325 King Street

Town of Niagara-on-the-Lake

Traffic Impact Study

Final

August 14, 2024

Prepared for:

Two Sisters Resorts Corp.

122 Romina Drive

Concord, Ontario

L4K 4Z7

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Town of Niagara-on-the-Lake

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1.0 Introduction

R. V. Anderson Associates Limited (RVA) was retained by Two Sisters Resorts Corp. to complete a Traffic Impact Study (TIS) for the proposed hotel development consisting of 129 rooms and their associated amenities (i.e., office space, eating areas etc.). The hotel will redevelop the former Parliament Oak Public School site, located at 325 King Street in the Town of Niagara-on-the-Lake (NOTL) in Ontario. This study was completed as per requirements identified in the Regional Municipality of Niagara's (Region) Guidelines for Transportation Impact Studies dated May 2012.

The primary objective of this TIS is to determine the traffic volumes anticipated to be generated by the proposed development during the weekday PM and Saturday midday peak hours of adjacent street traffic, which will allow for the analysis of the surrounding road network. Mitigation measures will then be recommended for intersections that are forecast to exhibit poor performance measures, if required.

1.1 Development Description

The proposed Concept Plan includes a hotel land use consisting of 129 rooms, 775m^2 of indoor eating space, 195m^2 of patio space, and approximately 950m^2 of amenity space (banquet halls, spa, office, etc.). The development is also proposing over 2.7 acres of landscape area surrounding the hotel. The site plan is available in Appendix 1.

Visitor access to the proposed hotel will be provided through two (2) full-movement accesses along King Street, with a loading/servicing access along Centre Street and Gage Street, respectively. The hotel has a proposed parking provision of 241 standard parking spaces and 7 accessible parking spaces, of which eight (8) are at-grade.

2.0 Study Area

The project site of the proposed 325 King Street residential development (i.e., former Parliament Oak School) is located on the land parcel bound by King Street to the southeast, Gage Street to the northeast, Regent Street to the northwest, and Centre Street to the southwest, in the Town of Niagara-on-the-Lake in Ontario.

The project site location of the proposed residential development, and the surrounding area roadway network are shown in Figure 2.1.

Figure 2.1 – Project Site Location and Adjacent Road Network

2.1 Study Area Roadways

Based on the location of the proposed development with respect to the adjacent roadway network, a study area was established in consultation with Town staff; this study area encompasses King Street, Mary Street, Queen Street, Gage Street, Regent Street, and Centre Street.

King Street is an arterial road oriented in the northeast/southwest direction under the jurisdiction of the Town of Niagara-on-the-Lake. The roadway consists of a two-lane cross-section (one lane per direction), with no raised curbs and a default posted speed limit of 50km/hr. There is a Niagara Region Transit (NRT) OnDemand stop location on the east side of King Street, just opposite the development. There is currently on-street parking available on the west side of King Street, as well as formal parking stalls near Veterans Memorial Park, which resides on the southeast quadrant of the King Street & Centre Street intersection.

Mary Street is an arterial road oriented in the northwest/southeast direction under the jurisdiction of the Town of Niagara-on-the-Lake. In proximity to the study area, Mary Street consists of a two-lane cross-section posted at 50km/hr, with 1.5-metre bike lanes in each direction. A pedestrian sidewalk is currently provided on both sides of the roadway, with pedestrian sidewalk on the south side containing a gap approximately 50 metres north of King Street.

Queen Street is a Town-owned arterial road oriented in the northwest/southeast direction. Near the study area, the roadway consists of a single lane in each direction with on-street parking on both sides. As the main corridor for the downtown area, Queen Street provides spacious pedestrian facilities and access to many commercial establishments.

Gage Street, Centre Street and Regent Street are local roadways with a default posted speed of 50km/hr. In close proximity to the site, there are no raised curbs along the corridor, with pedestrian sidewalks provided on both sides of Regent Street.

It is important to note that subsequent sections refer to King Street and Regent Street as the north/south roadways, with Mary Street, Queen Street, Gage Street, and Centre Street being referred to as the east/west roadways.

2.2 Study Area Intersections

The study area intersections considered for analysis as part of this study are:

- All-way-stop-controlled (AWSC) intersection of King Street with Queen Street/Picton Street;
- Two-way-stop-controlled (TWSC) intersection of King Street with Gage Street/Castlereagh Street;
- TWSC intersection of King Street with Centre Street;
- TWSC intersection of King Street with Mary Street;
- AWSC intersection of Regent Street with Gage Street;
- TWSC intersection of Regent Street with Centre Street; and
- The two (2) proposed site driveways along King Street.

The study intersections, along with their associated lane configuration and traffic control, are shown in Figure 2.2.

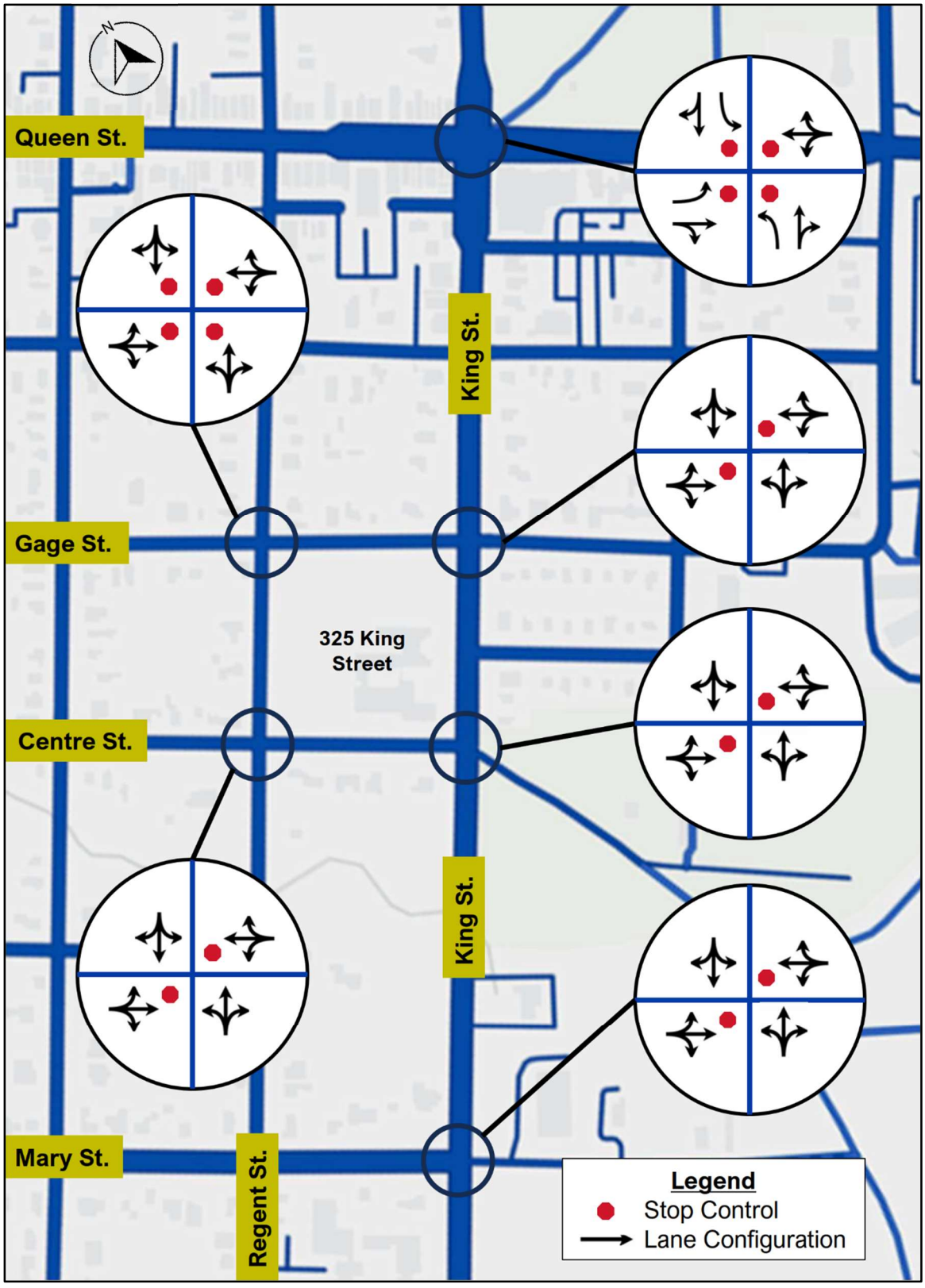


Figure 2.2 – Study Area Intersection Traffic Control and Lane Configurations

3.0 Study Methodology

3.1 Intersection Operational Analysis Methodology

The industry standard Synchro macroscopic traffic analysis software was utilized to analyze the study area intersections, as per the latest edition of the Niagara Region Traffic Impact Study Guidelines. Key performance measures such as Level of Service (LOS), volume-to-capacity ratio (v/c ratio), and 95th percentile queuing was reported, and are defined below:

- Average vehicle control delay is used to characterize LOS for the entire intersection, an approach, or movement. Delay quantifies the variations in travel time and is also a surrogate measure of driver discomfort and fuel consumption.
- V/c ratio quantifies the degree to which the capacity is utilized by a defined lane group.
- 95th percentile queue is the queue length which is expected to be exceeded only 5% of the time; it is common practice to identify preferred storage length requirements for auxiliary turn lanes based on estimated peak hour 95th percentile queueing.

Table 3.1 identifies the control delay thresholds (seconds of delay per vehicle) for each LOS based on Highway Capacity Manual (HCM 2000) methodology.

Table 3.1 – Characteristics of Level of Service at Intersections (HCM 2000)

Level of Service (LOS)	Control Delay (seconds/vehicle)
	Unsignalized Intersection
A	≤ 10
B	> 10 to 15
C	> 15 to 25
D	> 25 to 35
E	> 35 to 50
F	> 50

3.2 Analysis Periods

Given the nature of the proposed land use, it is anticipated that the peak demand of the hotel will take place on Friday evenings which captures the influx of weekend visitors, as well as the Saturday midday period which captures the general peak activity for the hotel and surrounding areas. Therefore, the analysis adopts the weekday PM peak hour and Saturday midday peak hour as the design hours.

4.0 Existing (2023) Traffic Conditions

4.1 Existing Traffic Data

The turning movement count (TMC) data used in this study was collected during the Labour Day long weekend on Friday, September 4th, 2020, and on Saturday, September 5th, 2020.

To calibrate the historical turning movement counts to the 2023 base year, it was agreed upon with Town staff that a 1% annualized growth rate should be applied to all turning movements within the study area. The resulting volumes have been adopted as the 2023 existing conditions volumes.

Furthermore, it was also agreed upon that volumes should be adjusted to reflect the reduction in traffic volumes caused by the COVID-19 pandemic. The adjustments were derived based on historical TMC data obtained from other approved TIS reports and consist of the following:

- For the PM peak hour, the TMC data was unchanged.
- For the SAT peak hour, the TMC data was increased by 10%.

In addition to the foregoing adjustment, site trips from the recent expansion of the Pillar & Post outdoor event facility have been extracted from the associated TIS report (June 2016) and added to the Saturday midday period. The raw turning movement count data can be found in Appendix 2, with the background development site trips summarized in Appendix 3.

The resulting existing (2023) conditions vehicular volumes, as approved by Town staff for use in this study, are shown in Figure 4.1.

XX – PM Peak Hour Volumes
(XX) – SAT Peak Hour Volumes

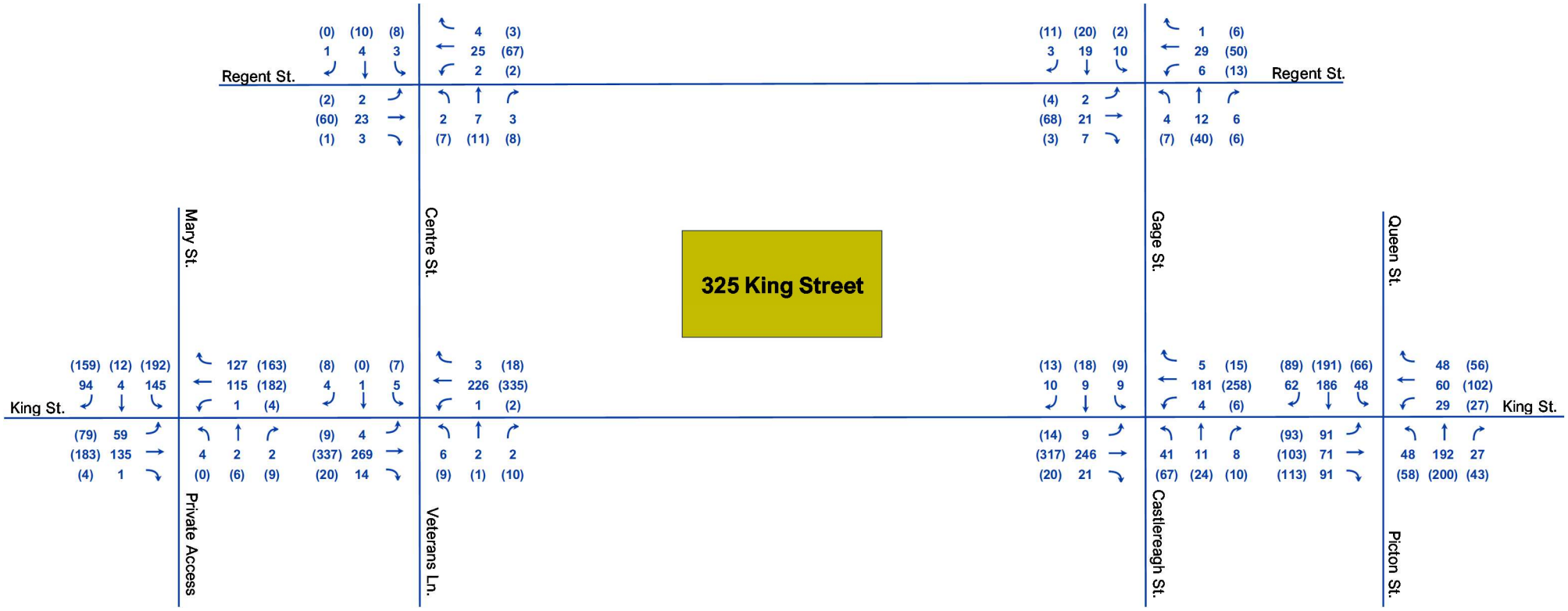


Figure 4.1 – Existing (2023) Traffic Volumes

4.2 Existing (2023) Intersection Operational Analysis

Table 4.1 presents the result of the intersection operational analysis completed under existing 2023 traffic conditions for the weekday PM and Saturday midday peak hours. All Synchro HCM analysis outputs are provided in Appendix 4.

Table 4.1 – Existing (2023) Traffic Conditions - Intersection Operational Analysis Results

Intersection (Traffic Control)	Movement	Peak Hour								Existing Storage Length (m)
		Weekday PM				Saturday MD				
		V/C	LOS	Delay (s)	95%^{tile} Queue (m)	V/C	LOS	Delay (s)	95%^{tile} Queue (m)	
King Street & Mary Street/Private Access (TWSC)	EBLTR	0.48	C	17.1	21	0.89	F	51.2	77	-
	WBLTR	0.02	B	13.6	1	0.03	B	12.5	1	-
	NBLTR	0.05	A	2.7	1	0.07	A	2.9	2	-
	SBLTR	0.00	A	0.0	0	0.00	A	0.1	0	-
	Overall	**-**	**B**	**6.9**	**-**	**-**	**D**	**19.8**	**-**	**-**
King Street & Centre Street/Veterans Lane (TWSC)	EBLTR	0.02	B	12.0	1	0.04	B	13.8	1	-
	WBLTR	0.02	B	13.0	1	0.05	B	14.1	1	-
	NBLTR	0.00	A	0.1	0	0.01	A	0.3	0	-
	SBLTR	0.00	A	0.0	0	0.00	A	0.1	0	-
	Overall	**-**	**A**	**1**	**-**	**-**	**A**	**0.8**	**-**	**-**
King Street & Gage Street/Castlereagh Street (TWSC)	EBLTR	0.06	B	12.2	2	0.11	B	14.7	3	-
	WBLTR	0.14	B	14.0	4	0.32	C	20.0	11	-
	NBLTR	0.01	A	0.3	0	0.01	A	0.4	0	-
	SBLTR	0.00	A	0.2	0	0.01	A	0.2	0	-
	Overall	**-**	**A**	**2.3**	**-**	**-**	**A**	**3.7**	**-**	-
King Street & Queen Street/Picton Street (AWS)	EBL	-	B	9.4	-	-	C	10.6	-	24
	EBTR	-	A	13.1	-	-	A	17.2	-	-
	WBLTR	-	C	16.0	-	-	C	20.8	-	-
	NBL	-	B	10.8	-	-	B	11.8	-	50
	NBTR	-	A	11.0	-	-	A	14.2	-	-
	SBL	-	B	9.8	-	-	B	10.4	-	16
	SBTR	-	A	10.2	-	-	A	13.0	-	-
	Overall	**-**	**B**	**12.7**	**-**	**-**	**C**	**16.0**	**-**	**-**
Regent Street & Centre Street (TWSC)	EBLTR	0.01	A	9.1	0	0.03	A	9.9	1	-
	WBLTR	0.01	A	9.1	0	0.04	A	9.5	1	-
	NBLTR	0.00	A	0.5	0	0.00	A	0.2	0	-
	SBLTR	0.00	A	0.4	0	0.00	A	0.2	0	-
	Overall	**-**	**A**	**2.6**	**-**	**-**	**A**	**2.6**	**-**	**-**

Intersection (Traffic Control)	Movement	Peak Hour								Existing Storage Length (m)
		Weekday PM				Saturday MD				
		V/C	LOS	Delay (s)	95% tile Queue (m)	V/C	LOS	Delay (s)	95% tile Queue (m)	
Regent Street & Gage Street (AWS)	EBLTR	-	A	7.3	-	-	A	7.3	-	-
	WBLTR	-	A	7.1	-	-	A	7.6	-	-
	NBLTR	-	A	7.1	-	-	A	7.6	-	-
	SBLTR	-	A	7.3	-	-	A	7.6	-	-
	Overall	**-**	**A**	**7.2**	**-**	**-**	**A**	**7.6**	**-**	**-**

As presented in Table 4.1, the study area intersections are operating acceptably under existing conditions, with ample reserve capacity, nominal delays, and no queueing concerns. For King Street & Mary Street, the stop-controlled eastbound approach is experiencing delays in the Saturday midday period due to the free-flow movement along King Street.

5.0 Future Background Traffic Conditions

5.1 Horizon Years

The proposed horizon years for the traffic analysis were determined based on the *Niagara Region Guidelines for Traffic Impact Studies*, dated May 2012. The guidelines state that the study horizons should include existing conditions and a 5-year horizon from the date of the TIS. Therefore, the study horizon that has been selected for this study is 2028.

5.2 Future Background Developments

As per consultation with Town staff, the Randwood Study for the proposed residential subdivision at 200 John Street East and 588 Charlotte Avenue is to be considered for the weekday PM analysis. However, as per the TIS report update completed in July 2020, the trip assignment completed for the development only assigns trips north on King Street in the AM peak hour. A summary of the background development site trips can be found in Appendix 3.

5.3 Future Background Traffic Volumes

The traffic volumes for the future background 2028 horizon year were developed by applying a 1% per annum growth rate to all turning movements, as approved by Town staff. The resulting future background volumes for the 2028 horizon year are shown in Figure 5.1.

XX – PM Peak Hour Volumes
(XX) – SAT Peak Hour Volumes

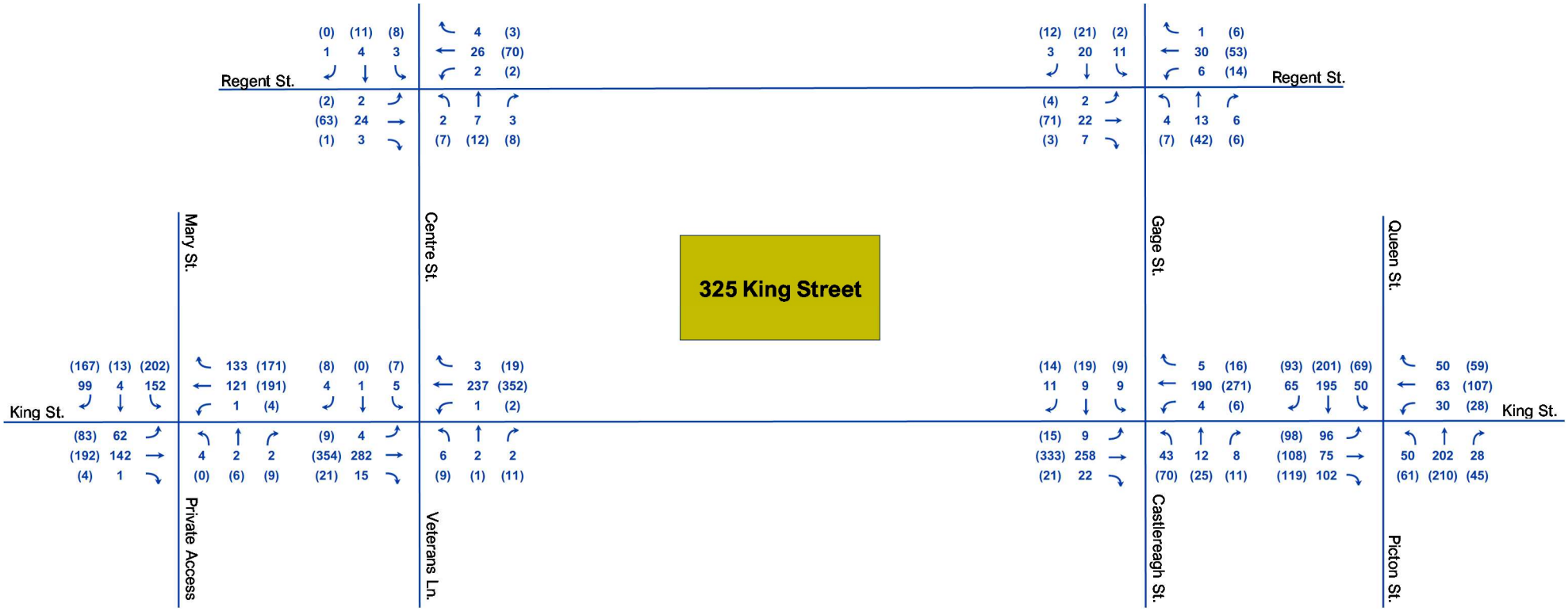


Figure 5.1 – Future (2028) Background Traffic Volumes

5.4 Future (2028) Background Intersection Operational Analysis

Table 5.1 presents the result of the intersection operational analysis completed under future background 2028 traffic conditions for the weekday PM and Saturday midday peak hours. All Synchro HCM analysis outputs are provided in Appendix 5.

Table 5.1 – Future (2028) Background Traffic Conditions - Intersection Operational Analysis Results

Intersection (Traffic Control)	Movement	Peak Hour								Existing Storage Length (m)
		Weekday PM				Saturday MD				
		V/C	LOS	Delay (s)	95%tile Queue (m)	V/C	LOS	Delay (s)	95%tile Queue (m)	
King Street & Mary Street/Private Access (TWSC)	EBLTR	0.50	C	17.6	22	0.99	F	71.8	97	-
	WBLTR	0.02	B	13.7	1	0.04	B	12.9	1	-
	NBLTR	0.05	A	2.7	1	0.08	A	3.0	2	-
	SBLTR	0.00	A	0.0	0	0.00	A	0.1	0	-
	Overall	**-**	**B**	**7.1**	**-**	**-**	**D**	**27.4**	**-**	**-**
King Street & Centre Street/Veterans Lane (TWSC)	EBLTR	0.02	B	12.2	1	0.04	B	14.3	1	-
	WBLTR	0.02	B	13.2	1	0.06	B	14.4	1	-
	NBLTR	0.00	A	0.1	0	0.01	A	0.3	0	-
	SBLTR	0.00	A	0.0	0	0.00	A	0.1	0	-
	Overall	**-**	**A**	**0.5**	**-**	**-**	**A**	**0.8**	**-**	**-**
King Street & Gage Street/Castlereagh Street (TWSC)	EBLTR	0.06	B	12.2	2	0.12	C	15.2	3	-
	WBLTR	0.15	B	14.2	4	0.35	C	21.6	12	-
	NBLTR	0.01	A	0.3	0	0.01	A	0.4	0	-
	SBLTR	0.00	A	0.2	0	0.01	A	0.2	0	-
	Overall	**-**	**A**	**2.4**	**-**	**-**	**A**	**3.9**	**-**	-
King Street & Queen Street/Picton Street (AWS)	EBL	-	B	9.6	-	-	C	10.9	-	24
	EBTR	-	A	14.0	-	-	A	19.2	-	-
	WBLTR	-	C	16.8	-	-	C	23.5	-	-
	NBL	-	B	11.0	-	-	B	12.3	-	50
	NBTR	-	A	11.5	-	-	A	15.4	-	-
	SBL	-	B	10.0	-	-	B	10.7	-	16
	SBTR	-	A	10.6	-	-	A	13.8	-	-
	Overall	**-**	**B**	**13.3**	**-**	**-**	**C**	**17.6**	**-**	**-**
Regent Street & Centre Street (TWSC)	EBLTR	0.01	A	9.1	0	0.03	A	9.9	1	-
	WBLTR	0.01	A	9.2	0	0.04	A	9.6	1	-
	NBLTR	0.00	A	0.5	0	0.00	A	0.2	0	-
	SBLTR	0.00	A	0.4	0	0.00	A	0.2	0	-
	Overall	**-**	**A**	**2.6**	**-**	**-**	**A**	**2.6**	**-**	**-**

Intersection (Traffic Control)	Movement	Peak Hour								Existing Storage Length (m)
		Weekday PM				Saturday MD				
		V/C	LOS	Delay (s)	95% tile Queue (m)	V/C	LOS	Delay (s)	95% tile Queue (m)	
Regent Street & Gage Street (AWS)	EBLTR	-	A	7.3	-	-	A	7.4	-	-
	WBLTR	-	A	7.1	-	-	A	7.6	-	-
	NBLTR	-	A	7.1	-	-	A	7.7	-	-
	SBLTR	-	A	7.3	-	-	A	7.7	-	-
	Overall	**-**	**A**	**7.2**	**-**	**-**	**A**	**7.6**	**-**	**-**

As presented in Table 5.1, the addition of background traffic growth results in minor increases to delay for all of the study area intersections, with all intersections forecast to operate with acceptable overall performance measures. Similar to the baseline traffic conditions, the intersection of King Street & Mary Street is forecast to operate with delays of approximately 72.8 seconds for the stop-controlled approach in the Saturday midday peak hour, which is an increase of 20.6 seconds from existing conditions.

6.0 Future Site Generated Traffic

6.1 Future Site Generated Traffic Volumes

Trip generation for the hotel was estimated using the *Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition*, utilizing *Land Use Code 310 Hotel*. As per the definition for the land use code, the hotel trip generation captures all amenities within the hotel land use, including sleeping accommodation, a full-service restaurant, cocktail lounge, meeting rooms, banquet rooms, and convention rooms. The trip generation for the proposed development is shown in Table 6.1.

Table 6.1 – Hotel Land Use – Trip Generation Summary

Land Use Code (LUC)	Peak Hour	Units	Trip Equation	Total Trips	Inbound % / Outbound %	Inbound / Outbound Trips
Hotel Land Use (310)	Weekday PM	129	T = 0.74(X) – 27.89	68	51 / 49	34 / 34
	Saturday MD		T = 0.69(X) + 5.95	95	56 / 44	53 / 42

Overall, approximately 68 trips are estimated to be generated by the site during the PM peak hour (34 inbound and 34 outbound). During the Saturday midday peak hour, approximately 95 trips are estimated to be generated (53 inbound and 42 outbound).

6.2 Trip Distribution

The site generated traffic was distributed to the surrounding road network based on the nature of the development, in addition to engineering judgement based on the layout and function of the surrounding road network. Table 6.2 outlines the estimated trip distribution patterns assumed for trips generated by the proposed hotel.

Table 6.2 – Site Trip Distribution Percentages

Direction (to/from)	Distribution Percentages
South on Queen's Parade	33%
West on Mary Street	67%
Total	**100%**

Given that access to the parking garage is located in the southeast quadrant of the parcel and majority of the parking provision is provided underground, it can be reasonably assumed that site generated traffic will utilize the south driveway, with the north driveway

being utilized primarily by inbound trips from the north. Therefore, the analysis applies all outbound trips to the south site access, with the inbound trips being distributed based on trip origin.

6.3 Trip Assignment

The estimated site traffic volumes assigned to the study area intersections during the weekday PM and Saturday midday peak hours are shown in Figure 6.1.

XX – PM Peak Hour Volumes
(XX) – SAT Peak Hour Volumes

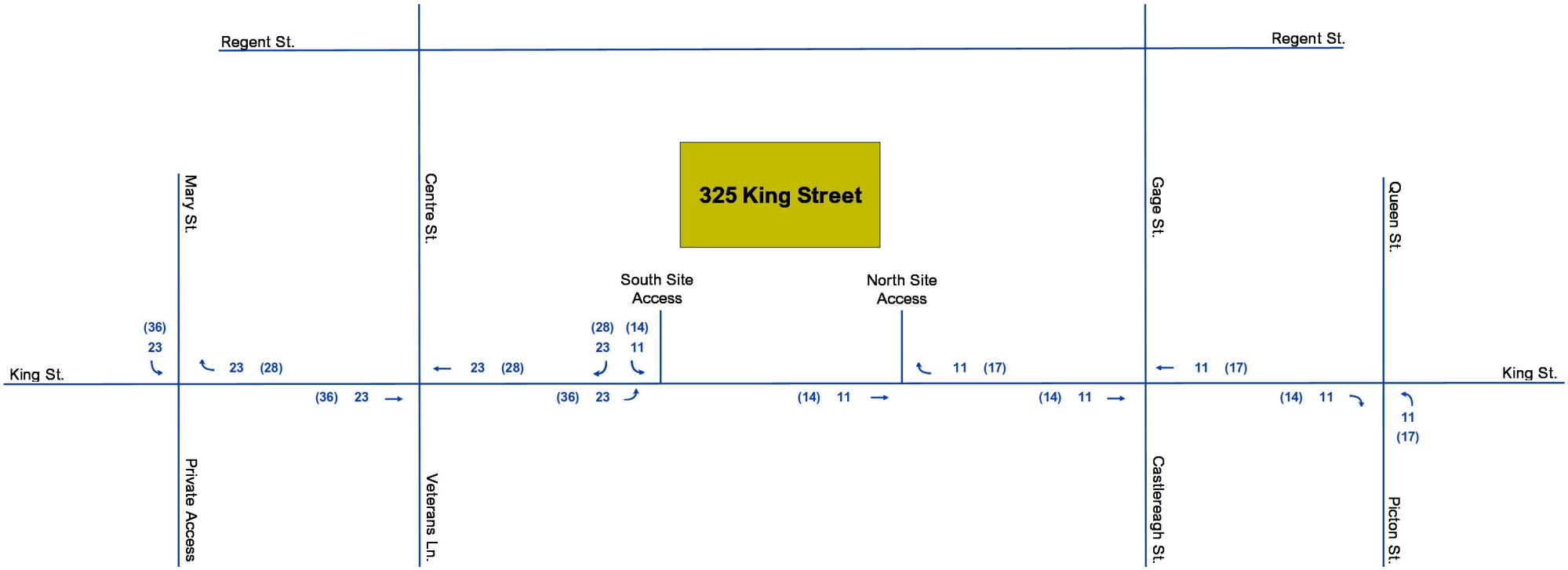


Figure 6.1 – Site Trip Assignment

7.0 Future Total (2028) Traffic Conditions

7.1 Future Total (2028) Traffic Volumes

Future total traffic volumes for the 2028 horizon year were estimated by adding the estimated site generated traffic to the future background (2028) traffic volumes. The resulting estimated future total (2028) traffic volumes are shown in Figure 7.1.

XX – PM Peak Hour Volumes
(XX) – SAT Peak Hour Volumes

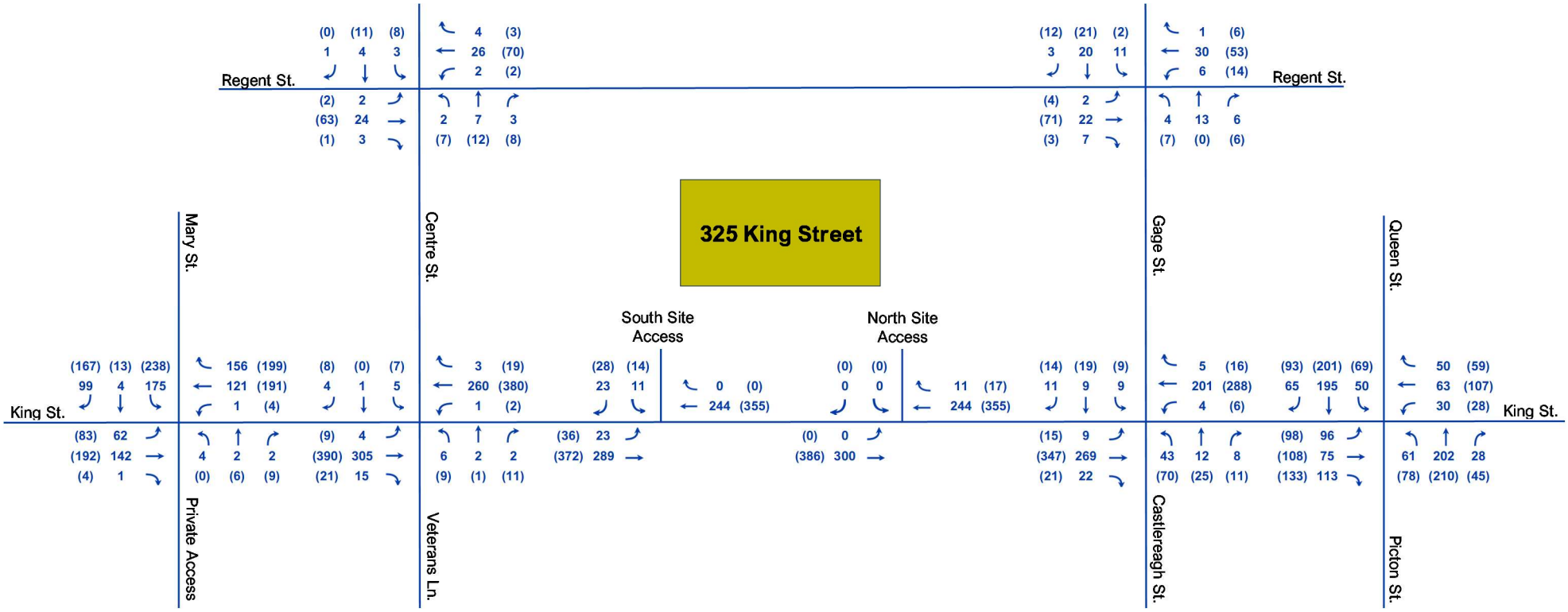


Figure 7.1 – Future (2028) Total Traffic Volumes

7.2 Future Total Intersection Operational Analysis

Table 7.1 presents the results of the intersection operational analysis completed under Future Total 2028 traffic conditions for the weekday PM and Saturday midday peak periods. All Synchro HCM analysis outputs are provided in Appendix 6.

Table 7.1 – Future Total (2028) Traffic Conditions - Intersection Operational Analysis Results

Intersection (Traffic Control)	Movement	Peak Hour								Existing Storage Length (m)
		Weekday PM				Saturday MD				
		V/C	LOS	Delay (s)	95%^{tile} Queue (m)	V/C	LOS	Delay (s)	95%^{tile} Queue (m)	
King Street & Mary Street/Private Access (TWSC)	EBLTR	0.56	C	19.9	28	1.14	F	118.9	135	-
	WBLTR	0.02	B	13.9	1	0.04	B	13.1	1	-
	NBLTR	0.05	A	2.7	1	0.08	A	3.0	2	-
	SBLTR	0.00	A	0.0	0	0.00	A	0.1	0	-
	Overall	**-**	**B**	**8.1**	**-**	**-**	**D**	**46.0**	**-**	**-**
King Street & Centre Street/Veterans Lane (TWSC)	EBLTR	0.02	B	12.7	1	0.05	C	15.2	1	-
	WBLTR	0.03	B	13.8	1	0.06	C	15.3	2	-
	NBLTR	0.00	A	0.1	0	0.01	A	0.3	0	-
	SBLTR	0.00	A	0.0	0	0.00	A	0.1	0	-
	Overall	**-**	**A**	**0.5**	**-**	**-**	**A**	**0.8**	**-**	**-**
King Street & Gage Street/Castlereagh Street (TWSC)	EBLTR	0.06	B	12.4	2	0.12	C	15.7	3	-
	WBLTR	0.16	B	14.6	5	0.37	C	22.9	13	-
	NBLTR	0.01	A	0.3	0	0.01	A	0.4	0	-
	SBLTR	0.00	A	0.2	0	0.01	A	0.2	0	-
	Overall	**-**	**A**	**2.4**	**-**	**-**	**A**	**4.0**	**-**	-
King Street & Queen Street/Picton Street (AWS)	EBL	-	C	9.7	-	-	C	11.1	-	24
	EBTR	-	A	14.4	-	-	A	20.1	-	-
	WBLTR	-	D	17.8	-	-	D	26.6	-	-
	NBL	-	C	11.2	-	-	C	12.5	-	50
	NBTR	-	A	12.0	-	-	A	16.7	-	-
	SBL	-	B	10.1	-	-	B	10.9	-	16
	SBTR	-	A	10.8	-	-	A	14.2	-	-
	Overall	**-**	**B**	**13.9**	**-**	**-**	**C**	**19.1**	**-**	**-**
Regent Street & Centre Street (TWSC)	EBLTR	0.01	A	9.1	0	0.03	A	9.9	1	-
	WBLTR	0.01	A	9.2	0	0.04	A	9.6	1	-
	NBLTR	0.00	A	0.5	0	0.00	A	0.2	0	-
	SBLTR	0.00	A	0.4	0	0.00	A	0.2	0	-
	Overall	**-**	**A**	**2.6**	**-**	**-**	**A**	**2.6**	**-**	-

Intersection (Traffic Control)	Movement	Peak Hour								Existing Storage Length (m)
		Weekday PM				Saturday MD				
		V/C	LOS	Delay (s)	95% tile Queue (m)	V/C	LOS	Delay (s)	95% tile Queue (m)	
Regent Street & Gage Street (AWS)	EBLTR	-	A	7.3	-	-	A	7.3	-	-
	WBLTR	-	A	7.1	-	-	A	7.2	-	-
	NBLTR	-	A	7.1	-	-	A	7.6	-	-
	SBLTR	-	A	7.3	-	-	A	7.5	-	-
	Overall	**-**	**A**	**7.2**	**-**	**-**	**A**	**7.5**	**-**	**-**
King Street & South Site Access	EBLR	0.06	B	11.2	2	0.09	B	13.2	3	-
	NBTL	0.02	A	0.7	1	0.03	A	1.0	1	-
	SBTR	0.16	A	0.0	0	0.23	A	0.0	0	-
	Overall	**-**	**A**	**1.0**	**-**	**-**	**A**	**1.2**	**-**	**-**
King Street & North Site Access	EBLR	0.00	A	0.0	0	0.00	A	0.0	0	-
	NBTL	0.00	A	0.0	0	0.00	A	0.0	0	-
	SBTR	0.17	A	0.0	0	0.24	A	0.0	0	-
	Overall	**-**	**A**	**0.0**	**-**	**-**	**A**	**0.0**	**-**	**-**

As presented in Table 7.1, during the weekday PM peak hour, the study area intersections are forecast to operate well upon full build-out of the site all the way to the ultimate future total horizon year of 2028. There are no critical movements, delay or significant queuing forecast with the introduction of site generated trips to the intersection.

For the Saturday midday peak period, the study area intersections are forecast to operate acceptably through to the 2028 horizon year. However, similar to the background conditions, the shared eastbound left/through/right movement at King Street & Mary Street is forecast to exhibit capacity constraints and delays. In response, a sensitivity analysis has been conducted under future 2028 conditions with the intersections operating under all-way stop control. The results of this analysis are presented in the following section.

For the other intersections within the study area, it is anticipated that the existing configurations can adequately accommodate the additional traffic caused by background corridor growth and site build-out. Therefore, there are no recommendations to add additional physical capacity or mitigation measures as a result of site generated traffic.

8.0 King Street & Mary Street Sensitivity Analysis (AWS)

To better accommodate minor street traffic, operations analysis has been completed for the intersection of King Street & Mary Street, with the mode of control being converted to all-way stop control. The results of this analysis are shown in Table 8.1.

Table 8.1 – King Street & Mary Street Sensitivity Analysis Results

Scenario	Movement	Peak Hour							
		Weekday PM				Saturday MD			
		V/C	LOS	Delay (s)	95%tile Queue (m)	V/C	LOS	Delay (s)	95%tile Queue (m)
2028 Future Background	EBLTR	-	B	11.3	-	-	C	19.7	-
	WBLTR	-	A	8.7	-	-	A	9.8	-
	NBLTR	-	B	10.5	-	-	C	15.1	-
	SBLTR	-	B	10.4	-	-	C	17.1	-
	Overall	**-**	**B**	**10.7**	**-**	**-**	**C**	**17.4**	**-**
2028 Future Total	EBLTR	-	B	12.1	-	-	C	25.0	-
	WBLTR	-	A	8.8	-	-	B	10.2	-
	NBLTR	-	B	10.8	-	-	C	16.2	-
	SBLTR	-	B	11.0	-	-	C	20.4	-
	Overall	**-**	**B**	**11.3**	**-**	**-**	**C**	**20.9**	**-**

As seen in Table 8.1, the conversion to all-way stop control significantly improves the performance measures for the minor approach (Mary Street), with overall intersection delays of LOS “C” in the 2028 Saturday midday period. Therefore, it is recommended that the intersection performance be monitored through to the 2028 horizon year to determine if the conversion to all-way stop is necessary to accommodate minor approach turning movements.

9.0 Site Circulation Assessment

Vehicle turning movements for the site driveways and underground parking garage have been assessed to ensure that adequate circulation exists within the proposed layout. As mentioned in *Section 1.1*, the site plan provides two (2) full-movement accesses for waste collection and delivery vehicles, where one (1) is provided along Centre Street and one (1) is provided along Gage Street. As such, a vehicle swept path analysis has been completed for each respective servicing driveway, utilizing the Niagara-on-the-lake front-loader garbage truck as the design vehicle for waste collection and the medium single-unit truck (TAC 2017) for shipments.

The routing for each respective driveway is as follows:

- Centre Street Driveway: Servicing vehicles approach from the north and exit travelling north.
- Gage Street Driveway: Servicing vehicles approach from the south and exit travelling north.

It is important to note that discussions with the client indicate that garbage bins will be stored indoors and brought out in front of the garbage truck for collection. As a typical conservative practice with front-loader garbage truck, the analysis utilizes a waste collection area that is three (3) metres deep. The vehicle swept path results for the front-loader vehicle and single-unit truck can be seen in Figure 9.1 and Figure 9.2, respectively.

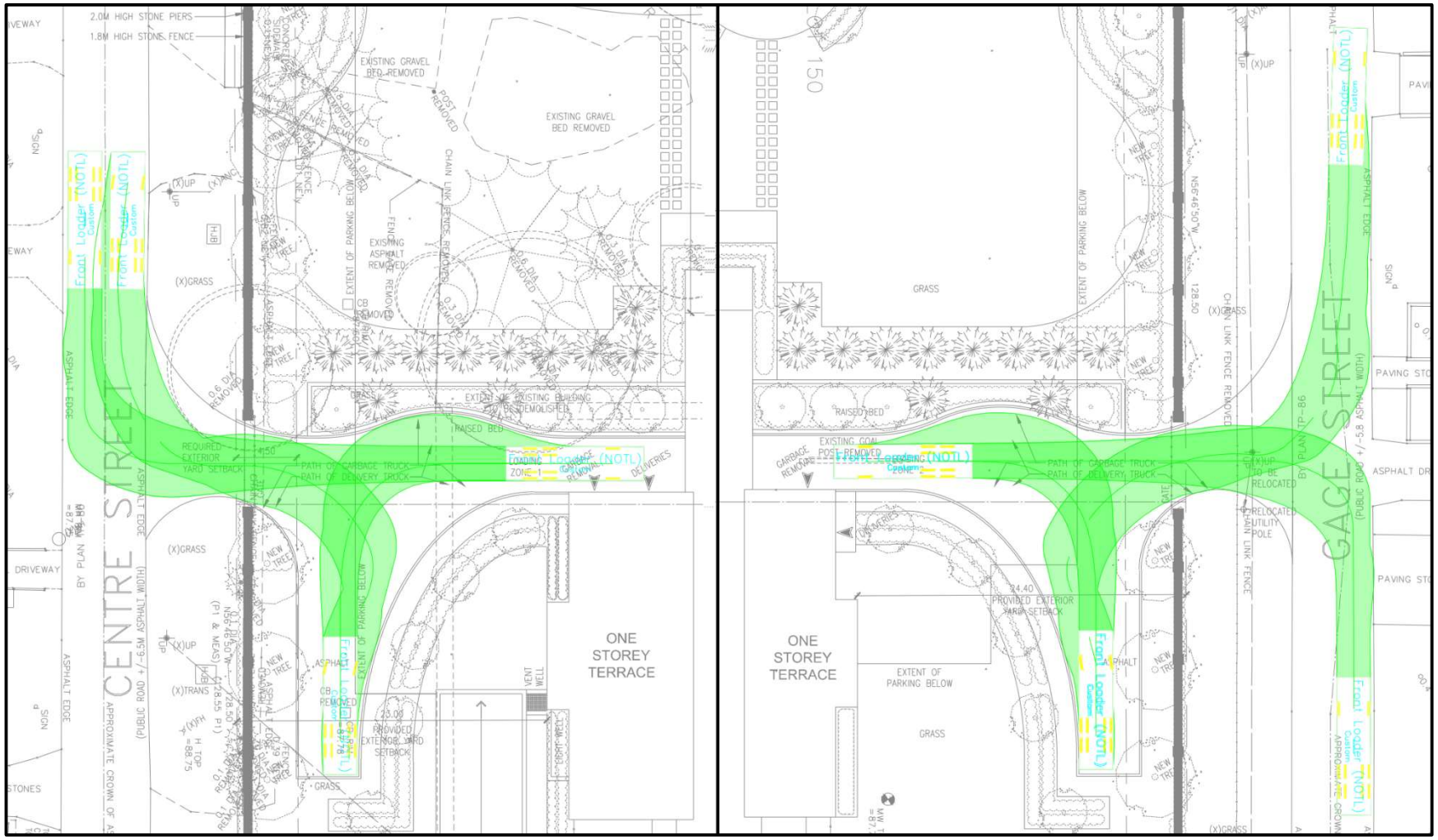


Figure 9.1 – Front-Loader Garbage Truck Turning Templates

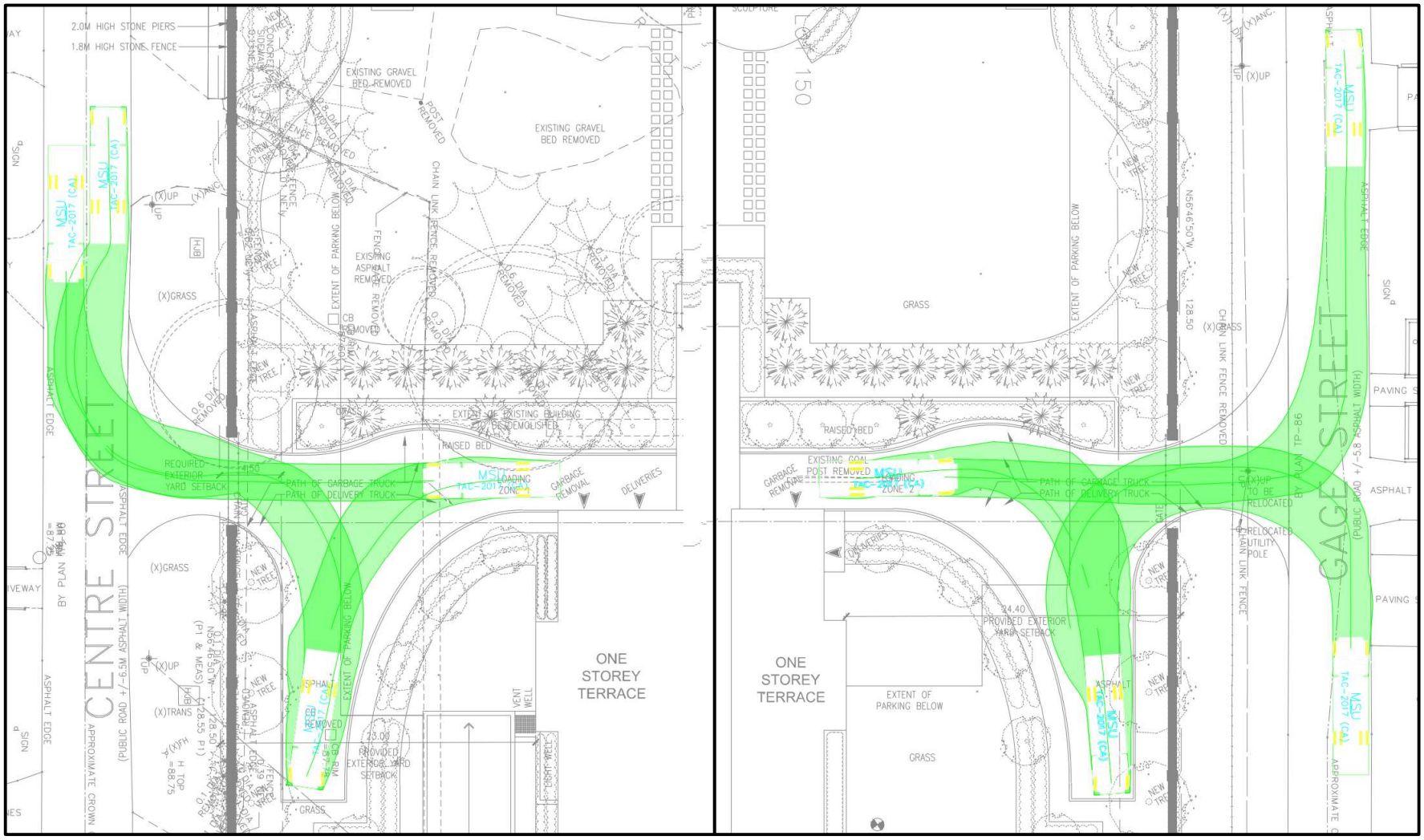


Figure 9.2 – Medium Single Unit Truck Turning Templates

For circulation within the underground lot, turning templates were created using the passenger car (TAC 2017) as the design vehicle. The turning templates for the underground garage are shown in Figure 9.3.

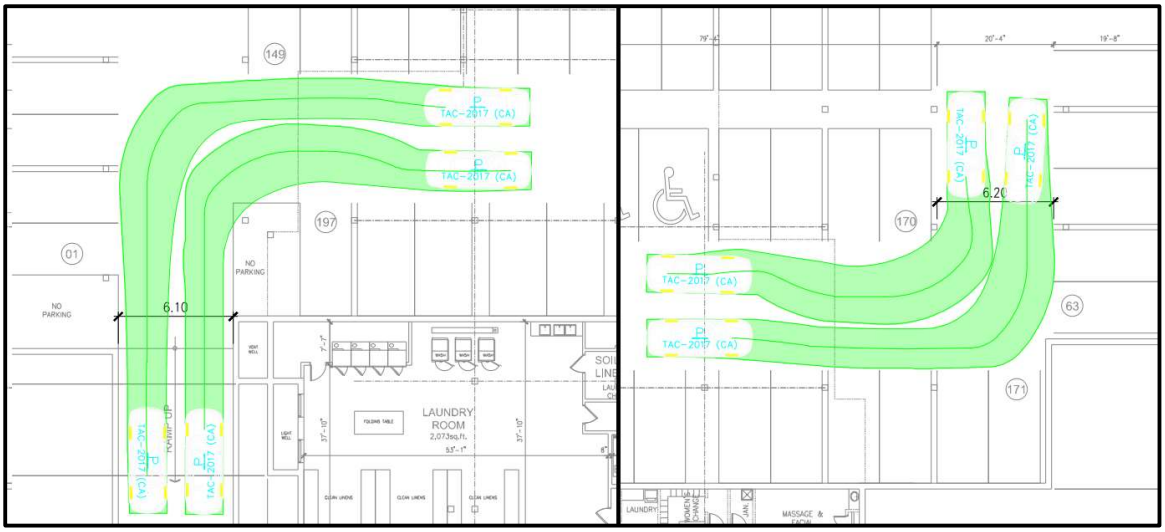


Figure 9.3 – Passenger Car Turning Template – Underground Garage

Therefore, it is anticipated that the proposed accesses design and parking layout can adequately accommodate the required turning movements for the two (2) servicing accesses and underground parking garage, respectively.

10.0 Summary of Analysis Conclusion and Recommendation

Based on the results of the completed Traffic Impact Study for the proposed Hotel development, the following conclusions were derived:

Existing (2021) Traffic Conditions

- The study area intersections are operating acceptably under baseline traffic conditions.
- For King Street & Mary Street, delays of approximately 51 seconds exist for the eastbound stop-controlled approach along Mary Street.

Future Background Traffic Conditions

- The study area intersections are forecast to operate acceptably through to the 2028 horizon year, with the delays at King Street & Mary Street forecast to continue for the minor approach, with delays expected to increase to approximately 72 seconds.

Future Site Generated Traffic

- The proposed hotel is estimated to generate approximately 68 trips (34 inbound and 34 outbound) during the weekday PM peak hour and approximately 95 trips (53 inbound and 42 outbound) during the Saturday midday peak hour.
- The site generated traffic for the hotel land use considers all amenities on the site, including sleeping accommodation, a full-service restaurant, cocktail lounge, meeting rooms, banquet rooms, and convention rooms.

Future Total Traffic Conditions

- King Street & Mary Street is forecast to exhibit capacity concerns with increased delays for the minor approach (Mary Street) under its current traffic control. However, the results of the sensitivity analysis show that converting this intersection to an all-way stop control would improve minor street traffic operations in addition to all approaches. It is therefore recommended that this intersection operation be monitored to later converting into an all-way stop control.
- The study area intersections within the study area can adequately accommodate the traffic associated with background corridor growth and site generated traffic.
- There are no recommendations to provide additional physical capacity or mitigation measures at any of the study area intersections as a result of site generated traffic.

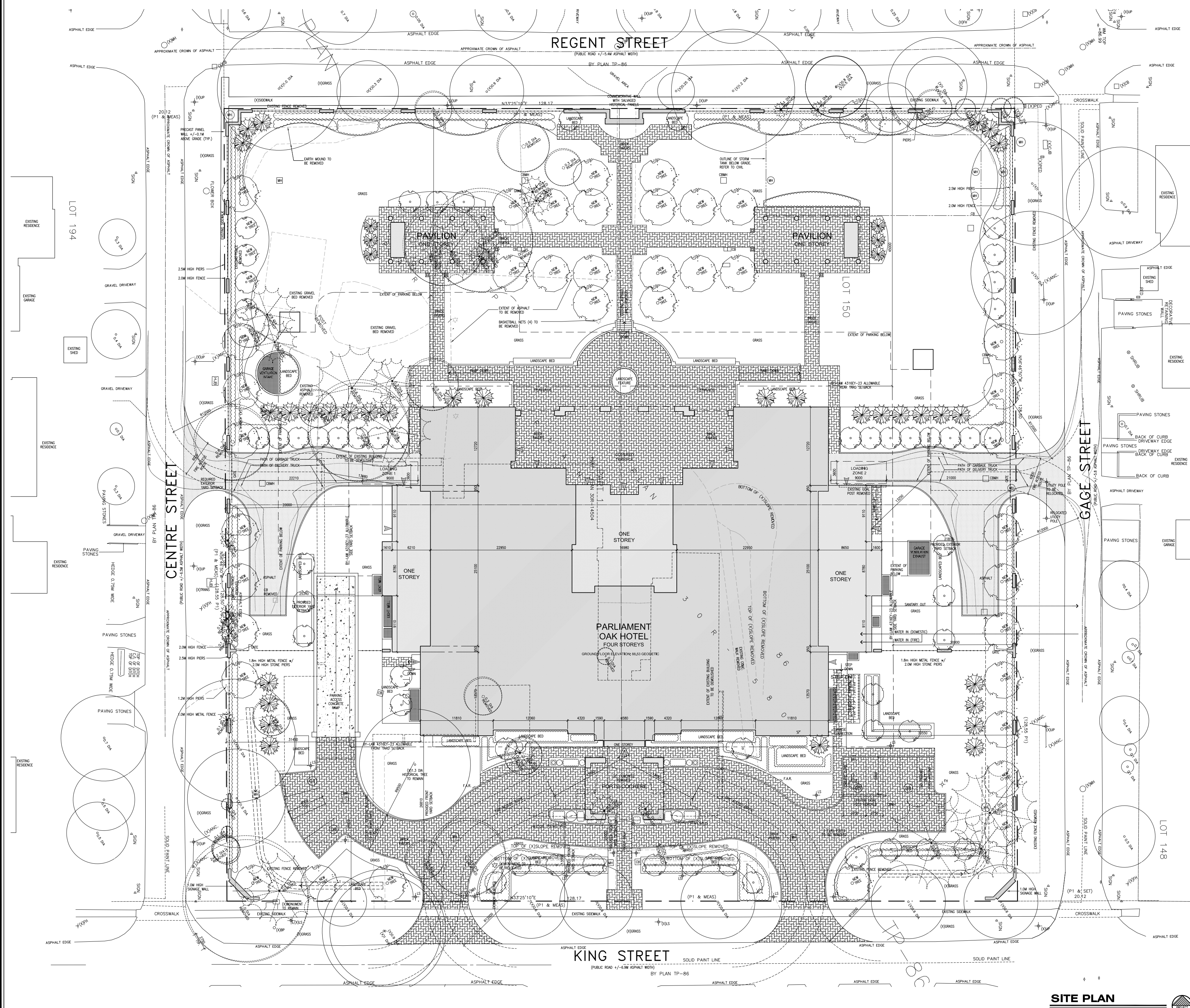
Site Circulation

- Vehicle turning templates have been created for the two (2) servicing accesses utilizing the Niagara-on-the-Lake front-loader vehicle for waste collection and the medium single-unit truck (TAC 2017) for deliveries.
- Site circulation within the underground parking garage has been completed using the passenger car (TAC 2017) as the design vehicle.
- The swept path analysis results show that the proposed site design can adequately accommodate the turning requirements of the design vehicles.

Based on the traffic analysis presented in this report, it is concluded that the study area intersections can adequately accommodate the traffic associated with background corridor growth and site generated traffic. There are no recommendations to provide additional physical capacity or mitigation measures at any of the study area intersections as a result of site generated traffic. It is recommended that the intersection of King Street & Mary Street be monitored through to the 2028 horizon year to determine if the conversion to all-way stop control is required to improve the minor approach turning movement operations.

APPENDIX 1

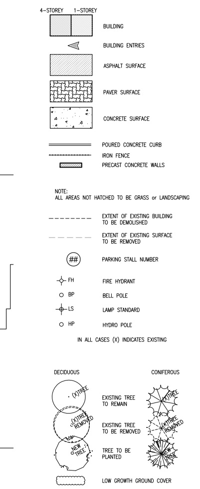
Development Site Plan



SITE PLAN

SCALE: 1:200

LEGEND



FOR LANDSCAPING REFER TO DRAWINGS PRODUCED BY:
STRYBOS BARRON KING LANDSCAPE ARCHITECTURE
5770 HURONTARIO STREET, SUITE 320,
MISSISSAUGA, ONTARIO
L5R 3G5

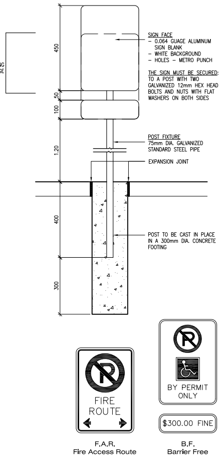
TYPICAL SIGNAGE

SIGNAGE NOTES:

ALL PARKING SPACES FOR BARRIER-FREE SHALL BE INDICATED WITH TYPICAL BARRIER FREE SIGNAGE CENTERED AT EACH PARKING SPACE – THESE SIGNS SHALL BE SUPPLIED & INSTALLED BY THE GENERAL CONTRACTOR
THE SIGN SHALL BE MOUNTED AT A HEIGHT OF 1.0–1.5 METERS FROM TOP OF CURB TO BOTTOM OF SIGN & CENTERED WITHIN THE PARKING SPACE.

THE GENERAL CONTRACTOR SHALL SUPPLY ALL REQUIRED FIRE ROUTE SIGNS. THESE SIGNS SHALL BE POSTED IN COMPLIANCE WITH THE HIGHWAY TRAFFIC ACT AND OR THE ONTARIO TRAFFIC MANUAL; WITH A MAX. SPACING OF 30M

ALL STOP, BARRIER FREE, STAFF PARKING, NO OVERNIGHT PARKING AND ONE WAY SIGNS SHALL BE SUPPLIED & INSTALLED BY THE GENERAL CONTRACTOR, – ALL SIGNS SHALL CONFORM TO THE ONTARIO TRAFFIC MANUAL AND HIGHWAY TRAFFIC ACT.



F.A.R.
Fire Access Route

B.F.
Barrier Free

NOTE

VEHICULAR MOVEMENT LIMITS FOR GARBAGE AND DELIVERY TRUCKS AS PROVIDED BY:
R.V. ANDERSON ASSOCIATES LIMITED
43 CHURCH STREET, SUITE 104,
ST. CATHARINES, ON,
L2R 7E1

KEY PLAN

SCALE: NOT TO SCALE

SURVEY NOTE:

LOTS 149, 150, 191 & 192, TP PLAN 86 (BEING PART 1 ON PLAN 30R-15804,
325 KING STREET, TOWN OF NIAGARA-ON-THE-LAKE, REGIONAL MUNICIPALITY OF NIAGARA

BOUNDARIES, SURVEY, TOPOGRAPHIC, EXISTING SITE FEATURES:
J.D. BARNES LIMITED, 4318 PORTAGE ROAD – UNIT 2, NIAGARA FALLS, ON, L2E 6A4

SITE STATISTICS

LOT AREA	16,456.58 m²
BUILDING GROUND COVER	
Parliament Oak Hotel	3,364.77 m²
Pavilion	129.36 m²
Gazebo	46.57 m²
Total Building Coverage	3,540.70 m²
21.5% of Lot Area (25% Permitted)	
DRIVEWAY/ ASPHALT AREA	
12.0% of Lot Area	1,970.52 m²
LANDSCAPED AREA	
66.5% of Lot Area	10,945.36 m²

PARKING REQUIREMENTS

Hotel, Motel	= 1 per quest room in addition to other uses	129	Rooms	129 Spaces
Restaurant	= 1 per 18.5 m² GFLA	775 m²	Restaurant, Bar/ Lounge, Private Bar/ Lounge & Breakfast Room	42 Spaces
Restaurant Outdoor Patio	= 1 per 30 m² GFLA of outdoor patio area in addition to the requirements for a restaurant or take-out restaurant	195 m²	Patio	7 Spaces
Conference Rooms or Areas Used in Conjunction with Other Uses	= 1 per 18.5 m²	551.9 m²	Upper Canada Banquet Room, Lower Canada Banquet Room, Simcoe Meeting Room	30 Spaces
Spa	= 1 per 15.0 m²	313.3 m²		21 Spaces
Office	= 1 per 28.0 m²	84.4 m²		4 spaces
TOTAL PARKING REQUIRED				233 Spaces
REQUIRED DESIGNATED ACCESSIBLE PARKING SPACES				7 Designated Spaces

PARKING PROVIDED

STANDARD PARKING SPACE (2.75m x 6.00m TYPICAL)	
AT GRADE	7 Spaces
BELOW GRADE	234 Spaces
DESIGNATED ACCESSIBLE PARKING	
AT GRADE	1 Spaces
BELOW GRADE	6 Spaces
TOTAL PARKING PROVIDED	248 Spaces

Peter J. Lesdow
architect
4465 Drummond Road, Unit 11, Niagara Falls, Ontario L2E 6C5
telephone: 905-357-1112
e-mail: pjlesdow@cogeco.net

SITE PLAN & STATISTICS

DATE	REVISIONS	DATE	REVISIONS
Jan. 04/ 23	REDESIGN FOR PRE-CONSULTATION	Oct. 26/ 23	O.P.A./Z.B.A. ADDED INFORMATION
Jan. 31/ 23	SHADOW STUDY	Nov. 16/ 23	ENLARGED COVERED TERRACE
Feb. 01/ 23	FOR O.P.A./Z.B.A. SUBMISSIONS	Apr. 08/ 24	REVISED PARKING GARAGE
May 29/ 23	FOR CONSULTANT COORDINATION	May 22/ 24	COORDINATION CIRCULATION
Jun. 07/ 23	FENCE REVISION	July 06/ 24	COORDINATION CIRCULATION
Sep. 21/ 23	ADDED INFORMATION		

PARLIAMENT OAK HOTEL
325 King Street
Niagara-on-the-Lake

DATE:	Nov. 18/ 22
SCALE:	1:100
DRAWN BY:	MRW
CHECK BY:	PJL

22 – 13

A101

APPENDIX 2

Existing Traffic Volume Data

King St @ Mary St

Municipality: NOTL
Major Road: King St
Minor Road: Mary St

Date: Sept 4, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	3	5	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	0	0	0	1	0	0	5	0	4	0	0	0	0	0	0	0	2	28	0
8:30	0	2	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	0	0	2	0	0	0	10	0	5	0	0	0	0	0	0	0	0	5	31	59
8:45	0	6	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	10	1	0	0	0	0	0	0	0	0	0	0	11	2	4	0	0	0	0	0	0	0	1	4	43	102
9:00	0	6	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	8	15	0	0	1	0	0	0	0	0	1	0	0	16	0	5	0	0	0	0	0	0	1	1	2	60	162
9:15	0	6	6	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	3	6	13	0	0	0	0	0	0	0	0	1	0	0	12	0	8	0	0	0	0	0	0	0	0	6	55	189
9:30	0	10	5	0	0	1	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	1	0	0	4	12	0	0	0	0	0	0	0	0	0	0	0	10	0	5	2	0	0	0	0	0	1	4	1	2	58	216
16:15	0	19	47	0	0	0	0	0	0	0	4	8	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	0	15	43	0	0	0	0	0	0	0	0	1	1	0	0	34	0	23	0	0	0	0	0	0	0	2	8	202	202
16:30	0	25	24	0	1	0	0	1	0	2	0	2	6	1	1	1	0	0	0	0	0	0	0	0	0	5	1	0	14	28	0	0	0	0	0	0	0	0	0	5	0	0	39	1	23	0	0	0	1	1	0	0	0	6	6	8	188	390
16:45	1	37	27	0	0	0	0	0	0	0	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	11	27	1	0	0	0	0	0	0	0	8	1	0	2	33	3	17	0	0	0	1	0	0	1	4	0	8	182	572
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17:15	0	31	33	0	0	0	0	0	0	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	4	0	0	15	19	0	0	0	0	0	0	0	0	0	2	0	0	23	0	20	0	0	0	0	0	0	2	6	0	20	160	716
17:30	0	25	35	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	16	0	0	0	0	0	0	0	0	1	0	0	0	24	1	13	0	0	0	0	0	0	0	0	0	7	132	660
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18:00	0	25	30	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	6	22	0	0	0	0	0	0	0	0	2	5	0	0	23	0	13	0	0	0	0	0	0	0	0	0	3	134	597

King St @ Centre St

Municipality: NOTL
Major Road: King St
Minor Road: Centre St

Date: Sept 4, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	1	8	1	1	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	7	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	26	0
8:30	3	4	0	1	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	0	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	30	56
8:45	0	8	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	16	6	0	0	0	0	0	0	0	0	0	0	0	5	0	1	1	0	0	0	0	0	1	0	0	2	39	95
9:00	0	9	0	0	2	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	23	9	0	1	0	0	0	0	0	0	1	0	2	1	0	0	0	0	0	0	0	0	0	1	0	1	51	146
9:15	1	10	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	17	4	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	37	157
9:30	1	17	1	0	1	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	2	1	20	3	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	51	178
16:15	0	63	1	0	0	0	0	0	0	0	11	0	2	1	0	1	0	0	0	0	0	0	1	7	1	13	1	71	5	0	0	0	0	0	0	0	0	0	1	8	1	0	0	0	0	0	0	0	0	1	0	1	17	167	167
16:30	1	43	0	0	1	0	0	1	0	0	5	0	0	1	0	0	0	0	0	0	0	0	0	1	0	10	2	67	2	0	0	0	0	1	0	0	6	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	10	135	302
16:45	0	56	0	0	0	0	0	0	0	0	9	0	1	3	2	0	0	0	0	0	0	0	0	2	2	2	0	54	4	0	0	0	0	1	0	0	2	0	3	1	0	2	0	0	0	0	0	0	0	1	0	0	18	137	439
17:00	0	55	2	0	0	0	0	0	0	0	5	0	0	1	0	1	0	0	0	0	0	0	0	1	0	8	1	66	3	0	0	0	0	1	0	0	0	0	5	1	0	2	0	0	0	0	0	0	1	0	0	0	26	140	579
17:15	0	57	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	6	2	44	1	0	0	0	0	0	0	0	0	2	2	0	3	1	2	0	0	0	0	0	0	0	0	0	0	24	120	532
17:30	0	57	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	2	0	38	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2	17	105	502
17:45	1	66	1	0	0	0	0	0	0	7	5	0	7	2	0	2	0	0	0	0	0	0	0	6	7	1	48	2	0	0	0	0	0	1	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	9	146	511
18:00	1	48	0	0	0	0	0	0	0	1	4	0	0	4	0	1	0	0	0	0	0	0	0	1	4	9	1	41	3	0	0	0	0	0	0	0	6	0	3	0	0	1	0	0	0	0	0	0	0	1	0	0	20	117	488

King St @ Gage St/Castlereagh St

Municipality: NOTL
Major Road: King St
Minor Road: Gage St

Date: Sept 4, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	6	0	0	1	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0	0	0	1	0	0	2	0	6	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	20	0
8:30	0	7	0	0	0	0	0	0	0	0	1	0	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	16	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	31	51
8:45	0	6	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	1	0	14	2	0	1	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	30	81
9:00	0	9	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	21	6	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7	40	121
9:15	0	8	0	0	1	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	3	1	14	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	8	30	131
9:30	0	11	0	0	1	0	0	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	18	4	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	3	45	145
16:15	1	52	2	0	0	0	0	0	0	1	8	1	10	13	3	4	0	0	0	0	0	0	3	0	0	21	1	63	7	0	0	0	0	0	0	0	0	3	0	0	2	0	1	1	0	0	0	0	0	0	28	166	166
16:30	1	34	0	0	1	0	0	1	0	0	4	0	11	5	3	1	0	0	0	0	0	0	0	0	0	8	4	66	0	1	0	0	0	1	0	2	5	0	0	1	2	3	0	0	0	0	0	0	0	27	135	301
16:45	1	50	2	0	0	0	0	0	0	0	5	0	5	6	4	2	0	0	0	0	0	0	2	0	0	5	2	48	3	0	0	0	0	1	0	3	3	0	0	5	4	3	0	0	0	0	0	0	0	22	144	445
17:00	1	38	1	0	0	0	0	0	0	0	7	0	2	16	1	1	0	0	0	0	0	0	0	0	0	6	1	59	10	0	0	0	0	1	0	0	2	0	0	0	3	2	0	0	1	0	0	0	0	36	144	589
17:15	0	41	2	0	0	0	0	0	0	0	0	0	8	8	1	3	0	0	0	0	0	0	0	0	0	8	1	42	2	0	0	0	0	0	0	0	1	3	0	4	0	2	5	0	0	0	0	0	0	35	111	534
17:30	0	37	1	0	0	0	0	0	0	0	2	0	6	19	2	1	0	0	0	0	0	0	0	0	0	4	3	32	2	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	23	103	502
17:45	0	45	1	0	0	0	0	0	0	0	9	0	4	15	3	1	0	0	0	0	0	0	2	0	0	7	2	44	3	0	0	0	0	1	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	18	134	492
18:00	0	37	0	0	0	0	0	0	0	0	3	0	0	12	2	1	0	0	0	0	0	0	2	0	0	13	1	34	3	0	0	0	0	0	0	0	10	0	0	3	1	4	0	0	0	0	0	0	0	20	113	461

King St @ Queen St

Municipality: NOTL
Major Road: King St
Minor Road: Queen St

Date: Sept 4, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	4	0	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	3	4	1	0	0	0	0	0	0	0	0	1	3	1	7	4	0	0	0	0	0	0	0	0	7	29	0
8:30	0	2	3	0	0	0	0	0	0	0	1	0	1	0	4	1	0	0	0	0	0	0	1	0	0	0	4	4	2	1	0	0	0	0	0	1	1	0	8	6	6	4	0	0	0	0	0	0	0	0	3	41	70
8:45	0	0	1	0	0	0	0	0	0	0	0	0	6	1	7	0	0	0	0	0	0	0	0	0	0	4	3	5	3	0	0	0	0	0	0	0	2	2	16	3	4	6	0	0	0	0	0	0	0	0	5	37	107
9:00	0	3	4	0	0	0	0	0	0	2	0	1	8	1	10	1	0	0	0	0	0	0	2	1	0	0	8	2	6	0	0	0	0	0	0	0	0	0	11	2	9	7	0	0	1	0	0	0	0	0	6	60	167
9:15	0	4	4	0	1	0	0	0	0	0	0	0	6	1	2	2	0	0	0	0	0	0	0	1	0	6	2	2	10	0	0	0	0	0	0	0	0	0	11	4	10	4	0	0	0	0	0	0	2	0	0	10	49	187
9:30	0	1	3	0	0	0	0	0	0	0	0	0	4	4	6	1	1	0	0	0	0	0	0	3	0	8	6	4	6	0	1	1	0	0	0	1	2	0	21	4	11	4	0	0	0	0	0	0	0	2	3	0	11	64	210
16:15	5	14	11	0	0	0	0	0	0	0	2	6	145	16	41	6	0	1	0	0	0	0	0	6	0	49	27	19	26	0	0	1	0	0	0	2	0	4	200	4	44	12	1	0	0	0	0	0	0	7	12	198	267	267
16:30	8	15	12	0	0	0	0	1	0	0	1	2	151	9	54	4	0	0	0	0	0	0	0	0	0	51	19	17	25	0	0	0	0	0	1	0	4	0	166	12	48	17	0	0	0	0	0	0	0	4	2	130	255	522
16:45	5	17	8	0	0	0	0	0	0	0	2	10	138	12	45	6	0	0	0	0	0	0	2	0	0	62	20	15	13	0	0	0	0	0	1	1	1	0	195	15	46	16	0	0	0	0	0	0	0	0	1	164	236	758
17:00	10	11	16	0	0	0	0	0	0	0	6	0	140	10	45	10	0	0	0	0	0	0	0	0	0	77	22	18	21	0	0	0	0	0	0	0	2	1	204	15	43	15	0	0	0	0	0	0	0	0	1	181	246	1004
17:15	9	17	9	0	0	0	0	0	0	0	0	4	146	9	45	5	0	0	0	0	0	0	0	0	0	70	17	11	17	0	0	0	0	0	0	1	0	1	193	9	53	20	0	0	0	0	0	0	1	4	2	144	234	971
17:30	15	14	18	0	0	0	0	0	0	0	0	8	137	4	54	10	0	0	0	0	0	0	0	0	0	92	16	6	18	0	0	0	0	0	0	0	0	0	151	19	47	16	0	0	0	0	0	0	0	0	0	143	245	961
17:45	8	17	14	0	0	0	1	0	0	0	3	0	139	9	48	7	0	0	0	0	0	0	0	0	0	54	15	11	20	0	0	0	0	1	0	1	10	0	183	8	48	13	0	0	0	0	0	0	0	7	1	205	242	967
18:00	6	12	5	0	0	0	0	1	0	0	0	1	132	10	41	4	0	0	0	0	0	0	0	0	0	90	16	16	12	0	0	0	0	0	0	0	2	5	171	13	34	13	0	0	0	0	0	0	0	1	2	136	194	915

Regent St @ Centre St

Municipality: NOTL
Major Road: Regent St
Minor Road: Centre St

Date: Sept 4, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5	0
8:30	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	9
8:45	0	0	1	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	9	18
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	2	4	22
9:15	0	1	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	19
9:30	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	10	25
16:15	1	5	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	6	2	0	0	1	6	0	0	0	0	0	0	0	0	1	1	2	1	0	0	0	0	0	0	0	1	1	0	2	30	30
16:30	1	4	2	0	0	0	0	0	0	0	0	1	3	1	1	2	0	0	0	0	0	0	0	1	6	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	4	23	53
16:45	0	9	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	7	2	0	0	0	0	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	2	0	0	27	80
17:00	0	6	0	0	0	0	0	0	0	0	1	0	1	1	2	0	0	0	0	0	0	0	1	0	1	0	4	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	19	99
17:15	2	8	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	0	0	0	0	0	0	0	0	9	28	97
17:30	0	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	5	14	88
17:45	1	4	0	0	0	0	0	0	0	0	2	1	4	0	2	1	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	8	14	75
18:00	0	4	0	0	0	0	0	0	0	0	4	0	1	0	0	1	0	0	0	0	0	0	1	0	3	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	16	72

Regent St @ Gage St

Municipality: NOTL
Major Road: Regent St
Minor Road: Gage St

Date: Sept 4, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4	0
8:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	9
8:45	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	5	5	14
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	16
9:15	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	4	16
9:30	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	7	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	12	23
16:15	1	5	1	0	0	0	0	0	0	0	0	0	8	0	3	2	0	0	0	0	0	0	0	0	0	1	2	5	0	0	0	0	0	0	0	0	0	2	0	0	1	1	2	0	1	0	0	0	0	1	0	2	27	27
16:30	1	5	0	0	0	0	0	0	0	0	1	0	4	2	2	3	0	1	0	0	0	0	0	2	0	3	0	3	3	0	0	0	0	0	0	0	0	1	0	0	4	1	0	0	0	0	0	0	0	0	29	56
16:45	5	7	0	0	0	0	0	0	0	0	0	2	0	2	3	2	0	0	0	0	0	0	0	4	0	5	1	5	3	0	0	0	0	0	0	0	0	1	0	3	5	5	2	0	0	0	0	0	0	0	3	47	103
17:00	0	6	0	0	0	0	0	0	0	0	1	0	2	0	2	1	0	0	0	0	0	0	0	0	0	8	1	4	0	0	0	0	0	0	0	0	0	2	0	0	1	5	1	0	1	0	0	0	0	0	0	25	128
17:15	0	10	1	0	0	0	0	0	0	0	1	0	4	0	4	0	0	0	0	0	0	0	0	0	0	1	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	32	133
17:30	0	5	0	0	0	0	0	0	0	0	1	0	0	1	5	1	0	0	0	0	0	0	0	0	0	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	17	121
17:45	0	6	0	0	0	0	0	0	0	0	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5	16	90
18:00	1	2	0	0	0	0	0	0	0	0	4	0	3	0	4	0	0	0	0	0	0	0	0	0	0	3	0	4	1	0	0	0	0	0	0	0	0	0	1	1	1	7	2	0	0	0	0	0	0	0	4	26	91

King St @ Mary St

Municipality: NOTL
Major Road: King St
Minor Road: Mary St

Date: Sept 5, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period Ending	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
13:15	0	28	26	0	0	1	0	0	0	0	2	0	0	2	1	1	0	0	0	0	0	0	0	0	5	0	7	39	0	0	0	0	0	0	0	0	0	0	0	47	1	18	0	0	0	0	0	0	1	0	0	10	179	179
13:30	0	27	15	0	0	0	0	0	0	0	6	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	26	38	0	0	0	0	0	0	0	0	2	0	0	36	2	15	0	0	0	0	0	0	0	0	3	2	171	350
13:45	0	21	28	0	0	0	0	0	0	0	3	6	1	0	0	0	0	0	0	0	0	0	0	3	0	0	22	41	0	1	0	0	0	0	0	0	2	0	2	35	0	16	0	0	0	0	0	0	0	4	10	8	192	542
14:00	0	19	26	0	0	0	0	0	0	0	4	4	4	1	1	0	0	0	0	0	0	0	0	4	2	1	15	35	0	0	0	0	0	0	0	0	0	0	1	38	1	18	0	0	0	0	0	0	0	3	2	4	173	715
14:15	1	23	37	0	0	0	0	0	0	0	2	2	8	0	0	1	0	0	0	0	0	0	0	8	0	0	15	29	0	0	0	0	0	0	0	0	2	0	5	47	3	24	0	0	1	0	0	0	1	4	2	0	202	738
14:30	1	36	31	0	0	0	0	0	0	0	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	17	29	0	1	0	0	0	0	0	0	0	0	2	40	0	23	0	0	0	0	0	0	9	10	16	4	219	786
14:45	1	17	46	0	2	0	0	0	0	0	4	1	3	0	1	1	0	0	0	0	0	0	0	1	1	0	20	34	2	0	1	0	0	0	0	2	1	4	0	36	3	17	0	0	0	0	0	0	2	0	2	2	199	793
15:00	1	35	30	0	0	0	0	0	0	0	4	1	1	0	2	5	0	0	0	0	0	0	0	3	0	0	16	57	2	0	1	0	0	0	0	2	2	2	0	45	5	27	0	0	0	0	1	0	0	5	7	3	253	873

King St @ Centre St

Municipality: NOTL
Major Road: King St
Minor Road: Centre St

Date: Sept 5, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period Ending	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
13:15	1	50	2	0	1	0	0	0	0	1	2	0	3	1	1	0	0	0	0	0	0	0	1	2	2	6	0	72	2	0	0	0	0	0	0	0	6	0	0	0	2	2	0	0	0	0	0	0	0	4	0	16	152	152
13:30	1	43	2	0	0	0	0	0	0	0	7	1	3	1	0	2	0	0	0	0	0	0	1	0	1	3	3	64	2	0	0	0	0	0	0	0	3	2	2	0	0	0	0	0	0	0	0	0	0	2	0	26	135	287
13:45	0	49	4	0	0	0	0	0	0	0	6	0	4	1	0	4	0	0	0	0	0	0	0	3	0	13	0	69	4	0	0	0	0	0	0	0	4	0	0	0	1	1	0	0	0	0	0	0	0	5	0	37	151	438
14:00	1	46	3	0	0	0	0	0	0	0	8	0	2	2	1	0	0	0	0	0	0	0	0	3	7	2	72	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	12	142	580
14:15	0	58	2	0	0	0	0	0	0	0	4	0	0	2	1	2	0	0	1	0	0	0	0	6	2	0	1	67	4	0	0	0	0	0	0	0	5	0	1	1	0	1	0	0	0	0	0	0	0	4	0	6	161	589
14:30	1	61	4	0	0	0	0	0	0	0	6	0	0	1	0	1	0	0	0	0	0	0	0	1	2	8	3	67	3	0	0	0	0	0	0	0	8	1	3	2	0	1	0	0	0	0	0	0	0	0	0	8	162	616
14:45	0	66	4	0	2	0	0	0	0	0	5	0	4	2	0	3	0	0	0	0	0	0	0	4	3	6	2	64	6	0	1	0	0	0	0	0	5	0	0	3	0	2	0	0	0	0	0	0	0	0	0	2	172	637
15:00	1	61	5	0	0	0	0	0	0	0	2	0	2	3	0	2	0	0	0	0	0	0	0	0	2	12	2	87	4	0	0	0	0	1	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	24	175	670

King St @ Gage St/Castlereagh St

Municipality: NOTL
Major Road: King St
Minor Road: Gage St

Date: Sept 5, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period Ending	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
13:15	0	33	4	0	0	0	0	0	0	0	3	0	2	12	1	2	0	0	0	0	0	0	0	0	0	11	2	66	2	0	0	0	0	0	0	0	8	0	1	2	3	3	0	0	2	0	0	0	0	1	0	17	144	144
13:30	2	39	0	0	0	0	0	0	0	0	7	0	0	8	5	2	0	0	0	0	0	0	0	0	0	2	1	61	3	0	0	0	0	0	0	0	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	44	133	277
13:45	1	45	5	0	0	0	0	0	0	0	6	0	0	5	2	3	0	0	0	0	0	0	0	0	0	13	6	62	5	0	0	0	0	0	0	0	3	0	1	4	3	1	0	0	0	0	0	0	0	0	0	47	151	428
14:00	1	39	5	0	0	0	0	0	0	0	5	0	1	9	3	4	0	0	0	0	0	0	0	0	0	26	2	58	11	0	0	0	0	0	0	0	2	0	0	3	3	4	0	0	0	0	0	0	0	0	3	10	152	580
14:15	0	40	6	0	0	0	0	0	0	0	4	0	2	18	4	4	0	0	0	0	0	0	0	2	0	2	4	59	4	0	1	0	0	0	0	0	8	0	0	5	4	3	0	0	0	0	0	0	3	0	0	23	169	605
14:30	2	45	2	0	0	0	0	0	0	0	5	0	2	10	7	2	0	0	0	0	0	0	0	0	2	8	2	66	5	0	0	0	0	0	0	0	8	0	0	2	3	3	0	0	0	0	0	0	1	2	2	11	169	641
14:45	2	53	3	0	1	0	0	0	0	0	3	0	6	13	7	2	0	0	0	0	0	0	2	0	0	12	1	64	4	1	0	0	0	0	0	0	7	0	0	0	6	1	0	0	1	0	0	0	0	5	0	23	176	666
15:00	1	41	3	0	0	0	0	0	0	0	6	0	1	18	3	1	0	0	0	0	0	0	0	0	0	13	5	78	4	0	0	0	0	1	0	1	1	1	0	1	2	4	0	0	0	0	0	0	0	0	0	12	171	685

King St @ Queen St

Municipality: NOTL
Major Road: King St
Minor Road: Queen St

Date: Sept 5, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period Ending	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
13:15	4	7	12	0	0	2	0	0	0	0	0	0	98	10	52	5	0	0	0	0	0	0	0	2	2	44	23	19	21	0	0	0	0	0	0	3	1	3	176	20	54	20	0	0	0	0	0	0	0	2	2	130	264	264
13:30	6	12	11	0	0	0	1	0	0	0	6	1	123	11	41	8	0	0	0	0	2	0	0	0	0	51	21	18	23	0	0	0	0	0	0	0	2	0	138	26	43	20	0	0	0	0	1	0	2	7	0	143	262	526
13:45	5	15	18	0	0	1	0	0	0	0	0	0	116	9	48	9	0	0	0	0	0	0	6	1	0	54	31	15	24	0	0	0	0	0	0	2	0	3	154	14	36	21	0	0	0	0	0	0	0	6	0	173	264	790
14:00	6	15	12	0	0	0	0	0	0	0	5	1	82	8	41	14	0	0	0	0	0	0	0	0	0	50	18	22	21	0	0	0	0	0	0	0	1	0	183	22	39	17	0	0	0	0	0	0	1	34	1	180	278	1068
14:15	7	16	14	0	0	0	0	0	0	1	0	1	88	7	43	13	0	0	0	0	0	0	0	1	0	43	25	23	22	0	1	0	0	0	0	0	7	6	176	7	45	15	0	0	0	0	0	0	4	2	3	212	263	1067
14:30	3	18	8	0	0	0	0	0	0	0	1	1	142	13	41	3	0	0	0	1	1	0	0	0	0	46	20	21	24	0	0	0	0	0	0	0	3	6	162	16	45	12	0	0	0	0	0	0	0	0	3	202	240	1045
14:45	8	22	15	0	0	0	0	0	0	1	2	5	129	11	50	8	0	0	0	0	0	0	1	0	0	35	14	20	29	1	0	0	0	0	0	2	3	1	197	13	38	17	0	1	1	0	0	0	0	0	1	214	264	1045
15:00	0	17	8	0	1	1	0	0	0	0	0	2	130	8	43	7	0	0	0	0	0	0	1	6	1	85	22	23	31	0	0	0	1	0	0	1	0	1	198	13	45	16	0	0	0	0	0	0	0	11	4	203	263	1030

Regent St @ Centre St

Municipality: NOTL
Major Road: Regent St
Minor Road: Centre St

Date: Sept 5, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
13:15	3	4	0	0	0	0	0	1	0	0	0	0	2	1	3	0	0	0	0	0	0	0	2	0	0	0	3	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	23	23
13:30	0	6	1	0	0	0	0	0	0	0	0	0	0	1	3	2	0	0	0	0	0	0	1	0	0	1	3	0	0	0	0	0	0	0	2	0	1	1	1	0	0	0	0	0	0	0	2	0	2	24	47
13:45	2	8	2	0	0	0	0	0	0	2	4	0	0	1	2	0	0	0	0	0	0	0	1	2	1	1	8	0	0	0	0	0	0	0	0	2	2	1	1	1	0	0	0	0	0	0	3	0	2	41	88
14:00	1	7	0	0	0	0	0	0	0	0	0	0	0	2	3	2	0	0	0	0	0	0	0	0	2	0	16	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3	33	121
14:15	1	10	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	6	0	0	0	9	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4	0	7	33	131
14:30	0	13	0	0	0	0	0	0	0	0	0	0	1	2	2	2	0	0	0	0	0	0	1	0	0	1	4	1	0	0	0	0	0	0	0	1	0	1	3	2	0	0	0	0	0	0	0	0	8	32	139
14:45	0	12	2	0	0	0	0	1	0	0	0	0	0	2	5	0	0	0	0	0	0	0	4	0	1	0	9	0	0	0	0	0	0	0	0	0	0	0	2	5	0	0	0	0	0	0	0	0	7	42	140
15:00	1	11	1	0	0	0	0	0	0	0	2	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	1	0	4	2	1	0	0	0	0	0	0	0	0	5	36	143

Regent St @ Gage St

Municipality: NOTL
Major Road: Regent St
Minor Road: Gage St

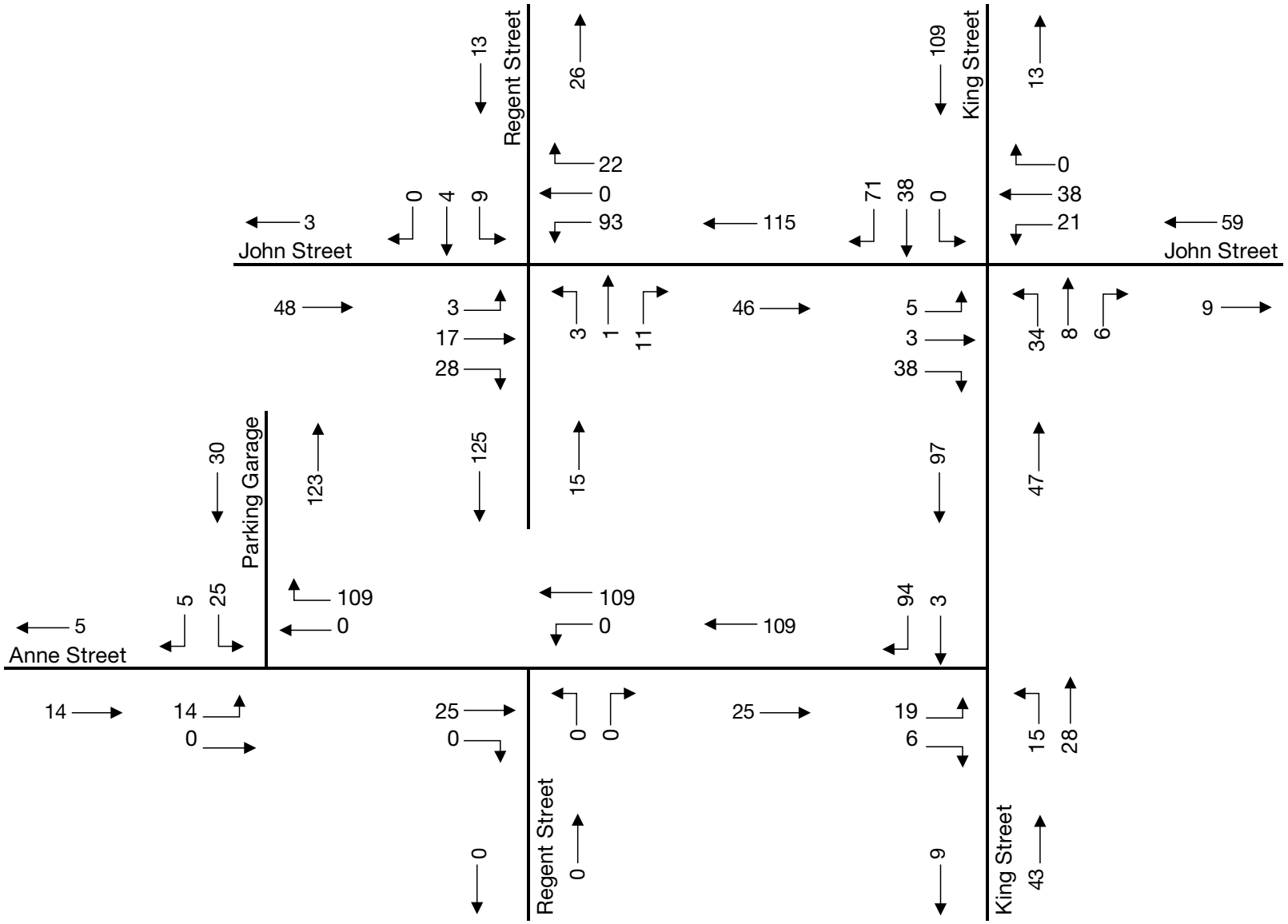
Date: Sept 5, 2020

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry

Period	North Approach													East Approach												South Approach												West Approach												Veh. Summary	
	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.	Cars			Trucks			Buses			Bicycles			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
13:15	3	5	2	0	0	0	0	1	0	1	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	4	2	0	2	0	0	0	0	1	0	0	0	33	33
13:30	1	6	1	0	0	0	0	0	0	0	0	0	4	0	5	1	0	0	0	0	0	0	0	0	0	6	1	3	1	0	0	0	0	0	0	0	2	0	6	1	2	1	0	0	0	0	0	0	0	0	6	25	58
13:45	3	7	1	0	0	0	0	0	0	0	6	0	3	1	9	2	0	0	0	0	0	0	0	0	0	4	1	6	1	0	0	0	0	0	0	0	3	0	0	1	3	4	0	0	0	0	0	0	2	0	0	2	50	108
14:00	2	4	1	0	0	0	0	0	0	0	0	2	0	1	7	2	0	0	0	0	0	0	0	0	0	0	3	12	3	0	0	0	0	0	0	0	0	0	0	2	5	1	0	0	0	0	0	0	0	3	0	2	48	156
14:15	4	8	1	0	0	0	0	0	0	0	0	0	2	1	12	0	0	0	0	0	0	0	1	1	0	1	0	7	2	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	3	0	2	46	169
14:30	5	9	0	0	0	0	0	0	0	1	0	7	0	1	9	1	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0	1	0	0	0	3	3	0	0	0	0	0	0	0	3	0	7	52	196
14:45	2	8	4	0	0	0	0	1	0	1	0	0	4	2	7	2	0	1	0	0	0	0	0	0	0	2	2	9	1	0	0	0	0	0	0	0	0	0	0	0	4	2	0	1	0	0	0	0	0	2	0	4	49	195
15:00	1	7	0	0	0	0	0	0	0	0	2	2	0	2	6	2	0	0	0	0	0	0	0	1	0	0	1	13	0	0	0	0	0	0	0	0	1	0	0	2	5	3	0	0	0	0	0	0	0	1	0	4	49	196

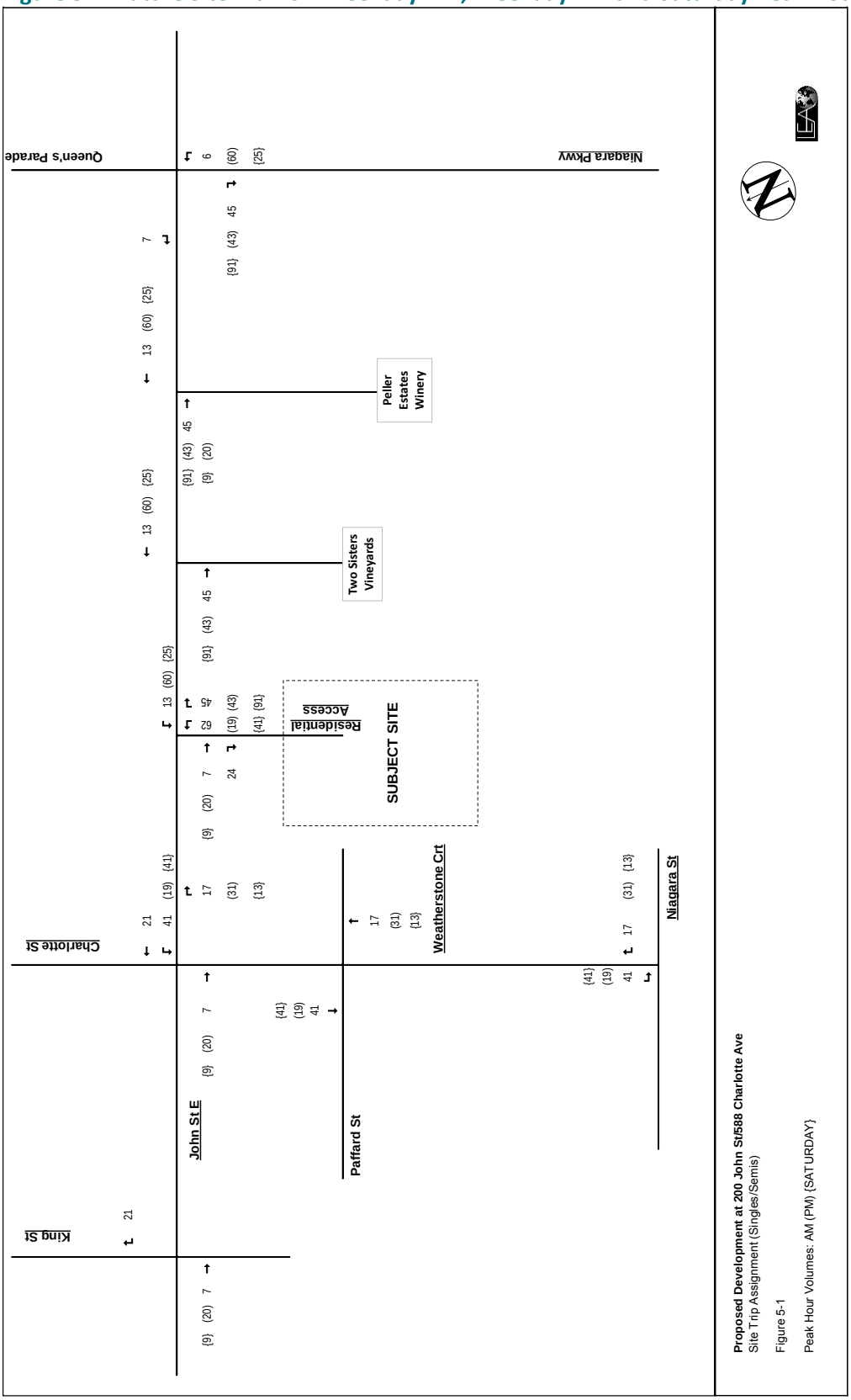
APPENDIX 3

Background Development Site Trips



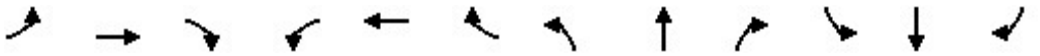
Saturday Peak Hour Site-Generated Trip Assignment

Figure 5-1: Future Site Traffic – Weekday AM, Weekday PM and Saturday Peak Hours



APPENDIX 4

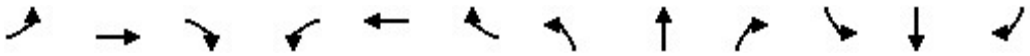
Existing (2023) Traffic Conditions – HCM Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	4	94	4	2	2	59	135	1	1	115	127
Future Volume (Veh/h)	145	4	94	4	2	2	59	135	1	1	115	127
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	158	4	102	4	2	2	64	147	1	1	125	138
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	474	472	194	576	540	148	263			148		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	474	472	194	576	540	148	263			148		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	99	88	99	100	100	95			100		
cM capacity (veh/h)	478	466	847	360	426	899	1301			1434		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	264	8	212	264
Volume Left	158	4	64	1
Volume Right	102	2	1	138
cSH	575	444	1301	1434
Volume to Capacity	0.46	0.02	0.05	0.00
Queue Length 95th (m)	19.2	0.4	1.2	0.0
Control Delay (s)	16.5	13.3	2.7	0.0
Lane LOS	C	B	A	A
Approach Delay (s)	16.5	13.3	2.7	0.0
Approach LOS	C	B		

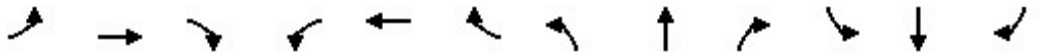
Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1	4	6	2	2	4	269	14	1	226	3
Future Volume (Veh/h)	5	1	4	6	2	2	4	269	14	1	226	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	4	7	2	2	4	292	15	1	246	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	560	564	248	562	558	300	249			307		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560	564	248	562	558	300	249			307		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	98	100	100	100			100		
cM capacity (veh/h)	435	433	791	434	436	740	1317			1254		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	10	11	311	250
Volume Left	5	7	4	1
Volume Right	4	2	15	3
cSH	530	470	1317	1254
Volume to Capacity	0.02	0.02	0.00	0.00
Queue Length 95th (m)	0.5	0.6	0.1	0.0
Control Delay (s)	11.9	12.9	0.1	0.0
Lane LOS	B	B	A	A
Approach Delay (s)	11.9	12.9	0.1	0.0
Approach LOS	B	B		

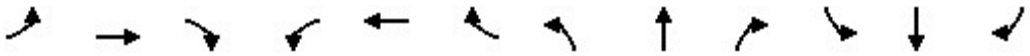
Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	29.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	9	10	41	11	8	9	246	21	4	181	5
Future Volume (Veh/h)	9	9	10	41	11	8	9	246	21	4	181	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	10	11	45	12	9	10	267	23	4	197	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	521	518	200	522	508	278	202			290		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	521	518	200	522	508	278	202			290		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	90	97	99	99			100		
cM capacity (veh/h)	448	457	841	448	463	760	1370			1272		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	66	300	206
Volume Left	10	45	10	4
Volume Right	11	9	23	5
cSH	541	477	1370	1272
Volume to Capacity	0.06	0.14	0.01	0.00
Queue Length 95th (m)	1.5	3.8	0.2	0.1
Control Delay (s)	12.1	13.7	0.3	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	12.1	13.7	0.3	0.2
Approach LOS	B	B		

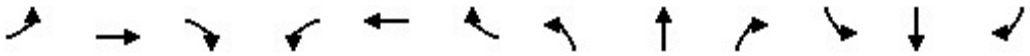
Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	34.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	48	186	62	48	192	27	91	71	91	29	60	48
Future Volume (vph)	48	186	62	48	192	27	91	71	91	29	60	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	202	67	52	209	29	99	77	99	32	65	52

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	52	269	290	99	176	32	117
Volume Left (vph)	52	0	52	99	0	32	0
Volume Right (vph)	0	67	29	0	99	0	52
Hadj (s)	0.53	-0.14	0.01	0.53	-0.36	0.53	-0.28
Departure Headway (s)	6.8	6.1	6.3	7.2	6.2	7.4	6.6
Degree Utilization, x	0.10	0.46	0.51	0.20	0.31	0.07	0.21
Capacity (veh/h)	496	558	547	470	536	441	495
Control Delay (s)	9.3	13.0	15.5	10.7	10.8	9.7	10.1
Approach Delay (s)	12.4		15.5	10.7		10.1	
Approach LOS	B		C	B		B	

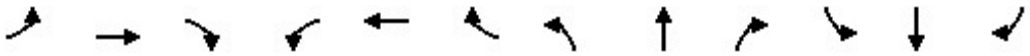
Intersection Summary				
Delay	12.5			
Level of Service	B			
Intersection Capacity Utilization	57.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	4	1	2	7	3	2	23	3	2	25	4
Future Volume (Veh/h)	3	4	1	2	7	3	2	23	3	2	25	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	4	1	2	8	3	2	25	3	2	27	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	70	65	29	66	66	26	31			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	70	65	29	66	66	26	31			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	99	100	100			100		
cM capacity (veh/h)	910	824	1046	921	823	1049	1582			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	8	13	30	33
Volume Left	3	2	2	2
Volume Right	1	3	3	4
cSH	878	881	1582	1585
Volume to Capacity	0.01	0.01	0.00	0.00
Queue Length 95th (m)	0.2	0.4	0.0	0.0
Control Delay (s)	9.1	9.1	0.5	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.1	9.1	0.5	0.4
Approach LOS	A	A		

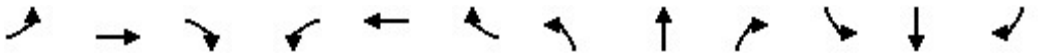
Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	19	3	4	12	6	2	21	7	6	29	1
Future Volume (vph)	10	19	3	4	12	6	2	21	7	6	29	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	21	3	4	13	7	2	23	8	7	32	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	35	24	33	40
Volume Left (vph)	11	4	2	7
Volume Right (vph)	3	7	8	1
Hadj (s)	0.05	-0.11	-0.10	0.05
Departure Headway (s)	4.1	4.0	4.0	4.1
Degree Utilization, x	0.04	0.03	0.04	0.05
Capacity (veh/h)	851	882	881	858
Control Delay (s)	7.3	7.1	7.1	7.3
Approach Delay (s)	7.3	7.1	7.1	7.3
Approach LOS	A	A	A	A

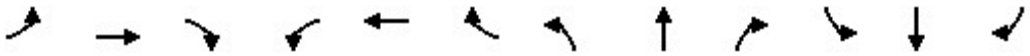
Intersection Summary				
Delay		7.2		
Level of Service		A		
Intersection Capacity Utilization		13.8%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	12	159	0	6	9	79	183	4	4	182	163
Future Volume (Veh/h)	192	12	159	0	6	9	79	183	4	4	182	163
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	13	173	0	7	10	86	199	4	4	198	177
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	681	670	286	847	756	201	375			203		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	681	670	286	847	756	201	375			203		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	37	96	77	100	98	99	93			100		
cM capacity (veh/h)	334	350	753	199	312	840	1183			1369		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	395	17	289	379
Volume Left	209	0	86	4
Volume Right	173	10	4	177
cSH	442	495	1183	1369
Volume to Capacity	0.89	0.03	0.07	0.00
Queue Length 95th (m)	76.6	0.9	1.9	0.1
Control Delay (s)	51.2	12.5	2.9	0.1
Lane LOS	F	B	A	A
Approach Delay (s)	51.2	12.5	2.9	0.1
Approach LOS	F	B		

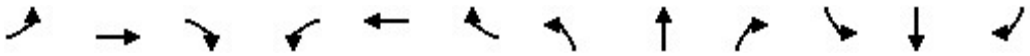
Intersection Summary				
Average Delay	19.8			
Intersection Capacity Utilization	76.4%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	8	9	1	10	9	337	20	2	335	18
Future Volume (Veh/h)	7	0	8	9	1	10	9	337	20	2	335	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	9	10	1	11	10	366	22	2	364	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	786	786	374	784	785	377	384			388		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	786	786	374	784	785	377	384			388		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	97	100	98	99			100		
cM capacity (veh/h)	301	321	672	304	321	670	1174			1170		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	22	398	386
Volume Left	8	10	10	2
Volume Right	9	11	22	20
cSH	426	420	1174	1170
Volume to Capacity	0.04	0.05	0.01	0.00
Queue Length 95th (m)	1.0	1.3	0.2	0.0
Control Delay (s)	13.8	14.1	0.3	0.1
Lane LOS	B	B	A	A
Approach Delay (s)	13.8	14.1	0.3	0.1
Approach LOS	B	B		

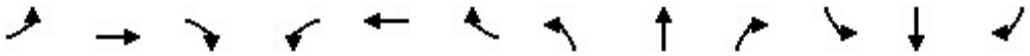
Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	37.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	18	13	67	24	10	14	317	20	6	258	15
Future Volume (Veh/h)	9	18	13	67	24	10	14	317	20	6	258	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	20	14	73	26	11	15	345	22	7	280	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	712	699	288	712	696	356	296			367		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	712	699	288	712	696	356	296			367		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	94	98	77	93	98	99			99		
cM capacity (veh/h)	319	357	751	322	359	688	1265			1192		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	44	110	382	303
Volume Left	10	73	15	7
Volume Right	14	11	22	16
cSH	415	349	1265	1192
Volume to Capacity	0.11	0.32	0.01	0.01
Queue Length 95th (m)	2.8	10.6	0.3	0.1
Control Delay (s)	14.7	20.0	0.4	0.2
Lane LOS	B	C	A	A
Approach Delay (s)	14.7	20.0	0.4	0.2
Approach LOS	B	C		

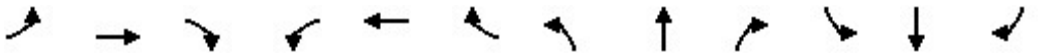
Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	46.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	66	191	89	58	200	43	93	103	113	27	102	56
Future Volume (vph)	66	191	89	58	200	43	93	103	113	27	102	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	208	97	63	217	47	101	112	123	29	111	61

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	72	305	327	101	235	29	172
Volume Left (vph)	72	0	63	101	0	29	0
Volume Right (vph)	0	97	47	0	123	0	61
Hadj (s)	0.53	-0.19	-0.01	0.53	-0.33	0.53	-0.21
Departure Headway (s)	7.5	6.8	6.9	7.8	6.9	8.1	7.3
Degree Utilization, x	0.15	0.57	0.63	0.22	0.45	0.07	0.35
Capacity (veh/h)	454	503	493	425	480	405	441
Control Delay (s)	10.6	17.2	20.8	11.8	14.2	10.4	13.0
Approach Delay (s)	15.9		20.8	13.5		12.6	
Approach LOS	C		C	B		B	

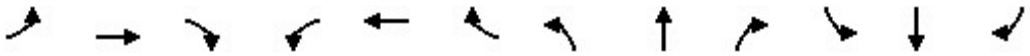
Intersection Summary				
Delay	16.0			
Level of Service	C			
Intersection Capacity Utilization	64.6%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	10	0	7	11	8	2	60	1	2	67	3
Future Volume (Veh/h)	8	10	0	7	11	8	2	60	1	2	67	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	11	0	8	12	9	2	65	1	2	73	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	163	148	74	154	150	66	76			66		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	163	148	74	154	150	66	76			66		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	99	98	99	100			100		
cM capacity (veh/h)	783	741	987	803	740	998	1523			1536		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	20	29	68	78
Volume Left	9	8	2	2
Volume Right	0	9	1	3
cSH	759	824	1523	1536
Volume to Capacity	0.03	0.04	0.00	0.00
Queue Length 95th (m)	0.6	0.9	0.0	0.0
Control Delay (s)	9.9	9.5	0.2	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.9	9.5	0.2	0.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	14.9%	ICU Level of Service	A	
Analysis Period (min)	15			



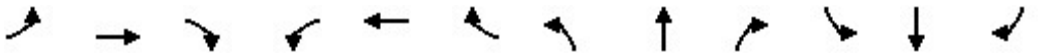
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	20	11	7	40	6	4	68	3	13	50	6
Future Volume (vph)	2	20	11	7	40	6	4	68	3	13	50	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	22	12	8	43	7	4	74	3	14	54	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	36	58	81	75
Volume Left (vph)	2	8	4	14
Volume Right (vph)	12	7	3	7
Hadj (s)	-0.15	-0.01	0.02	0.02
Departure Headway (s)	4.1	4.3	4.2	4.2
Degree Utilization, x	0.04	0.07	0.09	0.09
Capacity (veh/h)	828	799	826	831
Control Delay (s)	7.3	7.6	7.6	7.6
Approach Delay (s)	7.3	7.6	7.6	7.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.6			
Level of Service	A			
Intersection Capacity Utilization	20.4%	ICU Level of Service	A	
Analysis Period (min)	15			

APPENDIX 5

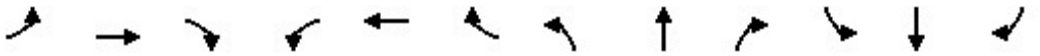
Future (2028) Background Traffic Conditions – HCM Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	4	99	4	2	2	62	142	1	1	121	133
Future Volume (Veh/h)	152	4	99	4	2	2	62	142	1	1	121	133
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	4	108	4	2	2	67	154	1	1	132	145
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	498	496	204	605	568	154	277			155		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498	496	204	605	568	154	277			155		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	99	87	99	100	100	95			100		
cM capacity (veh/h)	460	450	836	340	410	891	1286			1425		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	277	8	222	278
Volume Left	165	4	67	1
Volume Right	108	2	1	145
cSH	558	424	1286	1425
Volume to Capacity	0.50	0.02	0.05	0.00
Queue Length 95th (m)	21.9	0.5	1.3	0.0
Control Delay (s)	17.6	13.7	2.7	0.0
Lane LOS	C	B	A	A
Approach Delay (s)	17.6	13.7	2.7	0.0
Approach LOS	C	B		

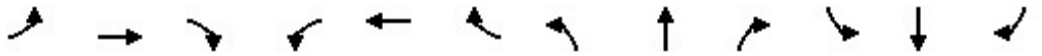
Intersection Summary				
Average Delay	7.1			
Intersection Capacity Utilization	59.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1	4	6	2	2	4	282	15	1	237	3
Future Volume (Veh/h)	5	1	4	6	2	2	4	282	15	1	237	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	4	7	2	2	4	307	16	1	258	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	588	592	260	589	586	315	261			323		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	588	592	260	589	586	315	261			323		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	98	100	100	100			100		
cM capacity (veh/h)	417	417	779	416	421	725	1303			1237		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	10	11	327	262
Volume Left	5	7	4	1
Volume Right	4	2	16	3
cSH	512	452	1303	1237
Volume to Capacity	0.02	0.02	0.00	0.00
Queue Length 95th (m)	0.5	0.6	0.1	0.0
Control Delay (s)	12.2	13.2	0.1	0.0
Lane LOS	B	B	A	A
Approach Delay (s)	12.2	13.2	0.1	0.0
Approach LOS	B	B		

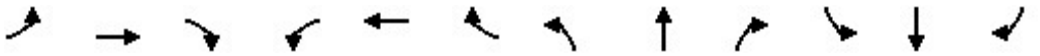
Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	9	11	43	12	8	9	258	22	4	190	5
Future Volume (Veh/h)	9	9	11	43	12	8	9	258	22	4	190	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	10	12	47	13	9	10	280	24	4	207	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	545	542	210	546	532	292	212			304		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	545	542	210	546	532	292	212			304		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	89	97	99	99			100		
cM capacity (veh/h)	430	443	831	431	449	747	1358			1257		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	32	69	314	216
Volume Left	10	47	10	4
Volume Right	12	9	24	5
cSH	531	459	1358	1257
Volume to Capacity	0.06	0.15	0.01	0.00
Queue Length 95th (m)	1.5	4.2	0.2	0.1
Control Delay (s)	12.2	14.2	0.3	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	12.2	14.2	0.3	0.2
Approach LOS	B	B		

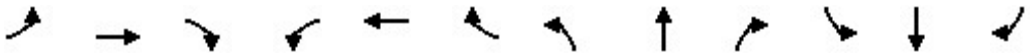
Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	35.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	50	195	65	50	202	28	96	75	102	30	63	50
Future Volume (vph)	50	195	65	50	202	28	96	75	102	30	63	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	212	71	54	220	30	104	82	111	33	68	54

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	54	283	304	104	193	33	122
Volume Left (vph)	54	0	54	104	0	33	0
Volume Right (vph)	0	71	30	0	111	0	54
Hadj (s)	0.53	-0.14	0.01	0.53	-0.37	0.53	-0.28
Departure Headway (s)	7.0	6.3	6.4	7.3	6.4	7.6	6.8
Degree Utilization, x	0.10	0.49	0.54	0.21	0.34	0.07	0.23
Capacity (veh/h)	485	545	535	461	525	428	479
Control Delay (s)	9.6	14.0	16.8	11.0	11.5	10.0	10.6
Approach Delay (s)	13.3		16.8	11.3		10.4	
Approach LOS	B		C	B		B	

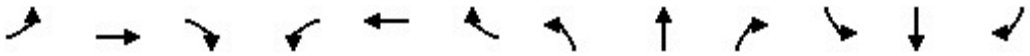
Intersection Summary				
Delay	13.3			
Level of Service	B			
Intersection Capacity Utilization	59.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	4	1	2	7	3	2	24	3	2	26	4
Future Volume (Veh/h)	3	4	1	2	7	3	2	24	3	2	26	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	4	1	2	8	3	2	26	3	2	28	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	72	67	30	68	68	28	32			29		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	72	67	30	68	68	28	32			29		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	99	100	100			100		
cM capacity (veh/h)	907	822	1044	918	821	1048	1580			1584		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	8	13	31	34
Volume Left	3	2	2	2
Volume Right	1	3	3	4
cSH	876	879	1580	1584
Volume to Capacity	0.01	0.01	0.00	0.00
Queue Length 95th (m)	0.2	0.4	0.0	0.0
Control Delay (s)	9.1	9.2	0.5	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.1	9.2	0.5	0.4
Approach LOS	A	A		

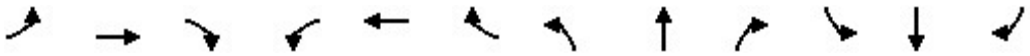
Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	20	3	4	13	6	2	22	7	6	30	1
Future Volume (vph)	11	20	3	4	13	6	2	22	7	6	30	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	22	3	4	14	7	2	24	8	7	33	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	37	25	34	41
Volume Left (vph)	12	4	2	7
Volume Right (vph)	3	7	8	1
Hadj (s)	0.05	-0.10	-0.10	0.05
Departure Headway (s)	4.1	4.0	4.0	4.1
Degree Utilization, x	0.04	0.03	0.04	0.05
Capacity (veh/h)	849	878	878	855
Control Delay (s)	7.3	7.1	7.1	7.3
Approach Delay (s)	7.3	7.1	7.1	7.3
Approach LOS	A	A	A	A

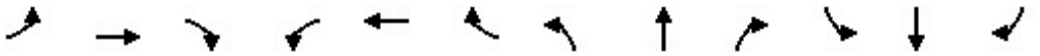
Intersection Summary				
Delay			7.2	
Level of Service			A	
Intersection Capacity Utilization			14.1%	ICU Level of Service
Analysis Period (min)			15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	13	167	0	6	9	83	192	4	4	191	171
Future Volume (Veh/h)	202	13	167	0	6	9	83	192	4	4	191	171
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	220	14	182	0	7	10	90	209	4	4	208	186
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	714	702	301	889	793	211	394			213		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	714	702	301	889	793	211	394			213		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	30	96	75	100	98	99	92			100		
cM capacity (veh/h)	316	333	739	181	295	829	1165			1357		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	416	17	303	398
Volume Left	220	0	90	4
Volume Right	182	10	4	186
cSH	422	475	1165	1357
Volume to Capacity	0.99	0.04	0.08	0.00
Queue Length 95th (m)	96.9	0.9	2.0	0.1
Control Delay (s)	71.8	12.9	3.0	0.1
Lane LOS	F	B	A	A
Approach Delay (s)	71.8	12.9	3.0	0.1
Approach LOS	F	B		

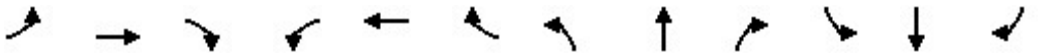
Intersection Summary				
Average Delay	27.4			
Intersection Capacity Utilization	74.4%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	8	9	1	11	9	354	21	2	352	19
Future Volume (Veh/h)	7	0	8	9	1	11	9	354	21	2	352	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	9	10	1	12	10	385	23	2	383	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	826	826	394	823	824	396	404			408		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	826	826	394	823	824	396	404			408		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	97	100	98	99			100		
cM capacity (veh/h)	283	304	655	286	305	653	1155			1151		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	23	418	406
Volume Left	8	10	10	2
Volume Right	9	12	23	21
cSH	404	406	1155	1151
Volume to Capacity	0.04	0.06	0.01	0.00
Queue Length 95th (m)	1.1	1.4	0.2	0.0
Control Delay (s)	14.3	14.4	0.3	0.1
Lane LOS	B	B	A	A
Approach Delay (s)	14.3	14.4	0.3	0.1
Approach LOS	B	B		

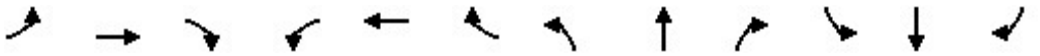
Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	19	14	70	25	11	15	333	21	6	271	16
Future Volume (Veh/h)	9	19	14	70	25	11	15	333	21	6	271	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	21	15	76	27	12	16	362	23	7	295	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	748	734	304	748	732	374	312			385		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	748	734	304	748	732	374	312			385		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	94	98	75	92	98	99			99		
cM capacity (veh/h)	299	341	736	302	342	673	1248			1173		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	115	401	319
Volume Left	10	76	16	7
Volume Right	15	12	23	17
cSH	398	330	1248	1173
Volume to Capacity	0.12	0.35	0.01	0.01
Queue Length 95th (m)	3.1	12.1	0.3	0.1
Control Delay (s)	15.2	21.6	0.4	0.2
Lane LOS	C	C	A	A
Approach Delay (s)	15.2	21.6	0.4	0.2
Approach LOS	C	C		

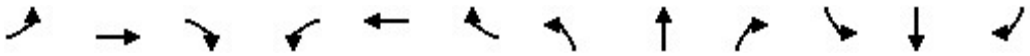
Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	45.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	69	201	93	61	210	45	98	108	119	28	107	59
Future Volume (vph)	69	201	93	61	210	45	98	108	119	28	107	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	218	101	66	228	49	107	117	129	30	116	64

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	75	319	343	107	246	30	180
Volume Left (vph)	75	0	66	107	0	30	0
Volume Right (vph)	0	101	49	0	129	0	64
Hadj (s)	0.53	-0.19	-0.01	0.53	-0.33	0.53	-0.21
Departure Headway (s)	7.7	6.9	7.1	8.0	7.1	8.3	7.5
Degree Utilization, x	0.16	0.62	0.67	0.24	0.49	0.07	0.38
Capacity (veh/h)	444	490	483	413	468	394	428
Control Delay (s)	10.9	19.2	23.5	12.3	15.4	10.7	13.8
Approach Delay (s)	17.7		23.5	14.5		13.4	
Approach LOS	C		C	B		B	

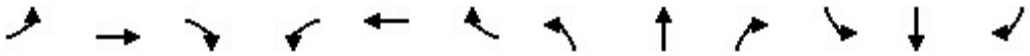
Intersection Summary				
Delay	17.6			
Level of Service	C			
Intersection Capacity Utilization	63.0%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	11	0	7	12	8	2	63	1	2	70	3
Future Volume (Veh/h)	8	11	0	7	12	8	2	63	1	2	70	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	12	0	8	13	9	2	68	1	2	76	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	170	154	78	160	156	68	79			69		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	170	154	78	160	156	68	79			69		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	99	98	99	100			100		
cM capacity (veh/h)	775	735	983	794	734	995	1519			1532		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	30	71	81
Volume Left	9	8	2	2
Volume Right	0	9	1	3
cSH	752	815	1519	1532
Volume to Capacity	0.03	0.04	0.00	0.00
Queue Length 95th (m)	0.7	0.9	0.0	0.0
Control Delay (s)	9.9	9.6	0.2	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.9	9.6	0.2	0.2
Approach LOS	A	A		

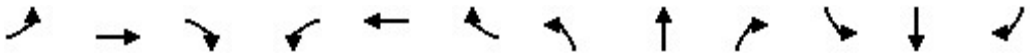
Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	21	12	7	42	6	4	71	3	14	53	6
Future Volume (vph)	2	21	12	7	42	6	4	71	3	14	53	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	23	13	8	46	7	4	77	3	15	58	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	38	61	84	80
Volume Left (vph)	2	8	4	15
Volume Right (vph)	13	7	3	7
Hadj (s)	-0.16	-0.01	0.02	0.02
Departure Headway (s)	4.2	4.3	4.2	4.2
Degree Utilization, x	0.04	0.07	0.10	0.09
Capacity (veh/h)	823	803	821	827
Control Delay (s)	7.4	7.6	7.7	7.7
Approach Delay (s)	7.4	7.6	7.7	7.7
Approach LOS	A	A	A	A

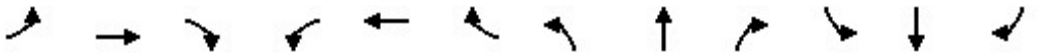
Intersection Summary				
Delay		7.6		
Level of Service		A		
Intersection Capacity Utilization		20.1%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	152	4	99	4	2	2	62	142	1	1	121	133
Future Volume (vph)	152	4	99	4	2	2	62	142	1	1	121	133
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	4	108	4	2	2	67	154	1	1	132	145

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	277	8	222	278
Volume Left (vph)	165	4	67	1
Volume Right (vph)	108	2	1	145
Hadj (s)	-0.08	-0.02	0.09	-0.28
Departure Headway (s)	5.1	5.6	5.1	4.7
Degree Utilization, x	0.39	0.01	0.32	0.36
Capacity (veh/h)	662	549	661	720
Control Delay (s)	11.3	8.7	10.5	10.4
Approach Delay (s)	11.3	8.7	10.5	10.4
Approach LOS	B	A	B	B

Intersection Summary				
Delay	10.7			
Level of Service	B			
Intersection Capacity Utilization	59.1%	ICU Level of Service	B	
Analysis Period (min)	15			



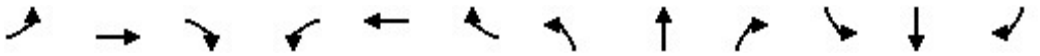
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	202	13	167	0	6	9	83	192	4	4	191	171
Future Volume (vph)	202	13	167	0	6	9	83	192	4	4	191	171
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	220	14	182	0	7	10	90	209	4	4	208	186

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	416	17	303	398
Volume Left (vph)	220	0	90	4
Volume Right (vph)	182	10	4	186
Hadj (s)	-0.12	-0.32	0.09	-0.24
Departure Headway (s)	5.8	6.6	6.0	5.6
Degree Utilization, x	0.67	0.03	0.51	0.62
Capacity (veh/h)	585	401	556	617
Control Delay (s)	19.7	9.8	15.1	17.1
Approach Delay (s)	19.7	9.8	15.1	17.1
Approach LOS	C	A	C	C

Intersection Summary				
Delay	17.4			
Level of Service	C			
Intersection Capacity Utilization	74.4%	ICU Level of Service	D	
Analysis Period (min)	15			

APPENDIX 6

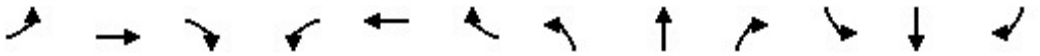
Future (2028) Total Traffic Conditions – HCM Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	4	99	4	2	2	62	142	1	1	121	156
Future Volume (Veh/h)	175	4	99	4	2	2	62	142	1	1	121	156
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	4	108	4	2	2	67	154	1	1	132	170
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	510	508	217	618	592	154	302			155		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510	508	217	618	592	154	302			155		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	58	99	87	99	99	100	95			100		
cM capacity (veh/h)	451	443	823	332	396	891	1259			1425		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	302	8	222	303
Volume Left	190	4	67	1
Volume Right	108	2	1	170
cSH	538	414	1259	1425
Volume to Capacity	0.56	0.02	0.05	0.00
Queue Length 95th (m)	27.5	0.5	1.3	0.0
Control Delay (s)	19.9	13.9	2.7	0.0
Lane LOS	C	B	A	A
Approach Delay (s)	19.9	13.9	2.7	0.0
Approach LOS	C	B		

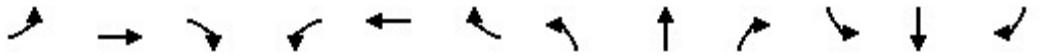
Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1	4	6	2	2	4	305	15	1	260	3
Future Volume (Veh/h)	5	1	4	6	2	2	4	305	15	1	260	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	4	7	2	2	4	332	16	1	283	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	638	642	284	639	636	340	286			348		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	638	642	284	639	636	340	286			348		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	98	99	100	100			100		
cM capacity (veh/h)	386	391	754	385	394	702	1276			1211		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	10	11	352	287
Volume Left	5	7	4	1
Volume Right	4	2	16	3
cSH	480	421	1276	1211
Volume to Capacity	0.02	0.03	0.00	0.00
Queue Length 95th (m)	0.5	0.6	0.1	0.0
Control Delay (s)	12.7	13.8	0.1	0.0
Lane LOS	B	B	A	A
Approach Delay (s)	12.7	13.8	0.1	0.0
Approach LOS	B	B		

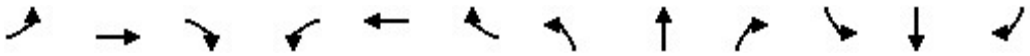
Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	9	11	43	12	8	9	269	22	4	201	5
Future Volume (Veh/h)	9	9	11	43	12	8	9	269	22	4	201	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	10	12	47	13	9	10	292	24	4	218	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	568	564	220	570	555	304	223			316		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	568	564	220	570	555	304	223			316		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	89	97	99	99			100		
cM capacity (veh/h)	415	430	819	415	435	736	1346			1244		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	32	69	326	227
Volume Left	10	47	10	4
Volume Right	12	9	24	5
cSH	516	444	1346	1244
Volume to Capacity	0.06	0.16	0.01	0.00
Queue Length 95th (m)	1.6	4.4	0.2	0.1
Control Delay (s)	12.4	14.6	0.3	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	12.4	14.6	0.3	0.2
Approach LOS	B	B		

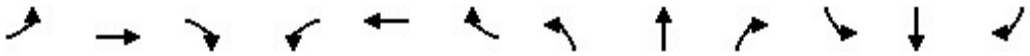
Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	50	195	65	61	202	28	96	75	113	30	63	50
Future Volume (vph)	50	195	65	61	202	28	96	75	113	30	63	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	212	71	66	220	30	104	82	123	33	68	54

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	54	283	316	104	205	33	122
Volume Left (vph)	54	0	66	104	0	33	0
Volume Right (vph)	0	71	30	0	123	0	54
Hadj (s)	0.53	-0.14	0.02	0.53	-0.39	0.53	-0.28
Departure Headway (s)	7.1	6.4	6.5	7.4	6.5	7.7	6.9
Degree Utilization, x	0.11	0.50	0.57	0.21	0.37	0.07	0.23
Capacity (veh/h)	480	529	532	458	522	423	472
Control Delay (s)	9.7	14.4	17.8	11.2	12.0	10.1	10.8
Approach Delay (s)	13.7		17.8	11.7		10.6	
Approach LOS	B		C	B		B	

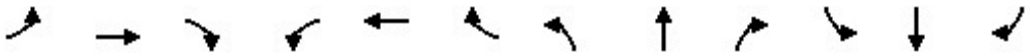
Intersection Summary				
Delay	13.9			
Level of Service	B			
Intersection Capacity Utilization	61.0%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	4	1	2	7	3	2	24	3	2	26	4
Future Volume (Veh/h)	3	4	1	2	7	3	2	24	3	2	26	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	4	1	2	8	3	2	26	3	2	28	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	72	67	30	68	68	28	32			29		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	72	67	30	68	68	28	32			29		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	99	100	100			100		
cM capacity (veh/h)	907	822	1044	918	821	1048	1580			1584		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	8	13	31	34
Volume Left	3	2	2	2
Volume Right	1	3	3	4
cSH	876	879	1580	1584
Volume to Capacity	0.01	0.01	0.00	0.00
Queue Length 95th (m)	0.2	0.4	0.0	0.0
Control Delay (s)	9.1	9.2	0.5	0.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.1	9.2	0.5	0.4
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	20	3	4	13	6	2	22	7	6	30	1
Future Volume (vph)	11	20	3	4	13	6	2	22	7	6	30	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	22	3	4	14	7	2	24	8	7	33	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	37	25	34	41
Volume Left (vph)	12	4	2	7
Volume Right (vph)	3	7	8	1
Hadj (s)	0.05	-0.10	-0.10	0.05
Departure Headway (s)	4.1	4.0	4.0	4.1
Degree Utilization, x	0.04	0.03	0.04	0.05
Capacity (veh/h)	849	878	878	855
Control Delay (s)	7.3	7.1	7.1	7.3
Approach Delay (s)	7.3	7.1	7.1	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.2		
Level of Service		A		
Intersection Capacity Utilization		14.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	23	23	289	244	0
Future Volume (Veh/h)	11	23	23	289	244	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	25	25	314	265	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	629	265	265			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	629	265	265			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	98			
cM capacity (veh/h)	438	774	1299			

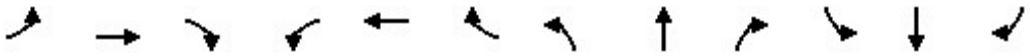
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	37	339	265
Volume Left	12	25	0
Volume Right	25	0	0
cSH	619	1299	1700
Volume to Capacity	0.06	0.02	0.16
Queue Length 95th (m)	1.5	0.5	0.0
Control Delay (s)	11.2	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	11.2	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	300	244	11
Future Volume (Veh/h)	0	0	0	300	244	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	326	265	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	597	271	277			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	597	271	277			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	466	768	1286			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	326	277
Volume Left	0	0	0
Volume Right	0	0	12
cSH	1700	1286	1700
Volume to Capacity	0.00	0.00	0.16
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

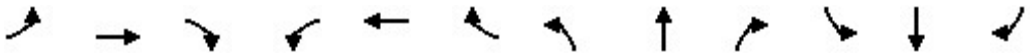
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	13	167	0	6	9	83	192	4	4	191	199
Future Volume (Veh/h)	238	13	167	0	6	9	83	192	4	4	191	199
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	259	14	182	0	7	10	90	209	4	4	208	216
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	728	717	316	904	823	211	424			213		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	728	717	316	904	823	211	424			213		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	16	96	75	100	98	99	92			100		
cM capacity (veh/h)	308	326	724	175	283	829	1135			1357		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	455	17	303	428
Volume Left	259	0	90	4
Volume Right	182	10	4	216
cSH	401	462	1135	1357
Volume to Capacity	1.14	0.04	0.08	0.00
Queue Length 95th (m)	135.2	0.9	2.1	0.1
Control Delay (s)	118.9	13.1	3.0	0.1
Lane LOS	F	B	A	A
Approach Delay (s)	118.9	13.1	3.0	0.1
Approach LOS	F	B		

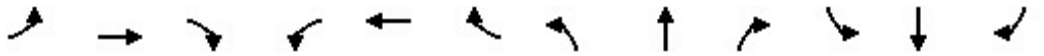
Intersection Summary				
Average Delay	46.0			
Intersection Capacity Utilization	78.1%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	8	9	1	11	9	390	21	2	380	19
Future Volume (Veh/h)	7	0	8	9	1	11	9	390	21	2	380	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	9	10	1	12	10	424	23	2	413	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	896	894	424	892	894	436	434			447		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	896	894	424	892	894	436	434			447		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	96	100	98	99			100		
cM capacity (veh/h)	253	277	630	257	278	621	1126			1113		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	23	457	436
Volume Left	8	10	10	2
Volume Right	9	12	23	21
cSH	371	372	1126	1113
Volume to Capacity	0.05	0.06	0.01	0.00
Queue Length 95th (m)	1.1	1.6	0.2	0.0
Control Delay (s)	15.2	15.3	0.3	0.1
Lane LOS	C	C	A	A
Approach Delay (s)	15.2	15.3	0.3	0.1
Approach LOS	C	C		

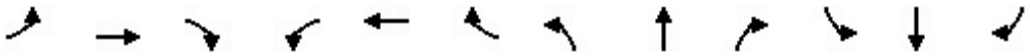
Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	38.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	19	14	70	25	11	15	347	21	6	288	16
Future Volume (Veh/h)	9	19	14	70	25	11	15	347	21	6	288	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	21	15	76	27	12	16	377	23	7	313	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	782	768	322	782	764	388	330			400		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	782	768	322	782	764	388	330			400		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	94	98	73	92	98	99			99		
cM capacity (veh/h)	283	326	719	286	327	660	1229			1159		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	115	416	337
Volume Left	10	76	16	7
Volume Right	15	12	23	17
cSH	381	314	1229	1159
Volume to Capacity	0.12	0.37	0.01	0.01
Queue Length 95th (m)	3.3	13.0	0.3	0.1
Control Delay (s)	15.7	22.9	0.4	0.2
Lane LOS	C	C	A	A
Approach Delay (s)	15.7	22.9	0.4	0.2
Approach LOS	C	C		

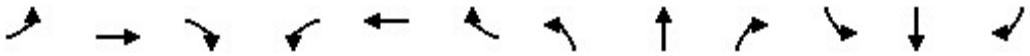
Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	46.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	69	201	93	78	210	45	98	108	133	28	107	59
Future Volume (vph)	69	201	93	78	210	45	98	108	133	28	107	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	218	101	85	228	49	107	117	145	30	116	64

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	75	319	362	107	262	30	180
Volume Left (vph)	75	0	85	107	0	30	0
Volume Right (vph)	0	101	49	0	145	0	64
Hadj (s)	0.53	-0.19	0.00	0.53	-0.35	0.53	-0.21
Departure Headway (s)	7.8	7.1	7.2	8.1	7.2	8.5	7.7
Degree Utilization, x	0.16	0.63	0.72	0.24	0.52	0.07	0.39
Capacity (veh/h)	435	480	478	408	464	385	419
Control Delay (s)	11.1	20.1	26.6	12.5	16.7	10.9	14.2
Approach Delay (s)	18.4		26.6	15.4		13.8	
Approach LOS	C		D	C		B	

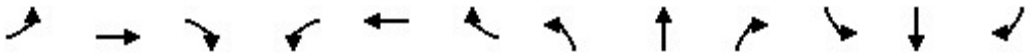
Intersection Summary				
Delay	19.1			
Level of Service	C			
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	11	0	7	12	8	2	63	1	2	70	3
Future Volume (Veh/h)	8	11	0	7	12	8	2	63	1	2	70	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	12	0	8	13	9	2	68	1	2	76	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	170	154	78	160	156	68	79			69		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	170	154	78	160	156	68	79			69		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	98	100	99	98	99	100			100		
cM capacity (veh/h)	775	735	983	794	734	995	1519			1532		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	30	71	81
Volume Left	9	8	2	2
Volume Right	0	9	1	3
cSH	752	815	1519	1532
Volume to Capacity	0.03	0.04	0.00	0.00
Queue Length 95th (m)	0.7	0.9	0.0	0.0
Control Delay (s)	9.9	9.6	0.2	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.9	9.6	0.2	0.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	21	12	7	0	6	4	71	3	14	53	6
Future Volume (vph)	2	21	12	7	0	6	4	71	3	14	53	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	23	13	8	0	7	4	77	3	15	58	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	38	15	84	80
Volume Left (vph)	2	8	4	15
Volume Right (vph)	13	7	3	7
Hadj (s)	-0.16	-0.14	0.02	0.02
Departure Headway (s)	4.1	4.2	4.1	4.1
Degree Utilization, x	0.04	0.02	0.10	0.09
Capacity (veh/h)	838	827	851	857
Control Delay (s)	7.3	7.2	7.6	7.5
Approach Delay (s)	7.3	7.2	7.6	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	18.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	28	36	372	355	0
Future Volume (Veh/h)	14	28	36	372	355	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	30	39	404	386	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	868	386	386			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	868	386	386			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	97			
cM capacity (veh/h)	312	662	1172			

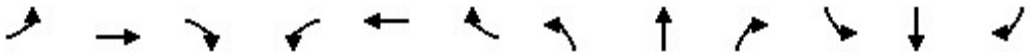
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	443	386
Volume Left	15	39	0
Volume Right	30	0	0
cSH	482	1172	1700
Volume to Capacity	0.09	0.03	0.23
Queue Length 95th (m)	2.5	0.8	0.0
Control Delay (s)	13.2	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.2	1.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	386	355	17
Future Volume (Veh/h)	0	0	0	386	355	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	420	386	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	815	395	404			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	815	395	404			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	347	654	1155			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	420	404
Volume Left	0	0	0
Volume Right	0	0	18
cSH	1700	1155	1700
Volume to Capacity	0.00	0.00	0.24
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

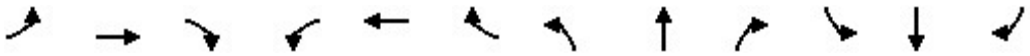
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	175	4	99	4	2	2	62	142	1	1	121	156
Future Volume (vph)	175	4	99	4	2	2	62	142	1	1	121	156
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	4	108	4	2	2	67	154	1	1	132	170

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	302	8	222	303
Volume Left (vph)	190	4	67	1
Volume Right (vph)	108	2	1	170
Hadj (s)	-0.05	-0.02	0.09	-0.30
Departure Headway (s)	5.2	5.8	5.3	4.8
Degree Utilization, x	0.43	0.01	0.32	0.40
Capacity (veh/h)	651	529	643	709
Control Delay (s)	12.1	8.8	10.8	11.0
Approach Delay (s)	12.1	8.8	10.8	11.0
Approach LOS	B	A	B	B

Intersection Summary				
Delay	11.3			
Level of Service	B			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	238	13	167	0	6	9	83	192	4	4	191	199
Future Volume (vph)	238	13	167	0	6	9	83	192	4	4	191	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	259	14	182	0	7	10	90	209	4	4	208	216

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	455	17	303	428
Volume Left (vph)	259	0	90	4
Volume Right (vph)	182	10	4	216
Hadj (s)	-0.09	-0.32	0.09	-0.27
Departure Headway (s)	6.0	7.0	6.3	5.8
Degree Utilization, x	0.75	0.03	0.53	0.69
Capacity (veh/h)	576	400	532	589
Control Delay (s)	25.0	10.2	16.2	20.4
Approach Delay (s)	25.0	10.2	16.2	20.4
Approach LOS	C	B	C	C

Intersection Summary				
Delay	20.9			
Level of Service	C			
Intersection Capacity Utilization	78.1%	ICU Level of Service	D	
Analysis Period (min)	15			