ROWE PROFESSIONAL SERVICES COMPANY

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Memorandum

To: Curt Wagner, Vice President, Development – Priya Living

From: Brandon M. Hayes, PE, P.Eng.

Date: August 31, 2021

RE: Traffic Impact Study Update for Priya Living in Rochester Hills, MI

ROWE Professional Services Company has completed a Traffic Impact Study (TIS) Update related to the senior living residential development located in the northeast quadrant of Adams Road and South Boulevard in Rochester Hills, MI. The current site plan (included in the materials attached to this report) shows 172 dwelling units (representing an increase of 12 units from the previous TIS report) with an anticipated opening date in 2023. There are currently two proposed access scenarios under consideration for the site: A) full movement access onto South Blvd. with S. Adams Rd. access restricted to emergency vehicles only; and B) full movement access onto South Blvd. with right-in, right-out (RIRO) public vehicle access onto S. Adams Rd. This TIS was prepared to determine if any improvements would be necessary to mitigate traffic impacts to the adjacent road network. This report has been completed in accordance with the requirements specified by the Road Commission for Oakland County (RCOC), and the City of Rochester Hills.

TRAFFIC IMPACT STUDY

Traffic Counts

Turning movement counts (TMCs) were collected during the weekday AM (7 a.m. to 9 a.m.) and PM (4 p.m. to 6 p.m.) peak periods on December 1, 2020 at the intersection of:

- Adams Road and South Boulevard

Due to the impacts of COVID-19, the traffic volume data collected for this project in December of 2020 was not representative of typical operations. The traffic signal at the intersection of Adams Road and South Boulevard is part of the RCOC Sydney Coordinated Adaptive Traffic System (SCATS), which continuously records traffic counts. The existing traffic counts that were collected for this project were compared to counts collected prior to the onset of the pandemic ("Pre-COVID-19") and an adjustment factor was determined for each peak hour.

All traffic counts used in this study are attached to this memorandum. The existing adjusted peak hour traffic volumes are shown in Figure 1 attached to this memo.

Background Traffic Scenario

Historical traffic data from the Southeast Michigan Council of Governments (SEMCOG) website was referenced to determine the applicable growth rate to be applied to the existing traffic volumes when

projecting volumes for the development build-out year in 2023. Based on this review, a background growth rate of 0.5 percent was utilized.

The background traffic volumes are shown in Figure 2 attached to this memorandum.

Trip Generation

Using the information and methodologies specified in the latest version of Trip Generation (Trip Generation Manual, 10th Edition, 2017), ROWE forecast the weekday AM and PM peak hour trips associated with the proposed development. The results of the trip generation forecasts are provided below in Table 1.

Table 1
Trip Generation for Proposed Development

Land Use	Land Use Code	Units	AM Peak Hour			PM Peak Hour			Weekday
			In	Out	Total	In	Out	Total	
Senior Adult Housing – Attached	252	172 DU	12	22	34	24	20	44	666

Trip Distribution

The existing traffic volumes were used to develop a trip distribution model for the AM and PM peak hours to be applied to the new traffic that will be generated by the proposed development. Table 2 provides the probable distribution based on the existing traffic patterns.

Table 2
Trip Distribution

Direction	Via	AM Peak Hour		PM Peak Hour	
		To	From	To	From
North	Adams Road	26%	40%	34%	30%
South	Adams Road	37%	25%	26%	31%
East	South Boulevard	16%	18%	17%	20%
West	South Boulevard	21%	17%	23%	19%
Total		**100%**	**100%**	**100%**	**100%**

The vehicle trip assignments for the site are shown in Figure 3 (for South Blvd. access only) and Figure 4 (for the addition of S. Adams Rd. RIRO access) attached to this memo. The background traffic volumes were combined with the site generated traffic volumes to obtain the total future traffic volumes, which are shown in Figure 5 (for South Blvd. access only) and Figure 6 (for the addition of S. Adams Rd. RIRO access) attached to this memo.

Level of Service Analysis

Level of service (LOS) analyses for existing, background, and total future (build) conditions for the AM and PM peak hours were performed for the intersections of:

- Adams Road and South Boulevard
  - Signalized Intersection
- Adams Road and North Driveway
  - Proposed RIRO driveway approximately 850’ north of South Boulevard
- South Boulevard and South Driveway

- Proposed driveway approximately 700' east of Adams Road
- Aligned with driveway for Bharatiya Temple

According to the most recent edition of the *Highway Capacity Manual (6th Edition)*, LOS ranges from A to F, with LOS A representing desirable traffic operations characterized by low vehicle delays and LOS F representing extremely poor traffic operations characterized by excessive vehicle delays and long vehicle queues. LOS D or above is generally considered to be acceptable in an urban/suburban area. Table 3 presents the criteria for defining the various LOS for signalized and unsignalized intersections.

Table 3
LOS Criteria

LOS	Average Stopped Delay/Vehicle (seconds)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

The results of the LOS analyses for the intersection listed above are summarized in Table 4 through Table 7. Full LOS output reports are attached to this memorandum.

Existing Conditions

The results of the LOS analysis for existing conditions reveals that most approaches and movements of the studied intersections operate at LOS D or better during the AM and PM peak hours, with the following exception:

Adams Road and South Boulevard

- The EB shared through/right-turn movement operates at LOS E during both the AM and PM peak hours.

The following observations were made, and improvements were recommended, following the ***Existing Conditions*** analysis at the above-noted location:

Adams Road and South Boulevard

- The NB/SB Adams Road phases are the major coordinated movements at this intersection. The EB/WB South Boulevard phases receive less green time as they service fewer vehicles during the peak hours. Nevertheless, if the vehicle recall for the EB/WB through phase were to be set to maximum, the EB shared through/right-turn movement would operate at LOS D or better during both peak hours. However, the signal appears to be operating efficiently and eastbound queues do not appear to be excessive. Signal timing improvements at this location would be at the discretion of RCOC. No signal timing changes are recommended at this time.

95th percentile queue lengths were reviewed at the studied intersection. In the AM peak hour, southbound traffic queues do not exceed 565' (23 vehicles). In the PM peak hour, northbound traffic queues do not

exceed 658' (26 vehicles). In the AM peak hour, southbound traffic queues will occasionally block the proposed location of the RIRO site driveway on Adams Road. These blockages are short in duration.

The operational results for existing conditions are presented in Table 4.

Table 4
LOS Analysis for Existing Conditions

Intersection	Control Type	Approach	AM Peak	PM Peak
Adams Road and South Boulevard	Signalized	Eastbound	D 52.4	D 53.9
		Westbound	D 44.4	D 48.4
		Northbound	C 22.8	C 23.5
		Southbound	C 24.7	B 18.4
		Overall	**C 32.7**	**C 33.3**

XX.X Average seconds of delay per vehicle

Background Conditions

The results of the LOS analysis for background conditions reveals that all approaches and movements of the studied intersection would continue to operate at LOS D or better during the AM and PM peak hours, with the following exception:

Adams Road and South Boulevard

- The EB shared through/right-turn movement continues to operate at LOS E during both the AM and PM peak hours.

The following observations were made, and improvements were recommended, following the ***Background Conditions*** analysis at the above-noted location:

Adams Road and South Boulevard

- Operations are similar to ***Existing Conditions***. No further improvements are recommended.

95th percentile queue lengths were reviewed at the studied intersection. In the AM peak hour, southbound traffic queues do not exceed 624' (25 vehicles). In the PM peak hour, northbound traffic queues do not exceed 678' (27 vehicles). In the AM peak hour, traffic queues will occasionally block the proposed location of the RIRO site driveway on Adams Road. These blockages are short in duration.

The operational results for ***Background Conditions*** are presented in Table 5.

Table 5
LOS Analysis for Background Conditions

Intersection	Control Type	Approach	AM Peak	PM Peak
Adams Road and South Boulevard	Signalized	Eastbound	D 52.4	D 54.1
		Westbound	D 44.4	D 48.1[1]
		Northbound	C 23.3	C 24.1
		Southbound	C 25.5	B 18.9
		Overall	**C 33.2**	**C 33.6**

XX.X Average seconds of delay per vehicle
[1]Delay decreases due to actuated signal.

Future Conditions – South Blvd. Access Only

The results of the LOS analysis for future conditions reveals that all approaches and movements of the studied intersections would continue to operate at LOS D or better during the AM and PM peak hours, with the following exception:

Adams Road and South Boulevard

- The EB shared through/right-turn movement continues to operate at LOS E during both the AM and PM peak hours.

The following observations were made, and improvements were recommended, following the ***Future Conditions – South Blvd. Access Only*** analysis at the above-noted location:

Adams Road and South Boulevard

- Operations are similar to ***Background Conditions***. No further improvements are recommended.

95th percentile queue lengths were reviewed at the studied intersections. At the intersection of Adams Road and South Boulevard, southbound traffic queues do not exceed 506' (20 vehicles) in the AM peak hour. In the PM peak hour, northbound traffic queues do not exceed 697' (28 vehicles).

At the intersection of South Boulevard and South Driveway, southbound traffic queues do not exceed 41' (2 vehicles) in the AM peak hour and 39' (2 vehicles) in the PM peak hour for vehicles exiting the site.

The operational results for ***Future Conditions – South Blvd. Access Only*** are presented in Table 6.

Table 6
LOS Analysis for Future Conditions – South Blvd. Access Only

Intersection	Control Type	Approach	AM Peak	PM Peak
Adams Road and South Boulevard	Signalized	Eastbound	D 52.5	D 54.1
		Westbound	D 44.9	D 47.6
		Northbound	C 23.8	C 25.2
		Southbound	C 25.7	B 19.3
		Overall	**C 33.6**	**C 34.0**
South Boulevard and South Driveway	Free	Eastbound	A 0.2	A 0.4
		Westbound	A 0.0	A 0.0
	Stop	Northbound	A 0.0	A 0.0
		Southbound	B 11.4	B 12.0

XX.X Average seconds of delay per vehicle

Future Conditions – South Blvd. Access and S. Adams Rd. RIRO

The results of the LOS analysis for future conditions reveals that all approaches and movements of the studied intersections would continue to operate at LOS D or better during the AM and PM peak hours, with the following exception:

Adams Road and South Boulevard

- The EB shared through/right-turn movement continues to operate at LOS E during both the AM and PM peak hours.

The following observations were made, and improvements were recommended, following the ***Future Conditions – South Blvd. Access and S. Adams Rd. RIRO*** analysis at the above-noted location:

Adams Road and South Boulevard

- Operations are similar to ***Background Conditions***. No further improvements are recommended.

95th percentile queue lengths were reviewed at the studied intersections. At the intersection of Adams Road and South Boulevard, southbound traffic queues do not exceed 574' (23 vehicles) in the AM peak hour. In the PM peak hour, northbound traffic queues do not exceed 739' (30 vehicles).

At the intersection of Adams Road and North Driveway, westbound traffic queues do not exceed 24' (1 vehicle) in the AM peak hour and 29' (1 vehicle) in the PM peak hour for vehicles exiting the site.

At the intersection of South Boulevard and South Driveway, southbound traffic queues do not exceed 32' (1-2 vehicles) in the AM peak hour and 32' (1-2 vehicles) in the PM peak hour for vehicles exiting the site.

The operational results for ***Future Conditions – South Blvd. Access and S. Adams Rd. RIRO*** are presented in Table 7.

Table 7
LOS Analysis for Future Conditions – South Blvd. Access and S. Adams Rd. RIRO

Intersection	Control Type	Approach	AM Peak	PM Peak
Adams Road and South Boulevard	Signalized	Eastbound	D 52.5	D 54.1
		Westbound	D 45.0	D 47.7
		Northbound	C 23.7	C 25.2
		Southbound	C 25.7	B 19.3
		Overall	**C 33.6**	**C 34.0**
Adams Road and North Driveway (RIRO)	Stop	Westbound	B 12.4	B 14.7
	Free	Northbound	A 0.0	A 0.0
		Southbound	A 0.0	A 0.0
South Boulevard and South Driveway	Free	Eastbound	A 0.2	A 0.3
		Westbound	A 0.0	A 0.0
	Stop	Northbound	A 0.0	A 0.0
		Southbound	B 11.4	B 12.2

XX.X Average seconds of delay per vehicle

Turn Lane, Passing Lane, and Taper Warrants

An evaluation was performed in accordance with RCOC requirements to determine if left turn passing lanes or right turn deceleration lanes/tapers are required at the proposed driveways. The results of the analysis indicated that no right turn lane treatment is warranted at the South Driveway. In addition, there is an existing two-way left turn lane (TWLTL). At the North Driveway (if a RIRO access is constructed), a right turn taper is warranted. All turn lane warrant charts are attached to this memorandum.

The results of the analysis are presented in Table 8.

Table 8
Turn Lane Warrants

Intersection	Movement	Result
Adams Road and North Driveway	NB RT	Taper Warranted
South Boulevard and South Driveway	EB RT	Not Warranted
	WB LT	NA – Existing TWLTL

Driveway Characteristics

The north RIRO driveway along Adams Road is designed with 1 inbound lane and 1 outbound lane; the total driveway approach throat width is approximately 21'. The south driveway along South Boulevard is designed with 1 inbound lane and 1 outbound lane; the total driveway approach throat width is approximately 25'. No driveway medians are proposed at either of the potential access points, although the provision of a RIRO driveway on S. Adams Rd. may necessitate the addition of right-turn channelization via a curbed median. This median typically aids in prohibiting inbound and outbound left turn movements at RIRO driveways.

Conclusions and Recommendations for the Traffic Impact Study

The proposed project consists of a senior living residential development containing 172 dwelling units and a build-out year of approximately 2023. There are currently two proposed access scenarios under consideration for the site: A) full movement access onto South Blvd. with S. Adams Rd. access restricted

to emergency vehicles only; and B) full movement access onto South Blvd. with right-in, right-out (RIRO) public vehicle access onto S. Adams Rd. The driveway on South Boulevard will be aligned with the existing driveway for the Bharatiya Temple, which does not operate during the peak hours of the road network identified in this report.

The proposed development is forecast to generate 34 new trips during the AM peak hour (12 inbound and 22 outbound from the site) and 44 new trips during the PM peak hour (24 inbound and 20 outbound from the site).

Operational analyses were performed for ***Existing Conditions***, ***Background Conditions (without the proposed development)***, ***Future Conditions – South Blvd. Access Only (with the proposed development)***, and ***Future Conditions – South Blvd. Access and S. Adams Rd. RIRO (with the proposed development)*** for the intersections of:

- Adams Road and South Boulevard;
- Adams Road and North Driveway; and
- South Boulevard and South Driveway.

The operational analyses indicated that all approaches of the study intersections would operate at acceptable levels during both the AM and PM peak hours under all analysis scenarios.

Turn lane warrant analysis indicated that no right turn lane treatment is warranted at the South Driveway. At the North Driveway (if a RIRO access is constructed), a right turn taper is warranted.

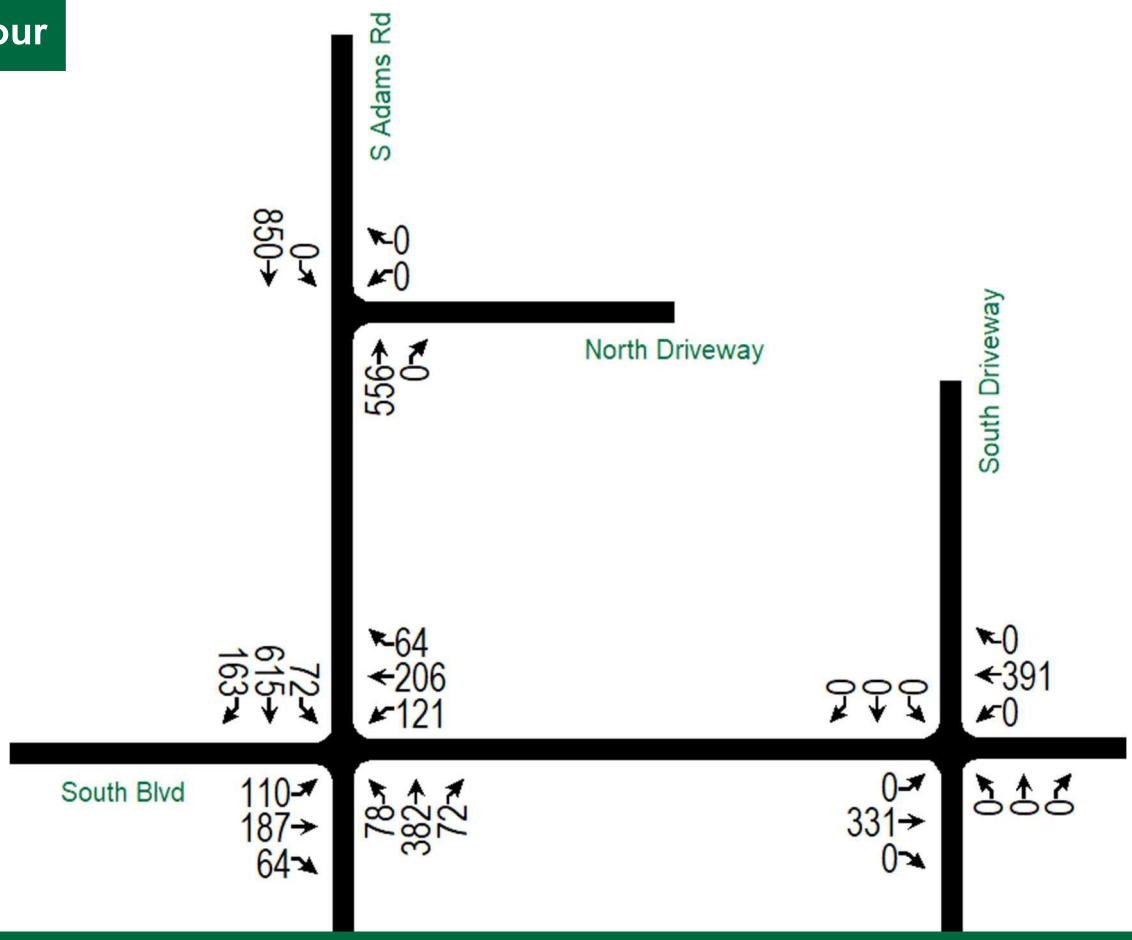
Attachments

SITE PLAN

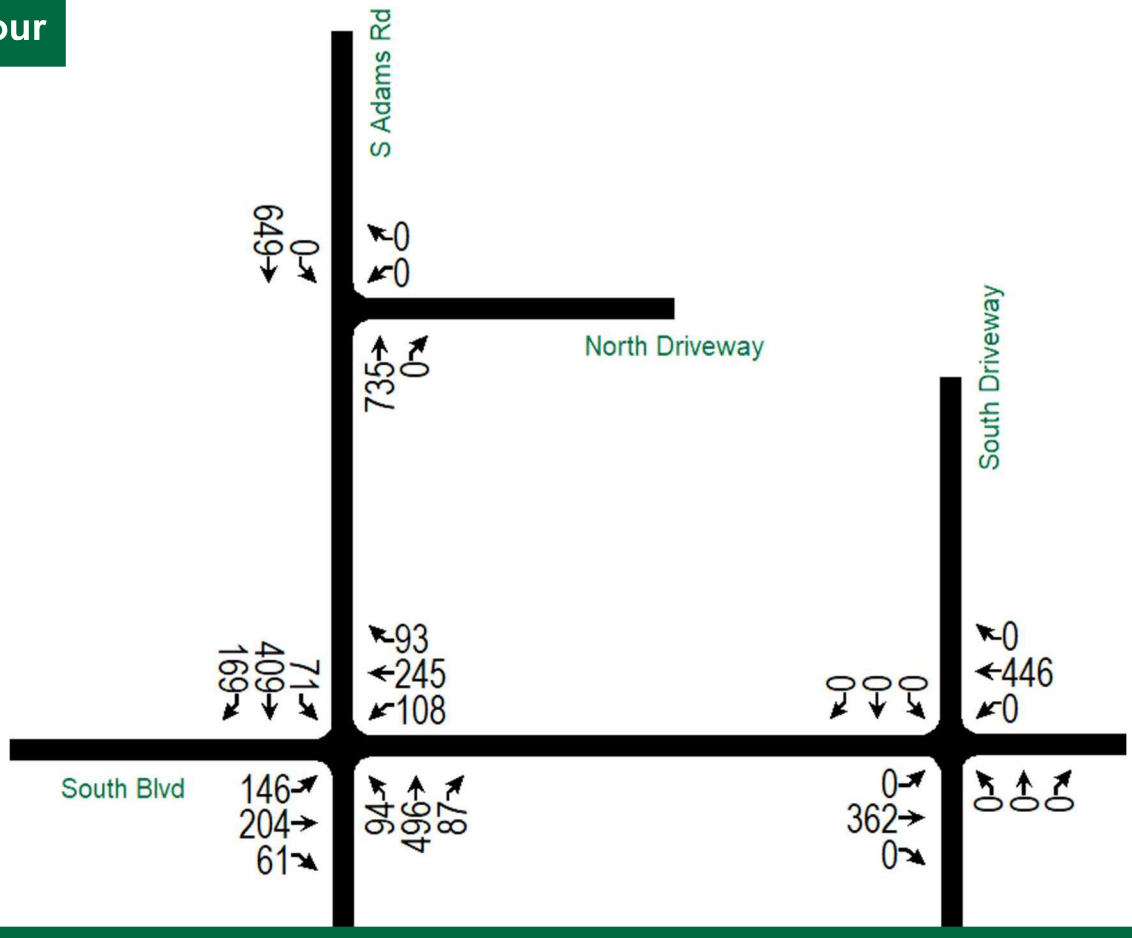
NOTE:
ALL WORK WITHIN THE S ADAMS ROAD
RIGHT-OF-WAY IS UNDER THE JURISDICTION
OF THE RCOC AND REQUIRES A PERMIT.

REPORT FIGURES

AM Peak Hour



PM Peak Hour



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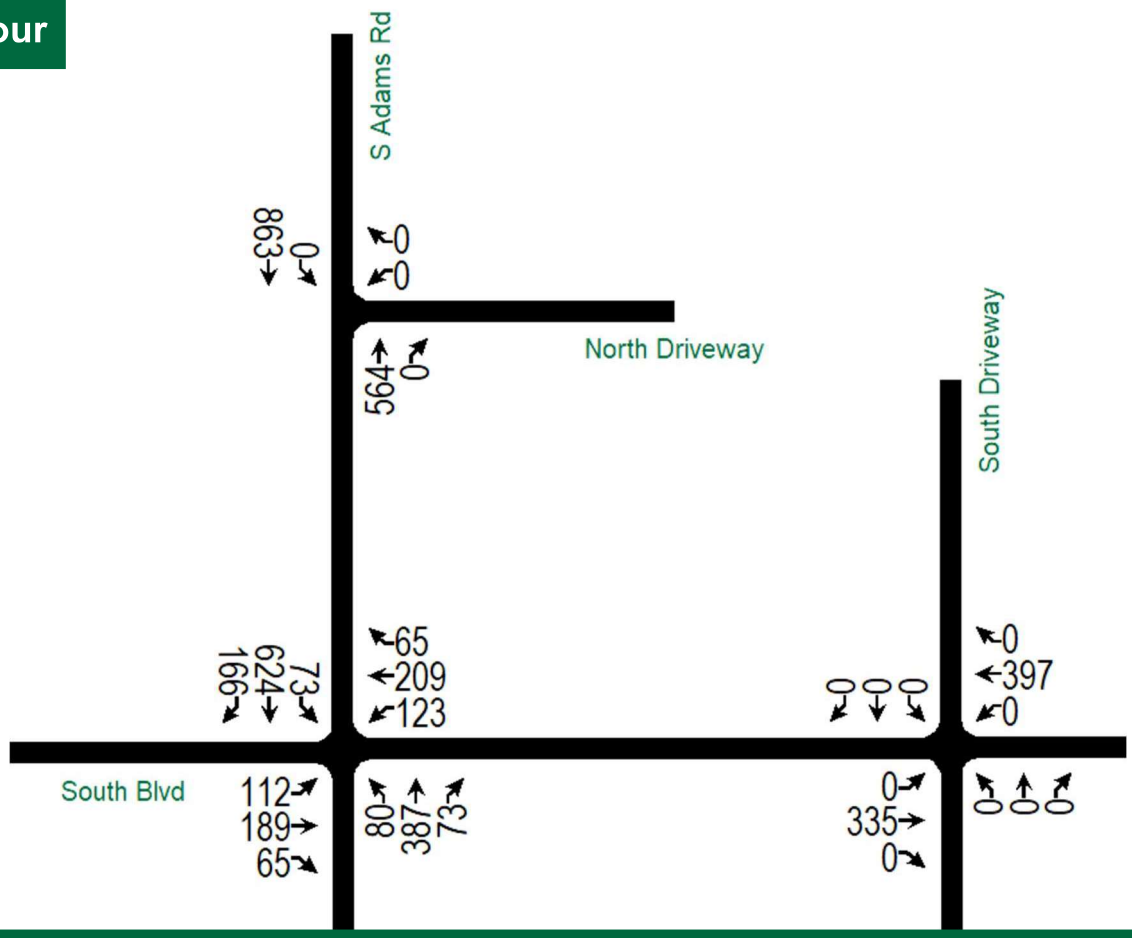
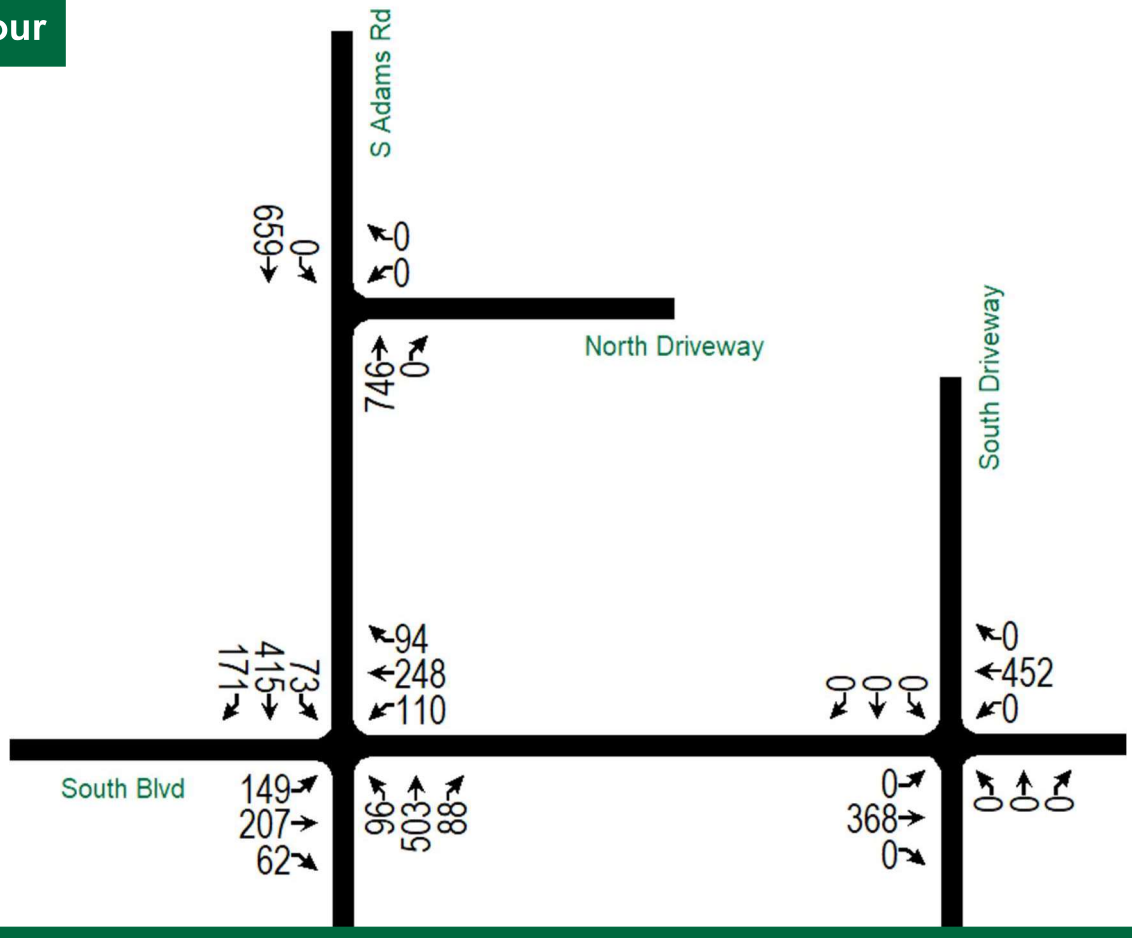
2020 Existing Conditions Traffic Volumes
Priya Living TIS
Figure 1

AM Peak Hour



PM Peak Hour



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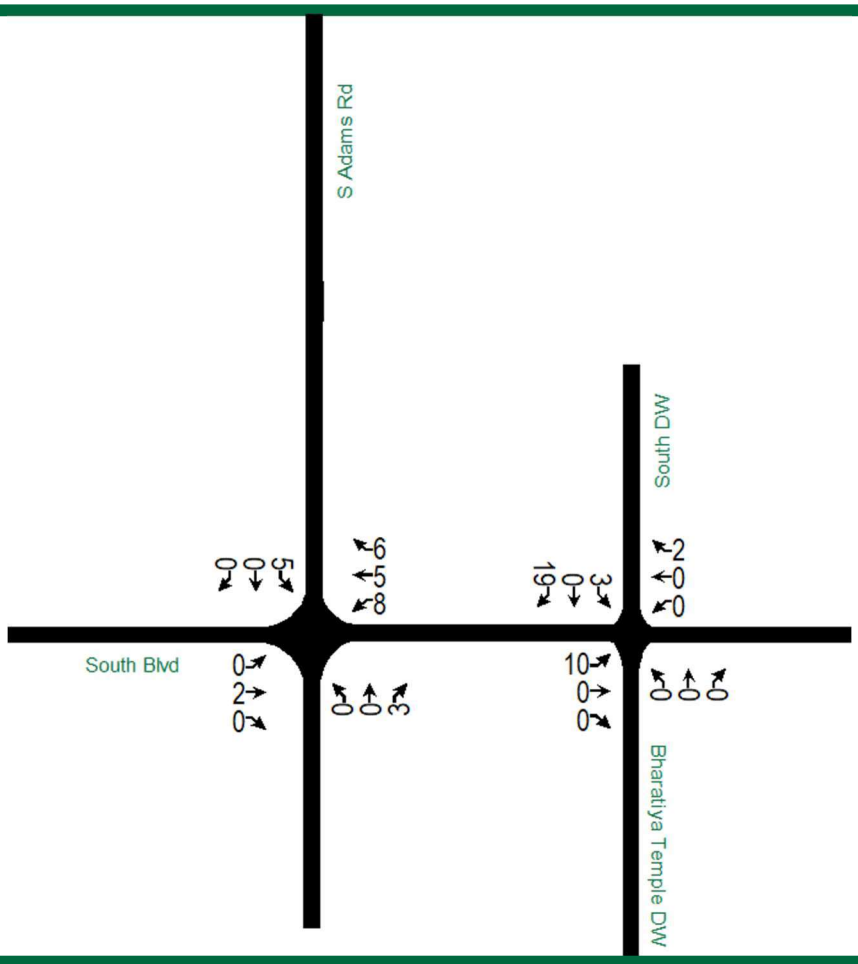
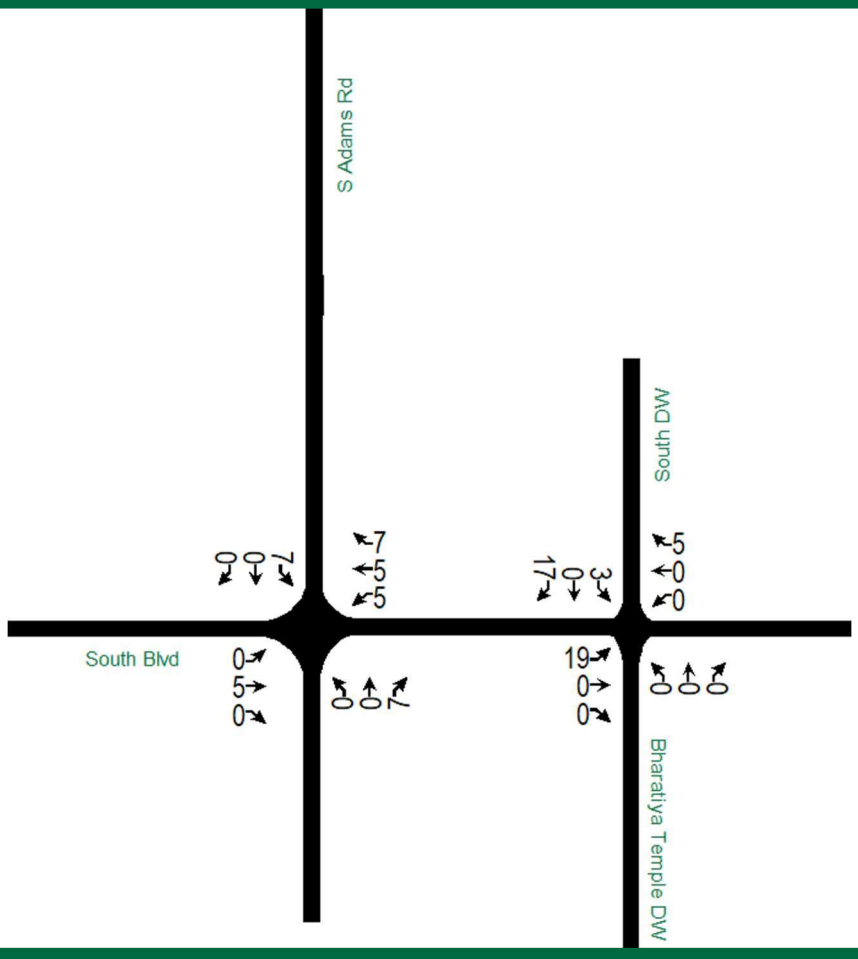
2023 Background Conditions Traffic Volumes
Priya Living TIS
Figure 2

AM Peak Hour



PM Peak Hour



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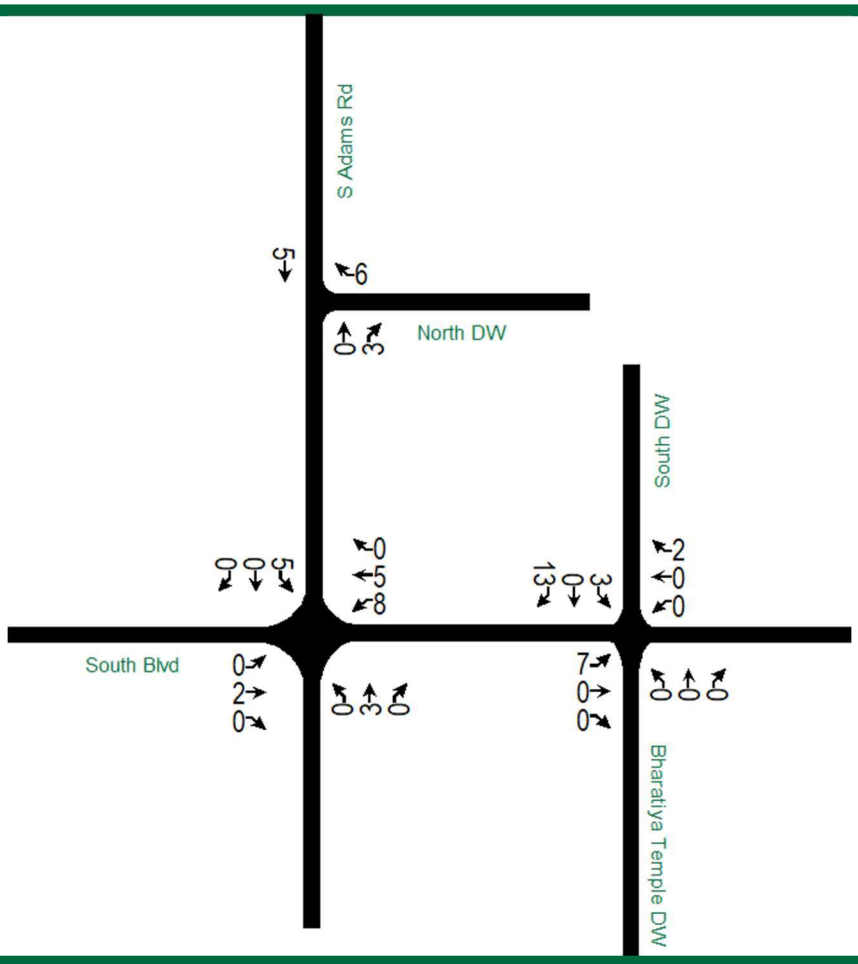
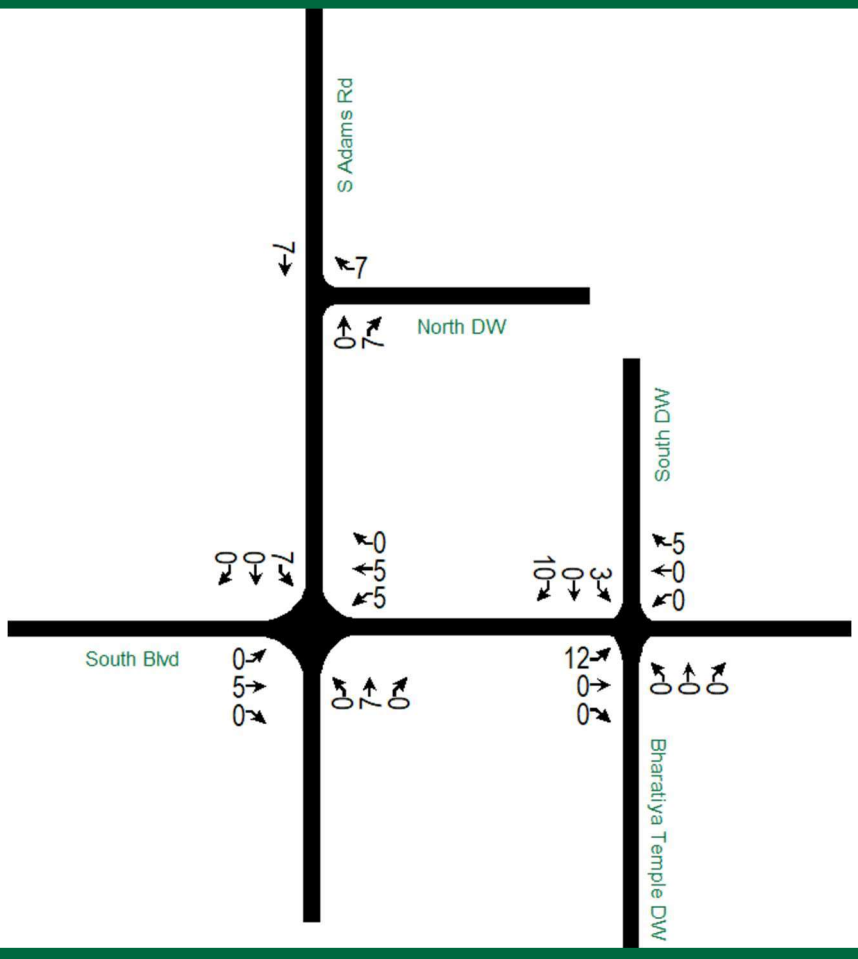
2023 Site-Generated Traffic Volumes – South Blvd.
Priya Living TIS
Figure 3

Not to scale – for illustrative purposes only

AM Peak Hour



PM Peak Hour



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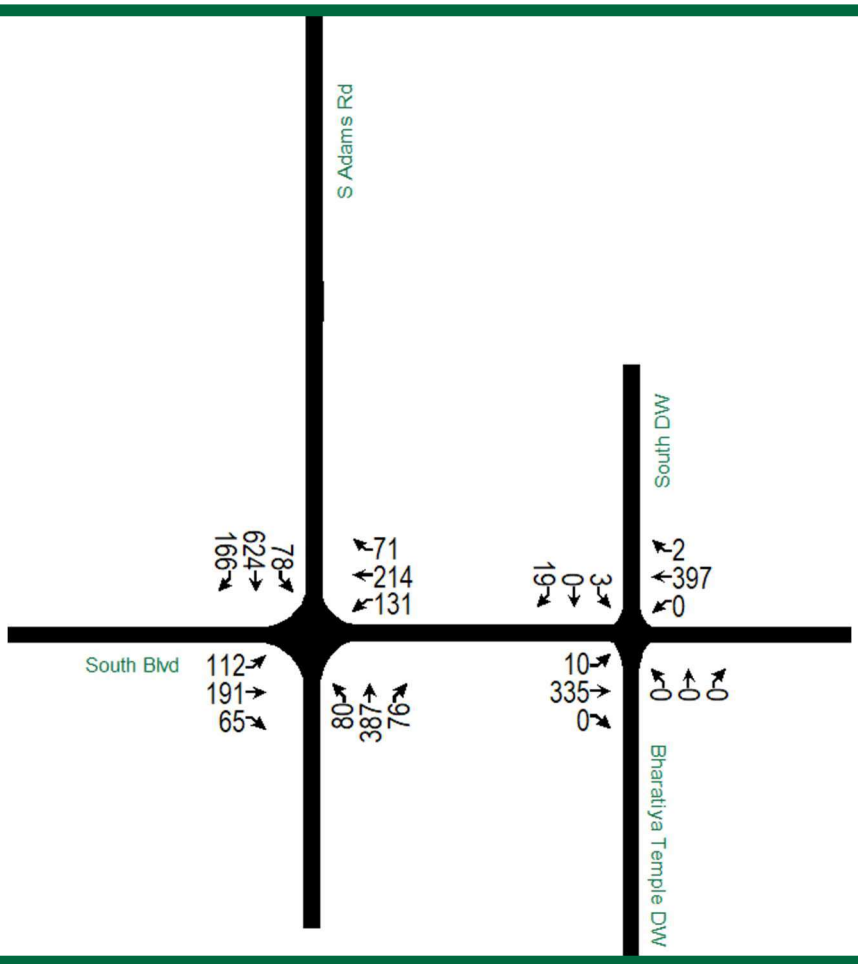
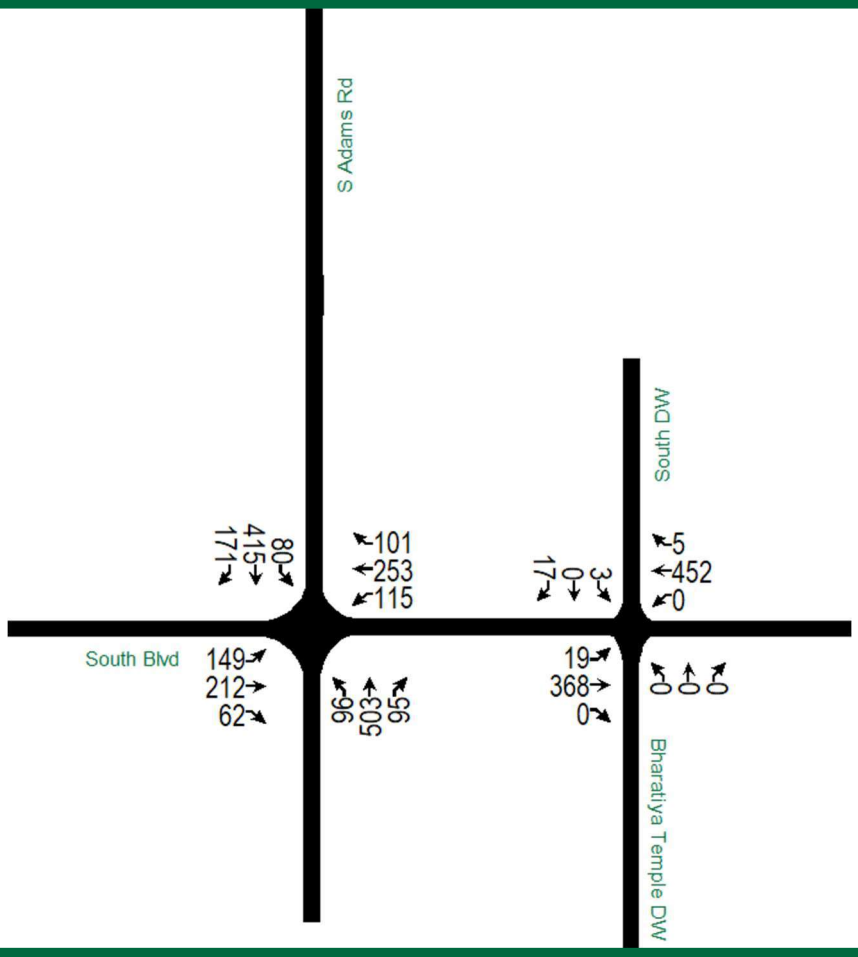
2023 Site-Generated Traffic Volumes – Adams RIRO
Priya Living TIS
Figure 4

Not to scale – for illustrative purposes only

AM Peak Hour



PM Peak Hour



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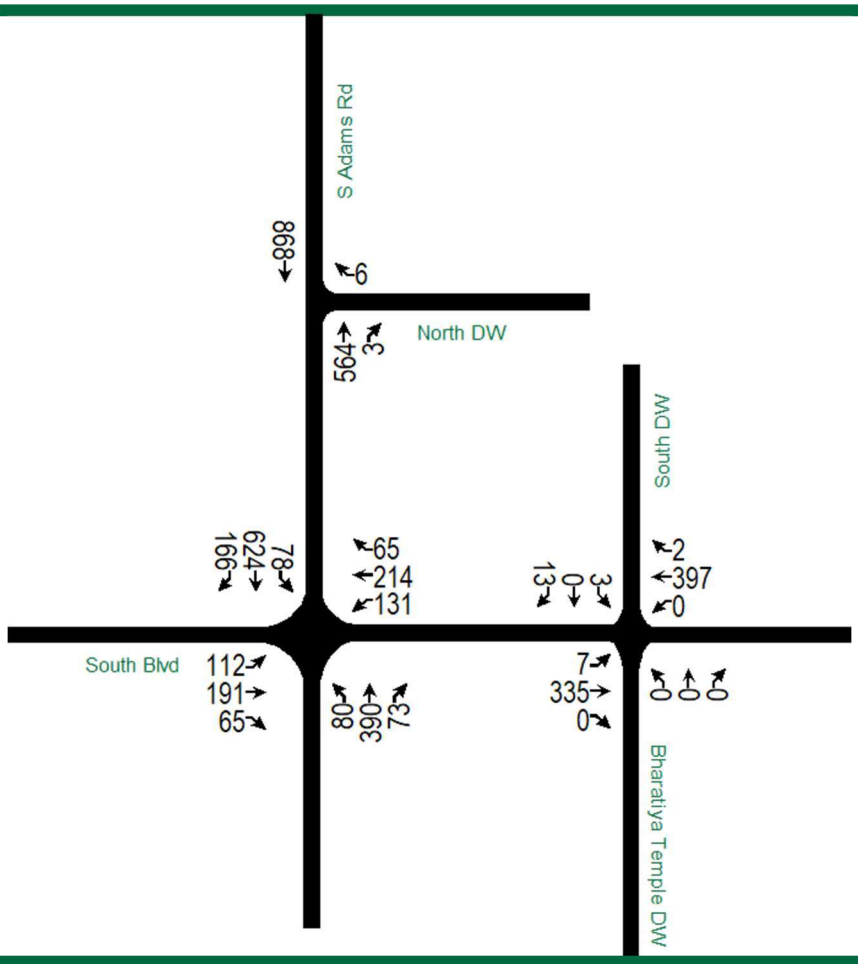
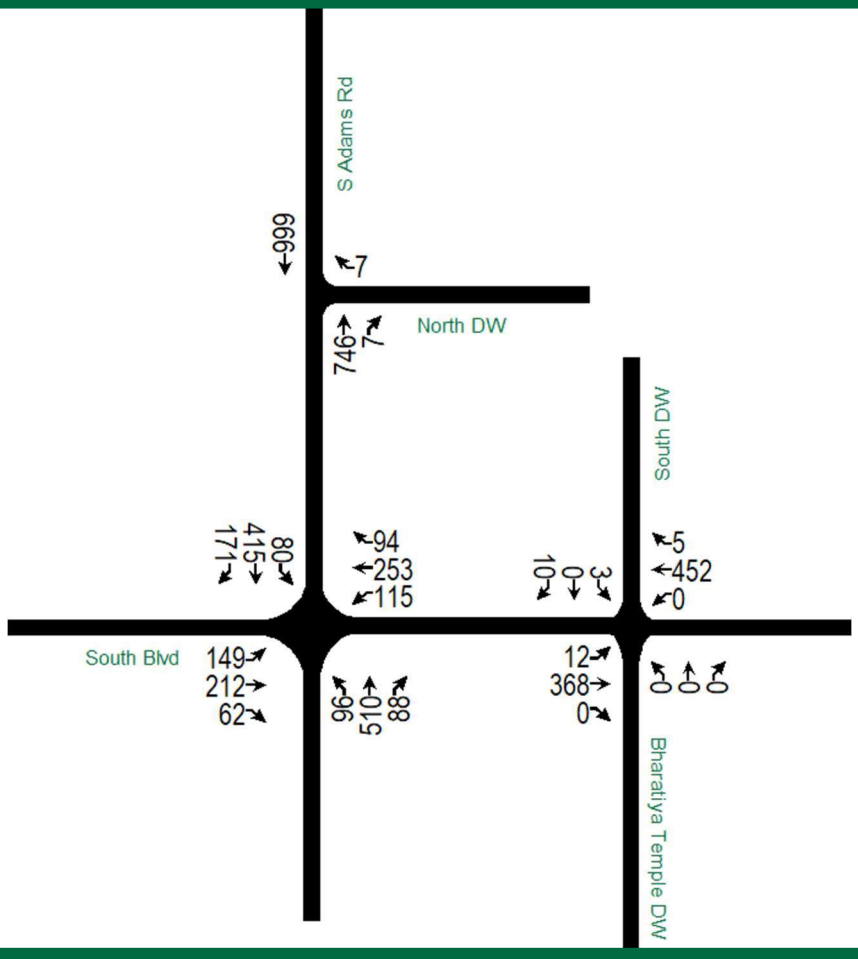
2023 Future Conditions Traffic Volumes – South Blvd.
Priya Living TIS
Figure 5

Not to scale – for illustrative purposes only

AM Peak Hour



PM Peak Hour



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2023 Future Conditions Traffic Volumes – Adams RIRO
Priya Living TIS
Figure 6

Not to scale – for illustrative purposes only

TRAFFIC COUNTS

South Adams Road & South Boulevard - TMC

Tue Dec 1, 2020
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 801533, Location: 42.621005, -83.209216

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	South						South						Adams						Adams						
Direction	Eastbound						Westbound						Northbound						Southbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2020-12-01 7:00AM	55	83	45	0	**183**	0	45	103	26	0	**174**	0	22	136	28	0	**186**	0	25	259	51	0	**335**	0	**878**
8:00AM	52	88	30	0	**170**	0	57	97	30	0	**184**	0	37	180	34	0	**251**	0	34	290	77	0	**401**	0	**1006**
4:00PM	84	142	41	0	**267**	0	67	153	57	0	**277**	0	63	321	59	0	**443**	1	36	281	98	1	**416**	0	**1403**
5:00PM	106	121	27	0	**254**	0	41	123	64	0	**228**	0	58	315	38	0	**411**	0	46	248	98	0	**392**	0	**1285**
Total	297	434	143	0	**874**	0	210	476	177	0	**863**	0	180	952	159	0	**1291**	1	141	1078	324	1	**1544**	0	**4572**
% Approach	34.0%	49.7%	16.4%	0%	**-**	-	24.3%	55.2%	20.5%	0%	**-**	-	13.9%	73.7%	12.3%	0%	**-**	-	9.1%	69.8%	21.0%	0.1%	**-**	-	**-**
% Total	6.5%	9.5%	3.1%	0%	**19.1%**	-	4.6%	10.4%	3.9%	0%	**18.9%**	-	3.9%	20.8%	3.5%	0%	**28.2%**	-	3.1%	23.6%	7.1%	0%	**33.8%**	-	**-**
Lights	291	428	138	0	**857**	-	206	466	174	0	**846**	-	175	926	157	0	**1258**	-	140	1047	319	1	**1507**	-	4468
% Lights	98.0%	98.6%	96.5%	0%	**98.1%**	-	98.1%	97.9%	98.3%	0%	**98.0%**	-	97.2%	97.3%	98.7%	0%	**97.4%**	-	99.3%	97.1%	98.5%	100%	**97.6%**	-	97.7%
Articulated Trucks	1	2	2	0	**5**	-	2	4	1	0	**7**	-	2	8	1	0	**11**	-	0	13	1	0	**14**	-	37
% Articulated Trucks	0.3%	0.5%	1.4%	0%	**0.6%**	-	1.0%	0.8%	0.6%	0%	**0.8%**	-	1.1%	0.8%	0.6%	0%	**0.9%**	-	0%	1.2%	0.3%	0%	**0.9%**	-	0.8%
Buses and Single-Unit Trucks	5	4	3	0	**12**	-	2	6	2	0	**10**	-	3	18	1	0	**22**	-	1	18	4	0	**23**	-	67
% Buses and Single-Unit Trucks	1.7%	0.9%	2.1%	0%	**1.4%**	-	1.0%	1.3%	1.1%	0%	**1.2%**	-	1.7%	1.9%	0.6%	0%	**1.7%**	-	0.7%	1.7%	1.2%	0%	**1.5%**	-	1.5%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

South Adams Road & South Boulevard - TMC

Tue Dec 1, 2020
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 801533, Location: 42.621005, -83.209216

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
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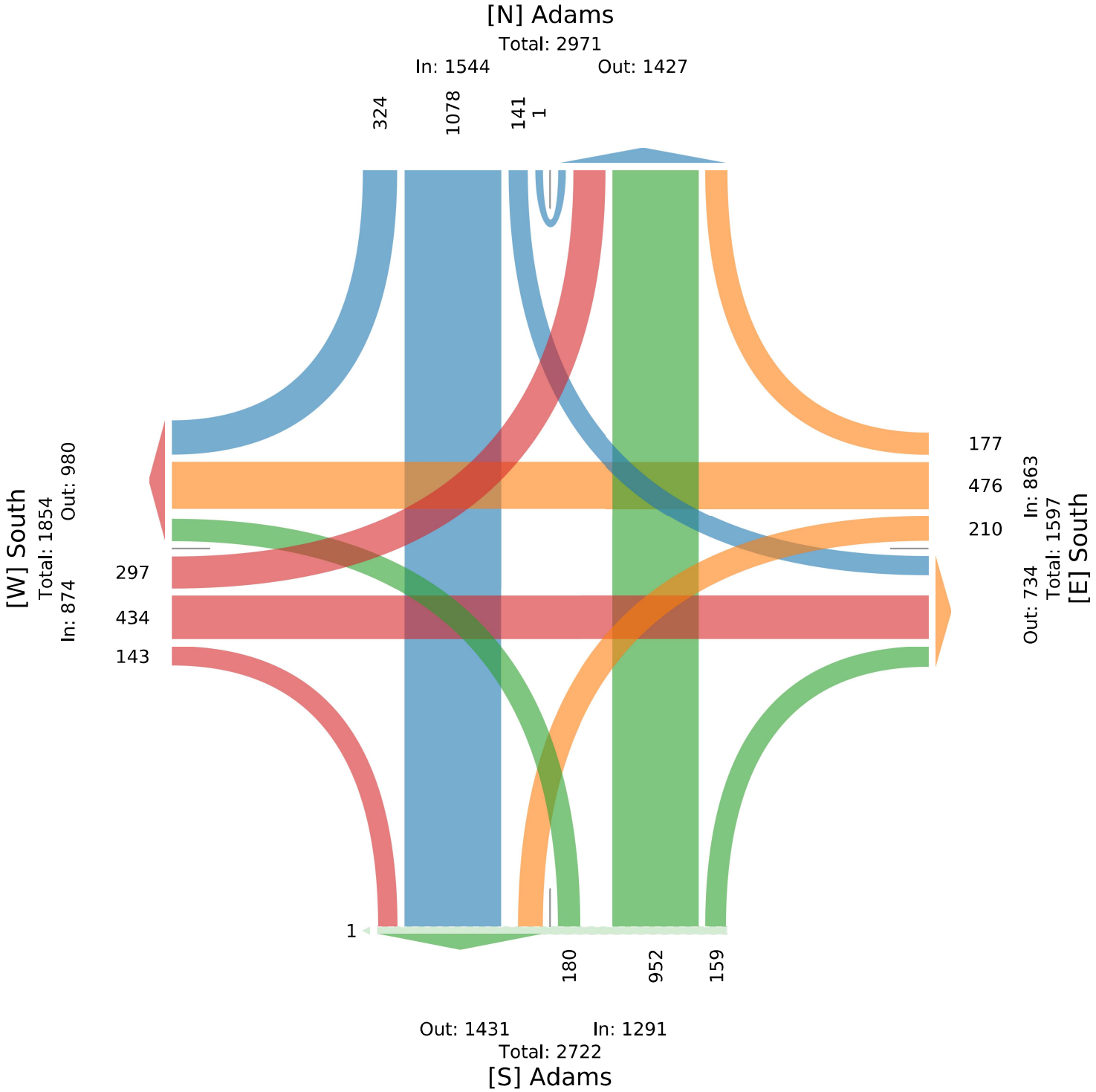


South Adams Road & South Boulevard - TMC

Tue Dec 1, 2020
AM Peak (8 AM - 9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 801533, Location: 42.621005, -83.209216

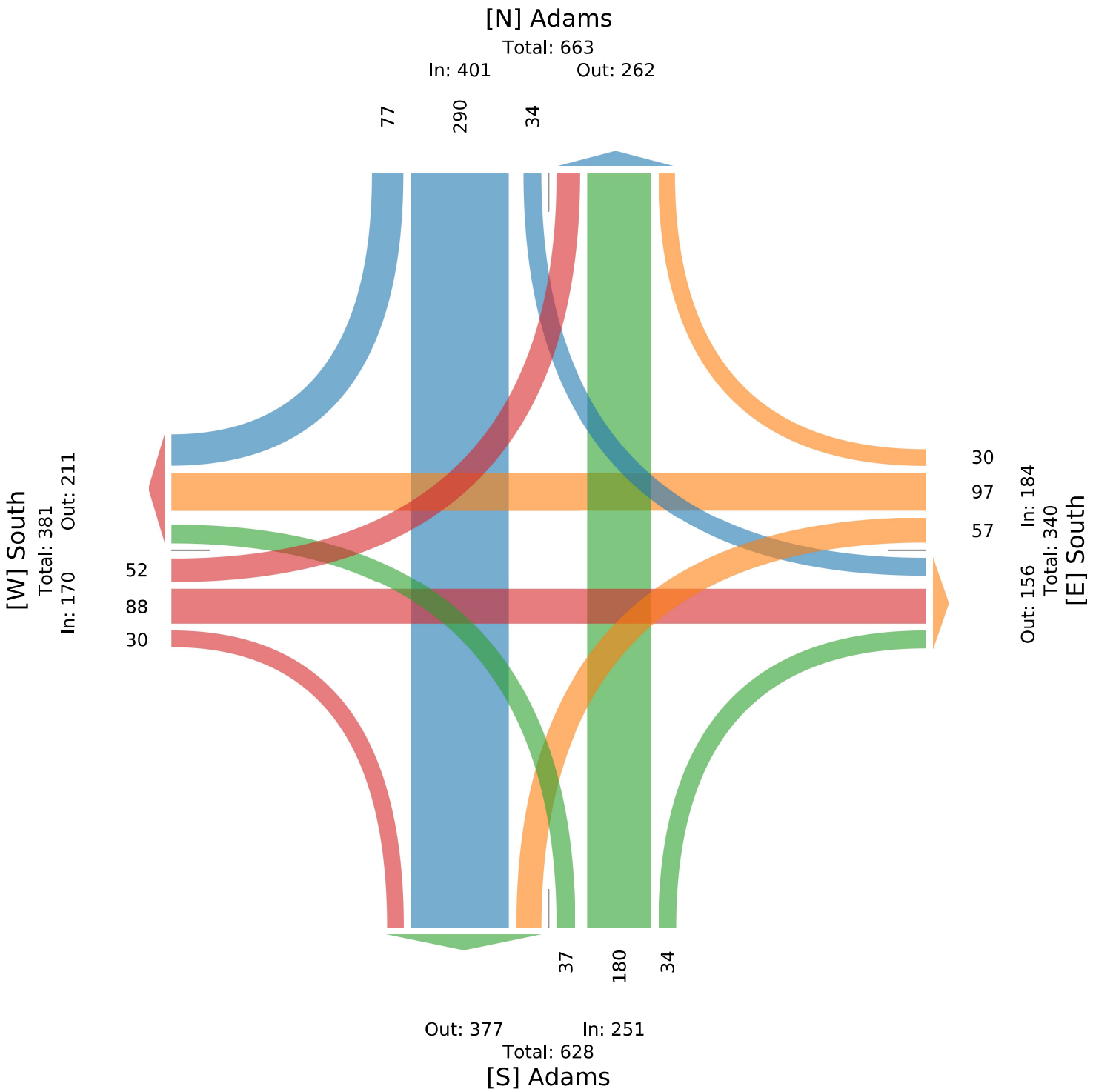
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg / Direction	South Eastbound						South Westbound						Adams Northbound						Adams Southbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2020-12-01 8:00AM	9	23	7	0	**39**	0	12	19	10	0	**41**	0	6	49	10	0	**65**	0	4	73	14	0	**91**	0	**236**
8:15AM	9	17	8	0	**34**	0	16	25	5	0	**46**	0	4	36	8	0	**48**	0	11	64	25	0	**100**	0	**228**
8:30AM	15	28	6	0	**49**	0	19	31	8	0	**58**	0	9	57	6	0	**72**	0	6	69	20	0	**95**	0	**274**
8:45AM	19	20	9	0	**48**	0	10	22	7	0	**39**	0	18	38	10	0	**66**	0	13	84	18	0	**115**	0	**268**
Total	52	88	30	0	**170**	0	57	97	30	0	**184**	0	37	180	34	0	**251**	0	34	290	77	0	**401**	0	**1006**
% Approach	30.6%	51.8%	17.6%	0%	**-**	-	31.0%	52.7%	16.3%	0%	**-**	-	14.7%	71.7%	13.5%	0%	**-**	-	8.5%	72.3%	19.2%	0%	**-**	-	**-**
% Total	5.2%	8.7%	3.0%	0%	**16.9%**	-	5.7%	9.6%	3.0%	0%	**18.3%**	-	3.7%	17.9%	3.4%	0%	**25.0%**	-	3.4%	28.8%	7.7%	0%	**39.9%**	-	**-**
PHF	0.684	0.786	0.833		**- 0.867**	-	0.750	0.782	0.750		**- 0.793**	-	0.514	0.789	0.850		**- 0.872**	-	0.654	0.863	0.770		**- 0.872**	-	0.918
Lights	48	85	29	0	**162**	-	55	97	28	0	**180**	-	35	170	34	0	**239**	-	33	277	75	0	**385**	-	966
% Lights	92.3%	96.6%	96.7%	0%	**95.3%**	-	96.5%	100%	93.3%	0%	**97.8%**	-	94.6%	94.4%	100%	0%	**95.2%**	-	97.1%	95.5%	97.4%	0%	**96.0%**	-	96.0%
Articulated Trucks	0	2	0	0	**2**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	7	0	0	**7**	-	10
% Articulated Trucks	0%	2.3%	0%	0%	**1.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0.6%	0%	0%	**0.4%**	-	0%	2.4%	0%	0%	**1.7%**	-	1.0%
Buses and Single-Unit Trucks	4	1	1	0	**6**	-	2	0	2	0	**4**	-	2	9	0	0	**11**	-	1	6	2	0	**9**	-	30
% Buses and Single-Unit Trucks	7.7%	1.1%	3.3%	0%	**3.5%**	-	3.5%	0%	6.7%	0%	**2.2%**	-	5.4%	5.0%	0%	0%	**4.4%**	-	2.9%	2.1%	2.6%	0%	**2.2%**	-	3.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

South Adams Road & South Boulevard - TMC
Tue Dec 1, 2020
AM Peak (8 AM - 9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 801533, Location: 42.621005, -83.209216

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



South Adams Road & South Boulevard - TMC

Tue Dec 1, 2020
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 801533, Location: 42.621005, -83.209216

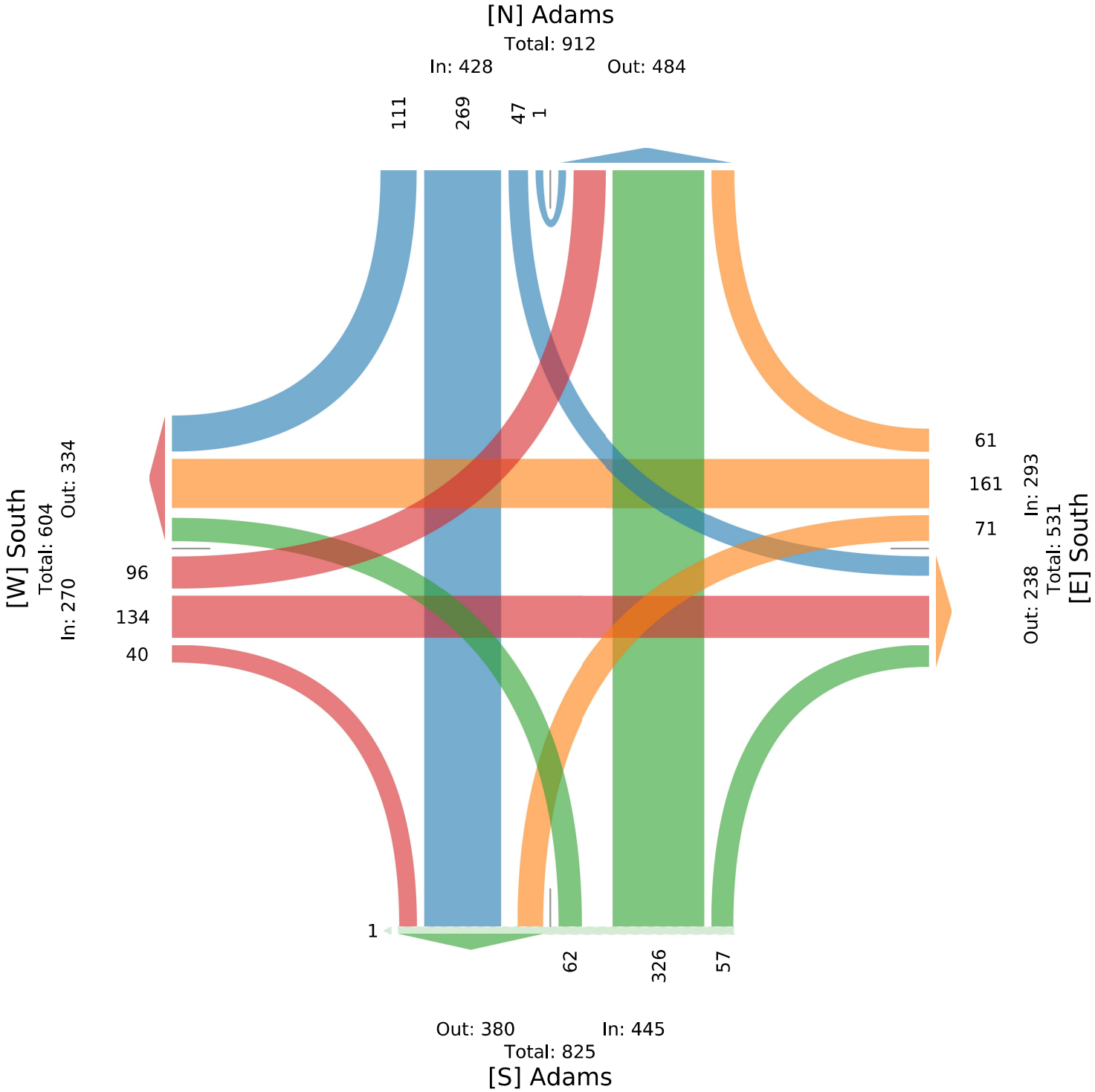
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	South						South						Adams						Adams						
Direction	Eastbound						Westbound						Northbound						Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2020-12-01 4:15PM	23	33	8	0	**64**	0	14	39	15	0	**68**	0	23	81	15	0	**119**	1	5	58	20	1	**84**	0	**335**
4:30PM	17	35	9	0	**61**	0	25	44	18	0	**87**	0	12	77	17	0	**106**	0	13	77	30	0	**120**	0	**374**
4:45PM	21	34	11	0	**66**	0	17	40	14	0	**71**	0	15	85	14	0	**114**	0	12	67	31	0	**110**	0	**361**
5:00PM	35	32	12	0	**79**	0	15	38	14	0	**67**	0	12	83	11	0	**106**	0	17	67	30	0	**114**	0	**366**
Total	96	134	40	0	**270**	0	71	161	61	0	**293**	0	62	326	57	0	**445**	1	47	269	111	1	**428**	0	**1436**
% Approach	35.6%	49.6%	14.8%	0%	**-**	-	24.2%	54.9%	20.8%	0%	**-**	-	13.9%	73.3%	12.8%	0%	**-**	-	11.0%	62.9%	25.9%	0.2%	**-**	-	**-**
% Total	6.7%	9.3%	2.8%	0%	**18.8%**	-	4.9%	11.2%	4.2%	0%	**20.4%**	-	4.3%	22.7%	4.0%	0%	**31.0%**	-	3.3%	18.7%	7.7%	0.1%	**29.8%**	-	**-**
PHF	0.686	0.957	0.833		**0.854**	-	0.710	0.915	0.847		**0.842**	-	0.674	0.959	0.838		**0.935**	-	0.691	0.873	0.895	0.250	**0.892**	-	0.960
Lights	96	133	38	0	**267**	-	70	159	61	0	**290**	-	61	322	57	0	**440**	-	47	264	111	1	**423**	-	1420
% Lights	100%	99.3%	95.0%	0%	**98.9%**	-	98.6%	98.8%	100%	0%	**99.0%**	-	98.4%	98.8%	100%	0%	**98.9%**	-	100%	98.1%	100%	100%	**98.8%**	-	98.9%
Articulated Trucks	0	0	1	0	**1**	-	1	1	0	0	**2**	-	1	1	0	0	**2**	-	0	1	0	0	**1**	-	6
% Articulated Trucks	0%	0%	2.5%	0%	**0.4%**	-	1.4%	0.6%	0%	0%	**0.7%**	-	1.6%	0.3%	0%	0%	**0.4%**	-	0%	0.4%	0%	0%	**0.2%**	-	0.4%
Buses and Single-Unit Trucks	0	1	1	0	**2**	-	0	1	0	0	**1**	-	0	3	0	0	**3**	-	0	4	0	0	**4**	-	10
% Buses and Single-Unit Trucks	0%	0.7%	2.5%	0%	**0.7%**	-	0%	0.6%	0%	0%	**0.3%**	-	0%	0.9%	0%	0%	**0.7%**	-	0%	1.5%	0%	0%	**0.9%**	-	0.7%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-

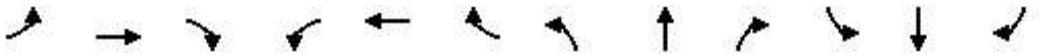
*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

South Adams Road & South Boulevard - TMC
Tue Dec 1, 2020
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 801533, Location: 42.621005, -83.209216

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



LOS OUTPUT REPORTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	187	64	121	206	64	78	382	72	72	615	163
Future Volume (veh/h)	110	187	64	121	206	64	78	382	72	72	615	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1922	1922	1922	1969	1969	1969	1922	1922	1922	1938	1938	1938
Adj Flow Rate, veh/h	126	215	74	153	261	81	90	439	83	83	707	187
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	5	5	5	2	2	2	5	5	5	4	4	4
Cap, veh/h	258	246	85	242	375	379	259	786	149	393	964	934
Arrive On Green	0.07	0.18	0.18	0.08	0.19	0.19	0.04	0.50	0.50	0.04	0.50	0.50
Sat Flow, veh/h	1830	1367	470	1875	1969	1668	1830	1571	297	1845	1938	1642
Grp Volume(v), veh/h	126	0	289	153	261	81	90	0	522	83	707	187
Grp Sat Flow(s),veh/h/ln	1830	0	1837	1875	1969	1668	1830	0	1869	1845	1938	1642
Q Serve(g_s), s	6.6	0.0	18.4	7.9	14.8	4.7	2.9	0.0	23.3	2.6	34.6	6.6
Cycle Q Clear(g_c), s	6.6	0.0	18.4	7.9	14.8	4.7	2.9	0.0	23.3	2.6	34.6	6.6
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	258	0	330	242	375	379	259	0	935	393	964	934
V/C Ratio(X)	0.49	0.00	0.88	0.63	0.70	0.21	0.35	0.00	0.56	0.21	0.73	0.20
Avail Cap(c_a), veh/h	280	0	505	245	541	520	338	0	935	478	964	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	47.9	37.3	45.3	37.7	19.4	0.0	20.8	16.1	23.8	12.6
Incr Delay (d2), s/veh	1.4	0.0	10.6	5.1	2.3	0.3	0.8	0.0	2.4	0.3	4.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	9.1	3.8	7.3	1.9	1.2	0.0	10.1	1.1	16.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	58.5	42.3	47.7	38.0	20.2	0.0	23.2	16.3	28.8	13.1
LnGrp LOS	D	A	E	D	D	D	C	A	C	B	C	B
Approach Vol, veh/h		415			495			612			977	
Approach Delay, s/veh		52.4			44.4			22.8			24.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	66.1	14.5	28.8	10.8	65.8	15.8	27.6
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.6	25.3	8.6	16.8	4.9	36.6	9.9	20.4
Green Ext Time (p_c), s	0.1	2.9	0.0	1.4	0.1	2.7	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	176	321	209	269	118	241	437	224	602	296
Average Queue (ft)	70	151	92	132	30	58	188	78	303	53
95th Queue (ft)	137	269	169	227	78	140	348	208	565	234
Link Distance (ft)		1498		584			818		680	
Upstream Blk Time (%)									1	
Queuing Penalty (veh)									10	
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	3	20		1		0	18	0	21	
Queuing Penalty (veh)	9	22		2		1	14	0	51	

Intersection: 2: S Adams Rd & North DW

Movement	SB
Directions Served	LT
Maximum Queue (ft)	129
Average Queue (ft)	17
95th Queue (ft)	140
Link Distance (ft)	466
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 110

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	204	61	108	245	93	94	496	87	71	409	169
Future Volume (veh/h)	146	204	61	108	245	93	94	496	87	71	409	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984
Adj Flow Rate, veh/h	172	240	72	129	292	111	100	528	93	80	460	190
Peak Hour Factor	0.85	0.85	0.85	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	249	274	82	224	347	352	412	830	146	346	990	979
Arrive On Green	0.08	0.19	0.19	0.07	0.17	0.17	0.04	0.51	0.51	0.04	0.50	0.50
Sat Flow, veh/h	1890	1465	439	1890	1984	1677	1890	1643	289	1890	1984	1682
Grp Volume(v), veh/h	172	0	312	129	292	111	100	0	621	80	460	190
Grp Sat Flow(s),veh/h/ln	1890	0	1904	1890	1984	1677	1890	0	1932	1890	1984	1682
Q Serve(g_s), s	8.9	0.0	19.1	6.6	17.1	6.7	3.1	0.0	28.1	2.5	18.1	6.4
Cycle Q Clear(g_c), s	8.9	0.0	19.1	6.6	17.1	6.7	3.1	0.0	28.1	2.5	18.1	6.4
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	249	0	356	224	347	352	412	0	976	346	990	979
V/C Ratio(X)	0.69	0.00	0.88	0.58	0.84	0.32	0.24	0.00	0.64	0.23	0.46	0.19
Avail Cap(c_a), veh/h	249	0	524	247	546	520	490	0	976	435	990	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	0.0	47.5	38.1	47.9	40.1	15.0	0.0	21.6	17.1	19.6	11.8
Incr Delay (d2), s/veh	7.8	0.0	11.1	2.7	6.9	0.5	0.3	0.0	3.2	0.3	1.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	9.9	3.1	8.9	2.8	1.3	0.0	12.7	1.0	8.3	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	0.0	58.5	40.8	54.8	40.6	15.3	0.0	24.8	17.4	21.2	12.2
LnGrp LOS	D	A	E	D	D	D	B	A	C	B	C	B
Approach Vol, veh/h		484			532			721			730	
Approach Delay, s/veh		53.9			48.4			23.5			18.4	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	66.7	16.0	27.0	11.1	66.0	14.5	28.4
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.5	30.1	10.9	19.1	5.1	20.1	8.6	21.1
Green Ext Time (p_c), s	0.1	3.1	0.0	1.6	0.1	3.2	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	186	288	143	296	113	304	583	224	324	95
Average Queue (ft)	92	141	70	158	43	102	340	59	163	32
95th Queue (ft)	164	235	126	253	90	270	658	142	277	76
Link Distance (ft)		1498		584			818		680	
Upstream Blk Time (%)							4			
Queuing Penalty (veh)							0			
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	7	16		1		1	36		5	
Queuing Penalty (veh)	18	24		3		3	34		13	

Intersection: 2: S Adams Rd & North DW

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 95

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	189	65	123	209	65	80	387	73	73	624	166
Future Volume (veh/h)	112	189	65	123	209	65	80	387	73	73	624	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1922	1922	1922	1969	1969	1969	1922	1922	1922	1938	1938	1938
Adj Flow Rate, veh/h	129	217	75	156	265	82	92	445	84	84	717	191
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	5	5	5	2	2	2	5	5	5	4	4	4
Cap, veh/h	259	248	86	245	378	382	251	781	147	385	957	930
Arrive On Green	0.07	0.18	0.18	0.08	0.19	0.19	0.04	0.50	0.50	0.04	0.49	0.49
Sat Flow, veh/h	1830	1365	472	1875	1969	1668	1830	1572	297	1845	1938	1642
Grp Volume(v), veh/h	129	0	292	156	265	82	92	0	529	84	717	191
Grp Sat Flow(s),veh/h/ln	1830	0	1837	1875	1969	1668	1830	0	1869	1845	1938	1642
Q Serve(g_s), s	6.8	0.0	18.6	8.0	15.1	4.8	3.0	0.0	23.8	2.7	35.7	6.8
Cycle Q Clear(g_c), s	6.8	0.0	18.6	8.0	15.1	4.8	3.0	0.0	23.8	2.7	35.7	6.8
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	259	0	333	245	378	382	251	0	928	385	957	930
V/C Ratio(X)	0.50	0.00	0.88	0.64	0.70	0.21	0.37	0.00	0.57	0.22	0.75	0.21
Avail Cap(c_a), veh/h	279	0	505	245	541	521	329	0	928	469	957	930
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	0.0	47.8	37.1	45.3	37.5	20.0	0.0	21.2	16.4	24.4	12.8
Incr Delay (d2), s/veh	1.5	0.0	10.8	5.4	2.4	0.3	0.9	0.0	2.5	0.3	5.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	9.2	3.9	7.4	1.9	1.2	0.0	10.4	1.1	16.6	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	0.0	58.6	42.5	47.7	37.8	20.9	0.0	23.7	16.6	29.7	13.3
LnGrp LOS	D	A	E	D	D	D	C	A	C	B	C	B
Approach Vol, veh/h		421			503			621			992	
Approach Delay, s/veh		52.4			44.4			23.3			25.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	65.7	14.7	29.0	10.9	65.4	16.0	27.8
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.7	25.8	8.8	17.1	5.0	37.7	10.0	20.6
Green Ext Time (p_c), s	0.1	2.9	0.0	1.4	0.1	2.4	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	33.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	182	329	202	266	123	201	457	225	637	381
Average Queue (ft)	71	152	96	134	28	64	198	79	339	62
95th Queue (ft)	141	273	175	230	76	163	366	207	624	276
Link Distance (ft)		1498		584			818		680	
Upstream Blk Time (%)									2	
Queuing Penalty (veh)									16	
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	3	21		1		0	19	0	25	
Queuing Penalty (veh)	9	23		2		1	16	0	61	

Intersection: 2: S Adams Rd & North DW

Movement	SB
Directions Served	LT
Maximum Queue (ft)	137
Average Queue (ft)	29
95th Queue (ft)	208
Link Distance (ft)	466
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 128

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	207	62	110	248	94	96	503	88	73	415	171
Future Volume (veh/h)	149	207	62	110	248	94	96	503	88	73	415	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984
Adj Flow Rate, veh/h	175	244	73	131	295	112	102	535	94	82	466	192
Peak Hour Factor	0.85	0.85	0.85	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	251	277	83	225	353	359	406	824	145	337	982	972
Arrive On Green	0.08	0.19	0.19	0.07	0.18	0.18	0.04	0.50	0.50	0.04	0.49	0.49
Sat Flow, veh/h	1890	1466	438	1890	1984	1677	1890	1644	289	1890	1984	1682
Grp Volume(v), veh/h	175	0	317	131	295	112	102	0	629	82	466	192
Grp Sat Flow(s),veh/h/ln	1890	0	1904	1890	1984	1677	1890	0	1932	1890	1984	1682
Q Serve(g_s), s	9.0	0.0	19.4	6.7	17.2	6.8	3.2	0.0	28.9	2.6	18.6	6.5
Cycle Q Clear(g_c), s	9.0	0.0	19.4	6.7	17.2	6.8	3.2	0.0	28.9	2.6	18.6	6.5
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	251	0	360	225	353	359	406	0	968	337	982	972
V/C Ratio(X)	0.70	0.00	0.88	0.58	0.84	0.31	0.25	0.00	0.65	0.24	0.47	0.20
Avail Cap(c_a), veh/h	251	0	524	247	546	522	482	0	968	425	982	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	47.3	37.8	47.6	39.7	15.2	0.0	22.1	17.5	20.0	12.1
Incr Delay (d2), s/veh	8.1	0.0	11.5	2.9	6.7	0.5	0.3	0.0	3.4	0.4	1.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	10.1	3.2	8.9	2.8	1.3	0.0	13.1	1.1	8.5	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	0.0	58.8	40.7	54.3	40.2	15.6	0.0	25.5	17.8	21.7	12.5
LnGrp LOS	D	A	E	D	D	D	B	A	C	B	C	B
Approach Vol, veh/h		492			538			731			740	
Approach Delay, s/veh		54.1			48.1			24.1			18.9	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	66.2	16.0	27.3	11.2	65.5	14.6	28.7
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.6	30.9	11.0	19.2	5.2	20.6	8.7	21.4
Green Ext Time (p_c), s	0.1	3.1	0.0	1.6	0.1	3.2	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	186	290	158	305	120	304	631	224	345	111
Average Queue (ft)	98	147	73	159	45	101	353	59	170	32
95th Queue (ft)	173	247	136	257	90	265	678	142	289	76
Link Distance (ft)		1498		584			818		680	
Upstream Blk Time (%)							4			
Queuing Penalty (veh)							0			
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	9	17		1		1	37		6	
Queuing Penalty (veh)	24	25		3		6	36		15	

Intersection: 2: S Adams Rd & North DW

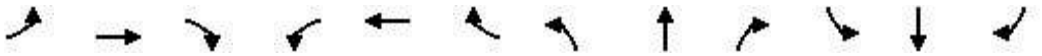
Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 109



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	191	65	131	214	71	80	387	76	78	624	166
Future Volume (veh/h)	112	191	65	131	214	71	80	387	76	78	624	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1922	1922	1922	1969	1969	1969	1922	1922	1922	1938	1938	1938
Adj Flow Rate, veh/h	129	220	75	166	271	90	92	445	87	90	717	191
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	5	5	5	2	2	2	5	5	5	4	4	4
Cap, veh/h	257	251	85	245	382	389	249	770	150	382	953	927
Arrive On Green	0.07	0.18	0.18	0.08	0.19	0.19	0.04	0.49	0.49	0.04	0.49	0.49
Sat Flow, veh/h	1830	1371	467	1875	1969	1668	1830	1562	305	1845	1938	1642
Grp Volume(v), veh/h	129	0	295	166	271	90	92	0	532	90	717	191
Grp Sat Flow(s),veh/h/ln	1830	0	1838	1875	1969	1668	1830	0	1867	1845	1938	1642
Q Serve(g_s), s	6.8	0.0	18.7	8.6	15.4	5.2	3.0	0.0	24.3	2.9	35.8	6.9
Cycle Q Clear(g_c), s	6.8	0.0	18.7	8.6	15.4	5.2	3.0	0.0	24.3	2.9	35.8	6.9
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	257	0	336	245	382	389	249	0	920	382	953	927
V/C Ratio(X)	0.50	0.00	0.88	0.68	0.71	0.23	0.37	0.00	0.58	0.24	0.75	0.21
Avail Cap(c_a), veh/h	277	0	505	245	541	524	327	0	920	462	953	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	0.0	47.7	37.2	45.2	37.3	20.1	0.0	21.6	16.6	24.6	12.9
Incr Delay (d2), s/veh	1.5	0.0	11.1	7.2	2.5	0.3	0.9	0.0	2.6	0.3	5.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	9.4	4.3	7.6	2.1	1.2	0.0	10.6	1.2	16.7	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	0.0	58.8	44.4	47.7	37.6	21.1	0.0	24.2	16.9	30.0	13.4
LnGrp LOS	D	A	E	D	D	D	C	A	C	B	C	B
Approach Vol, veh/h		424			527			624			998	
Approach Delay, s/veh		52.5			44.9			23.8			25.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	65.2	14.7	29.3	10.9	65.1	16.0	28.0
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.9	26.3	8.8	17.4	5.0	37.8	10.6	20.7
Green Ext Time (p_c), s	0.1	2.9	0.0	1.5	0.1	2.3	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	335	0	0	397	2	0	0	0	3	0	19
Future Vol, veh/h	10	335	0	0	397	2	0	0	0	3	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	25	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	364	0	0	432	2	0	0	0	3	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	434	0	0	-	-	0	830	820	364	819	819	433
Stage 1	-	-	-	-	-	-	386	386	-	433	433	-
Stage 2	-	-	-	-	-	-	444	434	-	386	386	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1126	-	-	0	-	-	289	310	681	294	310	623
Stage 1	-	-	-	0	-	-	637	610	-	601	582	-
Stage 2	-	-	-	0	-	-	593	581	-	637	610	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1126	-	-	-	-	-	277	307	681	292	307	623
Mov Cap-2 Maneuver	-	-	-	-	-	-	397	408	-	413	411	-
Stage 1	-	-	-	-	-	-	631	604	-	595	582	-
Stage 2	-	-	-	-	-	-	573	581	-	631	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	11.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1126	-	-	-	-	413	623
HCM Lane V/C Ratio	-	0.01	-	-	-	-	0.008	0.033
HCM Control Delay (s)	0	8.2	-	-	-	-	13.8	11
HCM Lane LOS	A	A	-	-	-	-	B	B
HCM 95th %tile Q(veh)	-	0	-	-	-	-	0	0.1

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

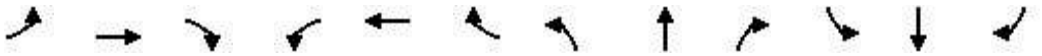
Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB	B2
Directions Served	L	TR	L	T	R	L	TR	L	T	R	T
Maximum Queue (ft)	196	308	231	250	88	271	487	225	609	319	49
Average Queue (ft)	76	153	102	132	31	63	208	72	268	50	2
95th Queue (ft)	151	254	208	220	65	180	409	190	506	243	35
Link Distance (ft)		1498		584			818		710		497
Upstream Blk Time (%)									0		
Queuing Penalty (veh)									0		
Storage Bay Dist (ft)	125		400		250	130		200		520	
Storage Blk Time (%)	4	20		0		1	21	0	17		
Queuing Penalty (veh)	10	22		1		3	18	0	44		

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	26	24	39
Average Queue (ft)	2	4	16
95th Queue (ft)	14	19	41
Link Distance (ft)		469	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 97



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	212	62	115	253	101	96	503	95	80	415	171
Future Volume (veh/h)	149	212	62	115	253	101	96	503	95	80	415	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984
Adj Flow Rate, veh/h	175	249	73	137	301	120	102	535	101	90	466	192
Peak Hour Factor	0.85	0.85	0.85	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	253	282	83	229	362	371	401	801	151	329	972	964
Arrive On Green	0.08	0.19	0.19	0.07	0.18	0.18	0.04	0.49	0.49	0.04	0.49	0.49
Sat Flow, veh/h	1890	1473	432	1890	1984	1677	1890	1623	306	1890	1984	1682
Grp Volume(v), veh/h	175	0	322	137	301	120	102	0	636	90	466	192
Grp Sat Flow(s),veh/h/ln	1890	0	1905	1890	1984	1677	1890	0	1929	1890	1984	1682
Q Serve(g_s), s	9.0	0.0	19.7	7.0	17.5	7.2	3.2	0.0	29.9	2.8	18.8	6.6
Cycle Q Clear(g_c), s	9.0	0.0	19.7	7.0	17.5	7.2	3.2	0.0	29.9	2.8	18.8	6.6
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	365	229	362	371	401	0	952	329	972	964
V/C Ratio(X)	0.69	0.00	0.88	0.60	0.83	0.32	0.25	0.00	0.67	0.27	0.48	0.20
Avail Cap(c_a), veh/h	253	0	524	247	546	526	477	0	952	411	972	964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	47.2	37.4	47.3	39.2	15.6	0.0	23.0	18.1	20.4	12.3
Incr Delay (d2), s/veh	7.8	0.0	11.9	3.5	6.7	0.5	0.3	0.0	3.7	0.4	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	10.3	3.3	9.1	2.9	1.3	0.0	13.6	1.2	8.6	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	0.0	59.0	40.9	53.9	39.7	15.9	0.0	26.7	18.5	22.1	12.8
LnGrp LOS	D	A	E	D	D	D	B	A	C	B	C	B
Approach Vol, veh/h		497			558			738			748	
Approach Delay, s/veh		54.1			47.6			25.2			19.3	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	65.3	16.0	27.9	11.2	64.9	14.9	29.0
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.8	31.9	11.0	19.5	5.2	20.8	9.0	21.7
Green Ext Time (p_c), s	0.1	3.0	0.0	1.6	0.1	3.2	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	34.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	368	0	0	452	5	0	0	0	3	0	17
Future Vol, veh/h	19	368	0	0	452	5	0	0	0	3	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	25	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	400	0	0	491	5	0	0	0	3	0	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	496	0	0	-	-	0	945	938	400	936	936	494
Stage 1	-	-	-	-	-	-	442	442	-	494	494	-
Stage 2	-	-	-	-	-	-	503	496	-	442	442	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1068	-	-	0	-	-	242	264	650	245	265	575
Stage 1	-	-	-	0	-	-	594	576	-	557	546	-
Stage 2	-	-	-	0	-	-	551	545	-	594	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1068	-	-	-	-	-	231	259	650	241	260	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	366	-	367	372	-
Stage 1	-	-	-	-	-	-	582	564	-	546	546	-
Stage 2	-	-	-	-	-	-	533	545	-	582	564	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	12
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1068	-	-	-	-	367	575
HCM Lane V/C Ratio	-	0.019	-	-	-	-	0.009	0.032
HCM Control Delay (s)	0	8.4	-	-	-	-	14.9	11.5
HCM Lane LOS	A	A	-	-	-	-	B	B
HCM 95th %tile Q(veh)	-	0.1	-	-	-	-	0	0.1

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

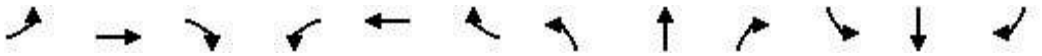
Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	282	359	171	304	131	304	730	198	362	99
Average Queue (ft)	98	173	79	148	51	110	360	65	169	32
95th Queue (ft)	183	297	163	243	102	291	697	167	298	75
Link Distance (ft)		1498		584			818		710	
Upstream Blk Time (%)							2			
Queuing Penalty (veh)							0			
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	8	24		1		1	39		6	
Queuing Penalty (veh)	24	37		3		4	38		17	

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	29	30	35
Average Queue (ft)	5	3	14
95th Queue (ft)	21	17	39
Link Distance (ft)		469	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 123



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	191	65	131	214	65	80	390	73	78	624	166
Future Volume (veh/h)	112	191	65	131	214	65	80	390	73	78	624	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1922	1922	1922	1969	1969	1969	1922	1922	1922	1938	1938	1938
Adj Flow Rate, veh/h	129	220	75	166	271	82	92	448	84	90	717	191
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	5	5	5	2	2	2	5	5	5	4	4	4
Cap, veh/h	258	251	85	245	382	389	249	776	145	382	953	927
Arrive On Green	0.07	0.18	0.18	0.08	0.19	0.19	0.04	0.49	0.49	0.04	0.49	0.49
Sat Flow, veh/h	1830	1371	467	1875	1969	1668	1830	1574	295	1845	1938	1642
Grp Volume(v), veh/h	129	0	295	166	271	82	92	0	532	90	717	191
Grp Sat Flow(s),veh/h/ln	1830	0	1838	1875	1969	1668	1830	0	1869	1845	1938	1642
Q Serve(g_s), s	6.8	0.0	18.7	8.6	15.4	4.8	3.0	0.0	24.2	2.9	35.8	6.9
Cycle Q Clear(g_c), s	6.8	0.0	18.7	8.6	15.4	4.8	3.0	0.0	24.2	2.9	35.8	6.9
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	258	0	336	245	382	389	249	0	921	382	953	927
V/C Ratio(X)	0.50	0.00	0.88	0.68	0.71	0.21	0.37	0.00	0.58	0.24	0.75	0.21
Avail Cap(c_a), veh/h	278	0	505	245	541	524	327	0	921	462	953	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	0.0	47.7	37.2	45.2	37.1	20.1	0.0	21.6	16.6	24.6	12.9
Incr Delay (d2), s/veh	1.5	0.0	11.1	7.2	2.5	0.3	0.9	0.0	2.6	0.3	5.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	9.4	4.3	7.6	1.9	1.2	0.0	10.6	1.2	16.7	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	0.0	58.8	44.4	47.7	37.4	21.1	0.0	24.2	16.9	30.0	13.4
LnGrp LOS	D	A	E	D	D	D	C	A	C	B	C	B
Approach Vol, veh/h		424			519			624			998	
Approach Delay, s/veh		52.5			45.0			23.7			25.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	65.2	14.7	29.3	10.9	65.1	16.0	28.0
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.9	26.2	8.8	17.4	5.0	37.8	10.6	20.7
Green Ext Time (p_c), s	0.1	2.9	0.0	1.4	0.1	2.3	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	6	564	3	0	868
Future Vol, veh/h	0	6	564	3	0	868
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	7	613	3	0	943

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	615	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	491	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	491	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	491	-
HCM Lane V/C Ratio	-	-	0.013	-
HCM Control Delay (s)	-	-	12.4	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	335	0	0	397	2	0	0	0	3	0	13
Future Vol, veh/h	7	335	0	0	397	2	0	0	0	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	25	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	364	0	0	432	2	0	0	0	3	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	434	0	0	-	-	0	820	814	364	813	813	433
Stage 1	-	-	-	-	-	-	380	380	-	433	433	-
Stage 2	-	-	-	-	-	-	440	434	-	380	380	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1126	-	-	0	-	-	294	312	681	297	313	623
Stage 1	-	-	-	0	-	-	642	614	-	601	582	-
Stage 2	-	-	-	0	-	-	596	581	-	642	614	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1126	-	-	-	-	-	286	310	681	296	311	623
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	411	-	416	414	-
Stage 1	-	-	-	-	-	-	638	610	-	597	582	-
Stage 2	-	-	-	-	-	-	582	581	-	637	610	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	11.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1126	-	-	-	-	416	623
HCM Lane V/C Ratio	-	0.007	-	-	-	-	0.008	0.023
HCM Control Delay (s)	0	8.2	-	-	-	-	13.7	10.9
HCM Lane LOS	A	A	-	-	-	-	B	B
HCM 95th %tile Q(veh)	-	0	-	-	-	-	0	0.1

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	206	283	189	284	80	304	528	224	650	364
Average Queue (ft)	69	143	91	139	29	66	208	74	310	46
95th Queue (ft)	142	243	156	232	61	155	400	196	574	204
Link Distance (ft)		1498		584			818		680	
Upstream Blk Time (%)									0	
Queuing Penalty (veh)									3	
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	2	18		1		1	21		22	
Queuing Penalty (veh)	6	20		2		4	17		56	

Intersection: 2: S Adams Rd & North DW

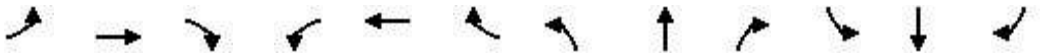
Movement	WB	SB
Directions Served	R	T
Maximum Queue (ft)	31	103
Average Queue (ft)	5	7
95th Queue (ft)	24	52
Link Distance (ft)	672	467
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	14	30	30
Average Queue (ft)	1	3	10
95th Queue (ft)	8	18	32
Link Distance (ft)		469	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 109



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	212	62	115	253	94	96	510	88	80	415	171
Future Volume (veh/h)	149	212	62	115	253	94	96	510	88	80	415	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984
Adj Flow Rate, veh/h	175	249	73	137	301	112	102	543	94	90	466	192
Peak Hour Factor	0.85	0.85	0.85	0.84	0.84	0.84	0.94	0.94	0.94	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	253	282	83	229	362	371	401	813	141	328	972	964
Arrive On Green	0.08	0.19	0.19	0.07	0.18	0.18	0.04	0.49	0.49	0.04	0.49	0.49
Sat Flow, veh/h	1890	1473	432	1890	1984	1677	1890	1648	285	1890	1984	1682
Grp Volume(v), veh/h	175	0	322	137	301	112	102	0	637	90	466	192
Grp Sat Flow(s),veh/h/ln	1890	0	1905	1890	1984	1677	1890	0	1933	1890	1984	1682
Q Serve(g_s), s	9.0	0.0	19.7	7.0	17.5	6.7	3.2	0.0	29.9	2.8	18.8	6.6
Cycle Q Clear(g_c), s	9.0	0.0	19.7	7.0	17.5	6.7	3.2	0.0	29.9	2.8	18.8	6.6
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	365	229	362	371	401	0	954	328	972	964
V/C Ratio(X)	0.69	0.00	0.88	0.60	0.83	0.30	0.25	0.00	0.67	0.27	0.48	0.20
Avail Cap(c_a), veh/h	253	0	524	247	546	526	477	0	954	411	972	964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	47.2	37.4	47.3	39.0	15.6	0.0	22.9	18.1	20.4	12.3
Incr Delay (d2), s/veh	7.8	0.0	11.9	3.5	6.7	0.5	0.3	0.0	3.7	0.4	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	10.3	3.3	9.1	2.7	1.3	0.0	13.6	1.2	8.6	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	0.0	59.0	40.9	53.9	39.4	15.9	0.0	26.6	18.5	22.1	12.8
LnGrp LOS	D	A	E	D	D	D	B	A	C	B	C	B
Approach Vol, veh/h		497			550			739			748	
Approach Delay, s/veh		54.1			47.7			25.2			19.3	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	65.3	16.0	27.9	11.2	64.9	14.9	29.0
Change Period (Y+Rc), s	* 6.1	* 6.1	* 6	* 6	* 6.1	* 6.1	* 6	* 6
Max Green Setting (Gmax), s	* 9.9	* 43	* 10	* 33	* 9.9	* 43	* 10	* 33
Max Q Clear Time (g_c+I1), s	4.8	31.9	11.0	19.5	5.2	20.8	9.0	21.7
Green Ext Time (p_c), s	0.1	3.0	0.0	1.6	0.1	3.2	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	34.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	7	746	7	0	666
Future Vol, veh/h	0	7	746	7	0	666
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	8	811	8	0	724

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	815	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	377	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	377	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	377	-
HCM Lane V/C Ratio	-	-	0.02	-
HCM Control Delay (s)	-	-	14.7	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	368	0	0	452	5	0	0	0	3	0	10
Future Vol, veh/h	12	368	0	0	452	5	0	0	0	3	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	25	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	400	0	0	491	5	0	0	0	3	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	496	0	0	-	-	0	925	922	400	920	920	494
Stage 1	-	-	-	-	-	-	426	426	-	494	494	-
Stage 2	-	-	-	-	-	-	499	496	-	426	426	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1068	-	-	0	-	-	250	270	650	251	271	575
Stage 1	-	-	-	0	-	-	606	586	-	557	546	-
Stage 2	-	-	-	0	-	-	554	545	-	606	586	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1068	-	-	-	-	-	243	267	650	249	268	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	367	375	-	375	379	-
Stage 1	-	-	-	-	-	-	599	579	-	550	546	-
Stage 2	-	-	-	-	-	-	544	545	-	599	579	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	12.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1068	-	-	-	-	375	575
HCM Lane V/C Ratio	-	0.012	-	-	-	-	0.009	0.019
HCM Control Delay (s)	0	8.4	-	-	-	-	14.7	11.4
HCM Lane LOS	A	A	-	-	-	-	B	B
HCM 95th %tile Q(veh)	-	0	-	-	-	-	0	0.1

Intersection: 1: N Adams Rd/S Adams Rd & South Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	215	287	198	293	112	305	657	184	300	105
Average Queue (ft)	101	156	93	155	40	114	378	55	158	33
95th Queue (ft)	178	249	180	250	88	297	739	133	265	73
Link Distance (ft)		1498		584			818		680	
Upstream Blk Time (%)							5			
Queuing Penalty (veh)							0			
Storage Bay Dist (ft)	125		400		250	130		200		520
Storage Blk Time (%)	9	19		1		0	40		4	
Queuing Penalty (veh)	26	28		3		0	39		11	

Intersection: 2: S Adams Rd & North DW

Movement	WB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	8
95th Queue (ft)	29
Link Distance (ft)	672
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Bharatiya Temple DW/South DW & South Blvd

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	25	24	39
Average Queue (ft)	4	2	9
95th Queue (ft)	19	15	32
Link Distance (ft)		469	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		100
Storage Blk Time (%)			
Queuing Penalty (veh)			

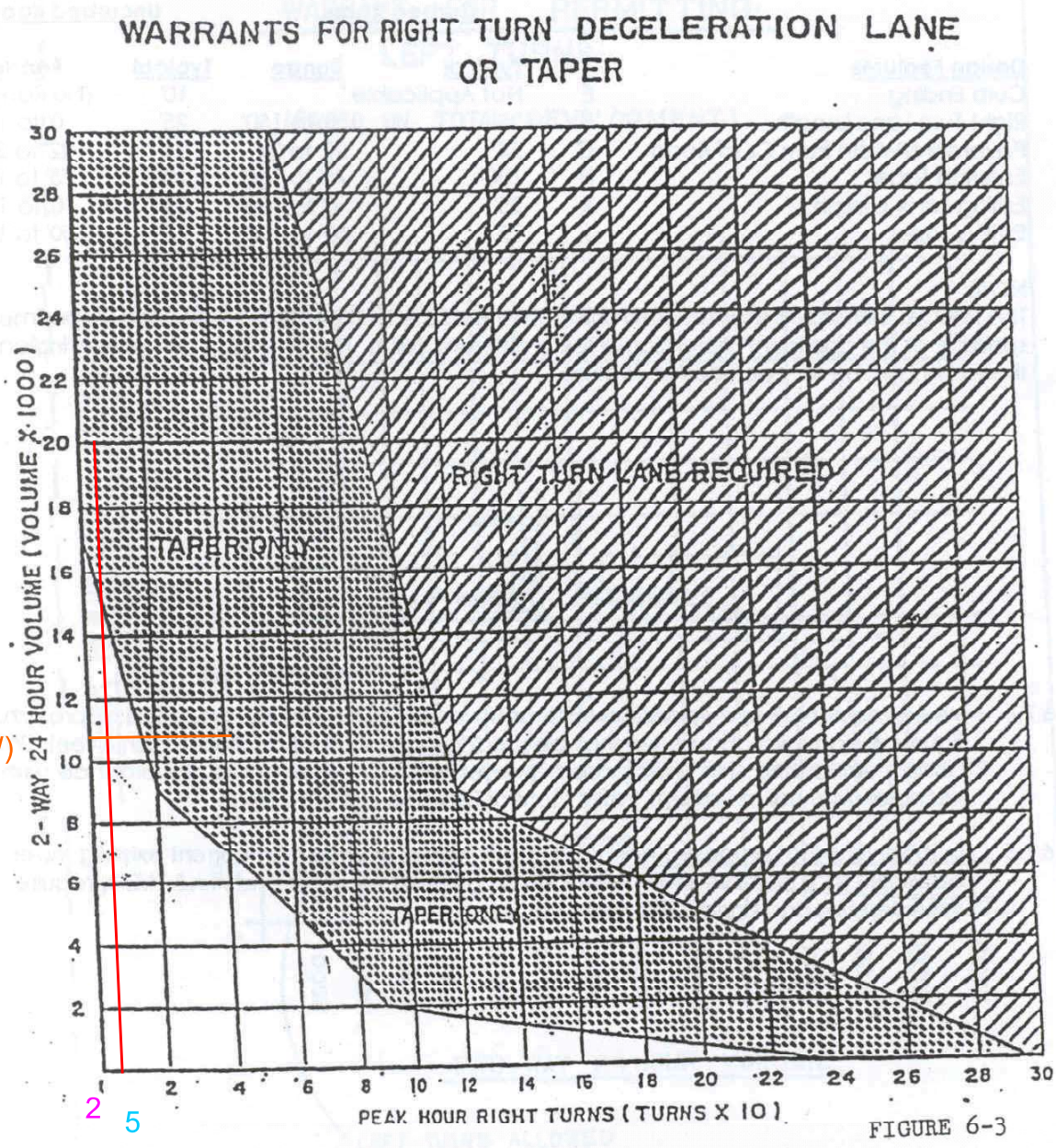
Network Summary

Network wide Queuing Penalty: 108

TURN LANE WARRANTS

South Boulevard Access Only

South DW AM Peak
South DW PM Peak



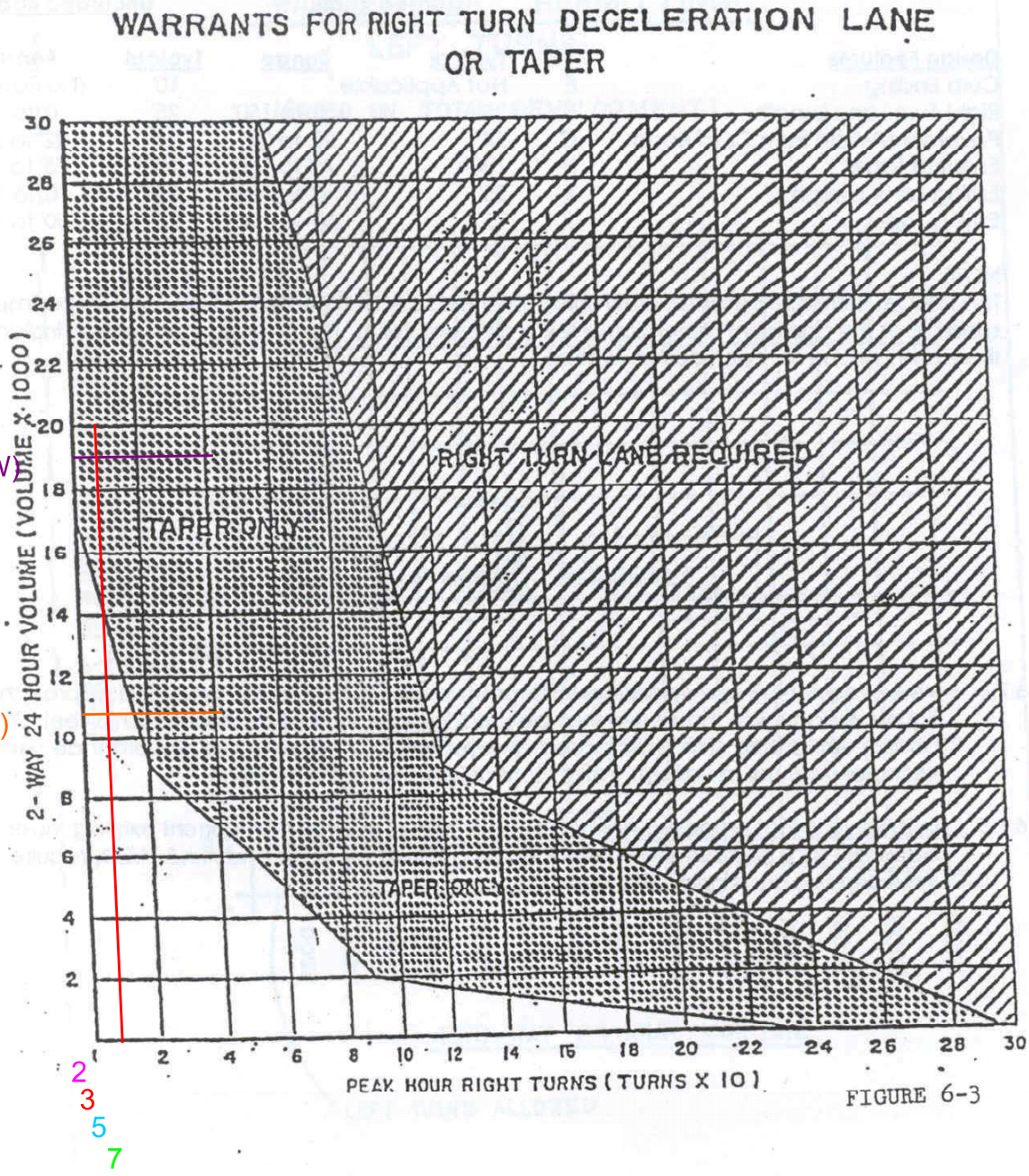
10,400 (South DW)

2 5

FIGURE 6-3

South Boulevard Access and S Adams RIRO Access

North DW AM Peak
North DW PM Peak
South DW AM Peak
South DW PM Peak



18,900 (North DW)

10,400 (South DW)

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3
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7