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Smartcap Arlington Airport Business Park Traffic Impact Analysis

Jurisdiction: City of Arlington

July 2020

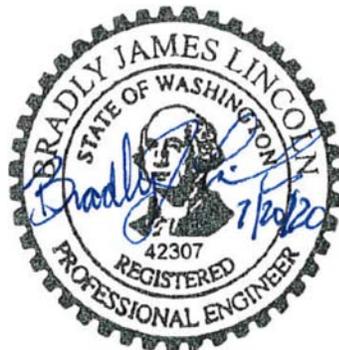


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1. INTRODUCTION

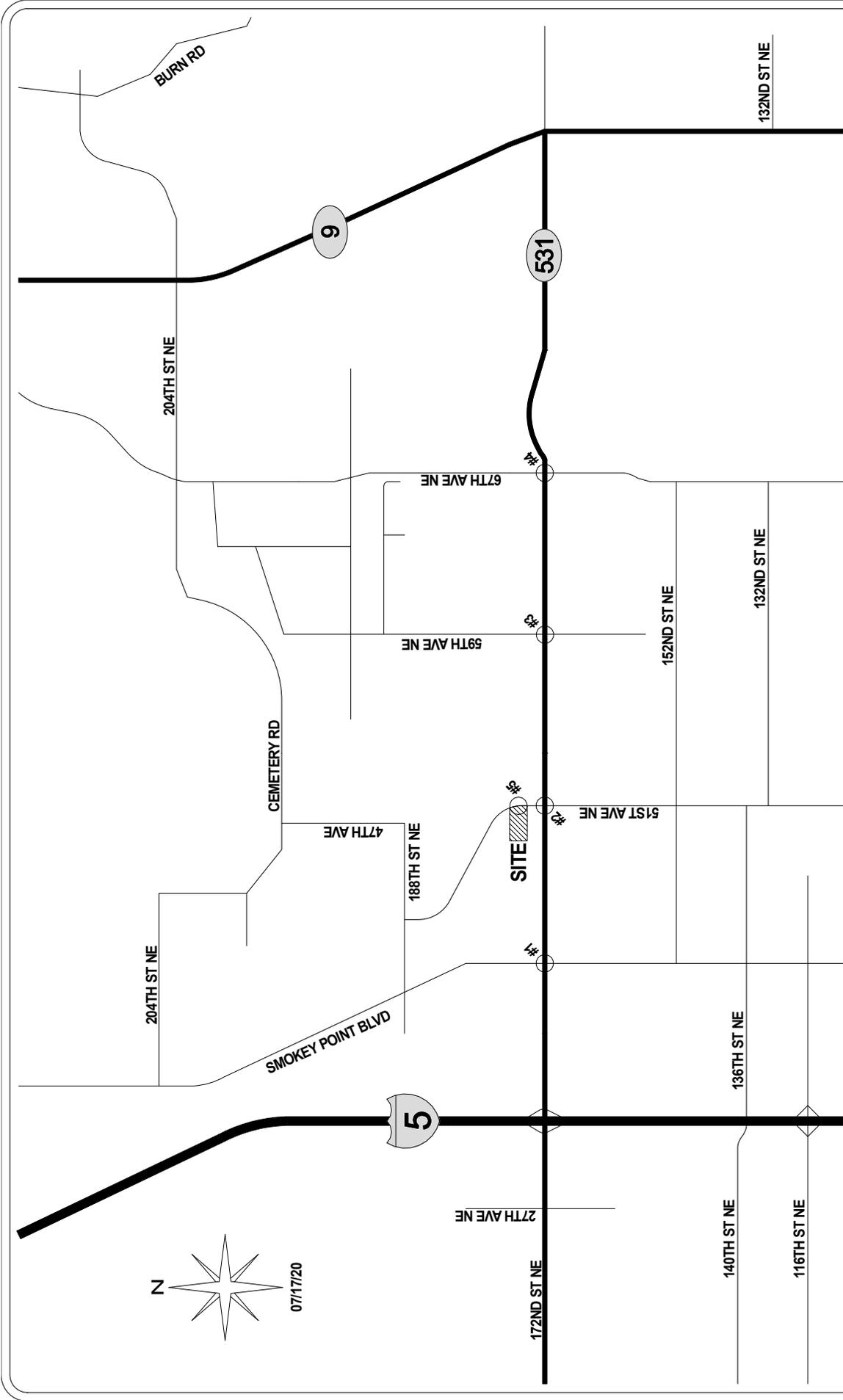
Gibson Traffic Consultants, Inc. (GTC) has been retained to analyze the traffic impacts of the proposed Smartcap Arlington Airport Business Park development. The proposed development is located along the west side of 51st Avenue NE, north of 172nd Street NE (SR-531). A site vicinity map is included in Figure 1. The development is proposed to consist of 300,775 square-feet (SF) of industrial space. The site is currently undeveloped. The development is anticipated to be constructed by the year 2023.

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

2. METHODOLOGY

Trip generation for the Smartcap Arlington Airport Business Park development is based on average trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition (2017)*. Level of service (LOS) at the study intersections is determined using the methodology described in the *Highway Capacity Manual, 6th Edition (HCM)*. The analysis has been performed using the *Synchro 10.3, Build 151* software. The intersection level of service analysis has been performed for the existing conditions, 2023 baseline conditions, and 2023 future with development conditions during the PM peak-hour. The year 2022 has been utilized for the future analysis based on the anticipated completion date of the development.

Traffic congestion on roadways is generally measured in terms of level of service at critical intersections. In accordance with the *Highway Capacity Manual, 6th Edition*, roadway 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, all-way stop-controlled and roundabout 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. 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.



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GTC #20-166

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- LEGEND**
-  DEVELOPMENT SITE
 -  STUDY INTERSECTION

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FIGURE 1
SITE VICINITY MAP

Table 1: Level of Service Criteria for Intersections

Level of ¹ Service	Expected Delay	Intersection Control Delay (Seconds per Vehicle)	
		Unsignalized Intersections	Signalized & Roundabout 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 City of Arlington has established an acceptable level of service of LOS D.

The City of Arlington and Snohomish County have an interlocal agreement that provides for reciprocal mitigation fees. Snohomish County mitigation fees can be calculated based on the default percentage in the interlocal agreement, which is 70%, or based on actual impacts. The City of Arlington also has an interlocal agreement with WSDOT that provides for mitigation fees to WSDOT for impacts to WSDOT improvement projects. WSDOT improvement projects and their associated fees are based on the most recent Exhibit C list, which is included in the attachments. City of Arlington developments are required to pay for any WSDOT improvement project on the Exhibit C list impacted with 3 or more directional PM peak-hour trips or based on the area wide mitigation fee.

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

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

LOS B: Generally stable traffic flow conditions.

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

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

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

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

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

3. TRIP GENERATION

Trip generation calculations for the proposed Smartcap Arlington Airport Business Park development are based on national research data contained in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 10th Edition* (2017). The final uses in the development are not currently known, but could consist of warehouse, manufacturing and other industrial uses. The trip generation calculations have therefore been performed using ITE Land Use Code 130, Industrial Park, since this land use code includes various uses, including warehouse and manufacturing. The trip generation of the Smartcap Arlington Airport Business Park development is summarized in Table 2.

Table 2: Trip Generation Summary

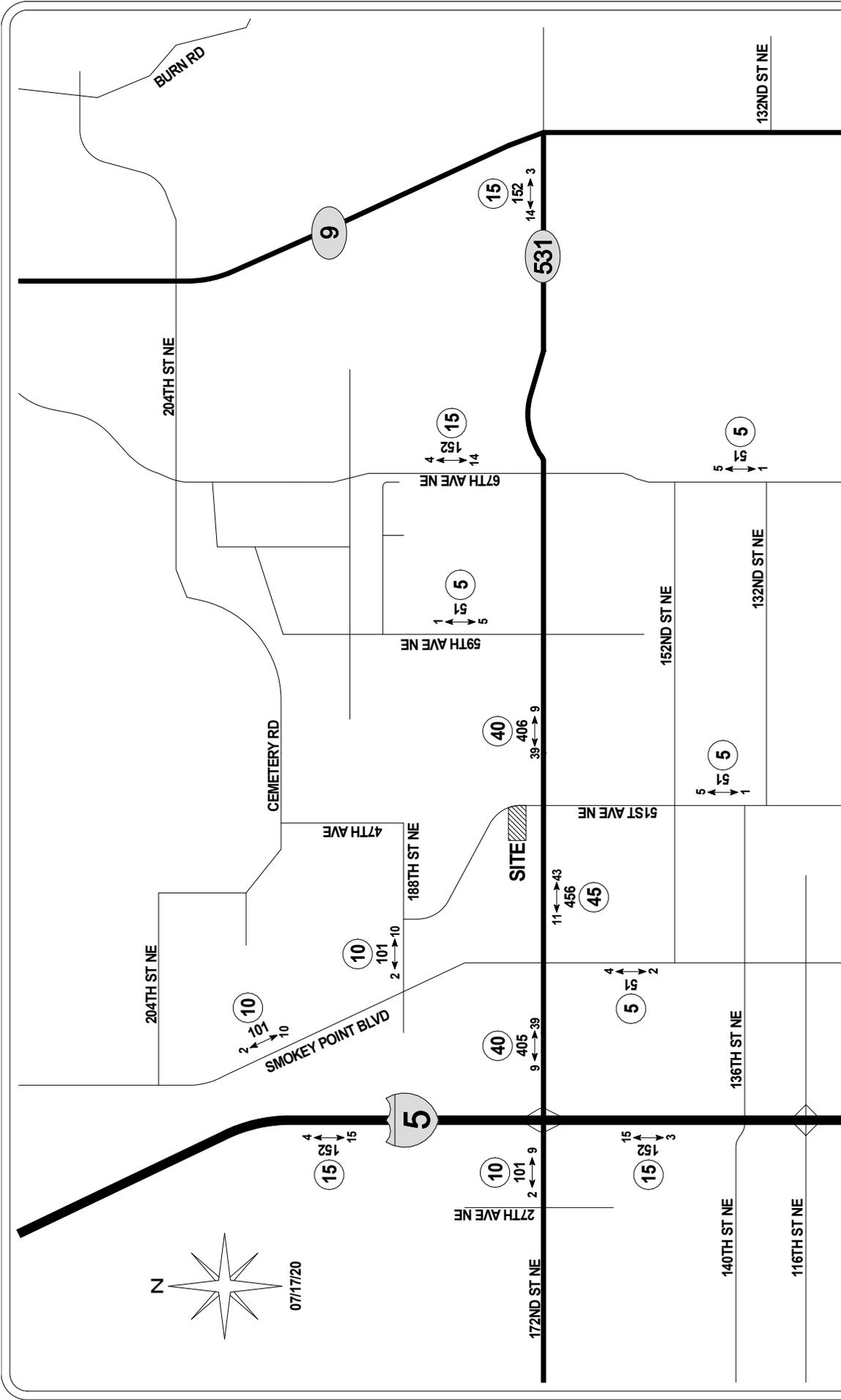
300,775 SF Industrial Park ITE LUC 130	Average Daily Trips			AM Peak-Hour Trips			PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Generation Rate	3.37 Trips per 1,000 SF			0.40 Trips per 1,000 SF			0.40 Trips per 1,000 SF		
Splits	50%	50%	100%	81%	19%	100%	21%	79%	100%
Trips	507	507	1,014	97	23	120	25	95	120

The Smartcap Arlington Airport Business Park development is anticipated to generate approximately 1,014 new average daily trips (ADT) with approximately 120 new AM peak-hour trips and approximately 120 new PM peak-hour trips.

4. TRIP DISTRIBUTION

The trip distribution for the Smartcap Arlington Airport Business Park development is based on previously approved distributions in the site vicinity, surrounding uses and existing traffic volumes. It is anticipated that 45% of the trips generated by the development will travel to and from the west along 172nd Street NE (SR-531). Approximately 40% of the trips generated by the development will travel to and from the east along 172nd Street NE (SR-531). An estimated 10% of the trips generated by the development will travel to and from the north along 51st Avenue NE. The remaining 5% of the trips generated by the development are anticipated to travel to and from the south along 51st Avenue NE. Detailed distributions for the AM and PM peak-hours are shown in Figure 2 and Figure 3, respectively.

The interlocal agreement between the City of Arlington and Snohomish County requires detailed development trip turning movement data at Snohomish County key intersections impacted with three or more directional trips during the AM peak-hour and PM peak-hour. The trips generated by the development will impact 3 Snohomish County key intersections during the AM and PM peak-hours before the local distribution of trips results in less than 3 directional peak-hour trips. Individual trip turning movements at the impacted Snohomish County key intersections are included in the attachments.



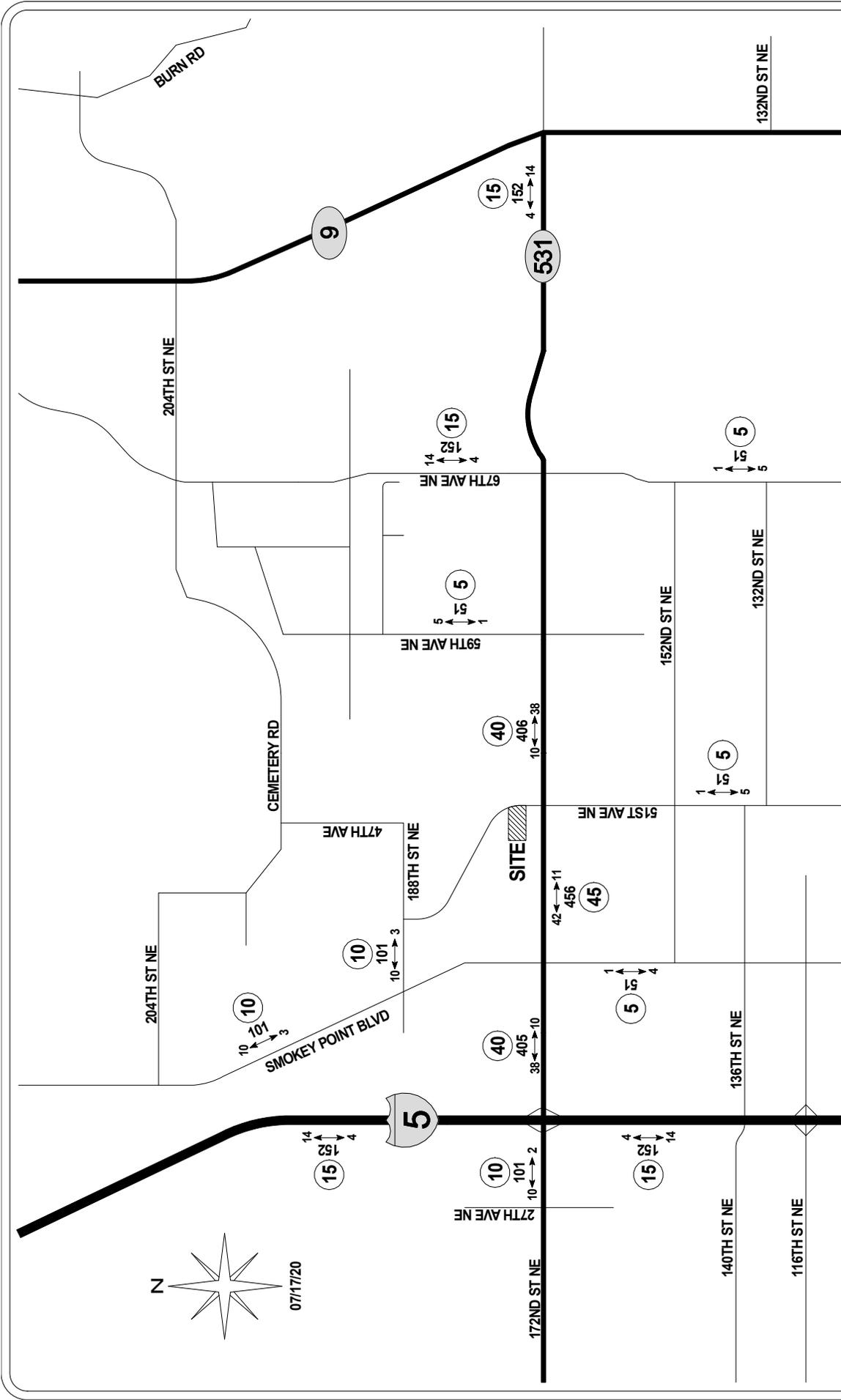
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FIGURE 2
DEVELOPMENT TRIP
DISTRIBUTION
AM PEAK-HOUR

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LEGEND
NEW DAILY TRIPS
NEW AM PEAK-HOUR TRIPS
TRIP DISTRIBUTION %

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FIGURE 3
DEVELOPMENT TRIP
DISTRIBUTION
PM PEAK-HOUR

LEGEND
AWDT
PM ← → PEAK
NEW DAILY TRIPS
NEW PM PEAK-HOUR TRIPS
TRIP DISTRIBUTION %
XX

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5. LEVEL OF SERVICE ANALYSIS

The following intersections were analyzed as a part of this report:

1. 172nd Street NE (SR-531 at Smokey Point Boulevard)
2. 172nd Street NE (SR-531 at 51st Avenue NE)
3. 172nd Street NE (SR-531 at 59th Avenue NE)
4. 172nd Street NE (SR-531 at 67th Avenue NE)
5. Site Access at 51st Avenue NE – 2023 future with development only

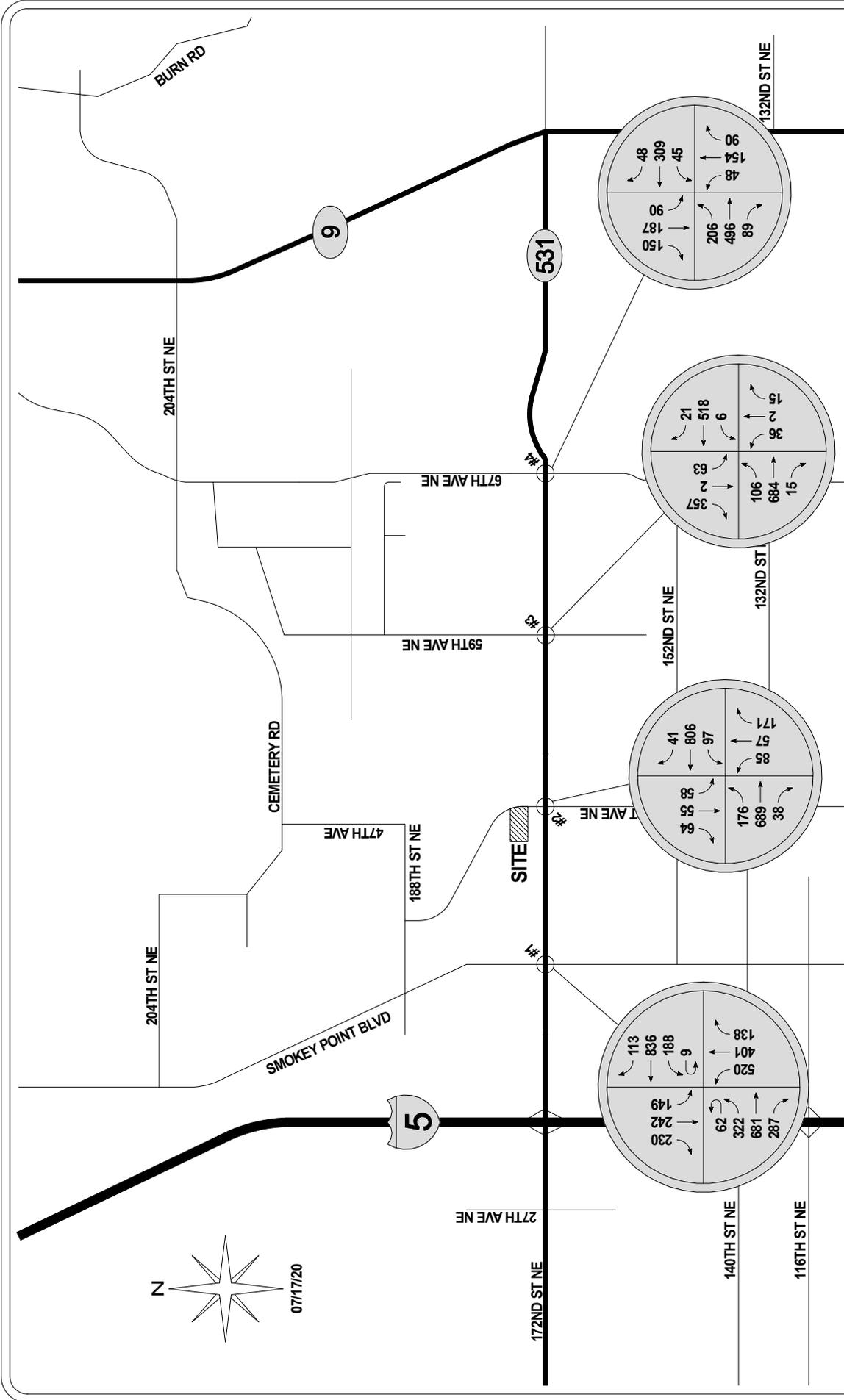
All of the existing intersections are signalized. The study intersections have been analyzed for the existing conditions, 2023 baseline conditions and 2023 future conditions with development. The site access has only been analyzed for the 2023 future conditions with development.

5.1 Intersection Turning Movements

The existing volumes at the study intersections are based on counts performed by the independent count firm Traffic Data Gathering (TDG) before the Covid-19 pandemic. The existing turning movements at the study intersections are shown in Figure 4. The 2023 baseline turning movements at the intersections have been calculated utilizing a 2% annually compounding growth rate, which is consistent with previous analysis performed in the City of Arlington. It is important to note that the growth is from the date of the county. The 2023 baseline turning movements are shown in Figure 5. The 2023 future with development turning movements were calculated by adding the trips generated by the development to the 2023 baseline tuning movements. The site is proposed to have multiple accesses to 51st Avenue NE, but the analysis assumes all of the trips will use a single access to represent the highest anticipated impacts to the site access. The 2023 future with development turning movements are shown in Figure 6. The existing turning movement counts and future turning movement calculations are included in the attachments.

5.2 Level of Service Analysis

The level of service analysis has been completed with the existing channelization and intersection control. The level of service analysis shows that the study intersections currently operate at LOS D, or better. The study intersections, with the exception of 172nd Street NE (SR-531) at Smokey Point Boulevard, are anticipated to operate at LOS D, or better, under the 2023 baseline and 2023 future with development conditions. The level of service results for the study intersections are summarized in Table 3.



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FIGURE 4
EXISTING
TURNING MOVEMENTS

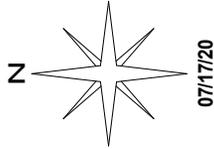
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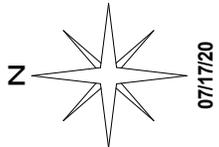
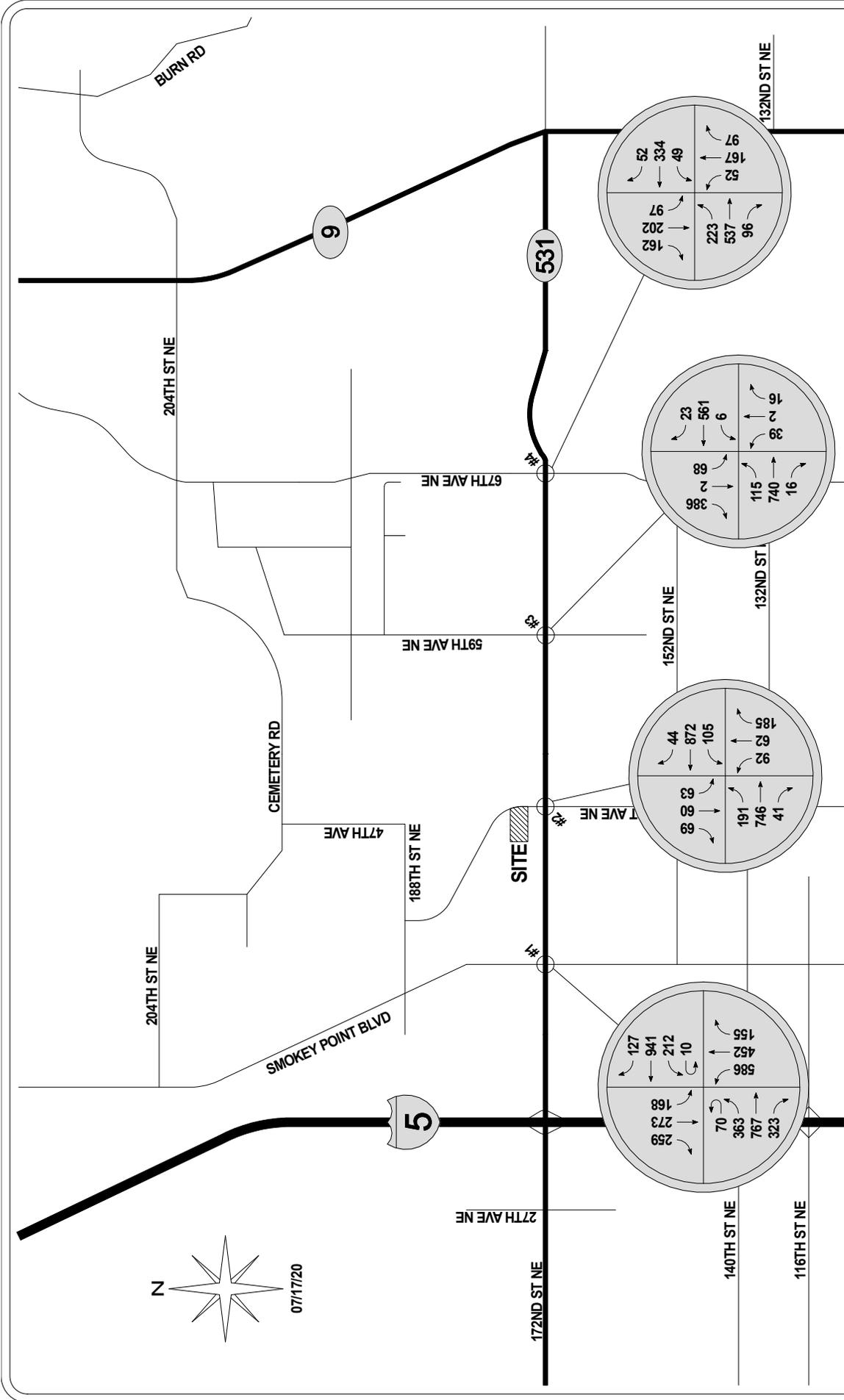
PM PEAK-HOUR
TURNING MOVEMENT VOLUMES

LEGEND
XXX →

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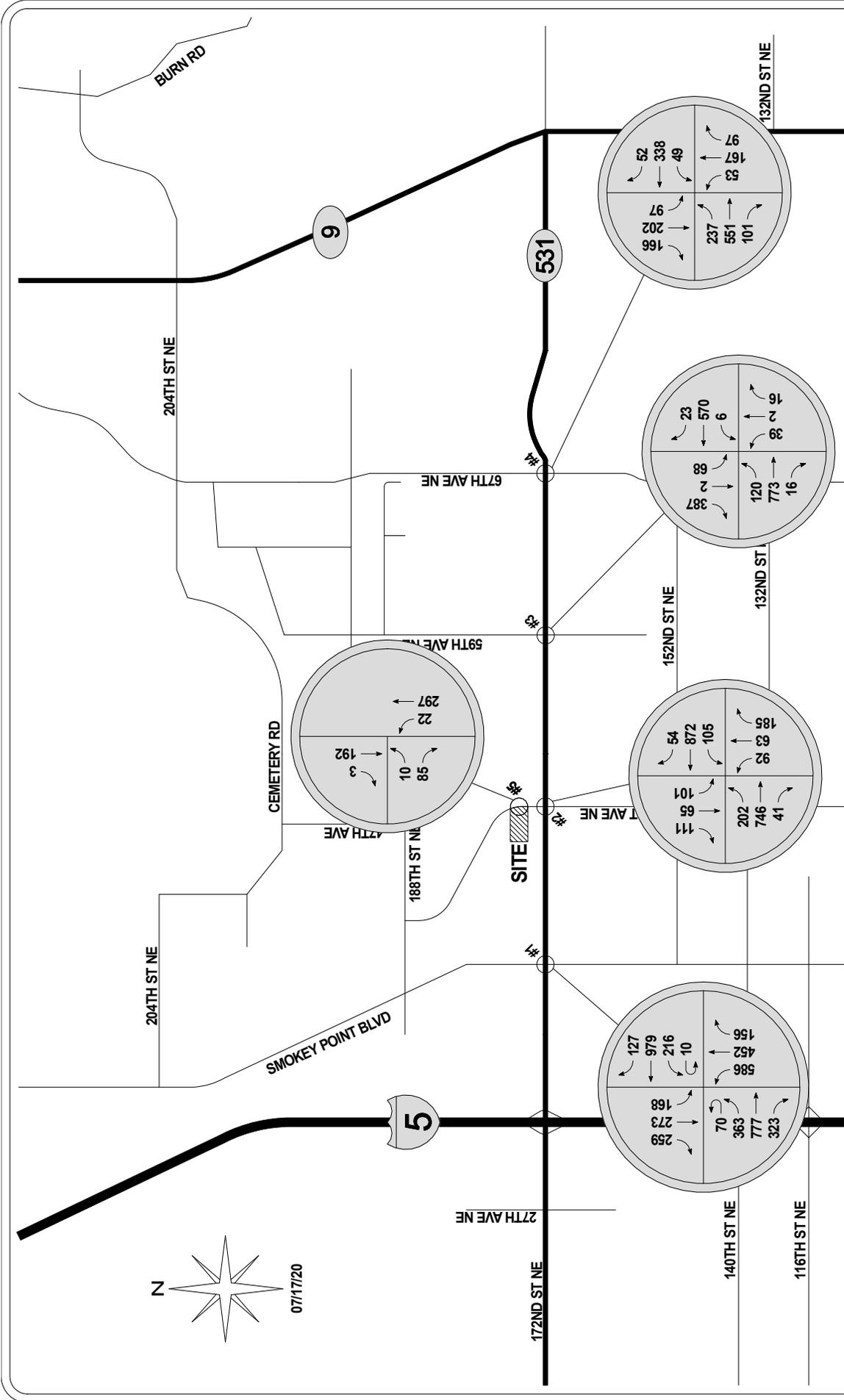
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FIGURE 5
2023 BASELINE
TURNING MOVEMENTS

LEGEND
PM PEAK-HOUR
TURNING MOVEMENT VOLUMES
XXX →

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FIGURE 6
2023 FUTURE WITH
DEVELOPMENT
TURNING MOVEMENTS

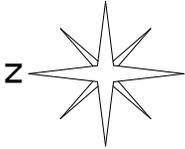
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LEGEND
PM PEAK-HOUR
TURNING MOVEMENT VOLUMES

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Table 3: Level of Service Summary

Intersection	Existing Conditions		2023 Baseline Conditions		2023 Future w Development Conditions	
	LOS	Delay	LOS	Delay	LOS	Delay
1. 172 nd Street NE (SR-531) at Smokey Point Boulevard	D	54.5 sec	E	63.8 sec	E	65.2 sec
2. 172 nd Street NE (SR-531) at 51 st Avenue NE	C	22.6 sec	C	28.7 sec	C	33.1 sec
3. 172 nd Street NE (SR-531) at 59 th Avenue NE	C	22.9 sec	C	25.7 sec	C	25.8 sec
4. 172 nd Street NE (SR-531) at 67 th Avenue NE	D	41.5 sec	D	42.5 sec	D	42.9 sec
5. Site Access at 51 st Avenue NE	---	---	---	---	B	10.4 sec

The intersection of 172nd Street NE (SR-531) at Smokey Point Boulevard is anticipated to operate at LOS E under the 2023 baseline conditions and under the 2023 future conditions with development. This intersection should be considered acceptable based on the WSDOT criteria for Tier 1 intersections. The level of service calculations are included in the attachments.

6. TRAFFIC MITIGATION FEES

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

6.1 City of Arlington

The City of Arlington currently has a traffic mitigation fee of \$3,355 per PM peak-hour trip. The Smartcap Arlington Airport Business Park development is anticipated to generate 120 new PM peak-hour trips. These trips result in a City of Arlington traffic mitigation fees of \$402,600.00. This fee is equivalent to \$1,338.54 per 1,000 SF.

The uses of the Smartcap Arlington Airport Business Park development are not known and could be all warehouse. This would reduce the trip generation to 57 PM peak-hour trips and reduce the traffic mitigation fees to \$191,235.00. This would be equivalent to \$635.81 per 1,000 SF.

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

6.2 Washington State Department of Transportation

WSDOT improvement projects and their associated fees are based on the most recent Exhibit C list, which is part of the interlocal agreement between Snohomish County and WSDOT and included in the attachments. City of Arlington developments are required to pay for WSDOT improvement projects on the Exhibit C list impacted with 10 or more PM peak-hour trips. Trips generated by the Smartcap Arlington Airport Business Park development will impact one improvement project on the WSDOT Exhibit C List:

- DOT-05 – SR-531, 43rd Avenue NE to 67th Avenue NE

The improvements for this segment have already been fully funded as part of Connecting Washington, but WSDOT has not updated the Exhibit C list to reflect the funding of this improvement project. The interlocal agreement between Snohomish County and WSDOT identifies that developments are not required to pay for impacts to improvement projects that have been fully funded. WSDOT traffic mitigation fees should therefore not be required for the Smartcap Arlington Airport Business Park development.

6.3 Snohomish County

The City of Arlington has an interlocal agreement with Snohomish County that provides for mitigation payments for impacts to Snohomish County arterials. City of Arlington developments that impact road improvement projects with 3 directional PM peak-hour trips identified in Snohomish County's *Transportation Needs Report* (TNR) are required to pay mitigation fees to Snohomish County. There are no improvement projects identified in Snohomish County's TNR that will be impacted by 3 or more directional PM peak-hour trips generated by the Smartcap Arlington Airport Business Park development. Snohomish County traffic mitigation fees should therefore not be required for the Smartcap Arlington Airport Business Park development.

7. CONCLUSIONS

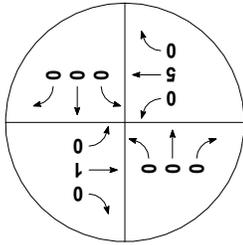
The proposed Smartcap Arlington Airport Business Park development is located on the west side of 51st Avenue NE, north of 172nd Street NE (SR-531). The development is proposed to consist of 300,775 Sf of industrial uses. The Smartcap Arlington Airport Business Park development is anticipated to generate 1,014 new daily trips with 120 new AM peak-hour trips and 120 new PM peak-hour trips.

The level of service analysis shows that the study intersections, with the exception of 172nd Street NE (SR-531) at Smokey Point Boulevard, are anticipated to operate at acceptable LOS D or better under the 2023 future with development conditions. The intersection of 172nd Street NE (SR-531) at Smokey Point Boulevard is anticipated to operate at LOS E under the 2023 baseline conditions and 2023 future with development conditions. This level of service should be deemed acceptable based on the WSDOT criteria for a Tier 1 intersection.

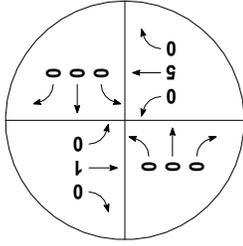
The Smartcap Arlington Airport Business Park development will have a total traffic mitigation fee of \$402,600.00 based on a variety of industrial uses. However, this fee could be as low as \$191,235.00 if the entire site is uses for warehousing. Traffic mitigation fees to WSDOT or Snohomish County should not be required, regardless of the use of the site. It is important to note that the City of Arlington traffic mitigation fees do not vest and could increase in the future.

Snohomish County Key Intersections

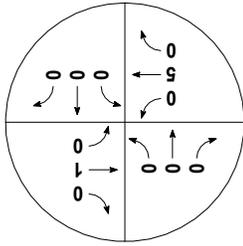
#81 51ST AVE NE @
132ND ST NE



#83 67TH AVE NE @
132ND ST NE



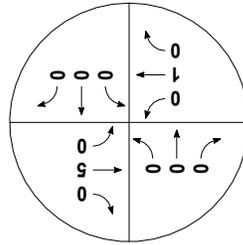
#84 67TH AVE NE @
152ND ST NE



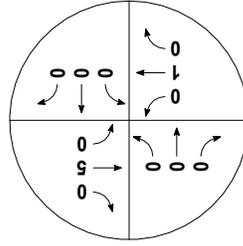
AM PEAK-HOUR

PM PEAK-HOUR

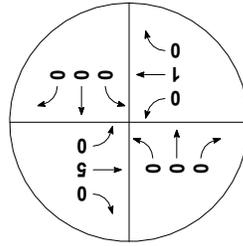
#81 51ST AVE NE @
132ND ST NE



#83 67TH AVE NE @
132ND ST NE



#84 67TH AVE NE @
152ND ST NE



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LEGEND

PEAK-HOUR
TURNING MOVEMENT VOLUMES

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FIGURE A
KEY INTERSECTION
TURNING MOVEMENTS

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Table A: AM Peak-Hour Key Intersection Volumes

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#81: 51 st Ave NE at 132 nd St NE	0	0	0	0	0	0	0	5	0	0	1	0
#83: 67 th Ave NE at 132 nd St NE	0	0	0	0	0	0	0	5	0	0	1	0
#84: 67 th Ave NE at 152 nd St NE	0	0	0	0	0	0	0	5	0	0	1	0

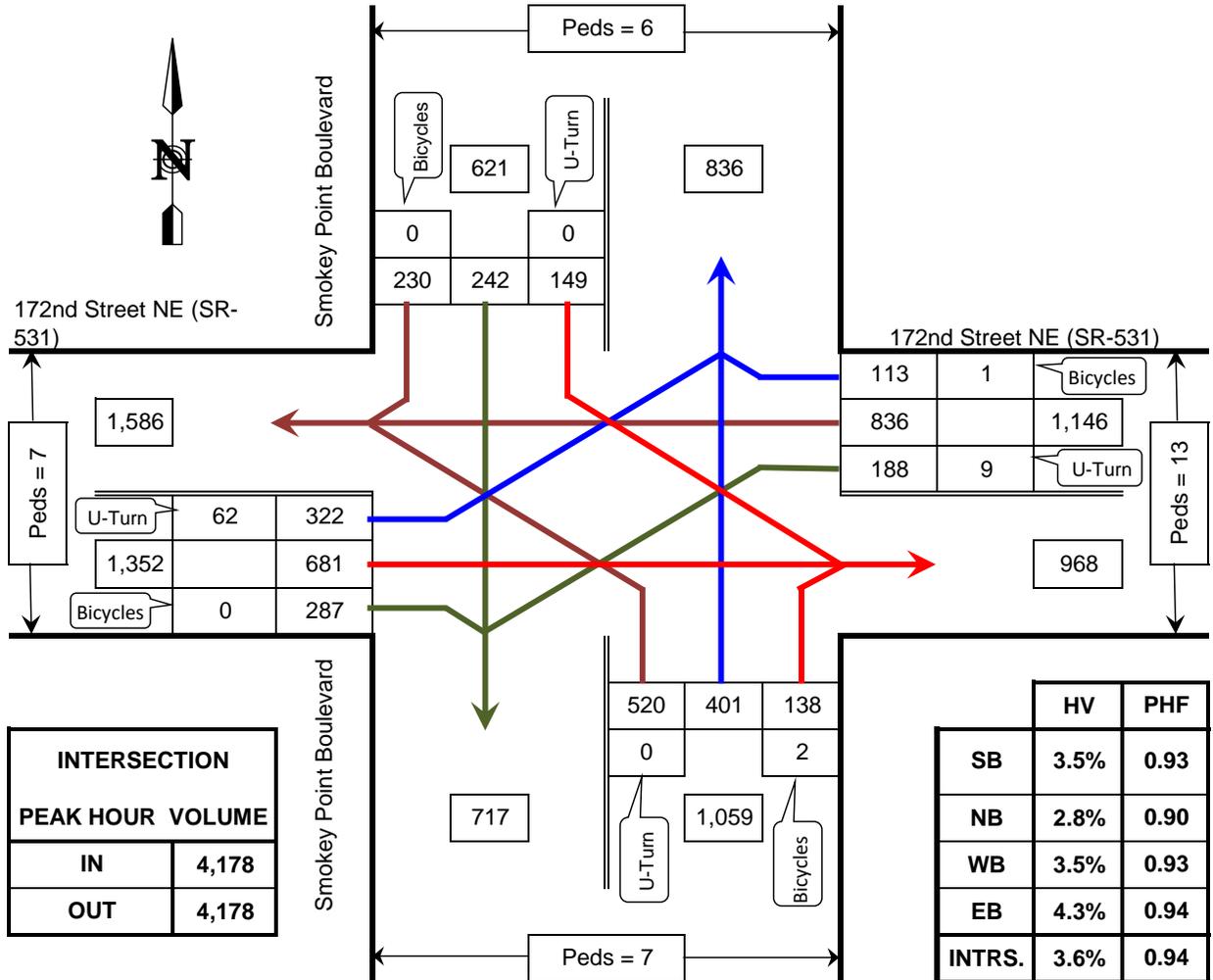
Table B: PM Peak-Hour Key Intersection Volumes

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
#81: 51 st Ave NE at 132 nd St NE	0	0	0	0	0	0	0	1	0	0	5	0
#83: 67 th Ave NE at 132 nd St NE	0	0	0	0	0	0	0	1	0	0	5	0
#84: 67 th Ave NE at 152 nd St NE	0	0	0	0	0	0	0	1	0	0	5	0

Counts and Turning Movement Calculations

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM



PHF = Peak Hour Factor
HV = Heavy Vehicle

Smokey Point Boulevard @ 172nd Street NE (SR-531)

Arlington, WA

COUNTED BY: CN/RN

DATE OF COUNT: Thu. 8/17/17

REDUCED BY: CN

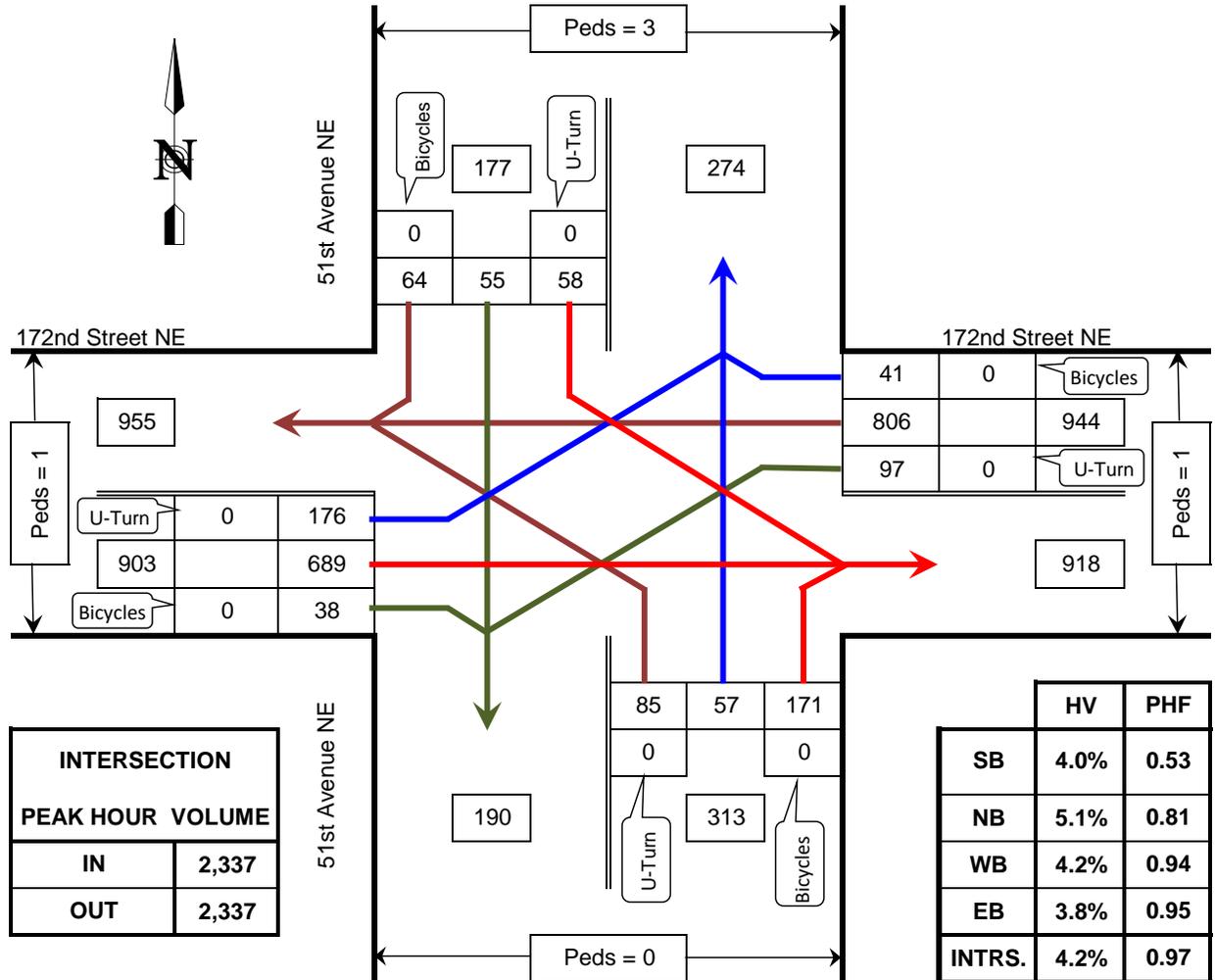
TIME OF COUNT: 4:00 PM - 6:00 PM

REDUCTION DATE: Fri. 8/18/17

WEATHER: Sunny

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM



PHF = Peak Hour Factor
HV = Heavy Vehicle

172nd Street NE @ 51st Avenue NE

Arlington, WA

COUNTED BY: TDG

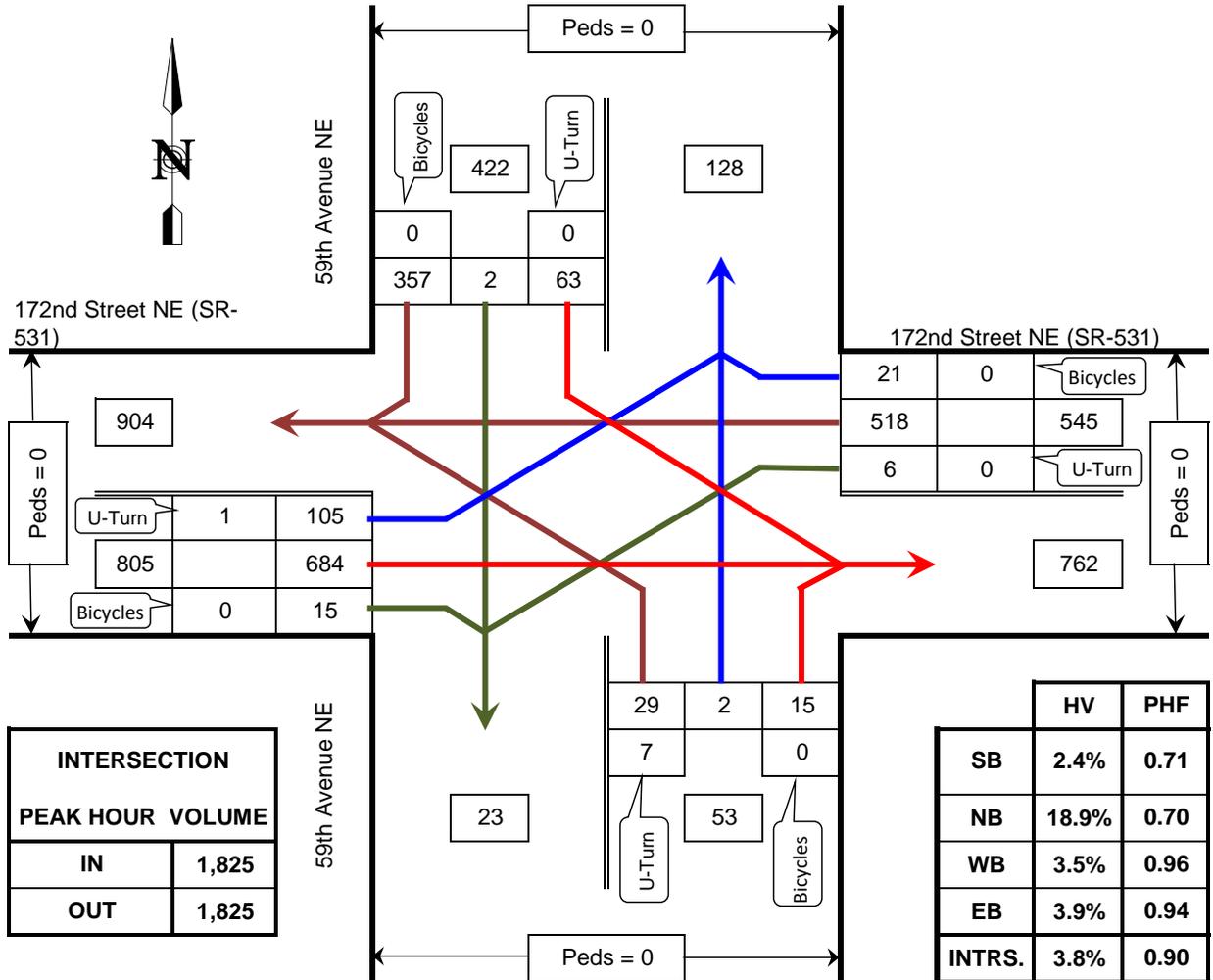
DATE OF COUNT: Tue. 10/8/19

REDUCTION DATE: Wed. 10/9/19

TIME OF COUNT: 4:00 PM - 6:00 PM

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM



PHF = Peak Hour Factor
HV = Heavy Vehicle

172nd Street NE (SR-531) @ 59th Avenue NE

Arlington, WA

COUNTED BY: TDG

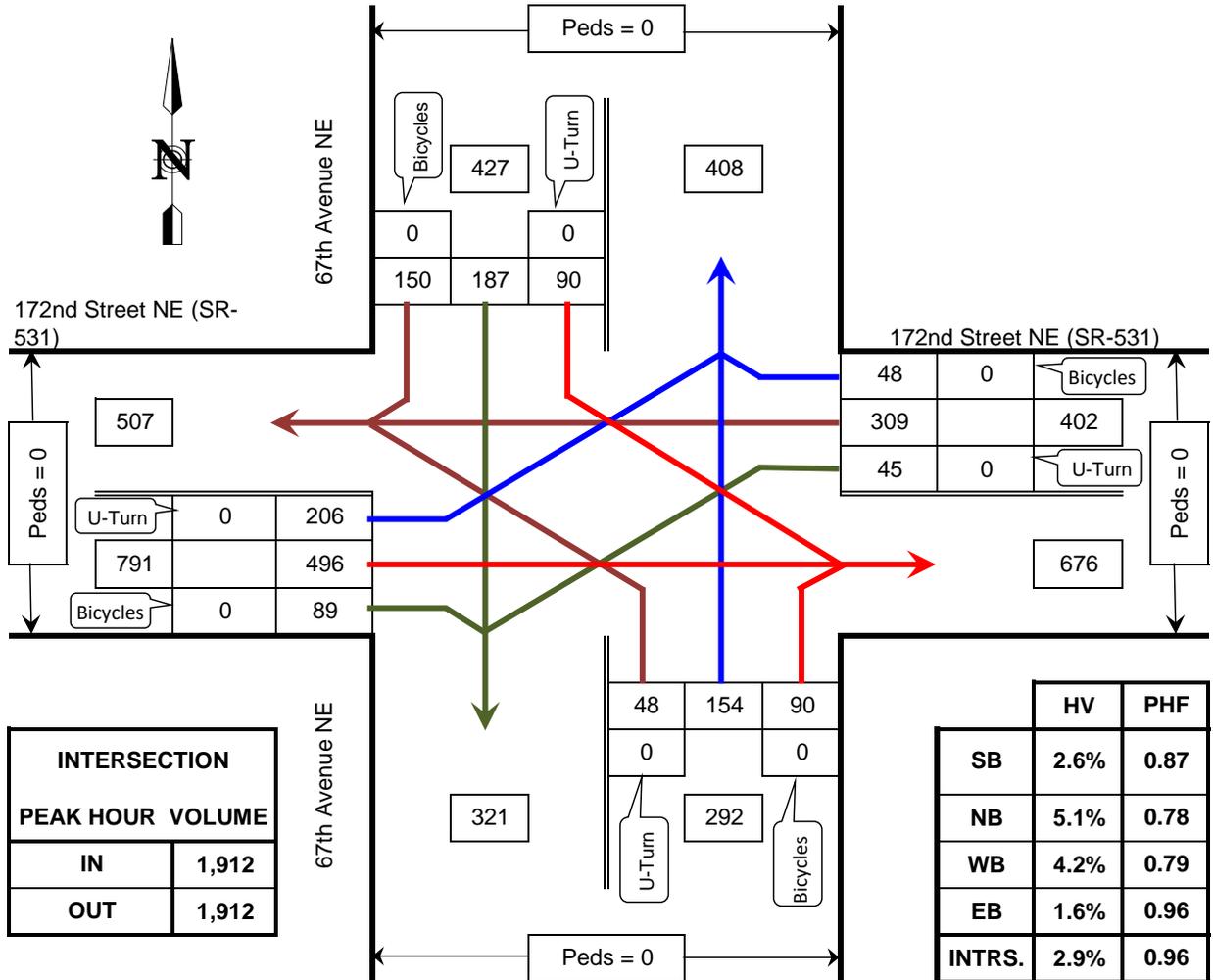
DATE OF COUNT: Wed. 3/6/19

REDUCTION DATE: Sun. 3/10/19

TIME OF COUNT: 4:00 PM - 6:00 PM

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:15 PM TO 5:15 PM



PHF = Peak Hour Factor
HV = Heavy Vehicle

172nd Street NE (SR-531) @ 67th Avenue NE

Arlington, WA

COUNTED BY: TDG

DATE OF COUNT: Wed. 3/6/19

REDUCTION DATE: Sun. 3/10/19

TIME OF COUNT: 4:00 PM - 6:00 PM

1 172nd St NE at Smokey Pt Blvd

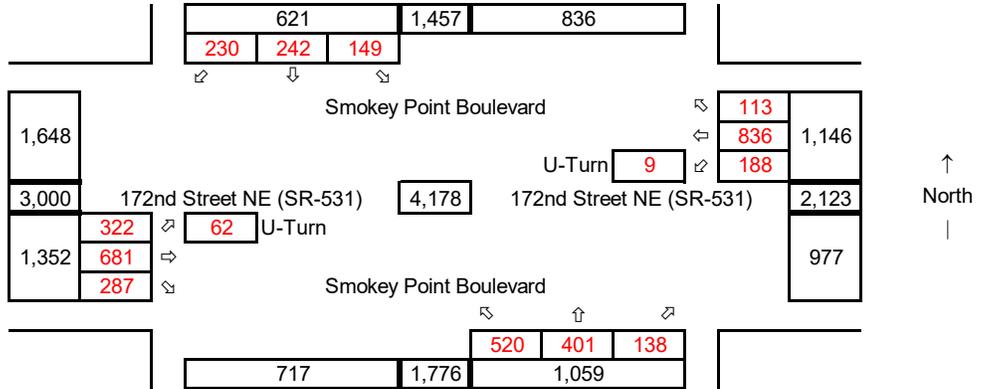
Synchro ID: 1

Existing

Average Weekday
PM Peak Hour

Year: 8/17/2017

Data Source: TDG



Baseline

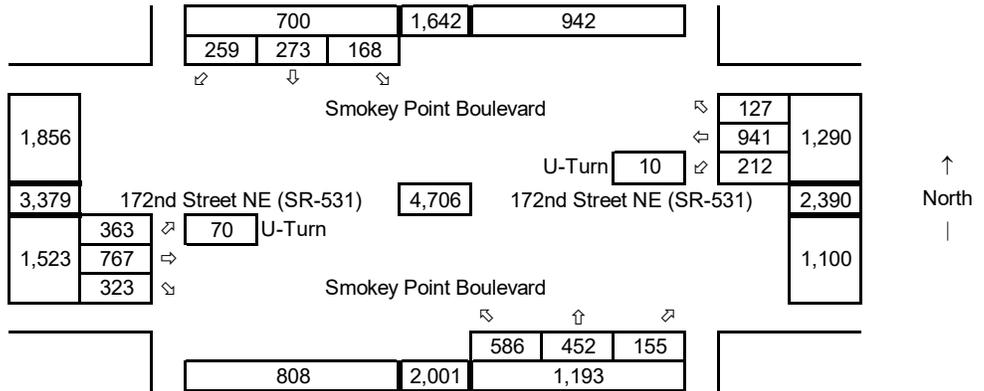
Average Weekday
PM Peak Hour

Year: 2023

Growth Rate = 2.0%

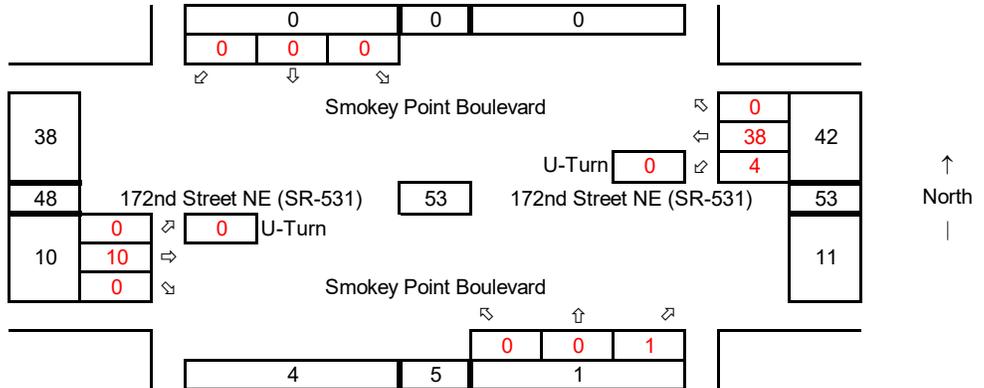
Years of Growth = 6

Total Growth = 1.1262



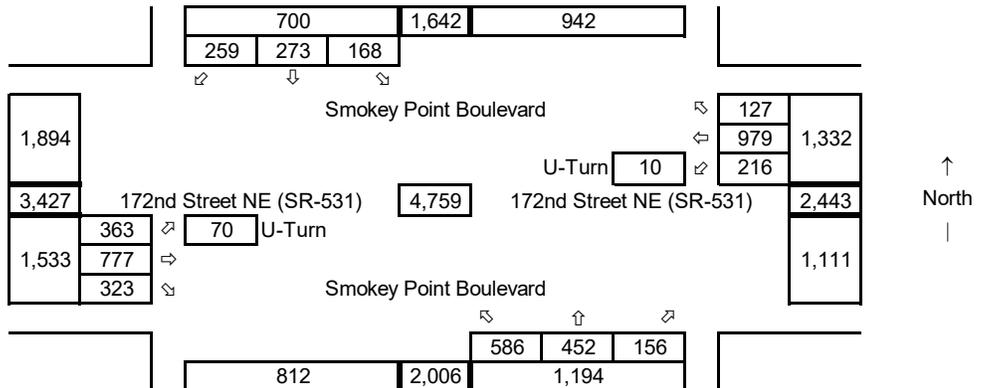
Development Trips

Average Weekday
PM Peak Hour



Future w Development

Average Weekday
PM Peak Hour



2 172nd St NE at 51st Ave NE

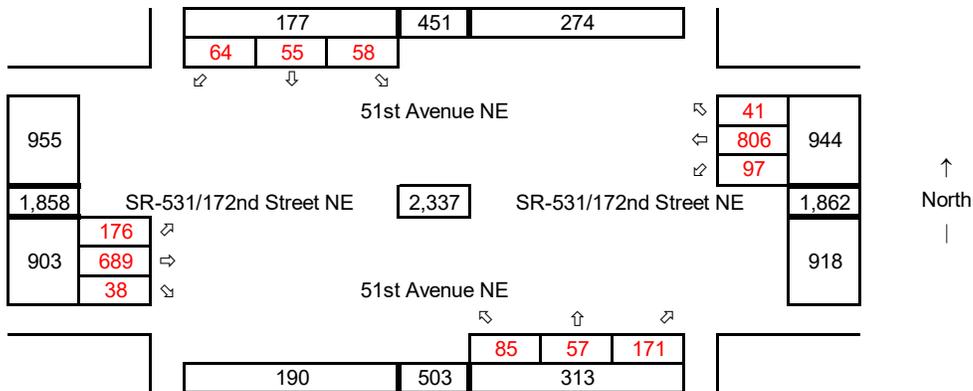
Synchro ID: 2

Existing

Average Weekday
PM Peak Hour

Year: 10/8/2019

Data Source: TDG



Baseline

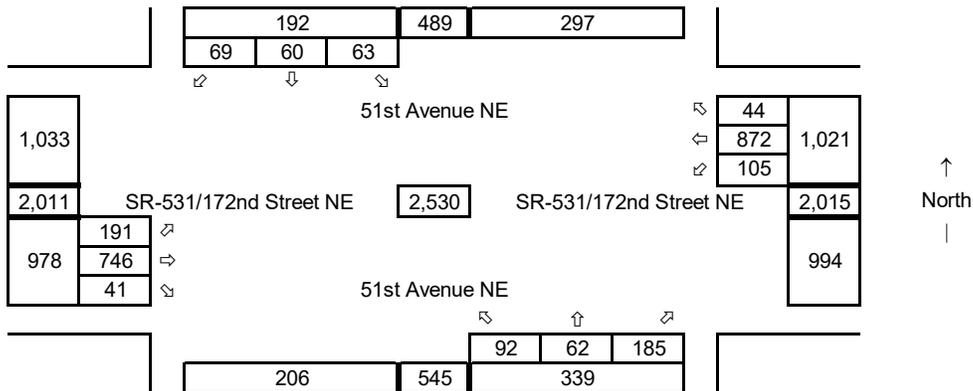
Average Weekday
PM Peak Hour

Year: 2023

Growth Rate = 2.0%

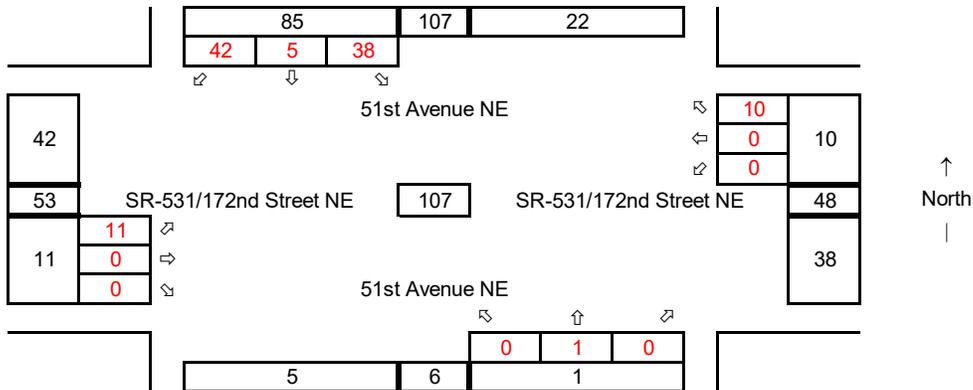
Years of Growth = 4

Total Growth = 1.0824



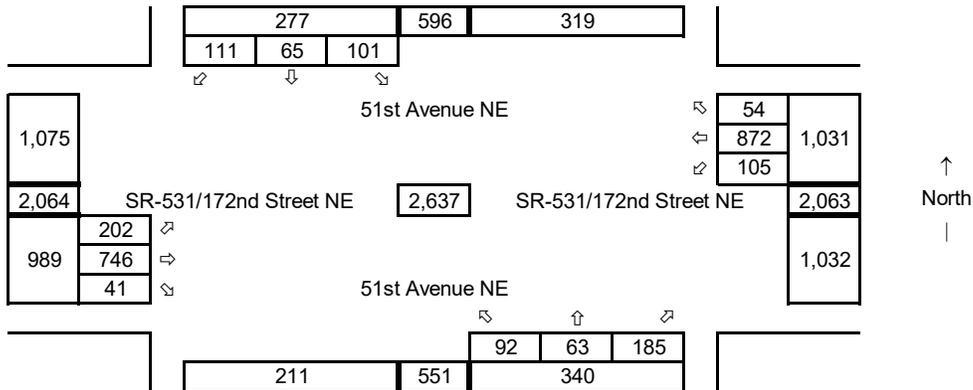
Development Trips

Average Weekday
PM Peak Hour



Future w Development

Average Weekday
PM Peak Hour



3 172nd St NE at 59th Ave NE

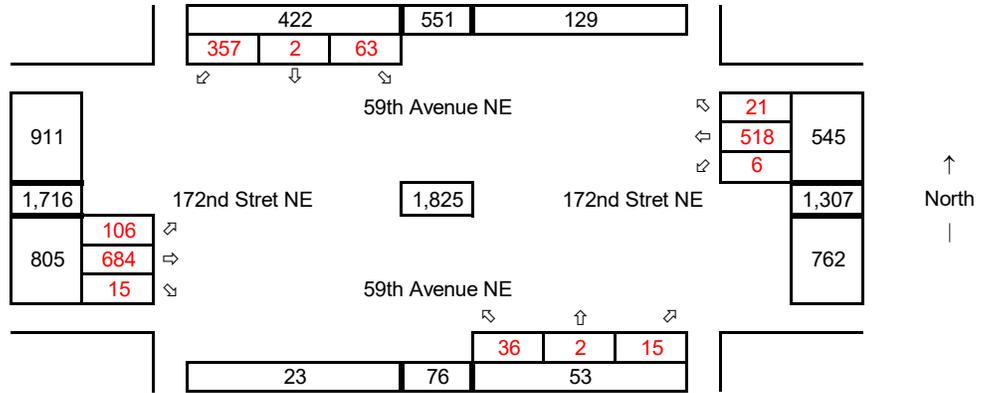
Synchro ID: 3

Existing

Average Weekday
PM Peak Hour

Year: 3/6/2019

Data Source: TDG



Baseline

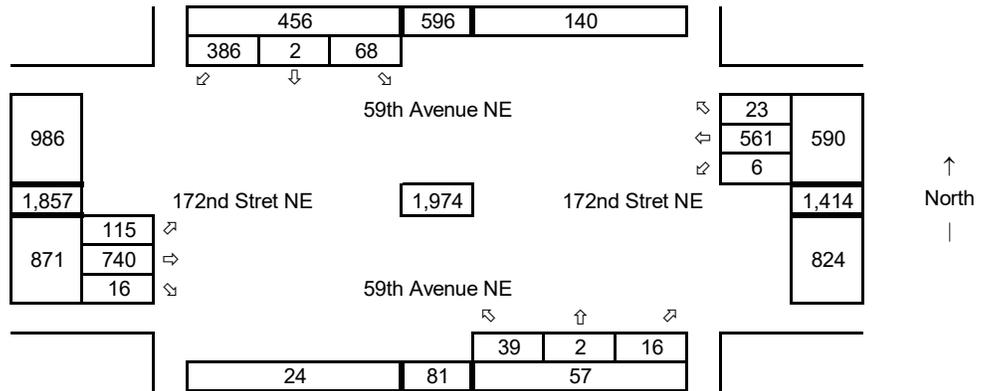
Average Weekday
PM Peak Hour

Year: 2023

Growth Rate = 2.0%

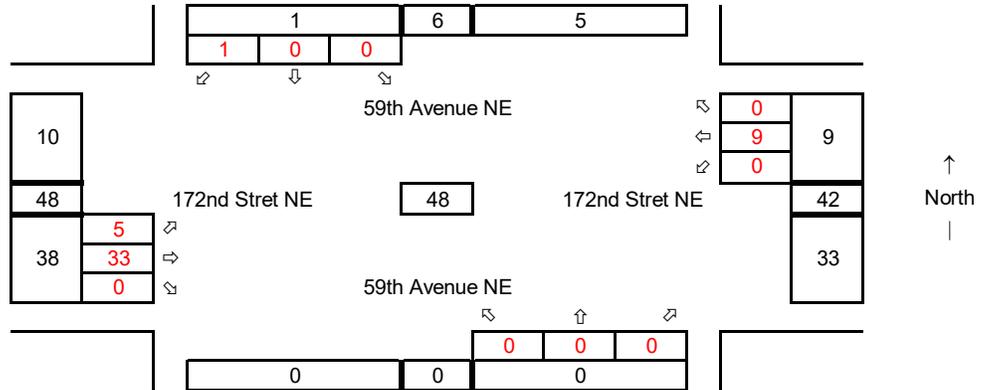
Years of Growth = 4

Total Growth = 1.0824



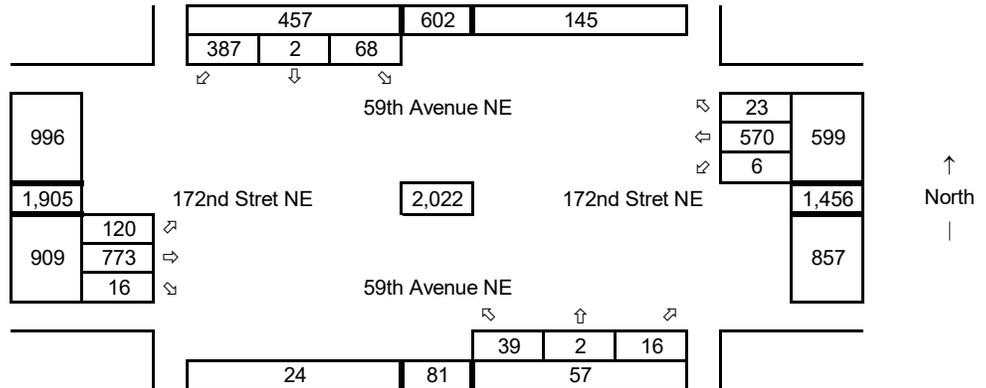
Development Trips

Average Weekday
PM Peak Hour



Future w Development

Average Weekday
PM Peak Hour

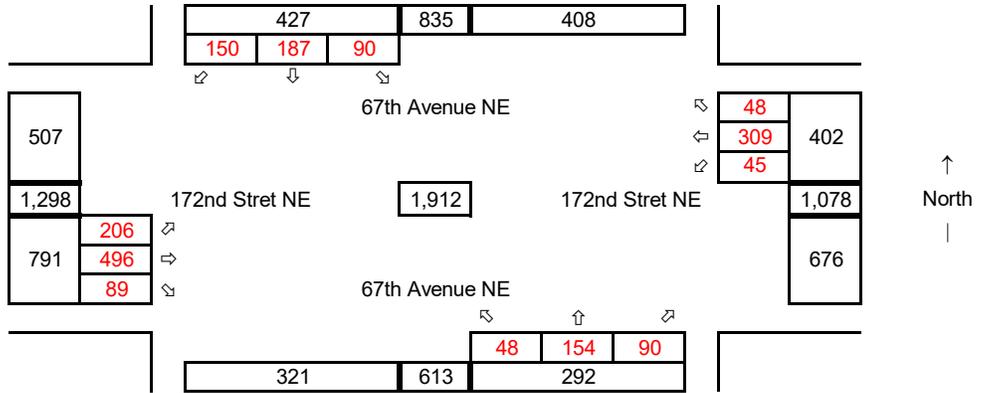


4 172nd St NE at 67th Ave NE

Synchro ID: 4
Existing
 Average Weekday
 PM Peak Hour

Year: **3/6/2019**

Data Source: **TDG**



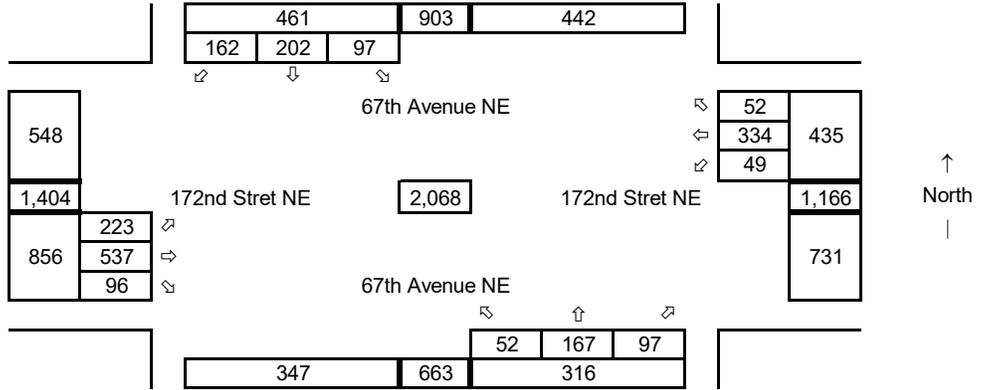
Baseline
 Average Weekday
 PM Peak Hour

Year: 2023

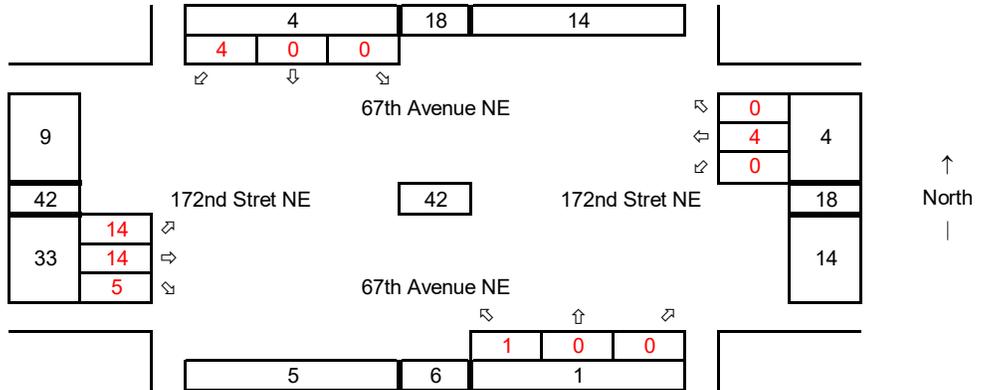
Growth Rate = 2.0%

Years of Growth = 4

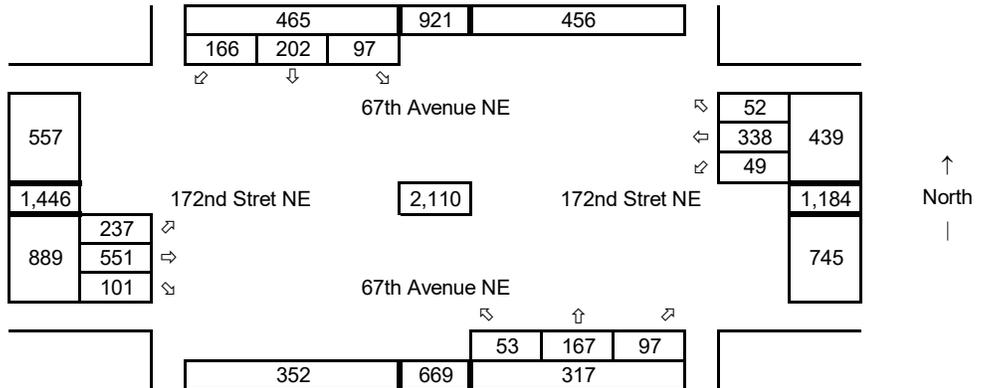
Total Growth = 1.0824



Development Trips
 Average Weekday
 PM Peak Hour



Future w Development
 Average Weekday
 PM Peak Hour



5 Site Access at 51st Ave NE

Synchro ID: 5

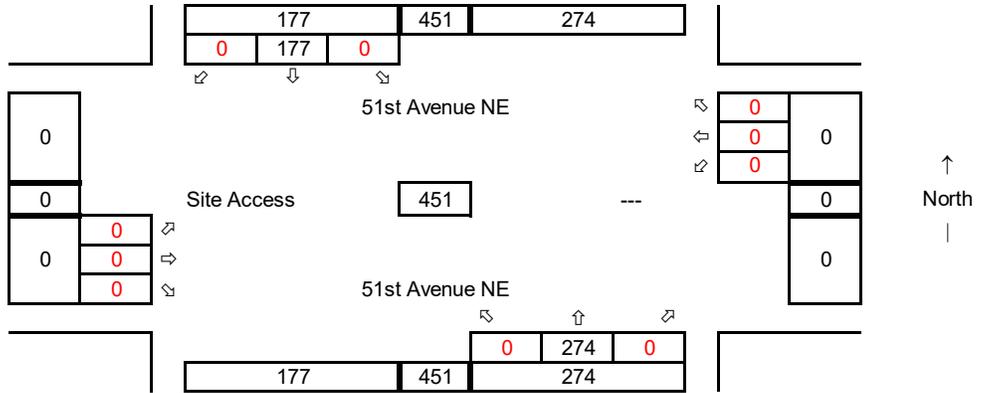
Existing

Average Weekday
PM Peak Hour

Year: 10/8/2019

Data Source: TDG

Based on count for
intersection of 172nd
St NE at 51st Ave NE



Baseline

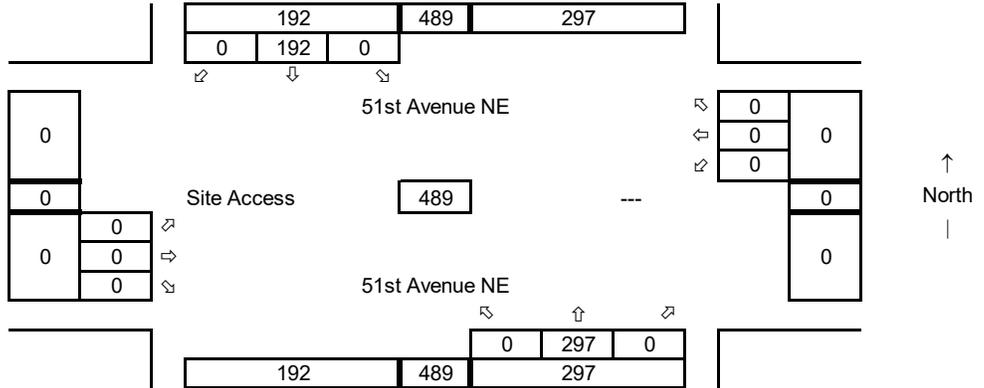
Average Weekday
PM Peak Hour

Year: 2023

Growth Rate = 2.0%

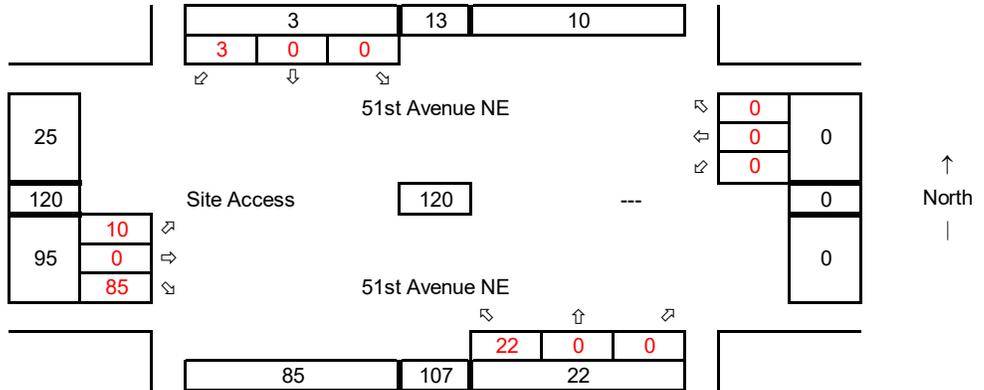
Years of Growth = 4

Total Growth = 1.0824



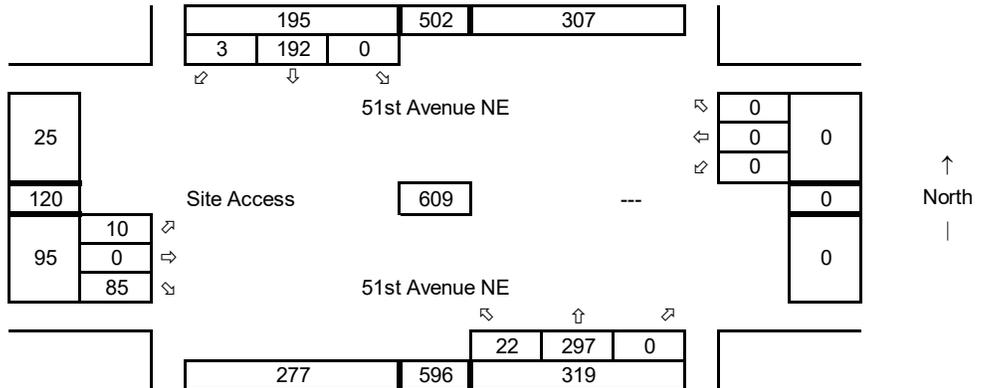
Development Trips

Average Weekday
PM Peak Hour



Future w Development

Average Weekday
PM Peak Hour



Level of Service Calculations

Lanes, Volumes, Timings
 1: Smokey Point Boulevard & 172nd Street NE

Smartcap Arlington Airport Business Park

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	62	322	681	287	9	188	836	113	520	401	138	149	242	230
Future Volume (vph)	62	322	681	287	9	188	836	113	520	401	138	149	242	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	490	490	400	400	400	400	400	0	175	175	175	240	240	155
Storage Lanes	1	1	1	1	1	1	1	1	2	2	1	1	1	1
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Lane Util. Factor	0.95	1.00	0.95	1.00	0.91	1.00	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00	1.00	0.98	1.00	1.00	0.98	0.98	0.99	0.99	0.97	0.99	0.99	0.98
Frt			0.850	0.850		0.850	0.850	0.850	0.950	0.950	0.850	0.950	0.950	0.850
Flt Protected		0.950		0.950		0.950		0.950	0.950		0.950	0.950		0.950
Satd. Flow (prot)	0	1741	3471	1553	0	1737	4988	1553	3400	3505	1568	1736	3471	1553
Flt Permitted		0.950		0.950		0.950		0.950	0.950		0.950	0.950		0.950
Satd. Flow (perm)	0	1737	3471	1519	0	1731	4988	1519	3379	3505	1524	1720	3471	1519
Right Turn on Red		Yes	Yes	Yes		Yes								
Satd. Flow (RTOR)		30	1100	25.0		748	17.0	120	30	1151	1766	40.1	30	245
Link Speed (mph)		6	6	7		7	7	6	7	7	13	13	13	7
Link Distance (ft)														
Travel Time (s)														
Conf. Peds. (#/hr)														
Conf. Bikes (#/hr)														
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	4%	4%	2%	4%	4%	4%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	67	343	724	305	10	200	889	120	553	427	147	159	257	245
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	410	724	305	0	210	889	120	553	427	147	159	257	245
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Permitted Phases	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Switch Phase														
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	5.0	10.0	10.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	10.6	10.6	40.0	40.0	10.6	10.6	40.0	40.0	10.6	44.0	44.0	10.6	44.0	44.0
Total Split (s)	42.0	42.0	47.0	47.0	40.0	40.0	45.0	45.0	31.0	42.0	42.0	31.0	42.0	42.0

Existing Conditions
 Gibson Traffic Consultants, Inc. [BJL #20-116] PM Peak-Hour

Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

Smartcap Arlington Airport Business Park

	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	26.3%	26.3%	29.4%	29.4%	25.0%	25.0%	28.1%	28.1%	19.4%	26.3%	26.3%	19.4%	26.3%	26.3%
Maximum Green (s)	36.4	36.4	41.0	41.0	34.4	34.4	39.0	39.0	25.4	36.0	36.0	25.4	36.0	36.0
Yellow Time (s)	3.6	3.6	4.0	4.0	3.6	3.6	4.0	4.0	3.6	4.0	4.0	3.6	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	6.0	6.0	5.6	5.6	6.0	6.0	5.6	6.0	6.0	5.6	6.0	6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?														
Vehicle Extension (s)	2.5	2.5	3.0	3.0	2.5	2.5	3.0	3.0	2.5	3.0	3.0	2.5	3.0	3.0
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)			27.0	27.0			27.0	27.0		31.0	31.0		31.0	31.0
Pedestrian Calls (#/hr)			7	7			10	10		10	10		6	6
Act Effct Green (s)	43.0	43.0	60.5	60.5	24.2	24.2	41.7	41.7	28.7	32.9	32.9	19.2	23.4	23.4
Actuated g/C Ratio	0.27	0.27	0.38	0.38	0.15	0.15	0.26	0.26	0.18	0.21	0.21	0.12	0.15	0.15
v/c Ratio	0.88	0.88	0.55	0.41	0.80	0.80	0.68	0.25	0.91	0.59	0.34	0.76	0.51	0.57
Control Delay	75.8	75.8	43.5	9.2	87.2	87.2	56.7	8.7	83.0	61.1	9.2	90.6	64.9	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.8	75.8	43.5	9.2	87.2	87.2	56.7	8.7	83.0	61.1	9.2	90.6	64.9	11.0
LOS	E	E	D	A	F	F	E	A	F	E	A	F	E	B
Approach Delay			45.4				57.2			65.1			51.1	
Approach LOS			D				E			E			D	
Queue Length 50th (ft)	398	398	292	24	215	215	303	0	298	226	0	164	137	0
Queue Length 95th (ft)	#678	#678	449	122	296	296	370	54	#438	268	61	238	164	76
Internal Link Dist (ft)			1020				668			1071			1686	
Turn Bay Length (ft)	490	490		739	400	400			175		175	240		155
Base Capacity (vph)	467	467	1312		373	373	1299	484	610	797	460	275	780	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.88	0.55	0.41	0.56	0.56	0.68	0.25	0.91	0.54	0.32	0.58	0.33	0.46

Intersection Summary

Area Type: Other

Existing Conditions

Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour

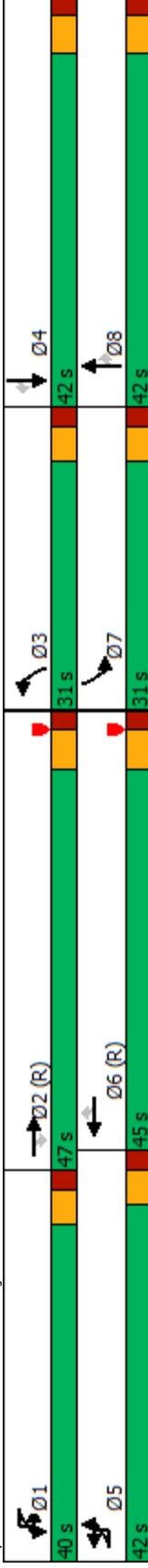
Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Red
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 54.5
 Intersection Capacity Utilization 102.2%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: D
 ICU Level of Service G

Splits and Phases: 1: Smokey Point Boulevard & 172nd Street NE



Lanes, Volumes, Timings
2: 51st Avenue NE & SR-531/172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	176	689	38	97	806	41	85	57	171	58	55	64
Traffic Volume (vph)	176	689	38	97	806	41	85	57	171	58	55	64
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	250	0	250	0	250	0	200	0	150	200	0	0
Storage Length (ft)	1	0	0	1	1	0	1	1	1	1	1	0
Storage Lanes	25	0	0	25	0	0	25	0	25	25	1	0
Taper Length (ft)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.992	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Ped Bike Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Flt Protected	1736	1812	0	1736	1812	0	1736	1827	1553	1736	1660	0
Satd. Flow (prot)	0.152	0.261	0	0.261	0.261	0	0.504	0.719	0.719	0.719	0.719	0
Flt Permitted	278	1812	0	477	1812	0	918	1827	1517	1310	1660	0
Satd. Flow (perm)	4	Yes										
Right Turn on Red	4	3	3	3	3	3	3	3	3	3	3	3
Satd. Flow (RTOR)	35	35	35	35	35	35	35	35	35	35	35	35
Link Speed (mph)	2271	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644	2644
Link Distance (ft)	44.2	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5
Travel Time (s)	3	3	3	3	3	3	3	3	3	3	3	3
Confl. Peds. (#/hr)	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Peak Hour Factor	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Heavy Vehicles (%)	181	710	39	100	831	42	88	59	176	60	57	66
Adj. Flow (vph)	181	749	0	100	873	0	88	59	176	60	123	0
Shared Lane Traffic (%)	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Lane Group Flow (vph)	5	2	6	6	6	6	6	6	6	6	6	6
Turn Type	5	2	6	6	6	6	6	6	6	6	6	6
Protected Phases	5	2	6	6	6	6	6	6	6	6	6	6
Permitted Phases	5	2	6	6	6	6	6	6	6	6	6	6
Detector Phase	5	2	6	6	6	6	6	6	6	6	6	6
Switch Phase	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Initial (s)	9.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	22.5	9.5	22.5	22.5
Minimum Split (s)	17.0	75.0	12.0	70.0	70.0	10.0	23.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	14.2%	62.5%	10.0%	58.3%	58.3%	8.3%	19.2%	19.2%	19.2%	8.3%	19.2%	19.2%
Total Split (%)	12.5	70.5	7.5	65.5	65.5	5.5	18.5	18.5	18.5	5.5	18.5	18.5
Maximum Green (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Yellow Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Total Lost Time (s)	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead/Lag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lead-Lag Optimize?	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	None	Max	None	Max	None	Max	None	Max	None	Max	None	Max
Recall Mode	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Walk Time (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Flash Don't Walk (s)	3	3	3	3	3	3	3	3	3	3	3	3
Pedestrian Calls (#/hr)	80.6	70.9	74.9	68.0	68.0	15.4	11.1	15.4	11.1	15.4	11.1	11.1
Act Effct Green (s)	0.73	0.64	0.68	0.62	0.62	0.14	0.10	0.14	0.10	0.14	0.10	0.10
Actuated G/C Ratio	0.54	0.64	0.25	0.78	0.78	0.52	0.32	0.57	0.30	0.61	0.61	0.61
v/c Ratio	Existing Conditions											

Existing Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings
2: 51st Avenue NE & SR-531/172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.3	16.7	6.8	24.3	24.3	6.8	51.1	51.2	14.4	42.0	44.8	44.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length	11.3	16.7	6.8	24.3	24.3	6.8	51.1	51.2	14.4	42.0	44.8	44.8
Total Delay	B	B	A	C	C	A	D	D	B	D	D	D
LOS	B	B	A	C	C	A	D	D	B	D	D	D
Approach Delay	15.7	22.5	22.5	31.1	31.1	22.5	31.1	31.1	43.9	43.9	43.9	43.9
Approach LOS	B	B	C	C	C	B	C	C	C	C	C	C
Queue Length 50th (ft)	34	315	18	450	450	18	55	40	0	37	57	57
Queue Length 95th (ft)	69	527	41	#848	#848	41	102	81	64	75	119	119
Internal Link Dist (ft)	250	2191	250	2564	2564	250	200	1057	150	200	961	961
Turn Bay Length (ft)	373	1166	412	1118	1118	412	168	308	402	203	314	314
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.64	0.24	0.78	0.78	0.24	0.52	0.19	0.44	0.30	0.39	0.39
Intersection Summary	Intersection Summary											
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	110.3											
Natural Cycle:	90											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.78											
Intersection Signal Delay:	22.6											
Intersection Capacity Utilization:	71.4%											
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: 51st Avenue NE & SR-531/172nd Street NE											

Existing Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings
3: 59th Avenue NE & 172nd Street NE

Lanes, Volumes, Timings
3: 59th Avenue NE & 172nd Street NE

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Ad Effect Green (s)	128.4	126.0	106.0	100.3	15.7	7.3	11.3	7.8	28.3			
Actuated g/C Ratio	0.80	0.79	0.66	0.63	0.10	0.05	0.07	0.05	0.18			
v/c Ratio	0.19	0.53	0.01	0.51	0.22	0.20	0.55	0.02	0.84			
Control Delay	5.1	10.0	5.7	20.3	67.6	36.8	87.6	71.5	40.9			
Queue Delay	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	5.1	10.0	5.7	20.3	67.6	36.8	87.6	71.5	40.9			
LOS	A	B	A	C	E	D	F	E	D			
Approach Delay	9.4	20.1	20.1	20.1	57.9	48.0						
Approach LOS	A	C	C	C	E	D						
Queue Length 50th (ft)	26	275	2	249	36	2	70	2	180			
Queue Length 95th (ft)	50	568	m3	641	81	31	123	12	271			
Internal Link Dist (ft)	250	2564	250	2420	230	506	355	380	15			
Turn Bay Length (ft)	693	1419	565	1150	210	342	155	369	563			
Base Capacity (vph)	0	0	0	0	0	0	0	0	0			
Stallion 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	0.17	0.53	0.01	0.51	0.19	0.05	0.44	0.01	0.69			

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 20 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red

Natural Cycle: 90

Control Type: Actuated-Coordinated

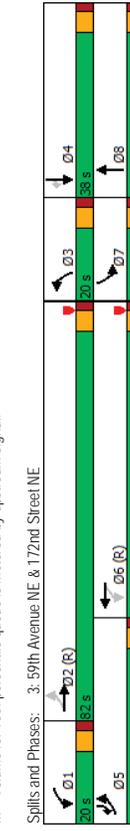
Maximum v/c Ratio: 0.84

Intersection Signal Delay: 22.9

Intersection Capacity Utilization: 69.0%

Analysis Period (min): 15

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	106	684	15	6	518	21	36	2	15	63	2	357
Traffic Volume (vph)	106	684	15	6	518	21	36	2	15	63	2	357
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	250	0	250	0	230	0	355	15				
Storage Lanes	1	0	1	0	1	0	1	1				
Taper Length (ft)	25	0	25	0	25	0	25	25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.997		0.994		0.867		0.850				
Flt Protected	0.950		0.950		0.950		0.950		0.950			
Satd. Flow (prot)	1719	1803	0	1752	1834	0	1805	1647	0	1752	1845	1568
Flt Permitted	0.307		0.358		0.950		0.950		0.950			
Satd. Flow (perm)	556	1803	0	660	1834	0	1805	1647	0	1752	1845	1568
Right Turn on Red			Yes		Yes		Yes		Yes			Yes
Satd. Flow (RTOR)	1		1		1		16		30		30	227
Link Speed (mph)	30		30		30		30		30		30	30
Link Distance (ft)	2644		2500		2500		586		460		460	460
Travel Time (s)	60.1		56.8		56.8		13.3		10.5		10.5	10.5
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	3%	3%	3%	3%	0%	0%	3%	3%	3%	3%
Adj. Flow (vph)	115	743	16	7	563	23	39	2	16	68	2	388
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	759	0	7	586	0	39	18	0	68	2	388
Turn Type	pm+pl	NA	NA	pm+pl	NA	NA	Prot	NA	Prot	NA	pm+ov	NA
Protected Phases	5	2		6			3	8	7	4	5	
Permitted Phases	2			6			6		4			
Detector Phase	5	2		6			3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	3.0	7.0		3.0	7.0		3.0	5.0	3.0	3.0	5.0	3.0
Minimum Split (s)	9.0	35.0		9.0	38.0		9.5	33.0	9.0	33.0	9.0	33.0
Total Split (s)	40.0	82.0		20.0	62.0		20.0	38.0	20.0	38.0	40.0	40.0
Total Split (%)	25.0%	51.3%		12.5%	38.8%		12.5%	23.8%	12.5%	23.8%	25.0%	25.0%
Maximum Green (s)	34.0	76.0		14.0	56.0		14.0	32.0	14.0	32.0	34.0	34.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	4.0	3.0	4.0	3.0	4.0
Minimum Cap (s)	2.5	3.0		2.5	3.0		3.0	3.0	3.0	3.0	2.5	3.0
Time Before Reduce (s)	15.0	30.0		10.0	30.0		10.0	10.0	10.0	10.0	15.0	15.0
Time To Reduce (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	22.0	22.0		25.0	25.0		20.0	20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 20 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 22.9

Intersection Capacity Utilization: 69.0%

Analysis Period (min): 15

m Volume for 95th percentile queue is metered by upstream signal.

Existing Conditions

Gibson Traffic Consultants, Inc. [BJL #20-116]

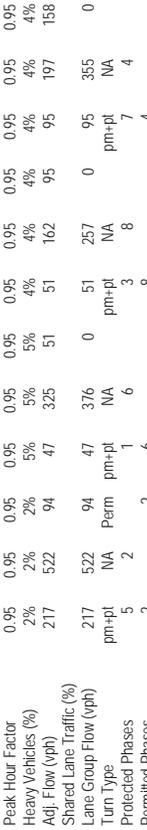
PM Peak-Hour

Lanes, Volumes, Timings
4: 67th Avenue NE & 172nd Street NE

Lanes, Volumes, Timings
4: 67th Avenue NE & 172nd Street NE

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Ad Effect Green (s)	96.1	85.4	85.4	82.2	75.3	42.8	34.8	49.7	40.2			
Actuated g/C Ratio	0.60	0.53	0.53	0.51	0.47	0.27	0.22	0.31	0.25			
v/c Ratio	0.41	0.53	0.11	0.12	0.45	0.27	0.66	0.36	0.80			
Control Delay	23.0	37.2	11.1	17.1	33.0	38.6	61.1	40.5	66.1			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	23.0	37.2	11.1	17.1	33.0	38.6	61.1	40.5	66.1			
LOS	C	D	B	B	C	D	E	D	E			
Approach Delay	30.6			31.3		57.4		60.7				
Approach LOS	C			C		E		E				
Queue Length 50th (ft)	143	467	12	20	267	36	227	69	328			
Queue Length 95th (ft)	214	634	67	43	406	67	328	112	452			
Internal Link Dist (ft)	2420			1777		674		5286				
Turn Bay Length (ft)	415	80	185	834		170		230				
Base Capacity (vph)	622	994	872	588	834	301	417	325	445			
Storage 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	0.35	0.53	0.11	0.08	0.45	0.17	0.62	0.29	0.80			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated Cycle Length: 160												
Offset: -108 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red												
Natural Cycle: 95												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.80												
Intersection Signal Delay: 41.5												
Intersection Capacity Utilization 73.8%												
Analysis Period (min) 15												



Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	-108 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red
Natural Cycle:	95
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	41.5
Intersection Capacity Utilization:	73.8%
Analysis Period (min):	15

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	-108 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red
Natural Cycle:	95
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	41.5
Intersection Capacity Utilization:	73.8%
Analysis Period (min):	15

Existing Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Existing Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

Smartcap Arlington Airport Business Park

	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group														
Lane Configurations														
Traffic Volume (vph)	70	363	767	323	10	212	941	127	586	452	155	168	273	259
Future Volume (vph)	70	363	767	323	10	212	941	127	586	452	155	168	273	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	490	490	400	0	400	400	1900	0	175	175	175	240	1900	155
Storage Lanes	1	1	1	1	1	1	1	1	2	1	1	1	1	1
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Lane Util. Factor	0.95	1.00	0.95	1.00	0.91	1.00	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00	1.00	0.98	1.00	1.00	0.98	0.98	0.99	0.97	0.97	0.99	0.97	0.98
Frt			0.850	0.850		0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
Flt Protected		0.950		0.950		0.950		0.950	0.950		0.950	0.950		0.850
Satd. Flow (prot)	0	1741	3471	1553	0	1737	4988	1553	3400	3505	1568	1736	3471	1553
Flt Permitted		0.950		0.950		0.950		0.950	0.950		0.950	0.950		0.950
Satd. Flow (perm)	0	1737	3471	1519	0	1732	4988	1519	3380	3505	1524	1721	3471	1519
Right Turn on Red		Yes	Yes	Yes		Yes								
Satd. Flow (RTOR)		30	1100	267		30	748	120	120	30	151	30	1766	234
Link Speed (mph)		25.0	25.0	7		7	17.0	6	6	7	13	13	40.1	7
Link Distance (ft)		6	6	7		7	17.0	6	6	7	13	13	40.1	7
Travel Time (s)		6	6	7		7	17.0	6	6	7	13	13	40.1	7
Conf. Peds. (#/hr)		6	6	7		7	17.0	6	6	7	13	13	40.1	7
Conf. Bikes (#/hr)		6	6	7		7	17.0	6	6	7	13	13	40.1	7
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	4%	4%	2%	4%	4%	4%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	76	386	816	344	11	226	1001	135	623	481	165	179	290	276
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	462	816	344	0	237	1001	135	623	481	165	179	290	276
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Permitted Phases	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Switch Phase														
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	5.0	10.0	10.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	10.6	10.6	40.0	40.0	10.6	10.6	40.0	40.0	10.6	44.0	44.0	10.6	44.0	44.0
Total Split (s)	42.0	42.0	47.0	47.0	40.0	40.0	45.0	45.0	31.0	42.0	42.0	31.0	42.0	42.0

2023 Baseline Conditions
 Gibson Traffic Consultants, Inc. [BJL #20-116] PM Peak-Hour

Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

Smartcap Arlington Airport Business Park

	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	26.3%	26.3%	29.4%	29.4%	25.0%	25.0%	28.1%	28.1%	19.4%	26.3%	26.3%	19.4%	26.3%	26.3%
Maximum Green (s)	36.4	36.4	41.0	41.0	34.4	34.4	39.0	39.0	25.4	36.0	36.0	25.4	36.0	36.0
Yellow Time (s)	3.6	3.6	4.0	4.0	3.6	3.6	4.0	4.0	3.6	4.0	4.0	3.6	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	6.0	6.0	5.6	5.6	6.0	6.0	5.6	6.0	6.0	5.6	6.0	6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?														
Vehicle Extension (s)	2.5	2.5	3.0	3.0	2.5	2.5	3.0	3.0	2.5	3.0	3.0	2.5	3.0	3.0
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)			27.0	27.0			27.0	27.0		31.0	31.0		31.0	31.0
Pedestrian Calls (#/hr)			7	7			10	10		10	10		6	6
Act Effct Green (s)	46.7	46.7	57.9	57.9	26.5	26.5	37.7	37.7	26.7	31.8	31.8	20.6	25.7	25.7
Actuated g/C Ratio	0.29	0.29	0.36	0.36	0.17	0.17	0.24	0.24	0.17	0.20	0.20	0.13	0.16	0.16
v/c Ratio	0.91	0.91	0.65	0.48	0.83	0.83	0.85	0.30	1.10	0.69	0.39	0.80	0.52	0.63
Control Delay	76.9	76.9	47.7	13.2	86.8	86.8	66.4	12.0	126.9	64.9	12.1	92.6	63.4	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	76.9	47.7	13.2	86.8	86.8	66.4	12.0	126.9	64.9	12.1	92.6	63.4	17.1
LOS	E	E	D	B	F	F	E	B	F	E	B	F	E	B
Approach Delay			48.7				64.6			88.5			53.3	
Approach LOS			D				E			F			D	
Queue Length 50th (ft)	465	465	366	53	243	243	366	12	~394	255	12	184	149	39
Queue Length 95th (ft)	#800	#800	#559	176	327	327	424	71	#520	304	78	267	184	128
Internal Link Dist (ft)			1020				668			1071			1686	
Turn Bay Length (ft)	490	490			400	400			175		175	240		155
Base Capacity (vph)	507	507	1255	719	373	373	1215	461	567	793	461	275	780	523
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.91	0.65	0.48	0.64	0.64	0.82	0.29	1.10	0.61	0.36	0.65	0.37	0.53

Intersection Summary

Area Type: Other

2023 Baseline Conditions

Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour

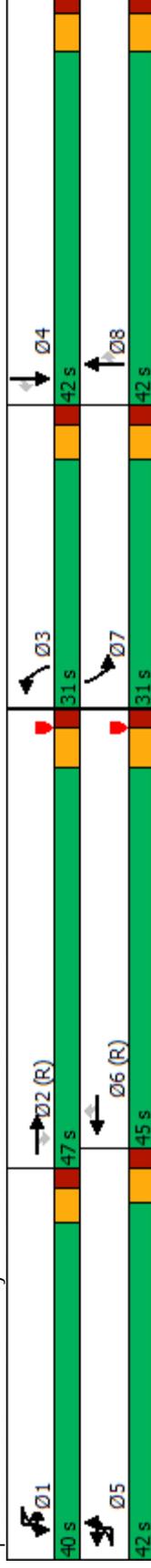
Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

- Cycle Length: 160
- Actuated Cycle Length: 160
- Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Red
- Natural Cycle: 150
- Control Type: Actuated-Coordinated
- Maximum v/c Ratio: 1.10
- Intersection Signal Delay: 63.8
- Intersection Capacity Utilization 108.2%
- 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.

Intersection LOS: E
 ICU Level of Service G

Splits and Phases: 1: Smokey Point Boulevard & 172nd Street NE



Lanes, Volumes, Timings
2: 51st Avenue NE & SR-531/172nd Street NE

Smartcap Aftlington Airport Business Park

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	191	746	41	105	872	44	92	62	185	63	60	69
Traffic Volume (vph)	191	746	41	105	872	44	92	62	185	63	60	69
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	250	0	250	0	200	0	200	0	150	200	0	0
Storage Length (ft)	1	0	0	1	1	0	1	1	1	1	0	0
Storage Lanes	25	0	0	25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	0.992			0.993			0.950		0.850		0.920	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1736	1812	0	1736	1812	0	1736	1827	1553	1736	1660	0
Flt Permitted	0.081			0.216			0.441		0.715		0.715	
Satd. Flow (perm)	148	1812	0	395	1812	0	804	1827	1517	1302	1660	0
Right Turn on Red			Yes			Yes			Yes		Yes	Yes
Satd. Flow (RTOR)	4			3			3		191		41	
Link Speed (mph)	35			35			35		1041		35	
Link Distance (ft)	2271			2644			1137		20.3		1041	
Travel Time (s)	44.2			51.5			22.1		20.3		20.3	
Confl. Peds. (#/hr)	3			3			3		1		1	
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 (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	197	769	42	108	899	45	95	64	191	65	62	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	811	0	108	944	0	95	64	191	65	133	0
Turn Type	pm+pl	NA	pm+pl	NA	NA	pm+pl	pm+pl	NA	Perm	pm+pl	NA	NA
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases	2			6			8	8	8	4	4	
Detector Phase	5	2		1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	17.0	75.0	12.0	12.0	70.0	10.0	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (%)	14.2%	62.5%	10.0%	58.3%	19.2%	8.3%	19.2%	8.3%	19.2%	8.3%	19.2%	19.2%
Maximum Green (s)	12.5	70.5	7.5	65.5	5.5	18.5	18.5	5.5	18.5	5.5	18.5	18.5
Yellow Time (s)	3.5	3.5	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	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	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	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	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	3.0	3.0
Recall Mode	None	Max	None	None	None	None	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	3			3			2		2		2	
Act Effct Green (s)	81.7	70.7	73.2	66.2	18.2	13.9	13.9	17.3	11.8			
Actuated G/C Ratio	0.72	0.63	0.65	0.59	0.16	0.12	0.12	0.15	0.10			
v/c Ratio	0.73	0.72	0.32	0.89	0.54	0.29	0.54	0.30	0.64			

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

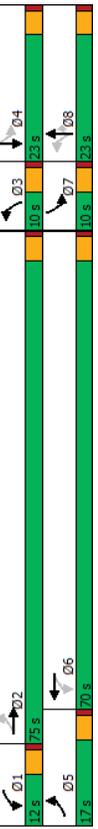
2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings
2: 51st Avenue NE & SR-531/172nd Street NE

Smartcap Aftlington Airport Business Park

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	35.6	19.7	8.2	33.4	51.9	49.7	12.5	41.9	47.1			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	19.7	8.2	33.4	51.9	49.7	12.5	41.9	47.1			
LOS	D	B	A	C	D	D	B	D	D			
Approach Delay	22.8	30.8	30.8									
Approach LOS	C	C	C									
Queue Length 50th (ft)	65	373	20	569	60	44	0	40	65			
Queue Length 95th (ft)	#182	609	44	#967	108	87	66	79	129			
Internal Link Dist (ft)	250	2191	250	2564	200	1057	150	200	306			
Turn Bay Length (ft)	283	1134	346	1062	175	299	408	220	306			
Base Capacity (vph)	0	0	0	0	0	0	0	0	0			
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	0.70	0.72	0.31	0.89	0.54	0.21	0.47	0.30	0.43			

Intersection Summary
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 113
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 28.7
Intersection Capacity Utilization: 86.9%
Analysis Period (min): 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Splits and Phases: 2: 51st Avenue NE & SR-531/172nd Street NE

Intersection Summary	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	113											
Natural Cycle:	100											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.89											
Intersection Signal Delay:	28.7											
Intersection Capacity Utilization:	86.9%											
Analysis Period (min):	15											
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings
3: 59th Avenue NE & 172nd Street NE

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	115	740	16	6	561	23	39	2	16	68	2	386
Future Volume (vph)	115	740	16	6	561	23	39	2	16	68	2	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250	0	250	0	250	0	230	0	355	15	1	1
Storage Lanes	1	0	1	0	1	0	1	0	1	1	1	1
Taper Length (ft)	25	0	25	0	25	0	25	0	25	25	1	1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.997			0.994		0.866					0.850
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	1568
Satd. Flow (prot)	1719	1803	0	1752	1834	0	1805	1645	0	1752	1845	1568
FIT Permitted	0.253		0.340		0.950		0.950		0.950		0.950	
Satd. Flow (perm)	458	1803	0	627	1834	0	1805	1645	0	1752	1845	1568
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	Yes
Satd. Flow (RTOR)	1			1								204
Link Speed (mph)	30			30			30		30		30	30
Link Distance (ft)	2644			2500			586		586		460	460
Travel Time (s)	60.1			56.8			13.3		13.3		10.5	10.5
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	3%	3%	3%	3%	0%	0%	0%	3%	3%	3%
Adj. Flow (vph)	125	804	17	7	610	25	42	2	17	74	2	420
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	821	0	7	635	0	42	19	0	74	2	420
Turn Type	pm+pl	NA	NA	pm+pl	NA	NA	Prot	NA	Prot	NA	pm+ov	NA
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			6			7	4	4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	3.0	7.0		3.0	7.0		3.0	5.0		3.0	5.0	3.0
Minimum Split (s)	9.0	35.0		9.0	38.0		9.5	33.0		9.0	33.0	9.0
Total Split (s)	40.0	82.0		20.0	62.0		20.0	38.0		20.0	38.0	40.0
Total Split (%)	25.0%	51.3%		12.5%	38.8%		12.5%	23.8%		12.5%	23.8%	25.0%
Maximum Green (s)	34.0	76.0		14.0	56.0		14.0	32.0		14.0	32.0	34.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	3.0
Minimum Cap (s)	2.5	3.0		2.5	3.0		3.0	3.0		3.0	3.0	2.5
Time Before Reduce (s)	15.0	30.0		10.0	30.0		0.0	10.0		10.0	10.0	15.0
Time To Reduce (s)	5.0	5.0		5.0	5.0		0.0	5.0		0.0	5.0	5.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0		25.0	25.0		20.0	20.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

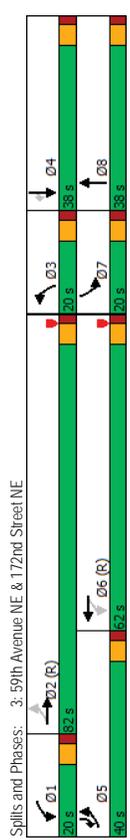
PM Peak-Hour

Lanes, Volumes, Timings
3: 59th Avenue NE & 172nd Street NE

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	128.2	125.8		100.0	94.3		16.2	7.3		11.5	7.6	33.9
Actuated g/C Ratio	0.80	0.79		0.62	0.59		0.10	0.05		0.07	0.05	0.21
v/c Ratio	0.21	0.58		0.02	0.59		0.23	0.21		0.59	0.02	0.85
Control Delay	5.3	10.9		5.7	24.7		67.6	36.2		90.0	72.0	46.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	5.3	10.9		5.7	24.7		67.6	36.2		90.0	72.0	46.1
LOS	A	B		A	C		E	D		F	E	D
Approach Delay	10.2			24.5			57.8			52.8		
Approach LOS	B			C			E			D		
Queue Length 50th (ft)	29	321		2	459		39	2		76	2	241
Queue Length 95th (ft)	53	645		m3	743		87	32		133	12	323
Internal Link Dist (ft)		2564			2420			506				380
Turn Bay Length (ft)	250			250			230			355		15
Base Capacity (vph)	647	1417		522	1081		212	342		153	369	558
Stallion 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	0.58		0.01	0.59		0.20	0.06		0.48	0.01	0.75

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour



Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 20 (13%), Referenced to phase 2.EBTL and 6.WBTL, Start of Red
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 25.7
 Intersection Capacity Utilization: 73.2%
 Analysis Period (min): 15
 m Volume for 95th percentile queue is metered by upstream signal.
 Intersection LOS: C
 ICU Level of Service: D

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour

Lanes, Volumes, Timings
4: 67th Avenue NE & 172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	223	537	96	49	334	52	52	167	97	97	202	162
Future Volume (vph)	223	537	96	49	334	52	52	167	97	97	202	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415	80	185	1	1	0	170	0	230	0	0	0
Storage Lanes	1	1	1	1	1	0	1	0	1	0	1	0
Taper Length (ft)	25	1	1	25	1	0	25	1	25	0	25	1
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							
Fit	0.950	0.850	0.850	0.950	0.980	0.950	0.950	0.945	0.950	0.950	0.933	0.933
FIT Protected	1770	1863	1583	1719	1768	0	1736	1726	0	1736	1705	0
Satd. Flow (prot)	0.337	0.337	0.315	0.315	0.247	0.247	0.316	0.247	0.316	0.316	0.316	0
Satd. Flow (perm)	628	1863	1546	570	1768	0	451	1726	0	577	1705	0
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)			102		5		17			23		
Link Speed (mph)		30			30		30			30		
Link Distance (ft)		2500			1857		754			5366		
Travel Time (s)		56.8			42.2		17.1			122.0		
Confl. Bikes (#/hr)		3			1		1			1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	235	565	101	52	352	55	55	176	102	102	213	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	565	101	52	407	0	55	278	0	102	384	0
Turn Type	pm-pt	NA	Perm	pm-pt	NA	pm-pt	pm-pt	NA	NA	pm-pt	NA	0
Protected Phases	5	2	2	6	6	3	8	8	8	7	4	
Permitted Phases	2	2	2	6	6	8	8	8	8	4	4	
Deleter Phase	5	2	2	1	6	3	8	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	5.0	7.0	5.0	5.0	7.0	5.0
Minimum Split (s)	11.0	32.0	32.0	11.0	35.0	11.0	11.0	35.0	11.0	11.0	35.0	11.0
Total Split (s)	35.0	60.0	60.0	35.0	60.0	25.0	40.0	60.0	25.0	40.0	60.0	25.0
Total Split (%)	21.9%	37.5%	37.5%	21.9%	37.5%	15.6%	25.0%	37.5%	15.6%	25.0%	37.5%	15.6%
Maximum Green (s)	29.0	54.0	54.0	29.0	54.0	19.0	34.0	54.0	19.0	34.0	54.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0	5.0	2.5	5.0	2.5	5.0	5.0	2.5	5.0	5.0	2.5
Minimum Cap (s)	3.0	4.0	4.0	2.5	4.0	2.5	4.0	4.0	2.5	4.0	4.0	2.5
Time Before Reduce (s)	0.0	30.0	30.0	0.0	30.0	0.0	30.0	0.0	15.0	0.0	15.0	0.0
Time To Reduce (s)	0.0	10.0	10.0	0.0	10.0	0.0	10.0	0.0	10.0	0.0	10.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	None	C-Min	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0		7.0		7.0		7.0	
Flash Don't Walk (s)		19.0	19.0		22.0		21.0		21.0		22.0	
Pedestrian Calls (#/hr)		0	0		0		0		0		0	

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings
4: 67th Avenue NE & 172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	92.3	81.4	81.4	77.3	70.1	46.6	38.3	38.3	53.6	43.8	43.8	53.6
Actuated g/C Ratio	0.58	0.51	0.51	0.48	0.44	0.29	0.24	0.24	0.34	0.27	0.27	0.34
v/c Ratio	0.49	0.60	0.12	0.16	0.52	0.28	0.65	0.65	0.37	0.80	0.80	0.37
Control Delay	24.4	40.1	11.1	18.3	37.4	37.4	59.0	59.0	38.9	63.8	63.8	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	40.1	11.1	18.3	37.4	37.4	59.0	59.0	38.9	63.8	63.8	38.9
LOS	C	D	B	B	D	D	E	E	D	D	D	E
Approach Delay		32.8			35.2		55.5	55.5				58.6
Approach LOS		C			D		E	E				E
Queue Length 50th (ft)	171	567	18	25	324	37	237	237	70	346	346	70
Queue Length 95th (ft)	222	679	73	46	454	72	359	359	119	526	526	119
Internal Link Dist. (ft)		2420			1777		674	674				5286
Turn Bay Length (ft)	415		80	185	537	777	170	170	308	438	438	338
Base Capacity (vph)	569	947	836	537	777	308	438	438	338	483	483	338
Sanitation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.60	0.12	0.10	0.52	0.18	0.63	0.63	0.30	0.80	0.80	0.30

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset: 108 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red	
Natural Cycle:	95
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	42.5
Intersection Capacity Utilization:	77.8%
Analysis Period (min):	15
ICU Level of Service:	D
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

2023 Baseline Conditions
Gibson Traffic Consultants, Inc. [BJL #20-116]

Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

Smartcap Arlington Airport Business Park

	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group														
Lane Configurations														
Traffic Volume (vph)	70	363	777	323	10	216	979	127	586	452	156	168	273	259
Future Volume (vph)	70	363	777	323	10	216	979	127	586	452	156	168	273	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	490	490	400	400	400	400	400	0	175	175	175	240	240	155
Storage Lanes	1	1	1	1	1	1	1	1	2	2	1	1	1	1
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Lane Util. Factor	0.95	1.00	0.95	1.00	0.91	1.00	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00	1.00	0.98	1.00	1.00	0.98	0.98	0.99	0.99	0.97	0.99	0.99	0.98
Frt				0.850				0.850			0.850			0.850
Flt Protected		0.950				0.950			0.950			0.950		
Satd. Flow (prot)	0	1741	3471	1553	0	1737	4988	1553	3400	3505	1568	1736	3471	1553
Flt Permitted		0.950				0.950			0.950			0.950		
Satd. Flow (perm)	0	1738	3471	1519	0	1732	4988	1519	3380	3505	1524	1721	3471	1519
Right Turn on Red				Yes			Yes		Yes		Yes			Yes
Satd. Flow (RTOR)			30	263			30	116		30	152			234
Link Speed (mph)			1100				748			1151			1766	
Link Distance (ft)			25.0				17.0			26.2			40.1	
Travel Time (s)		6		7		7		6	7		13	13		7
Conf. Peds. (#/hr)														
Conf. Bikes (#/hr)														
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	4%	4%	2%	4%	4%	4%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	76	386	827	344	11	230	1041	135	623	481	166	179	290	276
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	462	827	344	0	241	1041	135	623	481	166	179	290	276
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	5	2	2	1	1	6	6	3	8	7	7	4	4
Permitted Phases	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Detector Phase	5	5	2	2	1	1	6	6	3	8	8	7	4	4
Switch Phase														
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	5.0	10.0	10.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	10.6	10.6	40.0	40.0	10.6	10.6	40.0	40.0	10.6	44.0	44.0	10.6	44.0	44.0
Total Split (s)	42.0	42.0	47.0	47.0	40.0	40.0	45.0	45.0	31.0	42.0	42.0	31.0	42.0	42.0

2023 Future Conditions with Development
 Gibson Traffic Consultants, Inc. [BJL #20-116] PM Peak-Hour

Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

Smartcap Arlington Airport Business Park

	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	26.3%	26.3%	29.4%	29.4%	25.0%	25.0%	28.1%	28.1%	19.4%	26.3%	26.3%	19.4%	26.3%	26.3%
Maximum Green (s)	36.4	36.4	41.0	41.0	34.4	34.4	39.0	39.0	25.4	36.0	36.0	25.4	36.0	36.0
Yellow Time (s)	3.6	3.6	4.0	4.0	3.6	3.6	4.0	4.0	3.6	4.0	4.0	3.6	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	6.0	6.0	5.6	5.6	6.0	6.0	5.6	6.0	6.0	5.6	6.0	6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?														
Vehicle Extension (s)	2.5	2.5	3.0	3.0	2.5	2.5	3.0	3.0	2.5	3.0	3.0	2.5	3.0	3.0
Recall Mode	None	None	C-Min	C-Min	None	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)			7.0	7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)			27.0	27.0			27.0	27.0		31.0	31.0		31.0	31.0
Pedestrian Calls (#/hr)			7	7			10	10		10	10		6	6
Act Effct Green (s)	46.6	46.6	58.1	58.1	26.8	26.8	38.3	38.3	26.1	31.4	31.4	20.6	25.8	25.8
Actuated g/C Ratio	0.29	0.29	0.36	0.36	0.17	0.17	0.24	0.24	0.16	0.20	0.20	0.13	0.16	0.16
v/c Ratio	0.91	0.91	0.66	0.48	0.83	0.83	0.87	0.30	1.12	0.70	0.40	0.80	0.52	0.63
Control Delay	77.3	77.3	47.8	13.7	87.0	87.0	67.6	12.9	134.9	65.6	12.1	92.6	63.3	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.3	77.3	47.8	13.7	87.0	87.0	67.6	12.9	134.9	65.6	12.1	92.6	63.3	17.1
LOS	E	E	D	B	F	F	E	B	F	E	B	F	E	B
Approach Delay			49.0				65.7			92.6			53.2	
Approach LOS			D				E			F			D	
Queue Length 50th (ft)	465	465	374	56	247	247	384	15	~394	255	12	184	149	39
Queue Length 95th (ft)	#800	#800	#571	180	333	333	444	75	#520	304	78	267	184	128
Internal Link Dist (ft)			1020				668			1071			1686	
Turn Bay Length (ft)	490	490			400	400			175		175	240		155
Base Capacity (vph)	506	506	1259	718	373	373	1215	457	555	793	462	275	780	523
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.91	0.66	0.48	0.65	0.65	0.86	0.30	1.12	0.61	0.36	0.65	0.37	0.53

Intersection Summary

Area Type: Other

2023 Future Conditions with Development
Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour

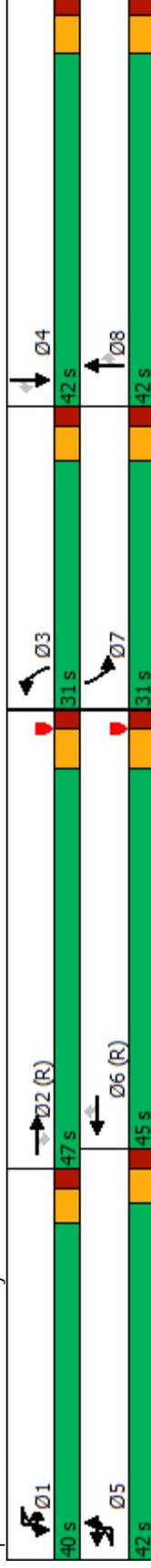
Lanes, Volumes, Timings

1: Smokey Point Boulevard & 172nd Street NE

- Cycle Length: 160
- Actuated Cycle Length: 160
- Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Red
- Natural Cycle: 150
- Control Type: Actuated-Coordinated
- Maximum v/c Ratio: 1.12
- Intersection Signal Delay: 65.2
- Intersection Capacity Utilization 108.2%
- 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.

Intersection LOS: E
 ICU Level of Service G

Splits and Phases: 1: Smokey Point Boulevard & 172nd Street NE



Lanes, Volumes, Timings
2: 51st Avenue NE & SR-531/172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	202	746	41	105	872	54	92	63	185	101	65	111
Traffic Volume (vph)	202	746	41	105	872	54	92	63	185	101	65	111
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	250	0	250	0	250	0	200	0	150	200	0	0
Storage Length (ft)	1	0	0	1	1	0	1	1	1	1	1	0
Storage Lanes	25	0	0	25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	0.992			0.991			0.950	0.950	0.850	0.950	0.906	
Flt Protected	0.950			0.950			0.950	0.950	0.850	0.950	0.906	
Satd. Flow (prot)	1736	1812	0	1736	1807	0	1736	1827	1553	1736	1631	0
Flt Permitted	0.068			0.213			0.318		0.715			
Satd. Flow (perm)	124	1812	0	389	1807	0	580	1827	1517	1302	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	4			4			4		191			60
Link Speed (mph)	35			35			35		35			35
Link Distance (ft)	2271			2644			1137		735			735
Travel Time (s)	44.2			51.5			22.1		14.3			14.3
Confl. Peds. (#/hr)	3					3	1		1		1	1
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 (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	208	769	42	108	899	56	95	65	191	104	67	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	811	0	108	955	0	95	65	191	104	67	114
Turn Type	pm+pt	NA	pm+pt	NA	NA	pm+pt	pm+pt	NA	Perm	pm+pt	NA	NA
Protected Phases	5	2		1	6		3	8	8	7	4	4
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		3	8	8	7	4	4
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	22.5	9.5	22.5	22.5
Total Split (s)	17.0	75.0		12.0	70.0		10.0	23.0	23.0	10.0	23.0	23.0
Total Split (%)	14.2%	62.5%		10.0%	58.3%		8.3%	19.2%	19.2%	8.3%	19.2%	19.2%
Maximum Green (s)	12.5	70.5		7.5	65.5		5.5	18.5	18.5	5.5	18.5	18.5
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	Lag	Lead	Lag	Lag
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	Max		None	Max		None	None	None	None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	3			3			2		2		2	2
Act Effct Green (s)	82.0	70.7		73.0	65.9		19.0	13.5	13.5	19.0	13.5	13.5
Actuated g/c Ratio	0.71	0.62		0.64	0.57		0.17	0.12	0.12	0.17	0.12	0.12
v/c Ratio	0.82	0.73		0.33	0.92		0.63	0.30	0.55	0.44	0.74	0.74

2023 Future Conditions with Development
Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour

Lanes, Volumes, Timings
2: 51st Avenue NE & SR-531/172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	50.2	20.9	8.8	38.2	58.3	49.7	12.8	45.6	50.7			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	20.9	8.8	38.2	58.3	49.7	12.8	45.6	50.7			
LOS	D	C	A	D	E	D	B	D	D			
Approach Delay	26.9	35.2			31.9			48.9				
Approach LOS	C	C			C			D				
Queue Length 50th (ft)	91	397	22	618	60	45	0	66	88			
Queue Length 95th (ft)	#227	616	44	#995	108	88	66	116	166			
Internal Link Dist (ft)	250	2191	250	2564	200	1057	150	200	655			
Turn Bay Length (ft)	264	1117	336	1039	151	294	404	236	313			
Base Capacity (vph)	0	0	0	0	0	0	0	0	0			
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	0.79	0.73	0.32	0.92	0.63	0.22	0.47	0.44	0.58			
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	114.8											
Natural Cycle:	110											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.92											
Intersection Signal Delay:	33.1											
Intersection Capacity Utilization:	90.9%											
Analysis Period (min):	15											
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Splits and Phases:	2: 51st Avenue NE & SR-531/172nd Street NE											

2023 Future Conditions with Development
Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak-Hour

Lanes, Volumes, Timings
3: 59th Avenue NE & 172nd Street NE

Smartcap Ailington Airport Business Park

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	128.2	125.8		99.6	93.9		16.2	7.3		11.5	7.6	34.3
Actuated g/C Ratio	0.80	0.79		0.62	0.59		0.10	0.05		0.07	0.05	0.21
v/c Ratio	0.22	0.60		0.02	0.60		0.23	0.21		0.59	0.02	0.85
Control Delay	5.3	11.5		5.7	25.1		67.6	36.2		90.0	72.0	46.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	5.3	11.5		5.7	25.1		67.6	36.2		90.0	72.0	46.5
LOS	A	B		A	C		E	D		F	E	D
Approach Delay		10.7		24.9			57.8				53.1	
Approach LOS		B		C			E				D	
Queue Length 50th (ft)	30	348		2	560		39	2		76	2	246
Queue Length 95th (ft)	54	699		m3	757		87	32		133	12	327
Internal Link Dist (ft)		2564			2420			506			380	
Turn Bay Length (ft)	250			250			230			355		15
Base Capacity (vph)	639	1417		498	1076		212	342		153	369	557
Slantion 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	0.20	0.60		0.01	0.60		0.20	0.06		0.48	0.01	0.76

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	20 (13%), Referenced to phase 2.EBTL and 6.WBTL, Start of Red
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	25.8
Intersection Capacity Utilization:	73.7%
Analysis Period (min):	15
m	Volume for 95th percentile queue is metered by upstream signal.



Splits and Phases: 3: 59th Avenue NE & 172nd Street NE

Lanes, Volumes, Timings
3: 59th Avenue NE & 172nd Street NE

Smartcap Ailington Airport Business Park

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	120	773	16	6	570	23	39	2	16	68	2	387
Future Volume (vph)	120	773	16	6	570	23	39	2	16	68	2	387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		0	230		0	355		15
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25		0	25		0	25		0	25		1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00											
Pd	0.997			0.994			0.866					0.850
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	0.950
Satd. Flow (prot)	1719	1803	0	1752	1834	0	1805	1645	0	1752	1845	1568
Flt Permitted	0.245		0.319		0.588		0.1805	1645		0.1752	1845	1568
Satd. Flow (perm)	443	1803	0	588	1834	0	1805	1645	0	1752	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	1			1			17					201
Link Speed (mph)	30			30			30					30
Link Distance (ft)	2644			2500			586					460
Travel Time (s)	60.1			56.8			13.3					10.5
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	3%	3%	3%	3%	0%	0%	0%	3%	3%	3%
Adj. Flow (vph)	130	840	17	7	620	25	42	2	17	74	2	421
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	857	0	7	645	0	42	19	0	74	2	421
Turn Type	pm+pl	NA		pm+pl	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6								4
Detector Phase	5	2		1	6		3	8		7	4	5
Switch Phase												
Minimum Initial (s)	3.0	7.0		3.0	7.0		3.0	5.0		3.0	5.0	3.0
Minimum Split (s)	9.0	35.0		9.0	38.0		9.5	33.0		9.0	33.0	9.0
Total Split (s)	40.0	82.0		20.0	62.0		20.0	38.0		20.0	38.0	40.0
Total Split (%)	25.0%	51.3%		12.5%	38.8%		12.5%	23.8%		12.5%	23.8%	25.0%
Maximum Green (s)	34.0	76.0		14.0	56.0		14.0	32.0		14.0	32.0	34.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	3.0
Minimum Cap (s)	2.5	3.0		2.5	3.0		3.0	3.0		3.0	3.0	2.5
Time Before Reduce (s)	15.0	30.0		10.0	30.0		0.0	10.0		10.0	10.0	15.0
Time To Reduce (s)	5.0	5.0		5.0	5.0		0.0	5.0		0.0	5.0	5.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	22.0			25.0			20.0			20.0		20.0
Pedestrian Calls (#/hr)	0			0			0			0		0

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	20 (13%), Referenced to phase 2.EBTL and 6.WBTL, Start of Red
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	25.8
Intersection Capacity Utilization:	73.7%
Analysis Period (min):	15
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: 59th Avenue NE & 172nd Street NE

2023 Future Conditions with Development
Gibson Traffic Consultants, Inc. [BJL #20-116]

PM Peak Hour

2023 Future Conditions with Development
Gibson Traffic Consultants, Inc. [BJL #20-116]

Smartcap Ailington Airport Business Park

PM Peak Hour

Lanes, Volumes, Timings
4: 67th Avenue NE & 172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	237	551	101	49	338	52	53	167	97	97	202	166
Future Volume (vph)	237	551	101	49	338	52	53	167	97	97	202	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415	80	185	1	1	0	170	0	230	0	0	0
Storage Lanes	1	1	1	1	1	0	1	0	1	0	1	0
Taper Length (ft)	25	1	1	25	1	0	25	1	25	0	25	1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98	0.850	0.980	0.980	0.980	0.945	0.950	0.950	0.932	0.932	0.932
Flt Protected	0.950	1770	1863	1719	1768	0	1736	1726	0	1736	1703	0
Satd. Flow (prot)	0.329	613	1863	1546	545	1768	0	442	1726	0	583	1703
Flt Permitted	613	1863	1546	545	1768	0	442	1726	0	583	1703	0
Satd. Flow (perm)	102	Yes										
Right Turn on Red	30	30	30	30	30	30	30	30	30	30	30	30
Satd. Flow (RTOR)	2500	1857	1857	1857	1857	1857	754	754	5366	5366	5366	5366
Link Speed (mph)	56.8	42.2	42.2	42.2	42.2	42.2	17.1	17.1	122.0	122.0	122.0	122.0
Travel Time (s)	3	3	3	3	3	3	1	1	1	1	1	1
Confl. Bikes (#/hr)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Peak Hour Factor	2%	2%	2%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Heavy Vehicles (%)	249	580	106	52	356	55	56	176	102	102	213	175
Adj. Flow (vph)	249	580	106	52	356	55	56	176	102	102	213	175
Shared Lane Traffic (%)	249	580	106	52	411	0	56	278	0	102	388	0
Lane Group Flow (vph)	pm-pt	NA	Perm	pm-pt	NA	pm-pt	pm-pt	NA	NA	pm-pt	NA	NA
Turn Type	5	2	2	6	6	8	8	8	8	7	4	4
Protected Phases	5	2	2	1	1	6	6	6	6	7	4	4
Permitted Phases	5	2	2	1	1	6	6	6	6	7	4	4
Detector Phase	5	2	2	1	1	6	6	6	6	7	4	4
Switch Phase	5.0	10.0	10.0	5.0	10.0	5.0	5.0	7.0	5.0	5.0	7.0	5.0
Minimum Initial (s)	11.0	32.0	32.0	11.0	35.0	11.0	11.0	35.0	11.0	11.0	35.0	11.0
Minimum Split (s)	35.0	60.0	60.0	35.0	60.0	25.0	25.0	40.0	25.0	25.0	40.0	25.0
Total Split (s)	21.9%	37.5%	37.5%	21.9%	37.5%	15.6%	15.6%	25.0%	15.6%	15.6%	25.0%	15.6%
Total Split (%)	29.0	54.0	54.0	29.0	54.0	19.0	19.0	34.0	19.0	19.0	34.0	19.0
Maximum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Yellow Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Total Lost Time (s)	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead/Lag	3.0	5.0	5.0	2.5	5.0	2.5	2.5	5.0	2.5	2.5	5.0	2.5
Lead-Lag Optimize?	3.0	4.0	4.0	2.5	4.0	2.5	4.0	2.5	4.0	2.5	4.0	2.5
Vehicle Extension (s)	0.0	30.0	30.0	0.0	30.0	0.0	0.0	15.0	0.0	0.0	15.0	0.0
Minimum Cap (s)	0.0	10.0	10.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Time Before Reduce (s)	None	C-Min	C-Min	None	C-Min	None	None	C-Min	None	None	C-Min	None
Time To Reduce (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Recall Mode	19.0	19.0	19.0	22.0	22.0	21.0	21.0	22.0	21.0	21.0	22.0	21.0
Walk Time (s)	0	0	0	0	0	0	0	0	0	0	0	0
Flash Don't Walk (s)	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Calls (#/hr)												

2023 Future Conditions with Development
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Lanes, Volumes, Timings
4: 67th Avenue NE & 172nd Street NE

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	92.0	81.0	81.0	76.3	69.1	46.9	38.6	38.6	46.9	38.6	38.6	44.0
Actuated g/C Ratio	0.58	0.51	0.51	0.48	0.43	0.29	0.24	0.24	0.29	0.24	0.24	0.28
v/c Ratio	0.53	0.62	0.13	0.17	0.54	0.29	0.65	0.65	0.29	0.65	0.65	0.80
Control Delay	25.0	41.1	11.3	18.4	38.3	37.6	58.8	58.8	37.6	58.8	58.8	64.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	41.1	11.3	18.4	38.3	37.6	58.8	58.8	37.6	58.8	58.8	64.2
LOS	C	D	B	B	D	D	E	E	D	E	D	E
Approach Delay	33.4	33.4	33.4	36.1	36.1	36.1	55.3	55.3	36.1	55.3	55.3	58.9
Approach LOS	C	C	C	D	D	D	E	E	D	E	D	E
Queue Length 50th (ft)	181	584	20	24	323	38	242	242	38	242	242	358
Queue Length 95th (ft)	224	699	74	46	464	72	359	359	72	359	359	540
Internal Link Dist (ft)	2420	2420	2420	1777	1777	1777	674	674	1777	674	674	5286
Turn Bay Length (ft)	415	80	185	80	185	170	170	170	170	170	170	230
Base Capacity (vph)	562	943	833	525	765	307	437	437	307	437	437	484
Sanitation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.62	0.13	0.10	0.54	0.18	0.64	0.64	0.18	0.64	0.64	0.80
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	160											
Actuated Cycle Length:	160											
Offset:	108 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Red											
Natural Cycle:	95											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.80											
Intersection Signal Delay:	42.9											
Intersection Capacity Utilization:	79.0%											
Analysis Period (min):	15											
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Splits and Phases:	4: 67th Avenue NE & 172nd Street NE											
	Ø1	Ø2 (R)	Ø3	Ø4	Ø5	Ø6 (R)	Ø7	Ø8				
	35 s	50 s	25 s	40 s	35 s	50 s	25 s	40 s				

2023 Future Conditions with Development
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HCM 6th TWSC
5: 51st Avenue NE & Site Access

Smartcap Arlington Airport Business Park

Intersection

Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	10	85	22	297	192	3
Future Vol, veh/h	10	85	22	297	192	3
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	92	24	323	209	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	582	211	212	0	0
Stage 1	211	-	-	-	-
Stage 2	371	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	475	829	1358	-	-
Stage 1	824	-	-	-	-
Stage 2	698	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	466	829	1358	-	-
Mov Cap-2 Maneuver	466	-	-	-	-
Stage 1	809	-	-	-	-
Stage 2	698	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	766	-	-
HCM Lane V/C Ratio	0.018	-	0.135	-	-
HCM Control Delay (s)	7.7	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-