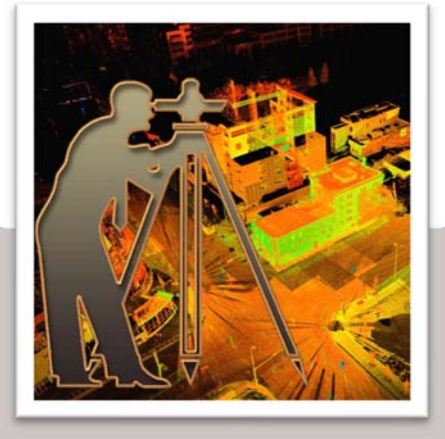
Richmond Green Development

Transportation Impact Assessment

March 12, 2021



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RICHMOND GREEN DEVELOPMENT

Transportation Impact Assessment

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MARCH 12, 2021

PERMIT TO PRACTICE
WATT CONSULTING GROUP LTD.
Signature
Date MARCH 12 2021
PERMIT NUMBER: P 3818
The Association of Professional Engineers and Geoscientists of Alberta

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1.0 INTRODUCTION

The City of Calgary's Real Estate and Development Services (RE&DS) Business Unit has retained WATT Consulting Group (WATT) to undertake a Transportation Impact Assessment (TIA) for the proposed Richmond Green mixed use development located on the east side of Sarcee Road between 33 Avenue SW and 34 Avenue SW. The City is proposing a land use redesignation of Mixed Use – 1 (MU-1) which allows for a variety of housing types and uses that can be standalone or either horizontally / vertically mixed. The project team estimates 375 residential units and 15,000 sq. ft. of retail. The location of the site is shown in **Figure 1**.

Figure 1: Site Context

1.1 SCOPE OF WORK

The scope and requirements for this TIA were discussed with the City of Calgary's Transportation Development Services (TDS) Team in January 2021 and related correspondence is included in **Appendix A**. The scope of work contains the following main requirements:

- Determine the existing (2021) volumes using a linear growth rate applied to pre-COVID volumes.

- Analyze the existing conditions for the AM and PM peak hours at the following key intersections:
    - 33 Avenue / Sarcee Road SW
    - Sarcee Road / Hampton Crescent SW
    - Sarcee Road / 34 Avenue SW

- Examine the 5-year horizon (2026) background operating conditions for the AM and PM peak hours at the key intersections, applying a linear growth rate to existing volumes to estimate 2026 volumes.

- Estimate trip generation for the proposed development using standard City of Calgary trip generation rates for the residential and commercial land uses.

- Examine the post development conditions for the AM and PM peak hours at the key intersections using Synchro / SimTraffic traffic modelling software. Analysis will include both the opening day and 5-year horizon conditions.

- Review active transportation modes and transit service in the area.

2.0 EXISTING CONDITIONS

2.1 EXISTING ROAD NETWORK

The proposed development is located on the east side of Sarcee Road between 33 Avenue SW and 34 Avenue SW. The following describes the key roadways in the study area:

- **Sarcee Road SW** is a two-lane undivided collector road that expands to 3 lanes (2 northbound) between Hampton Crescent and 33 Avenue SW. Sarcee Road has a speed limit of 50km/h and is generally oriented in a north-south direction from Richardson Way SW to 33 Avenue SW.

- **33 Avenue SW** is a four-lane divided arterial road with a speed limit of 50km/h. 33 Avenue generally runs in an east west direction and provides a connection to the 33 Avenue / Crowchild Trail interchange. West of Sarcee Road, 33 Avenue becomes Richmond Road and is reduced to two travel lanes.

- **34 Avenue SW** is a two-lane undivided local road with a speed limit of 50km/h. 34 Avenue ends 140m east of Sarcee Road at the access road to the Carewest Sarcee nursing home.

- **Hampton Crescent SW** is an undivided local road. Hampton Crescent is a short 300m crescent loop that intersects twice with Sarcee Road and which provides access to 18 single family homes.

There are four key intersections identified within the study area:

- The **33 Avenue / Sarcee Road / 29 Street SW** intersection is a signalized intersection with left and right turn lanes in both the eastbound and westbound directions on 33 Avenue as well as a northbound channelized right turn lane on Sarcee Road. The single southbound lane is very wide (~6m) and functions as two lanes (a left turn lane and a through / right turn lane) when left turning vehicles are queueing at the light; therefore for the analysis the southbound approach was modelled with a separate left turn lane.

- The **Sarcee Road / Hampton Crescent (N) SW** intersection is the northernmost of two Sarcee Road / Hampton Crescent intersections approximately 20m apart. The intersection is T-intersection with yield control on the minor road (Hampton Crescent).

- The **Sarcee Road / Hampton Crescent (S) SW** intersection is the southernmost of two Sarcee Road / Hampton Crescent intersections approximately 20m apart. The intersection is T-intersection with yield control on the minor road (Hampton Crescent).

- The **Sarcee Road / 34 Avenue SW** intersection is a two-way stop controlled intersection with stop control on 34 Avenue. There is a marked crosswalk on the south leg of the intersection.

Figure 2 indicates the existing lane configuration and traffic controls in the area.

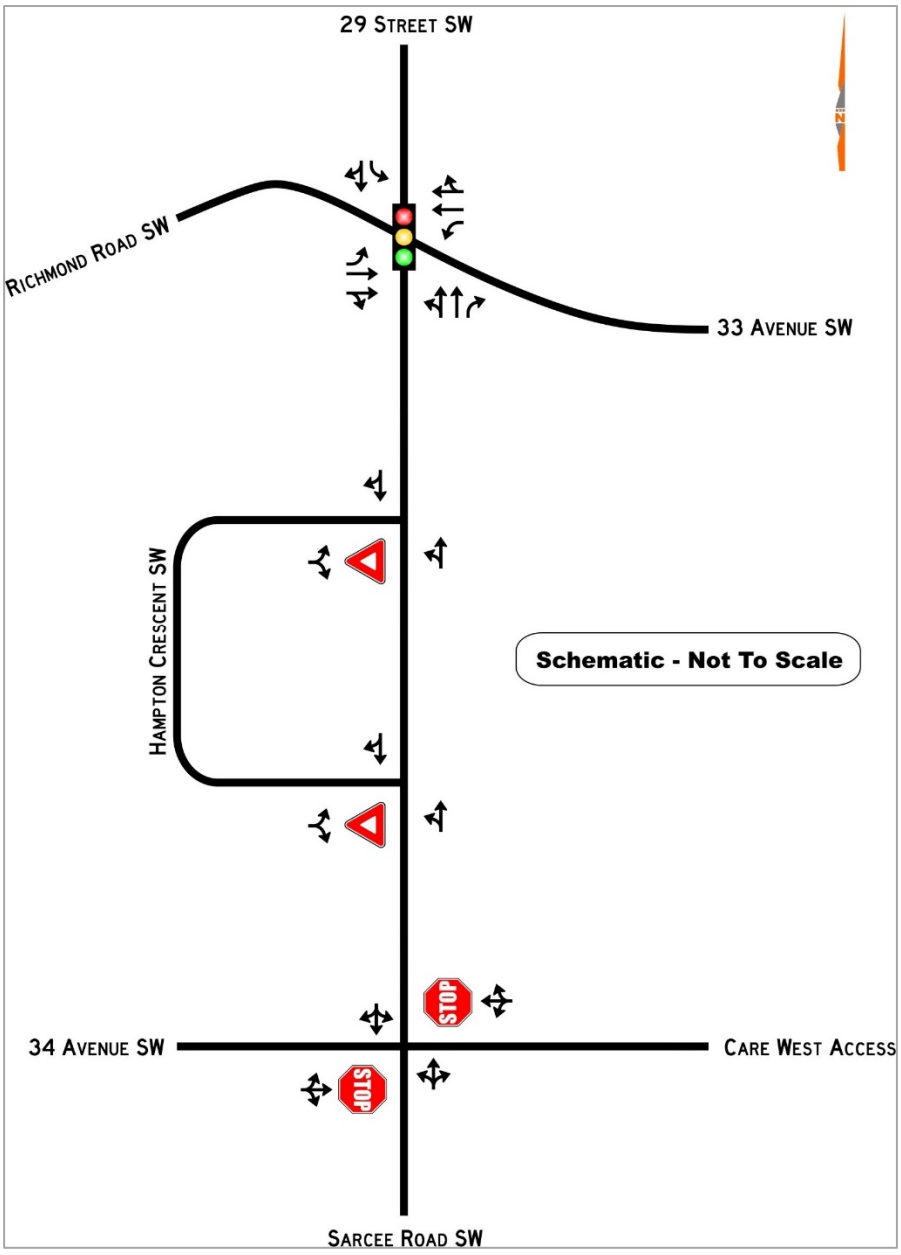

Figure 2: Existing Road Network

2.2 BACKGROUND TRAFFIC VOLUMES

The 2021 background volumes were estimated based on AM and PM intersection counts conducted at the Sarcee Road intersections with 33 Avenue and 34 Avenue SW. The 33 Avenue / Sarcee Road SW count was provided by the City of Calgary and was conducted in 2019; this count was adjusted to 2021 volumes using a 2% linear annual growth rate. The Sarcee Road / 34 Avenue SW intersection count was conducted by WATT on Wednesday, January 20, 2021. To account for the reduced traffic volumes due to the COVID pandemic, the volumes were increased by 38%. This factor was derived by comparing a 2019 and a 2021 count for the intersection of 33 Avenue and Sarcee Road. The COVID factor was used to adjust the observed volumes to volumes that would occur in a non-pandemic year.

No counts were conducted at either of the Sarcee Road / Hampton Crescent intersections. To determine the volumes at these intersections, the volumes on Hampton Crescent were estimated by applying the City of Calgary's trip generation rate to the 18 single family homes on Hampton Crescent, with the generated trips to / from Hampton Crescent split evenly between the two intersections. The northbound / southbound volumes at the Sarcee Road / Hampton Crescent intersections were based the volumes at Sarcee Road / 34 Avenue SW.

The resulting 2021 background volumes are shown in **Figure 3**.

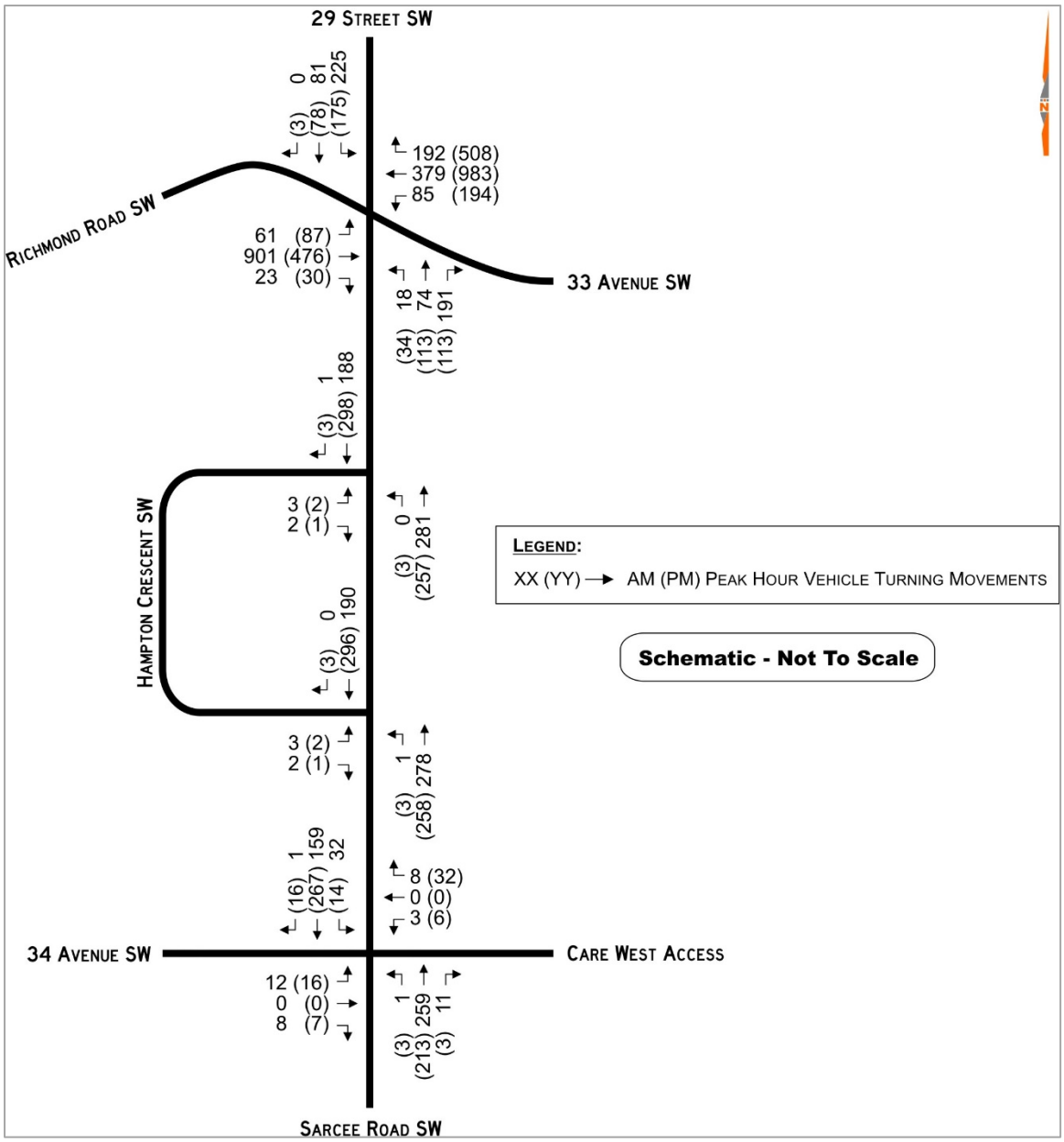

Figure 3: Existing 2021 Peak Hour Traffic Volumes

2.3 INTERSECTION PERFORMANCE CRITERIA

The operating conditions during the peak hours at the study intersections were evaluated using the Synchro/SimTraffic 10 software package (which is based on the methodology outlined in the U.S. Highway Capacity Manual[1]). For unsignalized (stop-controlled) intersections, the Level-of-Service (LOS) is based on the computed delays on each of the critical movements. For signalized intersections, the methodology considers the intersection geometry, traffic volumes, traffic signal phasing/timing plan, and also pedestrian volumes. The average delay for each lane group is calculated, as well as the delay for the overall intersection. The volume-to-capacity (v/c) ratio, LOS, and delay are obtained from Synchro while the 95th percentile queue lengths were obtained from SimTraffic.

Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions. A LOS C or better is considered acceptable operations, while LOS D is typically considered to be on the threshold between acceptable and unacceptable operations. LOS criteria for both unsignalized and signalized intersections, as summarized in the Highway Capacity Manual, are illustrated in **Table 1**.

TABLE 1: LEVEL OF SERVICE CRITERIA

Level of Service (LOS)	Average Delay for Unsignalized Intersection Movements	Average Delay for Signalized Intersection Movements
A	0 – 10 seconds per vehicle	0 – 10 seconds per vehicle
B	> 10 – 15 seconds per vehicle	> 10 – 20 seconds per vehicle
C	> 15 – 25 seconds per vehicle	> 20 – 35 seconds per vehicle
D	> 25 – 35 seconds per vehicle	> 35 – 55 seconds per vehicle
E	> 35 – 50 seconds per vehicle	> 55 – 80 seconds per vehicle
F	> 50 seconds per vehicle	> 80 seconds per vehicle

[1] Transportation Research Board, National Research Council. Highway Capacity Manual 2010. Washington, D.C. 2010.

2.4 EXISTING OPERATING CONDITIONS

Capacity analysis for existing conditions was conducted for the AM and PM peak hours using the road network as outlined in **Figure 2**, and the volumes as shown in **Figure 3**. The analysis results are summarized in **Table 2**. All software outputs for this analysis, and any subsequent analysis within this report, can be found in **Appendix C**.

TABLE 2: 2021 EXISTING OPERATING CONDITIONS

Intersection / Movement			AM Peak Hour				PM Peak Hour			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
33 Ave / Sarcee Rd / 29 St SW (Signalized)	EB	Left	0.18	A	9.4	14.2	0.49	C	24.8	72.7
		T / R	0.59	B	10.8	46.1	0.25	A	6.4	105.1
	WB	Left	0.48	C	20.9	23.1	0.40	B	11.1	43.8
		T / R	0.37	A	5.9	26.1	0.74	B	12.0	114.0
	NB	Left	0.04	B	10.1	7.7	0.09	B	11.2	10.6
		T / R	0.49	B	12.0	24.0	0.39	A	8.5	29.0
	SB	Left	0.72	C	27.9	41.4	0.55	C	20.1	35.1
		T / R	0.14	B	10.7	20.8	0.14	B	11.3	19.3
	Intersection Summary		-	**B**	**11.7**	-	-	**B**	**11.5**	-
Sarcee Rd / Hampton Cres N SW (Stop-controlled)	EB	L / R	0.01	B	10.9	3.9	0.01	B	11.9	2.7
	NB	L / T	0.00	A	0.0	0.0	0.00	A	0.1	1.9
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	0.0
Sarcee Rd / Hampton Cres S SW (Stop-controlled)	EB	L / R	0.01	B	11.3	6.6	0.01	B	12.5	4.0
	NB	L / T	0.00	A	0.0	1.2	0.00	A	0.1	1.2
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	0.0
Sarcee Rd / 34 Ave SW (Stop-controlled)	EB	L / T / R	0.04	B	12.1	14.2	0.06	B	13.6	15.4
	WB	L / T / R	0.02	B	10.8	8.7	0.06	B	10.5	13.6
	NB	L / T / R	0.00	A	0.0	4.3	0.00	A	0.1	3.7
	SB	L / T / R	0.03	A	0.0	9.3	0.01	A	0.4	4.9

Under 2021 existing conditions, the study intersections operate well during both the AM and PM peak hours. The signalized 33 Avenue / Sarcee Road intersection has all movements operating at LOS C or better and all movements at the three stop-controlled intersections are at LOS A/B.

3.0 PROPOSED DEVELOPMENT

3.1 PROPOSED LAND-USE REDESIGNATION

The Richmond Green development is proposed to be a mixed use development consisting of townhome and multi-family residential as well as retail commercial land uses. At the time of this study, there are multiple development scenarios under consideration; for the purposes of this study, a conservative development scenario consisting of 375 residential units (75 townhomes and 300 multi-family apartments) and 15,000 sq. ft. of retail space was assumed. There are two proposed accesses to the site, with one access off of Sarcee Road and another off of 34 Avenue (the access locations are the same for all development scenarios).

City of Calgary transportation staff have indicated that the Sarcee Road access is required to be a right-in / right-out access and has been modelled as such in the post development analysis. The City has also requested that the access to Sarcee Road be aligned with the southernmost access to Hamptons Cr. As an example, the proposed site layout for Scenario A is shown in **Figure 4**.

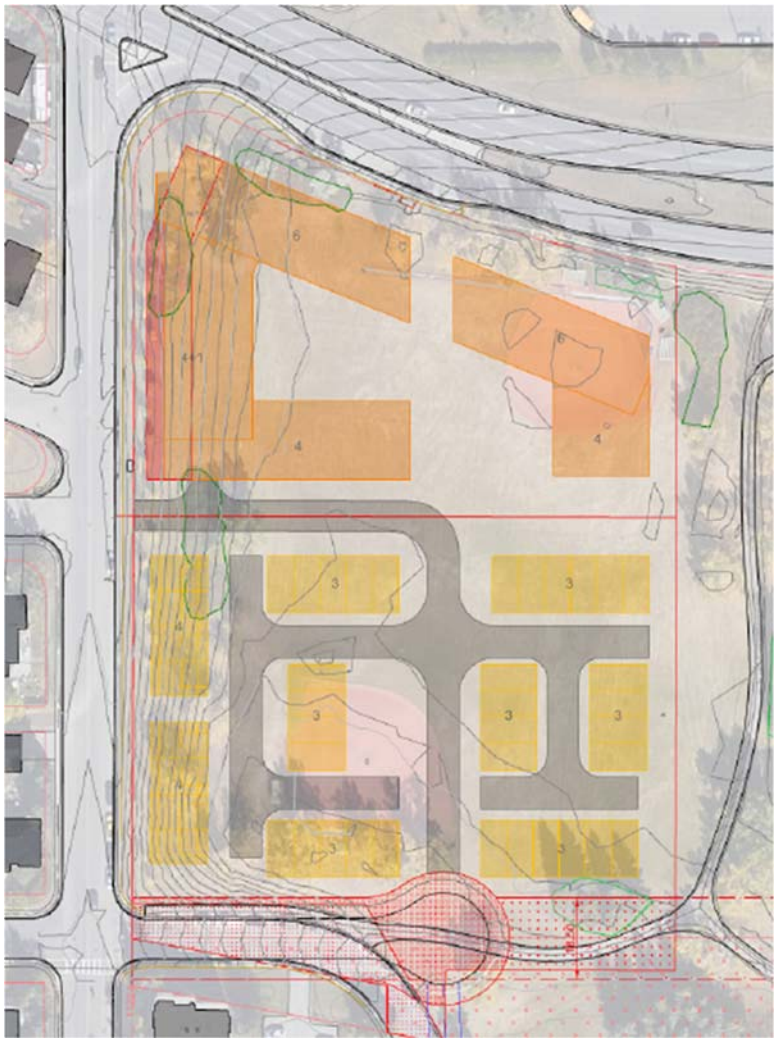

Figure 4: Proposed Site Plan (Scenario A)

3.1.1 34 AVENUE REALIGNMENT

34 Avenue SW east of Sarcee Road currently serves primarily as an access driveway to the Carewest Sarcee nursing home to the southeast. As part of the development, it is proposed to realign 34 Avenue to an east-west cardinal alignment which would end in a cul-de-sac at the access to the development site. The Carewest Sarcee access would then connect to the cul-de-sac as well. With this configuration, 34 Avenue could be extended eastward in the future if deemed beneficial.

The 34 Avenue cul-de-sac is proposed to be built to a residential street standard with two 3.3m drive lanes and will include parking on the north side of the road, a sidewalk on the south side, and a multi-use pathway on the north side that connects to the existing pathway that continues east of 34 Avenue.

3.2 TRIP GENERATION

Site trips were estimated using the City of Calgary's trip generation rates. For the proposed townhouses, the trip generation rate for single family homes was applied. **Table 3** summarizes the results of the trip generation for the proposed development.

TABLE 3: TRIP GENERATION RESULTS – AM / PM PEAK HOUR

Land Use	Units	Trip Rate	Split (IB/OB%)	Trips In	Trips Out	Total Trips
AM Peak Hour						
Single-Family Housing	75 units	0.7 / unit	20 / 80	11	42	53
Multi-Family Housing	300 units	0.6 / unit	25 / 75	45	135	180
Retail	15,000 sq. ft.	2.0 / 1000 sq. ft.	40 / 60	12	18	30
Total:				**68**	**195**	**263**
PM Peak Hour						
Single-Family Housing	75 units	1.0 / unit	65 / 35	50	26	76
Multi-Family Housing	300 units	0.7 / unit	65 / 35	137	74	211
Retail	15,000 sq. ft.	6.0 / 1000 sq. ft.	50 / 50	45	45	90
Total:				**232**	**145**	**377**

The Richmond Green development is expected to generate 263 trips (68 inbound / 195 outbound) during the AM peak and 377 trips (232 inbound / 145 outbound) during the PM peak.

3.3 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution pattern for the proposed development was based on the existing traffic patterns and the key origins and destinations for traffic in the area. Separate distribution ratios were created for the residential and commercial components of the proposed development.

3.3.1 RESIDENTIAL TRIP DISTRIBUTION / ASSIGNMENT

The trips generated by the residential component of the development were assigned to the road network using the trip distribution ratios shown in **Figure 5**; the resulting trip assignment is shown in **Figure 6**.

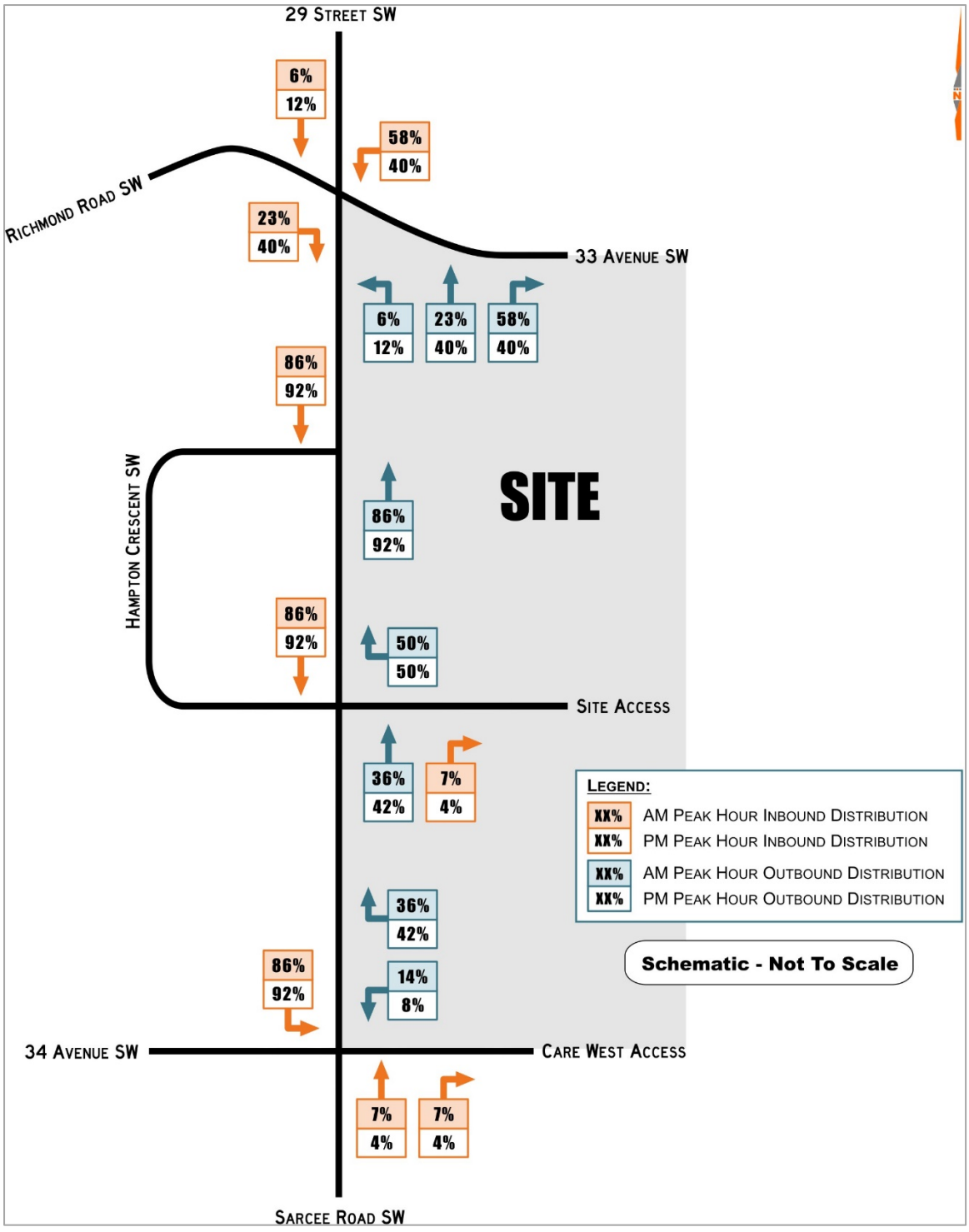

Figure 5: Residential Trip Distribution Ratios

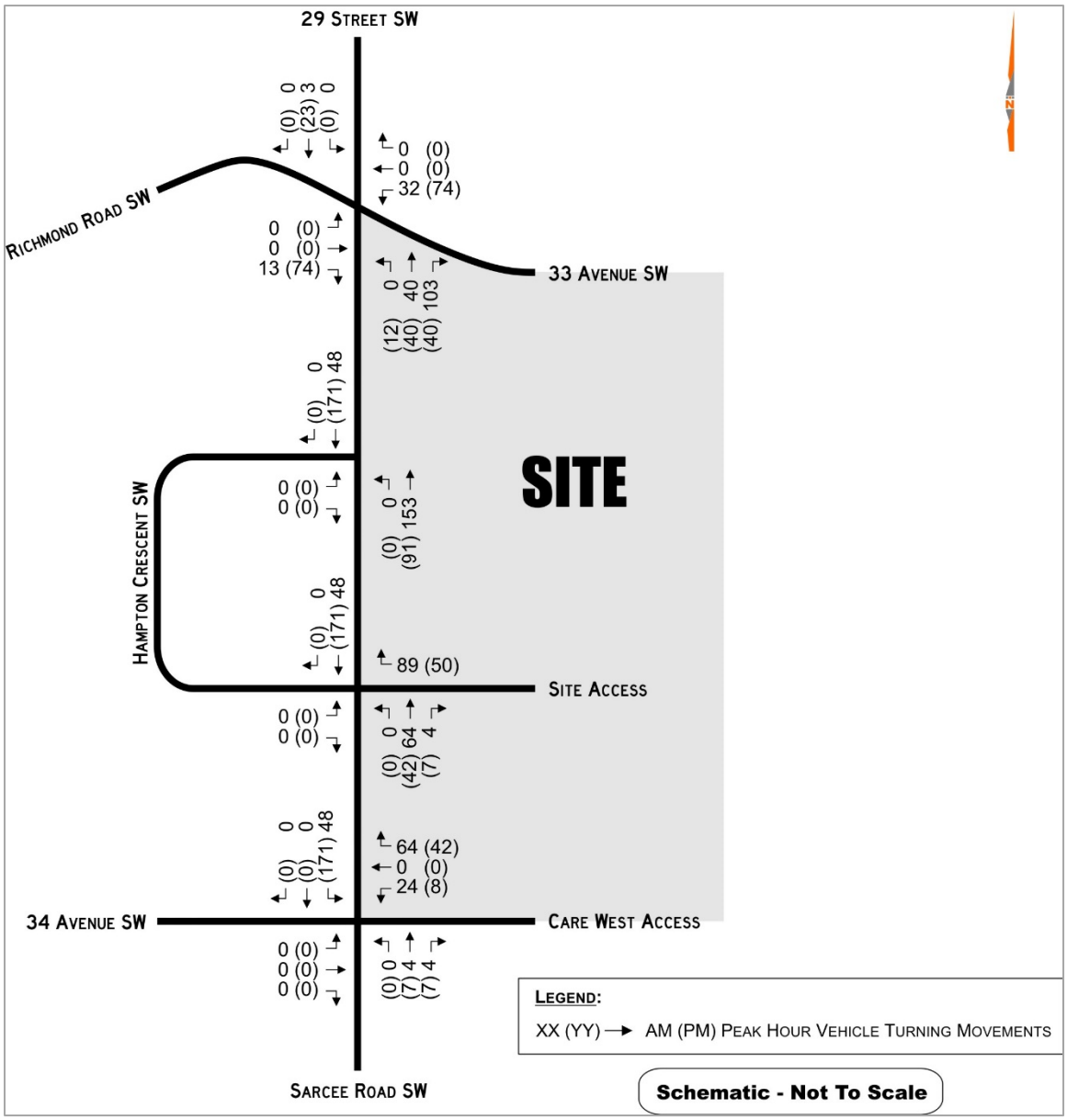

Figure 6: Residential Trip Assignment

3.3.2 COMMERCIAL TRIP DISTRIBUTION / ASSIGNMENT

The trips generated by the commercial component of the development were assigned to the road network using the trip distribution ratios shown in **Figure 7**; the resulting trip assignment is shown in **Figure 8**.

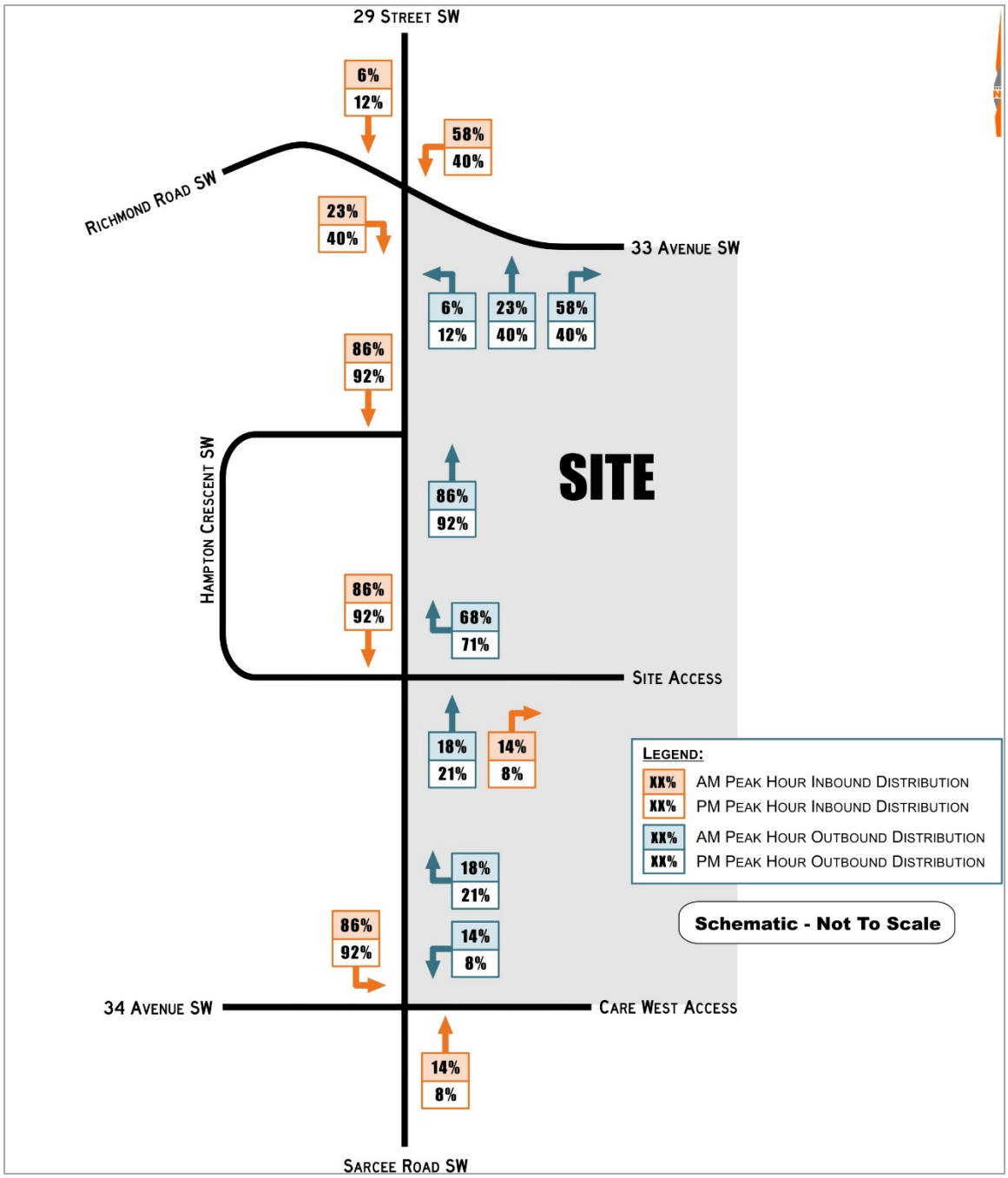

Figure 7: Commercial Trip Distribution Ratios

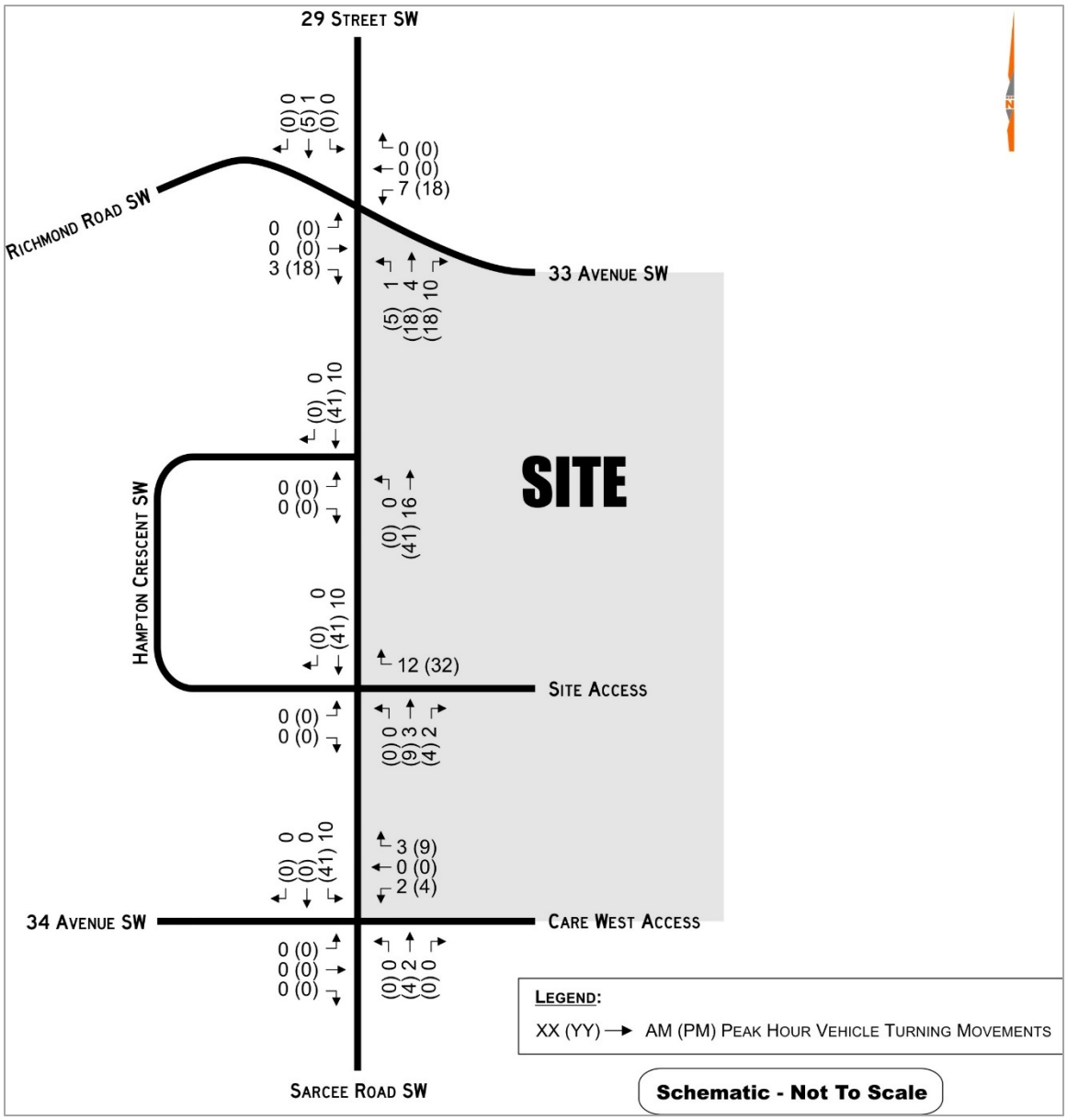

Figure 8: Commercial Trip Assignment

4.0 POST DEVELOPMENT ANALYSIS - 2021

4.1 POST DEVELOPMENT VOLUMES

The trips generated by the development were added to the 2021 background volumes to determine the 2021 post development volumes. The resulting AM and PM peak hour post development volumes are shown in **Figure 9**.

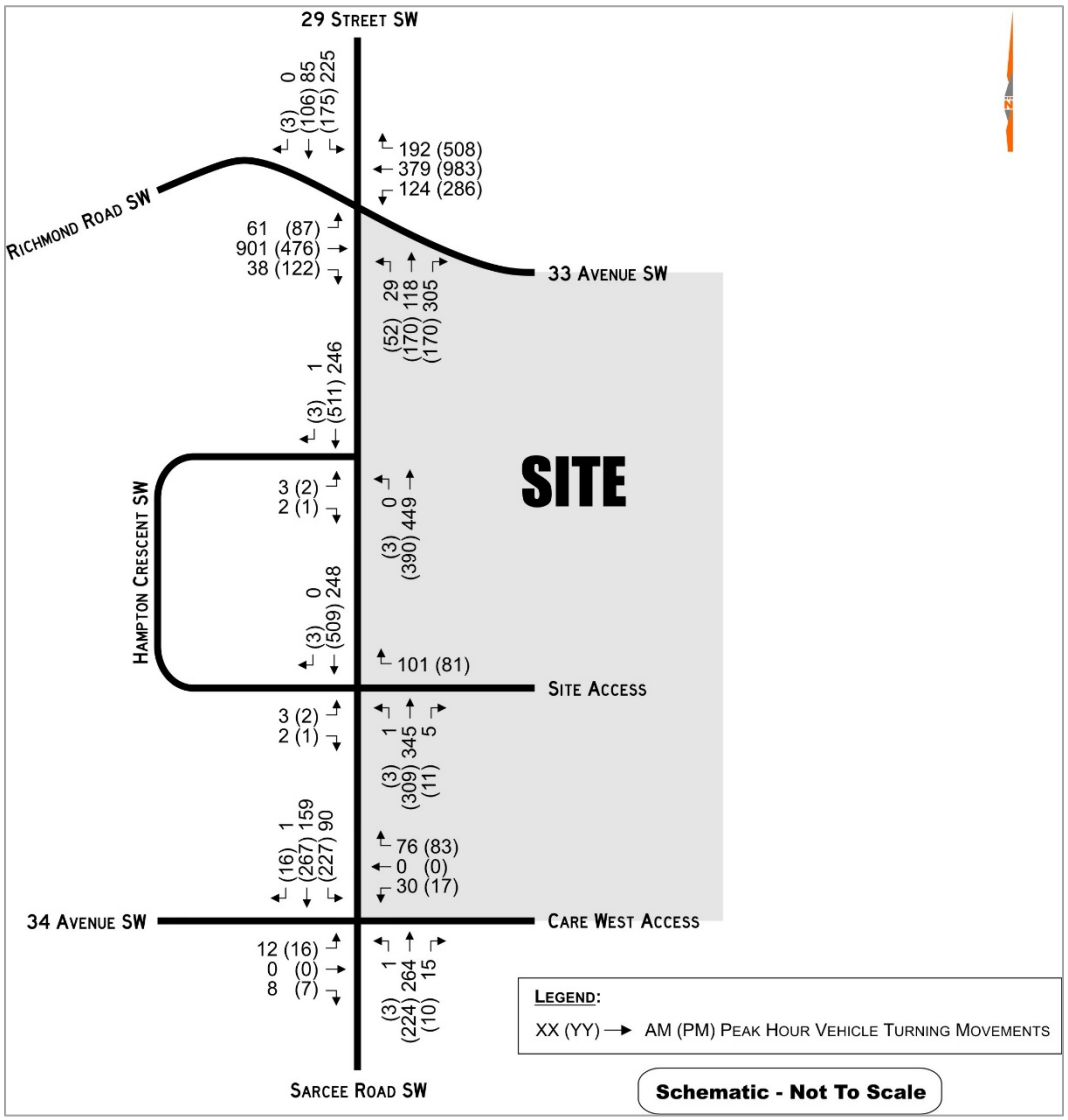

Figure 9: 2021 Post Development Volumes

4.2 POST DEVELOPMENT OPERATING CONDITIONS

Capacity analysis for the 2021 post development conditions was conducted for the AM and PM peak hours using the 2021 post development volumes shown in **Figure 9**. The analysis results are summarized in **Table 4**. All software outputs for this analysis, and any subsequent analysis within this report, can be found in **Appendix C**.

TABLE 4: 2021 POST DEVELOPMENT OPERATING CONDITIONS

Intersection / Movement			AM Peak Hour				PM Peak Hour			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
33 Ave / Sarcee Rd / 29 St SW (Signalized)	EB	Left	0.21	B	10.9	15.5	0.56	C	29.4	70.2
		T / R	0.65	B	13.2	52.3	0.37	A	7.5	109.1
	WB	Left	0.88	E	69.7	39.6	0.84	D	38.4	96.4
		T / R	0.40	A	6.9	29.4	0.89	B	19.7	221.7
	NB	Left	0.06	A	9.7	10.5	0.14	B	10.9	13.7
		T / R	0.68	B	17.2	40.4	0.57	B	11.7	40.2
	SB	Left	0.94	E	64.3	44.9	0.73	C	31.9	37.7
		T / R	0.12	B	10.1	20.7	0.19	B	10.9	21.3
	Intersection Summary		-	**B**	**19.8**	-	-	**B**	**18.7**	-
Sarcee Rd / Hampton Cres N SW (Stop-controlled)	EB	L / R	0.01	B	12.7	4.2	0.01	C	15.9	
	NB	L / T	0.00	A	0.0	26.1	0.01	A	0.1	
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	
Sarcee Rd / Hampton Cres S SW (Stop-controlled)	EB	L / R	0.01	B	13.6	7.2	0.01	C	17.6	
	WB	Right	0.16	B	11.4	0.0	0.12	B	10.8	
	NB	L / T / R	0.01	A	0.0	0.0	0.01	A	0.1	
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	
Sarcee Rd / 34 Ave SW (Stop-controlled)	EB	L / T / R	0.06	B	14.9	13.0	0.13	D	27.4	15.4
	WB	L / T / R	0.20	B	12.9	19.4	0.22	B	14.4	18.0
	NB	L / T / R	0.01	A	0.0	2.6	0.01	A	0.1	6.0
	SB	L / T / R	0.08	A	2.9	15.9	0.18	A	3.7	24.8

Under 2021 post development conditions, with the addition of site traffic to the road network the westbound left turn and the southbound left / through / right movements at the 33 Avenue / Sarcee Road intersection show signs of congestion (LOS E) in the AM peak. During the PM peak, the westbound left turn drops from LOS B to D, while the remaining movements remain at LOS C or better.

Both of the Sarcee Road / Hampton Crescent intersections continue to operate well under post development conditions, with all movements at LOS A/B in the AM and LOS C or better in the PM.

At Sarcee Road / 34 Avenue, the eastbound movement drops from LOS B to D in the PM peak hour with the addition of site traffic.

5.0 POST DEVELOPMENT ANALYSIS – 5 YEAR HORIZON (2026)

5.1 BACKGROUND VOLUMES (2026)

The 2026 background volumes were determined by applying a 2% linear annual growth rate to the existing volumes shown in **Figure 3**. The resulting 2026 background volumes are shown in **Figure 10** below.

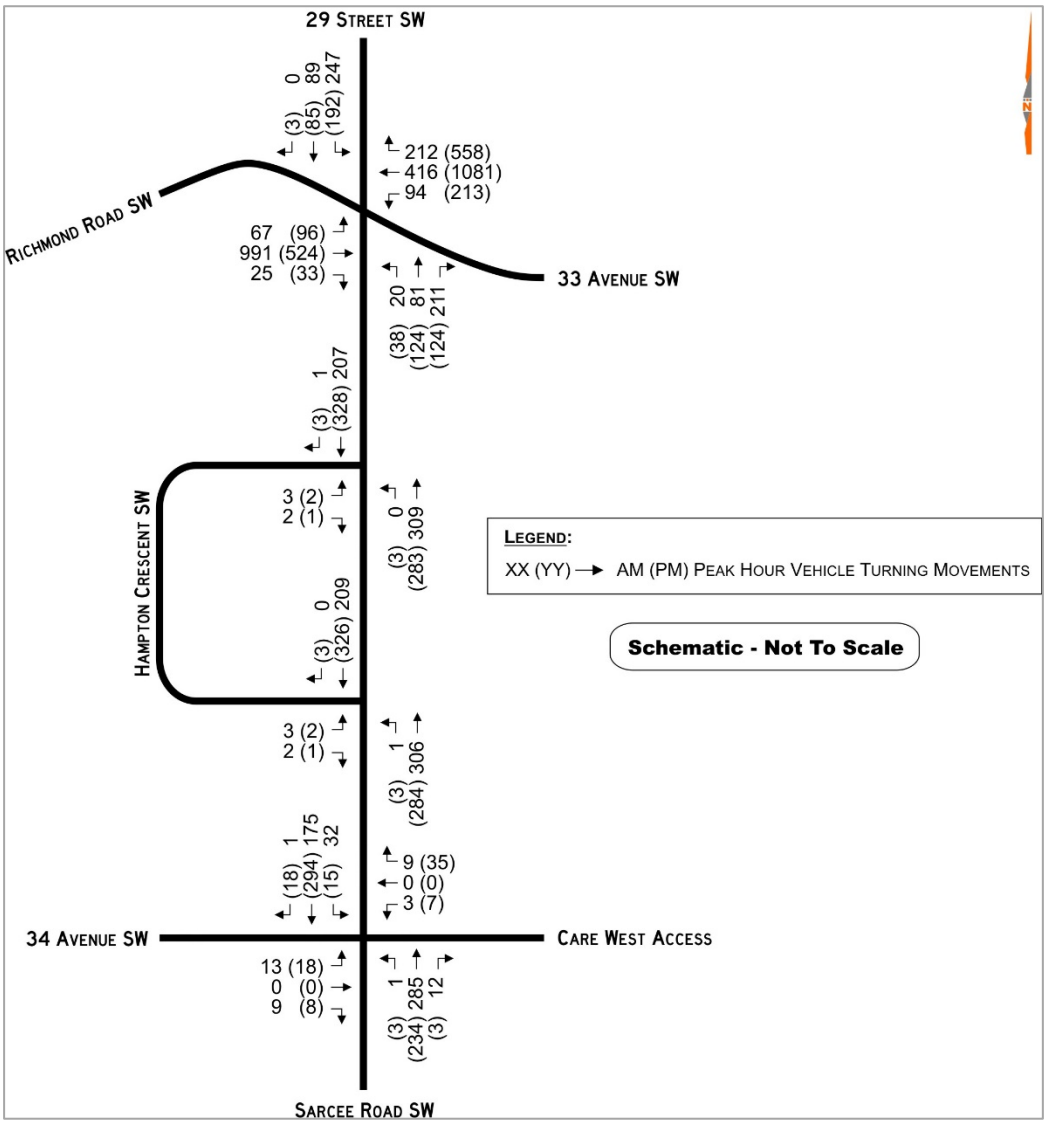

Figure 10: 2026 Background Volumes

5.2 BACKGROUND OPERATING CONDITIONS (2026)

Capacity analysis for the 2026 background horizon was conducted for the AM and PM peak hours using the 2026 background volumes shown in **Figure 10**. The analysis results are summarized in **Table 5**. All software outputs for this analysis, and any subsequent analysis within this report, can be found in **Appendix C**.

TABLE 5: 2026 BACKGROUND OPERATING CONDITIONS

Intersection / Movement			AM Peak Hour				PM Peak Hour			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
33 Ave / Sarcee Rd / 29 St SW (Signalized)	EB	Left	0.23	B	11.1	16.4	0.60	C	32.0	69.3
		T / R	0.67	B	12.8	55.7	0.33	A	7.7	109.2
	WB	Left	0.65	D	36.9	34.1	0.57	B	17.9	83.0
		T / R	0.41	A	6.7	30.3	0.97	C	28.3	195.2
	NB	Left	0.05	A	9.6	7.9	0.10	B	10.7	12.3
		T / R	0.52	B	13.3	29.2	0.43	A	8.8	27.8
	SB	Left	0.80	C	34.2	39.1	0.63	C	22.5	37.6
		T / R	0.14	B	10.3	17.7	0.16	B	10.7	18.7
	Intersection Summary		-	**B**	**14.2**	-	-	**C**	**21.3**	-
Sarcee Rd / Hampton Cres N SW (Stop-controlled)	EB	L / R	0.01	B	11.2	4.6	0.01	B	12.4	2.6
	NB	L / T	0.00	A	0.0	0.0	0.01	A	0.1	1.9
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	0.0
Sarcee Rd / Hampton Cres S SW (Stop-controlled)	EB	L / R	0.01	B	11.7	6.6	0.01	B	13.2	5.4
	NB	L / T	0.01	A	0.0	0.0	0.01	A	0.1	1.5
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	0.0
Sarcee Rd / 34 Ave SW (Stop-controlled)	EB	L / T / R	0.01	B	12.6	14.5	0.07	B	14.4	17.4
	WB	L / T / R	0.05	B	11.0	9.2	0.07	B	10.8	14.6
	NB	L / T / R	0.02	A	0.0	2.7	0.01	A	0.1	4.6
	SB	L / T / R	0.03	A	1.3	12.2	0.01	A	0.4	9.8

Under 2026 background conditions, the signalized 33 Avenue / Sarcee Road intersection operates adequately with all movements at LOS D or better (with most at LOS C or better) during both peak hours..

The stop-controlled intersections operate well under 2026 background conditions with all movements at LOS A/B during the AM and PM peak hours.

5.3 POST DEVELOPMENT VOLUMES (2026)

The trips generated by the development (shown in **Figures 5** and **6**) were added to the 2026 background volumes (shown in **Figure 10**) to determine the 5-year horizon post development volumes. The resulting AM and PM peak hour post development volumes are shown in **Figure 11**.

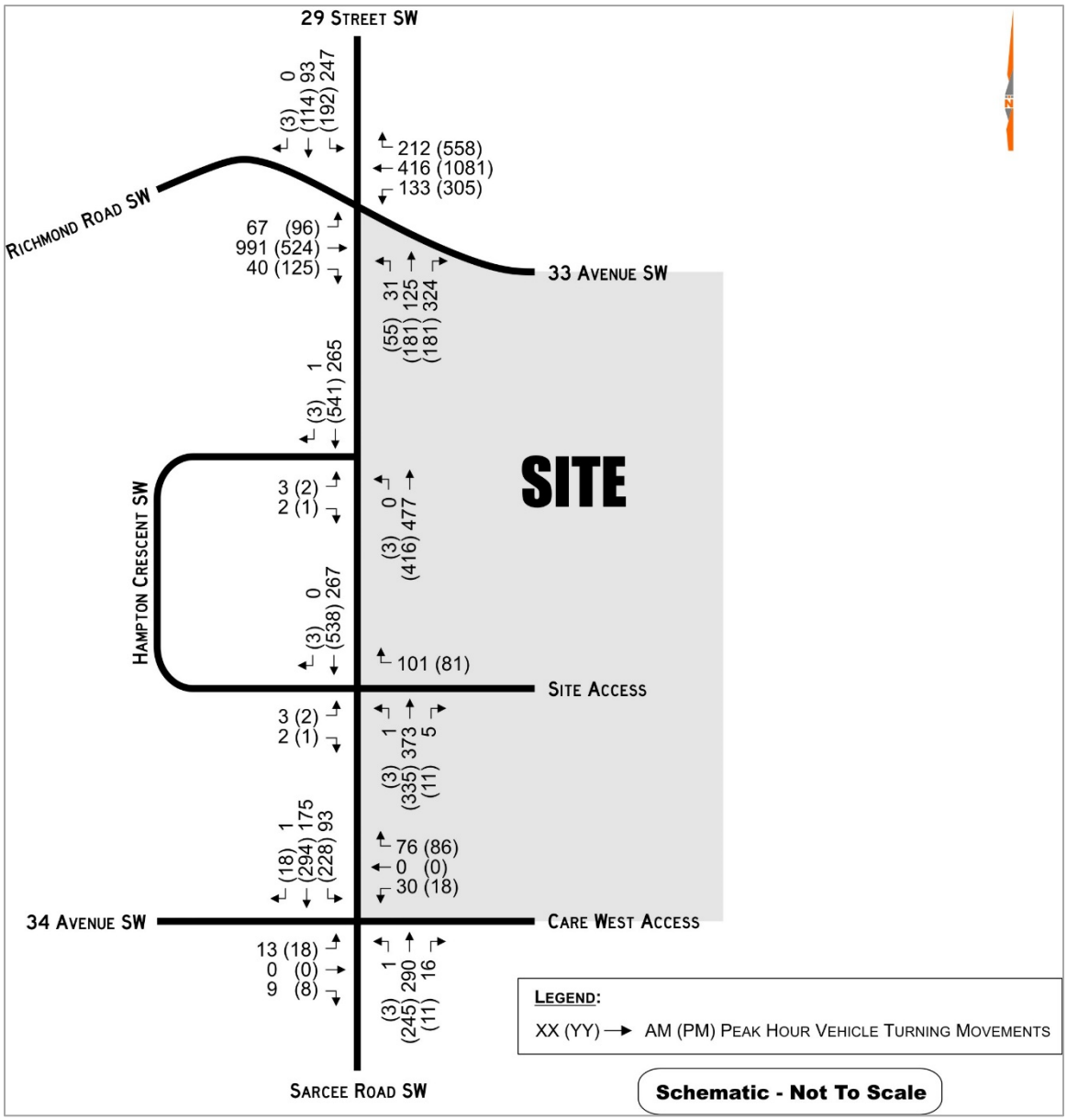

Figure 11: 2026 Post Development Volumes

5.4 POST DEVELOPMENT OPERATING CONDITIONS (2026)

Capacity analysis for the 5-year (2026) horizon post development conditions was conducted for the AM and PM peak hours using the 2026 post development volumes shown in **Figure 11**. The analysis results are summarized in **Table 6**. All software outputs for this analysis can be found in **Appendix C**.

TABLE 6: 2026 POST DEVELOPMENT OPERATING CONDITIONS

Intersection / Movement			AM Peak Hour				PM Peak Hour			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
33 Ave / Sarcee Rd / 29 St SW (Signalized)	EB	Left	0.25	B	11.9	16.6	0.63	D	35.6	63.5
		T / R	0.72	B	14.7	59.1	0.41	A	8.5	101.9
	WB	Left	0.99	F	96.7	65.2	1.01	E	75.6	102.5
		T / R	0.43	A	7.2	75.2	1.01	D	38.4	305.5
	NB	Left	0.07	A	9.8	11.6	0.14	B	10.7	16.1
		T / R	0.73	B	20.0	46.4	0.58	B	12.0	38.3
	SB	Left	1.11	F	114.1	45.6	0.80	D	39.4	38.4
		T / R	0.13	B	10.2	27.4	0.19	B	10.7	21.6
	Intersection Summary		-	**C**	**26.8**	-	-	**C**	**31.8**	-
Sarcee Rd / Hampton Cres N SW (Stop-controlled)	EB	L / R	0.01	B	13.1	4.7	0.01	C	16.7	3.2
	NB	L / T	0.00	A	0.0	28.0	0.01	A	0.1	26.7
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	0.0
Sarcee Rd / Hampton Cres S SW (Stop-controlled)	EB	L / R	0.01	B	14.3	5.3	0.01	C	18.6	4.7
	WB	Right	0.17	B	11.7	0.0	0.12	B	11.0	0.0
	NB	L / T / R	0.01	A	0.0	0.0	0.01	A	0.1	3.7
	SB	T / R	0.00	A	0.0	0.0	0.00	A	0.0	0.0
Sarcee Rd / 34 Ave SW (Stop-controlled)	EB	L / T / R	0.07	C	15.7	13.5	0.15	E	38.6	13.3
	WB	L / T / R	0.21	B	13.6	17.6	0.24	C	15.2	17.2
	NB	L / T / R	0.01	A	0.0	2.5	0.01	A	0.1	5.2
	SB	L / T / R	0.08	A	2.8	19.1	0.19	A	3.6	24.7

Under 2026 post development conditions, at the signalized 33 Avenue / Sarcee Road intersection the westbound and southbound left turn movements are at LOS F in the AM peak, and the westbound left turn movement is at LOS E in the PM peak.

The two Sarcee Road / Hampton Crescent intersections continue to operate well under 2026 post development conditions, with all movements at LOS A/B in the AM and LOS C or better in the PM.

At Sarcee Road / 34 Avenue, the eastbound movement is at LOS E in the PM peak. The remaining movements are at LOS C or better during both peak hours.

6.0 MITIGATIONS

Where failing movements were identified in the post development analysis, mitigation measures were explored to improve the intersection operations to acceptable levels.

At the 33 Avenue / Sarcee Road intersection, the following mitigation measures are recommended under 2021 post development conditions:

- Add a northbound right turn queue lane ahead of the channelized northbound right turn lane to allow right turning vehicles to bypass through traffic stopped at the signal. The queue lane should be 30m in length in order to accommodate 2026 post development traffic.

Under 2026 post development conditions, the following additional measure is recommended:

- Modify the eastbound and westbound left turn traffic signal phasing from permitted to protected / permitted phasing.

With these changes implemented at the 33 Avenue / Sarcee Road intersection, all movements operate at LOS C or better during the AM peak and LOS D or better (most at C or better) during PM peak.

At the Sarcee Road / 34 Avenue intersection, under 2026 post development conditions the eastbound movement is at LOS E during the PM peak hour. However, the volume of the eastbound movement is low (18 vph), the 95th percentile queue is 2 vehicles in length, and there are no capacity issues (v/c of 0.15). Mitigation measures are therefore not recommended for this intersection.

The two Sarcee Road / Hampton Crescent intersections operate well under 2026 post development conditions and do not require mitigation.

7.0 ACTIVE MODES AND TRANSIT

7.1 PEDESTRIAN AND CYCLIST INFRASTRUCTURE

There are sidewalks on both sides of Sarcee Road in the vicinity of the development site. 34 Avenue also has sidewalks on both sides west of Sarcee Road; east of Sarcee Road, 34 Avenue has a sidewalk on the south side and an asphalt multi-use path on the north side that continues east of the site. Hampton Crescent has sidewalks along one side of the road adjacent to the existing homes.

On 33 Avenue, there is a short section of sidewalk on the south side that runs from Sarcee Road to the transit stop on the north property frontage. East of the transit stop, the paved sidewalk transitions to a gravel pathway that continues east 350m where the paved sidewalk reappears at a pedestrian overpass across 33 Avenue.

There are crosswalks across all four legs of the signalized 33 Avenue / Sarcee Road intersection. Another marked crosswalk across Sarcee Road is located at 34 Avenue.

Sarcee Road (29 Street north of the development site) is designated as a 'Signed Bikeway & Shared Lane' bike facility on the City of Calgary's interactive pathway map. There are no bike lanes or separated bike infrastructure along Sarcee Road; cyclists are expected to share the vehicle travel lanes with traffic. There is a lack of bike route signage indicating that Sarcee Road is a bike route; only one northbound sign and two southbound signs were noted between 26 Avenue SW and 44 Avenue SW. The 2020 Calgary Transportation Plan shows Sarcee Road as an 'Existing On-Street Bikeway – 5A' route; however, the existing route should not be considered 5A (Always Available for All Ages and Abilities). Adding 5A cycling infrastructure along the property frontage should be done in conjunction with upgrading the wider Sarcee Road / 29 Street bike route, in order to ensure continuity of design and improved functionality. RE&DS should therefore explore opportunities to provide the required right-of-way for future 5A infrastructure such as separated bike lanes or a multi-use path along the property frontage.

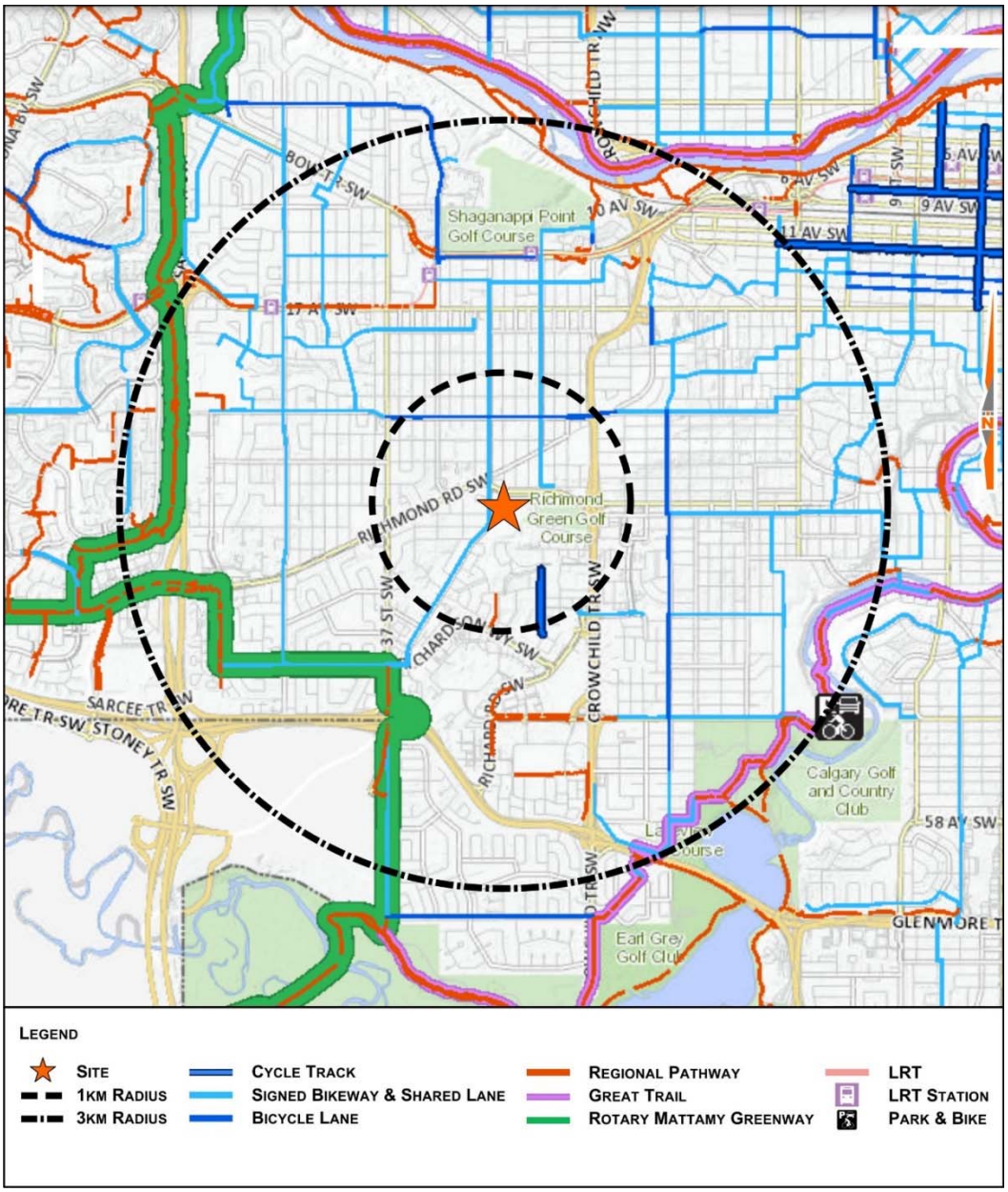

Figure 12: Active Modes Infrastructure

7.2 TRANSIT SERVICE

The City of Calgary Transportation Plan (2020) lists 33 Avenue SW as a part of the Primary Transit Network. There are 5 transit stops on 33 Avenue and Sarcee Road

within a 200m radius of the site (as shown in **Figure 13**). The routes are serviced by Calgary Transit Routes 22 (Richmond Road), 66 (Lakeview), and 732 (Central Memorial / Glamorgan). Routes 22 and 66 run at approximately 25-30 minute intervals while Route 732 is a school route that runs once per school day. The transit stop on 33rd Avenue along the north property frontage includes a bus bay and transit shelter; no transit infrastructure upgrades are required.

Figure 13: Area Transit Stops

8.0 CONCLUSION

The results of the Richmond Green TIA study led to the following conclusions:

Existing Operating Conditions:

- The signalized 33 Avenue / Sarcee Road SW intersection operates well during the AM and PM peak hours, with all movements at LOS C or better.
- The stop-controlled study intersections (Sarcee Road / Hampton Crescent N SW, Sarcee Road / Hampton Crescent S SW, and Sarcee Road / 34 Avenue SW) operate well with all movements at LOS A/B during both peak hours.

Post Development Operating Conditions:

- At the 33 Avenue / Sarcee Road SW intersection, the westbound and southbound left turn movements drop to LOS E in the AM peak. The westbound left is at LOS D in the PM; the remaining movements are at LOS C or better during both peak hours.
- The two Sarcee Road / Hampton Crescent intersections operate at LOS C or better during both peak hours.
- At the Sarcee Road / 34 Avenue SW intersection, the eastbound movement is at LOS D in the PM peak. All other movements are at LOS A/B.

2026 Horizon Year Operating Conditions:

- Under 2026 background conditions, the 33 Avenue / Sarcee Road intersection operates adequately with all movements at LOS D or better (most at LOS C or better) during both peak hours. The stop-controlled intersections operate well (LOS A/B) during both peak hours.
- Under 2026 post development conditions, at the 33 Avenue / Sarcee Road intersection the westbound and southbound left turn movements are failing (LOS F) during the AM peak hour. During the PM peak hour, the westbound left turn is at LOS E.

- At the Sarcee Road / 34 Avenue intersection, the eastbound movement is at LOS E in the PM peak hour under 2026 post development conditions. The remaining movements are at LOS C or better during both peak hours.

Mitigation Measures

- Under 2021 post development conditions, the following mitigation measures are recommended for improving the 33 Avenue / Sarcee Road intersection to acceptable operational levels:
    - Install a northbound right turn queue lane 30m in length leading up to the existing channelized right turn lane.
- Under 2026 post development conditions, the following mitigation measure is recommended (in addition to the measures above) at the 33 Avenue / Sarcee Road intersection:
    - Modify the eastbound and westbound left turn traffic signal phasing to permitted / protected phasing.
- No mitigation measures are required at the three stop-controlled study intersections.

Active Modes and Transit Service:

- There are existing sidewalks on both sides of Sarcee Road within the vicinity of the development site. There are also sidewalks on 34 Avenue and on Hampton Crescent. A multi-use pathway begins at Sarcee Road / 34 Avenue and heads east through the Richmond Green park.
- There is a sidewalk on 33 Avenue on the property frontage that runs from Sarcee Road to the transit stop. East of the transit stop, a gravel pathway continues east 300m to another transit stop and a pedestrian overpass over 33 Avenue. The City should consider replacing the gravel pathway with a paved sidewalk to shorten the gap in the accessible pedestrian network and to facilitate future connection of the paved sections.
- The City's interactive pathway map lists Sarcee Road as a signed bike route, however there is very minimal signage along the route to direct cyclists. The Calgary Transportation Plan lists Sarcee Road as an 'Existing On-Street Bikeway

– 5A' route; however there is no 5A bike infrastructure in place. RE&DS should explore ways to provide the required space for future 5A infrastructure (such as separated bike lanes or a multi-use path along the property frontage).

- The site is well serviced by transit, with three routes servicing five transit stops within a 200m radius of the site.

APPENDIX A: SCOPE OF WORK

Tanner Vollema

From: Bruce Nelligan
Sent: Wednesday, February 24, 2021 4:44 PM
To: Tanner Vollema
Subject: FW: Richmond Green Project - PE2020-02273

Bruce Nelligan, M.Eng., P.Eng., PTOE
President & CEO
D 403-569-8703 **C** 403-473-2685
E bnelligan@wattconsultinggroup.com

WATTCONSULTINGGROUP.COM
#WEAREWATT

From: Bruce Nelligan
Sent: January 13, 2021 11:05 AM
To: Vayali, George <George.Vayali@calgary.ca>
Cc: Ethan Hill <ehill@wattconsultinggroup.com>; Carnegie, Michael <Michael.Carnegie@calgary.ca>
Subject: Richmond Green Project - PE2020-02273

Hi George,

RE&DS is moving forward with a land use application for a portion of the lands surrounding the Richmond Green golf course in SW Calgary (PE2020-02273). We have been asked by RE&DS to prepare a TIA. We would like to confirm the following scope of work with you for the TIA:

- Background and Post Development Analysis (5-year horizon) at the following intersections (we will establish the 5-year background volumes by applying a straight line growth to the pre-COVID traffic volumes)
    - Sarcee Road / 33 Ave SW
    - Sarcee Road / Hampton CR SW (South access)
    - Sarcee Road / 34 Ave SW
- City of Calgary Trip Generation for the proposed development once land use is confirmed, and distribution based upon existing traffic patterns and available City model data
- Review of active modes infrastructure and transit service in the area
- Data Collection
    - We will conduct traffic counts at the following intersections and adjust them to account for COVID
        - Sarcee Road / 33 Ave SW
        - Sarcee Road / Hampton CR SW
        - Sarcee Road / 34 Ave SW

With regards to access, we reviewed the pre-app comments and the noted that Transportation suggested that the access off Sarcee Road needs to be a right-in, right-out access, opposite the current access on the south end of Hampton CR. We believe it will be difficult to continue allowing all-turns from Hampton CR while restricting turns to our site to

RI/RO. We have some thoughts on how this intersection can remain and all-turns access for both the east and west legs and as long as you're supportive of us exploring this, we will include this in the TIA.

Please review and let us know if this meets the City's expectations and needs for the TIA.

Regards,

Bruce Nelligan, M.Eng., P.Eng., PTOE
President & CEO
D 403-569-8703 **C** 403-473-2685
E bnelligan@wattconsultinggroup.com

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#WEAREWATT

APPENDIX B: TRAFFIC COUNTS

Traffic Count Reports

Intersection Id: 8820

Status: Valid

Study Name: 6 Hour Intersection Count

Study Date: Wednesday, 28 August 2019

Location: 29 ST SW & 33 AV SW

Weather: Sunny/Cloudy; 19.0°C

	North Approach						South Approach						East Approach						West Approach						Vehicle Total
Period Begining	North Left	North Straight	North Right	North Truck	North Ped	North Bike	South Left	South Straight	South Right	South Truck	South Ped	South Bike	East Left	East Straight	East Right	East Truck	East Ped	East Bike	West Left	West Straight	West Right	West Truck	West Ped	West Bike	
07:00	53	6	0	0	3	0	5	12	38	2	2	2	13	36	28	5	5	0	9	130	3	1	0	1	333
07:15	67	10	1	1	1	2	4	12	48	2	2	5	13	45	31	2	6	0	10	180	3	4	0	2	424
07:30	70	13	1	1	0	2	3	9	65	2	0	2	17	53	34	5	0	0	10	215	4	2	1	2	494
07:45	58	23	0	0	0	5	2	22	33	2	1	8	19	70	43	4	4	0	19	231	6	8	1	0	526
08:00	50	18	0	0	0	5	7	14	47	1	1	5	25	88	44	7	3	0	8	244	6	3	0	2	551
08:15	50	23	0	0	0	3	3	19	35	1	3	5	23	105	55	10	1	0	18	181	7	3	1	1	519
08:30	58	21	0	2	1	2	4	10	53	4	1	1	22	101	43	5	2	1	14	210	5	5	0	1	541
08:45	46	17	0	0	4	1	9	15	37	4	5	2	33	88	58	7	5	0	13	166	7	3	2	1	489
TOTAL	452	131	2	4	9	20	37	113	356	18	15	30	165	586	336	45	26	1	101	1557	41	29	5	10	**3877**
PEAK	216	85	0	2	1	15	16	65	168	8	6	19	89	364	185	26	10	1	59	866	24	19	2	4	**2137**
	PHF 0.93	Peak Total 301					PHF 0.92	Peak Total 249					PHF 0.87	Peak Total 638					PHF 0.92	Peak Total 949					
	Total Flow 4.4%						Total Flow 3.8%						Total Flow 8.2%						Total Flow 12.8%						
	Truck Flow 0.68%						Truck Flow 3.56%						Truck Flow 4.14%						Truck Flow 1.71%						
	Total Volume 585						Total Volume 506						Total Volume 1087						Total Volume 1699						
11:00	36	13	0	1	0	2	5	20	29	2	0	0	28	167	60	4	0	0	11	129	5	8	2	0	503
11:15	53	10	1	0	2	0	7	12	32	1	1	0	20	143	49	8	1	0	23	122	13	3	2	0	485
11:30	42	10	1	0	0	0	5	20	20	3	0	1	33	141	46	8	1	0	14	146	7	0	1	1	485
11:45	36	14	2	1	0	0	6	5	30	3	0	4	33	137	56	7	3	0	20	134	7	2	0	0	480
12:00	46	17	0	3	0	2	14	22	40	2	1	2	25	149	54	10	1	0	19	134	9	1	1	0	529
12:15	42	8	1	0	1	2	9	15	33	2	1	0	27	201	53	3	1	0	27	125	3	4	1	0	544
12:30	53	11	0	4	0	0	3	13	33	2	3	4	24	148	59	7	11	0	23	122	6	5	0	1	495
12:45	44	10	0	1	0	1	11	9	23	0	0	0	25	162	59	7	9	0	19	152	5	5	0	0	519
TOTAL	352	93	5	10	3	7	60	116	240	15	6	11	215	1248	436	54	27	0	156	1064	55	28	7	2	**4040**
PEAK	185	46	1	8	1	5	37	59	129	6	5	6	101	660	225	27	22	0	88	533	23	15	2	1	**2087**
	PHF 0.91	Peak Total 232					PHF 0.74	Peak Total 225					PHF 0.88	Peak Total 986					PHF 0.91	Peak Total 644					
	Total Flow 3.4%						Total Flow 3.1%						Total Flow 14.3%						Total Flow 9.6%						
	Truck Flow 2.22%						Truck Flow 3.61%						Truck Flow 2.84%						Truck Flow 2.2%						
	Total Volume 450						Total Volume 416						Total Volume 1899						Total Volume 1275						
16:00	35	19	1	0	1	1	9	24	30	0	0	2	37	217	89	4	1	0	28	116	8	4	0	0	613
16:15	43	21	2	1	2	2	4	35	39	3	0	6	62	223	107	1	0	1	17	102	10	1	3	0	665
16:30	48	30	1	0	1	4	8	32	31	1	0	1	55	228	119	2	0	1	23	115	6	1	8	0	696
16:45	38	25	1	0	0	5	6	23	20	0	0	3	73	251	129	2	2	0	17	122	9	1	3	1	714
17:00	41	21	0	0	1	6	8	30	39	3	0	0	54	222	105	2	1	0	26	102	11	1	1	0	659
17:15	41	21	1	0	0	9	10	20	15	1	1	7	60	244	135	3	4	1	18	119	11	0	4	1	695
17:30	42	35	1	0	1	2	7	26	19	1	1	5	47	224	130	2	0	0	20	108	7	2	1	0	666
17:45	51	16	1	2	1	6	9	16	23	1	1	2	55	217	106	5	2	0	17	116	5	4	1	2	632
TOTAL	339	188	8	3	7	35	61	206	216	10	3	26	443	1826	920	21	10	3	166	900	67	14	21	4	**5340**
PEAK	168	97	3	0	2	24	32	105	105	5	1	11	242	945	488	9	7	2	84	458	37	3	16	2	**2764**
	PHF 0.85	Peak Total 268					PHF 0.79	Peak Total 242					PHF 0.92	Peak Total 1675					PHF 0.98	Peak Total 579					
	Total Flow 4%						Total Flow 3.6%						Total Flow 24.1%						Total Flow 8.5%						
	Truck Flow 0.56%						Truck Flow 2.07%						Truck Flow 0.66%						Truck Flow 1.24%						
	Total Volume 535						Total Volume 483						Total Volume 3189						Total Volume 1133						
6 Hour Total	**1143**	**412**	**15**	**17**	**19**	**62**	**158**	**435**	**812**	**43**	**24**	**67**	**823**	**3660**	**1692**	**120**	**63**	**4**	**423**	**3521**	**163**	**71**	**33**	**16**	**13257**
4 Hour Total	791	319	10	Total: 1120			98	319	572	Total: 989			608	2412	1256	Total: 4276			267	2457	108	Total: 2832			9217
	North Bound: 2550 - 62%						South Bound: 1398 - 50%						East Bound: 5476 - 47%						West Bound: 3833 - 48%						
	South Bound: 1570 - 38%						North Bound: 1405 - 50%						West Bound: 6175 - 53%						East Bound: 4107 - 52%						
	Total: 4120						Total: 2803						Total: 11651						Total: 7940						

Intersection Id: 8820

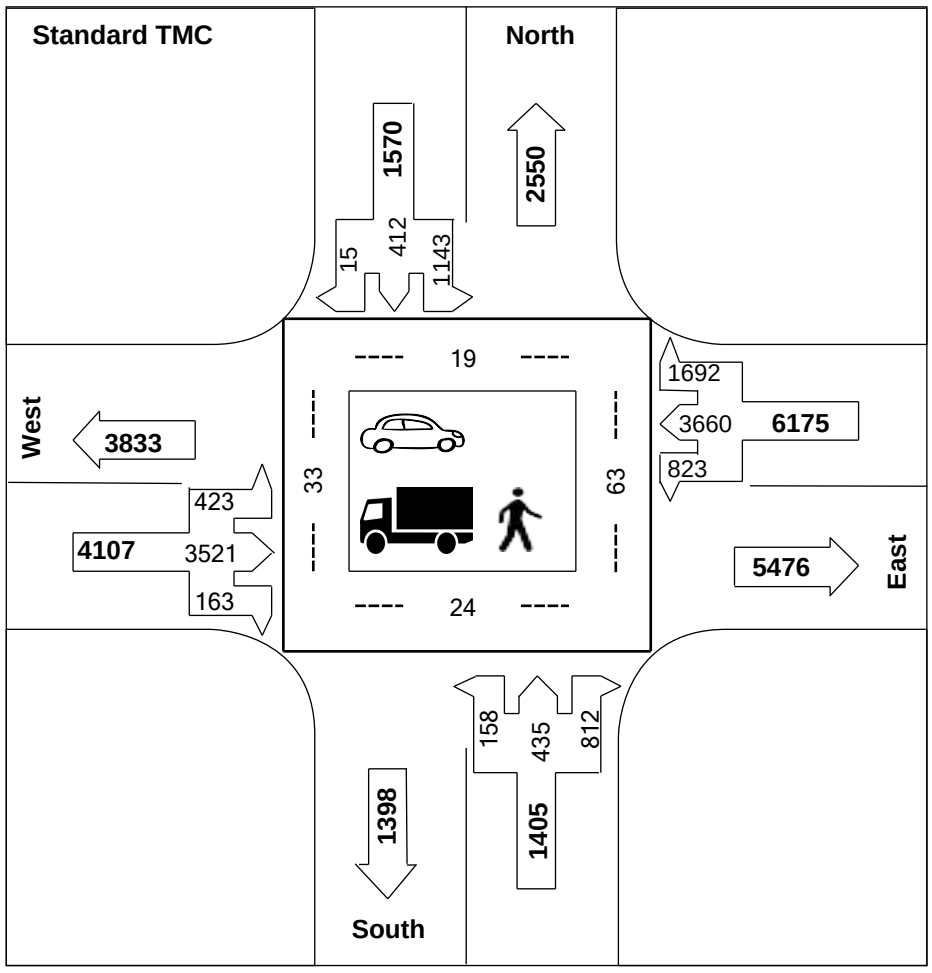
Status: Valid

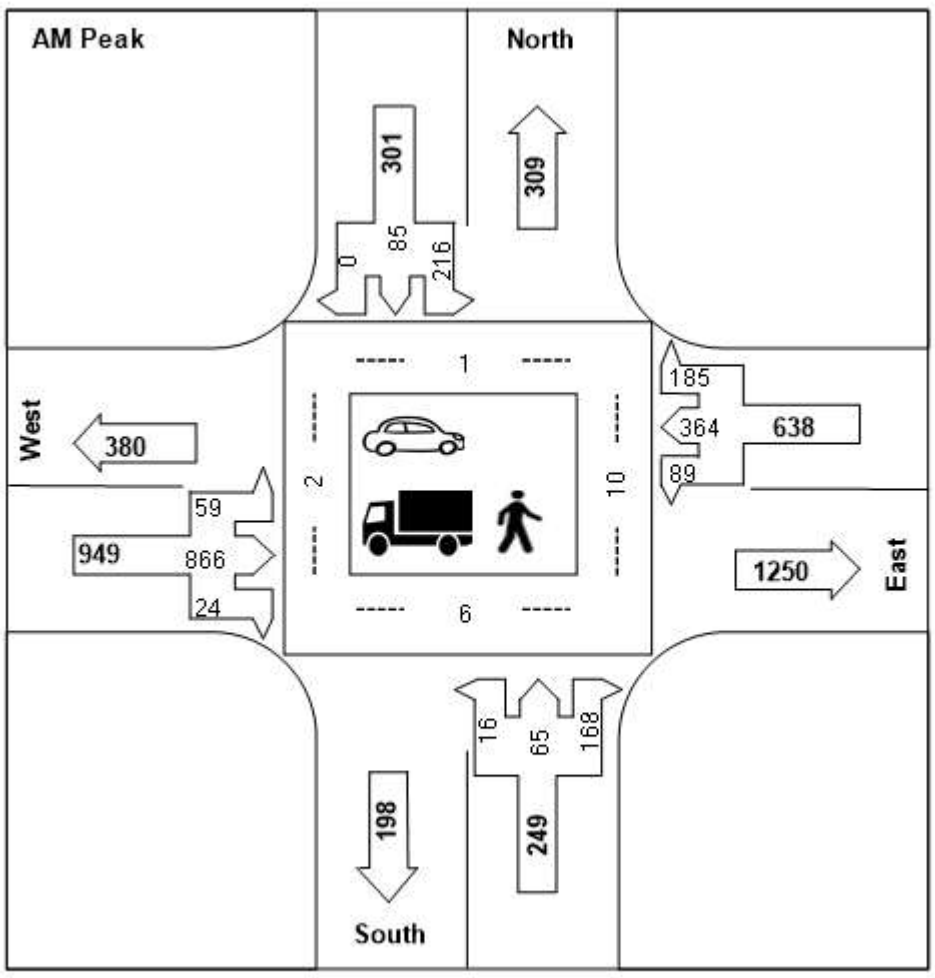
Study Name: Standard TMC Diagrams

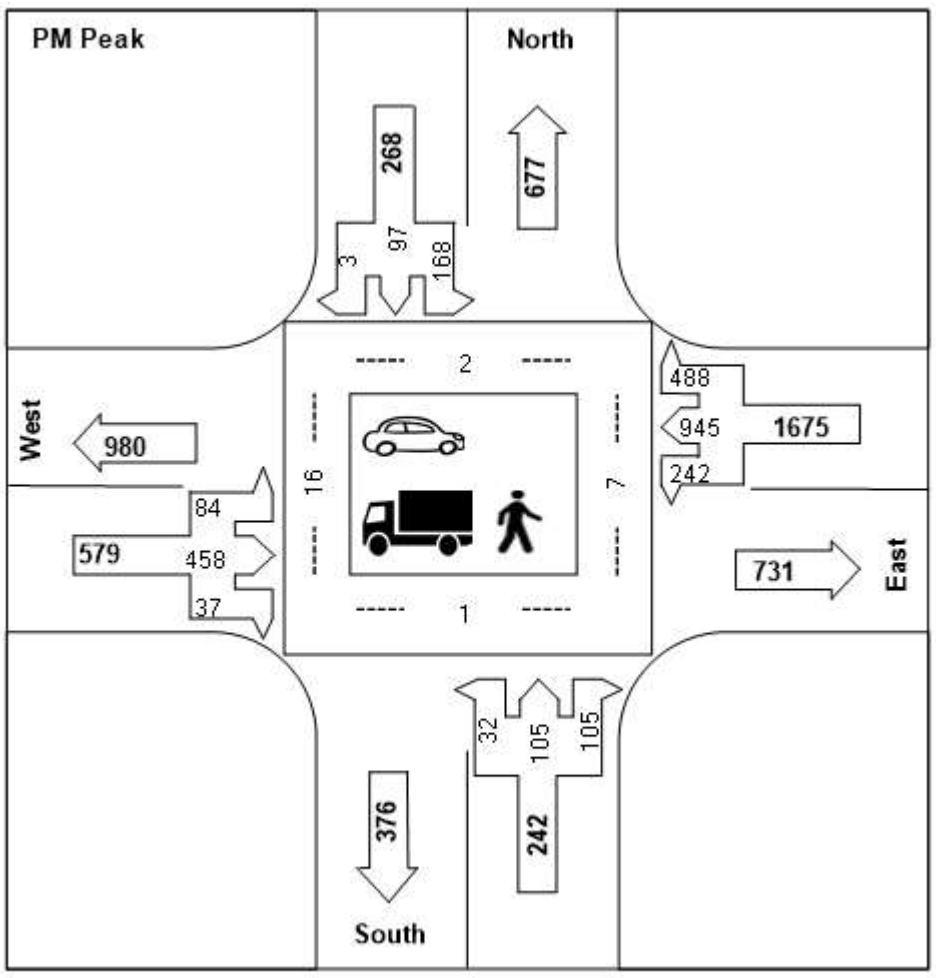
Study Date: Wednesday, 28 August 2019

Location: 29 ST SW & 33 AV SW

Weather: Sunny/Cloudy; 19.0°C







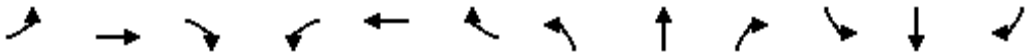
Location : North Leg : Sarcee Road / 29 Street SW
South Leg : Sarcee Road / 29 Street SW
East Leg : Care West Access
West leg : 34 Avenue SW
Date : Wednesday January 20, 2021
Observer(s) : Aaron
Job # : 3840.T01
Job Name: Richmond Green Development TIA

Time Starting	From the North On: Sarcee Road / 29 Street SW							From the South On: Sarcee Road / 29 Street SW							From the East On: Care West Access							From the West On: 34 Avenue SW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
7:00	0	0	5	0	0	0	0	0	0	15	0	0	0	0	0	0	2	0	3	0	0	0	0	3	0	0	0	0	28	0	0	28
7:15	6	0	12	2	1	0	1	0	0	17	3	0	0	0	1	0	6	0	6	0	3	3	0	2	0	0	0	0	54	5	4	59
7:30	6	0	20	3	0	0	0	0	0	32	1	2	0	1	0	0	0	0	1	0	0	1	0	0	0	2	0	0	64	4	1	68
7:45	10	0	17	2	0	0	0	0	0	34	2	2	0	1	0	0	0	0	2	0	0	2	0	0	0	2	0	0	69	4	1	73
8:00	5	0	29	3	0	0	0	0	0	57	4	2	0	0	0	0	0	0	3	0	0	3	1	0	0	2	1	0	101	9	0	110
8:15	4	0	38	2	0	0	0	1	0	41	1	1	1	2	1	0	0	0	1	0	0	3	0	0	0	0	0	0	90	4	2	94
8:30	4	0	21	3	1	0	1	0	0	47	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	77	5	2	82
8:45	3	0	22	0	0	0	1	0	0	29	0	3	0	0	0	0	1	0	0	1	0	2	0	5	0	1	0	0	66	1	1	67
Total	38	0	164	15	2	0	3	1	0	272	13	12	1	4	3	0	9	0	16	1	3	14	1	10	0	8	1	1	549	32	11	581
Peak Hour: 7:45 - 8:45	23	0	105	10	1	0	1	1	0	179	9	7	1	3	2	0	0	0	6	0	0	8	1	0	0	5	1	1	337	22	5	359
Total Veh & % Trucks	23	0%	115	9%	1	0%		1	0%	188	5%	8	13%		2	0%	0	0%	6	0%		9	11%	0	0%	6	17%					

Time Starting	From the North On: Sarcee Road / 29 Street SW							From the South On: Sarcee Road / 29 Street SW							From the East On: Care West Access							From the West On: 34 Avenue SW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
4:00	1	0	35	0	2	0	0	0	0	28	0	0	0	1	1	0	0	0	3	0	0	0	0	0	0	0	1	0	70	1	1	71
4:15	5	0	47	4	2	0	0	2	0	35	3	1	0	1	1	0	0	0	9	0	0	2	1	0	0	2	1	1	106	9	2	115
4:30	3	0	56	0	4	0	1	0	0	32	0	0	0	1	2	0	0	0	9	0	0	0	0	0	0	1	0	1	107	0	3	107
4:45	2	0	40	1	2	0	0	0	0	43	1	0	0	1	1	0	0	0	1	0	2	3	0	0	0	1	0	1	93	2	4	95
5:00	0	0	44	1	3	0	1	0	0	39	1	1	0	3	0	0	0	0	4	0	2	5	0	0	0	0	0	4	96	2	10	98
5:15	1	0	38	0	3	0	0	0	0	36	1	0	0	0	1	0	2	0	1	0	0	1	0	0	0	1	0	0	84	1	0	85
5:30	1	0	54	2	3	0	0	0	0	27	1	0	0	1	0	0	0	0	2	0	0	2	0	0	0	1	0	0	90	3	1	93
5:45	1	0	35	1	3	0	0	0	0	30	0	1	0	0	0	0	0	0	3	0	0	2	0	0	0	0	0	0	75	1	0	76
Total	14	0	349	9	22	0	2	2	0	270	7	3	0	8	6	0	2	0	32	0	4	15	1	0	0	6	2	7	721	19	21	740
Peak Hour: 4:15 - 5:15	10	0	187	6	11	0	2	2	0	149	5	2	0	6	4	0	0	0	23	0	4	10	1	0	0	4	1	7	402	13	19	415
Total Veh & % Trucks	10	0%	193	3%	11	0%		2	0%	154	3%	2	0%		4	0%	0	0%	23	0%		11	9%	0	0%	5	20%					

6 Hour Total	52	0	513	24	24	0	5	3	0	542	20	15	1	12	9	0	11	0	48	1	7	29	2	10	0	14	3	8				
	52		537		24			3		562		16			9		11		49			31		10		17						
	613							**581**							**69**							**58**										

APPENDIX C: SOFTWARE OUTPUTS



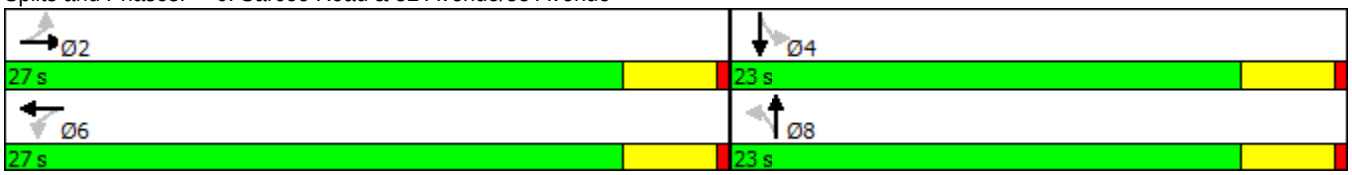
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	901	23	85	379	192	18	74	191	225	81	0
Future Volume (vph)	61	901	23	85	379	192	18	74	191	225	81	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.98		0.99		
Frt		0.996			0.950			0.892				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1742	3468	0	1709	3222	0	1725	1584	0	1759	1852	0
Flt Permitted	0.403			0.219			0.701			0.530		
Satd. Flow (perm)	739	3468	0	393	3222	0	1271	1584	0	977	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			204			65				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	1		6	6		1	2		10	10		2
Confl. Bikes (#/hr)			4			1			19			15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	1%	1%	0%
Adj. Flow (vph)	65	959	24	90	403	204	19	79	203	239	86	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	983	0	90	607	0	19	282	0	239	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	23.0	23.0		23.0	23.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	21.3	21.3		21.3	21.3		15.1	15.1		15.1	15.1	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.34	0.34		0.34	0.34	
v/c Ratio	0.18	0.59		0.48	0.37		0.04	0.49		0.72	0.14	
Control Delay	9.4	10.8		20.9	5.9		10.1	12.0		27.9	10.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	10.8		20.9	5.9		10.1	12.0		27.9	10.7	
LOS	A	B		C	A		B	B		C	B	
Approach Delay		10.7			7.9			11.8			23.4	
Approach LOS		B			A			B			C	
Queue Length 50th (m)	2.7	27.1		4.4	9.1		0.9	11.7		14.7	4.2	
Queue Length 95th (m)	9.1	47.0		#21.3	19.1		4.1	28.6		#43.6	11.4	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	386	1818		205	1784		549	722		422	801	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.54		0.44	0.34		0.03	0.39		0.57	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 11.7 Intersection LOS: B
Intersection Capacity Utilization 86.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	0	8	3	0	8	1	259	11	32	159	1
Future Vol, veh/h	12	0	8	3	0	8	1	259	11	32	159	1
Conflicting Peds, #/hr	2	0	5	5	0	2	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	11	0	17	0	0	0	0	5	13	0	9	0
Mvmt Flow	13	0	9	3	0	9	1	276	12	34	169	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	531	530	177	531	524	284	172	0	0	288	0	0
Stage 1	240	240	-	284	284	-	-	-	-	-	-	-
Stage 2	291	290	-	247	240	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.37	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.453	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	445	457	829	462	461	760	1417	-	-	1286	-	-
Stage 1	744	711	-	727	680	-	-	-	-	-	-	-
Stage 2	698	676	-	761	711	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	429	442	824	445	446	759	1415	-	-	1286	-	-
Mov Cap-2 Maneuver	429	442	-	445	446	-	-	-	-	-	-	-
Stage 1	742	689	-	726	679	-	-	-	-	-	-	-
Stage 2	688	675	-	728	689	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	10.8	0	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1415	-	-	531	637	1286	-	-
HCM Lane V/C Ratio	0.001	-	-	0.04	0.018	0.026	-	-
HCM Control Delay (s)	7.5	0	-	12.1	10.8	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	2	0	0	0	1	278	0	0	190	0
Future Vol, veh/h	3	0	2	0	0	0	1	278	0	0	190	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	3	0	2	0	0	0	1	296	0	0	202	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	500	500	202	-	-	296	202	0	-	-	-	0
Stage 1	202	202	-	-	-	-	-	-	-	-	-	-
Stage 2	298	298	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	476	468	831	0	0	736	1352	-	0	0	-	-
Stage 1	793	729	-	0	0	-	-	-	0	0	-	-
Stage 2	704	662	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	476	468	831	-	-	736	1352	-	-	-	-	-
Mov Cap-2 Maneuver	476	468	-	-	-	-	-	-	-	-	-	-
Stage 1	792	729	-	-	-	-	-	-	-	-	-	-
Stage 2	703	661	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	0	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1352	-	574	-	-	-
HCM Lane V/C Ratio	0.001	-	0.009	-	-	-
HCM Control Delay (s)	7.7	0	11.3	0	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-	-

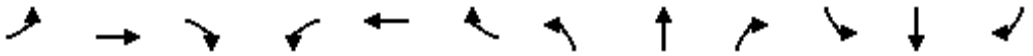
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	281	188	1
Future Vol, veh/h	3	2	0	281	188	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	2	0	299	200	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	500	201	201	0	-	0
Stage 1	201	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	525	832	1353	-	-	-
Stage 1	826	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	525	832	1353	-	-	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	826	-	-	-	-	-
Stage 2	746	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1353	-	616	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



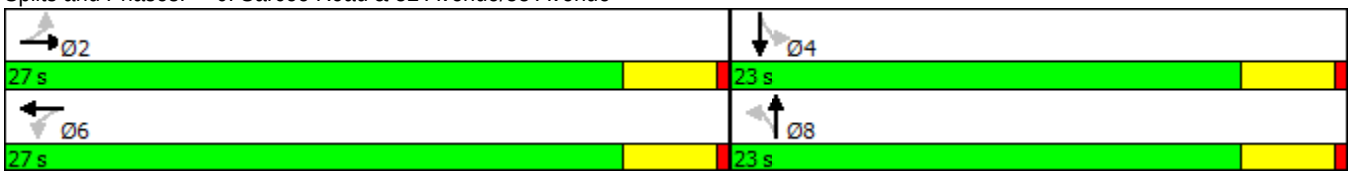
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	476	30	194	983	508	34	113	113	175	78	3
Future Volume (vph)	87	476	30	194	983	508	34	113	113	175	78	3
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		0.99	0.99		1.00	1.00	
Frt		0.991			0.949			0.925			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1759	3484	0	1759	3312	0	1742	1676	0	1777	1859	0
Flt Permitted	0.166			0.454			0.702			0.557		
Satd. Flow (perm)	307	3484	0	840	3312	0	1273	1676	0	1038	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			245			116			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	2		1	1		2	16		7	7		16
Confl. Bikes (#/hr)			2			2			11			24
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 (%)	1%	1%	0%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	92	501	32	204	1035	535	36	119	119	184	82	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	533	0	204	1570	0	36	238	0	184	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	23.0	23.0		23.0	23.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	25.3	25.3		25.3	25.3		13.3	13.3		13.3	13.3	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.32	0.32		0.32	0.32	
v/c Ratio	0.49	0.25		0.40	0.74		0.09	0.39		0.55	0.14	
Control Delay	24.8	6.4		11.1	12.0		11.2	8.5		20.1	11.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.8	6.4		11.1	12.0		11.2	8.5		20.1	11.3	
LOS	C	A		B	B		B	A		C	B	
Approach Delay		9.1			11.9			8.8			17.3	
Approach LOS		A			B			A			B	
Queue Length 50th (m)	4.0	9.6		8.1	36.6		2.0	7.0		11.8	4.5	
Queue Length 95th (m)	#25.8	22.3		28.4	#104.6		6.2	18.7		26.3	11.2	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	187	2133		513	2117		609	863		497	892	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.49	0.25		0.40	0.74		0.06	0.28		0.37	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 41.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 98.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	19.8	13.6	9.0	9.2
Average Queue (m)	5.9	6.4	0.5	0.8
95th Queue (m)	15.4	13.6	3.7	4.9
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	59.7	86.3	82.6	62.3	98.3	143.2	14.4	36.1	41.2	25.4
Average Queue (m)	45.0	54.8	29.7	20.8	48.5	64.8	4.0	14.2	18.9	8.7
95th Queue (m)	72.7	105.1	87.2	43.8	84.9	114.0	10.6	29.0	35.1	19.3
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)		31	1			0			0	
Queuing Penalty (veh)		0	0			0			0	
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)	73	1		1	3					
Queuing Penalty (veh)	173	0		4	6					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB	NB
Directions Served	LTR	LTR
Maximum Queue (m)	8.9	2.4
Average Queue (m)	0.5	0.1
95th Queue (m)	4.0	1.2
Link Distance (m)	91.7	86.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	4.3	3.7
Average Queue (m)	0.4	0.1
95th Queue (m)	2.7	1.9
Link Distance (m)	68.9	14.2
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 183

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	7	6	0	32	3	213	3	14	267	16
Future Vol, veh/h	16	0	7	6	0	32	3	213	3	14	267	16
Conflicting Peds, #/hr	3	0	9	9	0	3	10	0	6	6	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	9	0	20	0	0	0	0	3	0	0	3	0
Mvmt Flow	17	0	7	6	0	34	3	224	3	15	281	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	582	569	309	570	576	235	308	0	0	233	0	0
Stage 1	330	330	-	238	238	-	-	-	-	-	-	-
Stage 2	252	239	-	332	338	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	414	435	691	435	431	809	1264	-	-	1346	-	-
Stage 1	669	649	-	770	712	-	-	-	-	-	-	-
Stage 2	737	711	-	686	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	388	422	680	420	419	803	1253	-	-	1339	-	-
Mov Cap-2 Maneuver	388	422	-	420	419	-	-	-	-	-	-	-
Stage 1	662	635	-	764	706	-	-	-	-	-	-	-
Stage 2	702	705	-	665	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	10.4	0.1	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	446	702	1339	-	-
HCM Lane V/C Ratio	0.003	-	-	0.054	0.057	0.011	-	-
HCM Control Delay (s)	7.9	0	-	13.5	10.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	0	0	0	3	258	0	0	296	3
Future Vol, veh/h	2	0	1	0	0	0	3	258	0	0	296	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	2	0	1	0	0	0	3	272	0	0	312	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	592	592	314	-	-	272	315	0	-	-	-	0
Stage 1	314	314	-	-	-	-	-	-	-	-	-	-
Stage 2	278	278	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	414	415	719	0	0	760	1228	-	0	0	-	-
Stage 1	690	651	-	0	0	-	-	-	0	0	-	-
Stage 2	722	675	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	413	414	719	-	-	760	1228	-	-	-	-	-
Mov Cap-2 Maneuver	413	414	-	-	-	-	-	-	-	-	-	-
Stage 1	688	651	-	-	-	-	-	-	-	-	-	-
Stage 2	720	673	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	0	0.1	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1228	-	481	-	-	-
HCM Lane V/C Ratio	0.003	-	0.007	-	-	-
HCM Control Delay (s)	7.9	0	12.5	0	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-	-

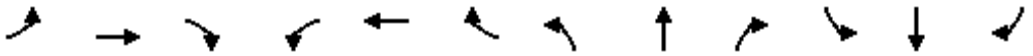
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	3	257	298	3
Future Vol, veh/h	2	1	3	257	298	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	2	1	3	271	314	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	593	316	317	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	463	718	1226	-	-	-
Stage 1	732	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	462	718	1226	-	-	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	763	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1226	-	524	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	7.9	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



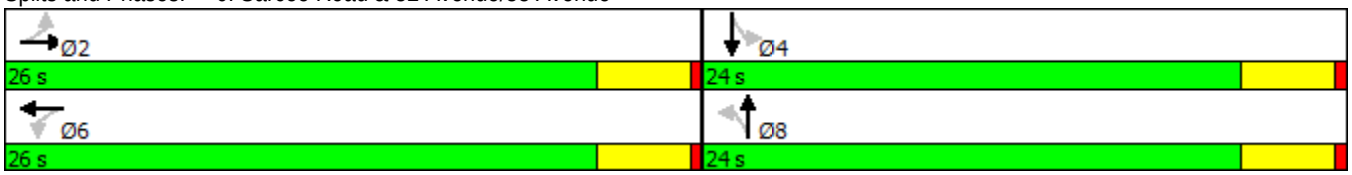
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	991	25	94	416	212	20	81	211	247	89	0
Future Volume (vph)	67	991	25	94	416	212	20	81	211	247	89	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.98		1.00		
Frt		0.996			0.949			0.892				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1742	3468	0	1709	3219	0	1725	1585	0	1759	1852	0
Flt Permitted	0.361			0.187			0.695			0.498		
Satd. Flow (perm)	662	3468	0	336	3219	0	1260	1585	0	918	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			226			42				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	1		6	6		1	2		10	10		2
Confl. Bikes (#/hr)			4			1			19			15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	1%	1%	0%
Adj. Flow (vph)	71	1054	27	100	443	226	21	86	224	263	95	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	1081	0	100	669	0	21	310	0	263	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0		26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	21.4	21.4		21.4	21.4		16.5	16.5		16.5	16.5	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.36	0.36		0.36	0.36	
v/c Ratio	0.23	0.67		0.65	0.41		0.05	0.52		0.80	0.14	
Control Delay	11.1	12.8		36.9	6.7		9.6	13.3		34.2	10.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.1	12.8		36.9	6.7		9.6	13.3		34.2	10.3	
LOS	B	B		D	A		A	B		C	B	
Approach Delay		12.7			10.6			13.1			27.9	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	3.6	37.1		6.5	12.2		1.1	16.4		18.7	5.1	
Queue Length 95th (m)	10.6	56.2		#27.6	22.0		4.2	33.2		#49.9	11.9	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	320	1683		162	1676		555	721		404	815	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.64		0.62	0.40		0.04	0.43		0.65	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 46
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 91.5% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.8	9.0	5.5	19.8
Average Queue (m)	5.2	2.6	0.2	3.1
95th Queue (m)	14.5	9.2	2.7	12.2
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	28.4	61.4	36.7	41.0	43.2	33.5	10.2	40.4	43.2	22.7
Average Queue (m)	5.5	32.2	14.0	15.4	14.8	11.2	2.5	12.7	23.8	8.2
95th Queue (m)	16.4	55.7	32.1	34.1	30.3	25.6	7.9	29.2	39.1	17.7
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)									0	
Queuing Penalty (veh)									0	
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)	0	7		0	0					
Queuing Penalty (veh)	0	5		0	0					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB
Directions Served	LTR
Maximum Queue (m)	9.1
Average Queue (m)	1.4
95th Queue (m)	6.6
Link Distance (m)	91.7
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB
Directions Served	LR
Maximum Queue (m)	5.9
Average Queue (m)	1.0
95th Queue (m)	4.6
Link Distance (m)	68.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 5

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	9	3	0	9	1	285	12	35	175	1
Future Vol, veh/h	13	0	9	3	0	9	1	285	12	35	175	1
Conflicting Peds, #/hr	2	0	5	5	0	2	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	11	0	17	0	0	0	0	5	13	0	9	0
Mvmt Flow	14	0	10	3	0	10	1	303	13	37	186	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	582	581	194	583	575	312	189	0	0	316	0	0
Stage 1	263	263	-	312	312	-	-	-	-	-	-	-
Stage 2	319	318	-	271	263	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.37	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.453	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	411	428	811	427	431	733	1397	-	-	1256	-	-
Stage 1	723	694	-	703	661	-	-	-	-	-	-	-
Stage 2	674	657	-	739	694	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	394	413	806	409	415	732	1395	-	-	1256	-	-
Mov Cap-2 Maneuver	394	413	-	409	415	-	-	-	-	-	-	-
Stage 1	721	670	-	702	660	-	-	-	-	-	-	-
Stage 2	663	656	-	703	670	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	11	0	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1395	-	-	498	611	1256	-	-
HCM Lane V/C Ratio	0.001	-	-	0.047	0.021	0.03	-	-
HCM Control Delay (s)	7.6	0	-	12.6	11	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	2	0	0	0	1	306	0	0	209	0
Future Vol, veh/h	3	0	2	0	0	0	1	306	0	0	209	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	3	0	2	0	0	0	1	326	0	0	222	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	550	550	222	-	-	326	222	0	-	-	-	0
Stage 1	222	222	-	-	-	-	-	-	-	-	-	-
Stage 2	328	328	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	441	439	810	0	0	708	1329	-	0	0	-	-
Stage 1	774	714	-	0	0	-	-	-	0	0	-	-
Stage 2	679	642	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	441	439	810	-	-	708	1329	-	-	-	-	-
Mov Cap-2 Maneuver	441	439	-	-	-	-	-	-	-	-	-	-
Stage 1	773	714	-	-	-	-	-	-	-	-	-	-
Stage 2	678	641	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	0	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1329	-	539	-	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-	-
HCM Control Delay (s)	7.7	0	11.7	0	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-	-

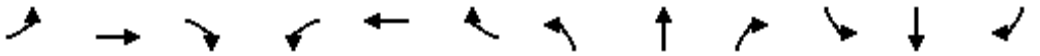
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	309	207	1
Future Vol, veh/h	3	2	0	309	207	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	2	0	329	220	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	550	221	221	0	-	0
Stage 1	221	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	491	811	1331	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	491	811	1331	-	-	-
Mov Cap-2 Maneuver	491	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	722	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1331	-	583	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



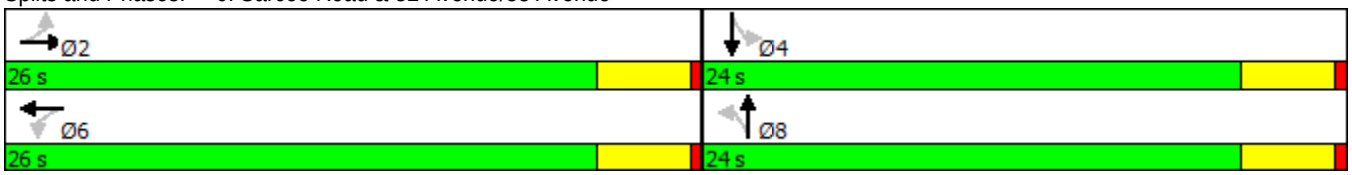
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	524	33	213	1081	558	38	124	124	192	85	3
Future Volume (vph)	96	524	33	213	1081	558	38	124	124	192	85	3
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	0.99		0.99	0.99		1.00	1.00	
Frt		0.991			0.949			0.925			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1759	3484	0	1759	3312	0	1742	1676	0	1777	1859	0
Flt Permitted	0.180			0.421			0.697			0.548		
Satd. Flow (perm)	333	3484	0	779	3312	0	1264	1676	0	1021	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			235			120			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	2		1	1		2	16		7	7		16
Confl. Bikes (#/hr)			2			2			11			24
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 (%)	1%	1%	0%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	101	552	35	224	1138	587	40	131	131	202	89	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	587	0	224	1725	0	40	262	0	202	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0		26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.2	22.2		22.2	22.2		13.8	13.8		13.8	13.8	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.31	0.31		0.31	0.31	
v/c Ratio	0.60	0.33		0.57	0.97		0.10	0.43		0.63	0.16	
Control Delay	32.0	7.7		17.9	28.3		10.7	8.8		22.5	10.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.0	7.7		17.9	28.3		10.7	8.8		22.5	10.7	
LOS	C	A		B	C		B	A		C	B	
Approach Delay		11.3			27.1			9.0			18.8	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	4.7	11.5		10.1	49.3		2.1	7.9		12.7	4.7	
Queue Length 95th (m)	#28.0	26.1		#42.5	#125.8		6.4	20.0		28.2	11.4	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	167	1762		392	1784		578	832		467	852	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.60	0.33		0.57	0.97		0.07	0.31		0.43	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 21.3 Intersection LOS: C
Intersection Capacity Utilization 105.1% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	21.3	15.0	9.9	18.3
Average Queue (m)	6.7	6.9	0.5	1.8
95th Queue (m)	17.4	14.6	4.6	9.8
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	59.9	90.7	85.4	80.0	225.4	236.8	14.9	34.8	44.6	23.8
Average Queue (m)	56.4	77.7	40.5	39.3	98.5	118.7	4.9	16.1	21.2	8.9
95th Queue (m)	69.3	109.2	102.1	83.0	195.2	212.7	12.3	27.8	37.6	18.7
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)		83	3		1	2			0	
Queuing Penalty (veh)		0	0		0	0			0	
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)	96	0		5	22					
Queuing Penalty (veh)	252	0		26	46					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB	NB
Directions Served	LTR	LTR
Maximum Queue (m)	9.1	2.4
Average Queue (m)	0.9	0.1
95th Queue (m)	5.4	1.5
Link Distance (m)	91.7	86.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	4.4	3.7
Average Queue (m)	0.4	0.1
95th Queue (m)	2.6	1.9
Link Distance (m)	68.9	14.2
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 324

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	8	7	0	35	3	234	3	15	294	18
Future Vol, veh/h	18	0	8	7	0	35	3	234	3	15	294	18
Conflicting Peds, #/hr	3	0	9	9	0	3	10	0	6	6	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	9	0	20	0	0	0	0	3	0	0	3	0
Mvmt Flow	19	0	8	7	0	37	3	246	3	16	309	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	636	622	338	624	630	257	338	0	0	255	0	0
Stage 1	361	361	-	260	260	-	-	-	-	-	-	-
Stage 2	275	261	-	364	370	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	381	405	665	401	401	787	1232	-	-	1322	-	-
Stage 1	643	629	-	749	697	-	-	-	-	-	-	-
Stage 2	716	696	-	659	624	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	354	392	654	385	389	781	1222	-	-	1315	-	-
Mov Cap-2 Maneuver	354	392	-	385	389	-	-	-	-	-	-	-
Stage 1	636	615	-	743	691	-	-	-	-	-	-	-
Stage 2	678	690	-	636	610	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	10.8	0.1	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1222	-	-	412	667	1315	-	-
HCM Lane V/C Ratio	0.003	-	-	0.066	0.066	0.012	-	-
HCM Control Delay (s)	8	0	-	14.4	10.8	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	0	0	0	3	284	0	0	326	3
Future Vol, veh/h	2	0	1	0	0	0	3	284	0	0	326	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	2	0	1	0	0	0	3	299	0	0	343	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	650	650	345	-	-	299	346	0	-	-	-	0
Stage 1	345	345	-	-	-	-	-	-	-	-	-	-
Stage 2	305	305	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	378	384	691	0	0	733	1196	-	0	0	-	-
Stage 1	664	631	-	0	0	-	-	-	0	0	-	-
Stage 2	698	657	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	377	383	691	-	-	733	1196	-	-	-	-	-
Mov Cap-2 Maneuver	377	383	-	-	-	-	-	-	-	-	-	-
Stage 1	662	631	-	-	-	-	-	-	-	-	-	-
Stage 2	696	655	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	0	0.1	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1196	-	444	-	-	-
HCM Lane V/C Ratio	0.003	-	0.007	-	-	-
HCM Control Delay (s)	8	0	13.2	0	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-	-

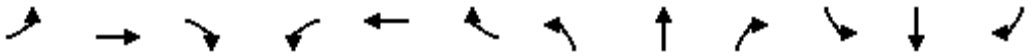
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	3	283	328	3
Future Vol, veh/h	2	1	3	283	328	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	2	1	3	298	345	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	651	347	348	0	-	0
Stage 1	347	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	428	689	1194	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	427	689	1194	-	-	-
Mov Cap-2 Maneuver	427	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1194	-	489	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	8	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



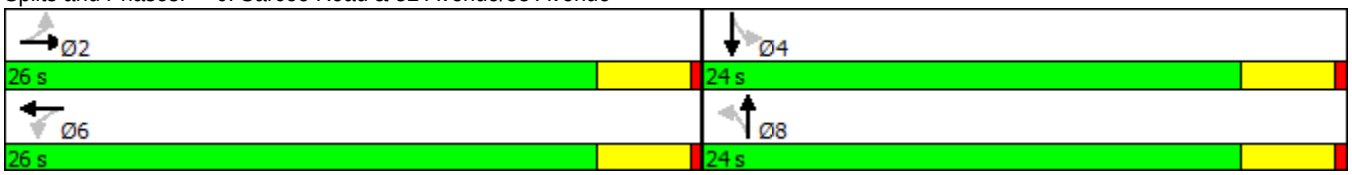
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	901	38	124	379	192	29	118	305	225	85	0
Future Volume (vph)	61	901	38	124	379	192	29	118	305	225	85	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.98		1.00		
Frt		0.994			0.950			0.892				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1742	3459	0	1709	3222	0	1725	1585	0	1759	1852	0
Flt Permitted	0.385			0.190			0.699			0.350		
Satd. Flow (perm)	706	3459	0	341	3222	0	1268	1585	0	646	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			204			57				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	1		6	6		1	2		10	10		2
Confl. Bikes (#/hr)			4			1			19			15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	1%	1%	0%
Adj. Flow (vph)	65	959	40	132	403	204	31	126	324	239	90	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	999	0	132	607	0	31	450	0	239	90	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0		26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	21.6	21.6		21.6	21.6		19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.39	0.39		0.39	0.39	
v/c Ratio	0.21	0.65		0.88	0.40		0.06	0.68		0.94	0.12	
Control Delay	10.9	13.2		69.7	6.9		9.7	17.2		64.3	10.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.9	13.2		69.7	6.9		9.7	17.2		64.3	10.1	
LOS	B	B		E	A		A	B		E	B	
Approach Delay		13.1			18.1			16.7			49.5	
Approach LOS		B			B			B			D	
Queue Length 50th (m)	3.3	33.8		10.0	11.2		1.6	26.8		19.3	4.8	
Queue Length 95th (m)	9.7	50.2		#36.6	20.0		5.4	#53.3		#54.6	11.4	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	317	1564		153	1563		519	682		264	758	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	0.64		0.86	0.39		0.06	0.66		0.91	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 48.9
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 96.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	13.9	24.0	4.9	19.7
Average Queue (m)	4.5	11.2	0.2	5.6
95th Queue (m)	13.0	19.4	2.6	15.9
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	25.7	63.3	43.8	44.8	37.3	24.2	16.2	57.9	47.4	26.2
Average Queue (m)	4.9	29.4	14.0	18.8	12.8	9.5	3.4	18.8	24.4	9.5
95th Queue (m)	15.5	52.3	33.3	39.6	29.4	21.8	10.5	40.4	44.9	20.7
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)		0							1	
Queuing Penalty (veh)		0							0	
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)		5		2	0					
Queuing Penalty (veh)		3		3	0					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB
Directions Served	LTR
Maximum Queue (m)	9.1
Average Queue (m)	1.6
95th Queue (m)	7.2
Link Distance (m)	91.7
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	5.7	29.5
Average Queue (m)	0.9	10.3
95th Queue (m)	4.2	26.1
Link Distance (m)	68.9	14.2
Upstream Blk Time (%)		3
Queuing Penalty (veh)		13
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 18

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	12	0	8	30	0	76	1	264	15	90	159	1
Future Vol, veh/h	12	0	8	30	0	76	1	264	15	90	159	1
Conflicting Peds, #/hr	2	0	5	5	0	2	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	11	0	17	0	0	0	0	5	13	0	9	0
Mvmt Flow	13	0	9	32	0	81	1	281	16	96	169	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	698	663	177	662	655	291	172	0	0	297	0	0
Stage 1	364	364	-	291	291	-	-	-	-	-	-	-
Stage 2	334	299	-	371	364	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.37	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.453	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	343	384	829	378	388	753	1417	-	-	1276	-	-
Stage 1	637	627	-	721	675	-	-	-	-	-	-	-
Stage 2	661	670	-	653	627	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	285	351	824	349	355	752	1415	-	-	1276	-	-
Mov Cap-2 Maneuver	285	351	-	349	355	-	-	-	-	-	-	-
Stage 1	635	574	-	720	674	-	-	-	-	-	-	-
Stage 2	588	669	-	590	574	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	12.9	0	2.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1415	-	-	386	567	1276	-	-
HCM Lane V/C Ratio	0.001	-	-	0.055	0.199	0.075	-	-
HCM Control Delay (s)	7.5	0	-	14.9	12.9	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0.2	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	2	0	0	101	1	345	5	0	248	0
Future Vol, veh/h	3	0	2	0	0	101	1	345	5	0	248	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	3	0	2	0	0	107	1	367	5	0	264	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	633	633	264	-	-	367	264	0	-	-	-	0
Stage 1	264	264	-	-	-	-	-	-	-	-	-	-
Stage 2	369	369	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	388	393	767	0	0	672	1283	-	0	0	-	-
Stage 1	735	685	-	0	0	-	-	-	0	0	-	-
Stage 2	645	616	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	326	393	767	-	-	672	1283	-	-	-	-	-
Mov Cap-2 Maneuver	326	393	-	-	-	-	-	-	-	-	-	-
Stage 1	734	685	-	-	-	-	-	-	-	-	-	-
Stage 2	541	615	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	11.4	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1283	-	423	672	-	-
HCM Lane V/C Ratio	0.001	-	0.013	0.16	-	-
HCM Control Delay (s)	7.8	0	13.6	11.4	-	-
HCM Lane LOS	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0	-	0	0.6	-	-

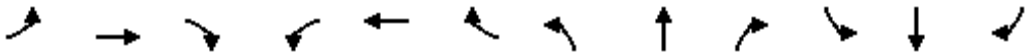
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	449	246	1
Future Vol, veh/h	3	2	0	449	246	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	2	0	478	262	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	741	263	263	0	-	0
Stage 1	263	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	379	768	1284	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	379	768	1284	-	-	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	617	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1284	-	475	-	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	0	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



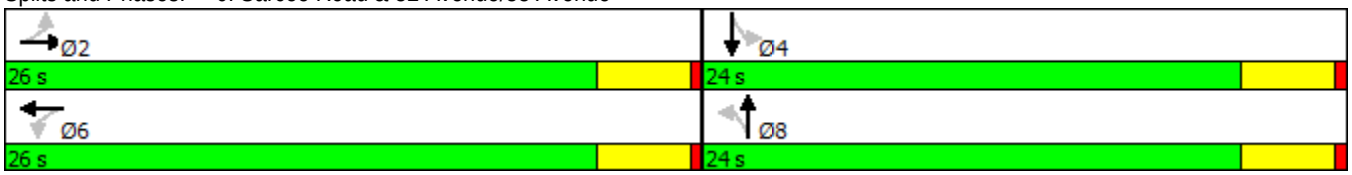
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	476	122	286	983	508	52	170	170	175	106	3
Future Volume (vph)	87	476	122	286	983	508	52	170	170	175	106	3
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	0.99		0.99	0.99		1.00	1.00	
Frt		0.969			0.949			0.925			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1759	3401	0	1759	3312	0	1742	1676	0	1777	1861	0
Flt Permitted	0.180			0.393			0.683			0.416		
Satd. Flow (perm)	333	3401	0	727	3312	0	1240	1676	0	776	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		81			236			120			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	2		1	1		2	16		7	7		16
Confl. Bikes (#/hr)			2			2			11			24
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 (%)	1%	1%	0%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	92	501	128	301	1035	535	55	179	179	184	112	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	629	0	301	1570	0	55	358	0	184	115	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0		26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.2	22.2		22.2	22.2		14.6	14.6		14.6	14.6	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.33	0.33		0.33	0.33	
v/c Ratio	0.56	0.37		0.84	0.89		0.14	0.57		0.73	0.19	
Control Delay	29.4	7.5		38.4	19.7		10.9	11.7		31.9	10.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.4	7.5		38.4	19.7		10.9	11.7		31.9	10.9	
LOS	C	A		D	B		B	B		C	B	
Approach Delay		10.3			22.7			11.6			23.8	
Approach LOS		B			C			B			C	
Queue Length 50th (m)	4.5	12.0		17.9	43.5		2.9	14.1		12.3	6.1	
Queue Length 95th (m)	#25.2	25.6		#64.0	#108.3		8.2	31.2		#35.2	13.7	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	164	1723		359	1757		557	820		349	838	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.56	0.37		0.84	0.89		0.10	0.44		0.53	0.14	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 18.7 Intersection LOS: B
Intersection Capacity Utilization 104.9% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.0	21.9	11.6	34.6
Average Queue (m)	6.5	10.8	0.6	11.5
95th Queue (m)	15.4	18.0	6.0	24.8
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	59.9	87.3	86.3	79.9	210.1	199.0	20.0	50.8	45.4	24.1
Average Queue (m)	54.5	72.2	40.3	54.8	105.7	111.1	5.7	21.8	20.0	11.6
95th Queue (m)	70.2	109.1	100.9	96.4	221.7	218.4	13.7	40.2	37.7	21.3
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)		65	2		5	3			1	
Queuing Penalty (veh)		0	0		0	0			0	
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)	95	0		34	10					
Queuing Penalty (veh)	225	0		165	29					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB	NB
Directions Served	LTR	LTR
Maximum Queue (m)	9.0	6.1
Average Queue (m)	0.6	0.2
95th Queue (m)	4.4	2.5
Link Distance (m)	91.7	86.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	5.6	29.4
Average Queue (m)	0.5	9.2
95th Queue (m)	3.2	24.6
Link Distance (m)	68.9	14.2
Upstream Blk Time (%)		2
Queuing Penalty (veh)		9
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 429

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	7	17	0	83	3	224	10	227	267	16
Future Vol, veh/h	16	0	7	17	0	83	3	224	10	227	267	16
Conflicting Peds, #/hr	3	0	9	9	0	3	10	0	6	6	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	9	0	20	0	0	0	0	3	0	0	3	0
Mvmt Flow	17	0	7	18	0	87	3	236	11	239	281	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1072	1037	309	1034	1040	251	308	0	0	253	0	0
Stage 1	778	778	-	254	254	-	-	-	-	-	-	-
Stage 2	294	259	-	780	786	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	192	233	691	212	232	793	1264	-	-	1324	-	-
Stage 1	379	410	-	755	701	-	-	-	-	-	-	-
Stage 2	699	697	-	391	406	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	140	179	680	172	179	787	1253	-	-	1317	-	-
Mov Cap-2 Maneuver	140	179	-	172	179	-	-	-	-	-	-	-
Stage 1	375	318	-	749	695	-	-	-	-	-	-	-
Stage 2	618	691	-	300	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.4	14.4	0.1	3.7
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	185	489	1317	-	-
HCM Lane V/C Ratio	0.003	-	-	0.131	0.215	0.181	-	-
HCM Control Delay (s)	7.9	0	-	27.4	14.4	8.3	0	-
HCM Lane LOS	A	A	-	D	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.8	0.7	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	0	0	81	3	309	11	0	509	3
Future Vol, veh/h	2	0	1	0	0	81	3	309	11	0	509	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	2	0	1	0	0	85	3	325	12	0	536	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	869	869	538	-	-	325	539	0	-	-	-	0
Stage 1	538	538	-	-	-	-	-	-	-	-	-	-
Stage 2	331	331	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	269	287	537	0	0	709	1014	-	0	0	-	-
Stage 1	522	517	-	0	0	-	-	-	0	0	-	-
Stage 2	676	640	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	236	286	537	-	-	709	1014	-	-	-	-	-
Mov Cap-2 Maneuver	236	286	-	-	-	-	-	-	-	-	-	-
Stage 1	520	517	-	-	-	-	-	-	-	-	-	-
Stage 2	592	637	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.6	10.8	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1014	-	290	709	-	-
HCM Lane V/C Ratio	0.003	-	0.011	0.12	-	-
HCM Control Delay (s)	8.6	0	17.6	10.8	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0	0.4	-	-

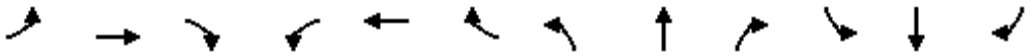
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	3	390	511	3
Future Vol, veh/h	2	1	3	390	511	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	2	1	3	411	538	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	957	540	541	0	-	0
Stage 1	540	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	282	536	1013	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	281	536	1013	-	-	-
Mov Cap-2 Maneuver	281	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1013	-	334	-	-
HCM Lane V/C Ratio	0.003	-	0.009	-	-
HCM Control Delay (s)	8.6	0	15.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



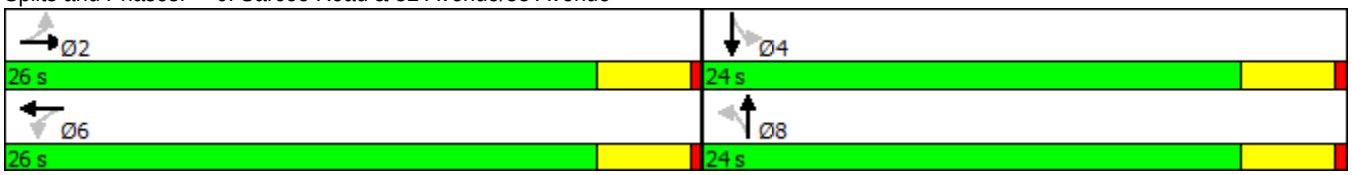
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	991	40	133	416	212	31	125	324	247	93	0
Future Volume (vph)	67	991	40	133	416	212	31	125	324	247	93	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00	0.98		1.00		
Frt		0.994			0.949			0.892				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1742	3459	0	1709	3219	0	1725	1585	0	1759	1852	0
Flt Permitted	0.347			0.182			0.693			0.322		
Satd. Flow (perm)	636	3459	0	327	3219	0	1257	1585	0	594	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			226			42				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	1		6	6		1	2		10	10		2
Confl. Bikes (#/hr)			4			1			19			15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	1%	1%	0%
Adj. Flow (vph)	71	1054	43	141	443	226	33	133	345	263	99	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	1097	0	141	669	0	33	478	0	263	99	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0		26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.40	0.40		0.40	0.40	
v/c Ratio	0.25	0.72		0.99	0.43		0.07	0.73		1.11	0.13	
Control Delay	11.9	14.7		96.7	7.2		9.8	20.0		114.1	10.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.9	14.7		96.7	7.2		9.8	20.0		114.1	10.2	
LOS	B	B		F	A		A	B		F	B	
Approach Delay		14.5			22.8			19.3			85.7	
Approach LOS		B			C			B			F	
Queue Length 50th (m)	3.7	38.8		11.5	12.5		1.7	30.9		~28.1	5.3	
Queue Length 95th (m)	10.8	57.3		#39.7	22.0		5.6	#70.7		#62.5	12.3	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	279	1527		143	1542		502	659		237	740	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.72		0.99	0.43		0.07	0.73		1.11	0.13	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 50
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 26.8 Intersection LOS: C
Intersection Capacity Utilization 101.5% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	16.0	21.5	3.0	30.2
Average Queue (m)	4.5	10.9	0.2	7.0
95th Queue (m)	13.5	17.6	2.5	19.1
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	27.1	68.8	54.3	69.6	78.0	73.7	18.9	63.7	50.0	43.9
Average Queue (m)	5.2	35.1	17.6	30.9	24.8	19.4	3.8	20.9	25.8	10.7
95th Queue (m)	16.6	59.1	41.1	65.2	75.2	65.6	11.6	46.4	45.6	27.4
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)		0	0					0	3	0
Queuing Penalty (veh)		0	0					0	0	0
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)		8		12	0					
Queuing Penalty (veh)		6		26	0					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB
Directions Served	LTR
Maximum Queue (m)	9.1
Average Queue (m)	0.9
95th Queue (m)	5.3
Link Distance (m)	91.7
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	7.0	30.8
Average Queue (m)	1.0	12.2
95th Queue (m)	4.7	28.0
Link Distance (m)	68.9	14.2
Upstream Blk Time (%)		3
Queuing Penalty (veh)		16
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 48

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	9	30	0	76	1	290	16	93	175	1
Future Vol, veh/h	13	0	9	30	0	76	1	290	16	93	175	1
Conflicting Peds, #/hr	2	0	5	5	0	2	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	11	0	17	0	0	0	0	5	13	0	9	0
Mvmt Flow	14	0	10	32	0	81	1	309	17	99	186	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	749	715	194	715	707	320	189	0	0	326	0	0
Stage 1	387	387	-	320	320	-	-	-	-	-	-	-
Stage 2	362	328	-	395	387	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.37	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.453	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	317	359	811	348	363	725	1397	-	-	1245	-	-
Stage 1	619	613	-	696	656	-	-	-	-	-	-	-
Stage 2	638	651	-	634	613	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	261	326	806	319	330	724	1395	-	-	1245	-	-
Mov Cap-2 Maneuver	261	326	-	319	330	-	-	-	-	-	-	-
Stage 1	617	557	-	695	655	-	-	-	-	-	-	-
Stage 2	565	650	-	568	557	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	13.6	0	2.8
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1395	-	-	361	533	1245	-	-
HCM Lane V/C Ratio	0.001	-	-	0.065	0.212	0.079	-	-
HCM Control Delay (s)	7.6	0	-	15.7	13.6	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.3	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	2	0	0	101	1	373	5	0	267	0
Future Vol, veh/h	3	0	2	0	0	101	1	373	5	0	267	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	3	0	2	0	0	107	1	397	5	0	284	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	683	683	284	-	-	397	284	0	-	-	-	0
Stage 1	284	284	-	-	-	-	-	-	-	-	-	-
Stage 2	399	399	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	359	368	748	0	0	646	1261	-	0	0	-	-
Stage 1	717	671	-	0	0	-	-	-	0	0	-	-
Stage 2	621	597	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	299	368	748	-	-	646	1261	-	-	-	-	-
Mov Cap-2 Maneuver	299	368	-	-	-	-	-	-	-	-	-	-
Stage 1	716	671	-	-	-	-	-	-	-	-	-	-
Stage 2	517	596	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	11.7	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1261	-	393	646	-	-
HCM Lane V/C Ratio	0.001	-	0.014	0.166	-	-
HCM Control Delay (s)	7.9	0	14.3	11.7	-	-
HCM Lane LOS	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0	-	0	0.6	-	-

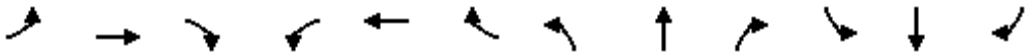
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2	0	477	265	1
Future Vol, veh/h	3	2	0	477	265	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	2	0	507	282	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	790	283	283	0	-	0
Stage 1	283	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	355	749	1262	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	355	749	1262	-	-	-
Mov Cap-2 Maneuver	355	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1262	-	450	-	-
HCM Lane V/C Ratio	-	-	0.012	-	-
HCM Control Delay (s)	0	-	13.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



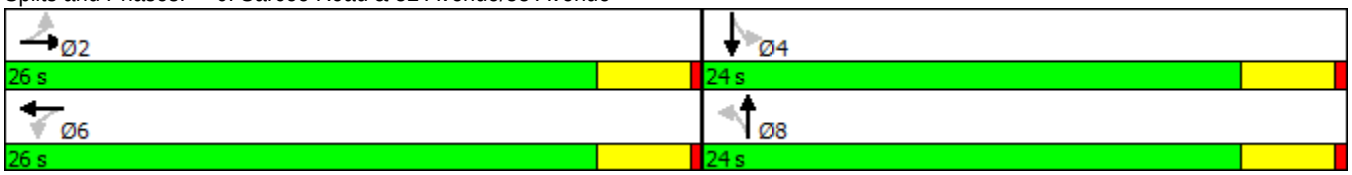
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	524	125	305	1081	558	55	181	181	192	114	3
Future Volume (vph)	96	524	125	305	1081	558	55	181	181	192	114	3
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	30.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	0.99		0.99	0.99		1.00	1.00	
Frt		0.971			0.949			0.925			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1759	3408	0	1759	3312	0	1742	1676	0	1777	1861	0
Flt Permitted	0.180			0.357			0.678			0.395		
Satd. Flow (perm)	333	3408	0	661	3312	0	1230	1676	0	737	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		74			235			120			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		95.3			247.6			108.9			63.6	
Travel Time (s)		6.9			17.8			7.8			4.6	
Confl. Peds. (#/hr)	2		1	1		2	16		7	7		16
Confl. Bikes (#/hr)			2			2			11			24
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 (%)	1%	1%	0%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	101	552	132	321	1138	587	58	191	191	202	120	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	684	0	321	1725	0	58	382	0	202	123	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0		26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.2	22.2		22.2	22.2		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.34	0.34		0.34	0.34	
v/c Ratio	0.63	0.41		1.01	1.01		0.14	0.58		0.80	0.19	
Control Delay	35.6	8.5		75.6	38.4		10.7	12.0		39.4	10.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.6	8.5		75.6	38.4		10.7	12.0		39.4	10.7	
LOS	D	A		E	D		B	B		D	B	
Approach Delay		12.0			44.3			11.8			28.5	
Approach LOS		B			D			B			C	
Queue Length 50th (m)	5.9	15.9		~27.7	~70.0		3.1	15.8		14.1	6.5	
Queue Length 95th (m)	#28.0	28.7		#71.7	#125.8		8.6	34.5		#41.4	14.4	
Internal Link Dist (m)		71.3			223.6			84.9			39.6	
Turn Bay Length (m)	30.0			50.0								
Base Capacity (vph)	160	1677		317	1715		538	800		322	815	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.63	0.41		1.01	1.01		0.11	0.48		0.63	0.15	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 46.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 31.8 Intersection LOS: C
Intersection Capacity Utilization 111.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Sarcee Road & 32 Avenue/33 Avenue



Intersection: 3: Sarcee Road & 34 Avenue

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	14.4	20.1	12.9	27.5
Average Queue (m)	4.8	10.8	0.7	12.0
95th Queue (m)	13.3	17.2	5.2	24.7
Link Distance (m)	66.3	45.6	71.4	86.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Sarcee Road & 32 Avenue/33 Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	59.9	89.0	84.8	79.9	244.8	247.1	18.9	46.1	44.9	25.5
Average Queue (m)	57.3	80.3	42.1	70.8	191.1	198.5	7.4	20.6	21.3	11.5
95th Queue (m)	63.5	96.6	101.9	102.5	305.5	300.5	16.1	38.3	38.4	21.6
Link Distance (m)		79.5	79.5		234.6	234.6	82.9	82.9	45.5	45.5
Upstream Blk Time (%)		83	3		30	29			1	
Queuing Penalty (veh)		0	0		0	0			0	
Storage Bay Dist (m)	30.0			50.0						
Storage Blk Time (%)	100	1		41	28					
Queuing Penalty (veh)	261	1		223	85					

Intersection: 9: Sarcee Road & Hampton Crescent S/West Access

Movement	EB	NB
Directions Served	LTR	LTR
Maximum Queue (m)	9.2	7.4
Average Queue (m)	0.7	0.4
95th Queue (m)	4.7	3.7
Link Distance (m)	91.7	86.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Sarcee Road & Hampton Crescent N

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	5.6	27.8
Average Queue (m)	0.5	10.9
95th Queue (m)	3.2	26.7
Link Distance (m)	68.9	14.2
Upstream Blk Time (%)		2
Queuing Penalty (veh)		10
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 579

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	0	18	0	86	3	245	11	228	294	18
Future Vol, veh/h	18	0	0	18	0	86	3	245	11	228	294	18
Conflicting Peds, #/hr	3	0	9	9	0	3	10	0	6	6	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	9	0	20	0	0	0	0	3	0	0	3	0
Mvmt Flow	19	0	0	19	0	91	3	258	12	240	309	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1128	1091	338	1084	1094	273	338	0	0	276	0	0
Stage 1	809	809	-	276	276	-	-	-	-	-	-	-
Stage 2	319	282	-	808	818	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.48	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	176	217	665	196	216	771	1232	-	-	1299	-	-
Stage 1	364	396	-	735	685	-	-	-	-	-	-	-
Stage 2	678	681	-	378	393	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	126	165	654	159	164	765	1222	-	-	1292	-	-
Mov Cap-2 Maneuver	126	165	-	159	164	-	-	-	-	-	-	-
Stage 1	360	303	-	729	680	-	-	-	-	-	-	-
Stage 2	594	676	-	290	301	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.6	15.2	0.1	3.6
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1222	-	-	126	461	1292	-	-
HCM Lane V/C Ratio	0.003	-	-	0.15	0.237	0.186	-	-
HCM Control Delay (s)	8	0	-	38.6	15.2	8.4	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.9	0.7	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	0	0	81	3	335	11	0	538	3
Future Vol, veh/h	2	0	1	0	0	81	3	335	11	0	538	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	2	0	1	0	0	85	3	353	12	0	566	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	927	927	568	-	-	353	569	0	-	-	-	0
Stage 1	568	568	-	-	-	-	-	-	-	-	-	-
Stage 2	359	359	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	-	-	6.25	4.15	-	-	-	-	-
Critical Hdwy Stg 1	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	-	-	3.345	2.245	-	-	-	-	-
Pot Cap-1 Maneuver	246	265	517	0	0	684	989	-	0	0	-	-
Stage 1	502	502	-	0	0	-	-	-	0	0	-	-
Stage 2	653	622	-	0	0	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	215	264	517	-	-	684	989	-	-	-	-	-
Mov Cap-2 Maneuver	215	264	-	-	-	-	-	-	-	-	-	-
Stage 1	500	502	-	-	-	-	-	-	-	-	-	-
Stage 2	569	620	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	11	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	989	-	267	684	-	-
HCM Lane V/C Ratio	0.003	-	0.012	0.125	-	-
HCM Control Delay (s)	8.7	0	18.6	11	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0	0.4	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	1	3	416	541	3
Future Vol, veh/h	2	1	3	416	541	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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	2	1	3	438	569	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1015	571	572	0	-	0
Stage 1	571	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	261	515	986	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	260	515	986	-	-	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	640	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	986	-	311	-	-
HCM Lane V/C Ratio	0.003	-	0.01	-	-
HCM Control Delay (s)	8.7	0	16.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-