GTC

Gibson Traffic Consultants
2813 Rockefeller Avenue
Suite B
Everett, WA 98201
425.339.8266

Tukwila Birth to K
Traffic Impact Analysis

Jurisdiction: City of Tukwila

February 2017

ATTACHMENT I   GTC #16-178

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ATTACHMENTS

1. DEVELOPMENT IDENTIFICATION

Gibson Traffic Consultants, Inc. (GTC) has been retained to provide a traffic impact analysis for the proposed Birth to K school for the Tukwila School District. GTC is a professional traffic engineering consulting firm registered and licensed in the State of Washington. Brad Lincoln, responsible for this report and traffic analysis, is a licensed professional engineer (Civil) in the State of Washington and member of the Washington State section of ITE.

The Birth to K school is located north of Showalter Middle School and is proposed to have access to S 142nd Street along the north side of Showalter Middle School and Foster High School. The school is proposed to consist of approximately 53,000 SF of school space for up to 440 students. Approximately 300 students will be kindergarten students and 140 will be birth to pre-kindergarten students. It is anticipated that as many as 75% of the kindergarten students will be bussed to the site. The start and end times for the different students, kindergarten, pre-kindergarten and infant/toddler, will be staggered by approximately 30 minutes. The site is proposed to have 80 parking spaces plus room for 6 busses. The school is expected to be built by the end of 2019. A site vicinity map has been included in Figure 1.

2. METHODOLOGY

The trip generation calculations for the Tukwila Birth to K school have been performed based on data contained in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual*. The calculations have been performed by using a combination of trip generation data for elementary school and daycare centers.

The scope of the analysis contained in this report is based on the discussions with City of Tukwila staff. The analysis has been performed for the AM peak-hour and the school PM peak-hour to account for the two times when the school's trip generation is the highest. The following intersections have been analyzed as part of this report:

1. 42nd Avenue S at S 144th Street
2. 42nd Avenue S at S 142nd Street

The analysis has been performed for the 2016 existing conditions, 2022 baseline conditions and 2022 future with development conditions. This time period has been utilized to account for a typical 6-year horizon period; even though the school is anticipated to be completed by 2020.
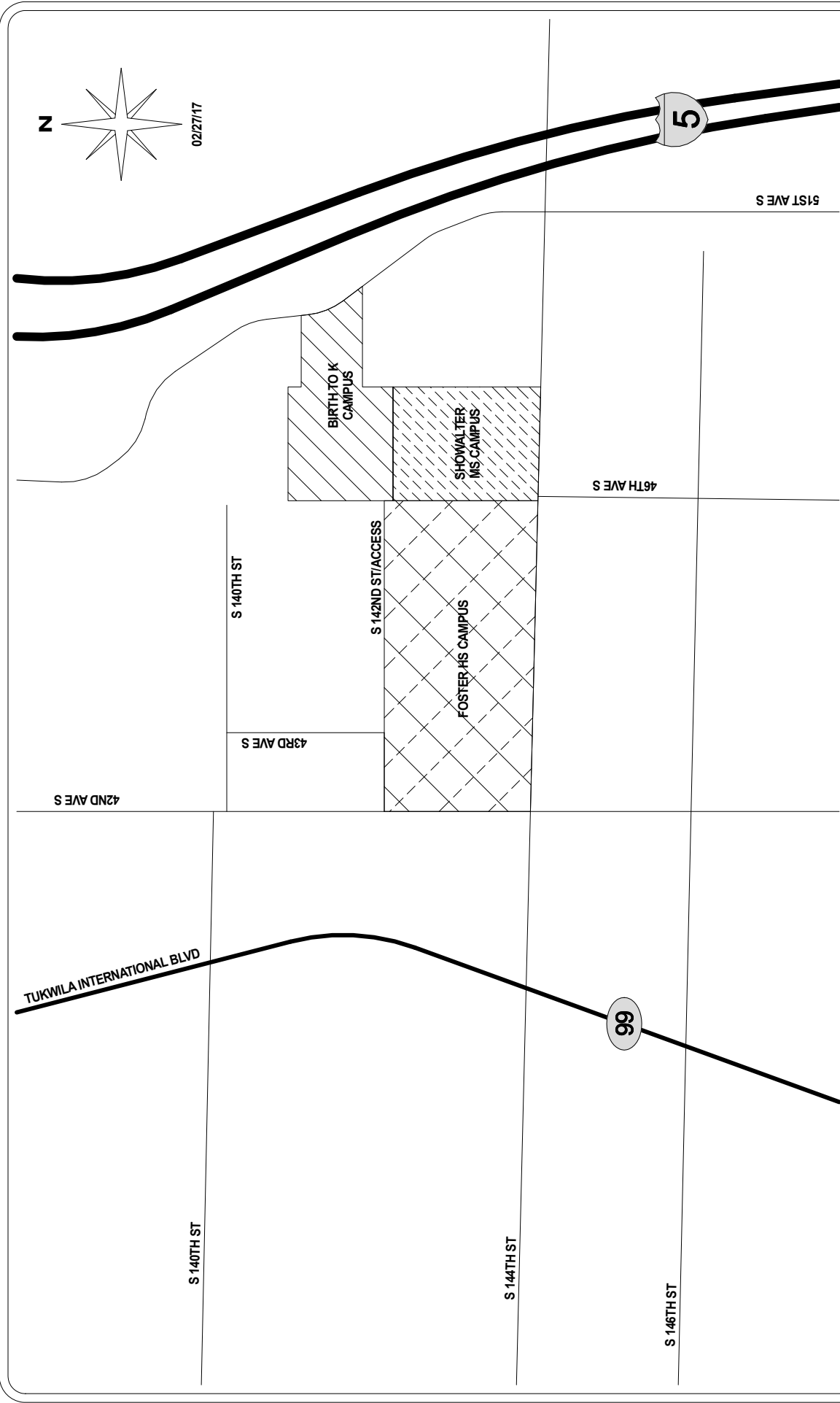
N 02/27/17

5

TRAFFIC IMPACT STUDY
GTC #16-178

FIGURE 1
SITE VICINITY MAP

51ST AVE S

BIRTH TO K CAMPUS

SHOWALTER MS CAMPUS

46TH AVE S

S 140TH ST

S 142ND ST/ACCESS

FOSTER HS CAMPUS

43RD AVE S

42ND AVE S

DEVELOPMENT SITE

TUKWILA INTERNATIONAL BLVD

99

GIBSON TRAFFIC CONSULTANTS

LEGEND

TUKWILA SCHOOL DISTRICT
BIRTH TO K CAMPUS
440 STUDENTS

CITY OF TUKWILA

S 140TH ST

S 144TH ST

S 146TH ST

156

Congestion at intersections is generally measured in terms of level of service (LOS). In accordance with *Highway Capacity Manual: 2010 Edition (HCM)* by the Transportation Research Board, road facilities and intersections are rated between LOS A and LOS F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. The level of service at signalized, roundabout and all-way stop-controlled intersections is based on the average delay of all approaches. The level of service for two-way stop-controlled intersections is based on average delays for the stopped approach with the highest delay. Geometric characteristics and conflicting traffic movements are taken into consideration when determining level of service values. A summary of the intersection level of service criteria is included in Table 1.

Table 1: Level of Service Criteria for Intersections

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

The level of service threshold that has been applied to the study intersections in this report is LOS D, based on the surrounding uses and the descriptions identified in the City of Tukwila *Comprehensive Plan*. The level of service analysis has been performed utilizing the *Synchro 9.1, Build 907* software.

---

[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.

3. TRIP GENERATION

The trip generation for the Tukwila Birth to K school is based on a combination of the following ITE Land Use Codes:

- ITE LUC 520 (Elementary School) – 300 students
- ITE LUC 565 (Daycare Center) – 140 students

The kindergarten students will most closely be associated with elementary school kids, especially with up to 75% of the students anticipated to ride the bus. The birth to pre-kindergarten students are most closely associated with daycare center type students since these students will almost certainly rely on parents dropping them off and picking them up.

A daycare center usually includes a significant amount of reduction in new trips being generated since parents will typically utilize a daycare center along a route they already travel. These trips are identified as pass-by trips since they are not new trips to the street system. A 75% pass-by reduction has been approved by many jurisdictions in the Puget Sound region. This pass-by trip reduction has been identified in the trip generation calculations included in the attachments, but has not been applied to the trip generation calculations included in the text of this report or in the calculations utilized for the intersection level of service analysis. This results in all of the trips generated by the school being new trips to the system and results in a conservatively high analysis of the impacts of the school.

The trip generation of the 300 elementary students is summarized in Table 2.

Table 2: Trip Generation Summary – Elementary Students

300 Elementary Students	Average Daily Trips			AM Peak-Hour Trips			School PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Generation Rate	1.29 trips per student			0.45 trips per student			0.28 trips per student		
Splits	50%	50%	100%	55%	45%	100%	45%	55%	100%
Trips	194	193	387	74	61	135	38	46	84

The trip generation of the 140 birth to pre-kindergarten students are summarized in Table 3.

Table 3: Trip Generation Summary – Birth to Pre-K Students

140 Birth to Pre-K Students	Average Daily Trips			AM Peak-Hour Trips			School PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Generation Rate	4.38 trips per student			0.80 trips per student			0.81 trips per student		
Splits	50%	50%	100%	53%	47%	100%	47%	53%	100%
Trips	307	306	613	60	52	112	53	58	113

158

The total trip generation of the Tukwila Birth to K school is summarized in Table 4.

Table 4: Trip Generation Summary – Total Trips

Student Type	Average Daily Trips			AM Peak-Hour Trips			School PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Elementary 300 students	194	193	387	74	61	135	38	46	84
Birth to Pre-K 140 students	307	306	613	60	52	112	53	60	113
Total	501	499	1,000	134	113	247	91	106	197

The trip generation calculations are included in the attachments.

It is important to note that 75% of the kindergarten students are anticipated to ride the bus, which is higher than a typical elementary school. This level of bus ridership would likely reduce the trip generation for the 300 kindergarten kids. However, the mode split for the Tukwila Birth to K school is not known, but it is assumed to be similar to an elementary school for the 300 kindergarten students and similar to a daycare for the 140 birth to pre-kindergarten students.

3.1 Half-Day Pre-Kindergarten

The Tukwila Birth to K is planned to have half-day pre-kindergarten with sessions in the morning and afternoon. The 440 students at the Tukwila Birth to K would represent the maximum number of students during either of these pre-kindergarten sessions. There are anticipated to be 77 pre-kindergarten students at one time. ITE Land Use Code 565, daycare, was utilized for the pre-kindergarten students since it is the most closely associated land use code. ITE does not identify if the data for this land use included morning and afternoon sessions. The worst case scenario would be to assume 154 additional daily trips for a full turnover of pre-kindergarten students and assuming all pre-kindergarten students are picked-up or dropped-off in a single vehicle. This does not account for students that may walk, carpool or utilize bus service. This would therefore represent an overly conservative assumption and would result in 1,154 average daily trips. The two half-day pre-kindergarten sessions are not anticipated to change the AM or school PM peak-hour trip generation of the site since the trip generation assumption of 1 vehicle per student is overly conservative.

4. TRIP DISTRIBUTION

The distribution of trips generated by the Tukwila Birth to K school is based on existing count data, surrounding uses and major roadways in the site vicinity. It is anticipated that 55% of the school's trips will travel along S 144th Street, forty-five percent to and from the west and ten percent to and from the east. Approximately 30% of the school's trips will travel to and from the south along 42nd Avenue S, south of S 144th Street. The remaining 15% of the school's trips are anticipated to travel to and from the north along S 42nd Street, north of the site. A detailed trip distribution is shown in Figure 2.

The school is not anticipated to significantly impact 43rd Avenue S or S 140th Street since the majority of trips are anticipated to travel to and from the south.

5. INTERSECTION ANALYSIS

The intersection analysis has been performed for the AM peak-hour and school PM peak-hour. Existing traffic volumes at the study intersections were collected by the independent count firm National Data and Surveying Solutions (NDS) near the end of September, 2016. The existing traffic volumes at the study intersections are shown in Figure 3.

The 2022 baseline traffic volumes were calculations by applying a 3% annually compounding growth rate to the existing traffic volumes. This growth rate is higher than the typical 2% growth rate identified by the Puget Sound Regional Council (PSRC) and considerably higher than the growth rates identified in the City of Tukwila *Background Report for the Transportation Element of the Comprehensive Plan Update*. The 2022 baseline traffic volumes are shown in Figure 4.

The 2022 future with development traffic volumes were calculated by adding the school's trips to the 2022 baseline traffic volumes. The 2022 future with development traffic volumes are shown in Figure 5. The existing count data and traffic volume calculations are included in the attachments.

GIBSON TRAFFIC CONSULTANTS

TUKWILA SCHOOL DISTRICT
BIRTH TO K CAMPUS
440 STUDENTS
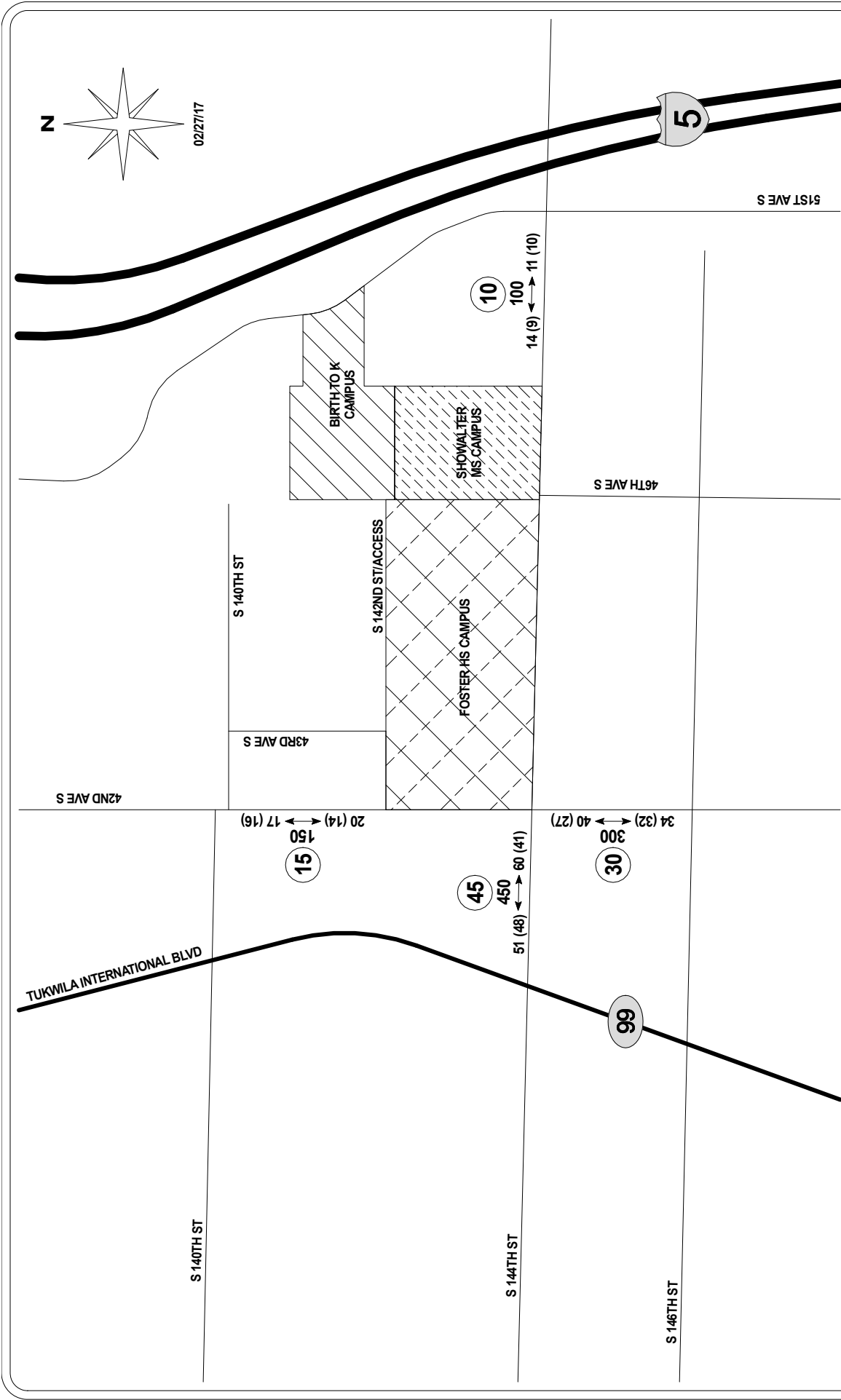
CITY OF TUKWILA

TRAFFIC IMPACT STUDY
GTC #16-178

FIGURE 2
DEVELOPMENT
TRIP DISTRIBUTION
AM (SCHOOL PM) PEAK

LEGEND
AWDT
AM (SPM) ◄—► PEAK

XX

NEW SITE TRAFFIC
(DAILY/PEAK-HOUR)

TRIP DISTRIBUTION %
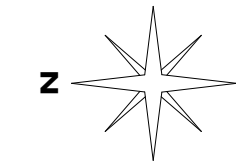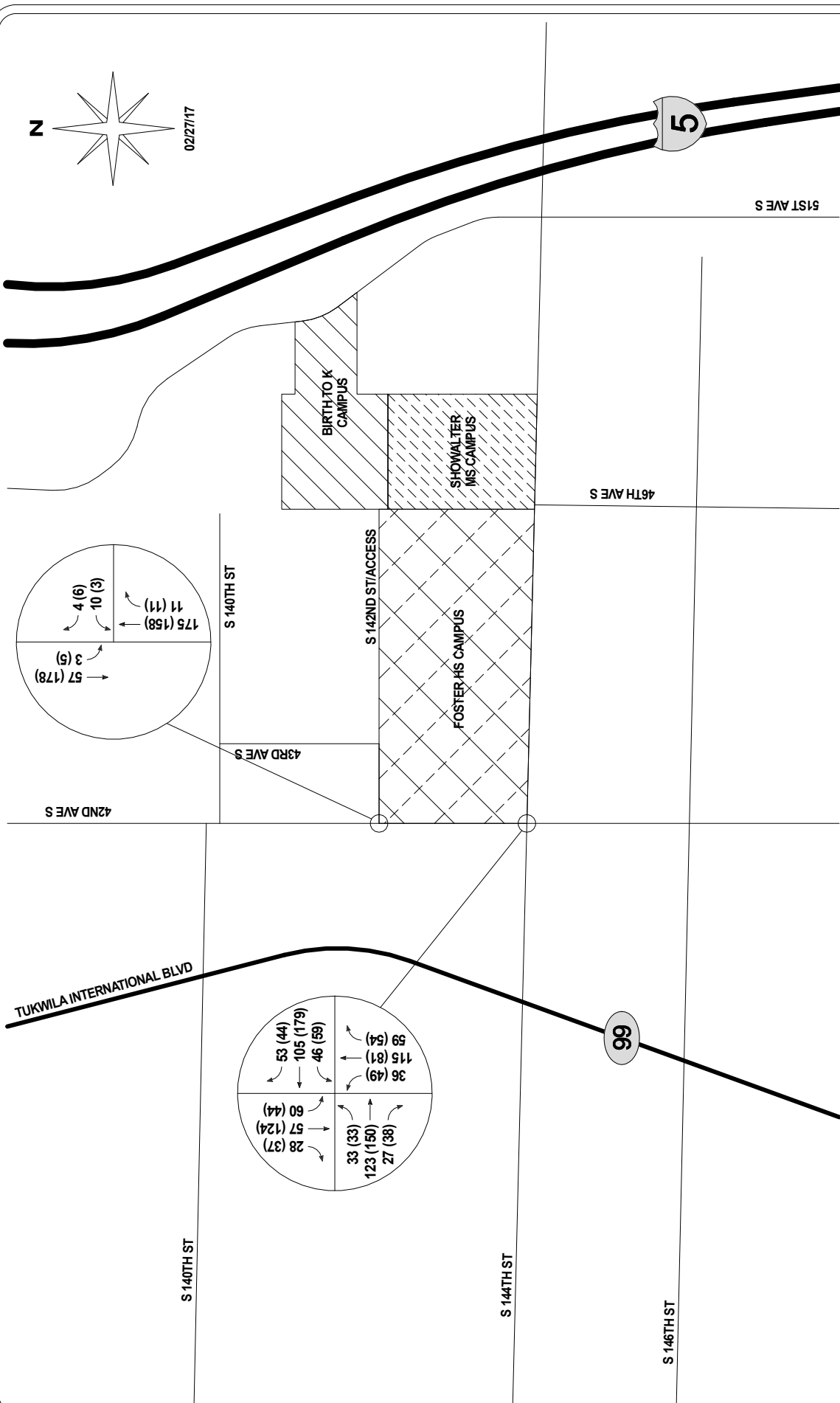
161

GIBSON TRAFFIC CONSULTANTS

TUKWILA SCHOOL DISTRICT
BIRTH TO K CAMPUS
440 STUDENTS

CITY OF TUKWILA

TRAFFIC IMPACT STUDY
GTC #16-178

FIGURE 3
2016 EXISTING
TRAFFIC VOLUMES

LEGEND
XXX (XXX) →
TURNING MOVEMENT VOLUME
AM (SCHOOL PM) PEAK-HOUR

162

GIBSON TRAFFIC CONSULTANTS

TUKWILA SCHOOL DISTRICT
BIRTH TO K CAMPUS
440 STUDENTS
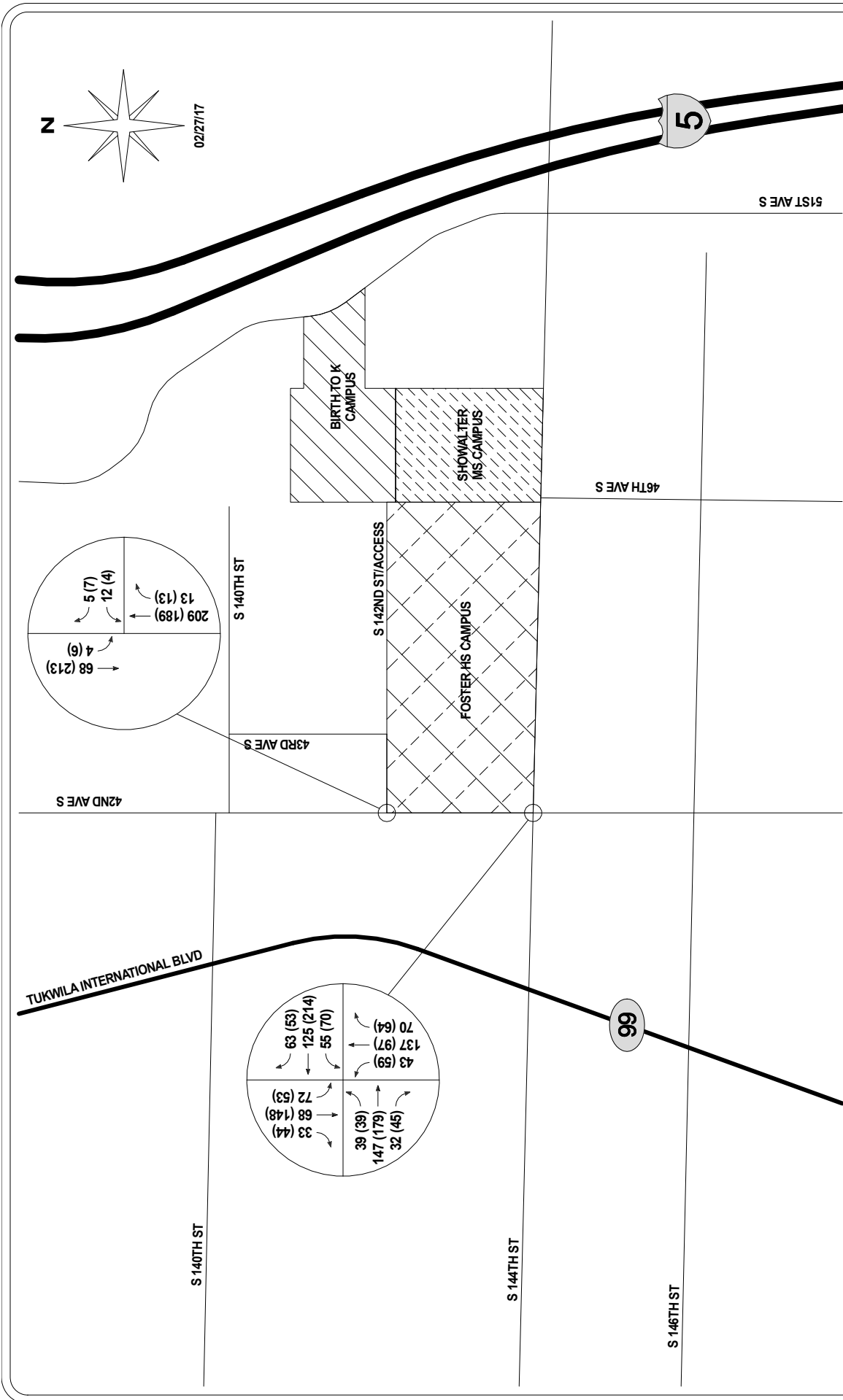
CITY OF TUKWILA

TRAFFIC IMPACT STUDY
GTC #16-178

FIGURE 4
2022 BASELINE
TRAFFIC VOLUMES

LEGEND
XXX (XXX) →

TURNING MOVEMENT VOLUME
AM (SCHOOL PM) PEAK-HOUR

02/27/17

N

163

GIBSON TRAFFIC CONSULTANTS

TUKWILA SCHOOL DISTRICT
BIRTH TO K CAMPUS
440 STUDENTS
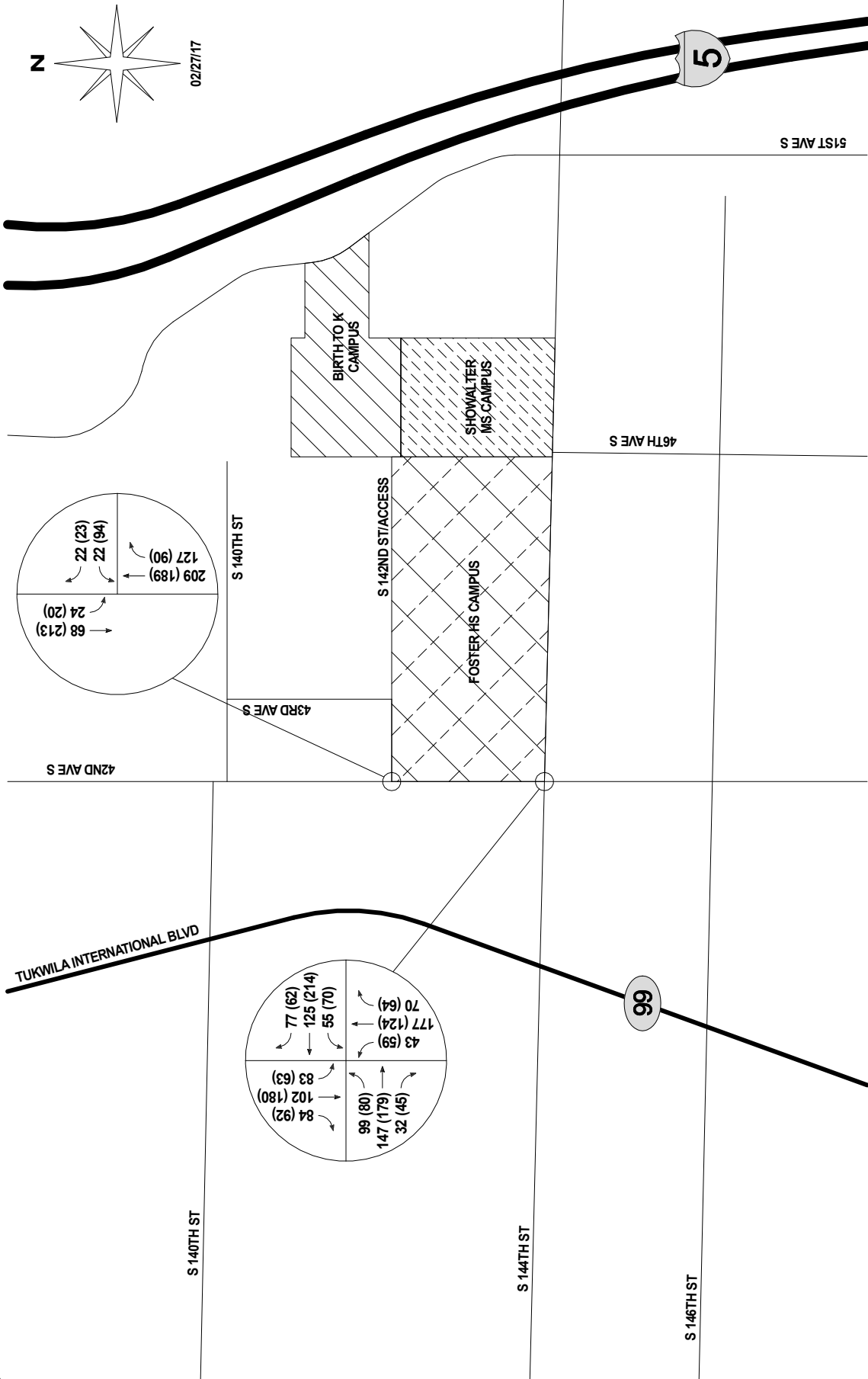
CITY OF TUKWILA

TRAFFIC IMPACT STUDY
GTC #16-178

FIGURE 5
2022 FUTURE
WITH DEVELOPMENT
TRAFFIC VOLUMES

LEGEND

XXX (XXX) →

TURNING MOVEMENT VOLUME
AM (SCHOOL PM) PEAK-HOUR

02/27/17

N

BIRTH TO K CAMPUS

SHOWALTER MS CAMPUS

FOSTER HS CAMPUS

S 142ND ST/ACCESS

S 140TH ST

42ND AVE S

43RD AVE S

46TH AVE S

51ST AVE S

TUKWILA INTERNATIONAL BLVD

S 140TH ST

S 144TH ST

S 146TH ST

22 (23)
22 (94)
127 (90)
209 (189)
24 (20)
68 (213)

77 (62)
125 (214)
55 (70)
70 (64)
177 (124)
43 (59)
83 (63)
102 (180)
84 (92)
99 (80)
147 (179)
32 (45)

5.1 Level of Service Results

The intersection of 42nd Avenue S at S 144th Street is currently an all-way stop-controlled intersection that is planned to be improved to a signalized intersection. This intersection has therefore been analyzed as an all-way stop-controlled intersection for the 2016 existing conditions and as a signal for the 2022 baseline and 2022 future with development conditions. No other improvements have been included as part of the level of service analysis. The level of service analysis has been performed with the same parameters, including channelization, peak-hour factors and heavy vehicle factors as the existing conditions. The level of service results are summarized in Table 5.

Table 5: Intersection Level of Service Summary

Intersection	Peak-Hour	2016 Existing Conditions		2022 Baseline Conditions		2022 Future w Development	
		LOS	Delay	LOS	Delay	LOS	Delay
1. 42nd Avenue S at S 144th Street	AM Peak-Hour	B	12.0 sec	B	11.6 sec	B	14.6 sec
	School PM Peak	B	12.6 sec	B	11.7 sec	B	13.7 sec
2. 42nd Avenue S at S 144th Street	AM Peak-Hour	C	10.7 sec	B	11.2 sec	C	17.3 sec
	School PM Peak	A	9.9 sec	B	10.4 sec	C	19.2 sec

The level of service analysis shows that the study intersections will operate at acceptable LOS C or better with the addition of the Tukwila Birth to K school. The level of service calculations are included in the attachments.

The level of service analysis does not show any significant queue lengths at the study intersections during either the AM or school PM peak-hours. Additionally, queue lengths due to schools are typically short in duration and do not last as long as queue lengths associated with commuter trips.

5.2 On-Site Operations

The on-site operations were evaluated qualitatively based on the anticipated operations of the site, which includes staggered arrival and dismissal times for kindergarten and pre-kindergarten students. The site is proposed to have separate bus and drop-off/pick-up loops, which provides for good separation between busses and parent vehicles. The site will have approximately 230 feet of dedicated drop-off/pick-up area, which can accommodate approximately 10 vehicles. There will be an additional 400 feet of storage area within the parking lot, which would provide storage for approximately 16 additional vehicles. The drop-off/pick-up area and parking lot are anticipated to have storage for 26 vehicles. Additionally, parents will be able to utilize open parking spaces to pick-up and drop-off students. The drive aisle through the parking lot and drop-off/pick-up area is wide enough to allow vehicles to pass stopped vehicles.

The Tukwila Birth to K school is anticipated to have 80 parking spaces and 46 teachers and staff, which allows for 34 parking spaces for parents. The total number of parent pick-up/drop-off vehicles that can be accommodated within the pick-up/drop-off and parking lot is 60 vehicles. The peak demand of the school is anticipated to be 74 inbound vehicles, based on the elementary school AM peak-hour inbound trips. There are not anticipated to be 74 vehicles on the site at the same

time, especially since a portion of these trips will be teachers and staff arriving. Space for 60 pick-up/drop-off vehicles on the site at any one time should therefore be sufficient for the Tukwila Birth to K school.

The staggered arrival and dismissal times, 80 parking spaces, separate bus and parent vehicle loops, dedicated drop-off/pick-up loop for 11 vehicles and space for 17 additional vehicles to queue should allow the site to adequate operate and handle the arrival and dismissal traffic. The school will also have emergency vehicle access so that emergency vehicles have an alternative access point if an emergency does occur during the AM or school PM peak-hours.

6. PARKING ANALYSIS

The Tukwila Birth to K school is proposed to include 440 students and 80 parking spaces, which equates to a parking rate of 0.18 spaces per student. This parking rate was compared to parking data published by ITE in *Parking Generation, 4th Edition (2010)*. ITE identifies an average parking demand of 0.17 parking spaces per student for an elementary school. The parking demand based on City of Tukwila standards is 1.5 spaces per teacher/staff. The 46 teachers/staff would result in 69 parking spaces being required. The proposed parking supply of 80 spaces would therefore satisfy the ITE parking demand and City of Tukwila parking demand.

7. MITIGATION

The City of Tukwila has established transportation impact fees for several different land uses, including schools. The most applicable land in the City of Tukwila *Traffic Impact Fee Schedule 2007*, the most recent schedule still in effect, is elementary school. The Tukwila Birth to K school is located in Zone 3, which has a fee of $119.31 per student. The traffic impact fee for the Tukwila Birth to K school, based on 440 students, is $52,496.40.

It is important to note that this fee mitigates for all students at the school. However, the 300 kindergarten students are currently at separate schools throughout the jurisdiction and should arguably not need to be mitigated. The 140 pre-kindergarten and infant/toddler students would represent a mitigation fee of $16,703.40.

No other off-site mitigation should be required for the Tukwila Birth to K school since the traffic analysis showed the study intersections operating at acceptable LOS C or better during the AM and School PM peak-hours.

166

8. CONCLUSIONS

The Tukwila Birth to K school is proposed to consist of an approximately 56,000 SF school with a maximum occupancy of 440 students. The majority of the students, approximately 300, will be kindergarten students. It is anticipated that 75% of these kindergarten students will utilize the provided bus service.

The school is anticipated to generate as many as 1,000 average daily trips with 247 AM peak-hour trips and 197 School PM peak-hour trips. The study intersections are anticipated to operate at LOS C or better in the future with the addition of these trips. The City of Tukwila traffic mitigation fee for the Tukwila Birth to K school will be $52,496.40, based on the 440 students. However, the mitigation fees would only be $16,703.40 if credit is applied for the 300 existing kindergarten students currently at separate schools within the district. No other off-site mitigation should be required.

Trip Generation Calculations

Tukwila Birth-to-K
GTC #16-178

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

LAND USES	VARIABLE	ITE LU code	Trip Rate	% IN	% OUT	Gross Trips In+Out (Total)	Internal Crossover % of Gross Trips	Internal Crossover Trips In+Out (Total)	TOTAL In+Out (Total)	PASS-BY % of Ext. Trips	PASS-BY In+Out (Total)	DIVERTED LINK % of Ext. Trips	DIVERTED LINK In+Out (Total)	NEW In+Out (Total)	PASS-BY In	PASS-BY Out	DIVERTED LINK In	DIVERTED LINK Out	NEW In	NEW Out
Elementary School	300 Stdt	520	1.29	50%	50%	387	0%	0	387	0%	0	0%	0	387	0	0	0	0	194	193
Daycare Center	140 Stdt	565	4.38	50%	50%	613	0%	0	613	75%	460	0%	0	153	230	230	0	0	77	76
Total						1,000		0	1,000		460		0	540	230	230	0	0	271	269

(Column group headers: Gross Trips | Internal Crossover | NET EXTERNAL TRIPS BY TYPE — IN BOTH DIRECTIONS (TOTAL, PASS-BY, DIVERTED LINK, NEW) | DIRECTIONAL ASSIGNMENTS (PASS-BY, DIVERTED LINK, NEW))

Tukwila Birth-to-K
GTC #16-178

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

			Gross Trips				Internal Crossover		NET EXTERNAL TRIPS BY TYPE						DIRECTIONAL ASSIGNMENTS					
									IN BOTH DIRECTIONS											
									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
Elementary School	300 Stdt	520	0.45	55%	45%	135	0%	0	135	0%	0	0%	0	135	0	0	0	0	74	61
Daycare Center	140 Stdt	565	0.80	53%	47%	112	0%	0	112	75%	84	0%	0	28	45	39	0	0	15	13
Total						247		0	247		84		0	163	45	39	0	0	89	74

170

A - 2

Tukwila Birth-to-K
GTC #16-178

Trip Generation for: **Development Peak Weekday, PM Peak Hour of Generator**
(a.k.a.): **PM Peak Hour of Generator**

LAND USES	VARIABLE	ITE LU code	Gross Trips				Internal Crossover		TOTAL	NET EXTERNAL TRIPS BY TYPE						DIRECTIONAL ASSIGNMENTS					
										IN BOTH DIRECTIONS											
										PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW	
			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
Elementary School	300 Stdt	520	0.28	45%	55%	84	0%	0	84	0%	0	0%	0	84	0	0	0	0	38	46
Daycare Center	140 Stdt	565	0.81	47%	53%	113	0%	0	113	75%	85	0%	0	28	40	45	0	0	13	15
Total						197		0	197		85		0	112	40	45	0	0	51	61

A - 3

171

Traffic Volume Data and Calculations

42nd Ave S / S 144th St

Peak Hour

42nd Ave S — 145 ↓ ↑ 201

S 144th St

28 57 60 0

EB ←

169 — 0
33 — 53
123 — 105 — 204
183 — 46 — 242
27 — 0

TEV: 742
PHF: 0.80

S 144th St

0 36 115 59

130 ↓ ↑ 210

42nd Ave S

	HV %:	PHF
EB	2.7%	0.80
WB	4.9%	0.75
NB	4.3%	0.88
SB	9.7%	0.65
TOTAL	5.1%	0.80

Pedestrian/bicycle diagram: 279, 27, 93, 4, 9, 0

Two-Hour Count Summaries

Interval Start	S 144th St Eastbound				S 144th St Westbound				42nd Ave S Northbound				42nd Ave S 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	5	17	2	0	5	7	7	0	8	39	9	0	14	8	2	123	0
7:15 AM	0	7	24	6	0	11	21	10	0	13	24	13	0	6	4	7	146	0
7:30 AM	0	9	40	8	0	12	28	18	0	10	26	19	0	29	16	6	221	0
7:45 AM	0	9	31	9	0	18	35	15	0	9	34	17	0	22	24	10	233	723
8:00 AM	0	8	28	4	0	5	21	10	0	4	31	10	0	3	13	5	142	742
8:15 AM	0	4	21	4	0	8	11	4	0	7	23	19	0	5	12	4	122	718
8:30 AM	0	2	21	7	0	11	20	4	0	9	22	9	0	10	13	7	135	632
8:45 AM	0	3	16	4	0	11	19	5	0	8	25	4	0	6	19	12	132	531
Count Total	0	47	198	44	0	81	162	73	0	68	224	100	0	95	109	53	1254	0
Peak Hour	0	33	123	27	0	46	105	53	0	36	115	59	0	60	57	28	742	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	1	4	0	0	0	0	0	0	0	6	0	6
7:15 AM	0	1	1	2	4	2	0	0	0	2	24	4	21	6	55
7:30 AM	3	5	3	7	18	2	0	0	0	2	29	14	114	3	160
7:45 AM	1	2	3	4	10	0	1	0	0	1	34	7	127	0	168
8:00 AM	1	2	2	1	6	0	0	0	0	0	6	2	17	0	25
8:15 AM	0	3	3	2	8	0	0	0	0	0	4	1	5	0	10
8:30 AM	1	3	0	2	6	0	0	0	0	0	2	5	4	0	11
8:45 AM	0	0	1	1	2	0	0	0	0	0	2	2	4	0	8
Count Total	6	17	15	20	58	4	1	0	0	5	101	35	298	9	443
Peak Hour	5	10	9	14	38	4	1	0	0	5	93	27	279	9	408

42nd Ave S
S 142nd St

National Data & Surveying Services

Date:	Tue, Sep 20, 2016		
Count Period:	7:00 AM	to	9:00 AM
Peak Hour:	7:30 AM	to	8:30 AM

Peak Hour

TEV: 360
PHF: 0.67

	HV %:	PHF
EB	0.0%	0.00
WB	14.3%	0.70
NB	5.9%	0.73
SB	5.0%	0.62
TOTAL	5.8%	0.67

Two-Hour Count Summaries

Interval Start	S 142nd St Eastbound				S 142nd St Westbound				42nd Ave S Northbound				42nd Ave S 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	2	0	0	0	2	0	0	0	2	44	1	0	1	22	0	74	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	32	2	0	0	11	0	46	0
7:30 AM	0	0	0	0	0	3	0	1	0	0	38	2	0	0	55	0	99	0
7:45 AM	0	0	0	0	0	3	0	2	0	0	61	3	0	2	63	0	134	353
8:00 AM	0	0	0	0	0	2	0	1	0	0	51	2	0	1	22	0	79	358
8:15 AM	0	0	0	0	0	2	0	0	0	0	25	4	0	0	17	0	48	360
8:30 AM	0	0	0	1	0	1	0	1	0	0	23	1	0	0	27	0	54	315
8:45 AM	0	0	0	2	0	2	0	0	0	0	29	1	0	0	31	0	65	246
Count Total	0	2	0	3	0	16	0	5	0	2	303	16	0	4	248	0	599	0
Peak Hour	0	0	0	0	0	10	0	4	0	0	175	11	0	3	157	0	360	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	1	0	2	1	4	0	0	0	0	0	1	2	1	0	4
7:15 AM	0	0	0	3	3	0	0	0	0	0	6	3	0	0	9
7:30 AM	0	0	2	5	7	0	0	0	0	0	14	9	1	3	27
7:45 AM	0	1	2	2	5	0	0	0	0	0	22	9	9	2	42
8:00 AM	0	1	4	1	6	0	0	0	0	0	1	3	0	1	5
8:15 AM	0	0	3	0	3	0	0	0	0	0	9	11	35	18	73
8:30 AM	0	0	0	2	2	0	0	0	0	0	0	4	0	0	4
8:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
Count Total	1	3	13	14	31	0	0	0	0	0	53	42	46	24	165
Peak Hour	0	2	11	8	21	0	0	0	0	0	46	32	45	24	147

1 S 144th St at 42nd Ave S

Existing Volumes
Average Weekday
AM Peak-Hour

Synchro ID: 1

Year: **9/20/2016**

Data Source: **NDS**

42nd Avenue S

| 145 | 346 | 201 |
| 28 | 57 | 60 |

169
53
105
46
204

352 — S 144th Street — 742 — S 144th Street — 446

North ↑ |

183
33
123
27

42nd Avenue S

242

36 | 115 | 59

| 130 | 340 | 210 |

Baseline Volumes
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 3.0%
Years of Growth = 6
Total Growth = 1.1941

42nd Avenue S

| 173 | 412 | 239 |
| 33 | 68 | 72 |

201
63
125
55
243

419 — S 144th Street — 884 — S 144th Street — 532

North ↑ |

218
39
147
32

42nd Avenue S

289

43 | 137 | 70

| 155 | 405 | 250 |

Development Trips
Average Weekday
AM Peak-Hour

42nd Avenue S

| 96 | 210 | 114 |
| 51 | 34 | 11 |

51
14
0
0
14

111 — S 144th Street — 210 — S 144th Street — 25

North ↑ |

60
60
0
0

42nd Avenue S

11

0 | 40 | 0

| 34 | 74 | 40 |

Future w Dev. Volumes
Average Weekday
AM Peak-Hour

Site Access

| 269 | 622 | 353 |
| 84 | 102 | 83 |

252
77
125
55
257

530 — S 144th Street — 1,094 — S 144th Street — 557

North ↑ |

278
99
147
32

42nd Avenue S

300

43 | 177 | 70

| 189 | 479 | 290 |

B - 3

175

2 S 142nd St at 42nd Ave S

Existing Volumes

Synchro ID: 2

Existing Volumes
Average Weekday
AM Peak-Hour

Year: **9/20/2016**

Data Source: **NDS**

	60	239	179
0	57	3	

42nd Avenue S

	4	
0		14
10		

0			
0	---	260	S 142nd Street	28
0	0		
0	0		14
0	0		

North |

42nd Avenue S

0	175	11
67	253	186

Baseline Volumes

Baseline Volumes
Average Weekday
AM Peak-Hour

Year: 2022
Growth Rate = 3.0%
Years of Growth = 6
Total Growth = 1.1941

	72	286	214
0	68	4	

42nd Avenue S

	5	
0		17
12		

0			
0	---	311	S 142nd Street	34
0	0		
0	0		17
0	0		

North |

42nd Avenue S

0	209	13
80	302	222

Development Trips

Development Trips
Average Weekday
AM Peak-Hour

	20	37	17
0	0	20	

42nd Avenue S

	17	
0		113
96		

0			
0	---	247	S 142nd Street	247
0	0		
0	0		134
0	0		

North |

42nd Avenue S

0	0	114
96	210	114

Future w Dev. Volumes

Future w Dev. Volumes
Average Weekday
AM Peak-Hour

	92	323	231
0	68	24	

Site Access

	22	
0		130
108		

0			
0	---	558	S 142nd Street	281
0	0		
0	0		151
0	0		

North |

42nd Avenue S

0	209	127
176	512	336
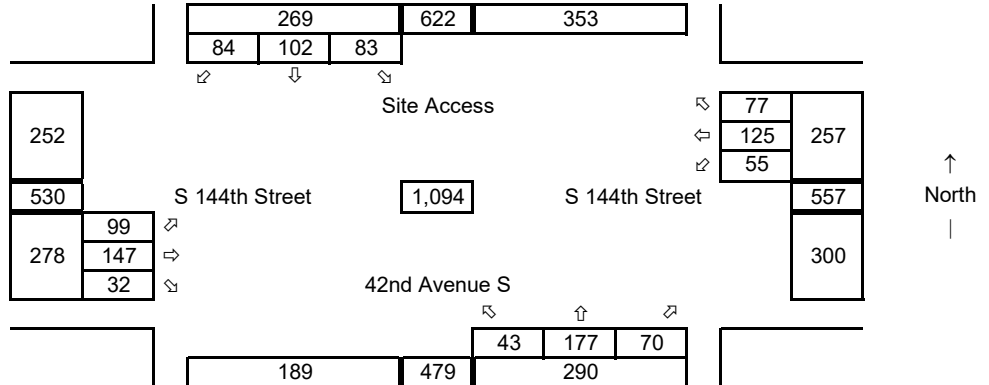
42nd Ave S
S 144th St

Date: Tue, Sep 20, 2016
Count Period: 1:30 PM to 3:30 PM
Peak Hour: 2:30 PM to 3:30 PM

Peak Hour

TEV: 892
PHF: 0.91
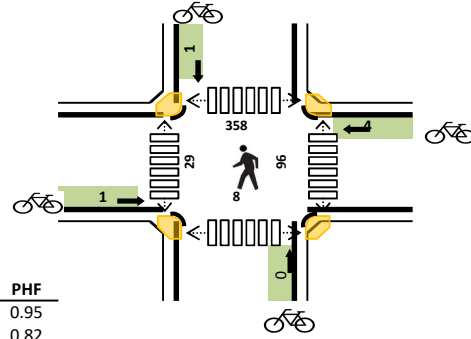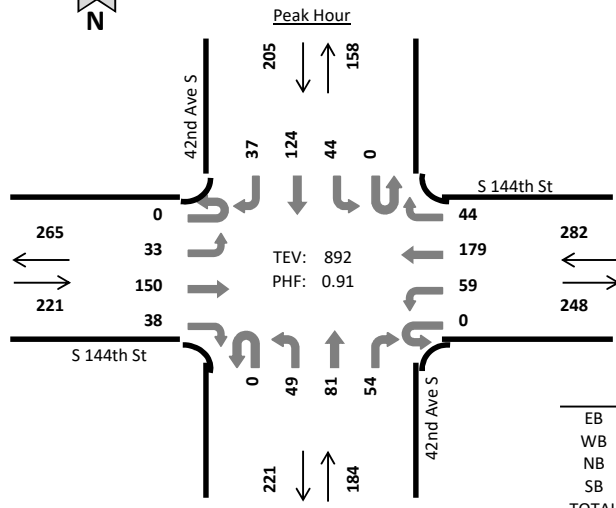
	HV %:	PHF
EB	1.8%	0.95
WB	1.4%	0.82
NB	1.1%	0.75
SB	4.4%	0.71
TOTAL	2.1%	0.91

Two-Hour Count Summaries

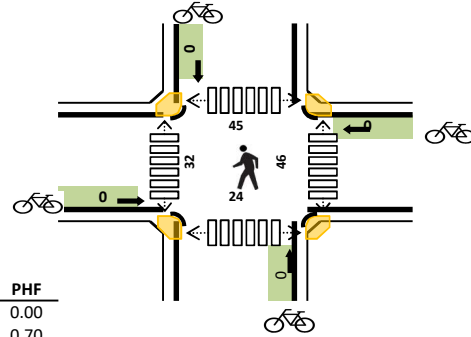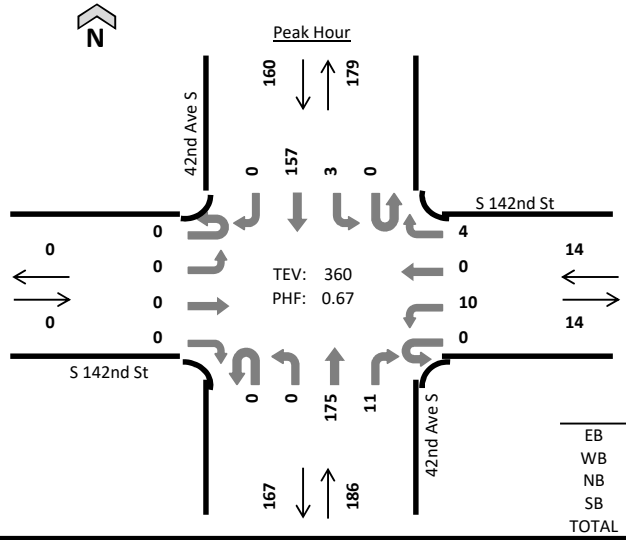| Interval Start	S 144th St Eastbound				S 144th St Westbound				42nd Ave S Northbound				42nd Ave S Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:30 PM	0	3	21	9	0	7	24	12	0	8	28	9	0	6	21	7	155	0
1:45 PM	0	5	24	9	0	5	19	11	0	12	19	10	0	4	21	11	150	0
2:00 PM	0	9	28	15	0	6	33	6	1	9	19	12	0	5	14	5	162	0
2:15 PM	0	7	22	11	0	3	31	15	0	14	14	18	0	11	14	6	166	633
2:30 PM	0	9	35	11	0	9	29	14	0	13	17	15	0	14	20	6	192	670
2:45 PM	0	7	38	7	0	20	53	13	0	10	12	10	0	16	37	4	227	747
3:00 PM	0	9	39	8	0	14	50	8	0	8	24	14	0	11	41	20	246	831
3:15 PM	0	8	38	12	0	16	47	9	0	18	28	15	0	3	26	7	227	892
Count Total	0	57	245	82	0	80	286	88	1	92	161	103	0	70	194	66	1525	0
Peak Hour	0	33	150	38	0	59	179	44	0	49	81	54	0	44	124	37	892	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
1:30 PM	2	5	1	1	9	0	0	0	0	0	1	1	2	1	5
1:45 PM	0	3	1	3	7	0	0	0	0	0	0	0	3	0	3
2:00 PM	2	3	3	2	10	0	1	0	0	1	1	2	6	1	10
2:15 PM	1	0	3	2	6	0	0	1	0	1	0	2	5	1	8
2:30 PM	2	1	0	7	10	0	4	0	0	4	54	12	235	3	304
2:45 PM	1	2	1	1	5	1	0	0	0	1	30	6	84	4	124
3:00 PM	1	1	1	0	3	0	0	0	0	0	6	7	25	1	39
3:15 PM	0	0	0	1	1	0	0	0	1	1	6	4	14	0	24
Count Total	9	15	10	17	51	1	5	1	1	8	98	34	374	11	517
Peak Hour	4	4	2	9	19	1	4	0	1	6	96	29	358	8	491

42nd Ave S
S 142nd St

Date: Tue, Sep 20, 2016
Count Period: 1:30 PM to 3:30 PM
Peak Hour: 2:30 PM to 3:30 PM

Peak Hour

42nd Ave S

183 ↓ ↑ 165

S 142nd St

0 178 5 0

0
3   1
0   0
2   1

TEV: 366
PHF: 0.87

S 142nd St

6
9   0
3   16
0

0 3 158 11

42nd Ave S

182 ↓ ↑ 172
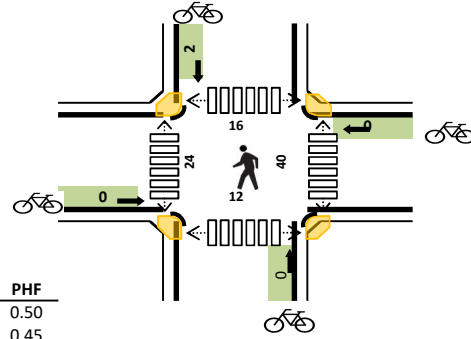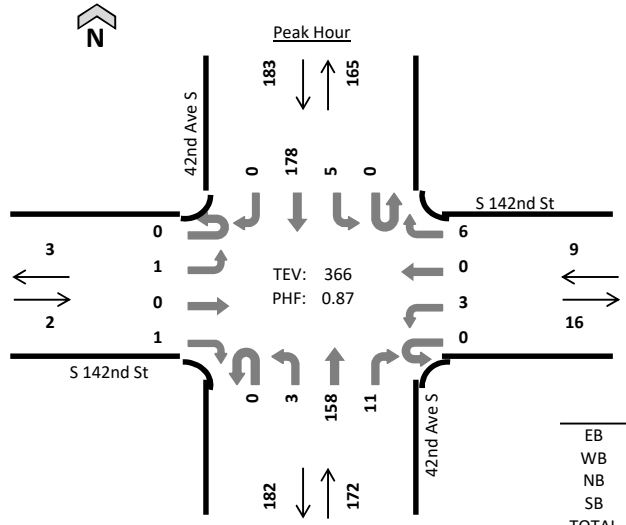
	HV %:	PHF
EB	0.0%	0.50
WB	0.0%	0.45
NB	2.3%	0.91
SB	2.7%	0.79
TOTAL	2.5%	0.87

Pedestrian/bicycle diagram values: 2, 16, 6, 24, 40, 0, 12, 0

Two-Hour Count Summaries

Interval Start	S 142nd St Eastbound				S 142nd St Westbound				42nd Ave S Northbound				42nd Ave S Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:30 PM	0	0	0	0	0	1	0	1	0	0	37	3	0	0	28	1	71	0
1:45 PM	0	0	0	1	0	4	0	1	0	1	37	0	0	0	29	1	74	0
2:00 PM	0	2	0	0	0	0	0	2	0	1	32	2	0	1	28	0	68	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	30	1	0	0	40	1	72	285
2:30 PM	0	0	0	0	0	1	0	4	0	0	39	2	0	3	35	0	84	298
2:45 PM	0	0	0	1	0	0	0	2	0	2	35	3	0	2	46	0	91	315
3:00 PM	0	1	0	0	0	2	0	0	0	1	42	1	0	0	58	0	105	352
3:15 PM	0	0	0	0	0	0	0	0	0	0	42	5	0	0	39	0	86	366
Count Total	0	3	0	2	0	8	0	10	0	5	294	17	0	6	303	3	651	0
Peak Hour	0	1	0	1	0	3	0	6	0	3	158	11	0	5	178	0	366	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
1:30 PM	0	0	1	1	2	0	0	0	0	0	0	1	0	0	1
1:45 PM	0	2	4	1	7	0	0	0	0	0	0	3	1	0	4
2:00 PM	1	0	2	3	6	0	0	1	0	1	3	0	0	0	3
2:15 PM	0	0	2	8	10	0	0	0	0	0	0	2	0	1	3
2:30 PM	0	0	3	4	7	0	0	0	0	0	25	13	10	6	54
2:45 PM	0	0	0	0	0	0	0	0	0	0	10	8	2	4	24
3:00 PM	0	0	1	1	2	0	0	0	0	0	1	3	1	1	6
3:15 PM	0	0	0	0	0	0	0	0	2	2	4	0	3	1	8
Count Total	1	2	13	18	34	0	0	1	2	3	43	30	17	13	103
Peak Hour	0	0	4	5	9	0	0	0	2	2	40	24	16	12	92

1 S 144th St at 42nd Ave S

Existing Volumes

Synchro ID: 1

Average Weekday
School PM Peak

Year: **9/20/2016**

Data Source: **NDS**

	205	363	158
	37	124	44

42nd Avenue S

265		44
		179	282
		59

| 486 | S 144th Street | 892 | S 144th Street | 530 | North |

221	33			248
	150			
	38			

42nd Avenue S

	49	81	54
221	405	184

Baseline Volumes

Average Weekday
School PM Peak

Year: 2022
Growth Rate = 3.0%
Years of Growth = 6
Total Growth = 1.1941

	245	434	189
	44	148	53

42nd Avenue S

317		53
		214	337
		70

| 580 | S 144th Street | 1,065 | S 144th Street | 633 | North |

263	39			296
	179			
	45			

42nd Avenue S

	59	97	64
263	483	220

Development Trips

Average Weekday
School PM Peak

	90	167	77
	48	32	10

42nd Avenue S

48		9
		0	9
		0

| 89 | S 144th Street | 167 | S 144th Street | 19 | North |

41	41			10
	0			
	0			

42nd Avenue S

	0	27	0
32	59	27

Future w Dev. Volumes

Average Weekday
School PM Peak

	335	601	266
	92	180	63

Site Access

365		62
		214	346
		70

| 669 | S 144th Street | 1,232 | S 144th Street | 652 | North |

304	80			306
	179			
	45			

42nd Avenue S

	59	124	64
295	542	247

2 S 142nd St at 42nd Ave S

Synchro ID: 2

Existing Volumes
Average Weekday
School PM Peak

Year: **9/20/2016**

Data Source: **NDS**

	183	347	164
0	178	5	

42nd Avenue S

				6	
0				0	9
				3	

| 0 | | --- | 361 | S 142nd Street | 25 |

0	0				16
0	0				
0	0				

↑ North |

42nd Avenue S

0	158	11
181	350	169

Baseline Volumes
Average Weekday
School PM Peak

Year: 2022
Growth Rate = 3.0%
Years of Growth = 6
Total Growth = 1.1941

	219	415	196
0	213	6	

42nd Avenue S

				7	
0				0	11
				4	

| 0 | | --- | 432 | S 142nd Street | 30 |

0	0				19
0	0				
0	0				

↑ North |

42nd Avenue S

0	189	13
217	419	202

Development Trips
Average Weekday
School PM Peak

	14	30	16
0	0	14	

42nd Avenue S

				16	
0				0	106
				90	

| 0 | | --- | 197 | S 142nd Street | 197 |

0	0				91
0	0				
0	0				

↑ North |

42nd Avenue S

0	0	77
90	167	77

Future w Dev. Volumes
Average Weekday
School PM Peak

	233	445	212
0	213	20	

Site Access

				23	
0				0	117
				94	

| 0 | | --- | 629 | S 142nd Street | 227 |

0	0				110
0	0				
0	0				

↑ North |

42nd Avenue S

0	189	90
307	586	279

180
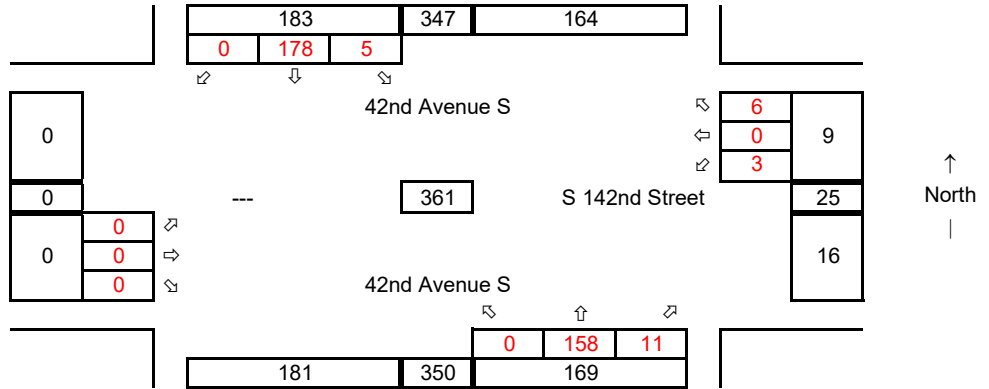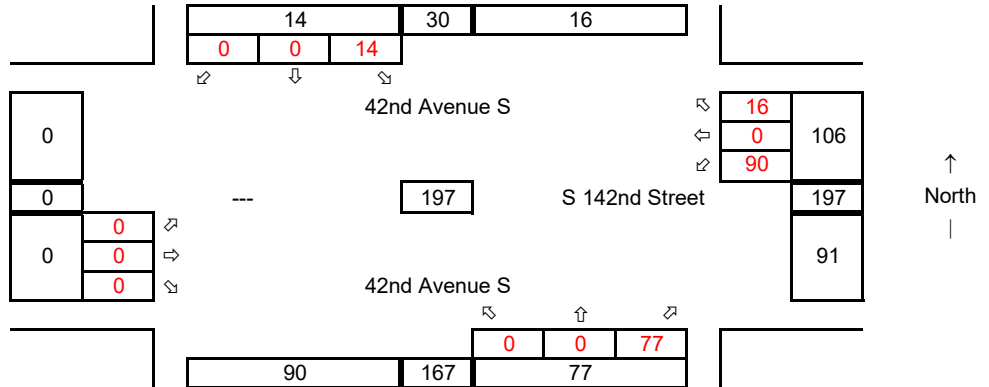
Level of Service Calculations

Intersection											
Intersection Delay, s/veh	12										
Intersection LOS	B										

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			⬦				⬦				⬦	
Traffic Vol, veh/h	0	33	123	27	0	46	105	53	0	36	115	59
Future Vol, veh/h	0	33	123	27	0	46	105	53	0	36	115	59
Peak Hour Factor	0.92	0.80	0.80	0.80	0.92	0.80	0.80	0.80	0.92	0.80	0.80	0.80
Heavy Vehicles, %	2	5	5	5	2	5	5	5	2	5	5	5
Mvmt Flow	0	41	154	34	0	58	131	66	0	45	144	74
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB			WB			NB	
Opposing Approach	WB			EB			SB	
Opposing Lanes	1			1			1	
Conflicting Approach Left	SB			NB			EB	
Conflicting Lanes Left	1			1			1	
Conflicting Approach Right	NB			SB			WB	
Conflicting Lanes Right	1			1			1	
HCM Control Delay	11.9			12.2			12.4	
HCM LOS	B			B			B	

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	18%	23%	41%
Vol Thru, %	55%	67%	51%	39%
Vol Right, %	28%	15%	26%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	183	204	145
LT Vol	36	33	46	60
Through Vol	115	123	105	57
RT Vol	59	27	53	28
Lane Flow Rate	262	229	255	181
Geometry Grp	1	1	1	1
Degree of Util (X)	0.404	0.359	0.393	0.291
Departure Headway (Hd)	5.542	5.642	5.542	5.786
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	646	634	645	618
Service Time	3.604	3.705	3.603	3.853
HCM Lane V/C Ratio	0.406	0.361	0.395	0.293
HCM Control Delay	12.4	11.9	12.2	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2	1.6	1.9	1.2

Intersection
Intersection Delay, s/veh
Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			⬥	
Traffic Vol, veh/h	0	60	57	28
Future Vol, veh/h	0	60	57	28
Peak Hour Factor	0.92	0.80	0.80	0.80
Heavy Vehicles, %	2	5	5	5
Mvmt Flow	0	75	71	35
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	11.2
HCM LOS	B

Intersection

Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		⬆			⬅
Traffic Vol, veh/h	10	4	175	11	3	57
Future Vol, veh/h	10	4	175	11	3	57
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	73	73	62	62
Heavy Vehicles, %	14	14	6	6	5	5
Mvmt Flow	14	6	240	15	5	92

Major/Minor	Minor1			Major1		Major2	
Conflicting Flow All	349	247		0	0	255	0
Stage 1	247	-		-	-	-	-
Stage 2	102	-		-	-	-	-
Critical Hdwy	6.54	6.34		-	-	4.15	-
Critical Hdwy Stg 1	5.54	-		-	-	-	-
Critical Hdwy Stg 2	5.54	-		-	-	-	-
Follow-up Hdwy	3.626	3.426		-	-	2.245	-
Pot Cap-1 Maneuver	625	763		-	-	1293	-
Stage 1	767	-		-	-	-	-
Stage 2	893	-		-	-	-	-
Platoon blocked, %				-	-		-
Mov Cap-1 Maneuver	623	763		-	-	1293	-
Mov Cap-2 Maneuver	623	-		-	-	-	-
Stage 1	767	-		-	-	-	-
Stage 2	889	-		-	-	-	-

Approach	WB			NB		SB	
HCM Control Delay, s	10.7			0		0.4	
HCM LOS	B						

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)	-	- 657	1293	-	
HCM Lane V/C Ratio	-	- 0.03	0.004	-	
HCM Control Delay (s)	-	- 10.7	7.8	0	
HCM Lane LOS	-	- B	A	A	
HCM 95th %tile Q(veh)	-	- 0.1	0	-	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⊕			⊕			⊕			⊕	
Traffic Volume (vph)	39	147	32	55	125	63	43	137	70	72	68	33
Future Volume (vph)	39	147	32	55	125	63	43	137	70	72	68	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.980			0.965			0.962			0.974	
Flt Protected		0.991			0.989			0.991			0.980	
Satd. Flow (prot)	0	1757	0	0	1727	0	0	1725	0	0	1727	0
Flt Permitted		0.892			0.864			0.910			0.797	
Satd. Flow (perm)	0	1582	0	0	1509	0	0	1584	0	0	1405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			37			41			24	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		526			2207			379			654	
Travel Time (s)		12.0			50.2			8.6			14.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	273	0	0	304	0	0	313	0	0	216	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	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	22.5		22.5	22.5	
Total Split (s)	30.0	30.0		30.0	30.0		30.0	30.0		30.0	30.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		11.7			11.7			11.5			11.5	
Actuated g/C Ratio		0.36			0.36			0.35			0.35	
v/c Ratio		0.48			0.54			0.54			0.43	
Control Delay		11.4			12.1			11.8			10.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.4			12.1			11.8			10.8	
LOS		B			B			B			B	
Approach Delay		11.4			12.1			11.8			10.8	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		29			31			32			22	
Queue Length 95th (ft)		82			88			90			65	
Internal Link Dist (ft)		446			2127			299			574	
Turn Bay Length (ft)												
Base Capacity (vph)		1276			1221			1282			1135	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.21			0.25			0.24			0.19	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 32.9
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 11.6   Intersection LOS: B
Intersection Capacity Utilization 46.9%   ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: 42nd Avenue S & S 144th Street

↑ Ø2	→ Ø4
30 s	30 s

↓ Ø6	← Ø8
30 s	30 s
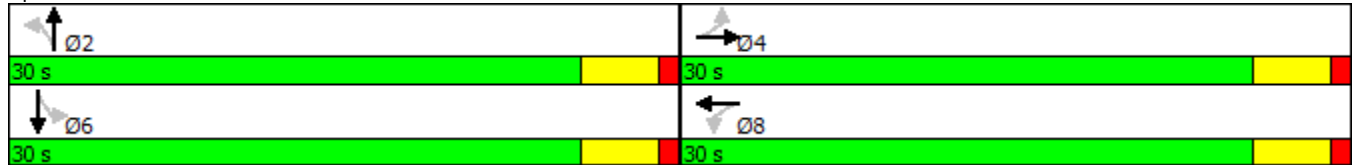
Intersection

Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	�室		⍀			⍂
Traffic Vol, veh/h	12	5	209	13	4	68
Future Vol, veh/h	12	5	209	13	4	68
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	73	73	62	62
Heavy Vehicles, %	14	14	6	6	5	5
Mvmt Flow	17	7	286	18	6	110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	418	295	0	0	304	0
Stage 1	295	-	-	-	-	-
Stage 2	123	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.15	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.245	-
Pot Cap-1 Maneuver	569	717	-	-	1240	-
Stage 1	729	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	566	717	-	-	1240	-
Mov Cap-2 Maneuver	566	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	870	-	-	-	-	-

Approach	WB		NB	SB	
HCM Control Delay, s	11.2		0	0.4	
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)	-	-	603	1240	-
HCM Lane V/C Ratio	-	-	0.04	0.005	-
HCM Control Delay (s)	-	-	11.2	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⊕			⊕			⊕			⊕	
Traffic Volume (vph)	99	147	32	55	125	77	43	177	70	83	102	84
Future Volume (vph)	99	147	32	55	125	77	43	177	70	83	102	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.984			0.960			0.967			0.958	
Flt Protected		0.982			0.989			0.993			0.985	
Satd. Flow (prot)	0	1749	0	0	1718	0	0	1738	0	0	1708	0
Flt Permitted		0.800			0.873			0.907			0.812	
Satd. Flow (perm)	0	1424	0	0	1517	0	0	1587	0	0	1408	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			45			33			47	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		526			2207			379			654	
Travel Time (s)		12.0			50.2			8.6			14.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	348	0	0	321	0	0	363	0	0	337	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	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	22.5		22.5	22.5	
Total Split (s)	30.0	30.0		30.0	30.0		30.0	30.0		30.0	30.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		15.0			15.0			14.4			14.4	
Actuated g/C Ratio		0.38			0.38			0.37			0.37	
v/c Ratio		0.63			0.53			0.60			0.62	
Control Delay		16.2			12.4			14.6			15.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.2			12.4			14.6			15.0	
LOS		B			B			B			B	
Approach Delay		16.2			12.4			14.6			15.0	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		50			38			50			43	
Queue Length 95th (ft)		134			107			127			117	
Internal Link Dist (ft)		446			2127			299			574	
Turn Bay Length (ft)												
Base Capacity (vph)		1009			1084			1130			1008	

2016 Future Conditions with Development   AM Peak-Hour
Gibson Traffic Consultants, Inc. [BJL 16-178]

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.34			0.30			0.32			0.33	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 39.3
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 14.6   Intersection LOS: B
Intersection Capacity Utilization 60.7%   ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: 42nd Avenue S & S 144th Street

Ø2	Ø4
30 s	30 s
Ø6	Ø8
30 s	30 s
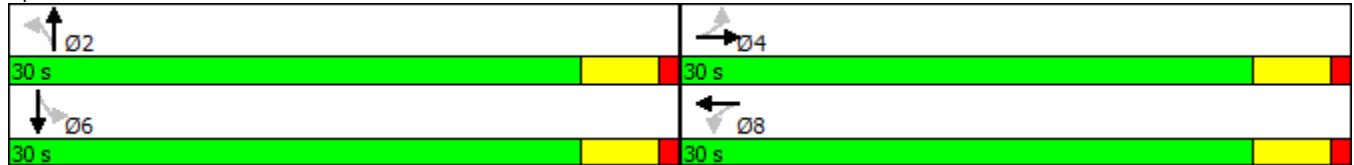
Intersection						
Int Delay, s/veh	4.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			⤹
Traffic Vol, veh/h	108	22	209	127	24	68
Future Vol, veh/h	108	22	209	127	24	68
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	73	73	62	62
Heavy Vehicles, %	14	14	6	6	5	5
Mvmt Flow	154	31	286	174	39	110

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	560	373	0	0	460	0
Stage 1	373	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.15	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.245	-
Pot Cap-1 Maneuver	470	647	-	-	1085	-
Stage 1	671	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	452	647	-	-	1085	-
Mov Cap-2 Maneuver	452	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	786	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	17.3		0		2.2	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)	-	- 476	1085	-	
HCM Lane V/C Ratio	-	- 0.39	0.036	-	
HCM Control Delay (s)	-	- 17.3	8.4	0	
HCM Lane LOS	-	- C	A	A	
HCM 95th %tile Q(veh)	-	- 1.8	0.1	-	

Intersection											
Intersection Delay, s/veh	12.6										
Intersection LOS	B										

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			⊕				⊕				⊕	
Traffic Vol, veh/h	0	33	150	38	0	59	179	44	0	49	81	54
Future Vol, veh/h	0	33	150	38	0	59	179	44	0	49	81	54
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	36	165	42	0	65	197	48	0	54	89	59
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB			WB			NB	
Opposing Approach	WB			EB			SB	
Opposing Lanes	1			1			1	
Conflicting Approach Left	SB			NB			EB	
Conflicting Lanes Left	1			1			1	
Conflicting Approach Right	NB			SB			WB	
Conflicting Lanes Right	1			1			1	
HCM Control Delay	12.2			13.7			11.7	
HCM LOS	B			B			B	

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	15%	21%	21%
Vol Thru, %	44%	68%	63%	60%
Vol Right, %	29%	17%	16%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	184	221	282	205
LT Vol	49	33	59	44
Through Vol	81	150	179	124
RT Vol	54	38	44	37
Lane Flow Rate	202	243	310	225
Geometry Grp	1	1	1	1
Degree of Util (X)	0.325	0.381	0.478	0.363
Departure Headway (Hd)	5.792	5.651	5.556	5.801
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	617	634	645	617
Service Time	3.869	3.723	3.624	3.875
HCM Lane V/C Ratio	0.327	0.383	0.481	0.365
HCM Control Delay	11.7	12.2	13.7	12.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.8	2.6	1.7

Intersection

Intersection Delay, s/veh
Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			⟨⊹⟩	
Traffic Vol, veh/h	0	44	124	37
Future Vol, veh/h	0	44	124	37
Peak Hour Factor	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	48	136	41
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	12.2
HCM LOS	B

Intersection

Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		↱			↴
Traffic Vol, veh/h	3	6	158	11	5	178
Future Vol, veh/h	3	6	158	11	5	178
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	45	45	91	91	79	79
Heavy Vehicles, %	0	0	2	2	3	3
Mvmt Flow	7	13	174	12	6	225

Major/Minor	Minor1			Major1		Major2	
Conflicting Flow All	418	180		0	0	186	0
Stage 1	180	-		-	-	-	-
Stage 2	238	-		-	-	-	-
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	595	868		-	-	1382	-
Stage 1	856	-		-	-	-	-
Stage 2	806	-		-	-	-	-
Platoon blocked, %				-	-		-
Mov Cap-1 Maneuver	592	868		-	-	1382	-
Mov Cap-2 Maneuver	592	-		-	-	-	-
Stage 1	856	-		-	-	-	-
Stage 2	802	-		-	-	-	-

Approach	WB			NB		SB	
HCM Control Delay, s	9.9			0		0.2	
HCM LOS	A						

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 751	1382	-
HCM Lane V/C Ratio	-	- 0.027	0.005	-
HCM Control Delay (s)	-	- 9.9	7.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.1	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⊕			⊕			⊕			⊕	
Traffic Volume (vph)	39	179	45	70	214	53	59	97	64	53	148	44
Future Volume (vph)	39	179	45	70	214	53	59	97	64	53	148	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.977			0.979			0.961			0.976	
Flt Protected		0.993			0.990			0.987			0.989	
Satd. Flow (prot)	0	1807	0	0	1805	0	0	1767	0	0	1798	0
Flt Permitted		0.905			0.872			0.862			0.879	
Satd. Flow (perm)	0	1647	0	0	1590	0	0	1543	0	0	1598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			21			40			21	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		526			2207			379			654	
Travel Time (s)		12.0			50.2			8.6			14.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	289	0	0	370	0	0	242	0	0	269	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	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	22.5		22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		13.1			13.1			11.0			11.0	
Actuated g/C Ratio		0.39			0.39			0.33			0.33	
v/c Ratio		0.44			0.59			0.46			0.50	
Control Delay		9.8			12.4			11.4			13.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.8			12.4			11.4			13.0	
LOS		A			B			B			B	
Approach Delay		9.8			12.4			11.4			13.0	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)		30			42			25			31	
Queue Length 95th (ft)		91			125			87			103	
Internal Link Dist (ft)		446			2127			299			574	
Turn Bay Length (ft)												
Base Capacity (vph)		1377			1330			1155			1191	
Starvation Cap Reductn		0			0			0			0	

School PM Peak

194

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.21			0.28			0.21			0.23	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 33.7
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 11.7   Intersection LOS: B
Intersection Capacity Utilization 53.1%   ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: 42nd Avenue S & S 144th Street

Ø2	Ø4
28 s	32 s

Ø6	Ø8
28 s	32 s
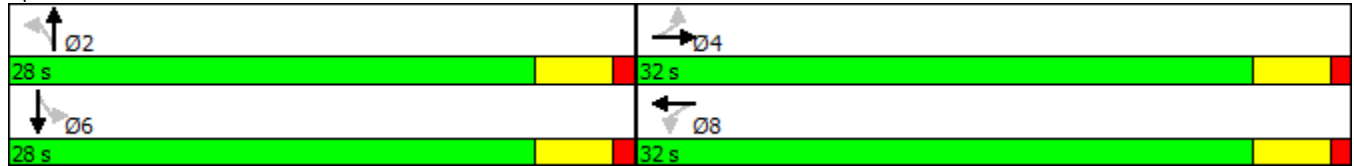
Intersection

Int Delay, s/veh   0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		↱			↰
Traffic Vol, veh/h	4	7	189	13	6	213
Future Vol, veh/h	4	7	189	13	6	213
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	45	45	91	91	79	79
Heavy Vehicles, %	0	0	2	2	3	3
Mvmt Flow	9	16	208	14	8	270

Major/Minor	Minor1			Major1		Major2	
Conflicting Flow All	500	215		0	0	222	0
Stage 1	215	-		-	-	-	-
Stage 2	285	-		-	-	-	-
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	534	830		-	-	1341	-
Stage 1	826	-		-	-	-	-
Stage 2	768	-		-	-	-	-
Platoon blocked, %				-	-		-
Mov Cap-1 Maneuver	530	830		-	-	1341	-
Mov Cap-2 Maneuver	530	-		-	-	-	-
Stage 1	826	-		-	-	-	-
Stage 2	763	-		-	-	-	-

Approach	WB		NB	SB	
HCM Control Delay, s	10.4		0	0.2	
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)	-	-	688	1341	-
HCM Lane V/C Ratio	-	-	0.036	0.006	-
HCM Control Delay (s)	-	-	10.4	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⊕			⊕			⊕			⊕	
Traffic Volume (vph)	80	179	45	70	214	62	59	124	64	63	180	92
Future Volume (vph)	80	179	45	70	214	62	59	124	64	63	180	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.980			0.976			0.965			0.963	
Flt Protected		0.987			0.990			0.988			0.991	
Satd. Flow (prot)	0	1802	0	0	1800	0	0	1776	0	0	1778	0
Flt Permitted		0.844			0.879			0.867			0.889	
Satd. Flow (perm)	0	1541	0	0	1598	0	0	1558	0	0	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			24			34			37	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		526			2207			379			654	
Travel Time (s)		12.0			50.2			8.6			14.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	334	0	0	380	0	0	271	0	0	368	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	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	22.5		22.5	22.5	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		14.5			14.5			13.7			13.7	
Actuated g/C Ratio		0.38			0.38			0.36			0.36	
v/c Ratio		0.56			0.61			0.47			0.62	
Control Delay		13.3			14.1			12.0			14.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.3			14.1			12.0			14.9	
LOS		B			B			B			B	
Approach Delay		13.3			14.1			12.0			14.9	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		43			50			32			48	
Queue Length 95th (ft)		135			155			109			155	
Internal Link Dist (ft)		446			2127			299			574	
Turn Bay Length (ft)												
Base Capacity (vph)		1181			1225			1061			1087	
Starvation Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.28			0.31			0.26			0.34	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 38
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 13.7   Intersection LOS: B
Intersection Capacity Utilization 55.1%   ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: 42nd Avenue S & S 144th Street

Ø2	Ø4
28 s	32 s
Ø6	Ø8
28 s	32 s
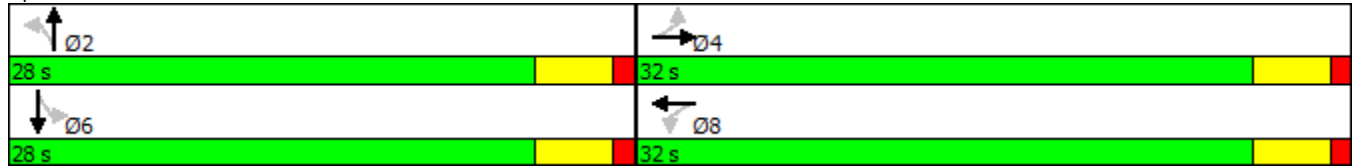
Intersection							
Int Delay, s/veh	6						

Movement	WBL	WBR		NBT	NBR	SBL	SBT
Lane Configurations	�			↱			↰
Traffic Vol, veh/h	94	23		189	90	20	213
Future Vol, veh/h	94	23		189	90	20	213
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	-		-	-	-	-
Veh in Median Storage, #	0	-		0	-	-	0
Grade, %	0	-		0	-	-	0
Peak Hour Factor	45	45		91	91	79	79
Heavy Vehicles, %	0	0		2	2	3	3
Mvmt Flow	209	51		208	99	25	270

Major/Minor	Minor1			Major1		Major2	
Conflicting Flow All	577	257		0	0	307	0
Stage 1	257	-		-	-	-	-
Stage 2	320	-		-	-	-	-
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	482	787		-	-	1248	-
Stage 1	791	-		-	-	-	-
Stage 2	741	-		-	-	-	-
Platoon blocked, %				-	-		-
Mov Cap-1 Maneuver	470	787		-	-	1248	-
Mov Cap-2 Maneuver	470	-		-	-	-	-
Stage 1	791	-		-	-	-	-
Stage 2	723	-		-	-	-	-

Approach	WB			NB		SB	
HCM Control Delay, s	19.2			0		0.7	
HCM LOS	C						

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT			
Capacity (veh/h)	-	-	510	1248	-		
HCM Lane V/C Ratio	-	-	0.51	0.02	-		
HCM Control Delay (s)	-	-	19.2	7.9	0		
HCM Lane LOS	-	-	C	A	A		
HCM 95th %tile Q(veh)	-	-	2.9	0.1	-		