.17	0.52	
Control Delay	9.5	14.1	2.1	8.7	38.1		31.7	20.5		26.3	21.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.5	14.1	2.1	8.7	38.1		31.7	20.5		26.3	21.5	
LOS	A	B	A	A	D		C	C		C	C	
Approach Delay		10.0			34.8			28.7			22.6	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	5	62	0	30	467		43	8		24	47	
Queue Length 95th (ft)	15	102	18	53	#911		94	37		59	128	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	170	1027	885	662	1039		252	363		355	405	
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	0.14	0.18	0.11	0.19	0.94		0.41	0.10		0.17	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 92.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 28.3 Intersection LOS: C
Intersection Capacity Utilization 88.1% 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: 5: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	1.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	34	693	25	23	766
Future Vol, veh/h	24	34	693	25	23	766
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	51	51	86	86	86	86
Heavy Vehicles, %	0	0	4	4	3	3
Mvmt Flow	47	67	806	29	27	891

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1750	806	0	0	806	0
Stage 1	806	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	95	385	-	-	814	-
Stage 1	443	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	385	-	-	814	-
Mov Cap-2 Maneuver	225	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	368	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	225	385	814	-
HCM Lane V/C Ratio	-	-	0.209	0.173	0.033	-
HCM Control Delay (s)	-	-	25.2	16.3	9.6	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.6	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	866	333	90	417	203	284	706	127	154	427	115
Future Volume (vph)	455	866	333	90	417	203	284	706	127	154	427	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	590		0	285		0	205		0	140		0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99										
Frt		0.958			0.951				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3370	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3370	0	1770	3366	0	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			59				95			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		930			1248			851			779	
Travel Time (s)		21.1			28.4			19.3			17.7	
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	464	884	340	92	426	207	290	720	130	157	436	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	1224	0	92	633	0	290	720	130	157	436	117
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	33.4	45.7		11.4	23.7		19.0	47.9	11.4	15.0	43.9	33.4
Total Split (%)	27.8%	38.1%		9.5%	19.8%		15.8%	39.9%	9.5%	12.5%	36.6%	27.8%
Maximum Green (s)	28.9	41.2		6.9	19.2		14.5	43.4	6.9	10.5	39.4	28.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max	None	None	Max	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.9	41.2		6.9	19.2		13.7	43.4	54.8	10.5	40.2	73.6
Actuated g/C Ratio	0.24	0.34		0.06	0.16		0.11	0.36	0.46	0.09	0.34	0.61
v/c Ratio	1.09	1.03		0.91	1.08		0.74	1.07	0.17	1.02	0.70	0.12
Control Delay	112.9	71.1		124.5	102.6		63.5	92.2	6.8	131.9	42.0	5.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.9	71.1		124.5	102.6		63.5	92.2	6.8	131.9	42.0	5.7
LOS	F	E		F	F		E	F	A	F	D	A
Approach Delay		82.6			105.4			75.2			55.9	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	~404	~518		72	~266		112	~618	15	~126	295	18
Queue Length 95th (ft)	#611	#657		#176	#387		160	#853	51	#267	417	43
Internal Link Dist (ft)		850			1168			771			699	
Turn Bay Length (ft)	590			285			205			140		
Base Capacity (vph)	426	1190		101	588		414	673	774	154	624	991
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.03		0.91	1.08		0.70	1.07	0.17	1.02	0.70	0.12

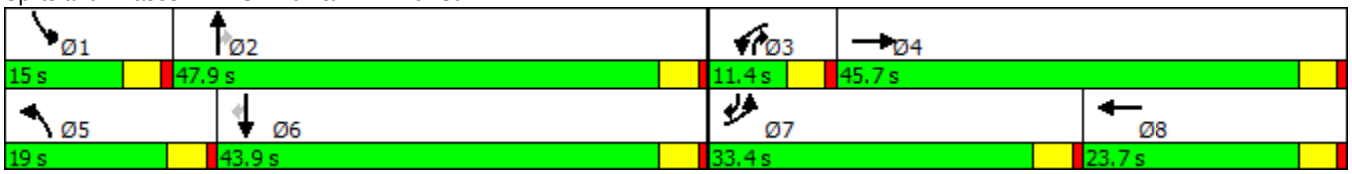
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 80.0 — Intersection LOS: F
Intersection Capacity Utilization 103.9% — ICU Level of Service G
Analysis Period (min) 15

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

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

Splits and Phases: 1: SR-202 & NE 124th St



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	277	873	155	269	575
Future Volume (vph)	96	277	873	155	269	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75	0		300	100	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.250	
Satd. Flow (perm)	1765	1583	1863	1583	466	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		203		160		
Link Speed (mph)	30		30			30
Link Distance (ft)	1132		2212			1750
Travel Time (s)	25.7		50.3			39.8
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	99	286	900	160	277	593
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	286	900	160	277	593
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	67.5	67.5	67.5	67.5
Total Split (%)	25.0%	25.0%	75.0%	75.0%	75.0%	75.0%
Maximum Green (s)	18.0	18.0	63.0	63.0	63.0	63.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	11.2	11.2	64.1	64.1	64.1	64.1
Actuated g/C Ratio	0.13	0.13	0.76	0.76	0.76	0.76
v/c Ratio	0.42	0.74	0.64	0.13	0.78	0.42
Control Delay	38.3	23.2	8.1	0.9	27.1	5.2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	23.2	8.1	0.9	27.1	5.2
LOS	D	C	A	A	C	A
Approach Delay	27.1		7.0			12.2
Approach LOS	C		A			B
Queue Length 50th (ft)	48	40	160	0	63	80
Queue Length 95th (ft)	94	121	385	16	#289	188
Internal Link Dist (ft)	1052		2132			1670
Turn Bay Length (ft)	75			300	100	
Base Capacity (vph)	378	498	1416	1241	354	1416
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	0.26	0.57	0.64	0.13	0.78	0.42

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 12.3 Intersection LOS: B
Intersection Capacity Utilization 77.4% 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: 2: SR-202 & NE 116th St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	78	55	74	46	107	42	909	87	77	571	23
Future Volume (vph)	16	78	55	74	46	107	42	909	87	77	571	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	95		0	90		0
Storage Lanes	0		0	0		1	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.98		1.00				
Frt		0.950				0.850		0.987			0.994	
Flt Protected		0.995			0.970		0.950			0.950		
Satd. Flow (prot)	0	1739	0	0	1807	1583	1770	1835	0	1770	1852	0
Flt Permitted		0.995			0.970		0.285			0.074		
Satd. Flow (perm)	0	1739	0	0	1799	1548	531	1835	0	138	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				110		6			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		193			229			955			2212	
Travel Time (s)		4.4			5.2			21.7			50.3	
Confl. Peds. (#/hr)			3	3					1	1		
Confl. Bikes (#/hr)			2			1			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	16	80	57	76	47	110	43	937	90	79	589	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	153	0	0	123	110	43	1027	0	79	613	0
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8	2			6		
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5	22.5	9.6	55.5		9.5	55.4	
Total Split (%)	20.5%	20.5%		20.5%	20.5%	20.5%	8.7%	50.5%		8.6%	50.4%	
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	5.1	51.0		5.0	50.9	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)		12.5			12.0	12.0	55.7	51.8		56.5	53.7	
Actuated g/C Ratio		0.13			0.12	0.12	0.57	0.53		0.58	0.55	
v/c Ratio		0.63			0.55	0.38	0.12	1.05		0.48	0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		47.0			51.3	12.1	10.3	67.7		21.7	20.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		47.0			51.3	12.1	10.3	67.7		21.7	20.4	
LOS		D			D	B	B	E		C	C	
Approach Delay		47.0			32.8			65.4			20.5	
Approach LOS		D			C			E			C	
Queue Length 50th (ft)		78			74	0	10	~726		18	265	
Queue Length 95th (ft)		151			138	49	30	#1131		#58	471	
Internal Link Dist (ft)		113			149			875			2132	
Turn Bay Length (ft)						90	95			90		
Base Capacity (vph)		344			338	379	370	981		165	1024	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.44			0.36	0.29	0.12	1.05		0.48	0.60	

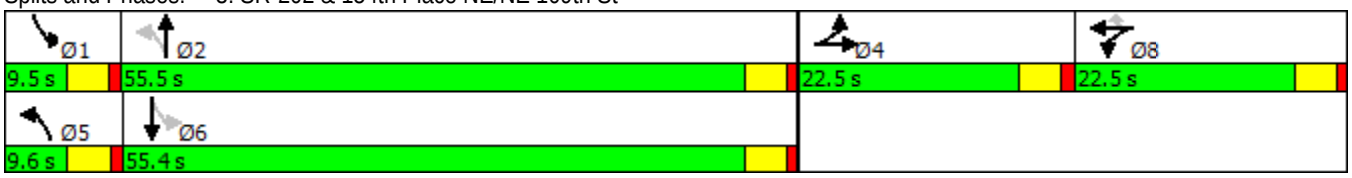
Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 97.2
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 46.1 Intersection LOS: D
Intersection Capacity Utilization 88.0% ICU Level of Service E
Analysis Period (min) 15

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

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

Splits and Phases: 3: SR-202 & 154th Place NE/NE 109th St



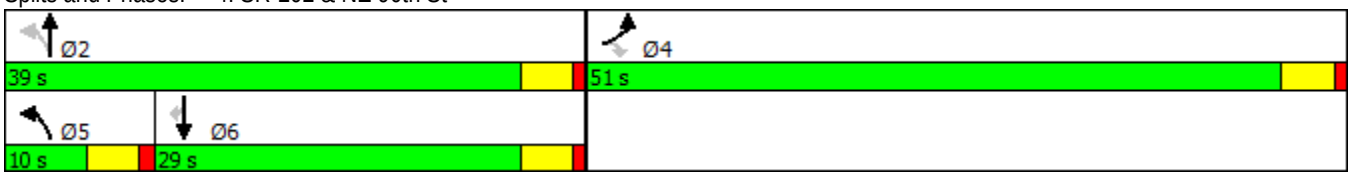
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	792	117	95	550	363	363
Future Volume (vph)	792	117	95	550	363	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	110	120			135
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.96				
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.262			
Satd. Flow (perm)	1770	1521	488	1863	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		66				352
Link Speed (mph)	30			30	30	
Link Distance (ft)	217			641	473	
Travel Time (s)	4.9			14.6	10.8	
Confl. Peds. (#/hr)		7				
Confl. Bikes (#/hr)		3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	825	122	99	573	378	378
Shared Lane Traffic (%)						
Lane Group Flow (vph)	825	122	99	573	378	378
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	51.0	51.0	10.0	39.0	29.0	29.0
Total Split (%)	56.7%	56.7%	11.1%	43.3%	32.2%	32.2%
Maximum Green (s)	46.5	46.5	5.5	34.5	24.5	24.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	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)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	42.8	42.8	34.7	34.7	26.9	26.9
Actuated g/C Ratio	0.49	0.49	0.40	0.40	0.31	0.31
v/c Ratio	0.94	0.16	0.36	0.77	0.65	0.51

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	41.0	6.4	21.8	32.0	34.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	6.4	21.8	32.0	34.7	6.9
LOS	D	A	C	C	C	A
Approach Delay	36.5			30.5	20.8	
Approach LOS	D			C	C	
Queue Length 50th (ft)	403	15	36	285	196	11
Queue Length 95th (ft)	#663	42	70	#458	#321	83
Internal Link Dist (ft)	137			561	393	
Turn Bay Length (ft)		110	120			135
Base Capacity (vph)	955	851	277	746	579	734
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	0.86	0.14	0.36	0.77	0.65	0.51

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 86.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 29.8 Intersection LOS: C
Intersection Capacity Utilization 80.3% 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: 4: SR-202 & NE 90th St



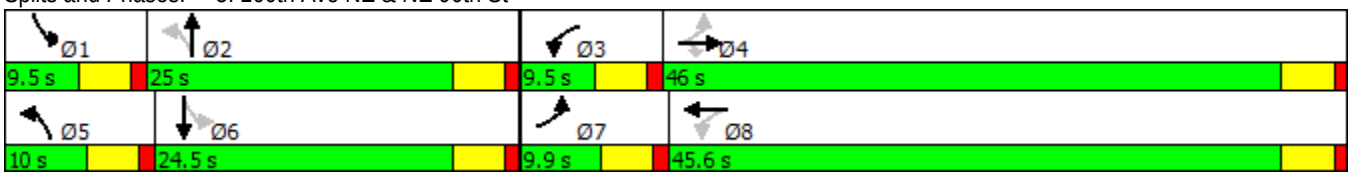
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	692	238	60	273	34	126	78	148	32	61	46
Future Volume (vph)	110	692	238	60	273	34	126	78	148	32	61	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	80		0	80		0	115		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.96		1.00		0.95	0.96		0.98	0.96	
Frt			0.850		0.983			0.902			0.936	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1599	1787	1841	0	1787	1635	0	1787	1698	0
Flt Permitted	0.454			0.109			0.607			0.545		
Satd. Flow (perm)	846	1881	1533	205	1841	0	1080	1635	0	1004	1698	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			256		9			98			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		629			430			546			516	
Travel Time (s)		14.3			9.8			12.4			11.7	
Confl. Peds. (#/hr)	7		8	8		7	26		14	14		26
Confl. Bikes (#/hr)			2			1			1			
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%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	118	744	256	65	294	37	135	84	159	34	66	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	744	256	65	331	0	135	243	0	34	115	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	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.9	46.0	46.0	9.5	45.6		10.0	25.0		9.5	24.5	
Total Split (%)	11.0%	51.1%	51.1%	10.6%	50.7%		11.1%	27.8%		10.6%	27.2%	
Maximum Green (s)	5.4	41.5	41.5	5.0	41.1		5.5	20.5		5.0	20.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	41.2	37.1	37.1	40.6	36.8		28.3	25.2		25.4	20.4	
Actuated g/C Ratio	0.49	0.44	0.44	0.48	0.44		0.34	0.30		0.30	0.24	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.25	0.90	0.31	0.34	0.41		0.33	0.43		0.10	0.26	
Control Delay	10.7	37.0	3.1	13.8	17.6		24.3	20.1		21.2	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	37.0	3.1	13.8	17.6		24.3	20.1		21.2	22.0	
LOS	B	D	A	B	B		C	C		C	C	
Approach Delay		26.5			16.9			21.6			21.9	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	29	364	0	16	117		55	70		13	36	
Queue Length 95th (ft)	54	#587	40	33	183		99	146		34	82	
Internal Link Dist (ft)		549			350			466			436	
Turn Bay Length (ft)	200			80			80			115		
Base Capacity (vph)	476	945	897	194	921		411	559		351	439	
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	0.25	0.79	0.29	0.34	0.36		0.33	0.43		0.10	0.26	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 23.4 Intersection LOS: C
Intersection Capacity Utilization 77.6% 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: 160th Ave NE & NE 90th St



Intersection						
Int Delay, s/veh	1.7					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	31	1106	44	24	832
Future Vol, veh/h	29	31	1106	44	24	832
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	98	98	92	92
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	58	62	1129	45	26	904

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2086	1129	0	0	1129	0
Stage 1	1129	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	59	251	-	-	619	-
Stage 1	312	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 57	251	-	-	619	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.2	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	178	251	619	-
HCM Lane V/C Ratio	-	-	0.326	0.247	0.042	-
HCM Control Delay (s)	-	-	34.7	24	11.1	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	1.3	0.9	0.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon