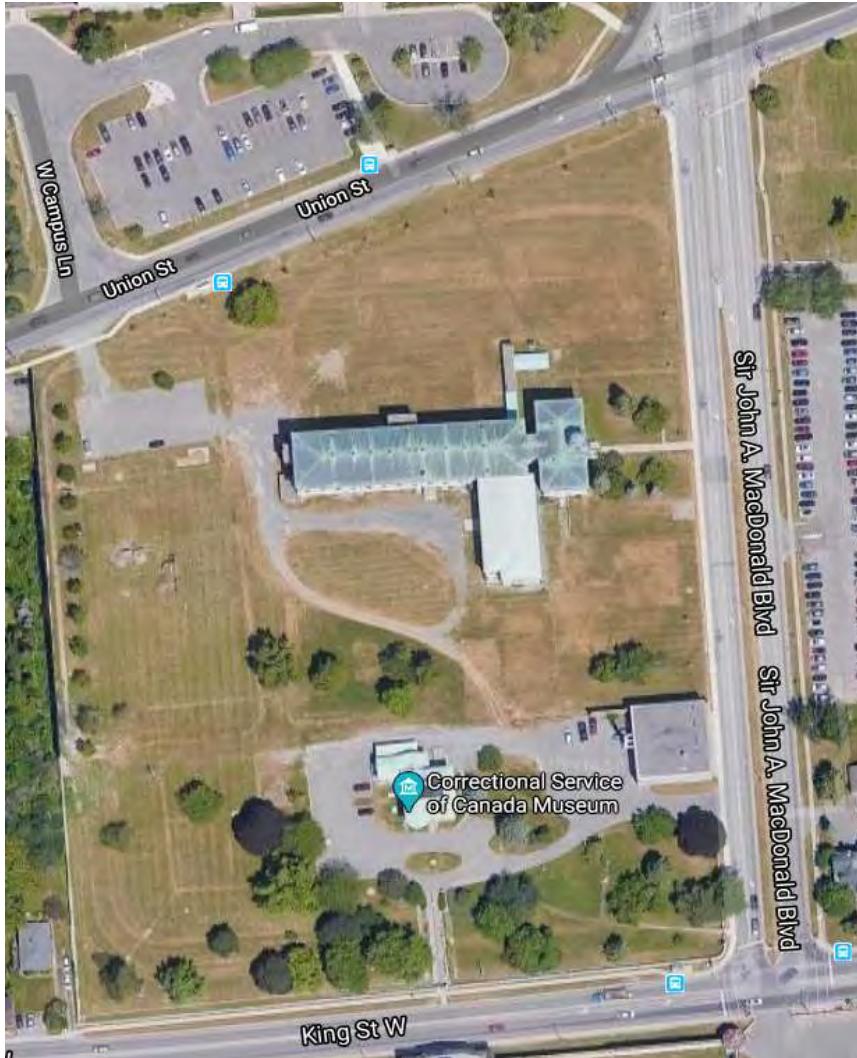


40 SIR JOHN A. MACDONALD BLVD, KINGSTON – UNION PARK TRANSPORTATION ENGINEERING/PLANNING SERVICES



Project No.: CCO-21-1203

Prepared for:

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1.0 INTRODUCTION

McIntosh Perry Consulting Engineers (MP) was retained by Siderius Developments Ltd. to complete a Traffic Impact Study (TIS) to support a proposed site plan application for a mixed-use development. The proposed mixed-use development is located on the west side of Sir John A. MacDonald Boulevard between Union Street and King Street West, and has a municipal address of 40 Sir John A. MacDonald Boulevard in Kingston, ON. The existing site is currently occupied by the non-operational former Correctional Service of Canada (CSC) Prison for Women (P4W), which operated as a maximum-security facility from 1934 to 2000. This study investigates and presents the following:

- Establish baseline traffic conditions for the study area, prepare forecasts for future background traffic growth, and assess the operating conditions for the study area road network at a future 2025 (build-out) planning horizon.
- Based on the composition of the site, estimate traffic generation and distribution of the development to assign to the adjacent road network.
- Determine the future site-related impacts in the context of all local transportation modes.
- Review proposed parking supply for the site based on the City's by-law parking requirement
- Identify measures to promote active transportation for the site
- Review the site plan in the context of operational and geometric perspectives and provide our findings and recommendations.

The objective of this study is to determine the traffic volumes anticipated to be generated by the proposed development during the critical weekday AM and PM peak periods and assess the impact of this traffic on the nearby roadways.

2.0 SITE CHARACTERISTICS

2.1 Study Location

The subject site is currently occupied by the non-operational former CSC P4W which was acquired by Queen's University in 2008. The site location is identified as an institutional land use as stated in the Kingston's Official Plan. The P4W building is to remain on the site and will be refurbished to provide residential units.

The Correctional Services of Canada Museum is located in the south east corner of site location bounded by King Street West to the south and Sir John A. MacDonald Boulevard to the east. The site is surrounded by residential development to the east and west of the proposed development location, Queen's University Faculty of Education to the north, and former maximum-security Kingston Penitentiary located to the south.

The location of the site and the surrounding road network is illustrated in **Figure 2-1**.



Figure 2-1 Site Location (Courtesy of Google Maps, 2020)

2.2 Proposed Land Use

Trip generation for the proposed site will be governed by four future residential / commercial development blocks that has been assessed using a five-year (2025) study planning horizon. Development blocks assessed as part of this study consist of the following:

- **Block A** whose densities are still under consideration is estimated to consists of approximately 250 residential units and 2,600 m² (27,800 sq.ft.) of retail
- **Block B** consists of the P4W building which is expected to be renovated to provide residential units
 - 24 Condominium Units
- **Block C** consists of a retirement / senior home proposing:
 - 215 units (141 retirement suites and 74 senior apartments)
- **Block D** consists of a hotel and ground floor retail
 - 119 hotel units
 - Retail area with gross floor area (GFA) of 364 m² (3,918 sq.ft.)

Access to the site is proposed via three driveway access which will provide vehicular access to each of the three development blocks.

- **Site Access 1** – a full moves access located along the north boundary of the site providing access to **Block C** via Union Street West. This access will align with the existing Queens University access (West Campus Lane) on the north side of Union Street, which provides access to Jean Royce Hall, the Queens University Faculty of Education and Richardson Memorial Stadium located further north. This access is proposed for signalization and upgrades of pedestrian crossings at this location.
- **Site Access 2** – a right-in and right-out (RIRO) access on Sir John A. MacDonald Boulevard located approximately 60m south of the Union Street and Sir John A. MacDonald Boulevard. This driveway provides access to **Block A**.
- **Site Access 3** – will provide access to **Block B** and **Block D** and is considered for full-move operation, facilitated by a break in the existing median on Sir John A. MacDonald Boulevard. Unsignalized operation is preferred for this location.

Internal connections within the site allow for circulation from all of the development blocks to each of the site driveway accesses. The proposed draft site plan of the development can be found in [Appendix A](#).

3.0 EXISTING CONDITIONS

3.1 Roadway Network

The following describes the existing road infrastructure within the study area.

King Street West is an east-west arterial roadway which runs through the south of Kingston with many local streets feeding into it. The roadway within the vicinity of the site is a two-lane paved roadway with sidewalks on both sides west of Sir John A. MacDonald Boulevard and only on the north side east of Sir John A. MacDonald Boulevard. A statutory posted speed limit of 50 km/h was observed within the vicinity of the proposed development. King Street West near the proposed development is expected to experience a high influx of tourists due to the decommissioned Penitentiary attraction.

Union Street is an east -west arterial roadway that runs from Barrie Street in the east and King Street in the west. It has several local residential streets feeding into it. The roadway within the vicinity of the site is a two-lane paved roadway with sidewalks provided on both sides of the roadway. Union street has a statutory posted speed limit of 40 km/h for the roadway within the vicinity of the proposed development. Union Street provides a direct access to Queen's University Faculty of Education.

Sir John A. MacDonald Boulevard is an arterial roadway running north and south through the City of Kingston. The roadway within the vicinity of the development is a four-lane paved roadway with a median along the center. Sidewalks are provided on both sides between King Street West and Union Street adjacent to the proposed development while north of Union Street the sidewalk alternates on either side of the roadway. A statutory posted speed limit of 50 km/h is provided within the vicinity of the proposed development. Sir John

A. MacDonald Boulevard provides access to many residential communities as well as commercial and industrial developments. It provides access to Highway 401 north of the site where the roadway ends.

Figure 3-1 illustrates the existing lane configurations and intersection control types at each of the intersections included for existing conditions.

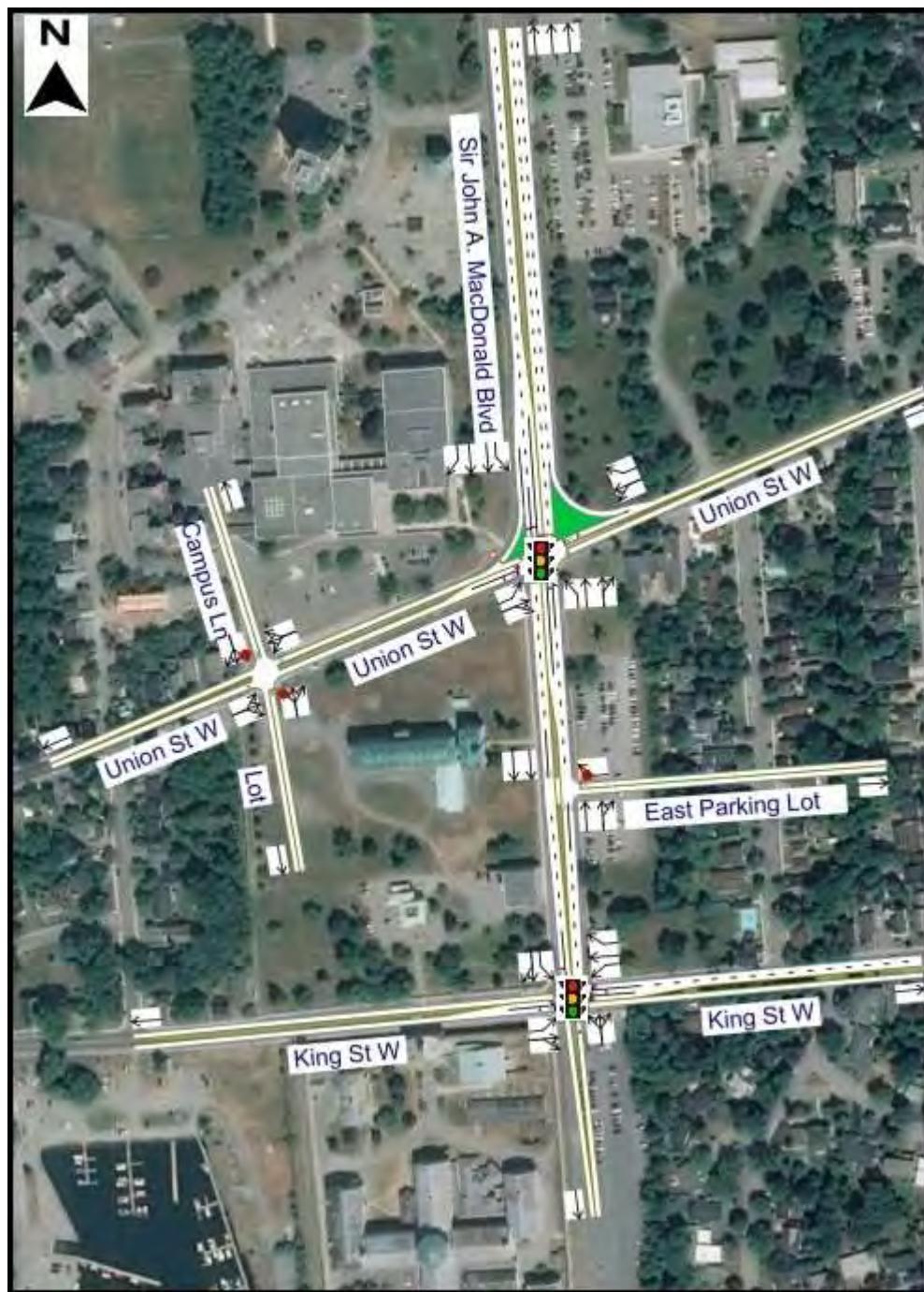


Figure 3-1 Existing Lane Configuration

3.2 Existing Pedestrian and Cycling Facilities

Sidewalks are provided on both sides of Union Street, Sir John A. Macdonald Boulevard, and King Street West. It should be noted that the sidewalk on the south side of Union Street ends approximately 130 m from the intersection of Sir John A. Macdonald. Pedestrian crossings are provided on all approaches at the intersection of Sir John A. Macdonald and Union Street as well as Sir John A. Macdonald and King Street West. Currently, there are no marked pedestrian crossing at Union Street and Campus Lane.

There are no existing bike facilities on Sir John A. Macdonald Boulevard. Designated bike lanes are provided on both sides of Union Street and King street West in the vicinity of the site.

Existing sidewalks and bike lanes are presented in **Figure 3-2**.



Figure 3-2 Presence of Sidewalks and Bike Lanes

3.3 Existing Transit System

Currently, there are four (4) bus routes within the vicinity of the site that will service the proposed development. The proposed site is bounded by three roadways with bus stops on Union Street and King Street

West. The closest bus stop is located north of the site, on Union Street which is served by the bus route's 1, 2 and 3. **Figure 3-3** shows the locations of transit routes and bus stops relative to the proposed development and a description of study area routes is provided below.



Figure 3-3: Existing Transit System

Route 1 – St. Lawrence College – Montreal Street operates along Union Street and provides access to St. Lawrence College. Currently the route provides service between 5:15 AM and 11:25 PM Monday to Saturday and between 5:53 AM and 11:25 PM on Sundays.

Route 2 – Kingston Centre – Division Street operates along Union Street and provides access to St. Lawrence College and Kingston Centre. Currently the route provides service between 6:05 AM and 11:25 PM Monday to Saturday and between 8:33 AM and 8:27 PM on Sundays.

Route 3 - Downtown Transfer Point - Kingston Centre operates along King Street and provides access to downtown Kingston. Currently the route provides service between 5:45 AM and 11:35 PM Monday to Saturday and between 6:45 AM and 8:10 PM on Sundays.

Route 501 Cataraqui Centre - Kingston Centre - Downtown - Kingston Gen. Hospital - St Lawrence College - Cataraqui Centre operates along Princess Street and provides access to downtown Kingston. Currently the route provides service between 5:58 AM and 11:57 PM Monday to Friday and between 5:58 AM and 11:41 PM on Saturdays and Sundays.

Route 502 Express 502, Cataraqui Centre - St. Lawrence - College - Kingston General Hospital – Downtown - Kingston Centre - Cataraqui Centre operates along Princess Street and provides access to downtown Kingston. Currently the route provides service between 6:10 AM and 11:48 PM Monday to Friday and between 6:10 AM and 8:19 PM on Saturdays and Sundays.

3.4 Traffic Data and Existing Traffic Volumes

Study intersections assessed as part of this study include:

- Sir John A. MacDonald Blvd and Union Street
- Sir John A. MacDonald Blvd and King Street West
- Union Street and Campus Lane / Site Access 1
- Sir John A. MacDonald Blvd and Site Access 2
- Sir John A. MacDonald Blvd and East Parking Lot Access
- Sir John A. MacDonald Blvd and Site Access 3

Due to the impacts of COVID-19 on current traffic patterns, roadway volumes at the time of the undertaking this study were considered not to be typical representations of weekday operation. To develop network volumes for existing conditions the following were considered:

- study assumptions were made for traffic volumes for the Queens University driveway,
- study assumptions were made for traffic volumes at the CSC parking lot access east of the site,
- traffic counts were commissioned by MP for study intersections on November 24, 2020, and
- 2014 and 2020 study intersection count data were obtained from the City of Kingston and adjusted where appropriate.

Study traffic volumes representing existing conditions are provided in **Figure 3-4** and detailed traffic counts are provided in **Appendix B**.

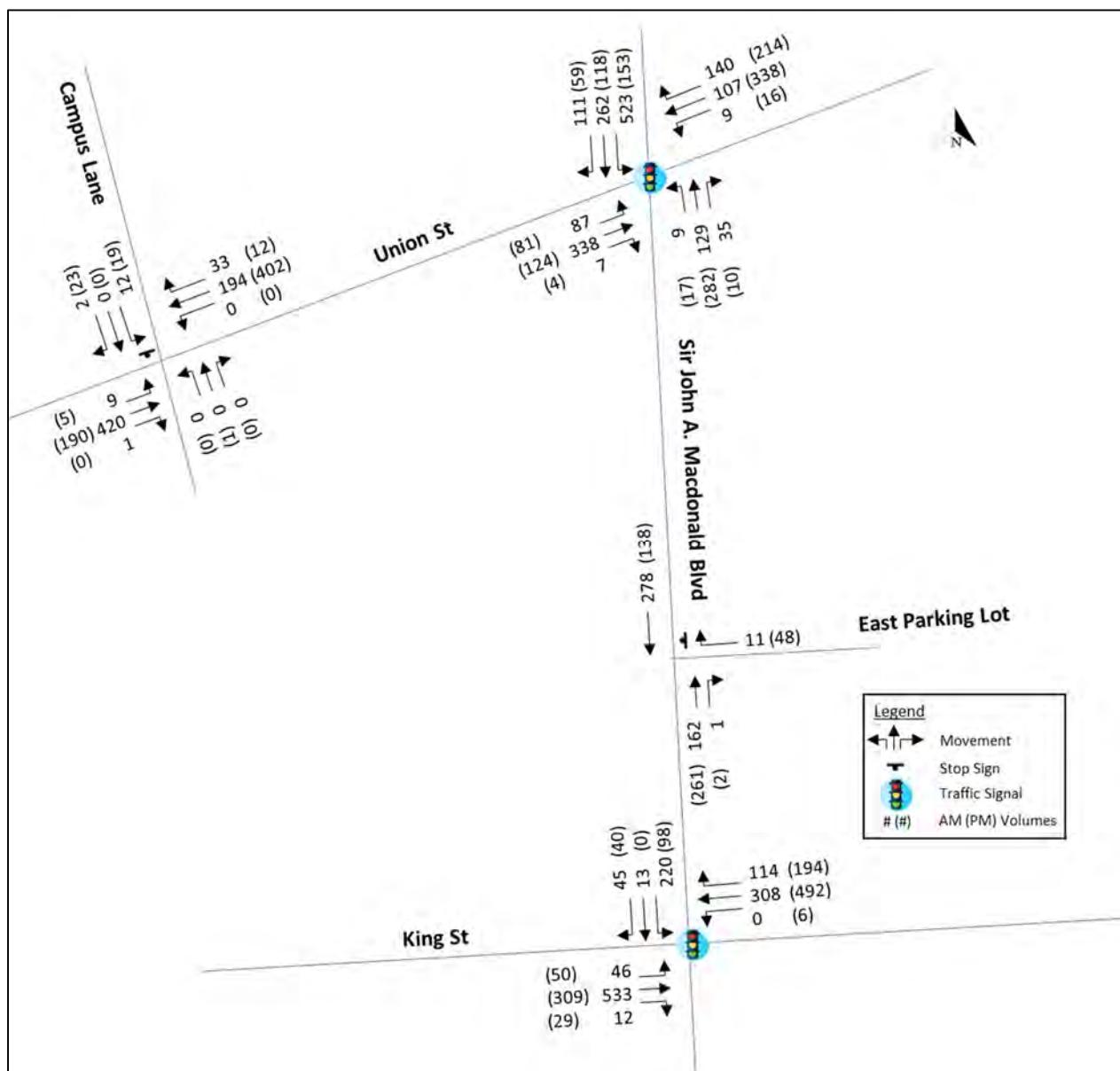


Figure 3-4 Existing Traffic Volumes (2020)

3.5 Existing Traffic Analysis

Intersection operations were assessed using the Synchro 10 software which utilizes the Highway Capacity Manual (HCM) methodology and Synchro 10. Signal timing plans used for study intersection analysis were provided by the City of Kingston.

Intersection operations performance metrics are reported in terms of Level of Service (LOS), delays, volume-to-capacity (v/c) ratios, and 95th percentile queues. Level of service is based on the average control delay per vehicle for a given movement. Delay is an indicator of how long a vehicle must wait to complete a movement

and is represented by a letter between 'A' and 'F', with 'F' being the longest delay. **Table 3-1** summarizes the LOS criteria for signalized and unsignalized intersections.

Table 3-1: LOS Criteria for Signalized and Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (seconds / vehicle)	
	Signalized Intersection ¹	Unsignalized Intersection ¹
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

¹ HCM 2000 Methodology

The existing intersection operations were analyzed for weekday AM and weekday PM peak hours. The overall signalized and unsignalized intersections operation results are provided in **Table 3-2** and **Table 3-3**Table 3-2 respectively. Detailed results are provided in [Appendix C](#).

AM Peak Period

All of the analyzed signalized study intersections operated with an overall LOS C or better. Individual turning movements for all study intersections operated at LOS D or better and are below capacity. The southbound left movement of the intersection of Sir John A. MacDonald boulevard and Union Street is operating with a v/c of 0.97 showing that it is nearing capacity.

All individual turning movements for unsignalized study intersections operate at a LOS of B or better and a v/c of 0.20 or less during assessed AM peak hour period.

PM Peak Period

All signalized study intersections operate with an overall LOS D or better, and a v/c of 0.54 or less. All individual turning movements for unsignalized study intersections operate at a LOS of B or better and a v/c of 0.20 or less.

Analysis indicates all intersections and turning movements operate with acceptable LOS and delay under existing conditions

Table 3-2: Existing Conditions 2020 Signalized Intersections Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & Union St	C	26	0.97	B	15	0.54
EB Left	B	20	0.25	C	22	0.29
EB Through-Right	C	24	0.53	B	18	0.23
WB Left-Through	B	19	0.2	C	24	0.54
WB Right	A	4	0.24	A	4	0.35
NB Left	B	12	0.03	B	12	0.05
NB Through-Right	A	9	0.12	B	13	0.21
SB Left	D	55	0.97	B	17	0.37
SB Through	B	13	0.16	B	12	0.08
SB Right	A	3	0.18	A	4	0.09
Sir John A. MacDonald Blvd & King St	B	18	0.80	B	11	0.54
EB Left	A	6	0.07	A	4	0.09
EB Through-Right	B	11	0.49	A	5	0.28
WB Left	-	-	-	A	8	0.01
WB Through	B	14	0.34	B	12	0.49
WB Right	A	3	0.15	A	2	0.21
NB Left-Through-Right	C	24	0.01	C	31	0.16
SB Left	D	53	0.80	D	42	0.54
SB Through-Right	B	12	0.17	A	1	0.08

Table 3-3: Existing Conditions 2020 Unsignalized Intersections Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Union St & Campus Ln						
EB Left-Through-Right	A	8	0.02	A	8	0.03
WB Left-Through-Right	A	0	-	A	0	-
NB Left-Through-Right	-	-	-	B	16	0.01
SB Left-Through-Right	B	17	0.20	B	16	0.20
Sir John A. MacDonald Blvd & East Parking Lot						
WB Right	A	9	0.01	A	9	0.06

4.0 FUTURE CONDITIONS

4.1 Study Horizon

The study assumes the site will be developed in a single phase with a typical five-year 2025 horizon. The study will assess weekday morning and evening peak hour for the future study horizon.

4.2 Background Growth

A 2.0% annual background growth rate was applied to existing traffic volumes at the study intersections as per consultation with City to develop future traffic volumes. The annual growth was applied to develop 2025 background study horizon traffic volumes.

4.3 Background Developments

A review of the study area and consultation with the City of Kingston have confirmed, there are no background developments to be considered within the study horizon.

4.4 Future (2025) Background Traffic Volumes

Background traffic volumes were determined by adding existing volumes and background growth for the 2025 horizon. Future 2025 background traffic volumes are provided in **Figure 4-1**.

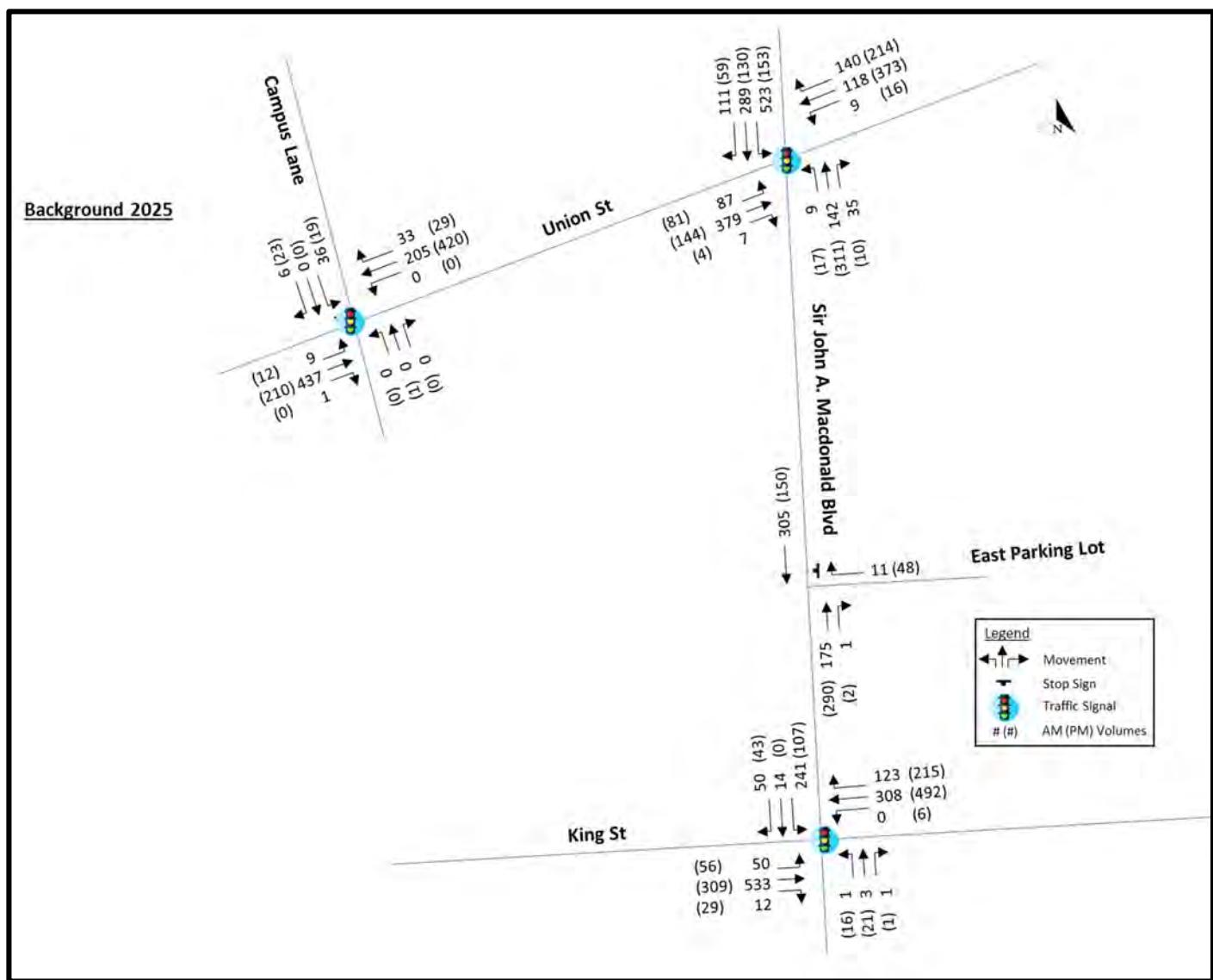


Figure 4-1: Background Future 2025 Traffic Volumes

4.5 Modal Split

A modal split of 15% for transit was determined for the 2025 horizon as per consultation with the City of Kingston. A 5% modal split adjustment for pedestrians was also applied to study analysis.

4.6 Trip Generation

Site traffic was generated for the proposed development for weekday AM and PM peak hours based on trip rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition. Generated site traffic was adjusted for modal splits and pass-by trips for retail components. Site trip generation for the 2025 horizon is provided in **Table 4-1**.

Table 4-1 Trip Generation Summary

Site Component		Density	ITE Code	Item	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Block A	Residential	250 Units	Mid Rise (221)	Directional Distribution (Fitted Curve) Gross Trips	26% 22	74% 62	100% 84	61% 65	39% 42	100% 107
	Commercial	27,800 sq.ft.	Shopping Centre (820)	Directional Distribution (Avg rate) Gross Trips	62% 0.58 16	38% 0.36 10	100% 0.94 26	48% 1.83 51	52% 1.98 55	100% 3.81 106
	<i>Non-Auto Adjustment</i>				8	14	22	23	19	42
	Commercial Trip Adjustment (Pass-by)							17	17	34
	Subtotal				30	58	88	76	61	137
	Residential	24 Units	Mid Rise (221)	Directional Distribution (Fitted Curve) Gross Trips	26% 2	74% 6	100% 8	61% 7	39% 4	100% 11
Block B	<i>Non-Auto Adjustment</i>				0	1	1	1	1	2
	Subtotal				2	5	7	6	3	9
	Seniors Housing	215 Units	Seniors Adult Housing (252)	Directional Distribution (Fitted Curve) Gross Trips	35% 15	65% 28	100% 43	55% 30	45% 24	100% 54
Block C	<i>Non-Auto Adjustment</i>				3	6	9	6	5	11
	Subtotal				12	22	34	24	19	43
	Hotel	119 Units	Hotel (310)	Directional Distribution (Fitted Curve) Gross Trips	59% 32	41% 22	100% 54	51% 32	49% 31	100% 63
	Commercial	3,918 sq.ft.	Shopping Centre (820)	Directional Distribution (Fitted Curve) Gross Trips	62% 0.58 2	38% 0.36 2	100% 0.94 4	48% 1.83 7	52% 1.98 8	100% 3.81 15
Block D	<i>Non-Auto Adjustment</i>				7	5	12	8	8	16
	Commercial Trip Adjustment (Pass-by)							2	2	4
	Subtotal				27	19	46	29	29	58
	Gross New Site Trips				89	130	219	192	164	356
Total Non-Auto Adjustment					18	26	44	38	33	71
Commercial Trip Adjustment (Pass-by)								19	19	38
Total New Site Trips					71	104	175	135	112	247

Notes:

1. Land use codes, trip rates or fitted curve equations and directional split are per ITE Trip Generation, 10th Edition.
2. Trip adjustment for commercial pass-by based on ITE trip generation handbook (LUC820). PM Peak hour - 34%
3. Non-Auto adjustment of 20% - 15% Transit, 5% Walk/Cycle

As shown in **Table 4-1** the site will generate 175 new trips (71 inbound and 104 outbound) during the AM peak hour and 247 new trips (135 inbound and 112 outbound) during the PM peak hour. The site will also generate 38 PM peak hour commercial pass-by trips (19 inbound and 19 outbound).

4.7 Trip Distribution and Assignment

The distribution of vehicular trips generated by the proposed development was derived based on existing travel patterns obtained from intersection turning movements. The distribution of site-generated trips is summarized in **Table 4-2**.

Table 4-2 Trip Distribution

To/From	Via	AM/PM Peak	
		IN	OUT
North	Sir John A. Macdonald Blvd	23%	41%
South	Sir John A. Macdonald Blvd	22%	10%
East	Union Street	40%	20%
West	Union Street	15%	29%
Total		100%	100%

The site traffic volumes assigned to the study road network for the 2025 horizon is shown in **Figure 4-2** and pass-by site traffic volumes are shown in **Figure 4-3**.

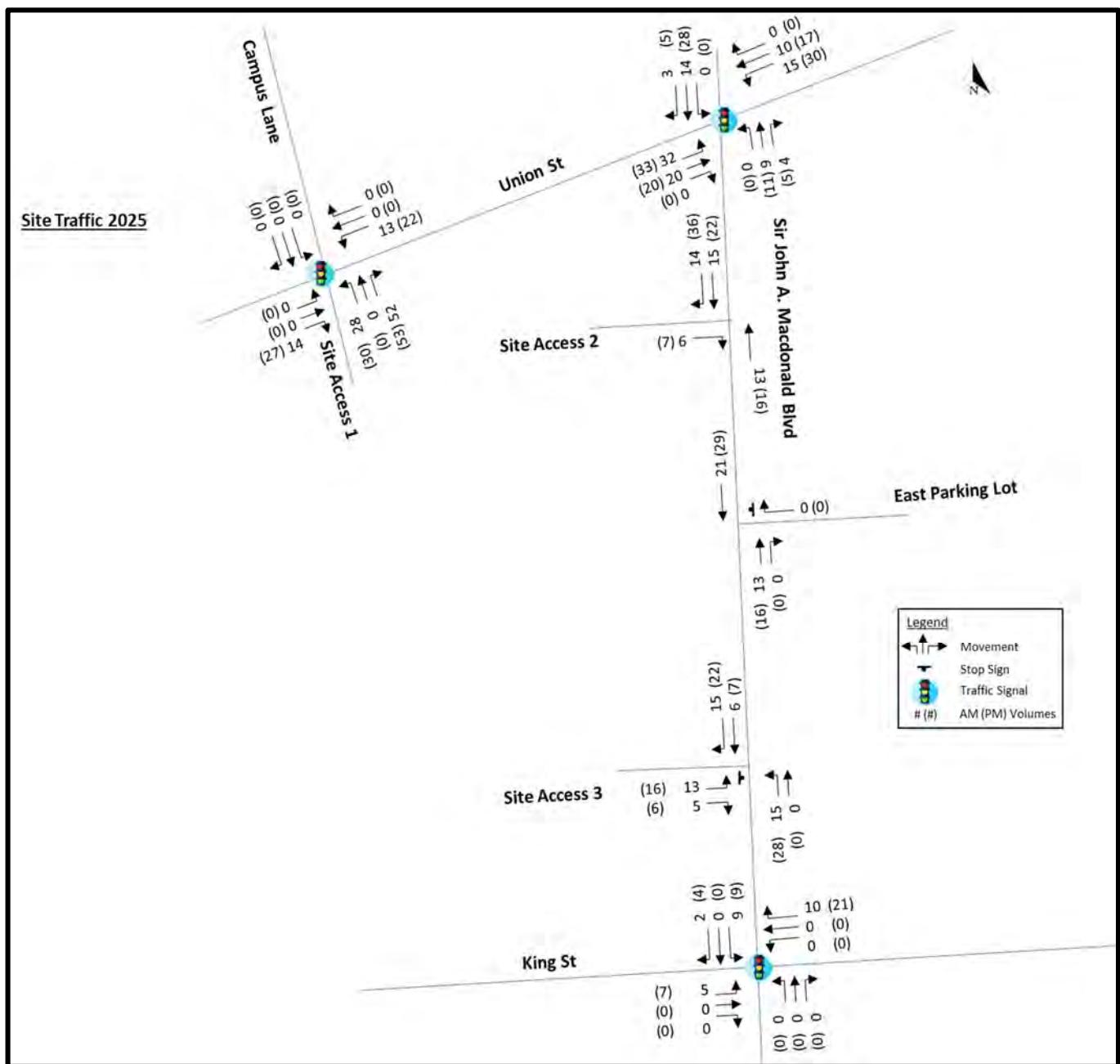


Figure 4-2 Site Traffic Volumes Weekday AM and PM Peak Periods

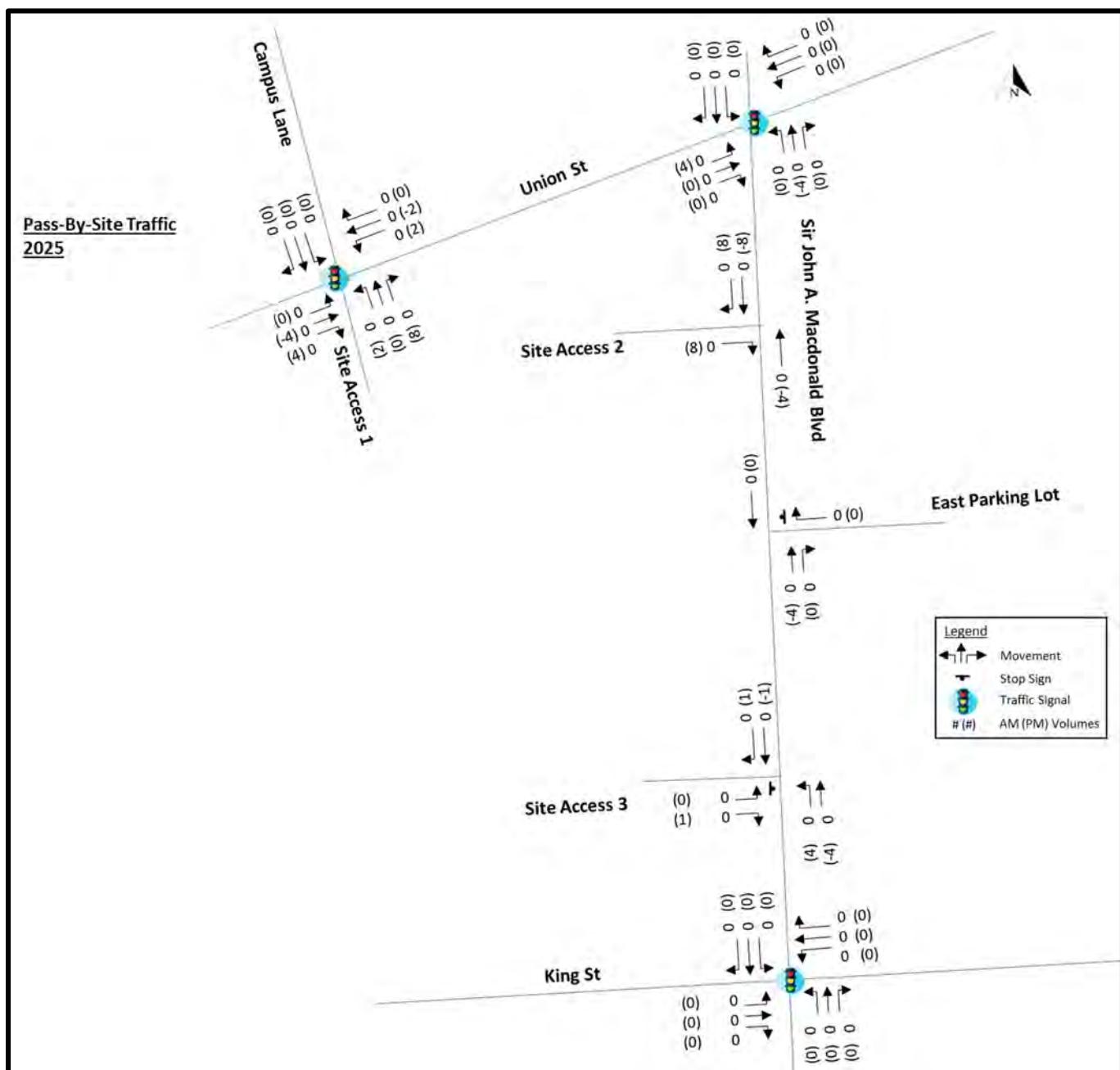


Figure 4-3 Pass-by Site Traffic Volumes Weekday AM and PM Peak Periods

4.8 Future (2025) Total Traffic Volumes

Future total traffic volumes for the 2025 horizon was obtained by adding site-generated traffic, pass-by traffic and future (2025) background traffic volumes.

Future total AM and PM peak hour volumes are shown in **Figure 4-4**.

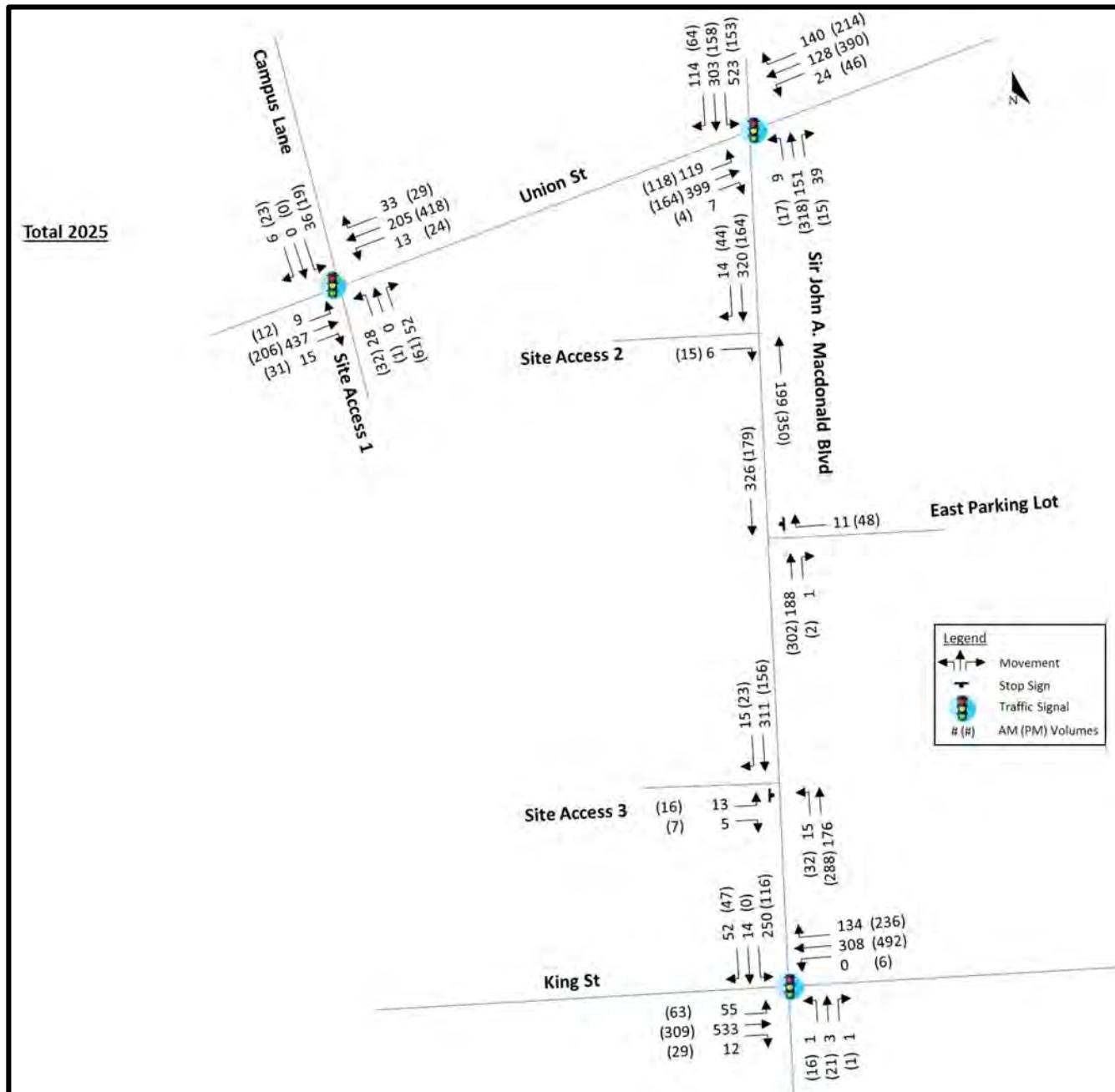


Figure 4-4 Total Traffic 2025 Volume Weekday AM and PM Peak Periods

4.9 Signal Warrant Analysis

Signal warrant analysis was carried out for the Union Street and Queens University access/ Site Access 1 under 2025 future background and total conditions. Analysis indicates a traffic signal is warranted for both future 2025 background and total conditions based on Justification 6 – Pedestrian Volume from OTM Book 12. This indicates that the traffic volume on the main road causes pedestrians excessive delay or hazard in crossing the main road.

It is noted that the need for traffic signals at this location is triggered under background conditions and not as a result of the future development proposed at 40 Sir John A. MacDonald Boulevard.

The pedestrian volumes used for analysis were acquired from count data provided by the City of Kingston, from counts completed on February 1, 2017. A minimal growth rate of 2% was applied in keeping with active transportation growth and due to the development. The total 8-hour pedestrian volume crossing Union Street is expected to be 551 with majority of students either accessing the university campus in the AM or the bus stop in the PM. It should be noted that the total 8-hour pedestrian volume for pedestrians delayed greater than 10 seconds was assumed to be based on the existing transit boarding data provided by the City of Kingston. Study assumptions included, 50% of the total 8-hour pedestrians boarding the bus would be delayed by greater than 10 seconds when crossing Union Street to get to the bus stop. This assumption can be related to the high pedestrian activity due to the Queens University as well as the limited number of gaps in traffic. Therefore, both Justification 6A – Pedestrian Volume and Justification 6B – Pedestrian Delay were justified, and a traffic signal is warranted. The traffic signal warrant analysis summary is shown in **Table 4-3**. The full traffic signal warrant analysis can be found in [Appendix D](#).

Table 4-3 Future Traffic signal Warrant Analysis

Justification		Background 2025			Total 2025		
		Compliance	Signal Justified?		Compliance	Signal Justified?	
			YES	NO		YES	NO
1. Minimum Vehicular Volume	A Total Volume	73 %		No	83 %		No
	B Crossing Volume	13 %			59 %		
2. Delay to Cross Traffic	A Main Road	70 %		No	73 %		No
	B Crossing Road	89 %			100 %		
3. Combination	A Justification 1	13 %		No	59 %		No
	B Justification 2	70 %			73 %		
4. 4-Hr Volume		17 %		No	39 %		No
5. Pedestrians	A Volume	Justification met	Yes		Justification met	Yes	
	B Delay	Justification met			Justification met		

5.0 FUTURE CONDITIONS ANALYSIS

5.1 Study Area Network Improvements

The following network improvements were included for future 2025 traffic scenarios:

- Provided an 8 second advance green to the southbound left-turn movement at the intersection of Sir John A. MacDonald Boulevard and Union Street to mitigate capacity constraints on the turning movement during the AM Peak Hour. Overall signal cycle length was increased from 84.6 seconds to 92.4 seconds.
- The intersection of Union Street and Campus Lane which will align with Site Access 1 was changed from a two-way stop control to a signalized intersection based on the traffic signal warrant being met as discussed in **Section 4.9**.
- Median break proposed on Sir John A MacDonald Boulevard for Site Access 3 to accommodate full move operation.

5.2 Future (2025) Background Traffic Analysis

Intersection capacity analysis for future (2025) background traffic conditions was completed for study area intersections to determine future operational measures of performance during the AM and PM weekday peak periods. Analysis was completed using the same methodology and parameters applied to existing conditions.

Table 5-1 and **Table 5-2** provide a summary of intersection Level of Service (LOS) for the signalized and unsignalized intersections analyzed under 2025 future background traffic conditions, for weekday AM and PM conditions.

AM Peak Period

All signalized study intersections operate with an overall LOS C or better. Individual turning movements for at all study intersections operated at LOS D or better with a v/c of 0.84 or less. The unsignalized study intersection individual turning movements operate at a LOS of A and a v/c of 0.01.

PM Peak Period

All of the signalized study intersections operated with an overall LOS B or better. Individual turning movements for at all study intersections operated at LOS D or better with a v/c of 0.59 or less. The unsignalized study intersection individual turning movements operate at a LOS of A and a v/c of 0.06.

All study intersections display significant residual capacity during both AM and PM peak hour operations.

Table 5-1 Future 2025 Background Signalized Intersection Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & Union St	C	21	0.84	B	16	0.59
EB Left	C	24	0.27	C	23	0.32
EB Through-Right	C	31	0.64	B	19	0.26
WB Left-Through	C	23	0.24	C	25	0.59
WB Right	A	5	0.26	A	4	0.35
NB Left	B	16	0.03	B	12	0.05
NB Through-Right	B	12	0.14	B	13	0.23
SB Left	C	31	0.84	B	18	0.38
SB Through	B	12	0.17	B	13	0.09
SB Right	A	3	0.17	A	4	0.09
Sir John A. MacDonald Blvd & King St	B	19	0.83	B	11	0.56
EB Left	A	6	0.08	A	4	0.11
EB Through-Right	B	11	0.50	A	6	0.29
WB Left	-	-	-	A	8	0.01
WB Through	B	14	0.34	B	12	0.48
WB Right	A	3	0.16	A	2	0.23
NB Left-Through-Right	C	24	0.01	C	30	0.16
SB Left	D	55	0.83	D	42	0.56
SB Through-Right	B	12	0.18	A	1	0.09
Union St & Campus Ln	A	7	0.49	A	7	0.46
EB Left-Through-Right	A	7	0.49	A	5	0.26
WB Left-Through-Right	A	5	0.27	A	6	0.46
NB Left-Through-Right	-	-	-	B	13	0.01
SB Left-Through-Right	B	12	0.26	B	12	0.30

Table 5-2 Future 2025 Background Unsignalized Intersection Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & East Parking Lot						
WB Right	A	9	0.01	A	10	0.06

5.3 Future (2025) Total Traffic Analysis

Intersection capacity analysis for the future (2025) total traffic conditions was completed for study area intersections to determine the future operational measures of performance during the AM and PM weekday peak periods. Lane configurations remained the same as the existing conditions with the exception of the changes required as a result of the intersection of Sir John A. MacDonald Boulevard and Site Access 3, as well as the intersection of Sir John A. MacDonald Boulevard and Site Access 2.

Table 5-3 and **Table 5-4** provide a summary of intersection Level of Service (LOS) for the signalized and unsignalized intersections analyzed under 2025 future total traffic conditions, for weekday AM and PM conditions.

AM Peak Period

All of the signalized study intersections operated with an overall LOS C or better. Individual turning movements for at all study intersections operated at LOS E or better with a v/c of 0.85 or less. The southbound left movement of the intersection of Sir John A. MacDonald and King Street West operates at an LOS of E and a v/c of 0.84. The unsignalized study intersections individual turning movements operate at a LOS of B or better and a v/c of 0.03 or less.

PM Peak Period

All of the signalized study intersections operated with an overall LOS B or better. Individual turning movements for at all study intersections operated at LOS D or better with a v/c of 0.71 or less. The unsignalized study intersections individual turning movements operate at a LOS of B or better and a v/c of 0.06 or less.

Table 5-3 Future 2025 Total Signalized Intersection Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & Union St	C	22	0.85	B	18	0.71
EB Left	C	27	0.39	C	33	0.56
EB Through-Right	C	32	0.67	C	20	0.29
WB Left-Through	C	27	0.41	C	29	0.71
WB Right	A	5	0.26	A	4	0.35
NB Left	B	16	0.04	B	13	0.05
NB Through-Right	B	12	0.15	B	13	0.24
SB Left	C	32	0.85	B	18	0.39
SB Through	B	12	0.17	B	13	0.11
SB Right	A	3	0.17	A	4	0.10
Sir John A. MacDonald Blvd & King St	B	19	0.84	B	12	0.59
EB Left	A	7	0.09	A	4	0.12
EB Through-Right	B	11	0.5	A	6	0.29
WB Left	-	-	-	A	9	0.01
WB Through	B	15	0.34	B	13	0.50
WB Right	A	3	0.17	A	2	0.26
NB Left-Through-Right	C	24	0.01	C	30	0.15
SB Left	E	57	0.84	D	44	0.59
SB Through-Right	B	12	0.18	A	1	0.10
Union St & Campus Ln/Site Access 1	A	7	0.54	A	7	0.49
EB Left-Through-Right	A	7	0.54	A	5	0.29
WB Left-Through-Right	A	6	0.36	A	7	0.49
NB Left-Through-Right	A	10	0.29	A	10	0.33
SB Left-Through-Right	B	12	0.28	B	12	0.31

Table 5-4 Future 2025 Total Unsignalized Intersection Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & East Parking Lot						
WB Right	A	9	0.01	A	10	0.06
Sir John A. MacDonald Blvd & Site Access 2						
EB Right	A	9	0.01	A	9	0.02
Sir John A. MacDonald Blvd & Site Access 3						
EB Left-Right	B	12	0.03	B	11	0.04
NB Left-Through	A	8	0.01	A	8	0.03

5.4 Analysis Summary

Intersection analysis concludes all study intersection and individual turning movements will operate with significant reserve capacity. Study intersections can adequately accommodate future development traffic, with minor signal timing adjustment.

5.5 Sensitivity Analysis

Per request of City of Kingston staff, a sensitivity analysis was completed to assess traffic impacts at study intersections, with the site being serviced by a single site access on Union Street. This analysis was conducted using future 2025 traffic volumes for weekday AM and PM peak hour analysis.

New 2025 site traffic volumes for the development based on a single site access is provided in **Figure 5-1** and pass-by site traffic volumes are shown in **Figure 5-2**. Sensitivity analysis was conducted using total traffic volumes show in **Figure 5-3**.

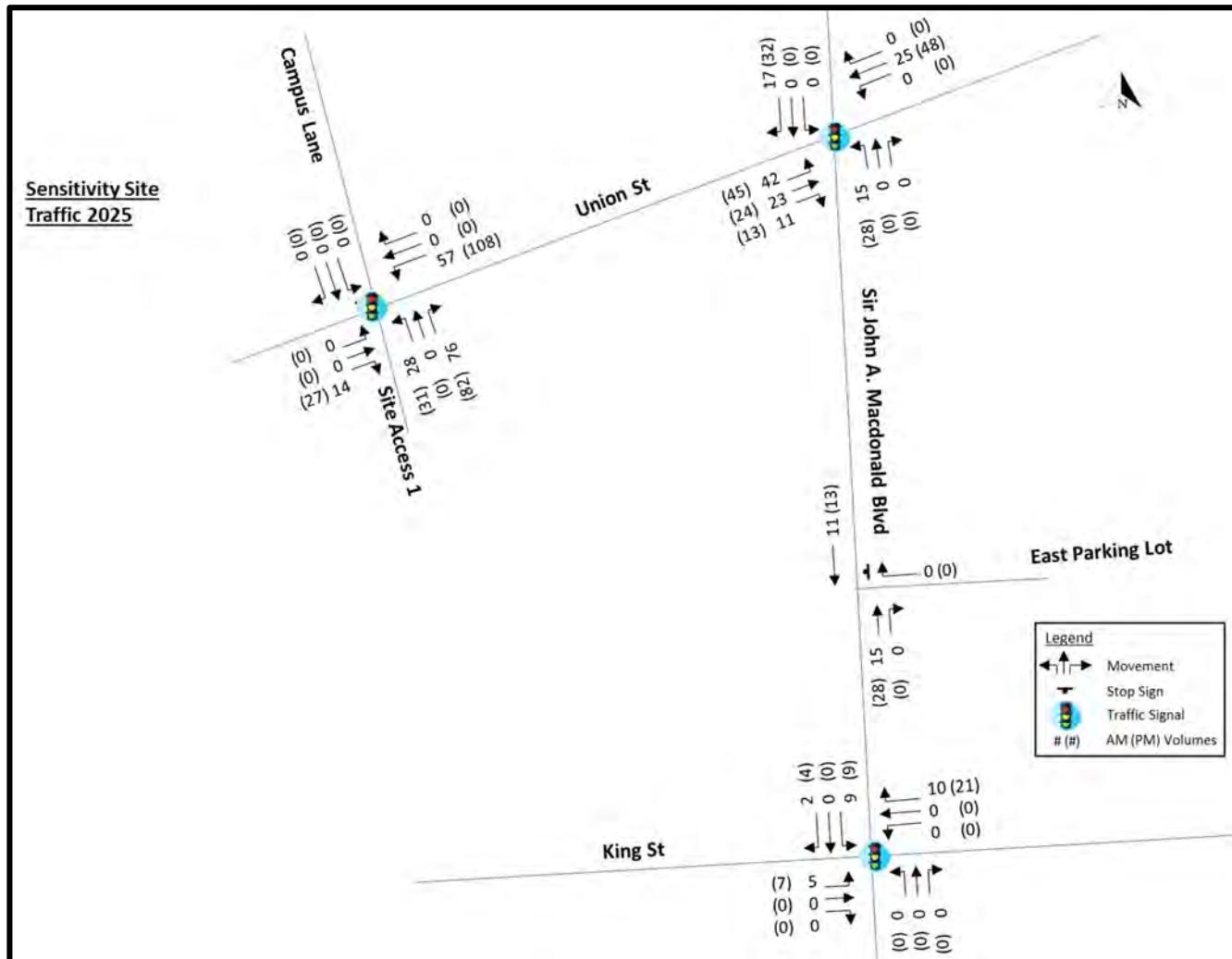


Figure 5-1 2025 Sensitivity Analysis New Site Traffic Volumes Weekday AM and PM Peak Periods

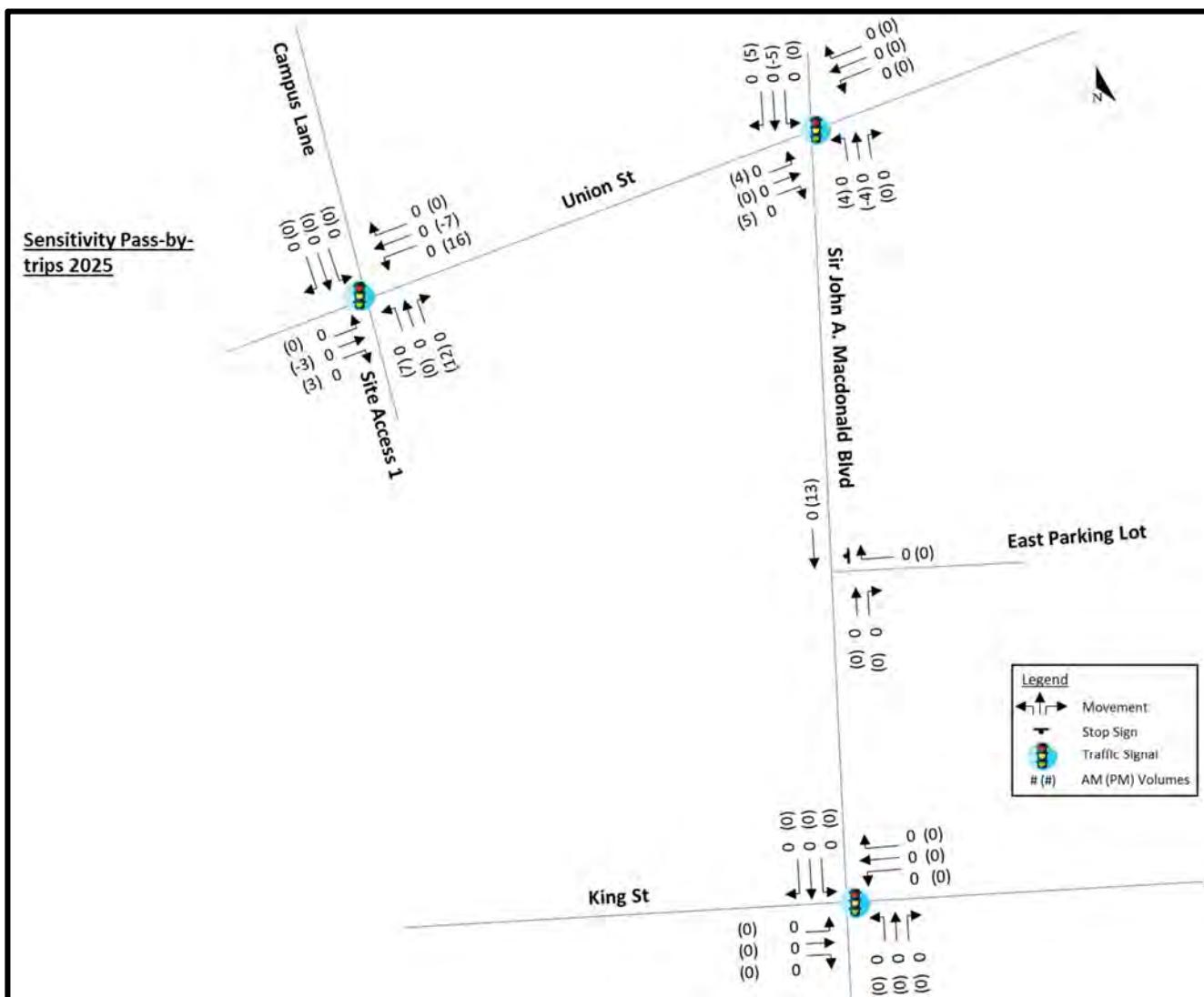


Figure 5-2 2025 Sensitivity Analysis Pass-by Site Traffic Volumes Weekday AM and PM Peak Periods

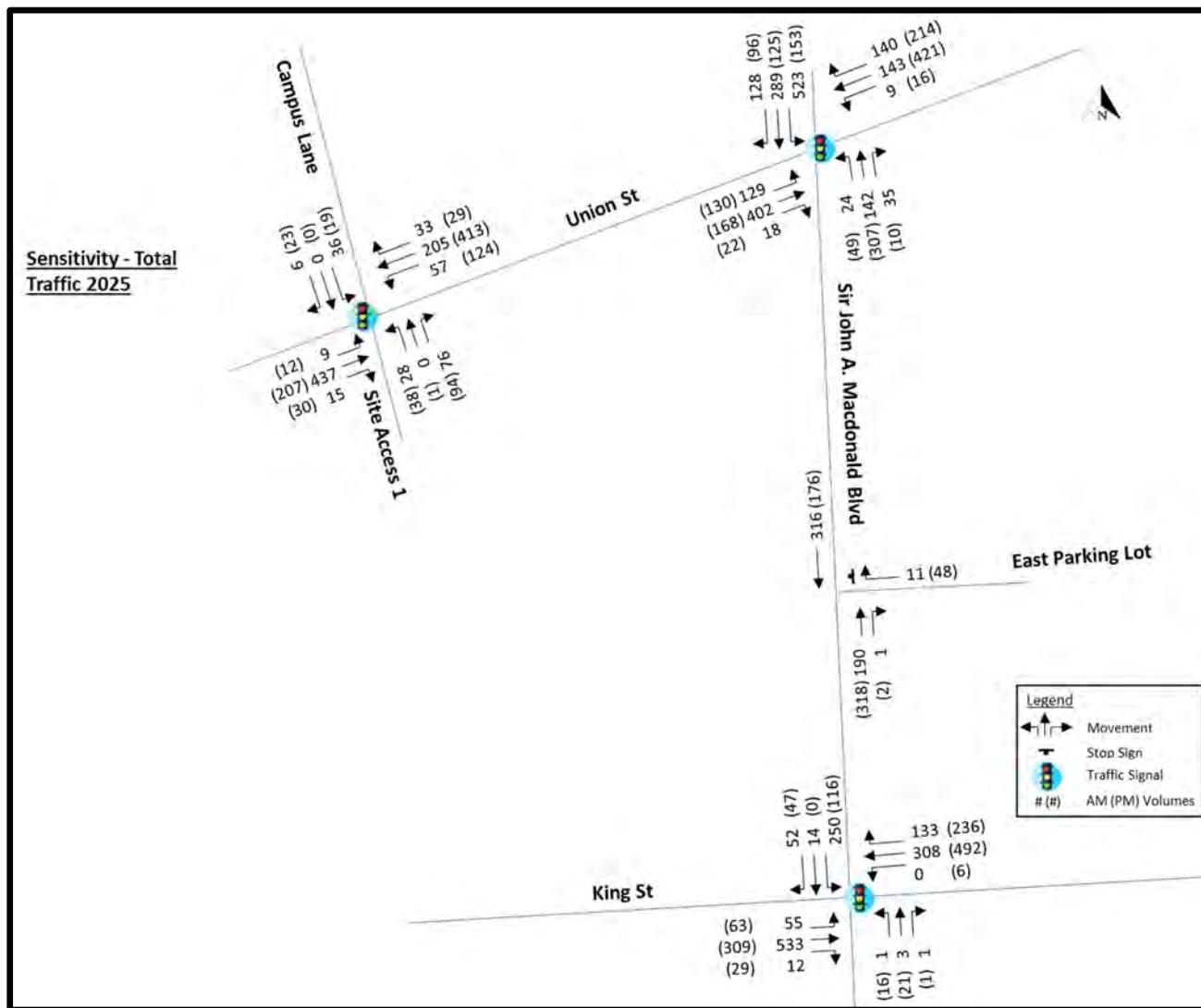


Figure 5-3 2025 Sensitivity Analysis Total Traffic Volumes Weekday AM and PM Peak Periods

Analysis was completed using the same methodology and parameters applied to the future total 2025 conditions, with the exception that all site generated traffic was rerouted to use the north access (intersection of Union Street and Campus Lane).

Table 5-5 and **Table 5-6** provide a summary of intersection Level of Service (LOS) for the signalized and unsignalized intersections analyzed under 2025 future sensitivity traffic conditions, for weekday AM and PM conditions.

AM Peak Period

All of the signalized study intersections operated with an overall LOS C or better. Individual turning movements for all study intersections operated at LOS E or better with a v/c of 0.84 or less. The southbound left movement of the intersection of Sir John A. MacDonald and King Street operates at an LOS of E and a v/c of

0.84. The unsignalized study intersections individual turning movements operate at a LOS of A or better and a v/c of 0.01 or less.

PM Peak Period

All of the signalized study intersections operated with an overall LOS B or better. Individual turning movements for all study intersections operated at LOS D or better with a v/c of 0.67 or less. The unsignalized study intersection's individual turning movements operate at a LOS of A or better and a v/c of 0.06 or less.

Table 5-5 Future 2025 Sensitivity Signalized Intersection Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & Union St	C	22	0.84	B	18	0.66
EB Left	C	27	0.41	C	35	0.60
EB Through-Right	C	34	0.72	C	20	0.42
WB Left-Through	C	24	0.29	C	28	0.66
WB Right	A	5	0.26	A	4	0.35
NB Left	B	17	0.09	B	14	0.13
NB Through-Right	B	12	0.14	B	13	0.23
SB Left	C	31	0.84	B	18	0.38
SB Through	B	12	0.17	B	13	0.09
SB Right	A	3	0.19	A	3	0.14
Sir John A. MacDonald Blvd & King St	B	19	0.84	B	12	0.59
EB Left	A	7	0.09	A	4	0.12
EB Through-Right	B	11	0.5	A	6	0.29
WB Left	-	-	-	A	9	0.01
WB Through	B	15	0.34	B	13	0.50
WB Right	A	3	0.17	A	2	0.26
NB Left-Through-Right	C	24	0.01	C	30	0.15
SB Left	E	57	0.84	D	44	0.59
SB Through-Right	B	12	0.18	A	1	0.10
Union St & Campus Ln/Site Access 1	B	12	0.74	A	10	0.67
EB Left-Through-Right	A	8	0.55	A	5	0.29
WB Left-Through-Right	B	17	0.74	B	11	0.67
NB Left-Through-Right	A	9	0.35	A	10	0.42
SB Left-Through-Right	B	11	0.26	B	11	0.29

Table 5-6 Future 2025 Sensitivity Unsignalized Intersection Capacity Analysis

Intersection / Movement	AM Peak			PM Peak		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
Sir John A. MacDonald Blvd & East Parking Lot						
WB Right	A	9	0.01	A	10	0.06

Completed sensitivity analysis indicates that all study intersections will operate with acceptable LOS under future total (2025) conditions, however an increase in traffic at Site Access 1 location will occur.

Consolidation of site accesses to a single access results in the following site impacts:

- Increases the potential for driver sightline impacts that may occur if the site is serviced by a single access at the Unions Street location. With more vehicles exiting the location sightlines may be obstructed at a higher rate, at the Union Street and Site Access 1/Campus Lane due to pedestrians and/or transit users waiting at the crossing or westbound bus stop on the south side of Union Street. Both east and westbound bus stop are heavily utilized and are among the busiest in the study area. Accesses on Sir John A. Macdonald Boulevard provide alternative entry and exit points dispersing vehicle volumes, whilst providing alternative accesses with clear sightlines reducing vehicle/pedestrian conflicts.
- The Union Street West access location provides the highest number of pedestrian crossings within the vicinity of the site. A single site access increases the potential number of vehicle / pedestrian conflicts at this intersection.
- Vehicle site circulation is better serviced with the proposed three site access and improves movement through the site especially for larger turning vehicles. This reduces the need for large vehicles to access the high pedestrian activity crossing locations at the Union Street and Site Access 1/Campus Lane intersection functioning as a mitigating safety measure.

Based on the impacts identified above, the proposed three site access driveways are considered to provide safe operation that benefits pedestrian and vehicle movements at the site.

5.6 Transit Capacity Review

MP completed a transit capacity review of the bus stops located within the vicinity of the site development. Reviewed stops were located at the intersection of Union Street and West Campus Lane and King Street West and Sir John A. Macdonald Boulevard. Transit ridership data was provided by the City of Kingston and was recorded pre-COVID from October 16 to October 22, 2019. The full seated capacity of a typical 40-foot bus is 38 riders as provided by the City of Kingston. **Table 5-7** below shows the number of buses per hour at each of the bus locations.

Table 5-7 Number of Buses per hour

Location	Peak	EB	WB
Union at West Campus Ln	AM Peak	8	7
	PM Peak	8	7
King at Sir John A. Macdonald	AM Peak	9	6
	PM Peak	7	10

As shown, the stops are served regularly with headways from 6.7 minutes to 10 minutes. **Table 5-8** below shows the capacity/hr for each direction, existing boarding, development boarding, and total boarding during the AM and PM peaks.

Table 5-8 Transit Ridership Analysis

Location	Peak	Direction	Capacity/hr	Existing Boarding/hr	Boarding from site development (2025)
Union at West Campus Ln	AM Peak	EB	304	31	10
		WB	266	4	1
	PM Peak	EB	304	31	22
		WB	266	4	3
King at Sir John A. Macdonald	AM Peak	EB	342	4	1
		WB	228	3	1
	PM Peak	EB	266	4	3
		WB	380	3	2

Boarding per hour was calculated by dividing the total weekday boarding by the number of bus operational hours and it was assumed that the AM and PM peak would be 25% greater than the off-peak boarding per hour. The table indicates that the existing largest boarding occurs in the EB direction at the intersection of Union Street and West Campus Lane with a total of 31 boarding's. Transit trips generated from the site where distributed based on a weighted average of the existing boarding. As shown, the highest boarding for site generated transit trips occurs in the eastbound direction at the intersection of Union Street and West Campus Lane with boarding of 10 and 22 in the AM and PM Peak periods respectively. Based on frequency of the existing service, new transit trips from the proposed development are anticipated to be accommodated existing service.

6.0 SITE PLAN REVIEW

6.1 Site Access Review

This section provides a review of the proposed site accesses, circulation, and sight distances for the proposed development. Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (2017) and applicable engineering standards for the City of Kingston were referenced. Site circulation was reviewed using vehicle tracking software to simulate the required design vehicles. This review is based on the proposed site plan provided to MP on March 01, 2021.

6.1.1 Curb Radii and Access Driveway Width

Curb radii and driveway widths were reviewed based on the City of Kingston's Site Plan Control Guidelines. Minimum curb radii of 7.5m is required which has been met for all site accesses. The guideline indicates that a minimum driveway entrance width of 7.5m should be provided. All site driveways have a width of 7.0m which is less than the guideline requirement. However, the proposed driveway widths can safely and adequately accommodate turning movement operations of all required design vehicles as demonstrated via vehicle swept path analysis. As such driveway widths have been considered acceptable based on conducted reviews.

Curb radii and driveway widths for proposed development site accesses are shown in **Figure 6-1**, **Figure 6-2** and **Figure 6-3**.

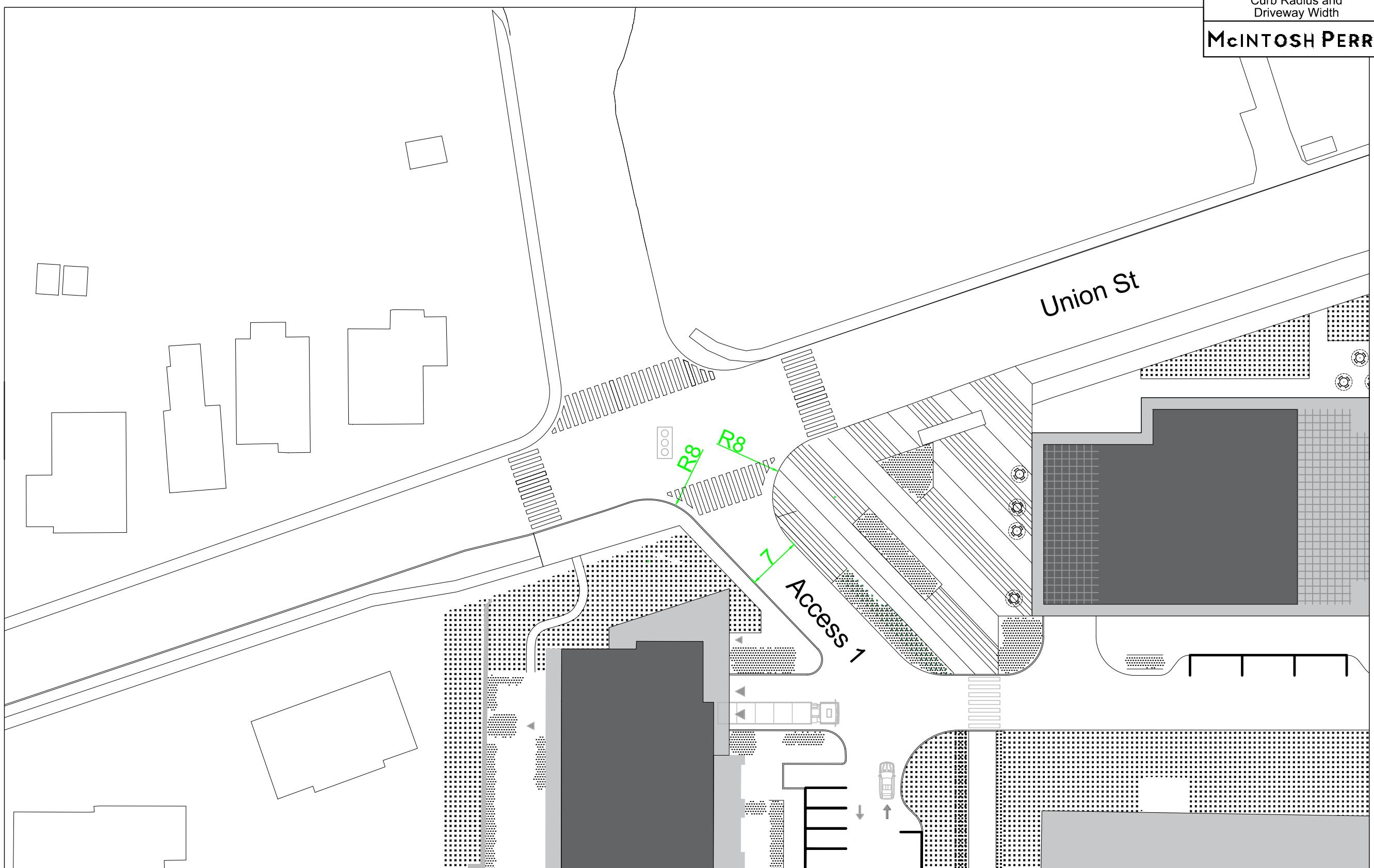
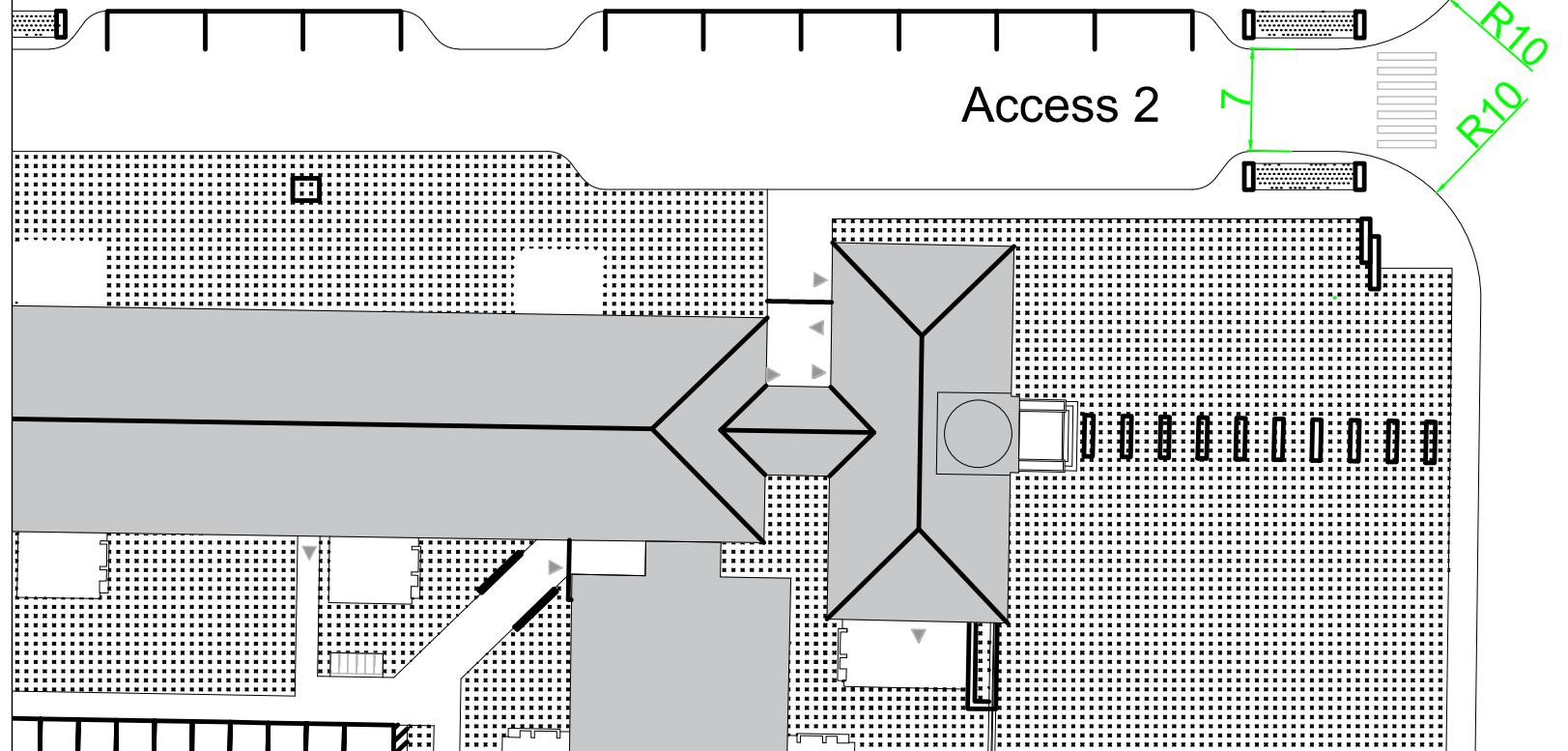
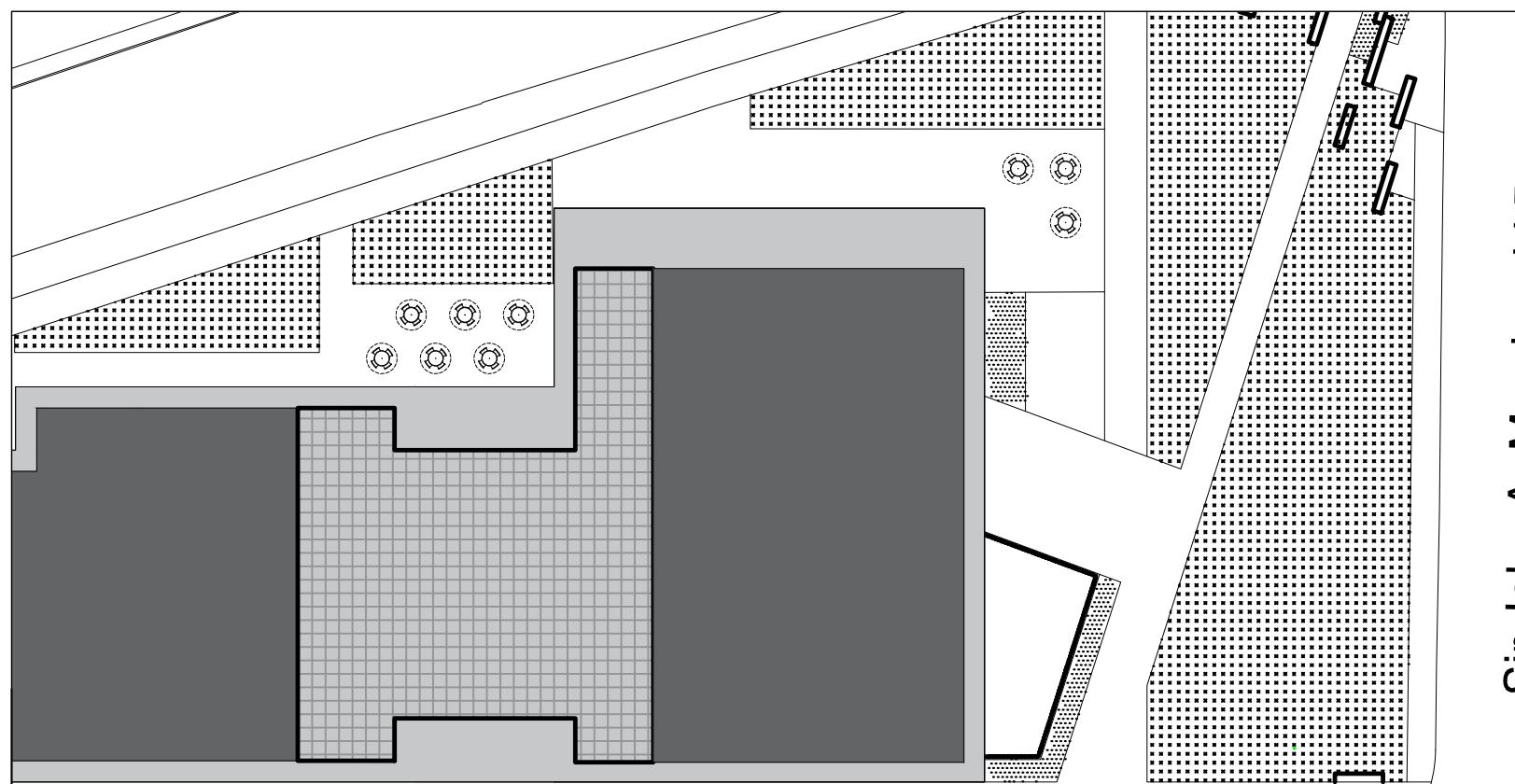


Figure 6-1 Site Access 1 Curb Radii and Driveway Width Review



Sir John A. Macdonald Blvd

Access 2

Figure 6-2 Site Access 2 Curb Radii and Driveway Width Review

PROJECT – P4W 40 Sir John A Macdonald Blvd	
Sir John A Macdonald and Access 3 Curb Radius and Driveway Width	SHEET 3
McINTOSH PERRY	

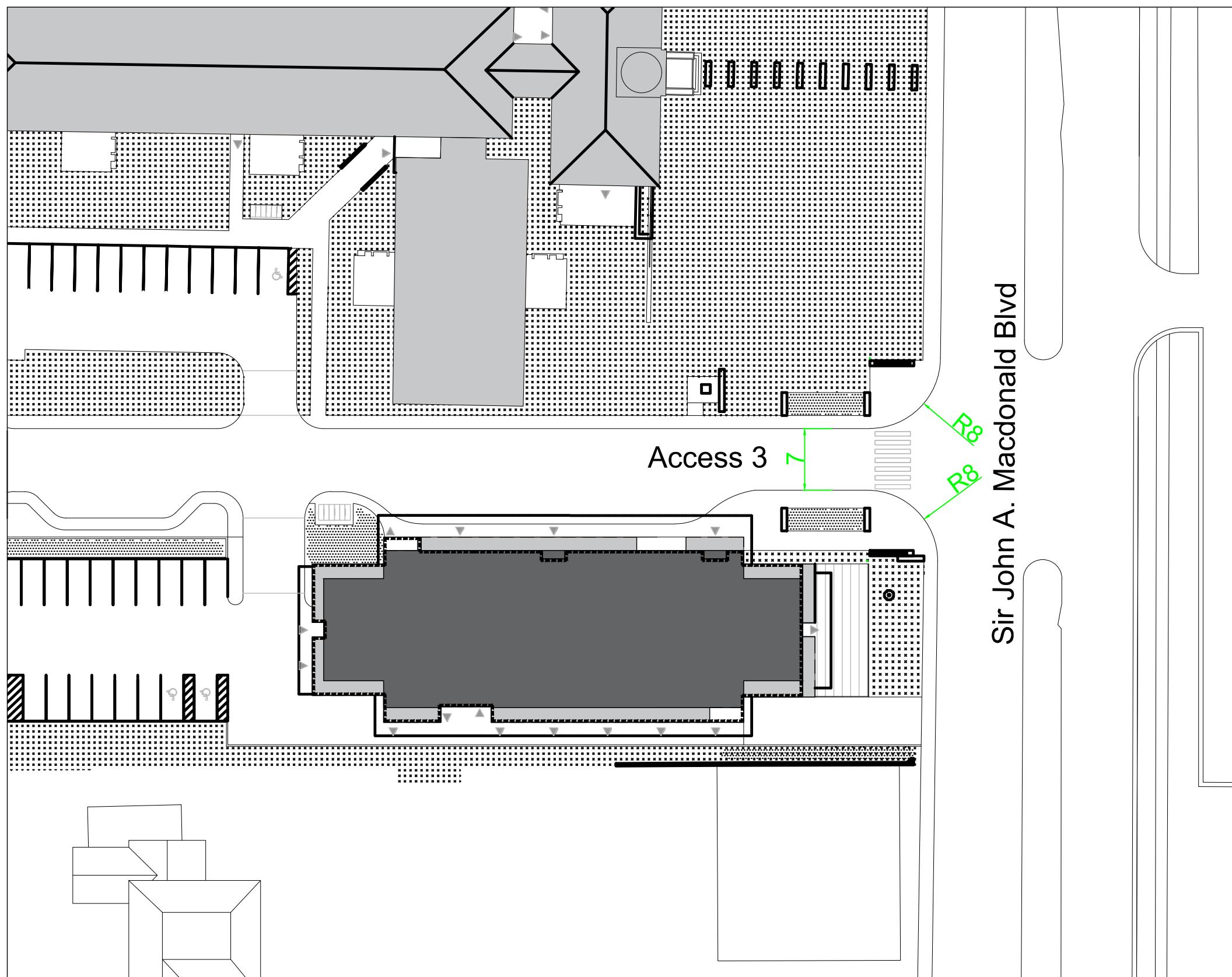


Figure 6-3 Site Access 3 Curb Radii and Driveway Width Review

6.1.2 Driveway Spacing

Driveway spacing was reviewed based on TAC Figure 8.8.2, which recommends a minimum corner clearance of 70m meters from a major signalized intersection. Corner clearance is measured from the near curb of the cross roadway to the near edge of the access throat. Corner clearance reviews indicate that the minimum 70m spacing requirement has been met for all site accesses. Site Access 2 and Site Access 3 along Sir John A. MacDonald Boulevard are located 60m apart, which is considered an acceptable spacing between site driveways. Driveway spacing reviews have been illustrated in [Appendix E](#).

6.1.3 Sight Distance Review

TAC Table 9.9.4 and Table 9.9.6 provides the minimum sight distance required for left turn and right-turn from stop bar respectively. Sight distance requirements for Site Access 1 was reviewed based on a 50km/h design speed for Union Street. Based on TAC guidelines left and right-turn maneuvers require sight distances of 105m and 95m respectively. The sight line review completed for Site Access 1 indicates that the required sight distances will be met.

For Sir John A. MacDonald Boulevard, sight distance requirements were reviewed based on a design speed of 60km/h. The sight distance for left turn maneuver was calculated based on TAC Section 9.9.2.3 for Sir John A. MacDonald Boulevard using the following equation:

$$ISD = 0.278V_{major}t_g$$

Where:

ISD = intersection sight distance

V_{major} – design speed of the major road (km/h)

t_g = time gap for minor road vehicle to enter the major road (s)

The time gap was adjusted for the left turning maneuver due to the number of lanes required by the vehicle to cross. For a two-lane roadway the time gap for a passenger car completing a left turn is 7.5s based on Table 9.9.3 in the TAC manual. For additional lanes 0.5s per lane is required to be added to the time gap. To complete the turning maneuver from the site access 3 along Sir John A. Macdonald Boulevard a total of 1s was added to the time gap (0.5 s for the additional lane and 0.5s for the median).

As such a 142m sight line is required for the left-turn maneuver and 110m sight line is required for the right-turn maneuver. Site Access 2 (Block A) operates as a right-in/right-out driveway, requiring a 110m sight line for the right-turn maneuver only. An unobstructed 110m sight line can be achieved at Site Access 2 which will extend beyond the Union Street and Sir John A. MacDonald Boulevard intersection.

Site Access 3 (Block B) will operate with both a left-turn and right-turn movement. The left-turn movement has an available sight distance of 118m due to the existing T-intersection at King Street West and Sir John A. MacDonald Boulevard. Although the available sight distance is slightly less than the required 142m, it is anticipated that vehicles turning onto Sir John A. MacDonald Boulevard will do so at low speed. This is due to

vehicles either completing turns from a stop position due to the traffic signal or vehicles having slowed to lower operating speeds to safely complete the turning movement. As such the available 118 m sightline has been considered acceptable for the driveway location. For the right turn movement, the required 110m sight distance can be met at the site access.

Detailed reviews of sight distance requirements at all site accesses are provided in [Appendix E](#).

6.2 Site Circulation Review

Site circulation was reviewed using vehicle tracking software to examine if vehicles can ingress, egress, and circulate the site in a safe and efficient manner. Figures for site circulation are provided in [Appendix F](#). Site circulation figures are based on full-build operation of the site.

6.2.1 *Emergency Vehicle*

A 6.0 metre unobstructed width is provided along site driving aisles meeting minimum operational requirements. Site driveways can accommodate circulation of a fire truck and simulations of fire truck turning movement indicate that emergency vehicle operation can be accommodated without conflict.

6.2.2 *Loading Review / Waste Disposal*

Loading for the site as reviewed using a heavy single unit (HSU) truck to assess its ability to access and egress loading areas at the various development blocks.

Waste collection at the site is to be coordinate via private pick-up. Waste operations at Block C is likely to be conducted using a front-loading garbage truck and waste collection at Block B and Block D will be completed using rear loading trucks. Loading operations for Block A will be addressed in a separate submission.

Block B

The waste disposal and loading area will both be accommodated in a lay-by area at the north side of Block B, along the Block A drive aisle. It is anticipated loading vehicles will enter the site via Union Street and access the Block B loading area in a forward motion. Loading vehicles will then exit the site via the right-in/right-out driveway 2 Site Access. Garbage trucks will operate in a similar fashion with but once entered in the garbage removal area the garbage bins wheeled out to meet the garbage truck using the ramp to the loading area. The garbage truck will also exit the site via the driveway 2 Site Access.

Block C

Loading and waste collection will occur at two separate areas for Block C, one at the north end for the retirement residence and one at the south end for senior apartments. For loading operations a HSU truck will access the north loading area via Site Access 1 and leave via Site Access 2. For the north loading area, a front-loading garbage truck is anticipated to be used for waste collection, entering from Site Access 2 and driving straight into the waste disposal area. On completion the garbage truck will exit the loading area and proceed to the waste collection area at the south end for the senior apartments.

For the southern waste disposal area, the garbage truck will stop at the drop curb parallel to the building and garbage bins will be wheeled out to the garbage truck. The garbage truck will reverse along the driving aisle in front of Block C and then turn left onto the Block B driving aisle to exit the site. The garbage truck will exit the site via the full-move Site Access 3 driveway.

It is anticipated that loading vehicles for southern waste disposal, will function in a similar fashion to a garbage truck and will conduct loading operations at the lowered curb parallel to the building frontage.

All loading and waste collection operations at the south end of Block C will be conducted with a flag person on-site and will also occur during off-peak hours to mitigate any delay and overall impact to the internal traffic circulation of the site. At both locations, a rear loading garbage truck can be accommodated however front loading is most likely.

Block D

It is anticipated that both loading and waste disposal operations in a similar fashion as the vehicle will drive into Block D and stop parallel to the barrier free parking spaces and either be unloaded or have the waste disposal bin wheeled out to the location. It is recommended that these operations be done at off-peak hours to aid in alleviating delay and overall impact to the internal traffic circulation of the Block D.

6.2.3 Passenger Vehicle

A review of passenger vehicle operation confirms that a passenger vehicle can access the site, access the various development blocks, and circulate on-site without conflict. Parking spaces can also be accessed and egressed without conflict.

6.2.4 Bus / Shuttle Provisions

Block C

A shuttle bus parking space is provided adjacent to the north loading area for the retirement residence (Building A). Reviews of the bus parking space indicates that buses can enter and exit without encroaching driveway curbs.

Block D

A separate bus loading area is also provided for the hotel. A review of the bus parking space confirms a bus can enter the site via Union Street, access and exit the bus parking space without conflict. The bus will exit the site via the Block B full-moves access onto Sir John A MacDonald Boulevard.

7.0 PARKING JUSTIFICATION

Parking for the site is to be provided to accommodate land uses at each of the development blocks. Parking for each development block is anticipated to operate independently of each other. As such, no connections will be provided between underground parking garages for each block.

This parking justification sections addresses parking needs for developments Block B, Block C and Block D. Densities for development Block A are still under consideration and as such parking requirements will be addressed in a separate submission.

7.1 Municipal By-law

It is MP's understanding that the site is governed by the City of Kingston's Zoning By-law 8499, which identifies parking requirements for land uses for the subject site. Parking required per the By-law are as follows:

- Residential parking rate of 1 parking space per dwelling unit
- Retirement / senior apartments: No specific requirements provided under the by-law
 - Parking requirement default of 1:1 ratio applied inline with residential requirement (adopted from *the residential rate*)
- Hotel parking rate of 1 space per guest room/suite plus 1 space for every 4 people to be accommodated in any beverage or liquor lounge, plus 1 bus parking space for each 50 guest rooms, to a maximum of 3 bus parking spaces
- Retail parking rate of 1 parking space per 28 m²

Based on the City of Kingston's Zoning By-law 8499, parking requirements and proposed parking supplies have been detailed in **Table 7-1**.

Table 7-1 Site Parking Requirements by Development Block

Block	Site Component	Units / Area	Required Parking Rate	Parking Required	Proposed Supply
Block B	Residential	24	1 / unit	24	52 ¹
Block C	Retirement/ Senior Apartments	215	1 / unit (default)	215	(+/-) 161
Block D	Retail	364m ²	1/28m ²	13	125 ²
	Hotel (parking) Hotel (bus parking)	119	1 / room 1/50 rooms	119 2	
					1

Note: ¹ Block B parking supply includes 1 car share space

² Block D parking supply includes 2 car share spaces

7.1.1 Block B Parking

Per Zoning By-law 8499 the 24 residential units of Block B requires a parking supply of 24 parking spaces to be provided at a rate of 1 space per unit. A total parking supply of 49 physical parking are provided, inclusive of one car share parking spaces i.e. 12 at grade and 37 below grade. Parking policies provide incentives for car-share services by giving credits towards parking space reductions. Planning policies typically allows for one car share parking space to replace four resident parking spaces for every 60 dwelling units. This results in one car-

share space reducing a residential development's parking requirement by three spaces. Applying this "4:1" credit, Block B would have an effective parking supply of 52 parking spaces.

A barrier free parking space is also provided at grade for the development. The proposed parking supply satisfies by-law parking requirements.

7.1.2 *Block C Parking*

Zoning By-law 8499 does not specifically identify parking requirement for senior apartments or retirement suites, therefore the study has defaulted to the residential requirement of one parking space per dwelling unit. It is noted however the City of Kingston has other zoning by-laws that provide requirements for senior living in addition existing examples of senior's projects that have been approved, which assist in determining a more appropriate parking requirement for Block C.

The Township of Kingston Zoning By-law 76-26 requires a minimum of 0.5 parking spaces per unit for a senior citizens' apartment dwelling house. A recent senior's housing project approved in the City of Kingston, within the boundary of the Cataraqui North governed by Zoning By-law 97-102, permitted a site specific retirement home parking requirement of 0.6 parking spaces per dwelling unit and for the purposes of calculating off-street parking, a dwelling unit equivalency ratio of 2 retirement home suites to 1 dwelling unit applies.

Based on this review, use of a 2:1 dwelling unit equivalency ratio for retirement suites and application of a reduced parking requirement of 0.6 spaces per unit for senior apartments is considered appropriate. Using these revised rates, the 141 retirement suites and 74 senior apartments will require 88 parking spaces as summarized in **Table 7-3**.

Table 7-2 Block C Parking Review

Block C Component	Units	Unit Equivalency	Required Parking Rate	Parking Required	Proposed Supply
Retirement Suites	141	71 units	0.6 / unit	43	(+/-) 161
Senior Apartments	74	74 units	0.6 / unit	45	

A total parking supply of approximately 161 parking spaces has been proposed for Block C inclusive of 6 barrier free parking spaces which meets the block's parking requirement. An additional parking space has also been supplied to accommodate a small shuttle which will be located at the north end of the surface level parking. The proposed parking supply satisfies parking requirements for Block C.

7.1.3 *Block D Parking*

Based on the proposed Hotel consisting of 119 units and 364m² of retail floor area, Block D will require 132 parking spaces and two bus loading spaces per Zoning By-law 8499. Block D proposes a parking supply of 125 parking spaces, consisting of 119 physical parking spaces inclusive of two car share spaces. The 125 space parking supply is 7 spaces less than the by-law requirement of 132 spaces for the combined hotel and retail components of block as shown in **Table 7-1**. The City of Kingston zoning by-law governing the site, was passed

in 1975 and does not account for parking policy changes as it relates to reducing parking requirements in areas to facilitate transportation mode shifts or car share.

Parking standard reviews in many cities and municipalities have identified the need for changes in parking rates to better represent current and future parking policy guidelines. This is illustrated in the Burlington City-wide parking standards review (2017) which identifies recommendations for a hotel parking rate of 0.9 per room following observations at 40 hotel locations. The Vaughan City-wide Zoning by-law (Draft 2019) provides a range of hotel parking rates ranging from 0.5 to 1.0 for various part of the City and the ITE Parking Generation 5th Edition provides an average hotel parking rate of less than 0.9 during weekday peak period of demand (see Appendix G).

Based on reviewed rates a reduced parking rate of 0.9 is considered acceptable for the hotel which will result in a requirement of **107 parking spaces** for the 119 unit hotel.

Given the nature of operation of the hotel and retail land uses, peak parking demand for these uses will occur at different times through out the day. Hotel operation is anticipated to have higher demands during the morning and evening peaks with retail components experiencing higher parking demand during the day. Block D parking spaces can therefore be shared between the retail and hotel components of the site to accommodate future block parking demand, resulting in a reduced need for parking at the site in comparison to providing satisfying requirements for the block's individual components. Time of day parking demand distribution analysis was completed for the two land uses, using percentage of peak parking demand provided in ITE Parking Generation 5th Edition, which also been provided in Appendix G. A summary of hourly hotel and retail parking demand based on individual requirements is provided in **Table 7-3**.

Table 7-3 Shared Parking Demand Analysis

Time of Day	Requirement	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00
Weekday Retail Demand	13	0%	0%	0%	0%	0%	0%	77%	100%	98%	90%	76%	82%	89%	90%	84%	0%
Retail Required Parking		0	0	0	0	0	0	10	13	13	12	10	11	12	12	11	0
Weekday Hotel Demand	107	91%	89%	90%	100%	98%	89%	85%	75%	81%	70%	74%	65%	73%	78%	93%	96%
Hotel Required Parking		97	95	96	107	105	95	91	80	87	75	79	70	78	83	100	103
Shared Parking Demand	120	97	95	96	107	105	95	101	93	100	87	89	81	90	95	111	103

Shared parking analysis indicates the retail component will have a peak parking demand at 1:00 PM (13), whilst the hotel component peak demand occurs at 9:00 AM (107). The shared peak demand of the proposed uses occurs at 8:00 PM and has a peak parking demand of 111.

The proposed parking supply of 125 parking spaces (119 physical spaces) generally aligns with the block's forecasted peak demand of 111 spaces. Based on the shared analysis the Block D parking demand can therefore be adequately accommodated by the proposed parking supply.

As part of consideration for the future development of Block D, the potential exist that the building could be developed to accommodate residential units only. Should a residential option be considered that consists of 119 units or fewer the proposed parking supply would satisfy Zoning By-law 8499 parking requirements of 1 space per unit.

Per the zoning by-law the site requires two bus parking spaces to be provided at Block D. A single bus parking space is proposed which will be located along site access 3 driving aisle. As previously identified the governing by-law was passed in 1975 and is over 40 years old. In its current form the by-law is void of many policy directional changes governing parking which has shifts to reduce parking rates for various land use types, which can account for a reduced bus parking demand for this site.

The hotel is anticipated to provide long stay accommodation and the use of buses dropping off and picking up guests is expected to be very low. As such the demand for bus parking at the site would be limited and the single bus parking space proposed should adequately meet demand.

Further to this to mitigate operations for bus parking the hotel will schedule bus on-site arrivals and departures to avoid overlap of more than one bus on-site at a time. It is also noted that the lay-by area at the front of the hotel can accommodate a bus and continue to facilitate other pick-up ad drop off operations. Should a second bus access the site whilst the bus parking space is occupied, it can be accommodated in the short-term without impacting overall site operation. As such the bus parking supply provided for the site is considered satisfactory.

7.2 Bicycle Parking

Per the City of Kingston's Zoning By-law 8499, bicycle parking for the proposed land uses at the site are required as follows:

- Residential parking rate of 1 parking space per dwelling unit
- Retirement / senior apartments: No specific requirements.
- Hotel: No specific requirements
- Retail: No specific requirements

Block B

A total of 24 bicycle parking spaces is proposed for the site which satisfies the by -law requirements.

Block C

A total 12 of bicycle parking spaces will be provided for the community. Given the by-law does not provide a minimum requirement for the land use type a nominal bicycle parking has been provided to meet the needs for residents, workers and visitors.

Given the sites proximity to transit, the community providing a shuttle service dedicated to residents and senior, a high demand for bicycle parking is not anticipated for the site. The proposed supply of 12 spaces is therefore considered suitable for the development block.

Block D

A total of 119 bicycle parking spaces will be provided at a rate of 1 per unit will be provided for the hotel. No specific parking rates are provided for hotel and retail uses however proposed supply will be shared between the two uses and is considered appropriate for the development block.

8.0 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Development of site-specific Transportation Demand Management (TDM) measures for the proposed site is based on the future build-out conditions. The primary objective of TDM is to reduce single occupancy vehicles (SOV) use and to promote sustainable modes of transportation. The plan will review opportunities to set realistic targets for increased use of transit, cycling, and walking trips.

8.1 City of Kingston TDM

The Kingston Transportation Master Plan (KTMP) provides a summary of the goals for the City with respect to TDM. The City's objective for TDM measures is to delay or eliminate the need for significant capital investments in new transportation infrastructure. Emphasis was placed on walking, cycling, and public transit as alternative modes of transportation. The following TDM strategy for the proposed development which support's the City's goals.

8.2 TDM Strategy

The City's TDM strategy revolves around encouraging modal shift away from the personal single use occupancy vehicle towards a sustainable mode of transportation such as walking, cycling, or transit. The City's planned enhancements of active transportation facilities as well as improved transit will make it more convenient to use an alternative mode of transportation. The following subsections describe how the proposed development is aligned with the City's TDM strategy.

8.2.1 *Transit*

The City's Official Plan supports increased transit use by providing full-service, accessible transit, comprising high-frequency peak period service and extended off-peak service. Union Street has some of the most travelled routes in the City with regular service also provided south of the site on King Street West.

Currently, there are four (4) bus routes servicing Union Street along the north boundary of the site. Bus stops providing access to these routes are located directly in front of the Block A. Routes servicing these bus stops allow for travel to the east, west and south (via Route 3 service). Access to additional transit service along Kingston Street West is provided at bus stops at its intersection with Sir John A Macdonald Boulevard. These stops are located approximately 100 metres away, within a two-minute walk of the site. A description of the existing transit services is provided in **Section 3.3**.

No expansion or increase of service has been confirmed for routes along study boundary roads. These transit routes, however, allow for residents and visitors to travel across the City of Kingston conveniently linking them to amenities, places of employment, hospital and other educational institutions. The City also supports

improving connections between active transportation and transit. One such initiative is the *Rack'n'Roll* program which integrates cycling and transit by transporting bicycles on buses.

Information related to transit routes, service times, stop location and pedestrian access, will be provided to residents (new homeowners) at time of occupation to encourage transit travel mode usage amongst residents.

8.2.2 *Cycling Facilities*

Existing cycling lanes are provided east-west on Union Street and King Street West. The City's Active Transportation Master Plan future proposes cycling lanes on Sir John A Macdonald Boulevard. According to the Official Plan, the City's intends to designate and developing bicycle routes on City streets and throughout public open space areas, which would encourage cyclists to travel within the City. Although there are currently no Zoning By-Law requirements for bicycle parking governing some land uses proposed for the site, the developer is providing 155 bicycle spaces for general use to encourage cycling as a travel mode to and from the site. Proposed bicycle parking allocations are as follows, 24 on Block B, 12 on Block C and 119 on Block D. Information related to the use and availability of on-site bicycle facilities will be provided to residents, workers and visitors.

8.2.3 *Pedestrian Facilities*

The north leg at the intersection of Union Street and Campus Lane is expected to be redeveloped and was confirmed with Queens University staff. The redevelopment will include a narrower access width to shorten the east-west crossing distance and provide for safer pedestrian crossing with the addition of designated crosswalk. Based on discussion with Queens University, a proposed realignment of the north approach with the development's Site Access 1 was discussed and agreed upon.

The crosswalk design for the north approach was based off the OTM Book 11 (Pavement, Hazard, and Delineation Markings) and City of Kingston Design Guidelines for Communities. The crosswalk demarcation lines were based off the City of Kingston Guideline outlined in section 5.8. The stop bar was located 1m from the crosswalk and a crosswalk width of 4m was provided based on OTM Book 11. The functional redesigned of the north approach and crosswalk design is provided in **Figure 8-1**.

Pedestrian facilities are provided throughout the proposed site development with four connections from the development to the external road network. The site plan for the proposed development indicates that adequate on-site pedestrian connections are provided to connect occupants of each development block to at-grade parking and bicycle facilities. Pedestrian connections also provided safe connection from the site from to existing pedestrian facilities along the site's boundary road network.

Internal pedestrian connections from each of the site's development blocks provide access to the existing boundary road sidewalk on Union Street to the north, Sir John A. Boulevard to the east and King Street West on the south side of the site. On-street sidewalk connections provides safe access to bus stops located on Union Street and King Street West.

As shown in **Figure 8-2** internal pedestrian paths connect to the sidewalk at Union Street to the north at the intersection of West Campus Lane. A second connection is provided to the south at King Street West

approximately 180 m westerly of the intersection of King Street West and Sir John A. MacDonald Boulevard. Furthermore, an additional two pedestrian pathways from the development connects to the external sidewalk on Sir John A. MacDonald Boulevard at Site Access 2 and Site Access 3 with pedestrian crossings provided at each of the accesses.

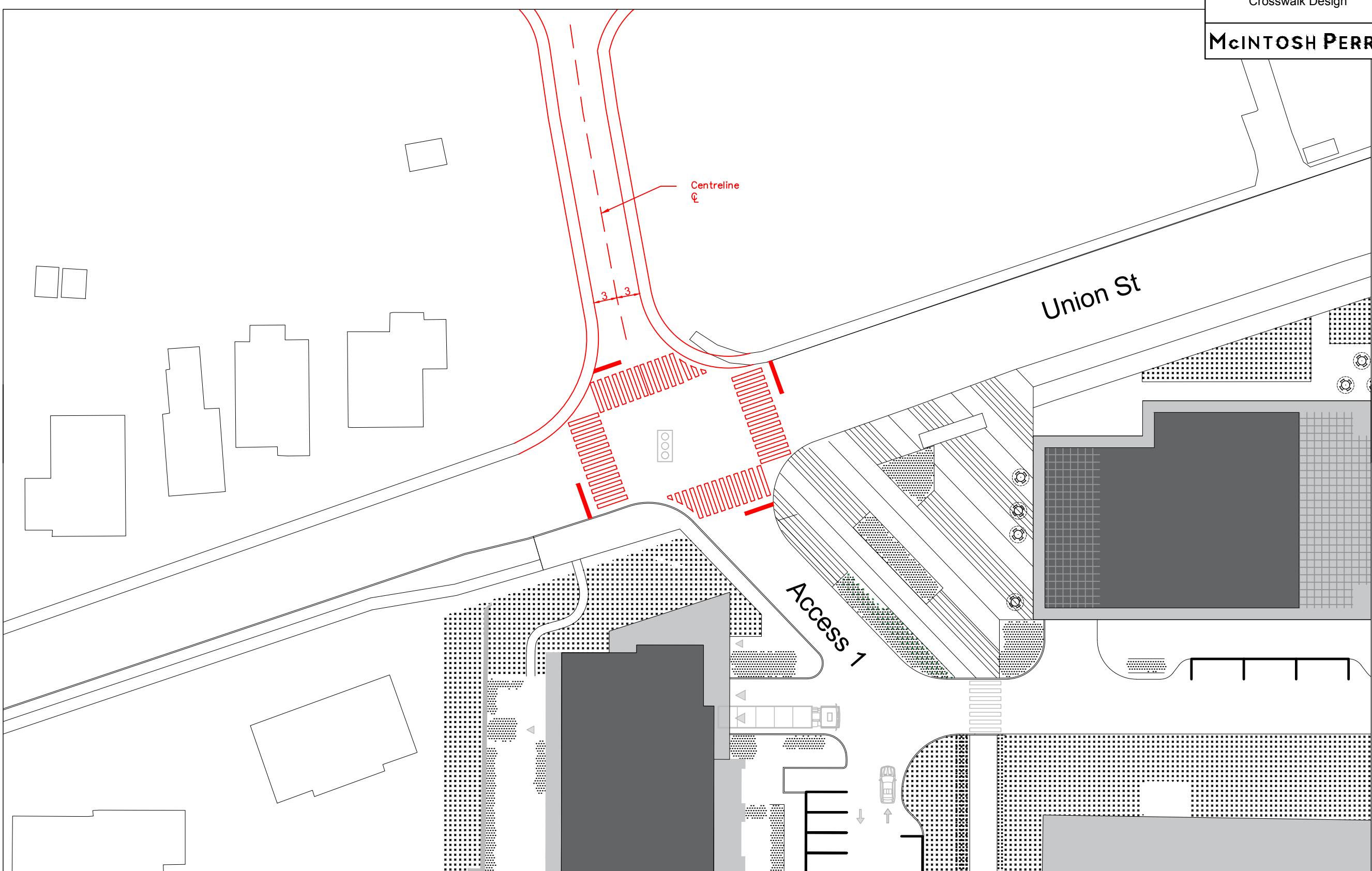


FIGURE 8-2 SITE AND ON-STREET PEDESTRIAN CONNECTIVITY

CITY OF KINGSTON

METRIC

PROJECT - P4W
40 Sir John A Macdonald Blvd



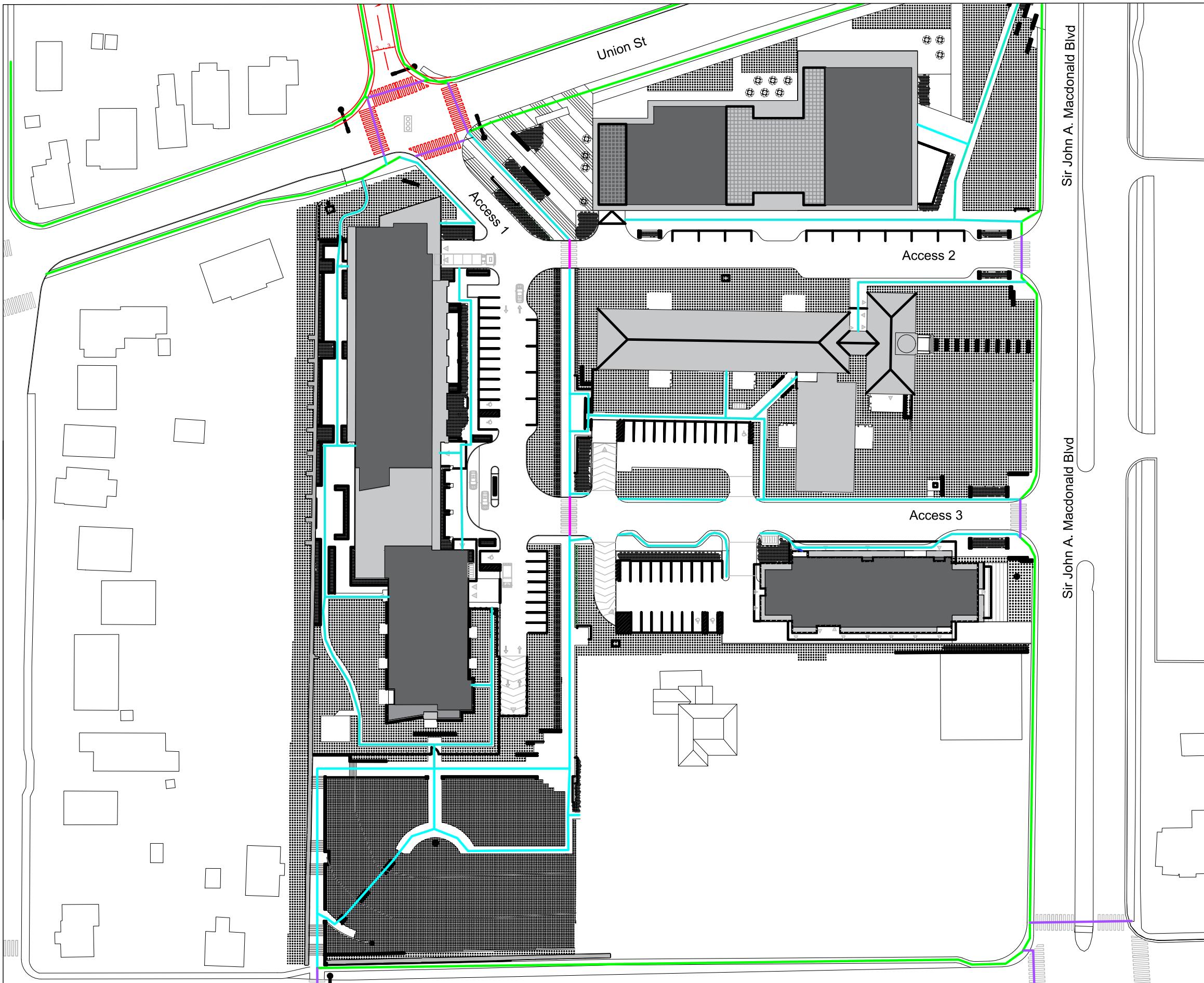
Internal Site Pedestrian Pathway Connectivity

SHEET
4

MCINTOSH PERRY

Legend

- On-Site Pedestrian Facilities
- Public Sidewalk
- Internal Crosswalk
- External Crosswalk



8.2.4 *Interactive Display / Notice Board*

Readily providing information for alternative transportation modes to the public is key to encouraging a shift to these modes. One method of achieving this is through physically displaying this information. This can be achieved through an interactive display device provided in the lobby or common area. The device can be programmed with transportation information as a daily reminder to residents who may not typically use transit as their mode of travel. It is expected that typical transit users will use their cell phones for immediate information. A low-cost display can be provided via a “cork styled” notice board with current information that is updated periodically ensuring the latest information is provided to residents. This measure is to be considered for Blocks A, Block B and Block D where transit use may be a common travel model.

8.2.5 *New Resident Information Packages*

It is important to provide transportation information to new residents, so they are made aware of their travel options before establishing new travel habits. This will increase the chance that new residents incorporate these alternatives in their travel patterns after moving into the development.

The developer/property manager will be responsible for providing information about transportation options to new residents in consultation with the City’s “Active Transportation Coordinator”. This information will be provided as a package to residents including information from the interactive display. The packages may include:

- Existing transit service, system map, seven-day schedules for nearby stops for every route. Information will be gathered from the City’s transit provider, Kingston Transit.
- A map of surrounding area with sidewalks and bicycle facilities, cycling and pedestrian safety tips, and information on active transportation events. Information will be collected from the existing open data available from the City.

9.0 FINDINGS AND RECOMMENDATIONS

9.1 Findings

The following findings have been made from the study:

1. The site is expected to generate 175 and 247 new AM and PM peak hour trips respectively and 38 PM peak hour pass-by trips.
2. Parking for Block A of the proposed development will be considered independently; however the proposed parking supply assessed for other development blocks has been considered satisfactory.
3. The developer will provide a total of 155 on-site bicycle parking spaces for the assessed development blocks for general use for all individuals to encourage cycling as a travel mode to- and from- the site.
4. There are five (5) existing bus routes with bus stops that can service the proposed development. The nearest bus stop is within one-minute walking distance of the proposed development heading eastbound or westbound.
5. An unobstructed fire route that satisfies a minimum 6m width is provided that can accommodate circulation of a fire truck.
6. Vehicle turning movement simulation indicate that all anticipated design vehicles can access, circulate, and exit the site without conflict.
7. The AM and PM peak hour volumes generated by the proposed development can be accommodated on the boundary road network with minor adjustments made to local signal timings.

9.2 Recommendations

The following recommendations are proposed for the study:

- Signal timings are to be adjustment as indicated in **Section 5.1**
- TDM measures for the site are to be implemented as discussed in **Section 8.0**.
- Union Street and Site Access 1 driveway should be signalized for future operation.
- The median along Sir John A. MacDonald Boulevard should be broken to accommodate full-move operation of the Site Access 3 driveway traffic.
- Pedestrian crossings at Union Street and West Campus Lane / Site Access 1 should be implemented.

Prepared by,



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APPENDIX A – SITE PLAN

McINTOSH PERRY

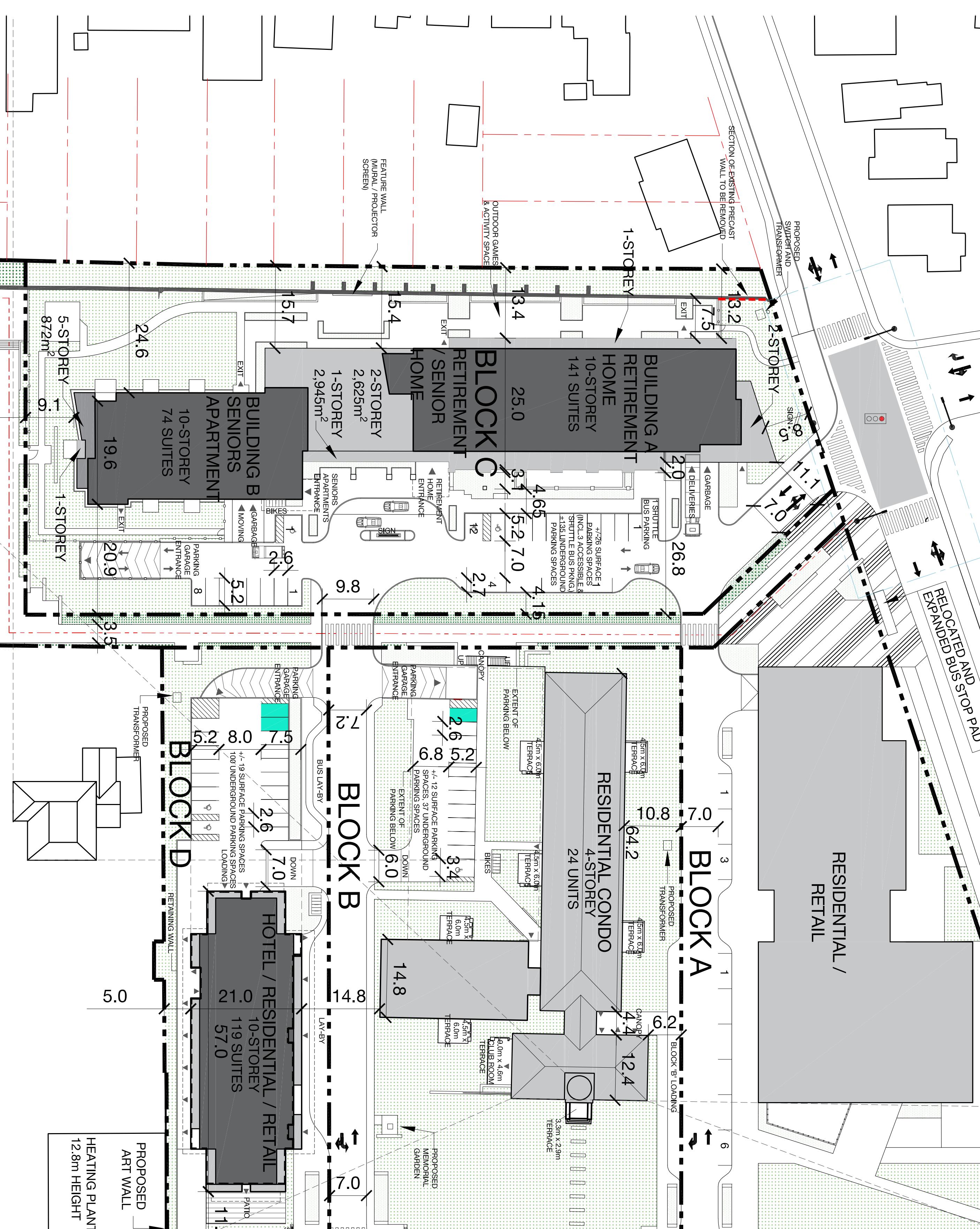
QUEEN'S UNIVERSITY

RESIDENTIAL
RETAIL

SITE AREA	
*Total Site Area:	32,825 m ² (3.28 ha)
*Retail GFA:	364 m ² (3,918 sf)
*Residential GFA:	29,163 m ² (313,908 sf)
*Hotel GFA:	8,335 m ² (89,717 sf)
*TOTAL GFA:	37,862 m² (407,543 sf)
 *excludes Block A	
SITE COVERAGE	
Built:	25.6%
Roads:	18.0%
Landscape / Sidewalks:	56.4%

MACDONALD BLVD CONCEPT SITE PLAN

UNION PARK



CORRECTIONAL SERVICE OF CANADA MUSEUM

1. For the purpose of this plan, Block A is conceptual and will be subject to future planning applications.
2. This plan is based on a survey.

Severed Lot Area: 4,820 m² (51,882 sf)

BICYCLE PARKING:	12 spaces
Bus Parking:	1 space
BLOCK D - HOTEL / RESIDENTIAL / RETAIL	
Severed Lot Area:	3,608 m ² (38,836 sf)
Retail GFA:	364 m ² (3,918 sf)
Hotel GFA:	8,335 m ² (89,717 sf)
Total GFA:	8,699 m ² (93,635 sf)
Total Units:	119
Ground Floor Area:	908 m ² (9,773 sf)
Vehicle Parking:	± 119 spaces (± 19 surface, ± 100 underground)
Bus Parking:	1 space
BLOCK E - WEST YARD PARK AND CONNECTING PATHWAY	
Severed Lot Area:	4,820 m ² (51,882 sf)

Severed Lot Area: 9,526 m² (102,537 sf)
Total Residential GFA: 22,055 m² (237,398 sf)
Total Units: 215 (141 Retirement Units and 74 Seniors Apartments)
Ground Floor Area: 2,813 m² (30,279 sf)
Vehicle Parking: ± 161 spaces (± 26 surface, ± 135 underground)
Bicycle Parking: 12 spaces
Bus Parking: 1 space

BLOCK B - RESIDENTIAL CONDOMINIUM
Severed Lot Area: 7,737 m² (83,280 sf)
Total Residential GFA: 7,108 m² (76,510 sf)
Total Units: 24
Ground Floor Area: 1,540 m² (16,576 sf)
Vehicle Parking: ± 49 spaces (± 12 surface, ± 37 underground)
Bicycle Parking: 24 spaces

Roads:	18.0%
Landscape / Sidewalks:	56.4%
*an estimated building footprint was used for Block A	
DEVELOPMENT BLOCKS	
BLOCK A - FUTURE PHASE RESIDENTIAL/RETAIL	
Severed Lot Area: 7,144 m ² (76,897 sf)	

SITE AREA	
*Total Site Area:	32,825 m ² (3.28 ha)
*Retail GFA:	364 m ² (3,918 sf)
*Residential GFA:	29,163 m ² (313,908 sf)
*Hotel GFA:	8,335 m ² (89,717 sf)
*TOTAL GFA:	37,862 m² (407,543 sf)

SIDERIUS DEVELOPMENTS LTD

Planning + Design FOR EVER

APPENDIX B – TRAFFIC COUNTS

MCINTOSH PERRY

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A. MacDonald Blvd and King St
Site Code : 00000000
Start Date : 11/24/2020
Page No : 1

Groups Printed- Cars - Trucks - Heavys - Cyclists

	Sir John A MacDonald Blvd Southbound					King St Westbound				Driveway Northbound				King St Eastbound				Int. Total			
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total						
Start Time																					
07:00 AM	6	4	16	0	26	38	53	0	1	92	0	0	0	1	1	0	70	10	0	80	199
07:15 AM	5	4	27	3	39	32	54	1	1	88	1	0	0	1	2	7	95	12	2	116	245
07:30 AM	3	6	33	1	43	18	34	0	1	53	0	0	0	0	0	1	109	9	0	119	215
07:45 AM	10	4	36	4	54	25	69	0	1	95	1	1	0	0	2	7	102	5	0	114	265
Total	24	18	112	8	162	113	210	1	4	328	2	1	0	2	5	15	376	36	2	429	924
08:00 AM	8	5	39	3	55	30	69	0	3	102	0	0	0	1	1	2	110	4	0	116	274
08:15 AM	12	2	19	2	35	15	77	0	0	92	2	0	0	0	2	1	107	11	0	119	248
08:30 AM	10	2	32	1	45	19	60	0	0	79	0	0	0	0	0	2	93	7	0	102	226
08:45 AM	9	0	17	1	27	22	59	0	2	83	2	0	0	2	4	0	96	7	1	104	218
Total	39	9	107	7	162	86	265	0	5	356	4	0	0	3	7	5	406	29	1	441	966
03:00 PM	12	0	21	2	35	59	121	2	1	183	1	4	1	5	11	0	61	21	4	86	315
03:15 PM	10	0	18	8	36	38	118	0	1	157	0	3	2	1	6	0	66	16	1	83	282
03:30 PM	8	0	20	1	29	37	119	0	1	157	0	5	0	2	7	2	68	11	2	83	276
03:45 PM	7	0	21	6	34	56	128	3	0	187	0	2	2	1	5	1	92	11	3	107	333
Total	37	0	80	17	134	190	486	5	3	684	1	14	5	9	29	3	287	59	10	359	1206
04:00 PM	6	0	25	4	35	47	122	1	5	175	0	10	5	2	17	0	74	13	12	99	326
04:15 PM	10	0	14	3	27	51	145	0	1	197	1	5	6	0	12	0	68	10	9	87	323
04:30 PM	10	0	21	5	36	40	97	2	1	140	0	2	3	3	8	0	75	16	5	96	280
04:45 PM	6	0	19	4	29	38	92	1	4	135	0	4	2	0	6	0	57	6	3	66	236
Total	32	0	79	16	127	176	456	4	11	647	1	21	16	5	43	0	274	45	29	348	1165
05:00 PM	8	0	17	5	30	29	107	0	4	140	0	2	0	4	6	0	58	12	1	71	247
05:15 PM	7	0	17	2	26	40	82	0	2	124	1	2	1	5	9	0	38	8	1	47	206
05:30 PM	6	0	8	2	16	16	59	0	1	76	0	1	1	2	4	0	40	9	1	50	146
05:45 PM	3	0	21	3	27	21	39	0	2	62	0	0	0	1	1	0	33	12	2	47	137
Total	24	0	63	12	99	106	287	0	9	402	1	5	2	12	20	0	169	41	5	215	736
Grand Total	156	27	441	60	684	671	1704	10	32	2417	9	41	23	31	104	23	1512	210	47	1792	4997
Apprch %	22.8	3.9	64.5	8.8		27.8	70.5	0.4	1.3		8.7	39.4	22.1	29.8		1.3	84.4	11.7	2.6		
Total %	3.1	0.5	8.8	1.2	13.7	13.4	34.1	0.2	0.6	48.4	0.2	0.8	0.5	0.6	2.1	0.5	30.3	4.2	0.9	35.9	
Cars	150	27	407	60	644	647	1667	10	32	2356	9	41	23	31	104	23	1473	207	47	1750	4854
% Cars	96.2	100	92.3	100	94.2	96.4	97.8	100	100	97.5	100	100	100	100	100	100	97.4	98.6	100	97.7	97.1

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A. MacDonald Blvd and King St

Site Code : 00000000

Start Date : 11/24/2020

Page No : 2

Groups Printed- Cars - Trucks - Heavys - Cyclists

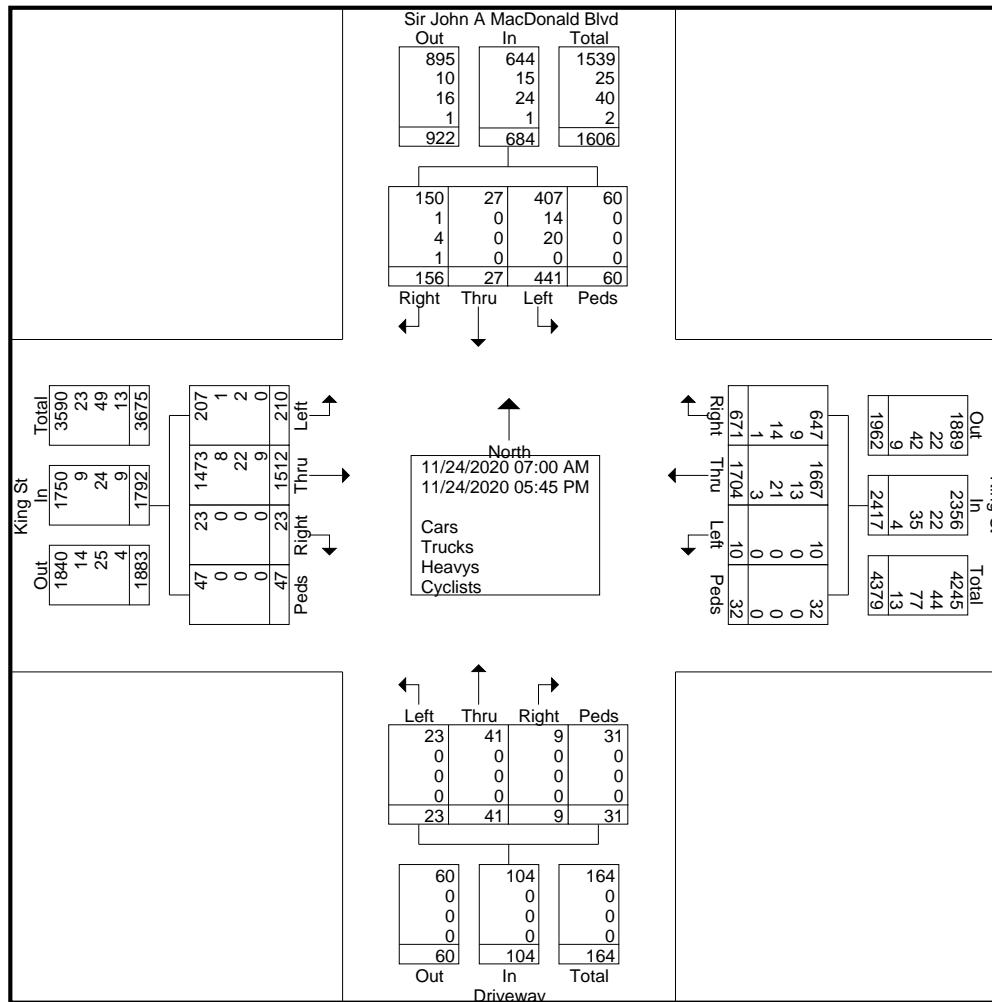
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	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru				
Trucks	1	0	14	0	15	9	13	0	0	22	0	0	0	0	0	0	8	1	0	9	46
% Trucks	0.6	0	3.2	0	2.2	1.3	0.8	0	0	0.9	0	0	0	0	0	0	0.5	0.5	0	0.5	0.9
Heavys	4	0	20	0	24	14	21	0	0	35	0	0	0	0	0	0	22	2	0	24	83
% Heavys	2.6	0	4.5	0	3.5	2.1	1.2	0	0	1.4	0	0	0	0	0	0	1.5	1	0	1.3	1.7
Cyclists	1	0	0	0	1	1	3	0	0	4	0	0	0	0	0	0	9	0	0	9	14
% Cyclists	0.6	0	0	0	0.1	0.1	0.2	0	0	0.2	0	0	0	0	0	0	0.6	0	0	0.5	0.3

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File Name : Sir John A. MacDonald Blvd and King St
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Page No : 4

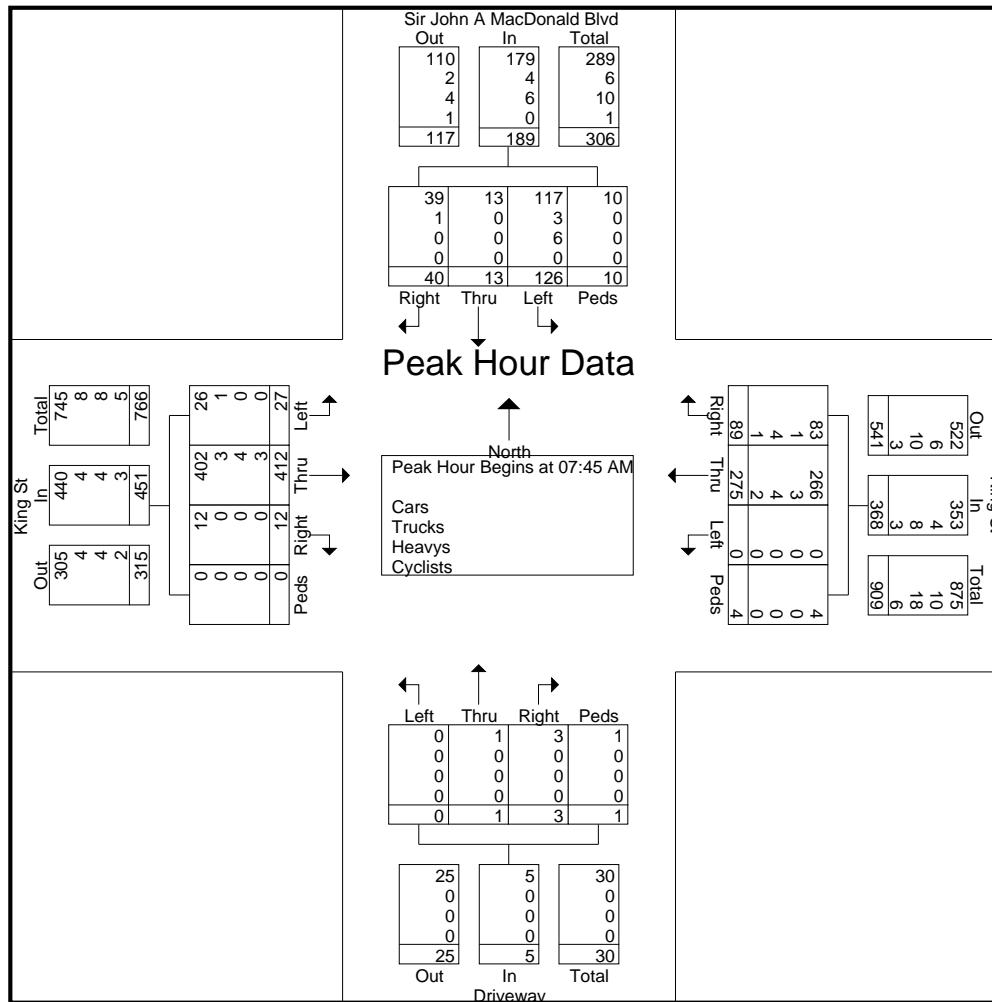
	Sir John A MacDonald Blvd Southbound					King St Westbound				Driveway Northbound				King St Eastbound				Int. Total			
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds		
Start Time																					
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	10	4	36	4	54	25	69	0	1	95	1	1	0	0	2	7	102	5	0	114	265
08:00 AM	8	5	39	3	55	30	69	0	3	102	0	0	0	1	1	2	110	4	0	116	274
08:15 AM	12	2	19	2	35	15	77	0	0	92	2	0	0	0	2	1	107	11	0	119	248
08:30 AM	10	2	32	1	45	19	60	0	0	79	0	0	0	0	0	2	93	7	0	102	226
Total Volume	40	13	126	10	189	89	275	0	4	368	3	1	0	1	5	12	412	27	0	451	1013
% App. Total	21.2	6.9	66.7	5.3		24.2	74.7	0	1.1		60	20	0	20		2.7	91.4	6	0		
PHF	.833	.650	.808	.625	.859	.742	.893	.000	.333	.902	.375	.250	.000	.250	.625	.429	.936	.614	.000	.947	.924
Cars	39	13	117	10	179	83	266	0	4	353	3	1	0	1	5	12	402	26	0	440	977
% Cars	97.5	100	92.9	100	94.7	93.3	96.7	0	100	95.9	100	100	0	100	100	100	97.6	96.3	0	97.6	96.4
Trucks	1	0	3	0	4	1	3	0	0	4	0	0	0	0	0	0	3	1	0	4	12
% Trucks	2.5	0	2.4	0	2.1	1.1	1.1	0	0	1.1	0	0	0	0	0	0	0.7	3.7	0	0.9	1.2
Heavys	0	0	6	0	6	4	4	0	0	8	0	0	0	0	0	0	4	0	0	4	18
% Heavys	0	0	4.8	0	3.2	4.5	1.5	0	0	2.2	0	0	0	0	0	0	1.0	0	0	0.9	1.8
Cyclists	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	3	0	0	3	6
% Cyclists	0	0	0	0	0	1.1	0.7	0	0	0.8	0	0	0	0	0	0	0.7	0	0	0.7	0.6

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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A. MacDonald Blvd and King St
Site Code : 00000000
Start Date : 11/24/2020
Page No : 5

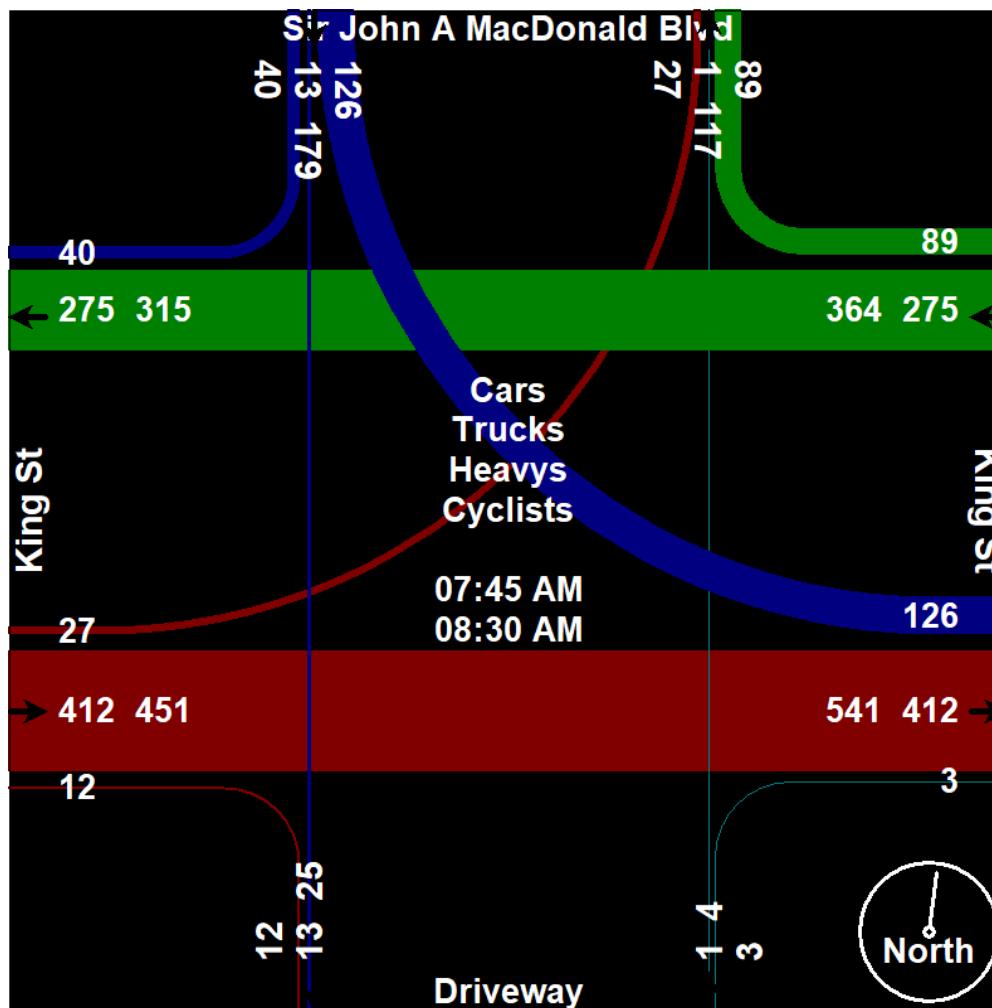


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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A. MacDonald Blvd and King St
Site Code : 00000000
Start Date : 11/24/2020
Page No : 6



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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A. MacDonald Blvd and King St
Site Code : 00000000
Start Date : 11/24/2020
Page No : 7

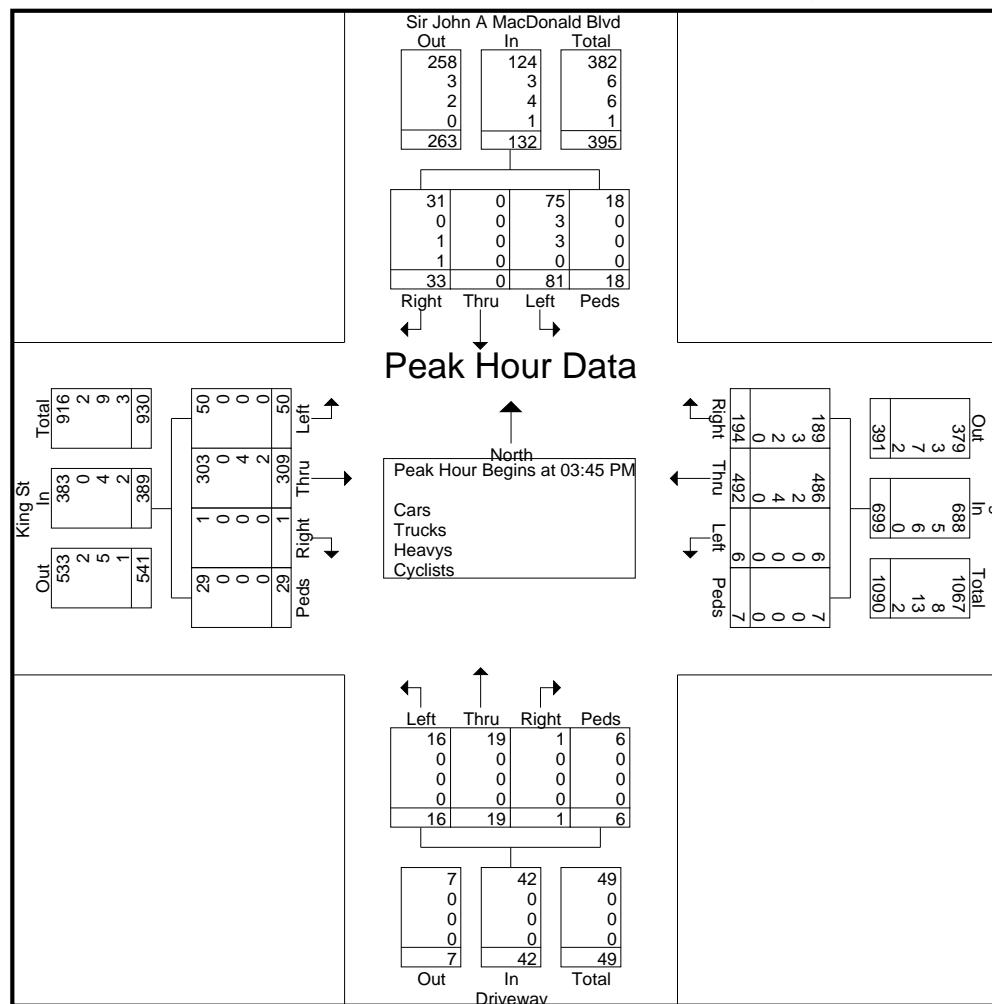
	Sir John A MacDonald Blvd Southbound					King St Westbound					Driveway Northbound					King St Eastbound					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	7	0	21	6	34	56	128	3	0	187	0	2	2	1	5	1	92	11	3	107	333
04:00 PM	6	0	25	4	35	47	122	1	5	175	0	10	5	2	17	0	74	13	12	99	326
04:15 PM	10	0	14	3	27	51	145	0	1	197	1	5	6	0	12	0	68	10	9	87	323
04:30 PM	10	0	21	5	36	40	97	2	1	140	0	2	3	3	8	0	75	16	5	96	280
Total Volume	33	0	81	18	132	194	492	6	7	699	1	19	16	6	42	1	309	50	29	389	1262
% App. Total	25	0	61.4	13.6		27.8	70.4	0.9	1		2.4	45.2	38.1	14.3		0.3	79.4	12.9	7.5		
PHF	.825	.000	.810	.750	.917	.866	.848	.500	.350	.887	.250	.475	.667	.500	.618	.250	.840	.781	.604	.909	.947
Cars	31	0	75	18	124	189	486	6	7	688	1	19	16	6	42	1	303	50	29	383	1237
% Cars	93.9	0	92.6	100	93.9	97.4	98.8	100	100	98.4	100	100	100	100	100	100	98.1	100	100	98.5	98.0
Trucks	0	0	3	0	3	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0	8
% Trucks	0	0	3.7	0	2.3	1.5	0.4	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0.6
Heavys	1	0	3	0	4	2	4	0	0	6	0	0	0	0	0	0	4	0	0	4	14
% Heavys	3.0	0	3.7	0	3.0	1.0	0.8	0	0	0.9	0	0	0	0	0	0	1.3	0	0	1.0	1.1
Cyclists	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	3
% Cyclists	3.0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.5	0.2

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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A. MacDonald Blvd and King St
Site Code : 00000000
Start Date : 11/24/2020
Page No : 8

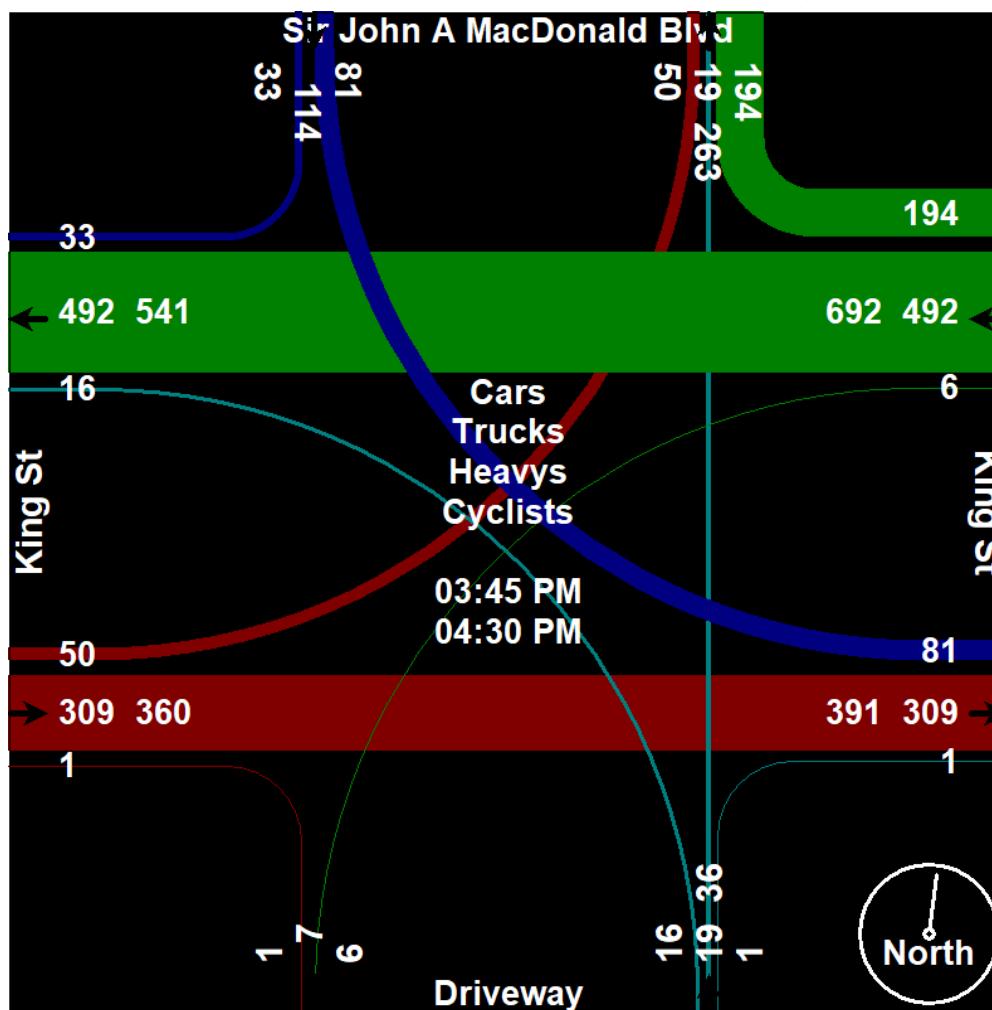


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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A. MacDonald Blvd and King St
Site Code : 00000000
Start Date : 11/24/2020
Page No : 9



Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 1

Groups Printed- Cars - Trucks - Heavys - Cyclists

	Sir John A MacDonald Blvd Southbound					Union St Westbound				Sir John A MacDonald Blvd Northbound					Union St Eastbound					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	14	27	41	3	85	19	10	0	2	31	2	42	2	4	50	1	14	11	0	26	192
07:15 AM	16	38	45	4	103	21	6	1	2	30	3	40	2	0	45	0	22	12	0	34	212
07:30 AM	17	42	57	3	119	14	10	0	10	34	2	25	0	1	28	2	41	20	0	63	244
07:45 AM	29	47	58	7	141	25	21	0	1	47	2	27	2	2	33	2	47	22	4	75	296
Total	76	154	201	17	448	79	47	1	15	142	9	134	6	7	156	5	124	65	4	198	944
08:00 AM	15	47	56	8	126	26	27	0	2	55	3	25	4	0	32	4	44	11	0	59	272
08:15 AM	17	31	51	2	101	55	33	1	1	90	4	19	3	0	26	1	44	16	0	61	278
08:30 AM	22	45	37	7	111	15	19	2	2	38	1	22	0	1	24	1	36	11	0	48	221
08:45 AM	15	25	42	2	84	16	19	2	0	37	1	27	5	0	33	1	29	6	0	36	190
Total	69	148	186	19	422	112	98	5	5	220	9	93	12	1	115	7	153	44	0	204	961
03:00 PM	23	31	26	6	86	46	35	1	2	84	1	80	3	3	87	1	15	15	3	34	291
03:15 PM	26	24	26	5	81	49	32	0	3	84	1	52	2	1	56	1	21	20	1	43	264
03:30 PM	19	23	17	9	68	41	40	2	2	85	1	53	1	0	55	1	18	19	0	38	246
03:45 PM	21	29	23	9	82	58	30	1	4	93	2	66	3	0	71	1	16	20	1	38	284
Total	89	107	92	29	317	194	137	4	11	346	5	251	9	4	269	4	70	74	5	153	1085
04:00 PM	15	25	16	10	66	57	50	1	11	119	0	65	0	1	66	2	28	13	1	44	295
04:15 PM	17	21	13	4	55	68	43	1	16	128	0	67	1	4	72	1	15	22	1	39	294
04:30 PM	16	31	21	11	79	45	51	0	1	97	0	60	1	1	62	1	16	18	2	37	275
04:45 PM	16	24	25	9	74	34	32	1	2	69	1	45	1	3	50	1	14	11	0	26	219
Total	64	101	75	34	274	204	176	3	30	413	1	237	3	9	250	5	73	64	4	146	1083
05:00 PM	19	21	24	3	67	38	31	2	2	73	3	37	0	1	41	2	9	11	1	23	204
05:15 PM	20	22	12	2	56	34	27	2	0	63	0	45	5	0	50	1	13	11	0	25	194
05:30 PM	13	9	11	11	44	22	18	1	1	42	2	23	1	0	26	2	12	14	0	28	140
05:45 PM	9	22	16	6	53	31	12	1	5	49	1	29	4	1	35	0	7	3	0	10	147
Total	61	74	63	22	220	125	88	6	8	227	6	134	10	2	152	5	41	39	1	86	685
Grand Total	359	584	617	121	1681	714	546	19	69	1348	30	849	40	23	942	26	461	286	14	787	4758
Apprch %	21.4	34.7	36.7	7.2		53	40.5	1.4	5.1		3.2	90.1	4.2	2.4		3.3	58.6	36.3	1.8		
Total %	7.5	12.3	13	2.5	35.3	15	11.5	0.4	1.5	28.3	0.6	17.8	0.8	0.5	19.8	0.5	9.7	6	0.3	16.5	
Cars	355	559	596	121	1631	698	504	18	69	1289	29	826	29	23	907	15	432	284	14	745	4572
% Cars	98.9	95.7	96.6	100	97	97.8	92.3	94.7	100	95.6	96.7	97.3	72.5	100	96.3	57.7	93.7	99.3	100	94.7	96.1

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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A MacDonald Blvd and Union Street

Site Code : 00000000

Start Date : 11/24/2020

Page No : 2

Groups Printed- Cars - Trucks - Heavys - Cyclists

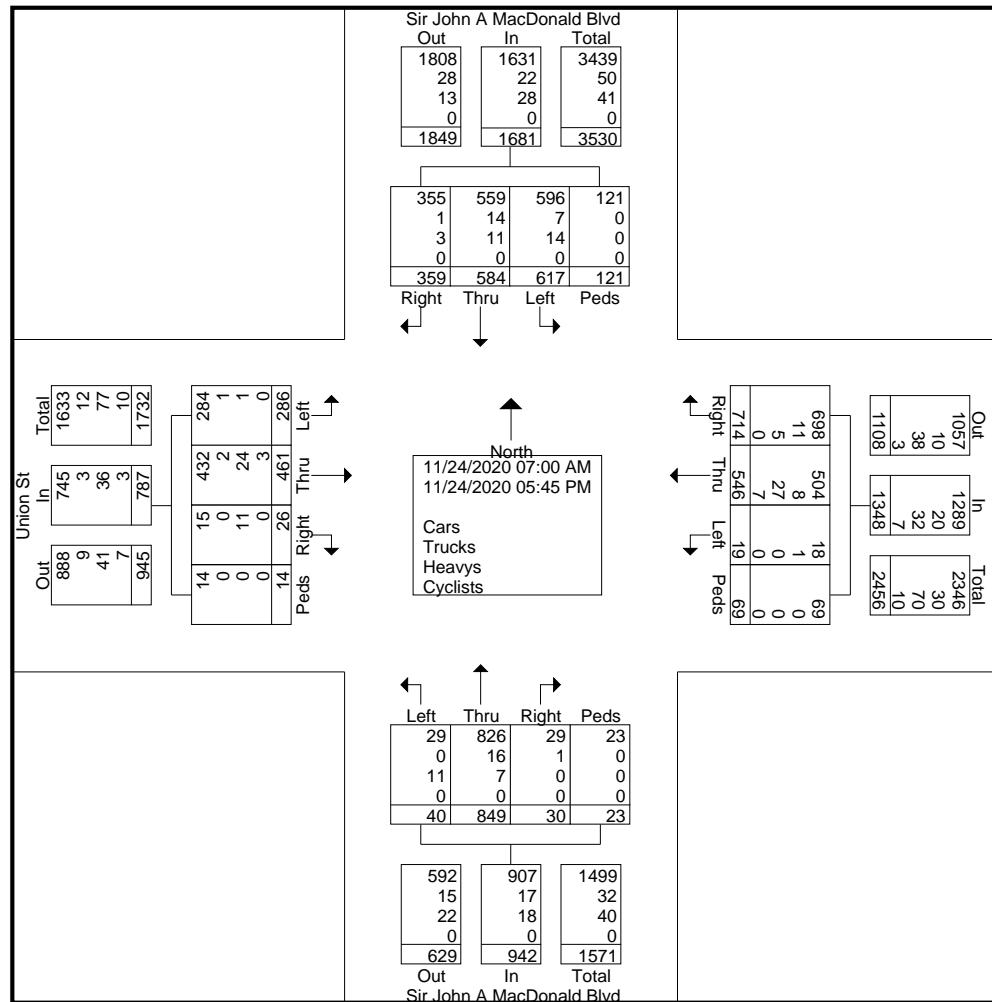
	Sir John A MacDonald Blvd Southbound					Union St Westbound				Sir John A MacDonald Blvd Northbound					Union St Eastbound						
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Trucks	1	14	7	0	22	11	8	1	0	20	1	16	0	0	17	0	2	1	0	3	62
% Trucks	0.3	2.4	1.1	0	1.3	1.5	1.5	5.3	0	1.5	3.3	1.9	0	0	1.8	0	0.4	0.3	0	0.4	1.3
Heavys	3	11	14	0	28	5	27	0	0	32	0	7	11	0	18	11	24	1	0	36	114
% Heavys	0.8	1.9	2.3	0	1.7	0.7	4.9	0	0	2.4	0	0.8	27.5	0	1.9	42.3	5.2	0.3	0	4.6	2.4
Cyclists	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	3	0	0	3	10
% Cyclists	0	0	0	0	0	0	1.3	0	0	0.5	0	0	0	0	0	0	0.7	0	0	0.4	0.2

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318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 3



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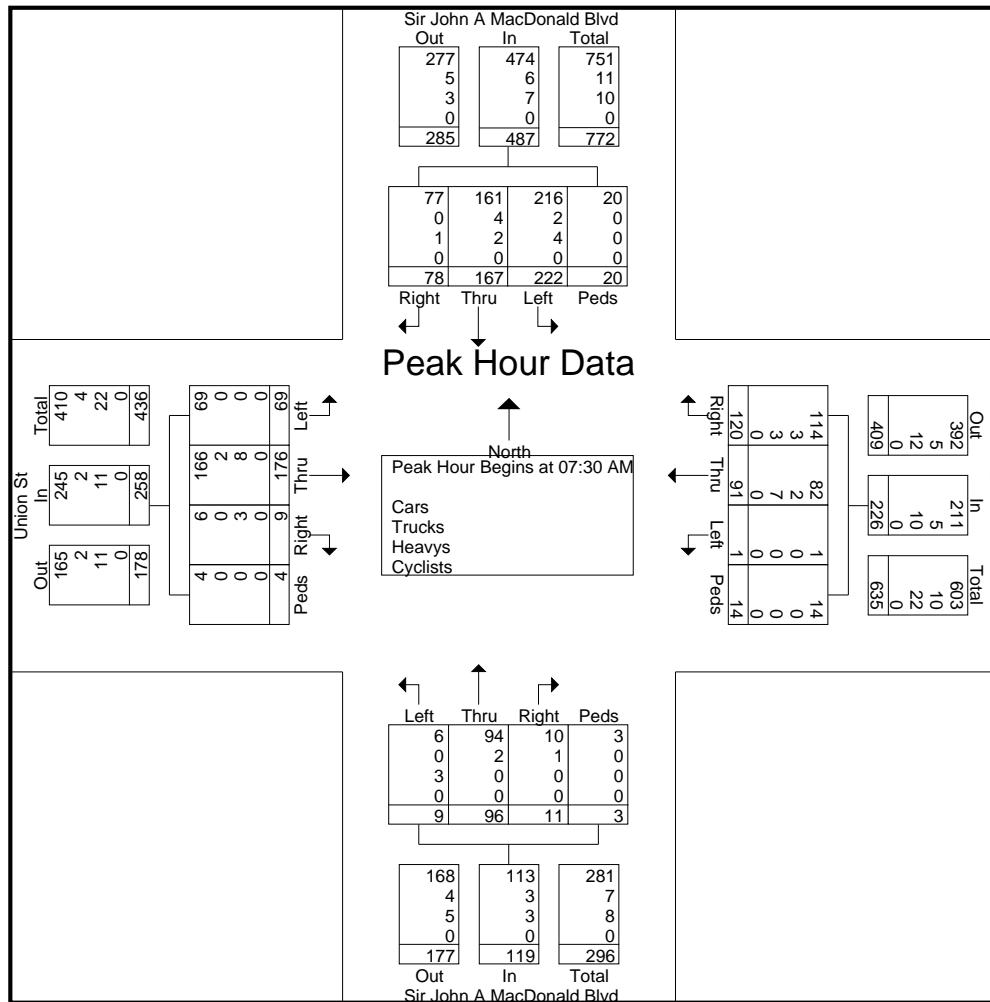
File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 4

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 5

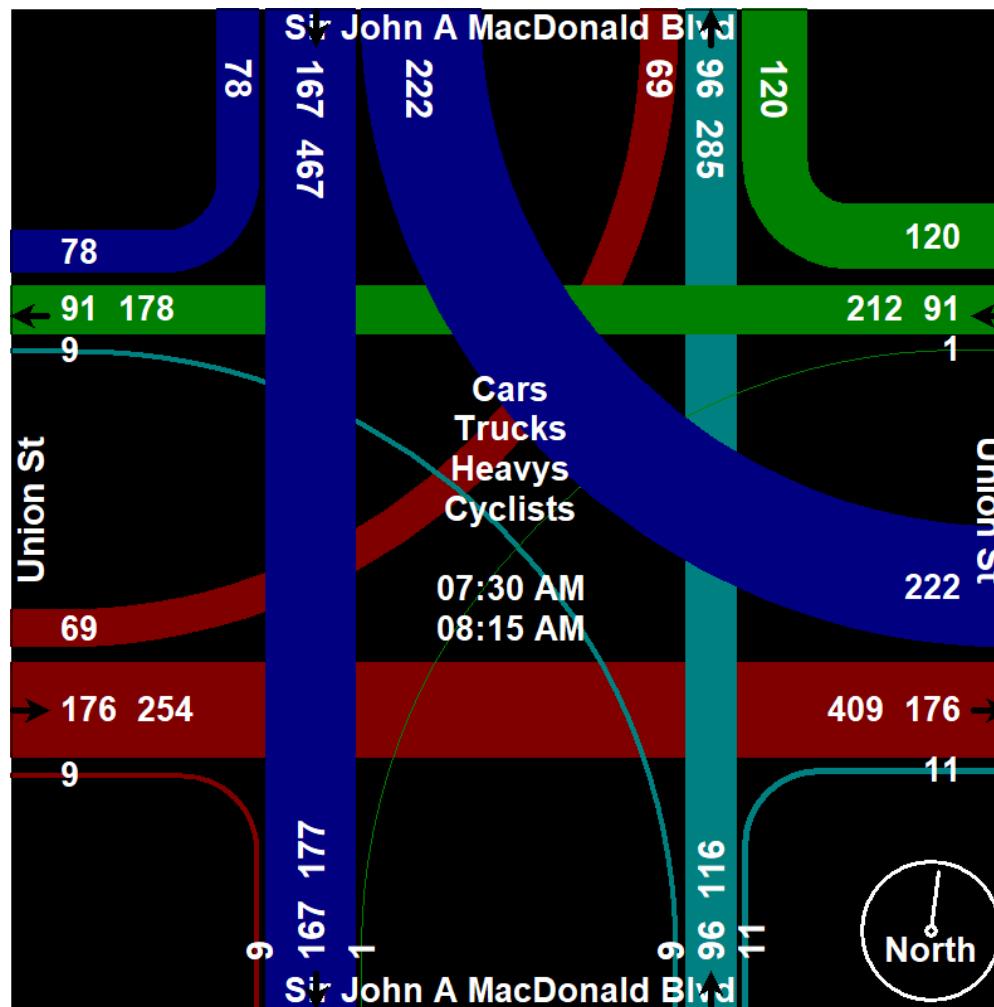


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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 6



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318 Simonston Blvd
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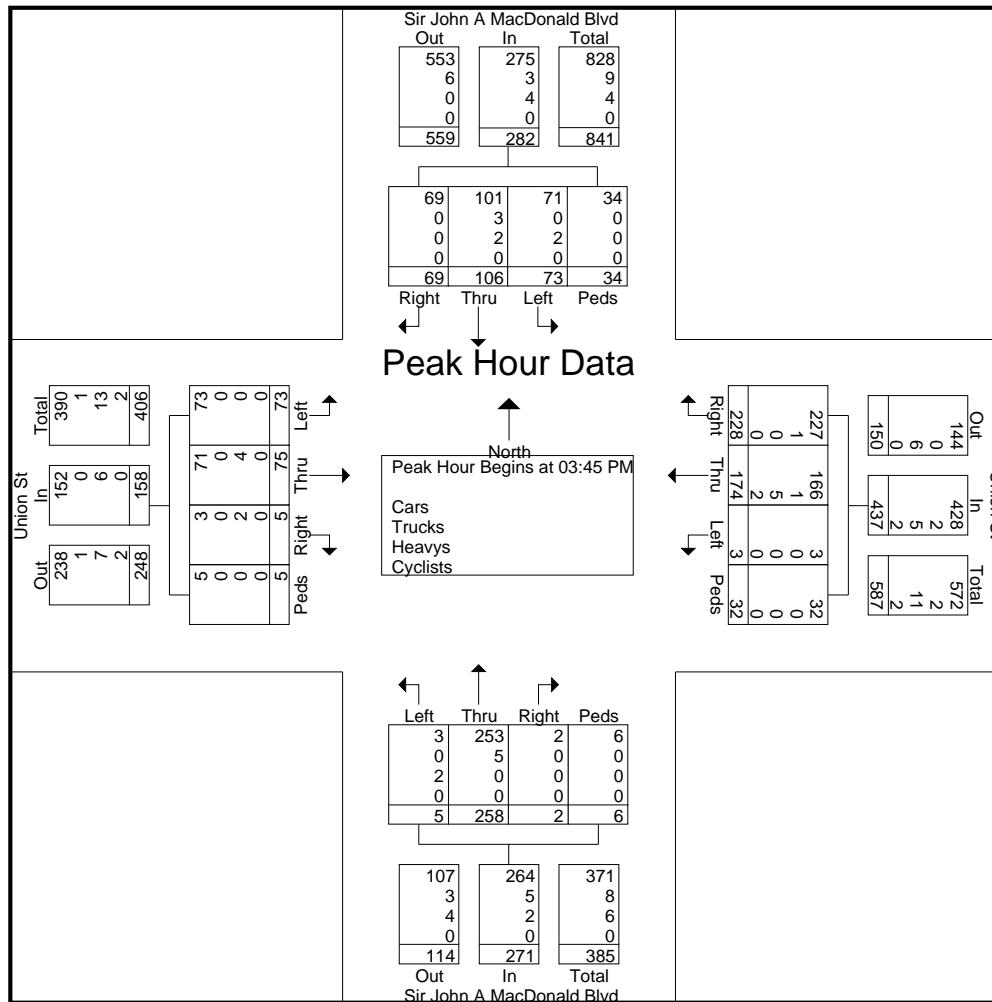
File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 7

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 8

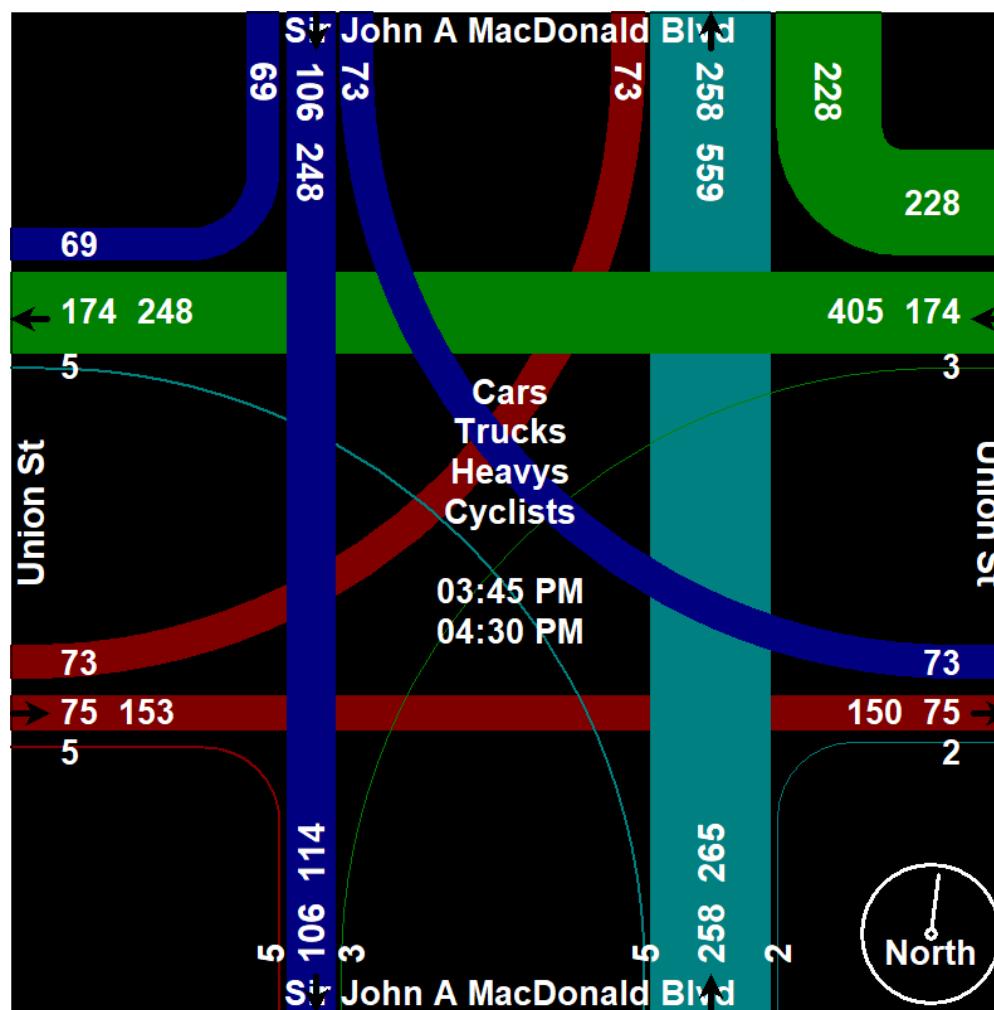


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318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and Union Street
Site Code : 00000000
Start Date : 11/24/2020
Page No : 9



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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 1

Groups Printed- Cars - Trucks - Heavys - Cyclists

	Campus Lane Southbound					Union St W Westbound				Driveway Northbound				Union St W Eastbound				Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
Start Time																		
07:00 AM	2	0	1	1	4	0	25	0	0	25	0	0	0	1	1	0	25	55
07:15 AM	0	0	2	4	6	0	24	0	1	25	0	0	0	1	1	0	30	31
07:30 AM	1	0	2	2	5	3	23	0	1	27	0	0	0	0	0	1	62	66
07:45 AM	0	0	3	2	5	3	50	0	1	54	0	0	0	0	0	0	68	68
Total	3	0	8	9	20	6	122	0	3	131	0	0	0	2	2	1	184	343
08:00 AM	0	0	5	0	5	2	45	0	0	47	0	0	0	1	1	0	59	60
08:15 AM	1	0	2	1	4	3	50	0	0	53	0	0	0	0	0	0	55	113
08:30 AM	0	0	1	2	3	2	39	0	0	41	0	0	0	1	1	0	45	90
08:45 AM	0	1	3	1	5	5	34	0	0	39	0	0	0	0	0	0	34	82
Total	1	1	11	4	17	12	168	0	0	180	0	0	0	2	2	0	193	397
03:00 PM	1	0	0	5	6	4	58	0	1	63	0	1	0	0	1	0	32	33
03:15 PM	3	0	2	1	6	3	56	0	0	59	0	0	0	1	1	0	39	41
03:30 PM	3	0	2	4	9	1	60	0	0	61	0	0	0	0	0	0	35	107
03:45 PM	1	0	5	6	12	1	55	0	2	58	0	0	0	0	0	0	34	108
Total	8	0	9	16	33	9	229	0	3	241	0	1	0	1	2	0	140	425
04:00 PM	3	0	2	4	9	5	63	0	1	69	0	0	0	0	0	0	40	40
04:15 PM	2	0	1	2	5	1	57	0	2	60	0	1	0	2	3	0	39	107
04:30 PM	4	0	0	3	7	5	63	0	0	68	0	0	0	2	2	0	33	115
04:45 PM	1	0	1	4	6	4	44	0	1	49	0	0	0	3	3	0	27	87
Total	10	0	4	13	27	15	227	0	4	246	0	1	0	7	8	0	139	427
05:00 PM	1	0	0	0	1	1	52	0	1	54	0	0	0	1	1	0	26	29
05:15 PM	0	0	0	2	2	0	52	0	0	52	0	0	0	1	1	0	26	81
05:30 PM	1	0	3	6	10	4	27	0	0	31	0	0	0	0	0	0	24	65
05:45 PM	1	0	0	0	1	1	24	0	1	26	0	0	0	0	0	0	11	39
Total	3	0	3	8	14	6	155	0	2	163	0	0	0	2	2	0	87	270
Grand Total	25	1	35	50	111	48	901	0	12	961	0	2	0	14	16	1	743	1862
Apprch %	22.5	0.9	31.5	45		5	93.8	0	1.2		0	12.5	0	87.5		0.1	96	0.8
Total %	1.3	0.1	1.9	2.7	6	2.6	48.4	0	0.6	51.6	0	0.1	0	0.8	0.9	0.1	39.9	41.6
Cars	25	1	33	50	109	43	848	0	12	903	0	2	0	14	16	1	703	1761
% Cars	100	100	94.3	100	98.2	89.6	94.1	0	100	94	0	100	0	100	100	100	94.6	94.6

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 2

Groups Printed- Cars - Trucks - Heavys - Cyclists

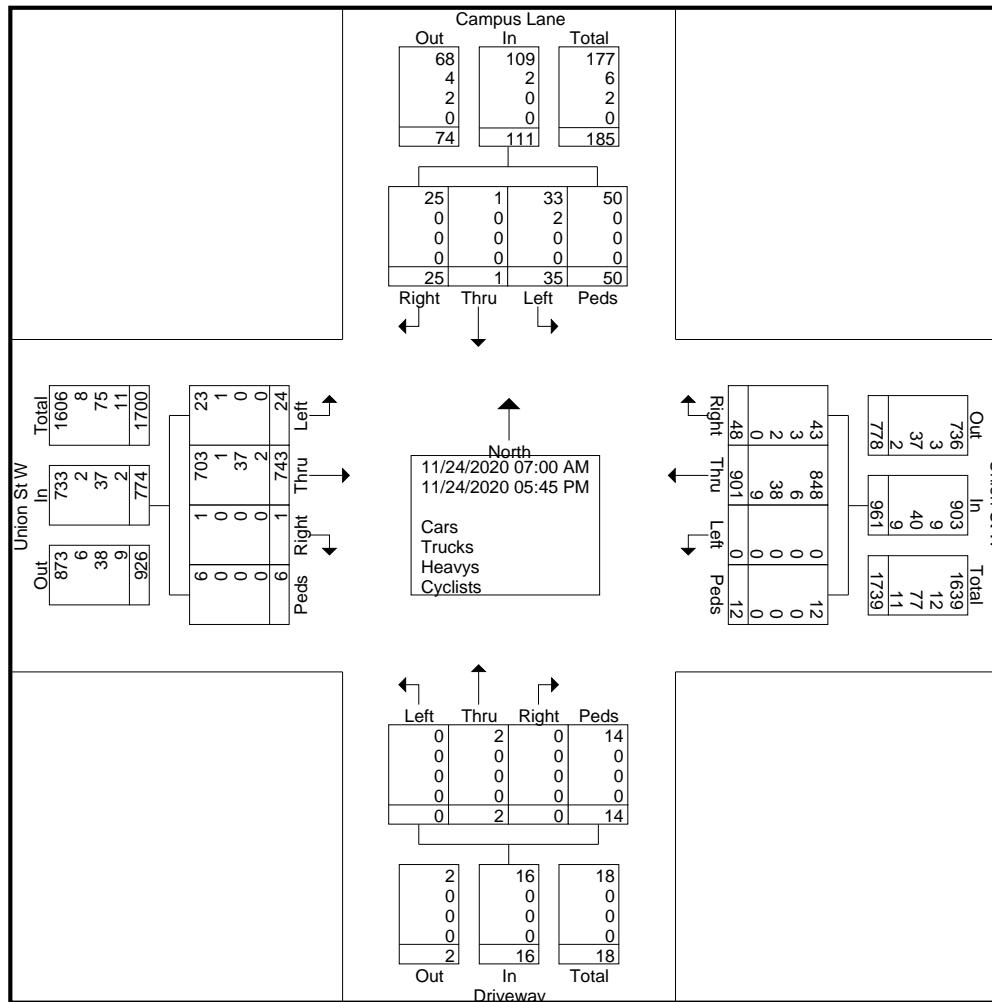
	Campus Lane Southbound					Union St W Westbound				Driveway Northbound				Union St W Eastbound							
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Trucks	0	0	2	0	2	3	6	0	0	9	0	0	0	0	0	0	1	1	0	2	13
% Trucks	0	0	5.7	0	1.8	6.2	0.7	0	0	0.9	0	0	0	0	0	0	0.1	4.2	0	0.3	0.7
Heavys	0	0	0	0	0	2	38	0	0	40	0	0	0	0	0	0	37	0	0	0	77
% Heavys	0	0	0	0	0	4.2	4.2	0	0	4.2	0	0	0	0	0	0	5	0	0	4.8	4.1
Cyclists	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	2	0	0	2	11
% Cyclists	0	0	0	0	0	0	1	0	0	0.9	0	0	0	0	0	0	0.3	0	0	0.3	0.6

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318 Simonston Blvd
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File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 3



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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 4

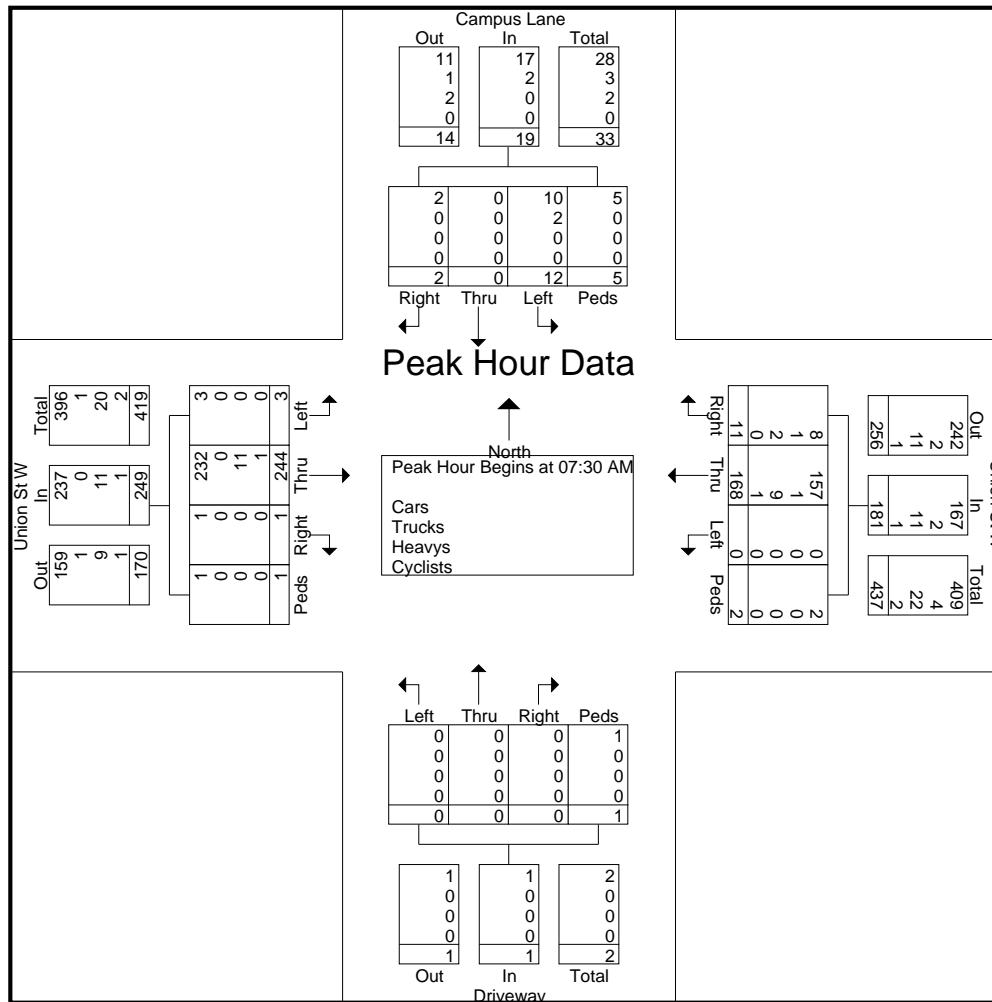
	Campus Lane Southbound					Union St W Westbound					Driveway Northbound					Union St W Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	1	0	2	2	5	3	23	0	1	27	0	0	0	0	0	1	62	2	1	66	98
07:45 AM	0	0	3	2	5	3	50	0	1	54	0	0	0	0	0	0	68	0	0	68	127
08:00 AM	0	0	5	0	5	2	45	0	0	47	0	0	0	1	1	0	59	1	0	60	113
08:15 AM	1	0	2	1	4	3	50	0	0	53	0	0	0	0	0	0	55	0	0	55	112
Total Volume	2	0	12	5	19	11	168	0	2	181	0	0	0	1	1	1	244	3	1	249	450
% App. Total	10.5	0	63.2	26.3		6.1	92.8	0	1.1		0	0	0	100		0.4	98	1.2	0.4		
PHF	.500	.000	.600	.625	.950	.917	.840	.000	.500	.838	.000	.000	.000	.250	.250	.250	.897	.375	.250	.915	.886
Cars	2	0	10	5	17	8	157	0	2	167	0	0	0	1	1	1	232	3	1	237	422
% Cars	100	0	83.3	100	89.5	72.7	93.5	0	100	92.3	0	0	0	100	100	100	95.1	100	100	95.2	93.8
Trucks	0	0	2	0	2	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
% Trucks	0	0	16.7	0	10.5	9.1	0.6	0	0	1.1	0	0	0	0	0	0	0	0	0	0	0.9
Heavys	0	0	0	0	0	2	9	0	0	11	0	0	0	0	0	0	11	0	0	11	22
% Heavys	0	0	0	0	0	18.2	5.4	0	0	6.1	0	0	0	0	0	0	4.5	0	0	4.4	4.9
Cyclists	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
% Cyclists	0	0	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0	0.4	0	0	0.4	0.4

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 5

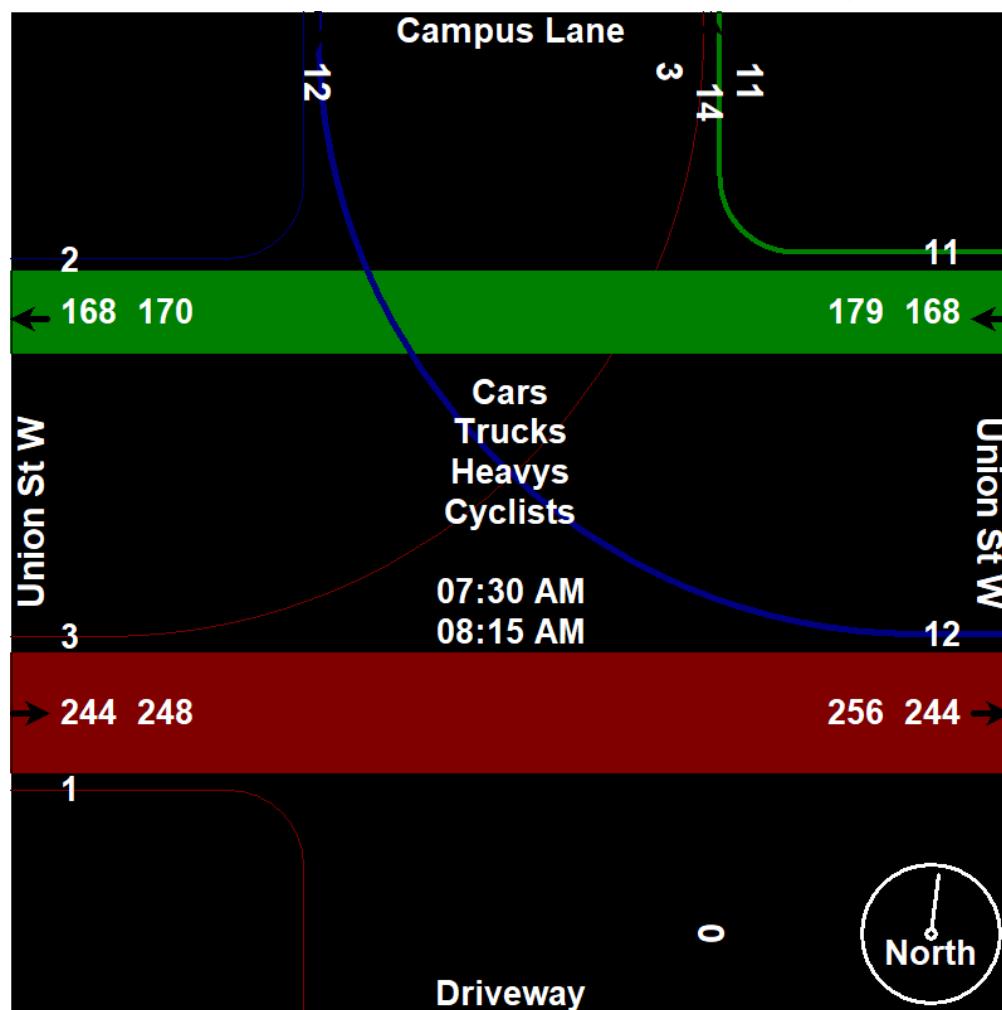


Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 6



Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

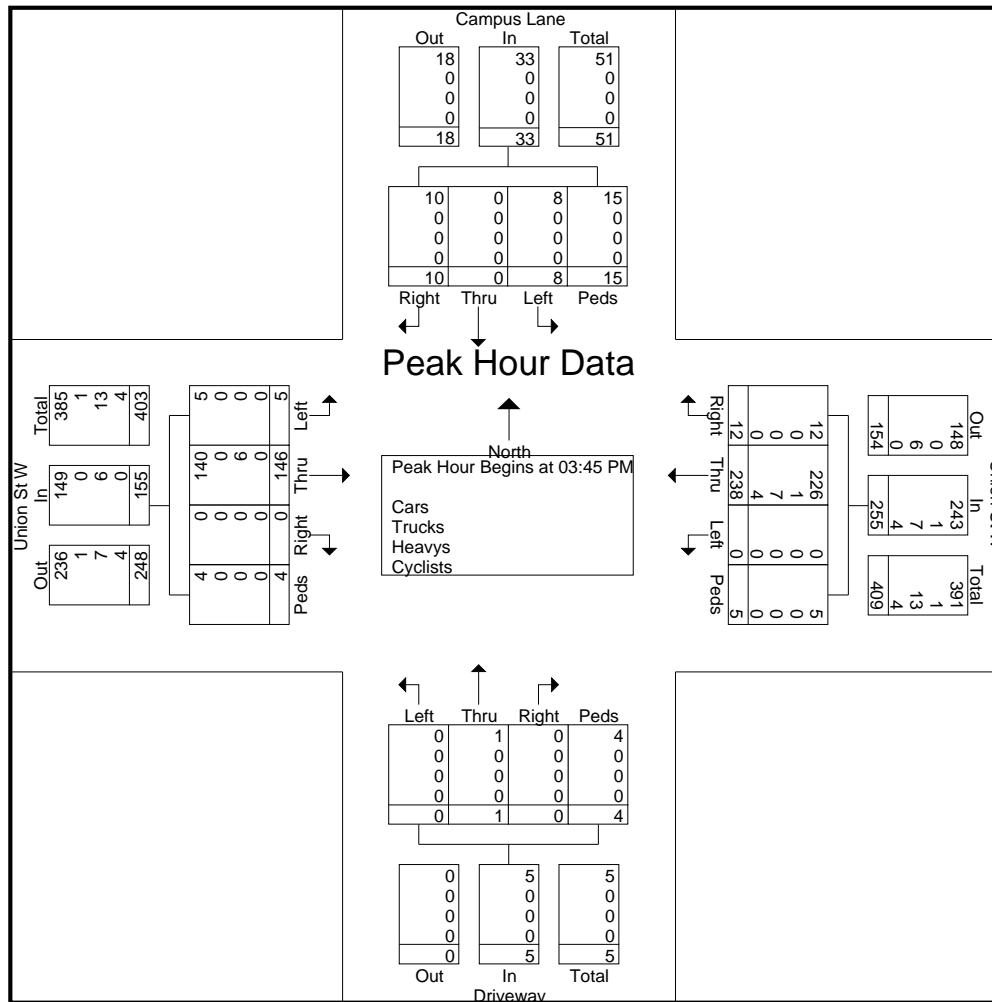
File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 7

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 8

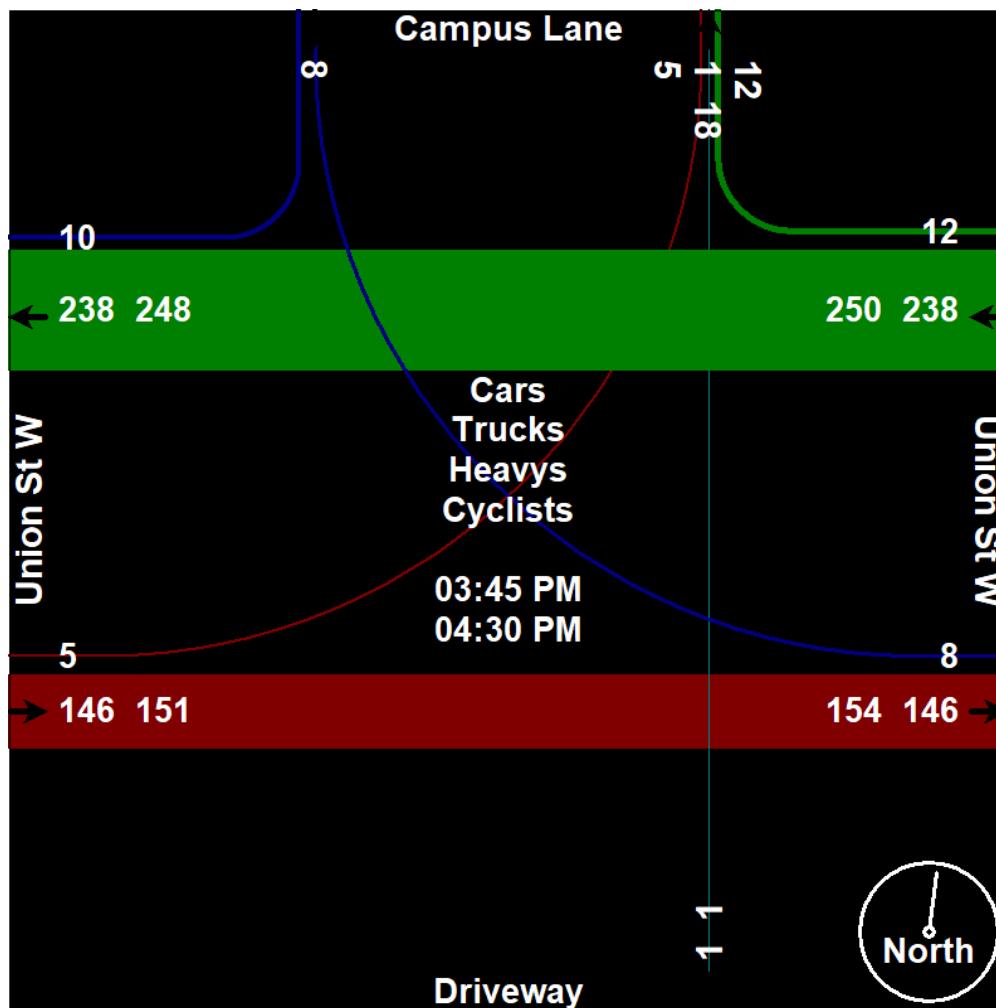


Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Union Street West and Campus Lane
Site Code : 00000000
Start Date : 11/24/2020
Page No : 9



Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 1

Groups Printed- Cars - Trucks - Heavys - Cyclists

	Sir John A MacDonald Blvd Southbound					East Parking Lot Access Westbound					Sir John A MacDonald Blvd Northbound					Eastbound					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Start Time																					
07:00 AM	0	27	0	0	27	0	0	0	0	0	0	47	0	0	47	0	0	0	0	0	74
07:15 AM	0	39	0	0	39	0	0	0	2	2	0	45	0	0	45	0	0	0	0	0	86
07:30 AM	0	44	0	0	44	0	0	0	0	0	0	37	0	0	37	0	0	0	0	0	81
07:45 AM	0	49	0	0	49	0	0	0	3	3	1	31	0	0	32	0	0	0	0	0	84
Total	0	159	0	0	159	0	0	0	5	5	1	160	0	0	161	0	0	0	0	0	325
08:00 AM	0	51	0	0	51	0	0	0	3	3	0	34	0	0	34	0	0	0	0	0	88
08:15 AM	0	32	0	0	32	0	0	0	2	2	0	26	0	0	26	0	0	0	0	0	60
08:30 AM	0	48	0	0	48	0	0	0	3	3	0	25	0	0	25	0	0	0	0	0	76
08:45 AM	0	29	0	0	29	0	0	0	1	1	0	31	0	0	31	0	0	0	0	0	61
Total	0	160	0	0	160	0	0	0	9	9	0	116	0	0	116	0	0	0	0	0	285
03:00 PM	0	34	0	0	34	0	0	0	2	2	0	85	0	0	85	0	0	0	0	0	121
03:15 PM	0	24	0	0	24	0	0	0	3	3	0	57	0	0	57	0	0	0	0	0	84
03:30 PM	0	27	0	0	27	0	0	0	5	5	0	54	0	0	54	0	0	0	0	0	86
03:45 PM	0	29	0	0	29	0	0	0	6	6	0	68	0	0	68	0	0	0	0	0	103
Total	0	114	0	0	114	0	0	0	16	16	0	264	0	0	264	0	0	0	0	0	394
04:00 PM	0	30	0	0	30	0	0	0	4	4	0	70	0	0	70	0	0	0	0	0	104
04:15 PM	0	23	0	0	23	1	0	0	7	8	1	65	0	0	66	0	0	0	0	0	97
04:30 PM	0	32	0	2	34	0	0	0	2	2	1	60	0	0	61	0	0	0	0	0	97
04:45 PM	0	25	0	0	25	0	0	0	3	3	0	48	0	0	48	0	0	0	0	0	76
Total	0	110	0	2	112	1	0	0	16	17	2	243	0	0	245	0	0	0	0	0	374
05:00 PM	0	24	0	0	24	0	0	0	2	2	0	41	0	0	41	0	0	0	0	0	67
05:15 PM	0	24	0	0	24	1	0	0	3	4	2	49	0	0	51	0	0	0	0	0	79
05:30 PM	0	14	0	0	14	0	0	0	0	0	0	26	0	0	26	0	0	0	0	0	40
05:45 PM	0	24	0	0	24	0	0	0	5	5	0	33	0	0	33	0	0	0	0	0	62
Total	0	86	0	0	86	1	0	0	10	11	2	149	0	0	151	0	0	0	0	0	248
Grand Total	0	629	0	2	631	2	0	0	56	58	5	932	0	0	937	0	0	0	0	0	1626
Apprch %	0	99.7	0	0.3		3.4	0	0	96.6		0.5	99.5	0	0		0	0	0	0	0	
Total %	0	38.7	0	0.1	38.8	0.1	0	0	3.4	3.6	0.3	57.3	0	0	57.6	0	0	0	0	0	
Cars	0	592	0	2	594	2	0	0	56	58	5	903	0	0	908	0	0	0	0	0	1560
% Cars	0	94.1	0	100	94.1	100	0	0	100	100	100	96.9	0	0	96.9	0	0	0	0	0	95.9

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

File Name : Sir John A MacDonald Blvd and East Parking Lot Access

Site Code : 00000000

Start Date : 11/24/2020

Page No : 2

Groups Printed- Cars - Trucks - Heavys - Cyclists

	Sir John A MacDonald Blvd Southbound					East Parking Lot Access Westbound					Sir John A MacDonald Blvd Northbound					Eastbound					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Trucks	0	15	0	0	15	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	25
% Trucks	0	2.4	0	0	2.4	0	0	0	0	0	0	1.1	0	0	1.1	0	0	0	0	0	1.5
Heavys	0	22	0	0	22	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	40
% Heavys	0	3.5	0	0	3.5	0	0	0	0	0	0	1.9	0	0	1.9	0	0	0	0	0	2.5
Cyclists	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Cyclists	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0.1

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

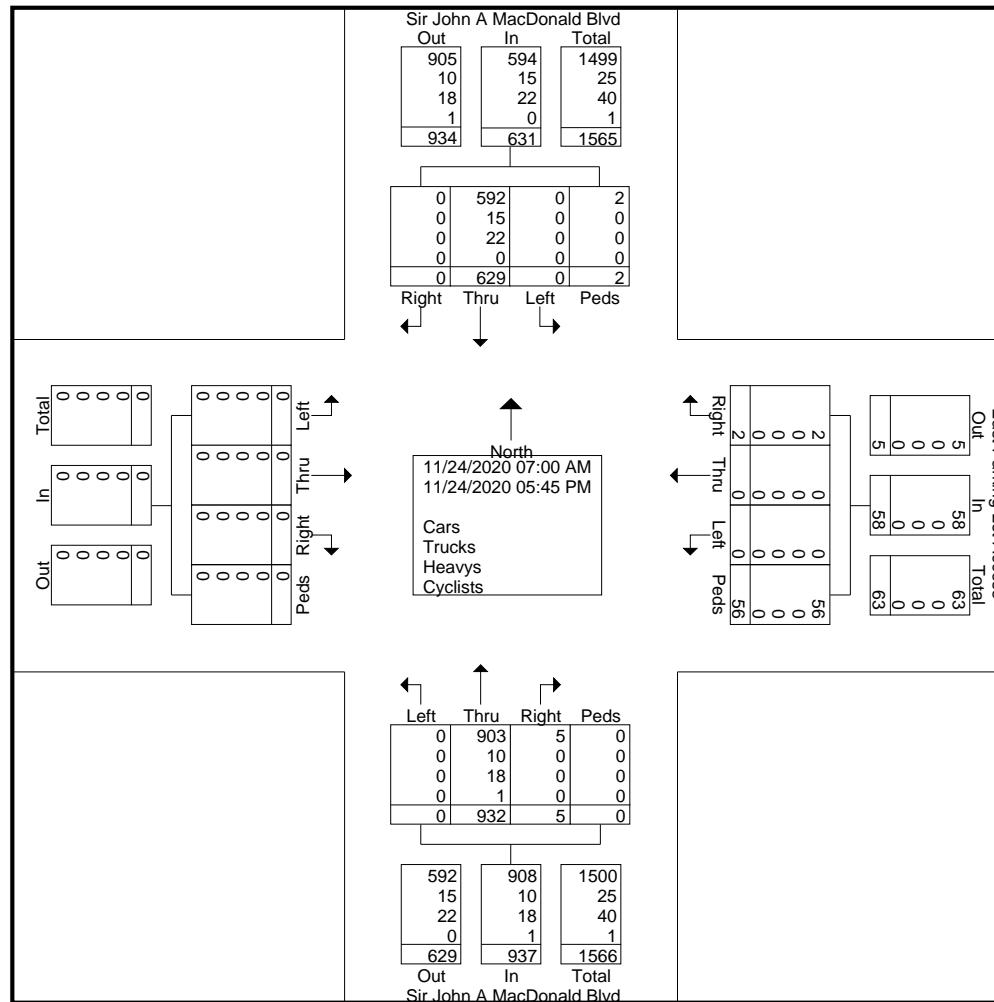
"we always count...never estimated"

File Name : Sir John A MacDonald Blvd and East Parking Lot Access

Site Code : 00000000

Start Date : 11/24/2020

Page No : 3



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318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 4

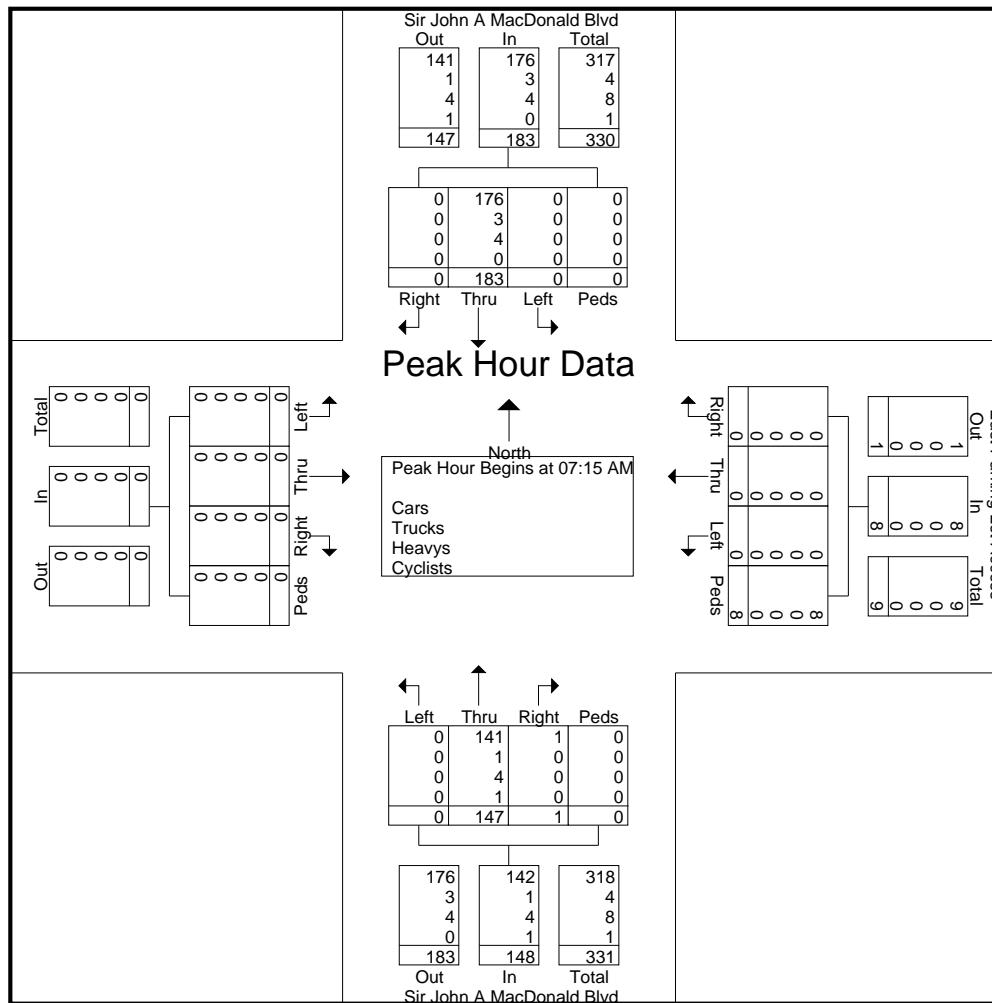
Start Time	Sir John A MacDonald Blvd Southbound					East Parking Lot Access Westbound					Sir John A MacDonald Blvd Northbound					Eastbound					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	39	0	0	39	0	0	0	2	2	0	45	0	0	45	0	0	0	0	0	86
07:30 AM	0	44	0	0	44	0	0	0	0	0	0	37	0	0	37	0	0	0	0	0	81
07:45 AM	0	49	0	0	49	0	0	0	3	3	1	31	0	0	32	0	0	0	0	0	84
08:00 AM	0	51	0	0	51	0	0	0	3	3	0	34	0	0	34	0	0	0	0	0	88
Total Volume	0	183	0	0	183	0	0	0	8	8	1	147	0	0	148	0	0	0	0	0	339
% App. Total	0	100	0	0	100	0	0	0	100	0	0.7	99.3	0	0	0	0	0	0	0	0	0
PHF	.000	.897	.000	.000	.897	.000	.000	.000	.667	.667	.250	.817	.000	.000	.822	.000	.000	.000	.000	.000	.963
Cars	0	176	0	0	176	0	0	0	8	8	1	141	0	0	142	0	0	0	0	0	326
% Cars	0	96.2	0	0	96.2	0	0	0	100	100	100	95.9	0	0	95.9	0	0	0	0	0	96.2
Trucks	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
% Trucks	0	1.6	0	0	1.6	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	1.2
Heavys	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
% Heavys	0	2.2	0	0	2.2	0	0	0	0	0	0	2.7	0	0	2.7	0	0	0	0	0	2.4
Cyclists	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Cyclists	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0.3

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318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 5



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318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 6



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318 Simonston Blvd
Thornhill, ON L3T 4T5

"we always count...never estimated"

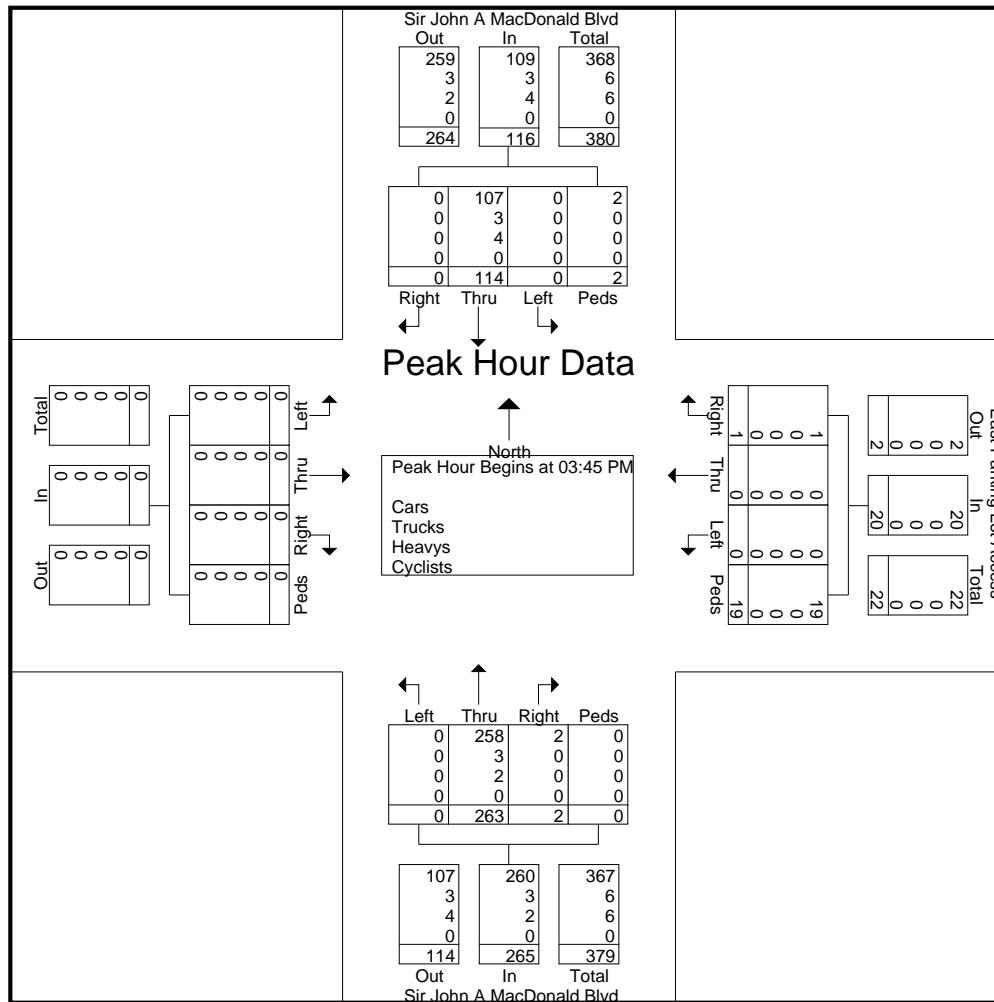
File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 7

Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

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File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 8

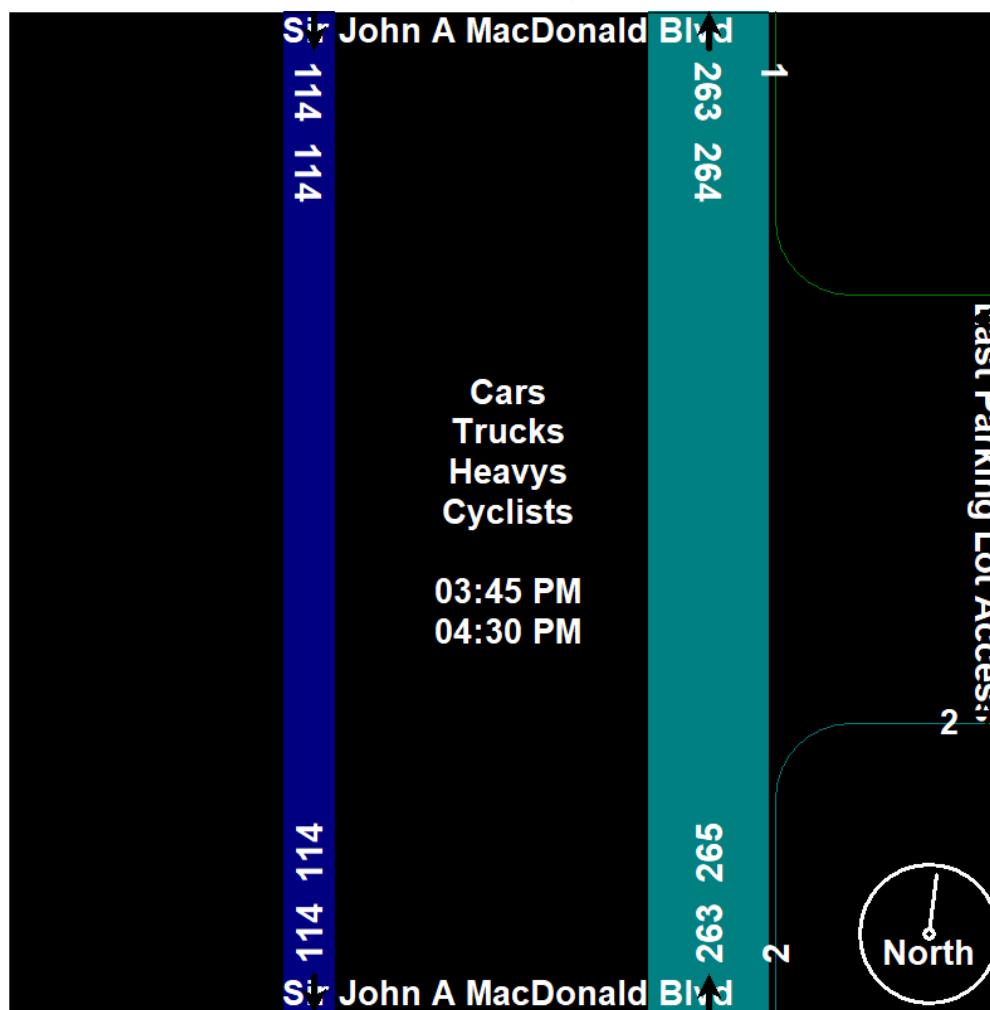


Horizon Data Services Ltd

318 Simonston Blvd
Thornhill, ON L3T 4T5

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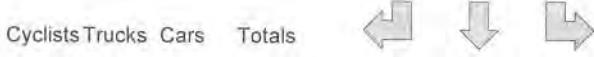
File Name : Sir John A MacDonald Blvd and East Parking Lot Access
Site Code : 00000000
Start Date : 11/24/2020
Page No : 9



King St @ Sir John A. Macdonald Blvd

Annual Average Daily Traffic Diagram

Total Factor = Monthly Factor(1.00) x Daily Factor(1.00) x 24 Hour Factor(1.88) = 1.880000

Municipality: City of Kingston Site #: 0000000001 Intersection: King St & Sir John A. Macdonald Blvd TFR File #: 1 Count date: 28-Oct-2014	Weather conditions: Person(s) who counted: MIOVISION																																								
** Signalized Intersection **	Major Road: King St runs W/E																																								
North Leg Total: 6319 North Entering: 2782 North Peds: 190 Peds Cross: ☰	<table border="1"> <thead> <tr> <th>Cyclists</th><th>0</th><th>2</th><th>4</th><th></th><th>Cyclists</th><th>6</th><th></th><th>East Leg Total: 16935</th></tr> </thead> <tbody> <tr> <td>Trucks</td><td>43</td><td>6</td><td>102</td><td>150</td><td>Trucks</td><td>192</td><td></td><td>East Entering: 8868</td></tr> <tr> <td>Cars</td><td>686</td><td>39</td><td>1903</td><td>2628</td><td>Cars</td><td>3339</td><td></td><td>East Peds: 45</td></tr> <tr> <td>Totals</td><td>731</td><td>45</td><td>2006</td><td></td><td>Totals</td><td>3536</td><td></td><td>Peds Cross: ☳</td></tr> </tbody> </table>	Cyclists	0	2	4		Cyclists	6		East Leg Total: 16935	Trucks	43	6	102	150	Trucks	192		East Entering: 8868	Cars	686	39	1903	2628	Cars	3339		East Peds: 45	Totals	731	45	2006		Totals	3536		Peds Cross: ☳				
Cyclists	0	2	4		Cyclists	6		East Leg Total: 16935																																	
Trucks	43	6	102	150	Trucks	192		East Entering: 8868																																	
Cars	686	39	1903	2628	Cars	3339		East Peds: 45																																	
Totals	731	45	2006		Totals	3536		Peds Cross: ☳																																	
Cyclists Trucks Cars Totals 32 205 6928 7165  King St	Sir John A. Macdonald Blvd <table border="1"> <thead> <tr> <th>Cars</th><th>Trucks</th><th>Cyclists</th><th>Totals</th></tr> </thead> <tbody> <tr> <td>2316</td><td>113</td><td>4</td><td>2433</td></tr> <tr> <td>6228</td><td>160</td><td>30</td><td>6418</td></tr> <tr> <td>17</td><td>0</td><td>0</td><td>17</td></tr> <tr> <td>8562</td><td>273</td><td>34</td><td></td></tr> </tbody> </table>	Cars	Trucks	Cyclists	Totals	2316	113	4	2433	6228	160	30	6418	17	0	0	17	8562	273	34																					
Cars	Trucks	Cyclists	Totals																																						
2316	113	4	2433																																						
6228	160	30	6418																																						
17	0	0	17																																						
8562	273	34																																							
Cyclists Trucks Cars Totals 2 70 998 1070 32 128 5873 6033 0 2 13 15 34 199 6885	King St  Kingston Pen.																																								
Peds Cross: ☳ West Peds: 51 West Entering: 7118 West Leg Total: 14282	<table border="1"> <thead> <tr> <th>Cars</th><th>Trucks</th><th>Cyclists</th><th>Totals</th></tr> </thead> <tbody> <tr> <td>7804</td><td>229</td><td>34</td><td>8067</td></tr> <tr> <td>Cars</td><td>70</td><td></td><td></td></tr> <tr> <td>Trucks</td><td>8</td><td></td><td></td></tr> <tr> <td>Cyclists</td><td>0</td><td></td><td></td></tr> <tr> <td>Totals</td><td>77</td><td></td><td></td></tr> <tr> <td>Cars</td><td>13</td><td>24</td><td>66</td></tr> <tr> <td>Trucks</td><td>2</td><td>9</td><td>11</td></tr> <tr> <td>Cyclists</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Totals</td><td>15</td><td>34</td><td>28</td></tr> </tbody> </table>	Cars	Trucks	Cyclists	Totals	7804	229	34	8067	Cars	70			Trucks	8			Cyclists	0			Totals	77			Cars	13	24	66	Trucks	2	9	11	Cyclists	0	0	0	Totals	15	34	28
Cars	Trucks	Cyclists	Totals																																						
7804	229	34	8067																																						
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Cyclists	0																																								
Totals	77																																								
Cars	13	24	66																																						
Trucks	2	9	11																																						
Cyclists	0	0	0																																						
Totals	15	34	28																																						
	Peds Cross: ☰ South Peds: 167 South Entering: 77 South Leg Total: 154																																								

Comments

King St @ Sir John A. Macdonald Blvd

Total Count Diagram

Municipality: City of Kingston
Site #: 0000000001
Intersection: King St & Sir John A. Macdonald Blvd
TFR File #: 1
Count date: 28-Oct-2014

Weather conditions:

Person(s) who counted:
MIOVISION

** Signalized Intersection **

Major Road: King St runs W/E

North Leg Total: 3361

North Entering: 1480

North Peds: 101

Peds Cross: ☒

Cyclists	1	0	1	2
Trucks	23	3	54	80
Cars	365	21	1012	1398
Totals	389	24	1067	

Cyclists	3
Trucks	102
Cars	1776
Totals	1881

East Leg Total: 9008

East Entering: 4717

East Peds: 24

Peds Cross: ☒

Cyclists Trucks Cars Totals
17 109 3685 3811



Sir John A. Macdonald Blvd

Cyclists Trucks Cars Totals
1 37 531 569
17 68 3124 3209
0 1 7 8
18 106 3662



King St

Cars Trucks Cyclists Totals
1232 60 2 1294
3313 85 16 3414
9 0 0 9
4554 145 18

King St

Cars Trucks Cyclists Totals
4151 122 18 4291

Peds Cross: ☒
West Peds: 27
West Entering: 3786
West Leg Total: 7597

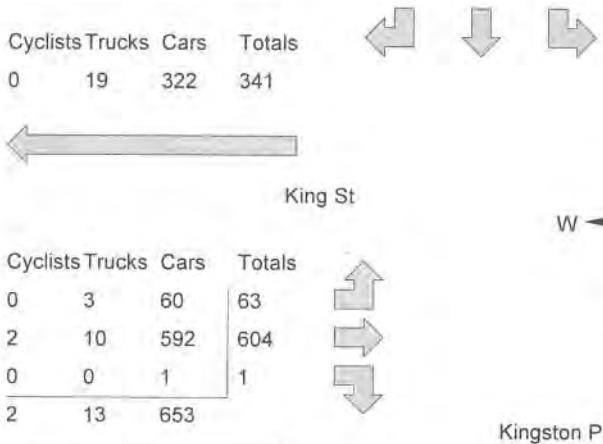
Cars 37
Trucks 4
Cyclists 0
Totals 41

Cars 7 13 15 35
Trucks 1 5 0 6
Cyclists 0 0 0 0
Totals 8 18 15

Peds Cross: ☐
South Peds: 89
South Entering: 41
South Leg Total: 82

Comments

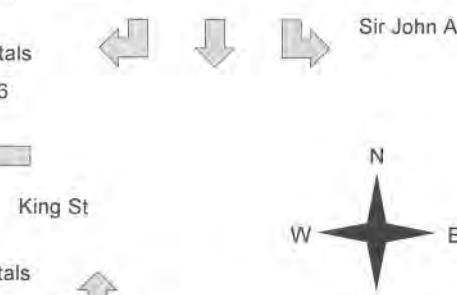
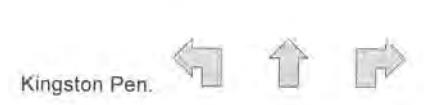
King St @ Sir John A. Macdonald Blvd

Morning Peak Diagram	Specified Period From: 7:00:00 To: 10:00:00	One Hour Peak From: 7:45:00 To: 8:45:00																								
Municipality: City of Kingston Site #: 0000000001 Intersection: King St & Sir John A. Macdonald Blvd TFR File #: 1 Count date: 28-Oct-2014		Weather conditions:																								
Person(s) who counted: MIOVISION																										
** Signalized Intersection **		Major Road: King St runs W/E																								
North Leg Total: 450 North Entering: 271 North Peds: 2 Peds Cross: ✘	Cyclists 0 0 0 0 Trucks 4 2 7 13 Cars 38 3 217 258 Totals 42 5 224	Cyclists 0 0 0 0 Trucks 9 Cars 170 Totals 179																								
East Leg Total: 1243 East Entering: 413 East Peds: 2 Peds Cross: ✘																										
	Sir John A. Macdonald Blvd <table border="1"> <thead> <tr> <th>Cyclists</th><th>Trucks</th><th>Cars</th><th>Totals</th></tr> </thead> <tbody> <tr> <td>0</td><td>19</td><td>322</td><td>341</td></tr> <tr> <td>0</td><td>108</td><td>6</td><td>114</td></tr> <tr> <td>2</td><td>284</td><td>15</td><td>299</td></tr> <tr> <td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>392</td><td>21</td><td>0</td><td></td></tr> </tbody> </table>		Cyclists	Trucks	Cars	Totals	0	19	322	341	0	108	6	114	2	284	15	299	0	0	0	0	392	21	0	
Cyclists	Trucks	Cars	Totals																							
0	19	322	341																							
0	108	6	114																							
2	284	15	299																							
0	0	0	0																							
392	21	0																								
	King St <table border="1"> <thead> <tr> <th>Cyclists</th><th>Trucks</th><th>Cars</th><th>Totals</th></tr> </thead> <tbody> <tr> <td>0</td><td>3</td><td>60</td><td>63</td></tr> <tr> <td>2</td><td>10</td><td>592</td><td>604</td></tr> <tr> <td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr> <td>2</td><td>13</td><td>653</td><td></td></tr> </tbody> </table>		Cyclists	Trucks	Cars	Totals	0	3	60	63	2	10	592	604	0	0	1	1	2	13	653					
Cyclists	Trucks	Cars	Totals																							
0	3	60	63																							
2	10	592	604																							
0	0	1	1																							
2	13	653																								
Peds Cross: ✘ West Peds: 0 West Entering: 668 West Leg Total: 1009	Cars 4 Trucks 2 Cyclists 0 Totals 6	Cars 0 2 2 4 Trucks 0 0 0 0 Cyclists 0 0 0 0 Totals 0 2 2 0																								
Peds Cross: ✘ South Peds: 0 South Entering: 4 South Leg Total: 10																										
Comments																										

King St @ Sir John A. Macdonald Blvd

Mid-day Peak Diagram	Specified Period From: 11:00:00 To: 13:00:00	One Hour Peak From: 12:00:00 To: 13:00:00																																												
Municipality: City of Kingston Site #: 0000000001 Intersection: King St & Sir John A. Macdonald Blvd TFR File #: 1 Count date: 28-Oct-2014		Weather conditions:																																												
		Person(s) who counted: MIOVISION																																												
** Signalized Intersection **		Major Road: King St runs W/E																																												
<table border="1"> <tr> <td>North Leg Total: 270</td> <td>Cyclists 0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td>Cyclists 0</td> <td>0</td> <td>0</td> <td>0</td> <td>East Leg Total: 656</td> </tr> <tr> <td>North Entering: 114</td> <td>Trucks 2</td> <td>0</td> <td>4</td> <td>6</td> <td></td> <td>Trucks 8</td> <td>8</td> <td>8</td> <td>8</td> <td>East Entering: 343</td> </tr> <tr> <td>North Peds: 16</td> <td>Cars 33</td> <td>2</td> <td>73</td> <td>108</td> <td></td> <td>Cars 148</td> <td>148</td> <td>148</td> <td>148</td> <td>East Peds: 1</td> </tr> <tr> <td>Peds Cross: ☒</td> <td>Totals 35</td> <td>2</td> <td>77</td> <td></td> <td></td> <td>Totals 156</td> <td>156</td> <td>156</td> <td>156</td> <td>Peds Cross: ☒</td> </tr> </table>	North Leg Total: 270	Cyclists 0	0	0	0		Cyclists 0	0	0	0	East Leg Total: 656	North Entering: 114	Trucks 2	0	4	6		Trucks 8	8	8	8	East Entering: 343	North Peds: 16	Cars 33	2	73	108		Cars 148	148	148	148	East Peds: 1	Peds Cross: ☒	Totals 35	2	77			Totals 156	156	156	156	Peds Cross: ☒		
North Leg Total: 270	Cyclists 0	0	0	0		Cyclists 0	0	0	0	East Leg Total: 656																																				
North Entering: 114	Trucks 2	0	4	6		Trucks 8	8	8	8	East Entering: 343																																				
North Peds: 16	Cars 33	2	73	108		Cars 148	148	148	148	East Peds: 1																																				
Peds Cross: ☒	Totals 35	2	77			Totals 156	156	156	156	Peds Cross: ☒																																				
<table border="1"> <tr> <td>Cyclists</td> <td>Trucks</td> <td>Cars</td> <td>Totals</td> <td>◀</td> <td>▼</td> <td>▶</td> </tr> <tr> <td>0</td> <td>6</td> <td>275</td> <td>281</td> <td></td> <td></td> <td></td> </tr> </table> <p>King St</p>	Cyclists	Trucks	Cars	Totals	◀	▼	▶	0	6	275	281				<p>Sir John A. Macdonald Blvd</p> <table border="1"> <tr> <td>Cars</td> <td>Trucks</td> <td>Cyclists</td> <td>Totals</td> </tr> <tr> <td>94</td> <td>3</td> <td>0</td> <td>97</td> </tr> <tr> <td>241</td> <td>4</td> <td>0</td> <td>245</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>336</td> <td>7</td> <td>0</td> <td></td> </tr> </table> <p>King St</p>		Cars	Trucks	Cyclists	Totals	94	3	0	97	241	4	0	245	1	0	0	1	336	7	0											
Cyclists	Trucks	Cars	Totals	◀	▼	▶																																								
0	6	275	281																																											
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<table border="1"> <tr> <td>Cyclists</td> <td>Trucks</td> <td>Cars</td> <td>Totals</td> <td>↑</td> </tr> <tr> <td>0</td> <td>3</td> <td>54</td> <td>57</td> <td></td> </tr> <tr> <td>0</td> <td>5</td> <td>229</td> <td>234</td> <td></td> </tr> <tr> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>0</td> <td>9</td> <td>283</td> <td></td> <td></td> </tr> </table>	Cyclists	Trucks	Cars	Totals	↑	0	3	54	57		0	5	229	234		0	1	0	1		0	9	283			<table border="1"> <tr> <td>Cars</td> <td>Trucks</td> <td>Cyclists</td> <td>Totals</td> </tr> <tr> <td>304</td> <td>9</td> <td>0</td> <td>313</td> </tr> </table>		Cars	Trucks	Cyclists	Totals	304	9	0	313											
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Peds Cross:	☒	Cars 3		Cars 1	0	2	3		Peds Cross:	☒																																				
West Peds:	1	Trucks 1		Trucks 0	2	0	2		South Peds:	8																																				
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West Leg Total:	573	Totals 4		Totals 1	2	2			South Leg Total:	9																																				
Comments																																														

King St @ Sir John A. Macdonald Blvd

Afternoon Peak Diagram		Specified Period From: 14:00:00 To: 17:00:00	One Hour Peak From: 15:45:00 To: 16:45:00
Municipality: City of Kingston Site #: 0000000001 Intersection: King St & Sir John A. Macdonald Blvd TFR File #: 1 Count date: 28-Oct-2014		Weather conditions: Person(s) who counted: MIOVISION	
** Signalized Intersection **		Major Road: King St runs W/E	
North Leg Total: 456 North Entering: 136 North Peds: 17 Peds Cross: ✕	Cyclists 0 0 0 0 Trucks 2 0 4 6 Cars 44 0 86 130 Totals 46 0 90	Cyclists 1 Trucks 4 Cars 315 Totals 320	East Leg Total: 1319 East Entering: 888 East Peds: 2 Peds Cross: ✕
Cyclists Trucks Cars Totals 5. 12 679 696		 Sir John A. Macdonald Blvd	
Cyclists Trucks Cars Totals 0 0 81 81 4 9 326 339 0 0 0 0 4 9 407		Cars Trucks Cyclists Totals 232 4 1 237 635 10 5 650 1 0 0 1 868 14 6	
Peds Cross: ✕ West Peds: 2 West Entering: 420 West Leg Total: 1116		 Kingston Pen.	
Cars 1 Trucks 0 Cyclists 0 Totals 1		Cars 0 2 2 4 Trucks 0 0 0 0 Cyclists 0 0 0 0 Totals 0 2 2	
		Peds Cross: ✕ South Peds: 12 South Entering: 4 South Leg Total: 5	
Comments			

King St @ Sir John A. Macdonald Blvd

Eight Hour Peak Diagram

Eight Hour Peak

From: 7:30:00

To: 15:30:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: King St & Sir John A. Macdonald Blvd

TFR File #: 1

Count date: 28-Oct-2014

Weather conditions:

Person(s) who counted:

MIOVISION

** Signalized Intersection **

Major Road: King St runs W/E

North Leg Total: 2294

North Entering: 1099

North Peds: 55

Peds Cross: ☒

Cyclists	1	0	1	2
Trucks	19	3	38	60
Cars	252	15	770	1037
Totals	272	18	809	

Cyclists	1			
Trucks	75			
Cars	1119			
Totals	1195			

East Leg Total: 5749

East Entering: 2672

East Peds: 16

Peds Cross: ☒

Cyclists	9	81	2063	2153
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Sir John A. Macdonald Blvd

Cars	746	42	1	789
Trucks	1807	61	8	1876
Cyclists	7	0	0	7
Totals	2560	103	9	

Cyclists	0	31	364	395
Trucks	11	49	2198	2258
Cars	0	1	6	7
Totals	11	81	2568	



Kingston Pen.

King St

Cars	2978	87	12	3077
------	------	----	----	------

Peds Cross:	☒
West Peds:	14
West Entering:	2660
West Leg Total:	4813

Cars	28			
Trucks	4			
Cyclists	0			
Totals	32			



Comments

Peds Cross:	☒
South Peds:	44
South Entering:	26
South Leg Total:	58

King St @ Sir John A. Macdonald Blvd

Traffic Count Summary

Intersection: King St & Sir John A. Macdonald B				Count Date: 28-Oct-2014			Municipality: City of Kingston					
North Approach Totals					South Approach Totals							
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	North/South Total Approaches	Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
8:00:00	162	8	28	198	4	200	8:00:00	0	1	1	2	2
9:00:00	214	5	57	276	2	280	9:00:00	0	2	2	4	0
10:00:00	116	1	39	156	9	158	10:00:00	1	0	1	2	7
12:00:00	93	4	38	135	7	139	12:00:00	1	0	3	4	7
13:00:00	105	2	44	151	21	156	13:00:00	1	2	2	5	11
15:00:00	119	1	50	170	10	174	15:00:00	1	3	0	4	12
16:00:00	110	2	46	158	6	174	16:00:00	3	8	5	16	13
17:00:00	76	0	49	125	24	127	17:00:00	0	1	1	2	15
18:00:00	72	1	38	111	18	113	18:00:00	1	1	0	2	22
Totals:	1067	24	389	1480	101	1521		8	18	15	41	89
East Approach Totals					West Approach Totals							
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	East/West Total Approaches	Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
8:00:00	0	237	104	341	0	879	8:00:00	50	487	1	538	0
9:00:00	0	287	117	404	2	1037	9:00:00	63	569	1	633	0
10:00:00	1	248	89	338	5	707	10:00:00	43	325	1	369	3
12:00:00	1	314	143	458	2	815	12:00:00	73	281	3	357	0
13:00:00	2	320	128	450	1	852	13:00:00	80	321	1	402	2
15:00:00	3	348	171	522	4	924	15:00:00	76	325	1	402	3
16:00:00	1	524	191	716	6	1092	16:00:00	61	315	0	376	6
17:00:00	0	676	235	911	3	1298	17:00:00	84	303	0	387	2
18:00:00	1	460	116	577	1	899	18:00:00	39	283	0	322	11
Totals:	9	3414	1294	4717	24	8503		569	3209	8	3786	27
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	12:00	13:00			15:00	16:00	17:00	18:00		
Crossing Values:	170	221	100	111			130	133	82	86		

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014

Intersection: King St & Sir John A. Macdonald Blvd

Municipality: City of Kingston

Major Road: King St

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches.

80% Satisfied

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant						
	1 Lane Each Way		2 Lanes Each Way		3 Lanes	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00							
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00							
100%	480	720	600	900	1125	1079	1317	954	1008	1098	1266	1425	1012	Yes: X	100%					
80%	385	575	480	720	900									No:						
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100	800						
	80% Fulfilled													0						
	Actual % if Below 80%													0						
														Total:	800					
														Actual Average (Total/8):	100%					

B. Minor Street Both Approaches.

100%	120	170	120	170	170	200	280	139	156	174	174	127	113	100%						
80%	95	135	95	135	135									Yes: No: X						
Minor Street Both Approaches	100% Fulfilled					100	100			100	100			400						
	80% Fulfilled							80	80					160						
	Actual % if Below 80%											75	66	141						
														Total:	701					
														Actual Average (Total/8):	88%					

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014

Intersection: King St & Sir John A. Macdonald Blvd

Municipality: City of Kingston

Major Road: King St

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches.

100% Satisfied

No. of Lanes	Minimum Requirements					Hours Ending									Percentage Warrant					
	1 Lane Each Way	2 Lanes Each Way	3 Lanes	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00									
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)															
100%	480	720	600	900	1125										100%					
80%	385	575	480	720	900	879	1037	815	852	924	1092	1298	899	Yes: X No:						
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100	100	800					
	80% Fulfilled														0					
	Actual % if Below 80%														0					
												Total:	800							
												Actual Average (Total/8):	100%							

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	170	221	100	111	130	133	82	86	Yes: X No:	100%					
80%	40	60	40	60	60															
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100	100	800					
	80% Fulfilled														0					
	Actual % if Below 80%														0					
												Total:	800							
												Actual Average (Total/8):	100%							

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014

Intersection: King St & Sir John A. Macdonald Blvd

Municipality: City of Kingston

Major Road: King St

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #3: Accident Experience.

Not Satisfied

- A. Reportable accidents within a twelve month period averaged over 36 consecutive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	0 in 0 years	Invalid	0%
B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.			No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.			Yes

Warrant #4: Combination Warrant. (Used if no warrant satisfied 100%)

Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	Yes Yes No

Conclusion: Traffic signal warranted.

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014 Site #: 0000000001

Interval Time	Passenger Cars - North Approach				Trucks - North Approach				Cyclists - North Approach				Pedestrians			
	Left	Cum	Thru	Incr	Right	Cum	Incr	Thru	Left	Cum	Incr	Thru	Right	Cum	Incr	North Cross
7:15:00	22	22	3	3	6	6	2	2	1	0	0	0	0	0	0	0
7:30:00	51	29	5	2	9	3	4	2	0	0	2	1	0	0	0	0
7:45:00	99	48	8	3	21	12	5	1	0	0	2	0	0	0	0	3
8:00:00	155	56	8	0	26	5	7	2	0	0	2	0	0	0	0	1
8:15:00	194	39	10	2	40	14	8	1	2	2	3	1	0	0	0	4
8:30:00	257	63	11	1	45	5	8	0	2	0	6	3	0	0	0	0
8:45:00	316	59	11	0	59	14	12	4	2	0	6	0	0	0	0	5
9:00:00	361	45	11	0	77	18	15	3	2	0	8	2	0	0	0	6
9:15:00	388	27	11	0	88	11	18	3	2	0	8	0	0	0	0	1
9:30:00	402	14	11	0	96	8	19	1	2	0	9	1	0	0	0	8
9:45:00	433	31	12	1	105	9	20	1	2	0	10	1	0	0	0	11
10:00:00	466	33	12	0	113	8	26	6	2	0	11	1	0	0	0	13
11:15:00	489	23	12	0	123	10	27	1	2	0	12	1	0	0	0	15
11:30:00	511	22	12	0	131	8	28	1	2	0	12	0	0	0	0	21
11:45:00	533	22	12	0	142	11	29	1	2	0	12	0	0	0	0	22
12:00:00	556	23	16	4	148	6	29	0	2	0	13	1	0	0	0	0
12:15:00	577	21	17	1	160	12	30	1	2	0	14	1	0	0	0	22
12:30:00	594	17	18	1	167	7	31	1	2	0	15	1	0	0	0	26
12:45:00	629	35	18	0	181	14	33	2	2	0	15	0	0	0	0	4
13:00:00	657	28	18	0	189	8	33	0	2	0	16	1	0	0	0	43
14:15:00	683	26	18	0	197	8	36	3	3	1	17	1	0	0	0	5
14:30:00	713	30	18	0	210	13	36	0	3	0	17	0	0	0	0	47
14:45:00	745	32	18	0	224	14	37	1	3	0	18	1	0	0	0	4
15:00:00	770	25	18	0	236	12	39	2	3	0	19	1	0	0	0	53
15:15:00	798	28	19	1	248	12	42	3	3	0	21	2	0	0	0	2
15:30:00	821	23	20	1	261	13	42	0	3	0	21	0	0	0	0	6
15:45:00	843	22	20	0	269	8	46	4	3	0	21	0	0	0	0	4
16:00:00	872	29	20	0	280	11	46	0	3	0	23	1	0	0	0	0
16:15:00	890	18	20	0	294	14	48	2	3	0	22	1	0	0	0	6
16:30:00	911	21	20	0	301	7	49	1	3	0	22	0	0	0	0	7
16:45:00	929	18	20	0	313	12	50	1	3	0	23	1	0	0	0	4
17:00:00	944	15	20	0	327	14	50	0	3	0	23	0	0	0	0	7
17:15:00	956	12	21	1	339	12	53	3	3	0	23	0	0	0	0	6
17:30:00	973	17	21	0	347	8	53	0	3	0	23	0	0	0	0	4
17:45:00	997	24	21	0	355	8	54	1	3	0	23	0	0	0	0	6
18:00:00	1012	15	21	0	365	10	54	0	3	0	23	0	0	0	0	2

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014 Site #: 0000000001

Interval Time	Passenger Cars - East Approach				Trucks - East Approach				Cyclists - East Approach				Pedestrians			
	Left Cum	Left Incr	Thru Cum	Thru Incr	Right Cum	Right Incr	Left Cum	Left Incr	Right Cum	Right Incr	Thru Cum	Thru Incr	Cum	Incr	Cum	Incr
7:15:00	0	0	67	35	35	0	0	3	1	1	0	0	0	0	0	0
7:30:00	0	0	121	54	50	15	0	4	3	2	0	0	0	0	0	0
7:45:00	0	0	159	38	75	25	0	5	5	2	0	0	0	0	0	0
8:00:00	0	0	228	69	98	23	0	9	4	6	1	0	0	0	0	0
8:15:00	0	0	324	96	125	27	0	0	14	5	7	1	0	0	0	1
8:30:00	0	0	388	64	164	39	0	18	4	10	3	0	0	0	2	1
8:45:00	0	0	443	55	183	19	0	20	2	11	1	0	0	0	2	0
9:00:00	0	0	501	58	207	24	0	23	3	14	3	0	0	0	2	0
9:15:00	0	0	553	52	226	19	0	27	4	15	1	0	0	0	3	1
9:30:00	0	0	616	63	248	22	0	29	2	17	2	0	0	0	3	0
9:45:00	1	1	664	48	265	17	0	34	5	17	0	0	0	0	4	1
10:00:00	1	0	735	71	291	26	0	36	2	19	2	0	0	0	7	3
11:15:00	1	0	813	78	319	28	0	41	5	21	2	0	0	0	1	0
11:30:00	1	0	882	69	361	42	0	41	0	23	2	0	0	0	8	1
11:45:00	2	1	954	72	391	30	0	45	4	26	3	0	0	0	9	1
12:00:00	2	0	1038	84	425	34	0	45	0	28	2	0	0	0	9	0
12:15:00	3	1	1126	88	456	31	0	46	1	30	2	0	0	0	9	0
12:30:00	3	0	1206	80	482	26	0	47	1	31	1	0	0	0	10	1
12:45:00	3	0	1279	73	519	37	0	49	2	31	0	0	0	0	10	0
13:00:00	4	1	1353	74	548	29	0	50	1	33	2	0	0	0	10	0
14:15:00	5	1	1421	68	580	32	0	55	5	37	4	0	0	0	10	0
14:30:00	5	0	1500	79	625	45	0	57	2	38	1	0	0	0	10	0
14:45:00	7	2	1581	81	666	41	0	59	2	38	0	0	0	0	13	3
15:00:00	7	0	1686	105	709	43	0	61	2	42	4	0	0	0	14	1
15:15:00	7	0	1825	139	757	48	0	64	3	43	1	0	0	0	16	2
15:30:00	7	0	1928	103	796	39	0	65	1	45	2	0	0	0	16	0
15:45:00	7	0	2059	131	843	47	0	66	1	47	2	0	0	0	19	3
16:00:00	8	1	2202	143	893	50	0	68	2	49	2	0	0	0	20	1
16:15:00	8	0	2386	184	960	67	0	72	4	49	0	0	0	0	23	2
16:30:00	8	0	2518	132	1020	60	0	75	3	51	2	0	0	0	20	0
16:45:00	8	0	2694	176	1075	55	0	76	1	51	0	0	0	0	21	1
17:00:00	8	0	2862	168	1122	47	0	78	2	54	3	0	0	0	23	2
17:15:00	8	0	3016	154	1164	42	0	79	1	54	0	0	0	0	23	0
17:30:00	8	0	3133	117	1191	27	0	82	3	57	3	0	0	0	23	0
17:45:00	8	0	3236	103	1210	19	0	84	2	57	0	0	0	0	24	1
18:00:00	9	1	3313	77	1232	22	0	85	1	60	3	0	0	0	24	0

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014 Site #: 000000000001

Interval Time	Passenger Cars - South Approach				Trucks - South Approach				Cyclists - South Approach				Pedestrians			
	Left Cum	Left Incr	Thru Cum	Thru Incr	Right Cum	Right Incr	Left Cum	Left Incr	Thru Cum	Thru Incr	Right Cum	Right Incr	Cum	Incr	Cum	Incr
7:15:00	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	1	1	1	0	1	1	0	0	0	0	1	1	0	0
7:45:00	0	0	1	0	1	0	0	0	0	0	0	0	2	1	1	0
8:00:00	0	0	1	2	2	1	0	1	0	0	0	0	2	0	2	0
8:15:00	0	0	2	0	2	1	0	3	1	0	0	0	2	0	2	0
8:30:00	0	0	2	0	2	1	0	3	0	0	0	0	2	0	2	0
8:45:00	0	0	3	0	3	0	0	3	0	0	0	0	2	0	2	0
9:00:00	0	0	3	0	3	0	0	3	0	0	0	0	2	0	2	0
9:15:00	0	0	3	0	3	0	0	3	0	0	0	0	2	0	2	0
9:30:00	0	0	3	0	3	0	0	3	0	0	0	0	2	0	2	0
9:45:00	1	1	3	0	3	0	0	3	0	0	0	0	2	0	2	0
10:00:00	1	0	3	0	3	0	0	4	1	1	0	0	2	0	2	0
11:15:00	1	0	3	0	3	0	0	5	1	1	0	0	2	0	2	0
11:30:00	1	0	3	0	3	0	0	6	1	1	0	0	2	0	2	0
11:45:00	1	0	3	0	3	0	0	7	1	1	0	0	2	0	2	0
12:00:00	2	1	3	0	3	0	0	8	0	0	0	0	2	0	2	0
12:15:00	3	1	3	0	3	0	0	8	0	0	0	0	2	0	2	0
12:30:00	3	0	3	0	3	0	0	9	0	0	0	0	2	0	2	0
12:45:00	3	0	3	0	3	0	0	9	0	0	0	0	2	0	2	0
13:00:00	3	0	3	0	3	0	0	9	0	0	0	0	2	0	2	0
14:15:00	3	0	3	0	3	0	0	9	0	0	0	0	2	0	2	0
14:30:00	3	0	4	1	4	1	0	9	0	0	0	0	2	0	2	0
14:45:00	3	0	5	1	5	1	0	9	0	0	0	0	2	0	2	0
15:00:00	3	0	6	1	6	0	10	0	0	0	0	0	3	0	3	0
15:15:00	4	1	6	0	6	0	10	4	1	1	1	0	4	1	4	1
15:30:00	4	0	6	1	6	0	10	4	1	1	1	0	4	1	4	1
15:45:00	6	2	10	0	13	2	11	1	14	1	1	1	0	15	0	15
16:00:00	6	0	11	1	12	0	15	0	0	0	0	0	0	15	0	15
16:15:00	6	0	11	0	14	0	15	1	1	1	1	0	15	1	1	1
16:30:00	6	0	12	1	15	1	15	1	1	1	1	0	15	1	1	1
16:45:00	6	0	12	0	15	0	15	0	0	0	0	0	15	0	15	0
17:00:00	6	0	12	0	15	0	15	0	0	0	0	0	15	0	15	0
17:15:00	7	1	12	0	15	0	15	0	0	0	0	0	15	0	15	0
17:30:00	7	0	12	0	15	0	15	0	0	0	0	0	15	0	15	0
17:45:00	7	0	12	0	15	0	15	0	0	0	0	0	15	0	15	0
18:00:00	13	1	15	1	15	1	15	1	1	1	1	1	15	1	15	1

King St @ Sir John A. Macdonald Blvd

Count Date: 28-Oct-2014 Site #: 0000000001

Interval Time	Passenger Cars - West Approach				Trucks - West Approach				Cyclists - West Approach				Pedestrians		
	Left Cum	Left Incr	Thru Cum	Thru Incr	Right Cum	Right Incr	Left Cum	Left Incr	Thru Cum	Thru Incr	Right Cum	Right Incr	Cum	Cum	Incr
7:15:00	8	8	70	70	1	1	0	0	2	2	0	0	0	0	0
7:30:00	17	9	186	116	1	0	3	4	2	2	0	0	0	0	0
7:45:00	30	13	326	140	1	0	4	1	9	5	0	0	0	0	0
8:00:00	45	15	475	149	1	0	5	1	11	2	0	0	1	1	0
8:15:00	63	18	632	157	1	0	5	0	15	4	0	0	1	0	0
8:30:00	77	14	785	153	2	1	5	0	18	3	0	0	2	1	0
8:45:00	90	13	918	133	2	0	7	2	19	1	0	0	2	0	0
9:00:00	106	16	1031	113	2	0	7	0	22	3	0	0	3	1	2
9:15:00	120	14	1120	89	2	0	7	0	24	2	0	0	5	2	0
9:30:00	130	10	1195	75	2	0	7	0	25	1	0	0	5	0	0
9:45:00	139	9	1261	66	3	1	11	4	30	5	0	0	7	2	0
10:00:00	145	6	1341	80	3	0	11	0	33	3	0	0	7	0	0
11:15:00	162	17	1411	70	3	0	11	0	36	3	0	0	9	2	0
11:30:00	174	12	1480	69	4	1	17	6	36	0	0	0	10	1	0
11:45:00	191	17	1544	64	4	0	20	3	37	1	0	0	10	0	0
12:00:00	207	16	1615	71	6	2	22	2	37	0	0	0	10	0	0
12:15:00	225	18	1679	64	6	0	23	1	40	3	1	0	10	0	0
12:30:00	245	20	1751	72	6	0	25	2	41	1	1	0	10	4	0
12:45:00	261	16	1844	93	6	0	25	0	42	1	1	0	10	4	0
13:00:00	283	22	1928	84	6	0	26	1	45	3	1	0	10	5	0
14:15:00	304	21	2005	77	7	1	26	0	48	3	1	0	10	0	0
14:30:00	322	18	2100	95	7	0	26	1	48	0	1	0	10	0	0
14:45:00	343	21	2175	75	7	0	29	3	48	0	1	0	11	0	0
15:00:00	356	13	2247	72	7	0	29	0	50	2	1	0	11	0	0
15:15:00	371	15	2306	59	7	0	30	1	52	2	1	0	11	0	0
16:15:00	432	22	2642	90	7	0	35	0	53	1	1	0	15	2	0
16:30:00	455	23	2724	82	7	0	35	0	60	2	1	0	15	0	0
16:45:00	475	20	2789	65	7	0	35	1	54	1	1	0	16	2	0
17:00:00	494	19	2846	57	7	0	35	0	58	4	1	0	16	0	0
17:15:00	506	12	2914	68	7	0	35	0	58	0	1	0	16	0	0
17:30:00	513	7	2992	78	7	0	37	2	66	1	1	0	17	1	0
17:45:00	522	9	3063	71	7	0	37	0	67	1	1	0	17	0	0
18:00:00	531	9	3124	61	7	0	37	0	68	1	1	0	17	0	0



Turning Movements Count - Full Study Report

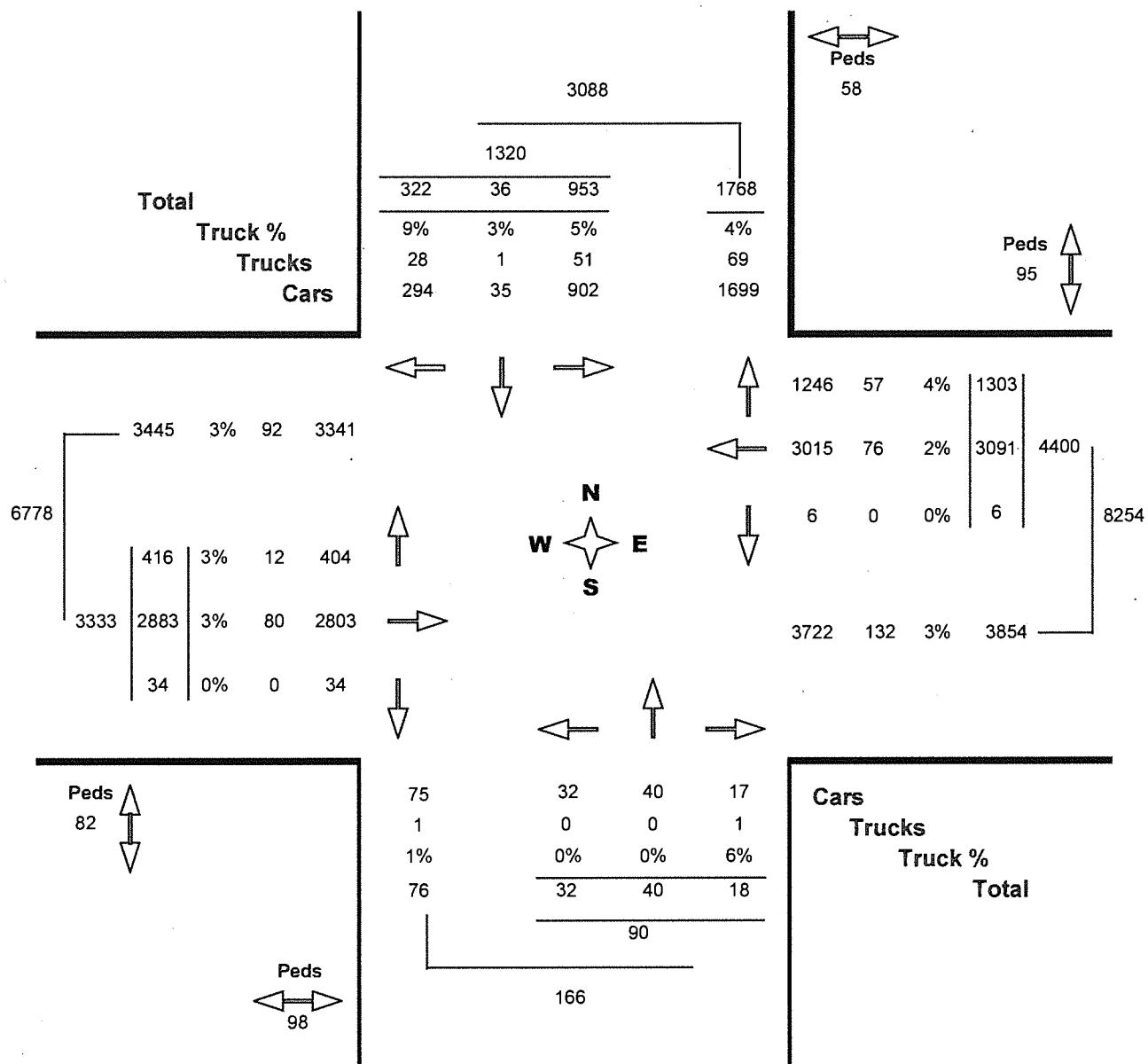
Location..... KING STREET WEST @ SIR JOHN A. MACDONALD BOULEVARD

Municipality..... City of Kingston

GeoID..... 900047

Count Date..... Tuesday, 10 March, 2020

Duration..... 9





Turning Movements Report - AM Period

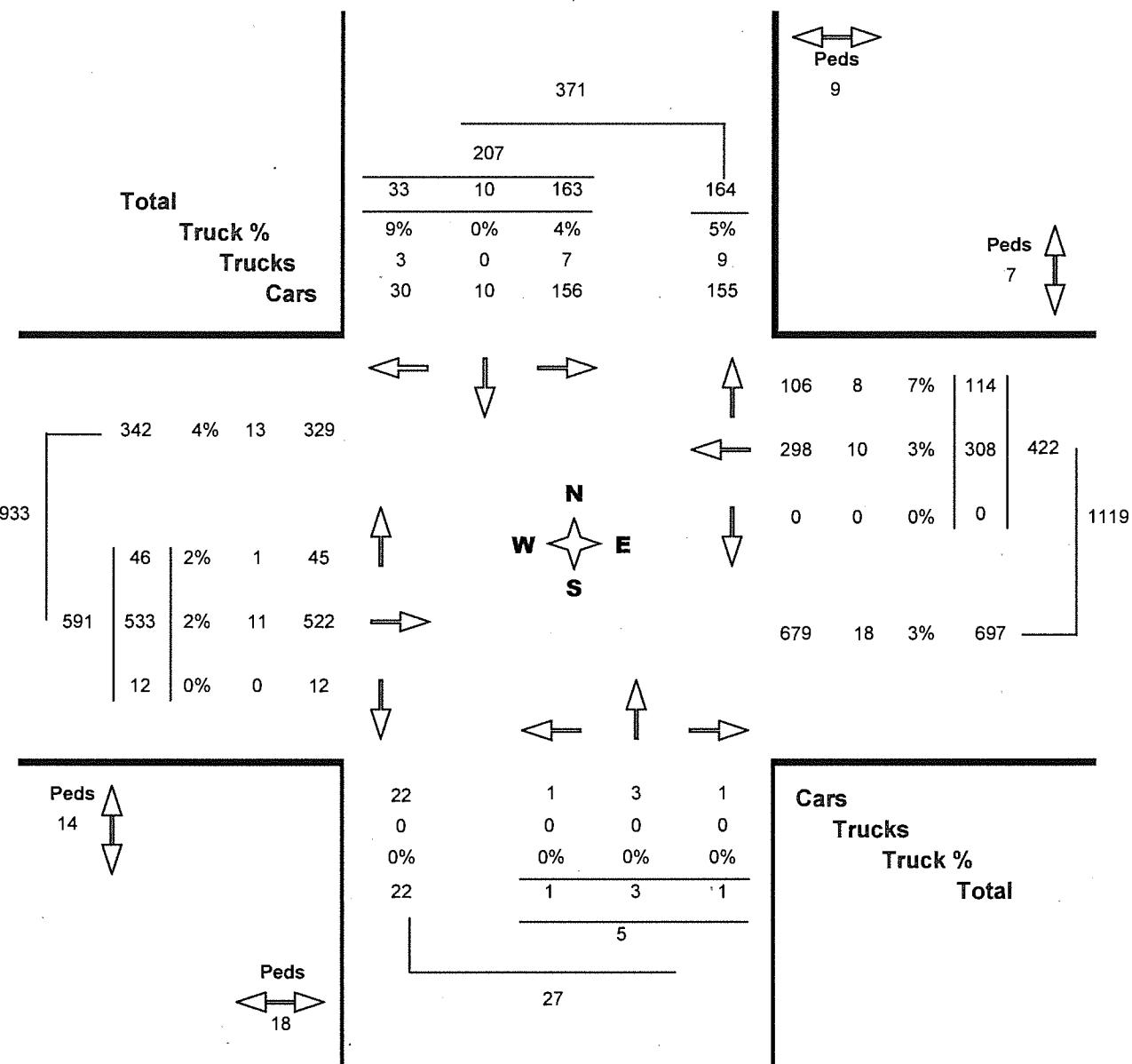
Location..... KING STREET WEST @ SIR JOHN A. MACDONALD BOULEVARD

Municipality..... City of Kingston

GeOID..... 900047

Count Date..... Tuesday, 10 March, 2020

Peak Hour..... 08:00 AM — 09:00 AM





Turning Movements Report - MD Period

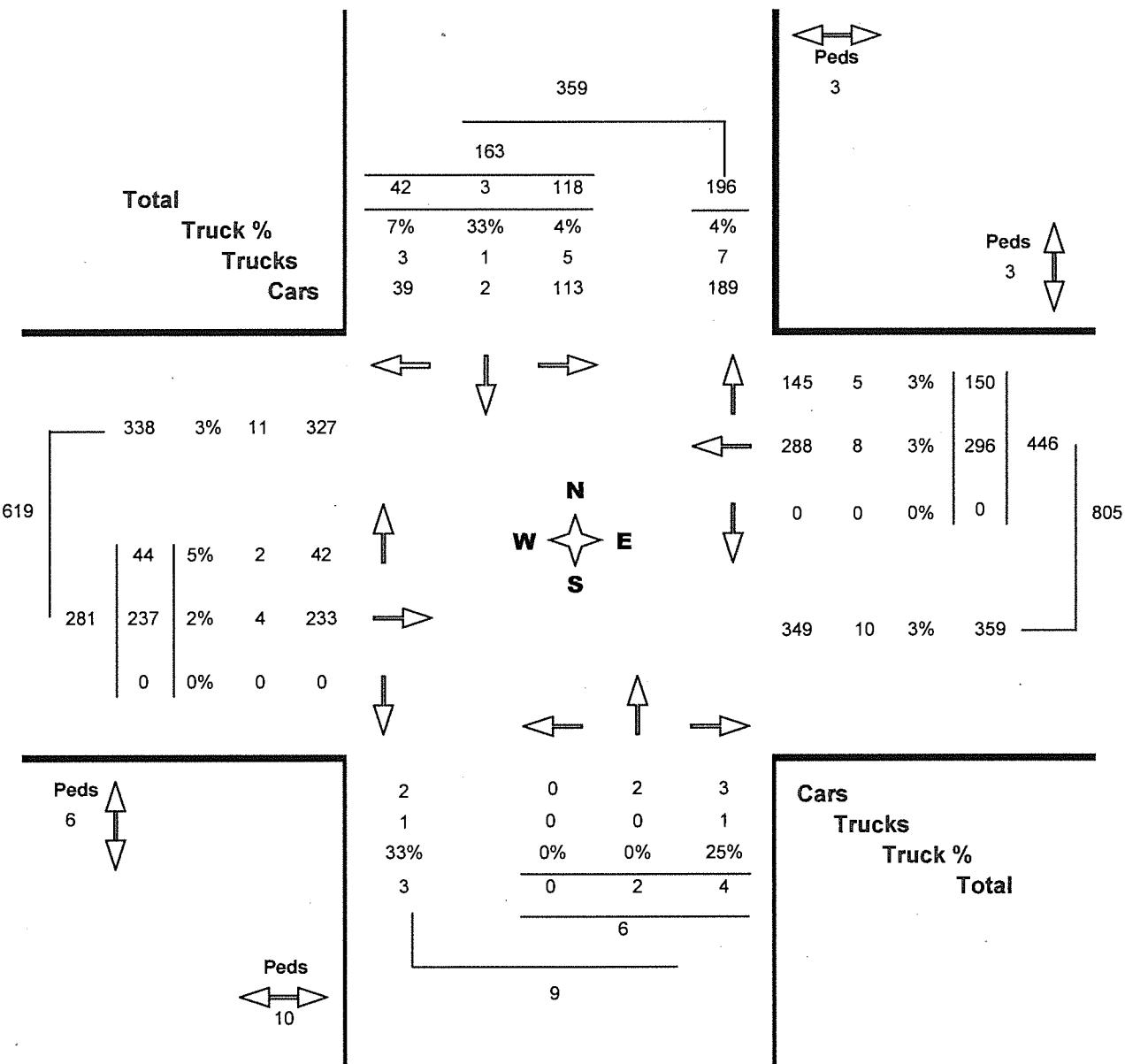
Location..... KING STREET WEST @ SIR JOHN A. MACDONALD BOULEVARD

Municipality..... City of Kingston

GeoID..... 900047

Count Date..... Tuesday, 10 March, 2020

Peak Hour..... 11:45 AM — 12:45 PM





Turning Movements Report - PM Period

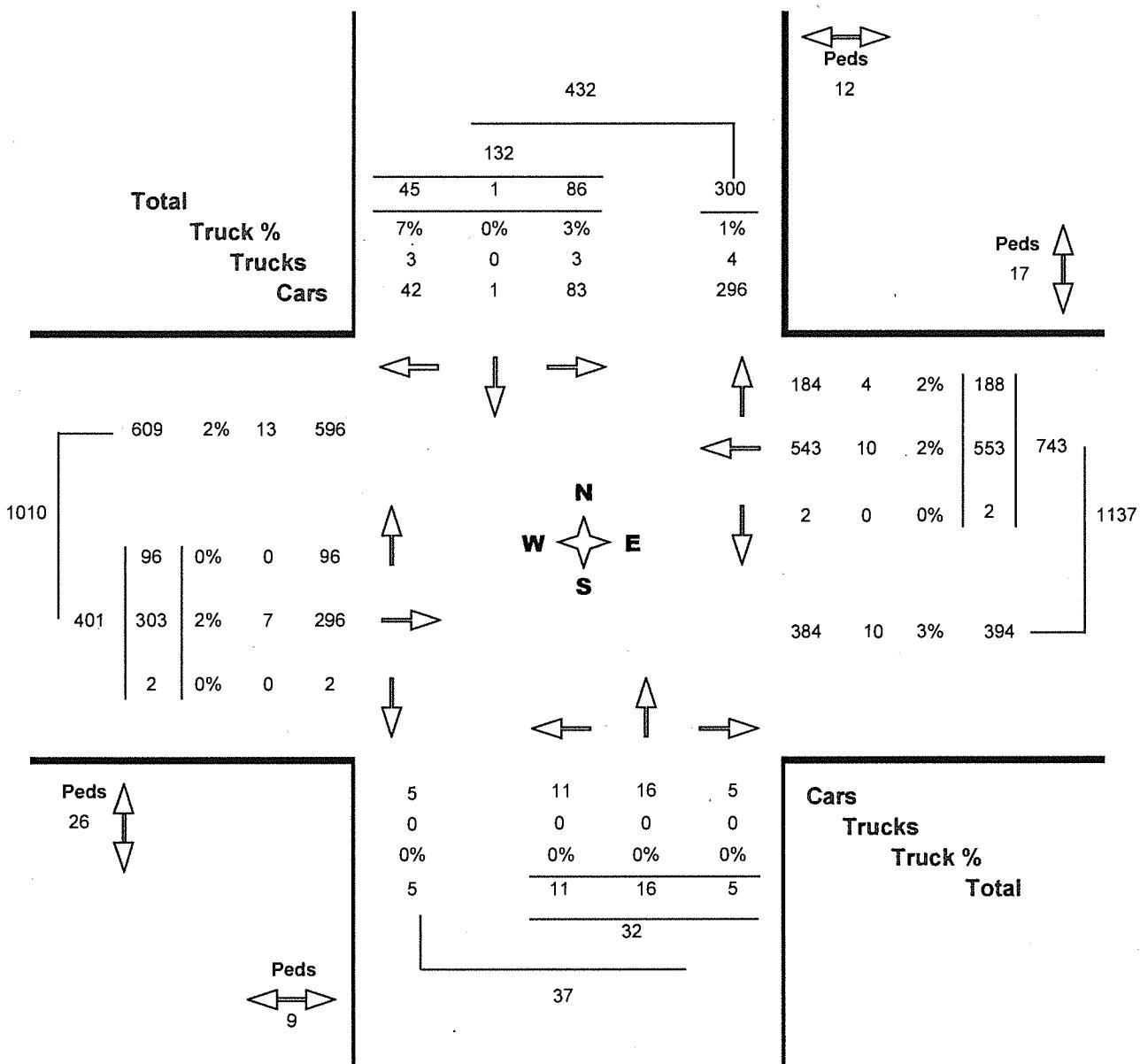
Location..... KING STREET WEST @ SIR JOHN A. MACDONALD BOULEVARD

Municipality..... City of Kingston

GeOID..... 900047

Count Date..... Tuesday, 10 March, 2020

Peak Hour..... 04:00 PM — 05:00 PM





Turning Movement Count - Pedestrian Volume Report

Location..... KING STREET WEST @ SIR JOHN A. MACDONALD BOULEVARD

Municipality..... City of Kingston

Count Date..... Tuesday, March 10, 2020

Time Period	North Approach	South Approach	Street Total	East Approach	West Approach	Street Total	Grand Total
07:00 07:15	3	4	7	1	0	1	8
07:15 07:30	0	2	2	1	1	2	4
07:30 07:45	2	2	4	4	1	5	9
07:45 08:00	0	5	5	0	4	4	9
08:00 08:15	5	2	7	1	2	3	10
08:15 08:30	2	10	12	2	9	11	23
08:30 08:45	0	5	5	4	3	7	12
08:45 09:00	2	1	3	0	0	0	3
09:00 09:15	1	0	1	0	1	1	2
09:15 09:30	1	1	2	42	0	42	44
09:30 09:45	1	0	1	0	0	0	1
09:45 10:00	1	0	1	0	0	0	1
11:00 11:15	0	1	1	0	0	0	1
11:15 11:30	2	4	6	2	4	6	12
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	8	8	1	1	2	10
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	3	2	5	2	5	7	12
12:45 13:00	1	1	2	1	0	1	3
14:00 14:15	1	0	1	0	0	0	1
14:15 14:30	0	4	4	1	2	3	7
14:30 14:45	0	1	1	1	1	2	3
14:45 15:00	0	0	0	0	1	1	1
15:00 15:15	0	5	5	1	3	4	9
15:15 15:30	1	1	2	0	1	1	3
15:30 15:45	3	3	6	0	2	2	8
15:45 16:00	3	11	14	1	6	7	21
16:00 16:15	0	0	0	3	6	9	9
16:15 16:30	2	4	6	3	10	13	19
16:30 16:45	7	3	10	7	5	12	22
16:45 17:00	3	2	5	4	5	9	14
17:00 17:15	5	4	9	4	5	9	18
17:15 17:30	5	5	10	3	1	4	14
17:30 17:45	3	2	5	3	0	3	8
17:45 18:00	1	5	6	3	3	6	12
Total	58	98	156	95	177	177	333



Turning Movement Count - Cyclist Volume Report

Location..... KING STREET WEST @ SIR JOHN A. MACDONALD BOULEVARD

Municipality..... City of Kingston

Count Date..... Tuesday, March 10, 2020

Time Period	North Approach	South Approach	Street Total	East Approach	West Approach	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	1	0	1	1
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:00 11:15	0	0	0	0	0	0	0
11:15 11:30	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	1	1	1
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	1	1	1
12:45 13:00	0	0	0	0	0	0	0
14:00 14:15	0	0	0	0	0	0	0
14:15 14:30	0	0	0	0	0	0	0
14:30 14:45	0	0	0	0	0	0	0
14:45 15:00	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	1	1	1
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	1	0	1	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	1	0	1	1
Total	0	0	0	3	3	6	6

Sir John A. Macdonald Blvd @ Union St

Annual Average Daily Traffic Diagram

Total Factor = Monthly Factor(1.00) x Daily Factor(1.00) x 24 Hour Factor(1.88) = 1.880000

Municipality: City of Kingston
Site #: 0000000001
Intersection: Sir John A. MacDonald Blvd & Union St
TFR File #: 1
Count date: 28-Oct-2014

Weather conditions:

Person(s) who counted:
MIOVISION

** Signalized Intersection **

Major Road: Sir John A. MacDonald Blvd runs N/S

North Leg Total: 14179

North Entering: 7437

North Peds: 453

Peds Cross: ☒

Cyclists 4 11 6 21

Trucks 30 111 169 310

Cars 1079 2480 3548 7106

Totals 1113 2602 3722

Cyclists 0

Trucks 286

Cars 6456

Totals 6742

East Leg Total: 12064

East Entering: 5548

East Peds: 115

Peds Cross: ☒

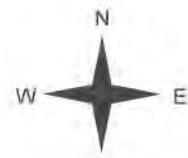
Cyclists Trucks Cars Totals
32 250 3771 4053



Sir John A Macdonald Blvd

Cars	Trucks	Cyclists	Totals
2553	124	0	2677
2544	169	28	2741
124	6	0	130
5221	299	28	

Cyclists Trucks Cars Totals
0 28 1064 1092
81 156 2305 2542
2 38 60 100
83 222 3429



Union St

→
Cars 6093 Trucks 335 Cyclists 88 Totals 6516

Peds Cross: ☒
West Peds: 122
West Entering: 3734
West Leg Total: 7787

Cars 2664
Trucks 154
Cyclists 13
Totals 2831

Cars 149 2839 241 3228
Trucks 51 133 9 194
Cyclists 0 0 2 2
Totals 199 2972 252

Peds Cross: ☒
South Peds: 135
South Entering: 3423
South Leg Total: 6255

Comments

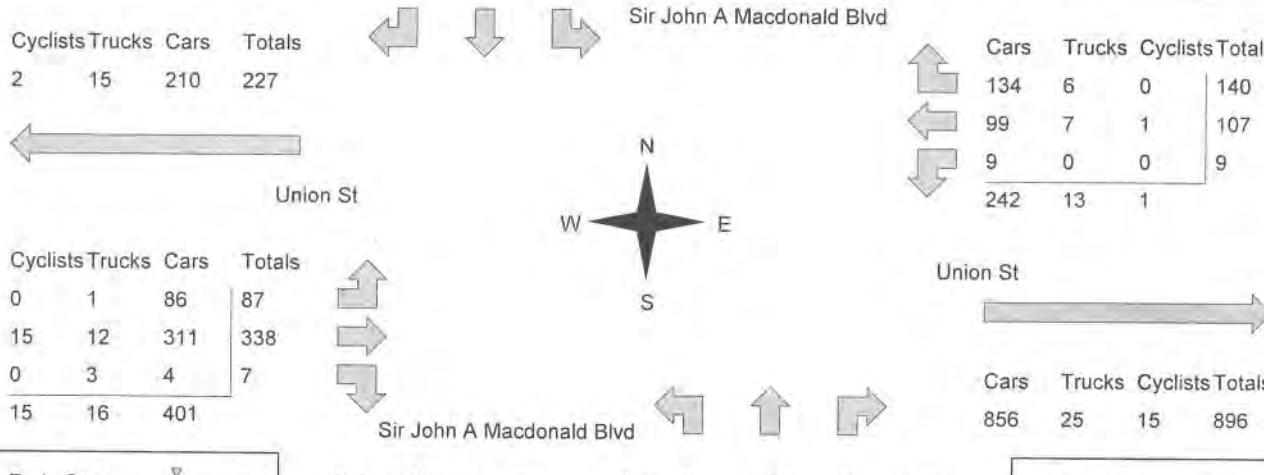
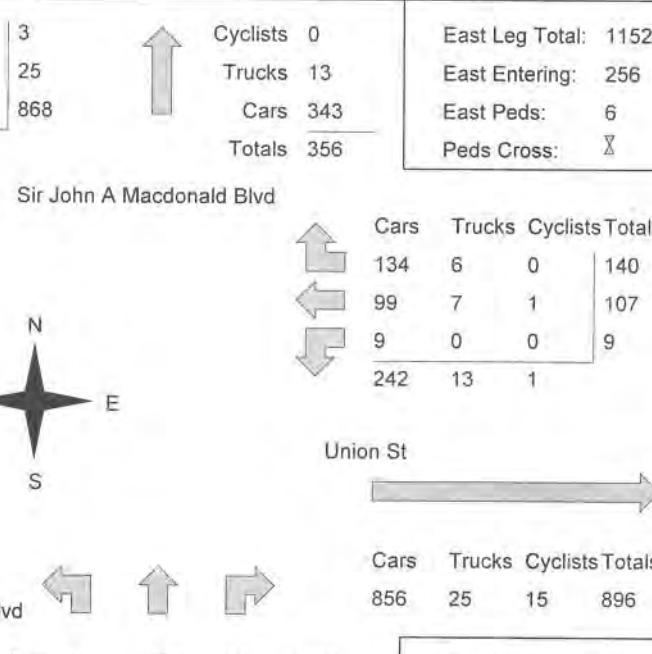
Sir John A. Macdonald Blvd @ Union St

Total Count Diagram

Municipality: City of Kingston Site #: 0000000001 Intersection: Sir John A. MacDonald Blvd & Union St TFR File #: 1 Count date: 28-Oct-2014	Weather conditions: Person(s) who counted: MIOVISION																																				
** Signalized Intersection **	Major Road: Sir John A. MacDonald Blvd runs N/																																				
North Leg Total: 7542 North Entering: 3956 North Peds: 241 Peds Cross: ☰	<table border="1"> <thead> <tr> <th>Cyclists</th><th>6</th><th>3</th><th>11</th><th></th><th>Cyclists</th><th>0</th><th></th><th>East Leg Total: 6417</th></tr> </thead> <tbody> <tr> <td>Trucks</td><td>16</td><td>59</td><td>90</td><td>165</td><td>Trucks</td><td>152</td><td></td><td>East Entering: 2951</td></tr> <tr> <td>Cars</td><td>574</td><td>1319</td><td>1887</td><td>3780</td><td>Cars</td><td>3434</td><td></td><td>East Peds: 61</td></tr> <tr> <td>Totals</td><td>592</td><td>1384</td><td>1980</td><td></td><td>Totals</td><td>3586</td><td></td><td>Peds Cross: ☱</td></tr> </tbody> </table>	Cyclists	6	3	11		Cyclists	0		East Leg Total: 6417	Trucks	16	59	90	165	Trucks	152		East Entering: 2951	Cars	574	1319	1887	3780	Cars	3434		East Peds: 61	Totals	592	1384	1980		Totals	3586		Peds Cross: ☱
Cyclists	6	3	11		Cyclists	0		East Leg Total: 6417																													
Trucks	16	59	90	165	Trucks	152		East Entering: 2951																													
Cars	574	1319	1887	3780	Cars	3434		East Peds: 61																													
Totals	592	1384	1980		Totals	3586		Peds Cross: ☱																													
Cyclists Trucks Cars Totals 17 133 2006 2156 	Sir John A Macdonald Blvd <table border="1"> <thead> <tr> <th>Cars</th><th>Trucks</th><th>Cyclists</th><th>Totals</th></tr> </thead> <tbody> <tr> <td>1358</td><td>66</td><td>0</td><td>1424</td></tr> <tr> <td>1353</td><td>90</td><td>15</td><td>1458</td></tr> <tr> <td>66</td><td>3</td><td>0</td><td>69</td></tr> <tr> <td>2777</td><td>159</td><td>15</td><td></td></tr> </tbody> </table>	Cars	Trucks	Cyclists	Totals	1358	66	0	1424	1353	90	15	1458	66	3	0	69	2777	159	15																	
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1353	90	15	1458																																		
66	3	0	69																																		
2777	159	15																																			
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Peds Cross: ☱ West Peds: 65 West Entering: 1986 West Leg Total: 4142	Sir John A Macdonald Blvd <table border="1"> <thead> <tr> <th>Cars</th><th>Trucks</th><th>Cyclists</th><th>Totals</th></tr> </thead> <tbody> <tr> <td>3241</td><td>178</td><td>47</td><td>3466</td></tr> </tbody> </table>	Cars	Trucks	Cyclists	Totals	3241	178	47	3466																												
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Cars 1417 Trucks 82 Cyclists 7 Totals 1506	Cars 79 1510 128 1717 Trucks 27 71 5 103 Cyclists 0 0 1 1 Totals 106 1581 134																																				
Peds Cross: ☱ South Peds: 72 South Entering: 1821 South Leg Total: 3327																																					

Comments

Sir John A. Macdonald Blvd @ Union St

Morning Peak Diagram	Specified Period From: 7:00:00 To: 10:00:00	One Hour Peak From: 7:30:00 To: 8:30:00																																																																					
Municipality: City of Kingston Site #: 0000000001 Intersection: Sir John A. MacDonald Blvd & Union St TFR File #: 1 Count date: 28-Oct-2014	Weather conditions: Person(s) who counted: MIOVISION																																																																						
** Signalized Intersection **	Major Road: Sir John A. MacDonald Blvd runs N/																																																																						
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Sir John A. Macdonald Blvd @ Union St

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 13:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Sir John A. MacDonald Blvd & Union St

TFR File #: 1

Count date: 28-Oct-2014

Weather conditions:

Person(s) who counted:

MIOVISION

** Signalized Intersection **

Major Road: Sir John A. MacDonald Blvd runs N/S

North Leg Total: 595

North Entering: 294

North Peds: 10

Peds Cross: ☒

Cyclists	0	0	0	0
Trucks	0	4	9	13
Cars	54	99	128	281
Totals	54	103	137	

Cyclists	0	0	0	0
Trucks	15	15	15	15
Cars	286	286	286	286
Totals	301	301	301	301

East Leg Total: 457

East Entering: 217

East Peds: 3

Peds Cross: ☒

Cyclists	0	0	0	0
Trucks	8	8	8	8
Cars	152	152	152	152
Totals	160	160	160	160



Sir John A Macdonald Blvd

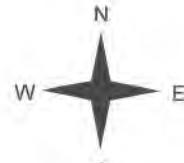
Cars	111	5	0	116
Trucks	92	6	0	98
Cyclists	3	0	0	3
Totals	206	11	0	206

Cyclists	0	0	0	0
Trucks	3	3	3	3
Cars	52	52	52	52
Totals	55	55	55	55

Cyclists	0	0	0	0
Trucks	8	8	8	8
Cars	89	89	89	89
Totals	97	97	97	97

Cyclists	0	0	0	0
Trucks	1	1	1	1
Cars	2	2	2	2
Totals	3	3	3	3

Cyclists	0	0	0	0
Trucks	12	12	12	12
Cars	143	143	143	143
Totals	143	143	143	143



Union St



Peds Cross:	☒
West Peds:	4
West Entering:	155
West Leg Total:	315

Cars	104
Trucks	5
Cyclists	0
Totals	109



Comments

Peds Cross:	☒
South Peds:	11
South Entering:	144
South Leg Total:	253



Cars	6	123	6	135
Trucks	2	7	0	9
Cyclists	0	0	0	0
Totals	8	130	6	135

Sir John A. Macdonald Blvd @ Union St

Afternoon Peak Diagram

Specified Period

From: 14:00:00

To: 17:00:00

One Hour Peak

From: 15:45:00

To: 16:45:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Sir John A. MacDonald Blvd & Union

TFR File #: 1

Count date: 28-Oct-2014

Weather conditions:

Person(s) who counted:

MIOVISION

** Signalized Intersection **

Major Road: Sir John A. MacDonald Blvd runs N/

North Leg Total: 907

North Entering: 330

North Peds: 37

Peds Cross: ☒

Cyclists	0	0	0	0
Trucks	1	4	5	10
Cars	58	114	148	320
Totals	59	118	153	

Cyclists	0	0	0	0
Trucks	9	9	9	27
Cars	568	568	568	1694
Totals	577	577	577	1721

East Leg Total: 855

East Entering: 568

East Peds: 13

Peds Cross: ☒

Cyclists	4	11	399	414
Trucks	0	0	0	0
Cars	0	0	0	0
Totals	4	11	399	414



Sir John A Macdonald Blvd

Cars	206	8	0	214
Trucks	326	8	4	338
Cyclists	16	0	0	16
Totals	548	16	4	568

Cyclists	0	0	81	81
Trucks	2	9	113	124
Cars	0	2	2	4
Totals	2	11	196	

Union St



Union St

Peds Cross:	☒
West Peds:	8
West Entering:	209
West Leg Total:	623

Cars	132
Trucks	6
Cyclists	0
Totals	138

Cars	15	281	10	306
Trucks	2	1	0	3
Cyclists	0	0	0	0
Totals	17	282	10	306

Peds Cross:	☒
South Peds:	7
South Entering:	309
South Leg Total:	447

Comments

Sir John A. Macdonald Blvd @ Union St

Eight Hour Peak Diagram

Eight Hour Peak

From: 7:15:00

To: 15:15:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Sir John A. MacDonald Blvd & Union St

TFR File #: 1

Count date: 28-Oct-2014

Weather conditions:

Person(s) who counted:

MIOVISION

** Signalized Intersection **

Major Road: Sir John A. MacDonald Blvd runs N/

North Leg Total: 5109

North Entering: 2937

North Peds: 144

Peds Cross: ☒

Cyclists	2	5	3	10
Trucks	13	49	67	129
Cars	374	1001	1423	2798
Totals	389	1055	1493	

Cyclists	0
Trucks	110
Cars	2062
Totals	2172

East Leg Total: 4193

East Entering: 1612

East Peds: 25

Peds Cross: ☒

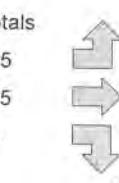
Cyclists	10	101	1077	1188
Trucks				
Cars				
Totals				



Sir John A Macdonald Blvd

Cars	786	48	0	834
Trucks	661	67	8	736
Cyclists	40	2	0	42
Totals	1487	117	8	

Cyclists	0	12	363	375
Trucks	34	62	889	985
Cars	0	14	19	33
Totals	34	88	1271	



Sir John A Macdonald Blvd

Union St

Cars	2411	132	38	2581
Trucks				
Cyclists				
Totals				

Peds Cross:	☒
West Peds:	42
West Entering:	1393
West Leg Total:	2581

Cars	1060
Trucks	65
Cyclists	5
Totals	1130



Peds Cross:	☒
South Peds:	53
South Entering:	1129
South Leg Total:	2259

Comments

Sir John A. Macdonald Blvd @ Union St

Traffic Count Summary

Intersection: Sir John A. MacDonald Blvd & Unic				Count Date: 28-Oct-2014		Municipality: City of Kingston					
North Approach Totals						South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	North/South Total Approaches	Hour Ending	Includes Cars, Trucks, & Cyclists			
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total
8:00:00	423	200	84	707	17	852	8:00:00	5	119	21	145
9:00:00	456	263	86	805	26	967	9:00:00	14	122	26	162
10:00:00	190	143	56	389	27	523	10:00:00	5	115	14	134
12:00:00	136	134	48	318	28	541	12:00:00	14	190	19	223
13:00:00	193	140	73	406	18	598	13:00:00	12	169	11	192
15:00:00	147	166	49	362	24	613	15:00:00	10	229	12	251
16:00:00	145	131	55	331	25	601	16:00:00	14	245	11	270
17:00:00	157	105	61	323	45	622	17:00:00	20	268	11	299
18:00:00	133	102	80	315	31	460	18:00:00	12	124	9	145
Totals:	1980	1384	592	3956	241	5777		106	1581	134	1821
											72
East Approach Totals						West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	East/West Total Approaches	Hour Ending	Includes Cars, Trucks, & Cyclists			
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total
8:00:00	8	65	120	193	2	540	8:00:00	74	268	5	347
9:00:00	8	129	138	275	9	620	9:00:00	72	269	4	345
10:00:00	4	103	110	217	7	416	10:00:00	58	136	5	199
12:00:00	10	119	130	259	4	405	12:00:00	47	90	9	146
13:00:00	5	128	137	270	3	479	13:00:00	75	130	4	209
15:00:00	7	149	185	341	0	512	15:00:00	52	114	5	171
16:00:00	9	207	207	423	4	600	16:00:00	62	106	9	177
17:00:00	15	348	200	563	14	764	17:00:00	77	120	4	201
18:00:00	3	210	197	410	18	601	18:00:00	64	119	8	191
Totals:	69	1458	1424	2951	61	4937		581	1352	53	1986
											65
Calculated Values for Traffic Crossing Major Street											
Hours Ending:	8:00	9:00	12:00	13:00			15:00	16:00	17:00	18:00	
Crossing Values:	372	390	211	239			237	309	489	319	

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014

Intersection: Sir John A. MacDonald Blvd & Union St Municipality: City of Kingston

Major Road: Sir John A. MacDonald Blvd

Major Road Runs: N/S two lanes each way

Operating Speed of Major Road: 60 km/hr

Operating under restricted flow conditions

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches.

100% Satisfied

No. of Lanes	Minimum Requirements					Hours Ending									Percentage Warrant						
	1 Lane Each Way		2 Lanes Each Way		3 Lanes	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00								
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)																
100%	480	720	600	900	1125											100%					
80%	385	575	480	720	900	1392	1587	946	1077	1125	1201	1386	1061	Yes: X No:							
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100		800						
	80% Fulfilled															0					
	Actual % if Below 80%															0					
													Total:	800							
													Actual Average (Total/8):	100%							

B. Minor Street Both Approaches.

100%	120	170	120	170	170											100%					
80%	95	135	95	135	135	540	620	405	479	512	600	764	601	Yes: X No:							
Minor Street Both Approaches	100% Fulfilled					100	100	100	100	100	100	100	100		800						
	80% Fulfilled															0					
	Actual % if Below 80%															0					
													Total:	800							
													Actual Average (Total/8):	100%							

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014

Intersection: Sir John A. MacDonald Blvd & Union St Municipality: City of Kingston

Major Road: Sir John A. MacDonald Blvd

Major Road Runs: N/S two lanes each way

Operating Speed of Major Road: 60 km/hr

Operating under restricted flow conditions

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches.

Not Satisfied

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant					
	1 Lane Each Way	2 Lanes Each Way	3 Lanes	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00								
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	852	967	541	598	613	601	622	460	Yes: 100% No: X					
100%	480	720	600	900	1125														
80%	385	575	480	720	900														
All Approaches	100% Fulfilled					100								100					
	80% Fulfilled					80								80					
	Actual % if Below 80%							60	66	68	67	69	51	382					
+												Total:	562						
												Actual Average (Total/8):	70%						

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	372	390	211	239	237	309	489	319	100% Yes: X No:					
80%	40	60	40	60	60														
All Approaches	100% Fulfilled					100	100	100	100	100	100	100	100	800					
	80% Fulfilled													0					
	Actual % if Below 80%													0					
												Total:	800						
												Actual Average (Total/8):	100%						

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014

Intersection: Sir John A. MacDonald Blvd & Union St **Municipality:** City of Kingston

Major Road: Sir John A. MacDonald Blvd

Major Road Runs: N/S two lanes each way

Operating Speed of Major Road: 60 km/hr

Operating under restricted flow conditions

Warrant #3: Accident Experience.

Not Satisfied

- A. Reportable accidents within a twelve month period averaged over 36 consecutive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	0 in 0 years	Invalid	0%
B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.			No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.			Yes

Warrant #4: Combination Warrant. (Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	Yes No No

Conclusion: Traffic signal warranted.

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014 Site #: 0000000001

Interval Time	Passenger Cars - North Approach				Trucks - North Approach				Cyclists - North Approach				Pedestrians			
	Left		Thru		Right		Left		Thru		Right		Left		Thru	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:15:00	68	68	28	28	20	20	2	2	1	1	0	0	0	0	0	2
7:30:00	161	93	69	41	35	15	3	1	4	3	0	0	0	0	0	4
7:45:00	278	117	126	57	57	22	8	5	4	0	2	0	0	0	0	8
8:00:00	411	133	194	68	79	22	12	4	5	1	4	2	0	0	1	4
8:15:00	540	129	244	50	114	35	13	1	8	3	4	0	0	0	1	9
8:30:00	672	132	321	77	140	26	15	2	12	4	5	1	0	0	1	9
8:45:00	780	108	392	71	155	15	19	4	14	2	5	0	0	0	2	4
9:00:00	858	78	442	50	163	8	21	2	19	5	6	1	0	0	2	4
9:15:00	910	52	476	34	175	12	22	1	20	1	6	0	1	1	2	9
9:30:00	952	42	500	24	184	9	26	4	22	2	7	1	2	1	2	9
9:45:00	994	42	540	40	200	16	32	6	24	2	8	1	2	0	2	6
10:00:00	1033	39	574	34	215	15	34	2	30	6	9	1	2	0	2	3
11:15:00	1072	39	608	34	229	14	36	2	32	2	9	0	2	0	2	10
11:30:00	1096	24	634	26	240	11	37	1	33	1	9	0	3	1	4	5
11:45:00	1132	36	667	33	250	10	39	2	34	1	10	1	3	0	5	5
12:00:00	1161	29	700	33	261	11	41	2	35	1	11	3	0	5	0	8
12:15:00	1192	31	726	26	280	19	43	2	37	2	11	0	3	0	5	8
12:30:00	1246	54	757	31	290	10	47	4	39	2	11	0	3	0	5	8
12:45:00	1289	43	799	42	315	25	50	3	39	0	11	0	3	0	5	6
13:00:00	1345	56	835	36	333	18	50	0	40	1	12	1	3	0	2	6
14:15:00	1372	27	869	34	341	8	54	4	43	3	12	0	3	0	2	6
14:30:00	1406	34	910	41	354	13	59	5	43	0	12	0	3	0	2	5
14:45:00	1447	41	957	47	365	11	67	8	44	1	13	1	3	0	2	5
15:00:00	1474	27	994	37	381	16	68	1	47	3	13	0	3	0	2	5
15:15:00	1491	17	1029	35	394	13	69	1	50	3	13	0	3	0	2	3
15:30:00	1532	41	1060	31	410	16	74	5	51	1	13	0	3	0	2	4
15:45:00	1575	43	1083	23	419	9	76	2	53	2	14	1	3	0	2	5
16:00:00	1610	35	1117	34	435	16	77	1	54	1	14	0	3	0	2	5
16:15:00	1649	39	1146	29	444	9	80	3	56	2	14	0	3	0	2	5
16:30:00	1691	42	1177	31	461	17	81	1	56	0	14	0	3	0	2	5
16:45:00	1723	32	1197	20	477	16	81	0	57	1	15	1	3	0	2	5
17:00:00	1762	39	1219	22	495	18	82	1	57	0	15	0	3	0	2	5
17:15:00	1787	25	1250	31	511	16	84	2	58	1	16	1	3	0	2	5
17:30:00	1820	33	1267	17	529	18	86	2	58	0	16	0	3	0	2	5
17:45:00	1854	34	1301	34	547	18	87	1	58	0	16	0	3	0	2	5
18:00:00	1887	33	1319	18	574	27	59	1	59	1	16	0	3	0	2	5

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014 Site #: 0000000001

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014 Site #: 0000000001

Interval Time	Passenger Cars - South Approach				Trucks - South Approach				Cyclists - South Approach				Pedestrians			
	Left	Cum	Incr	Thru	Right	Cum	Incr	Thru	Left	Cum	Incr	Thru	Right	Cum	Incr	South Cross
7:15:00	1	1	33	33	1	1	0	0	1	1	1	0	0	0	0	0
7:30:00	2	1	51	18	5	4	2	2	2	1	0	0	0	0	1	1
7:45:00	2	0	79	28	11	6	2	0	2	1	0	0	0	0	4	3
8:00:00	2	0	113	34	19	8	3	1	6	1	2	2	0	0	5	8
8:15:00	3	1	136	23	29	10	3	0	8	1	2	2	0	0	13	1
8:30:00	8	5	174	38	39	10	5	2	9	1	2	2	0	0	14	3
8:45:00	11	3	199	25	44	5	5	0	11	2	2	2	0	0	17	0
9:00:00	13	2	228	29	45	1	6	1	13	2	2	2	0	0	20	3
9:15:00	13	0	263	35	50	5	6	0	14	1	2	2	0	0	21	1
9:30:00	14	1	284	21	53	3	7	1	15	1	2	2	0	0	25	4
9:45:00	15	1	306	22	56	3	8	1	18	3	2	2	0	0	26	1
10:00:00	15	0	337	31	59	3	9	1	19	1	2	2	0	0	28	2
11:15:00	18	3	368	31	65	6	10	1	20	1	2	2	0	0	28	0
11:30:00	20	2	418	50	66	1	11	1	27	7	2	2	0	0	29	1
11:45:00	21	1	464	46	70	4	12	1	30	3	3	3	0	0	32	3
12:00:00	25	4	514	50	77	7	13	1	32	2	3	3	0	0	35	3
12:15:00	28	3	552	38	79	2	13	0	35	3	3	3	0	0	41	6
12:30:00	28	0	589	37	80	1	14	1	39	4	3	3	0	0	45	4
12:45:00	31	3	637	48	83	3	15	1	39	0	3	3	0	0	46	1
13:00:00	32	1	675	38	88	5	18	3	40	1	3	3	0	0	46	0
14:15:00	34	2	732	57	90	2	18	0	43	3	3	3	0	0	48	2
14:30:00	36	2	788	56	93	3	19	1	45	2	4	4	0	0	53	1
14:45:00	36	0	842	54	98	5	19	0	47	2	4	4	0	0	54	0
15:00:00	39	3	894	52	98	0	21	2	50	3	4	4	0	0	57	3
15:15:00	43	4	946	52	100	2	21	0	51	1	4	4	0	0	58	1
15:30:00	46	3	1002	56	101	1	22	1	56	5	5	5	0	0	59	1
15:45:00	48	2	1058	56	106	5	22	0	61	5	5	5	0	0	61	2
16:00:00	51	3	1128	70	108	2	23	1	61	0	5	5	0	0	62	0
16:15:00	54	3	1211	83	110	2	23	0	61	0	5	5	0	0	66	1
16:30:00	60	6	1276	65	113	3	24	1	62	1	5	5	0	0	66	0
16:45:00	63	3	1339	63	116	3	24	0	62	0	5	5	0	0	66	2
17:00:00	69	6	1391	52	119	3	25	1	66	4	5	5	0	0	66	1
17:15:00	73	4	1440	49	121	2	25	0	66	0	4	4	0	0	66	0
17:30:00	75	2	1464	24	122	1	26	1	70	1	5	5	0	0	66	1
17:45:00	77	2	1490	26	125	3	26	0	70	0	5	5	0	0	66	1
18:00:00	79	2	1510	20	128	3	27	1	71	1	5	5	0	0	72	0

Sir John A. Macdonald Blvd @ Union St

Count Date: 28-Oct-2014 Site #: 000000001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians			West Cross		
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		Cum	Incr	Cum	Incr	Cum	Incr
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:15:00	14	14	43	43	0	0	0	0	2	2	0	0	0	0	0	0	3	3	0	0	0	0	0	0
7:30:00	28	14	81	38	0	0	0	0	4	2	1	0	0	0	0	0	5	2	0	0	1	1	0	1
7:45:00	44	16	164	83	0	0	1	1	7	3	2	1	0	0	0	0	7	2	0	0	2	1	1	1
8:00:00	73	29	247	83	2	2	1	0	9	2	3	1	0	0	0	0	12	5	0	0	3	1	1	1
8:15:00	96	23	324	77	3	1	1	0	13	4	3	0	0	0	0	0	15	3	0	0	0	0	0	0
8:30:00	114	18	392	68	4	1	1	0	16	3	4	1	0	0	0	0	20	5	0	0	0	0	0	0
8:45:00	128	14	441	49	4	0	1	0	19	3	4	0	0	0	0	0	20	0	0	0	0	0	0	0
9:00:00	142	14	492	51	4	0	4	3	24	5	5	1	0	0	0	0	21	1	0	0	0	0	0	0
9:15:00	165	23	541	49	6	2	4	0	28	4	5	0	0	0	0	0	21	0	0	0	0	0	0	0
9:30:00	172	7	568	27	6	0	5	1	31	3	6	1	0	0	0	0	22	1	0	0	0	0	0	0
9:45:00	184	12	591	23	7	1	5	0	33	2	6	0	0	0	0	0	23	1	0	0	0	0	0	0
10:00:00	198	14	613	22	7	0	6	1	36	3	7	1	0	0	0	0	24	1	0	0	0	0	0	0
11:15:00	201	3	628	15	9	2	6	0	40	4	7	0	0	0	0	0	26	2	0	0	0	0	0	0
11:30:00	214	13	650	22	10	1	6	0	41	1	8	1	0	0	0	0	28	2	0	0	0	0	0	0
11:45:00	230	16	674	24	10	0	8	2	43	2	8	0	0	0	0	0	30	2	0	0	0	0	0	0
12:00:00	242	12	687	13	14	4	9	1	44	1	9	1	0	0	0	0	32	2	0	0	0	0	0	0
12:15:00	267	25	715	28	14	0	10	1	47	3	9	0	0	0	0	0	32	0	0	0	0	0	0	0
12:30:00	281	14	751	36	16	2	11	1	49	2	9	0	0	0	0	0	32	0	0	0	0	0	0	0
12:45:00	294	13	776	25	16	0	12	1	52	3	10	1	0	0	0	0	32	0	0	0	0	0	0	0
13:00:00	314	20	808	32	16	0	12	0	53	1	11	1	0	0	0	0	32	0	0	0	0	0	0	0
14:15:00	321	7	839	31	17	1	12	0	56	3	12	1	0	0	0	0	34	2	0	0	0	0	0	0
14:30:00	340	19	862	23	17	0	12	0	58	2	13	1	0	0	0	0	34	0	0	0	0	0	0	0
14:45:00	354	14	892	30	18	1	12	0	60	2	13	0	0	0	0	0	36	2	0	0	0	0	0	0
15:00:00	366	12	910	18	18	0	12	0	61	1	14	0	0	0	0	0	36	0	0	0	0	0	0	0
15:15:00	377	11	932	22	19	1	12	0	64	3	14	0	0	0	0	0	37	1	0	0	0	0	0	0
15:30:00	388	11	955	23	20	1	12	0	67	3	15	1	0	0	0	0	37	0	0	0	0	0	0	0
15:45:00	405	17	978	23	3	15	0	69	2	15	0	0	0	0	0	37	0	1	0	0	0	0	0	
16:00:00	425	20	1005	27	24	1	15	0	70	1	16	1	0	0	0	0	38	1	0	0	0	0	0	0
16:15:00	446	21	1035	30	24	0	15	0	72	2	16	0	0	0	0	0	38	0	1	0	0	0	0	0
16:30:00	464	18	1061	26	25	1	15	0	74	2	17	1	0	0	0	0	38	0	1	0	0	0	0	0
16:45:00	486	22	1091	30	25	0	15	0	78	4	17	0	0	0	0	0	39	1	0	0	0	0	0	0
17:00:00	502	16	1116	25	26	1	15	0	78	0	18	1	0	0	0	0	39	0	1	0	0	0	0	0
17:15:00	526	24	1132	16	27	1	15	0	80	2	18	0	0	0	0	0	40	1	0	0	0	0	0	0
17:30:00	539	13	1163	31	28	1	15	0	81	1	19	1	0	0	0	0	41	1	1	1	1	1	1	1
17:45:00	553	14	1191	28	30	2	15	0	83	2	19	0	0	0	0	0	42	1	1	1	1	1	1	1
18:00:00	566	13	1226	35	32	2	15	0	83	0	20	1	0	0	0	0	43	0	0	0	0	0	0	0

Union St @ West Campus Ln - 518 Union St

Annual Average Daily Traffic Diagram

Total Factor = Monthly Factor(1.00) x Daily Factor(1.00) x 24 Hour Factor(1.88) = 1.880000

Municipality: City of Kingston Site #: 0000000001 Intersection: Union St & West Campus Ln TFR File #: 1 Count date: 1-Feb-2017	Weather conditions: Person(s) who counted: Miovision																																
** Non-Signalized Intersection **	Major Road: Union St runs W/E																																
North Leg Total: 0 North Entering: 0 North Peds: 212 Peds Cross:	<table border="1"> <tr> <td>Cyclists 0</td> <td>0</td> <td>0</td> <td>↑</td> <td>Cyclists 0</td> <td>0</td> <td>0</td> <td>East Leg Total: 7403</td> </tr> <tr> <td>Trucks 0</td> <td>0</td> <td>0</td> <td>↑</td> <td>Trucks 0</td> <td>0</td> <td>0</td> <td>East Entering: 3465</td> </tr> <tr> <td>Cars 0</td> <td>0</td> <td>0</td> <td>↑</td> <td>Cars 0</td> <td>0</td> <td>0</td> <td>East Peds: 1290</td> </tr> <tr> <td>Totals 0</td> <td>0</td> <td>0</td> <td>↑</td> <td>Totals 0</td> <td>0</td> <td>0</td> <td>Peds Cross: </td> </tr> </table>	Cyclists 0	0	0	↑	Cyclists 0	0	0	East Leg Total: 7403	Trucks 0	0	0	↑	Trucks 0	0	0	East Entering: 3465	Cars 0	0	0	↑	Cars 0	0	0	East Peds: 1290	Totals 0	0	0	↑	Totals 0	0	0	Peds Cross:
Cyclists 0	0	0	↑	Cyclists 0	0	0	East Leg Total: 7403																										
Trucks 0	0	0	↑	Trucks 0	0	0	East Entering: 3465																										
Cars 0	0	0	↑	Cars 0	0	0	East Peds: 1290																										
Totals 0	0	0	↑	Totals 0	0	0	Peds Cross:																										
Cyclists Trucks Cars Totals 8 216 3241 3465 	West Campus Ln <table border="1"> <tr> <td>←</td> <td>→</td> <td>Cars Trucks Cyclists Totals</td> </tr> <tr> <td>0</td> <td>0</td> <td>0 0</td> <td>0</td> </tr> <tr> <td>3241</td> <td>216</td> <td>8</td> <td>3465</td> </tr> </table>	←	→	Cars Trucks Cyclists Totals	0	0	0 0	0	3241	216	8	3465																					
←	→	Cars Trucks Cyclists Totals																															
0	0	0 0	0																														
3241	216	8	3465																														
Cyclists Trucks Cars Totals 0 0 0 0 9 291 3638 3939 	Union St <table border="1"> <tr> <td>←</td> <td>→</td> <td>Cars Trucks Cyclists Totals</td> </tr> <tr> <td>3241</td> <td>216</td> <td>8</td> <td>3465</td> </tr> <tr> <td>3638</td> <td>291</td> <td>9</td> <td>3939</td> </tr> </table>	←	→	Cars Trucks Cyclists Totals	3241	216	8	3465	3638	291	9	3939																					
←	→	Cars Trucks Cyclists Totals																															
3241	216	8	3465																														
3638	291	9	3939																														
Peds Cross: West Peds: 192 West Entering: 3939 West Leg Total: 7403	Comments																																

Union St @ West Campus Ln - 518 Union St

Total Count Diagram

Municipality: City of Kingston
Site #: 0000000001
Intersection: Union St & West Campus Ln
TFR File #: 1
Count date: 1-Feb-2017

Weather conditions:

Person(s) who counted:

Miovision

**** Non-Signalized Intersection ****

Major Road: Union St runs W/E

North Leg Total: 0	Cyclists	0	0
North Entering: 0	Trucks	0	0
North Peds: 113	Cars	0	0
Peds Cross: X	Totals	0	0

Cyclists	0	0
Trucks	0	0
Cars	0	0
Totals	0	0

Cyclists	0	0
Trucks	0	0
Cars	0	0
Totals	0	0

East Leg Total: 3938			
East Entering: 1843			
East Peds: 686			
Peds Cross: X			

Cyclists	4
Trucks	115
Cars	1724
Totals	1843



West Campus Ln

Cars	0	0	0	0
Trucks	1724	115	4	1843

Cyclists	0	0	0	0
Trucks	5	155	1935	2095
Cars	5	155	1935	2095
Totals				



Union St

Cars	1935	155	5	2095
Trucks				
Cyclists				
Totals				

Peds Cross: X
 West Peds: 102
 West Entering: 2095
 West Leg Total: 3938

Comments

Union St @ West Campus Ln - 518 Union St

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 10:00:00

One Hour Peak

From: 7:45:00

To: 8:45:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Union St & West Campus Ln

TFR File #: 1

Count date: 1-Feb-2017

Weather conditions:

Person(s) who counted:

Miovision

** Non-Signalized Intersection **

Major Road: Union St runs W/E

North Leg Total: 0

Cyclists 0 0 0

North Entering: 0

Trucks 0 0 0

North Peds: 12

Cars 0 0 0

Peds Cross: ☰

Totals 0 0 0

Cyclists 0

Trucks 0

Cars 0

Totals 0

East Leg Total: 542

East Entering: 168

East Peds: 122

Peds Cross: ☒

Cyclists Trucks Cars Totals
0 14 154 168



West Campus Ln

Cars Trucks Cyclists Totals
0 0 0 0
154 14 0 168

Union St



Cyclists Trucks Cars Totals
0 0 0 0
1 19 354 374
1 19 354



Union St

Cars Trucks Cyclists Totals
354 19 1 374

Peds Cross: ☒

West Peds: 49

West Entering: 374

West Leg Total: 542

Comments

Union St @ West Campus Ln - 518 Union St

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 13:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Union St & West Campus Ln

TFR File #: 1

Count date: 1-Feb-2017

Weather conditions:

Person(s) who counted:

Miovision

** Non-Signalized Intersection **

Major Road: Union St runs W/E

North Leg Total: 0

Cyclists	0	0	0
Trucks	0	0	0
Cars	0	0	0
Totals	0	0	0

North Entering: 0

North Peds: 10

Peds Cross:

Cyclists 0

Trucks 0

Cars 0

Totals 0

East Leg Total: 317

East Entering: 146

East Peds: 49

Peds Cross:

Cyclists Trucks Cars Totals

0 8 138 146



West Campus Ln

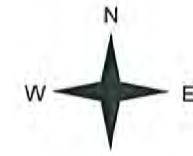
	Cars	Trucks	Cyclists	Totals
0	0	0	0	0
138	8	0	0	146

Cyclists Trucks Cars Totals

0 0 0 0

0 14 157 171

0 14 157 171



Union St



	Cars	Trucks	Cyclists	Totals
157	14	0	0	171

Peds Cross:

West Peds: 2

West Entering: 171

West Leg Total: 317

Comments

Union St @ West Campus Ln - 518 Union St

Afternoon Peak Diagram

Specified Period

From: 13:00:00

To: 18:00:00

One Hour Peak

From: 16:15:00

To: 17:15:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Union St & West Campus Ln

TFR File #: 1

Count date: 1-Feb-2017

Weather conditions:

Person(s) who counted:

Miovision

** Non-Signalized Intersection **

Major Road: Union St runs W/E

North Leg Total: 0	Cyclists	0	0
North Entering: 0	Trucks	0	0
North Peds: 10	Cars	0	0
Peds Cross: ☒	Totals	0	0

Cyclists	0	0
Trucks	0	0
Cars	0	0
Totals	0	0

Cyclists	0	0	East Leg Total: 563
Trucks	0	0	East Entering: 355
Cars	0	0	East Peds: 17
Totals	0	0	Peds Cross: ☒

Cyclists	Trucks	Cars	Totals	←	→
0	9	346	355		
				←	
				→	

Cyclists	Trucks	Cars	Totals	←	→
0	0	0	0	↑	↑
0	11	197	208	↑	↑
0	11	197	208		

West Campus Ln

Union St

N

S

E

W

Cars	Trucks	Cyclists	Totals	←	→
0	0	0	0	↑	↑
346	9	0	355	↑	↑
346	9	0	355		
				←	→

Cars	Trucks	Cyclists	Totals	←	→
197	11	0	208	↑	↑
197	11	0	208	↑	↑
				↑	↑

Peds Cross: ☒

West Peds: 2

West Entering: 208

West Leg Total: 563

Comments

Union St @ West Campus Ln - 518 Union St

Eight Hour Peak Diagram

Eight Hour Peak

From: 10:00:00

To: 18:00:00

Municipality: City of Kingston

Site #: 0000000001

Intersection: Union St & West Campus Ln

TFR File #: 1

Count date: 1-Feb-2017

Weather conditions:

Person(s) who counted:

Miovision

**** Non-Signalized Intersection ****

Major Road: Union St runs W/E

North Leg Total: 0

Cyclists 0 0 0

East Leg Total: 2700

North Entering: 0

Trucks 0 0 0

East Entering: 1416

North Peds: 83

Cars 0 0 0

East Peds: 464

Peds Cross: X

Totals 0 0 0

Peds Cross: X

Cyclists Trucks Cars Totals

4 78 1334 1416



West Campus Ln

Cyclists Trucks Cars Totals

0 0 0 0

3 106 1175 1284



Cars Trucks Cyclists Totals

0 0 0 0

1334 78 4 1416

1334 78 4

3 106 1175



Peds Cross: X

West Peds: 41

West Entering: 1284

West Leg Total: 2700

Union St

Cars Trucks Cyclists Totals

1175 106 3 1284

Comments

Union St @ West Campus Ln - 518 Union St

Traffic Count Summary

Intersection: Union St & West Campus Ln				Count Date: 1-Feb-2017			Municipality: City of Kingston					
North Approach Totals					North/South Total Approaches	South Approach Totals						
Hour Ending	Includes Cars, Trucks, & Cyclists					Hour Ending	Includes Cars, Trucks, & Cyclists					
	Left	Thru	Right	Grand Total	Total Peds		Left	Thru	Right	Grand Total	Total Peds	
8:00:00	0	0	0	0	16	0	8:00:00	0	0	0	0	
9:00:00	0	0	0	0	4	0	9:00:00	0	0	0	0	
10:00:00	0	0	0	0	6	0	10:00:00	0	0	0	0	
11:00:00	0	0	0	0	14	0	11:00:00	0	0	0	0	
12:00:00	0	0	0	0	9	0	12:00:00	0	0	0	0	
13:00:00	0	0	0	0	10	0	13:00:00	0	0	0	0	
14:00:00	0	0	0	0	5	0	14:00:00	0	0	0	0	
15:00:00	0	0	0	0	8	0	15:00:00	0	0	0	0	
16:00:00	0	0	0	0	21	0	16:00:00	0	0	0	0	
17:00:00	0	0	0	0	9	0	17:00:00	0	0	0	0	
18:00:00	0	0	0	0	11	0	18:00:00	0	0	0	0	
Totals:	0	0	0	0	113	0	0	0	0	0	0	
East Approach Totals					East/West Total Approaches	West Approach Totals						
Hour Ending	Includes Cars, Trucks, & Cyclists					Hour Ending	Includes Cars, Trucks, & Cyclists					
	Left	Thru	Right	Grand Total	Total Peds		Left	Thru	Right	Grand Total	Total Peds	
8:00:00	0	108	0	108	19	337	8:00:00	0	229	0	229	0
9:00:00	0	176	0	176	116	533	9:00:00	0	357	0	357	49
10:00:00	0	98	0	98	78	273	10:00:00	0	175	0	175	4
11:00:00	0	101	0	101	115	273	11:00:00	0	172	0	172	14
12:00:00	0	138	0	138	88	291	12:00:00	0	153	0	153	7
13:00:00	0	146	0	146	49	317	13:00:00	0	171	0	171	2
14:00:00	0	109	0	109	60	267	14:00:00	0	158	0	158	2
15:00:00	0	135	0	135	62	272	15:00:00	0	137	0	137	3
16:00:00	0	224	0	224	54	389	16:00:00	0	165	0	165	10
17:00:00	0	355	0	355	21	548	17:00:00	0	193	0	193	2
18:00:00	0	253	0	253	24	438	18:00:00	0	185	0	185	9
Totals:	0	1843	0	1843	686	3938	0	2095	0	2095	102	
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	8:00	9:00	10:00	12:00			13:00	16:00	17:00	18:00		
Crossing Values:	19	165	82	95			51	64	23	33		

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017

Intersection: Union St & West Campus Ln

Municipality: City of Kingston

Major Road: Union St

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches.

Not Satisfied

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant					
	1 Lane Each Way	2 Lanes Each Way	3 Lanes	8:00	9:00	10:00	12:00	13:00	16:00	17:00	18:00								
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)														
100%	480	720	600	900	1125	337	533	273	291	317	389	548	438	100%					
80%	385	575	480	720	900									Yes: X No: X					
All Approaches	100% Fulfilled													0					
	80% Fulfilled													0					
	Actual % if Below 80%					47	74	38	40	44	54	76	61	434					
												Total:	434						
												Actual Average (Total/8):	54%						

B. Minor Street Both Approaches.

100%	120	170	120	170	170	0	0	0	0	0	0	0	0	100%					
80%	95	135	95	135	135									Yes: X No: X					
Minor Street Both Approaches	100% Fulfilled													0					
	80% Fulfilled													0					
	Actual % if Below 80%					0	0	0	0	0	0	0	0	0					
												Total:	0						
												Actual Average (Total/8):	0%						

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017

Intersection: Union St & West Campus Ln

Municipality: City of Kingston

Major Road: Union St

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches.

Not Satisfied

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant					
	1 Lane Each Way	2 Lanes Each Way	3 Lanes	8:00	9:00	10:00	12:00	13:00	16:00	17:00	18:00								
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	8:00	9:00	10:00	12:00	13:00	16:00	17:00	18:00						
100%	480	720	600	900	1125	337	533	273	291	317	389	548	438	100%					
80%	385	575	480	720	900									Yes: No: X					
All Approaches	100% Fulfilled													0					
	80% Fulfilled													0					
	Actual % if Below 80%					47	74	38	40	44	54	76	61	434					
													Total:	434					
													Actual Average (Total/8):	54%					

B. Traffic Crossing Major Street.

100%	50	75	50	75	75	19	165	82	95	51	64	23	33	100%					
80%	40	60	40	60	60									Yes: No: X					
All Approaches	100% Fulfilled						100	100	100					300					
	80% Fulfilled													80					
	Actual % if Below 80%					25				68		31	44	168					
													Total:	548					
													Actual Average (Total/8):	69%					

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017

Intersection: Union St & West Campus Ln

Municipality: City of Kingston

Major Road: Union St

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #3: Accident Experience.

Not Satisfied

- A. Reportable accidents within a twelve month period averaged over 36 consecutive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	0 in 0 years	Invalid	0%
B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.			No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.			No

Warrant #4: Combination Warrant. (Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	No No No

Conclusion: Traffic signal not warranted.

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Interval Time	Passenger Cars - East Approach				Trucks - East Approach				Cyclists - East Approach				Pedestrians		
	Left	Cum	Incr	Thru	Right	Cum	Incr	Thru	Right	Cum	Incr	Thru	Right	Cum	Incr
7:15:00	0	0	19	0	19	0	0	0	1	1	0	0	0	0	0
7:30:00	0	0	43	24	67	0	0	0	3	2	0	0	0	0	0
7:45:00	0	0	68	25	92	0	0	0	4	1	0	0	0	0	5
8:00:00	0	0	101	33	135	0	0	0	7	3	0	0	0	0	14
8:15:00	0	0	131	30	166	0	0	0	10	3	0	0	0	0	62
8:30:00	0	0	166	35	201	0	0	0	14	4	0	0	0	0	103
8:45:00	0	0	222	56	257	0	0	0	18	4	0	0	0	0	103
9:00:00	0	0	264	42	300	0	0	0	20	2	0	0	0	0	127
9:15:00	0	0	278	14	314	0	0	0	25	5	0	0	0	0	135
9:30:00	0	0	307	29	343	0	0	0	29	4	0	0	0	0	153
9:45:00	0	0	325	18	361	0	0	0	29	0	0	0	0	0	175
10:00:00	0	0	349	24	385	0	0	0	33	4	0	0	0	0	198
10:15:00	0	0	370	21	406	0	0	0	35	2	0	0	0	0	213
10:30:00	0	0	387	17	423	0	0	0	38	3	0	0	0	0	247
10:45:00	0	0	413	26	449	0	0	0	40	2	0	0	0	0	34
11:00:00	0	0	439	26	475	0	0	0	44	4	0	0	0	0	302
11:15:00	0	0	475	36	511	0	0	0	46	2	0	0	0	0	354
11:30:00	0	0	495	20	535	0	0	0	51	5	0	0	0	0	385
11:45:00	0	0	534	39	574	0	0	0	54	3	0	0	0	0	394
12:00:00	0	0	564	30	604	0	0	0	57	3	0	0	0	0	9
12:15:00	0	0	599	35	644	0	0	0	58	1	0	0	0	0	416
12:30:00	0	0	634	35	679	0	0	0	61	3	0	0	0	0	432
12:45:00	0	0	670	36	715	0	0	0	63	2	0	0	0	0	440
13:00:00	0	0	702	32	747	0	0	0	65	2	0	0	0	0	455
13:15:00	0	0	719	17	764	0	0	0	66	1	0	0	0	0	465
13:30:00	0	0	753	34	800	0	0	0	69	3	0	0	0	0	507
13:45:00	0	0	780	27	827	0	0	0	70	1	0	0	0	0	10
14:00:00	0	0	802	22	850	0	0	0	73	3	0	0	0	0	525
14:15:00	0	0	832	30	882	0	0	0	75	2	0	0	0	0	18
14:30:00	0	0	861	29	911	0	0	0	79	4	0	0	0	0	545
14:45:00	0	0	889	28	940	0	0	0	82	3	0	0	0	0	20
15:00:00	0	0	924	35	975	0	0	0	86	4	0	0	0	0	19
15:15:00	0	0	974	50	1024	0	0	0	87	1	0	0	0	0	564
15:30:00	0	0	1030	56	1080	0	0	0	92	5	0	0	0	0	10
15:45:00	0	0	1079	49	1129	0	0	0	95	3	0	0	0	0	626
16:00:00	0	0	1136	57	1193	0	0	0	97	2	0	0	0	0	15
16:15:00	0	0	1214	78	1292	0	0	0	99	2	0	0	0	0	641
16:30:00	0	0	1310	96	1406	0	0	0	101	2	0	0	0	0	648
16:45:00	0	0	1412	102	1518	0	0	0	102	1	0	0	0	0	8
17:00:00	0	0	1483	71	1651	0	0	0	105	3	0	0	0	0	5

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:15:00	0	0	1560	77	0	0	0	108	3	0	0	0	0	2	0	0	0	0	665	3
17:30:00	0	0	1640	80	0	0	0	110	2	0	0	0	0	4	2	0	0	0	673	8
17:45:00	0	0	1683	43	0	0	0	111	1	0	0	0	0	4	0	0	0	0	677	4
18:00:00	0	0	1724	41	0	0	0	115	4	0	0	0	0	4	0	0	0	0	686	9

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Interval Time	Passenger Cars - West Approach				Trucks - West Approach				Cyclists - West Approach				Pedestrians				
	Left	Cum	Incr	Thru	Right	Cum	Incr	Thru	Right	Cum	Incr	Thru	Left	Cum	Incr	Right	West Gross
7:15:00	0	0	19	19	0	0	0	0	2	2	0	0	0	0	0	0	0
7:30:00	0	0	61	42	0	0	0	0	4	2	0	0	0	0	0	0	0
7:45:00	0	0	129	68	0	0	0	0	7	3	0	0	0	0	0	0	0
8:00:00	0	0	217	88	0	0	0	0	12	5	0	0	0	0	0	0	0
8:15:00	0	0	317	100	0	0	0	0	18	6	0	0	0	1	1	0	21
8:30:00	0	0	423	106	0	0	0	0	24	6	0	0	0	1	1	0	47
8:45:00	0	0	483	60	0	0	0	0	26	2	0	0	0	1	1	0	49
9:00:00	0	0	555	72	0	0	0	0	30	4	0	0	0	1	1	0	49
9:15:00	0	0	592	37	0	0	0	0	34	4	0	0	0	1	1	0	49
9:30:00	0	0	642	50	0	0	0	0	40	6	0	0	0	1	1	0	51
9:45:00	0	0	680	38	0	0	0	0	44	4	0	0	0	1	1	0	51
10:00:00	0	0	712	32	0	0	0	0	47	3	0	0	0	2	1	0	53
10:15:00	0	0	754	42	0	0	0	0	53	6	0	0	0	2	0	0	57
10:30:00	0	0	797	43	0	0	0	0	57	4	0	0	0	2	0	0	65
10:45:00	0	0	832	35	0	0	0	0	60	3	0	0	0	2	0	0	65
11:00:00	0	0	869	37	0	0	0	0	62	2	0	0	0	2	0	0	67
11:15:00	0	0	892	23	0	0	0	0	69	7	0	0	0	2	0	0	68
11:30:00	0	0	934	42	0	0	0	0	72	3	0	0	0	2	0	0	71
11:45:00	0	0	963	29	0	0	0	0	76	4	0	0	0	2	0	0	72
12:00:00	0	0	1005	42	0	0	0	0	79	3	0	0	0	2	0	0	74
12:15:00	0	0	1041	36	0	0	0	0	82	3	0	0	0	2	0	0	74
12:30:00	0	0	1079	38	0	0	0	0	83	1	0	0	0	2	0	0	74
12:45:00	0	0	1107	28	0	0	0	0	88	5	0	0	0	2	0	0	74
13:00:00	0	0	1162	55	0	0	0	0	93	5	0	0	0	2	0	0	76
13:15:00	0	0	1200	38	0	0	0	0	96	3	0	0	0	3	0	0	77
13:30:00	0	0	1238	38	0	0	0	0	99	3	0	0	0	3	0	0	77
13:45:00	0	0	1273	35	0	0	0	0	103	4	0	0	0	3	0	0	78
14:00:00	0	0	1304	31	0	0	0	0	107	4	0	0	0	4	1	0	78
14:15:00	0	0	1336	32	0	0	0	0	112	5	0	0	0	4	4	0	81
14:30:00	0	0	1368	32	0	0	0	0	116	4	0	0	0	5	0	0	81
14:45:00	0	0	1395	27	0	0	0	0	120	4	0	0	0	5	0	0	81
15:00:00	0	0	1424	29	0	0	0	0	123	3	0	0	0	5	0	0	81
15:15:00	0	0	1449	25	0	0	0	0	126	3	0	0	0	5	0	0	81
15:30:00	0	0	1483	34	0	0	0	0	128	2	0	0	0	5	0	0	83
15:45:00	0	0	1543	60	0	0	0	0	132	4	0	0	0	5	0	0	86
16:00:00	0	0	1578	35	0	0	0	0	134	3	0	0	0	5	0	0	91
16:15:00	0	0	1617	39	0	0	0	0	137	3	0	0	0	5	0	0	91
16:30:00	0	0	1670	53	0	0	0	0	141	4	0	0	0	5	0	0	92
16:45:00	0	0	1718	48	0	0	0	0	143	2	0	0	0	5	0	0	92
17:00:00	0	0	1760	42	0	0	0	0	145	2	0	0	0	5	0	0	93

Union St @ West Campus Ln - 518 Union St

Count Date: 1-Feb-2017 Site #: 0000000001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians		
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross		
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum
17:15:00	0	0	1814	54	0	0	0	0	148	3	0	0	0	0	5	0	0	0	93	0	0
17:30:00	0	0	1849	35	0	0	0	0	151	3	0	0	0	0	5	0	0	0	93	0	0
17:45:00	0	0	1887	38	0	0	0	0	153	2	0	0	0	0	5	0	0	0	94	1	0
18:00:00	0	0	1935	48	0	0	0	0	155	2	0	0	0	0	5	0	0	0	102	8	0

APPENDIX C – SYNCHRO REPORTS

McINTOSH PERRY

Lanes, Volumes, Timings

2020 Existing

3: Sir John A. MacDonald Blvd & Union St W

AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓			↑	↑	↑	↑↓		↑	↑↓	↑
Traffic Volume (vph)	87	338	7	9	107	140	9	129	35	523	262	111
Future Volume (vph)	87	338	7	9	107	140	9	129	35	523	262	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.98	1.00			1.00	0.97	0.99	0.99		0.99		0.96
Fr _t		0.995				0.850		0.962				0.850
Flt Protected	0.950				0.994		0.950			0.950		
Satd. Flow (prot)	1787	1793	0	0	1779	1553	1357	3299	0	1770	3505	1553
Flt Permitted	0.674				0.938		0.584			0.633		
Satd. Flow (perm)	1246	1793	0	0	1678	1502	825	3299	0	1170	3505	1495
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				159		48				141
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		186.6			261.0			143.6			191.9	
Travel Time (s)		16.8			23.5			10.3			13.8	
Confl. Peds. (#/hr)	26		13	13		26	10		6	6		10
Confl. Bikes (#/hr)			15			1						2
Peak Hour Factor	0.75	0.98	0.58	0.56	0.95	0.88	0.75	0.92	0.73	0.98	0.96	0.79
Heavy Vehicles (%)	1%	4%	43%	0%	7%	4%	33%	5%	3%	2%	3%	4%
Adj. Flow (vph)	116	345	12	16	113	159	12	140	48	534	273	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	357	0	0	129	159	12	188	0	534	273	141
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings

2020 Existing

3: Sir John A. MacDonald Blvd & Union St W

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (%)	45.3%	45.3%		45.3%	45.3%	45.3%	54.7%	54.7%		54.7%	54.7%	54.7%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.47	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.25	0.53		0.20	0.24	0.03	0.12	0.97	0.16	0.18		
Control Delay	19.8	23.8		18.8	4.1	12.3	9.4		54.9	13.1	3.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	19.8	23.8		18.8	4.1	12.3	9.4		54.9	13.1	3.0	
LOS	B	C		B	A	B	A		D	B	A	
Approach Delay		22.8			10.7			9.6			35.1	
Approach LOS		C			B			A			D	

Intersection Summary

Area Type: Other

Cycle Length: 84.6

Actuated Cycle Length: 84.6

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 109.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 2

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2020 Existing
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	46	533	12	0	308	114	1	3	1	220	13	45
Future Volume (vph)	46	533	12	0	308	114	1	3	1	220	13	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0		0.0	26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.98		0.99	0.99	0.99	0.99	0.96	
Fr _t		0.997			0.850		0.973			0.883		
Flt Protected	0.950						0.990			0.950		
Satd. Flow (prot)	1770	1856	0	1900	1845	1509	0	1818	0	1736	1509	0
Flt Permitted	0.486						0.968			0.754		
Satd. Flow (perm)	901	1856	0	1900	1845	1480	0	1768	0	1358	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			124		1			49		
Link Speed (k/h)		40			40		50			50		
Link Distance (m)		274.6			221.0		135.8			133.8		
Travel Time (s)		24.7			19.9		9.8			9.6		
Confl. Peds. (#/hr)	9		18	18		9	14		7	7		14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	0%	3%	7%	0%	0%	0%	4%	0%	9%
Adj. Flow (vph)	50	579	13	0	335	124	1	3	1	239	14	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	592	0	0	335	124	0	5	0	239	63	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6		3.6			3.6		
Link Offset(m)		0.0			0.0		0.0			0.0		
Crosswalk Width(m)		4.8			4.8		4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4		9.4			9.4		
Detector 2 Size(m)		0.6			0.6		0.6			0.6		
Detector 2 Type		Cl+Ex			Cl+Ex		Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2020 Existing
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	0	0	0		0	0	
Act Effct Green (s)	61.2	58.4		48.3	48.3		19.9		19.9	19.9		
Actuated g/C Ratio	0.68	0.65		0.54	0.54		0.22		0.22	0.22		
v/c Ratio	0.07	0.49		0.34	0.15		0.01		0.80	0.17		
Control Delay	6.0	10.6		13.8	2.8		24.0		52.5	12.2		
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		
Total Delay	6.0	10.6		13.8	2.8		24.0		52.5	12.2		
LOS	A	B		B	A		C		D	B		
Approach Delay		10.2		10.8			24.0			44.1		
Approach LOS		B		B			C			D		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 89.8

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 17.7

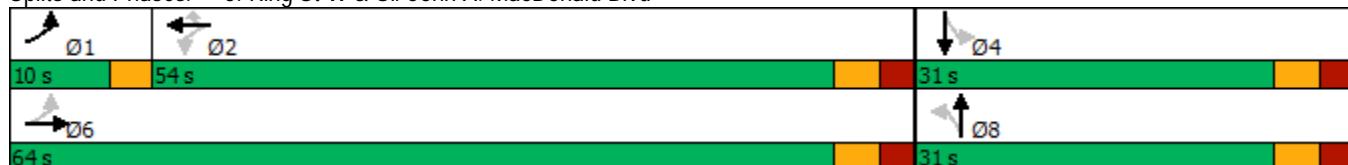
Intersection LOS: B

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: King St W & Sir John A. MacDonald Blvd



Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑		↑↑	
Traffic Vol, veh/h	0	11	162	1	0	278
Future Vol, veh/h	0	11	162	1	0	278
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	2	2	4
Mvmt Flow	0	12	176	1	0	302
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	89	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	951	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	951	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	8.8	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	951	-		
HCM Lane V/C Ratio	-	-	0.013	-		
HCM Control Delay (s)	-	-	8.8	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	0	-		

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	396	1	0	194	33	0	0	0	36	0	6
Future Vol, veh/h	9	396	1	0	194	33	0	0	0	36	0	6
Conflicting Peds, #/hr	2	0	1	1	0	2	5	0	1	1	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	90	25	25	84	92	25	25	25	60	25	50
Heavy Vehicles, %	0	4	0	0	5	18	0	0	0	0	0	0
Mvmt Flow	24	440	4	0	231	36	0	0	0	60	0	12

Major/Minor	Major1	Major2		Minor1		Minor2						
Conflicting Flow All	269	0	0	445	0	0	751	760	444	742	744	256
Stage 1	-	-	-	-	-	-	491	491	-	251	251	-
Stage 2	-	-	-	-	-	-	260	269	-	491	493	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1306	-	-	1126	-	-	330	338	618	334	345	788
Stage 1	-	-	-	-	-	-	563	552	-	758	703	-
Stage 2	-	-	-	-	-	-	749	690	-	563	550	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1304	-	-	1125	-	-	317	329	617	327	336	783
Mov Cap-2 Maneuver	-	-	-	-	-	-	317	329	-	327	336	-
Stage 1	-	-	-	-	-	-	549	538	-	738	702	-
Stage 2	-	-	-	-	-	-	734	689	-	549	536	-

Approach	EB	WB		NB		SB		
HCM Control Delay, s	0.4	0		0		17.4		
HCM LOS				A		C		
<hr/>								
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1304	-	-	1125	-	-	362
HCM Lane V/C Ratio	-	0.018	-	-	-	-	-	0.199
HCM Control Delay (s)	0	7.8	0	-	0	-	-	17.4
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.7

Lanes, Volumes, Timings

2020 Existing

3: Sir John A. MacDonald Blvd & Union St W

PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓			↑	↑	↑	↑↓		↑	↑↓	↑
Traffic Volume (vph)	81	124	4	16	338	214	17	282	10	153	118	59
Future Volume (vph)	81	124	4	16	338	214	17	282	10	153	118	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.98	1.00			1.00	0.96	0.99	1.00		0.99		0.97
Fr _t		0.988				0.850		0.991				0.850
Flt Protected	0.950				0.997		0.950			0.950		
Satd. Flow (prot)	1805	1696	0	0	1859	1553	1612	3536	0	1752	3471	1583
Flt Permitted	0.415				0.981		0.666			0.541		
Satd. Flow (perm)	776	1696	0	0	1829	1486	1118	3536	0	985	3471	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				252		10				68
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		186.6			261.0			143.6			191.9	
Travel Time (s)		16.8			23.5			10.3			13.8	
Confl. Peds. (#/hr)	37		7	7		37	8		13	13		8
Confl. Bikes (#/hr)		2			4							
Peak Hour Factor	0.96	0.91	0.33	0.80	0.96	0.85	0.71	0.85	0.50	0.89	0.87	0.87
Heavy Vehicles (%)	0%	7%	50%	0%	2%	4%	12%	1%	0%	3%	4%	2%
Adj. Flow (vph)	84	136	12	20	352	252	24	332	20	172	136	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	148	0	0	372	252	24	352	0	172	136	68
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings

2020 Existing

3: Sir John A. MacDonald Blvd & Union St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (%)	45.3%	45.3%		45.3%	45.3%	45.3%	54.7%	54.7%		54.7%	54.7%	54.7%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.47	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.29	0.23		0.54	0.35	0.05	0.21	0.37		0.08	0.09	
Control Delay	21.8	18.4		24.1	4.0	12.4	13.1		17.2	12.4	3.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	21.8	18.4		24.1	4.0	12.4	13.1		17.2	12.4	3.7	
LOS	C	B		C	A	B	B		B	B	A	
Approach Delay		19.6			16.0			13.0			13.0	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 84.6

Actuated Cycle Length: 84.6

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 15.1

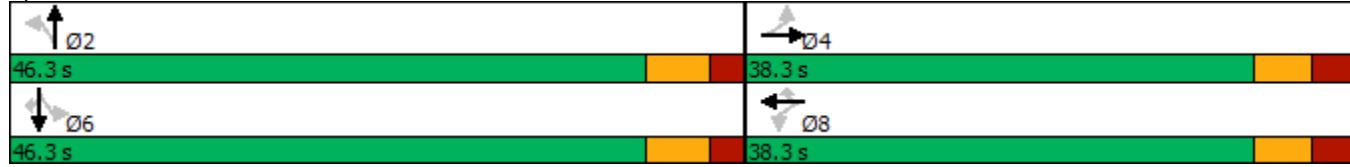
Intersection LOS: B

Intersection Capacity Utilization 141.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 2

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2020 Existing
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	50	309	29	6	492	194	16	19	1	98	0	40
Future Volume (vph)	50	309	29	6	492	194	16	19	1	98	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0		0.0	26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99		0.98		0.98		0.97	0.93	
Fr _t		0.987				0.850		0.997			0.850	
Flt Protected	0.950			0.950				0.979		0.950		
Satd. Flow (prot)	1805	1836	0	1805	1863	1583	0	1852	0	1752	1400	0
Flt Permitted	0.359			0.542				0.867		0.732		
Satd. Flow (perm)	680	1836	0	1022	1863	1548	0	1604	0	1305	1400	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				211		1			365	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			133.8	
Travel Time (s)		24.7			19.9			9.8			9.6	
Confl. Peds. (#/hr)	12		9	9		12	26		17	17		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	3%	0%	7%
Adj. Flow (vph)	54	336	32	7	535	211	17	21	1	107	0	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	368	0	7	535	211	0	39	0	107	43	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2020 Existing
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0		16.0	16.0		
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0	0		
Act Effct Green (s)	61.0	58.2		48.2	48.2	48.2		12.6		12.6	12.6	
Actuated g/C Ratio	0.74	0.71		0.58	0.58	0.58		0.15		0.15	0.15	
v/c Ratio	0.09	0.28		0.01	0.49	0.21		0.16		0.54	0.08	
Control Delay	3.7	5.4		8.3	12.4	2.0		30.7		42.3	0.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	3.7	5.4		8.3	12.4	2.0		30.7		42.3	0.3	
LOS	A	A		A	B	A		C		D	A	
Approach Delay		5.1			9.4			30.7			30.3	
Approach LOS		A			A			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 82.4

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: King St W & Sir John A. MacDonald Blvd



Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑			↑↑
Traffic Vol, veh/h	0	48	261	2	0	138
Future Vol, veh/h	0	48	261	2	0	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	2	2	4
Mvmt Flow	0	52	284	2	0	150
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	143	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	879	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	879	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.4	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	879	-		
HCM Lane V/C Ratio	-	-	0.059	-		
HCM Control Delay (s)	-	-	9.4	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	0.2	-		

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	190	0	0	385	29	0	1	0	19	0	23
Future Vol, veh/h	12	190	0	0	385	29	0	1	0	19	0	23
Conflicting Peds, #/hr	5	0	4	4	0	5	15	0	4	4	0	15
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	91	92	92	94	60	92	25	92	40	92	62
Heavy Vehicles, %	0	4	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	29	209	0	0	410	48	0	4	0	48	0	37

Major/Minor	Major1	Major2		Minor1		Minor2						
Conflicting Flow All	463	0	0	213	0	0	739	734	217	712	710	454
Stage 1	-	-	-	-	-	-	271	271	-	439	439	-
Stage 2	-	-	-	-	-	-	468	463	-	273	271	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1109	-	-	1369	-	-	336	350	828	350	361	610
Stage 1	-	-	-	-	-	-	739	689	-	601	582	-
Stage 2	-	-	-	-	-	-	579	568	-	737	689	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1104	-	-	1364	-	-	303	337	822	336	348	600
Mov Cap-2 Maneuver	-	-	-	-	-	-	303	337	-	336	348	-
Stage 1	-	-	-	-	-	-	715	666	-	581	580	-
Stage 2	-	-	-	-	-	-	536	566	-	708	666	-

Approach	EB	WB		NB		SB		
HCM Control Delay, s	1	0		15.8		15.8		
HCM LOS				C		C		
<hr/>								
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	337	1104	-	-	1364	-	-	416
HCM Lane V/C Ratio	0.012	0.026	-	-	-	-	-	0.203
HCM Control Delay (s)	15.8	8.3	0	-	0	-	-	15.8
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.8

Lanes, Volumes, Timings

2025 Background

3: Sir John A. MacDonald Blvd & Union St W

AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓			↑	↑	↑	↑↓		↑	↑↓	↑
Traffic Volume (vph)	87	379	7	9	118	140	9	142	35	523	289	111
Future Volume (vph)	87	379	7	9	118	140	9	142	35	523	289	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.98	1.00			1.00	0.97	0.99	0.99		0.99		0.96
Fr _t		0.995				0.850		0.964				0.850
Flt Protected	0.950				0.994		0.950			0.950		
Satd. Flow (prot)	1787	1796	0	0	1778	1553	1357	3305	0	1770	3505	1553
Flt Permitted	0.668				0.936		0.568			0.581		
Satd. Flow (perm)	1233	1796	0	0	1674	1499	802	3305	0	1074	3505	1493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				159		48				141
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		186.6			261.0			143.6			191.9	
Travel Time (s)		16.8			23.5			10.3			13.8	
Confl. Peds. (#/hr)	26		13	13		26	10		6	6		10
Confl. Bikes (#/hr)			15			1						2
Peak Hour Factor	0.75	0.98	0.58	0.56	0.95	0.88	0.75	0.92	0.73	0.98	0.96	0.79
Heavy Vehicles (%)	1%	4%	43%	0%	7%	4%	33%	5%	3%	2%	3%	4%
Adj. Flow (vph)	116	387	12	16	124	159	12	154	48	534	301	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	399	0	0	140	159	12	202	0	534	301	141
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings

2025 Background

3: Sir John A. MacDonald Blvd & Union St W

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		5.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		8.0	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		8.0	54.3	54.3
Total Split (%)	41.4%	41.4%		41.4%	41.4%	41.4%	50.0%	50.0%		8.6%	58.6%	58.6%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		5.0	48.0	48.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		0.0	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		3.0	6.3	6.3
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0			51.3	48.0	48.0
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.43	0.43			0.55	0.52	0.52
v/c Ratio	0.27	0.64		0.24	0.26	0.03	0.14			0.84	0.17	0.17
Control Delay	24.1	31.1		23.1	4.8	15.7	12.3			30.9	12.1	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	24.1	31.1		23.1	4.8	15.7	12.3			30.9	12.1	2.6
LOS	C	C		C	A	B	B			C	B	A
Approach Delay		29.5			13.3			12.5			21.0	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 92.6

Actuated Cycle Length: 92.6

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.1

Intersection LOS: C

Intersection Capacity Utilization 109.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 2

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2025 Background
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	50	533	12	0	308	123	1	3	1	241	14	50
Future Volume (vph)	50	533	12	0	308	123	1	3	1	241	14	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0		0.0	26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.98		0.99	0.99	0.99	0.96		
Fr _t		0.997				0.850		0.973			0.883	
Flt Protected	0.950							0.990		0.950		
Satd. Flow (prot)	1770	1856	0	1900	1845	1509	0	1818	0	1736	1508	0
Flt Permitted	0.483							0.969		0.754		
Satd. Flow (perm)	896	1856	0	1900	1845	1480	0	1770	0	1358	1508	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				134		1			54	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			133.8	
Travel Time (s)		24.7			19.9			9.8			9.6	
Confl. Peds. (#/hr)	9		18	18		9	14		7	7		14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	0%	3%	7%	0%	0%	0%	4%	0%	9%
Adj. Flow (vph)	54	579	13	0	335	134	1	3	1	262	15	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	592	0	0	335	134	0	5	0	262	69	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2025 Background
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0		16.0	16.0		
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0	0		
Act Effct Green (s)	61.1	58.3		48.3	48.3		21.2		21.2	21.2		
Actuated g/C Ratio	0.67	0.64		0.53	0.53		0.23		0.23	0.23		
v/c Ratio	0.08	0.50		0.34	0.16		0.01		0.83	0.18		
Control Delay	6.3	11.1		14.3	2.8		24.0		55.3	11.8		
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		
Total Delay	6.3	11.1		14.3	2.8		24.0		55.3	11.8		
LOS	A	B		B	A		C		E	B		
Approach Delay		10.7		11.0			24.0			46.3		
Approach LOS		B		B			C			D		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 91.1

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 19.0

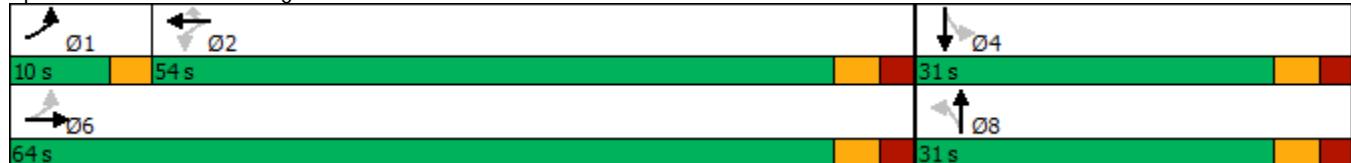
Intersection LOS: B

Intersection Capacity Utilization 71.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: King St W & Sir John A. MacDonald Blvd



Lanes, Volumes, Timings
10: Lot/Campus Ln & Union St W

2025 Background

AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	437	1	0	205	33	0	0	0	36	0	6
Future Volume (vph)	9	437	1	0	205	33	0	0	0	36	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												0.99
Frt		0.999				0.983						0.977
Flt Protected		0.998										0.960
Satd. Flow (prot)	0	1825	0	0	1746	0	0	1900	0	0	1774	0
Flt Permitted		0.981										0.761
Satd. Flow (perm)	0	1794	0	0	1746	0	0	1900	0	0	1405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			19							33
Link Speed (k/h)		50			50			50				50
Link Distance (m)		112.7			186.6			69.7				78.8
Travel Time (s)		8.1			13.4			5.0				5.7
Confl. Peds. (#/hr)	2		1	1		2	5		1	1		5
Confl. Bikes (#/hr)			1			1						
Peak Hour Factor	0.38	0.90	0.25	0.25	0.84	0.92	0.25	0.25	0.25	0.60	0.25	0.50
Heavy Vehicles (%)	0%	4%	0%	0%	5%	18%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	486	4	0	244	36	0	0	0	60	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	514	0	0	280	0	0	0	0	0	72	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA				Perm	NA		
Protected Phases		4			8			2			6	

Lanes, Volumes, Timings
10: Lot/Campus Ln & Union St W

2025 Background
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	4.5			4.5			4.5			4.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.5			22.5						6.7		
Actuated g/C Ratio	0.59			0.59						0.18		
v/c Ratio	0.49			0.27						0.26		
Control Delay	6.8			4.7						11.5		
Queue Delay	0.0			0.0						0.0		
Total Delay	6.8			4.7						11.5		
LOS	A			A						B		
Approach Delay	6.8			4.7						11.5		
Approach LOS	A			A						B		

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 38.2

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 6.5

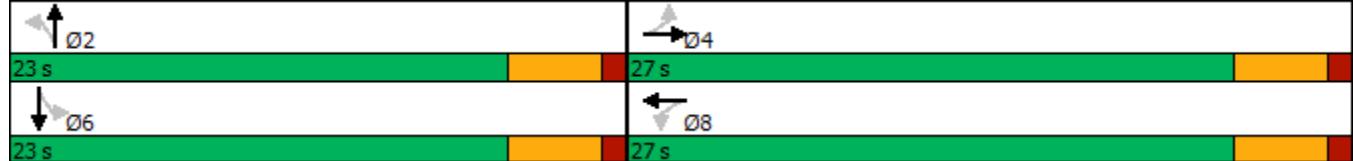
Intersection LOS: A

Intersection Capacity Utilization 43.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Lot/Campus Ln & Union St W



Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Vol, veh/h	0	11	175	1	0	305
Future Vol, veh/h	0	11	175	1	0	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	2	2	4
Mvmt Flow	0	12	190	1	0	332
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	96	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	942	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	942	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	8.9	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	942	-		
HCM Lane V/C Ratio	-	-	0.013	-		
HCM Control Delay (s)	-	-	8.9	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	0	-		

Lanes, Volumes, Timings

2025 Background

3: Sir John A. MacDonald Blvd & Union St W

PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓			↑	↑	↑	↑↓		↑	↑↓	↑
Traffic Volume (vph)	81	144	4	16	373	214	17	311	10	153	130	59
Future Volume (vph)	81	144	4	16	373	214	17	311	10	153	130	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00			1.00	0.96	0.99	1.00		0.99		0.97
Fr _t		0.989				0.850		0.992				0.850
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	1805	1705	0	0	1861	1553	1612	3540	0	1752	3471	1583
Flt Permitted	0.373				0.981		0.658			0.523		
Satd. Flow (perm)	699	1705	0	0	1829	1486	1104	3540	0	953	3471	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				252		9				68
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		186.6			261.0			143.6			191.9	
Travel Time (s)		16.8			23.5			10.3			13.8	
Confl. Peds. (#/hr)	37		7	7		37	8		13	13		8
Confl. Bikes (#/hr)			2			4						
Peak Hour Factor	0.96	0.91	0.33	0.80	0.96	0.85	0.71	0.85	0.50	0.89	0.87	0.87
Heavy Vehicles (%)	0%	7%	50%	0%	2%	4%	12%	1%	0%	3%	4%	2%
Adj. Flow (vph)	84	158	12	20	389	252	24	366	20	172	149	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	170	0	0	409	252	24	386	0	172	149	68
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings

2025 Background

3: Sir John A. MacDonald Blvd & Union St W

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (%)	45.3%	45.3%		45.3%	45.3%	45.3%	54.7%	54.7%		54.7%	54.7%	54.7%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.47	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.32	0.26		0.59	0.35	0.05	0.23	0.38		0.09	0.09	0.09
Control Delay	22.9	19.0		25.4	4.0	12.4	13.3		17.5	12.5	3.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	22.9	19.0		25.4	4.0	12.4	13.3		17.5	12.5	3.7	
LOS	C	B		C	A	B	B		B	B	A	
Approach Delay		20.3			17.2			13.3			13.2	
Approach LOS		C			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 84.6

Actuated Cycle Length: 84.6

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 15.8

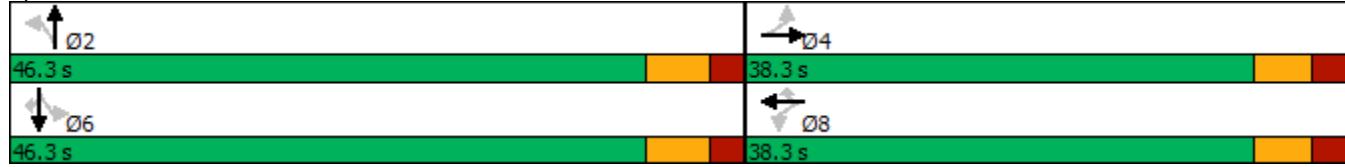
Intersection LOS: B

Intersection Capacity Utilization 141.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 3: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 2

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2025 Background
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	59	309	29	6	492	215	16	21	1	107	0	43
Future Volume (vph)	59	309	29	6	492	215	16	21	1	107	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0		0.0	26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99		0.98		0.98		0.97	0.93	
Fr _t		0.987				0.850		0.997			0.850	
Flt Protected	0.950			0.950				0.980		0.950		
Satd. Flow (prot)	1805	1836	0	1805	1863	1583	0	1854	0	1752	1400	0
Flt Permitted	0.366			0.542				0.873		0.730		
Satd. Flow (perm)	693	1836	0	1022	1863	1548	0	1617	0	1302	1400	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				234		1			349	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			133.8	
Travel Time (s)		24.7			19.9			9.8			9.6	
Confl. Peds. (#/hr)	12		9	9		12	26		17	17		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	3%	0%	7%
Adj. Flow (vph)	64	336	32	7	535	234	17	23	1	116	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	368	0	7	535	234	0	41	0	116	47	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
5: King St W & Sir John A. MacDonald Blvd

2025 Background
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	8.0	64.0		56.0	56.0	56.0	31.0	31.0		31.0	31.0	
Total Split (%)	8.4%	67.4%		58.9%	58.9%	58.9%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	5.0	58.2		50.2	50.2	50.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0		16.0	16.0		
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0	0		
Act Effct Green (s)	59.1	56.3		48.3	48.3	48.3	13.0		13.0	13.0		
Actuated g/C Ratio	0.73	0.70		0.60	0.60	0.60	0.16		0.16	0.16		
v/c Ratio	0.11	0.29		0.01	0.48	0.23		0.16		0.56	0.09	
Control Delay	4.1	5.6		7.8	11.5	1.9	29.6		41.7	0.3		
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	4.1	5.6		7.8	11.5	1.9	29.6		41.7	0.3		
LOS	A	A		A	B	A	C		D	A		
Approach Delay		5.4			8.6		29.6			29.8		
Approach LOS		A			A		C			C		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 80.8

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 10.7

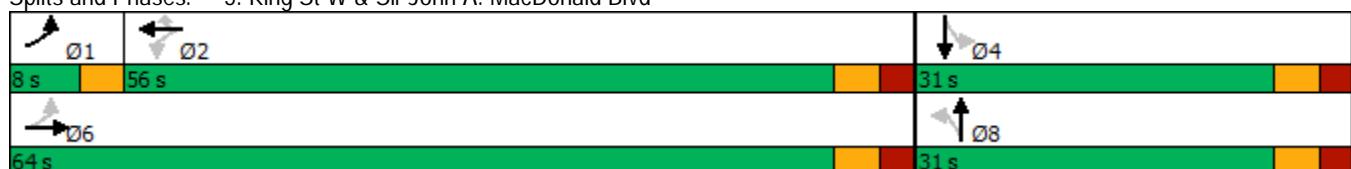
Intersection LOS: B

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: King St W & Sir John A. MacDonald Blvd



Lanes, Volumes, Timings
10: Lot/Campus Ln & Union St W

2025 Background

PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	210	0	0	420	29	0	1	0	19	0	23
Future Volume (vph)	12	210	0	0	420	29	0	1	0	19	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00					0.98		
Frt					0.987					0.941		
Flt Protected		0.994								0.973		
Satd. Flow (prot)	0	1824	0	0	1821	0	0	1900	0	0	1709	0
Flt Permitted		0.933								0.823		
Satd. Flow (perm)	0	1711	0	0	1821	0	0	1900	0	0	1441	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					14						37	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		112.7			186.6			69.7			78.8	
Travel Time (s)		8.1			13.4			5.0			5.7	
Confl. Peds. (#/hr)	5		4	4		5	15		4	4		15
Confl. Bikes (#/hr)			4									
Peak Hour Factor	0.42	0.91	0.92	0.92	0.94	0.60	0.92	0.25	0.92	0.40	0.92	0.62
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	231	0	0	447	48	0	4	0	48	0	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	260	0	0	495	0	0	4	0	0	85	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA			NA			NA		Perm	NA	
Protected Phases		4			8			2			6	

Lanes, Volumes, Timings
10: Lot/Campus Ln & Union St W

2025 Background
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	4.5			4.5			4.5			4.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.5			22.5			6.9			6.9		
Actuated g/C Ratio	0.59			0.59			0.18			0.18		
v/c Ratio	0.26			0.46			0.01			0.30		
Control Delay	5.0			6.4			13.0			11.8		
Queue Delay	0.0			0.0			0.0			0.0		
Total Delay	5.0			6.4			13.0			11.8		
LOS	A			A			B			B		
Approach Delay	5.0			6.4			13.0			11.8		
Approach LOS	A			A			B			B		

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 38.4

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 6.6

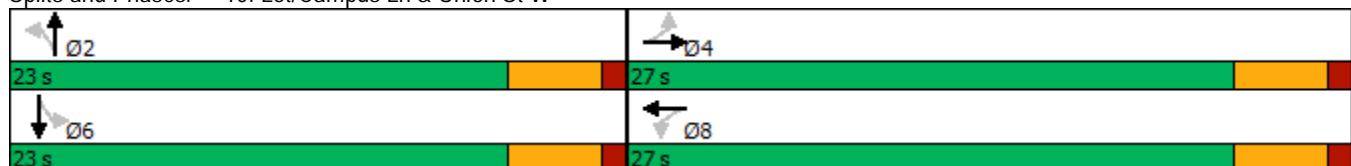
Intersection LOS: A

Intersection Capacity Utilization 43.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Lot/Campus Ln & Union St W



Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑		↑↑	
Traffic Vol, veh/h	0	48	290	2	0	150
Future Vol, veh/h	0	48	290	2	0	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	2	2	4
Mvmt Flow	0	52	315	2	0	163
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	159	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	858	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	858	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.5	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	858	-		
HCM Lane V/C Ratio	-	-	0.061	-		
HCM Control Delay (s)	-	-	9.5	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	0.2	-		

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Total
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	437	15	13	205	33	28	0	52	36	0	6
Future Volume (vph)	9	437	15	13	205	33	28	0	52	36	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.986				0.985			0.912			0.977
Flt Protected		0.998				0.992			0.983			0.960
Satd. Flow (prot)	0	1804	0	0	1753	0	0	1647	0	0	1774	0
Flt Permitted		0.981				0.879			0.857			0.702
Satd. Flow (perm)	0	1773	0	0	1553	0	0	1432	0	0	1296	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		15				16			57			33
Link Speed (k/h)		50				50			50			50
Link Distance (m)		112.7				186.6			69.7			78.8
Travel Time (s)		8.1				13.4			5.0			5.7
Confl. Peds. (#/hr)	2		1	1		2	5		1	1		5
Confl. Bikes (#/hr)			1			1						
Peak Hour Factor	0.38	0.90	0.25	0.25	0.84	0.92	0.92	0.92	0.92	0.60	0.92	0.50
Heavy Vehicles (%)	0%	4%	0%	0%	5%	18%	2%	0%	2%	0%	0%	0%
Adj. Flow (vph)	24	486	60	52	244	36	30	0	57	60	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	570	0	0	332	0	0	87	0	0	72	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Total
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	4.5			4.5			4.5			4.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.5			22.5			6.7			6.7		
Actuated g/C Ratio	0.59			0.59			0.17			0.17		
v/c Ratio	0.54			0.36			0.29			0.28		
Control Delay	7.4			5.6			9.8			11.9		
Queue Delay	0.0			0.0			0.0			0.0		
Total Delay	7.4			5.6			9.8			11.9		
LOS	A			A			A			B		
Approach Delay	7.4			5.6			9.8			11.9		
Approach LOS	A			A			A			B		

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 38.3

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 7.3

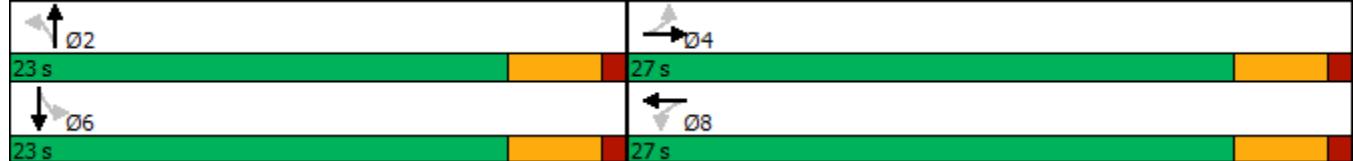
Intersection LOS: A

Intersection Capacity Utilization 41.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Lot/Campus Ln & Union St W



Lanes, Volumes, Timings
2: Sir John A. MacDonald Blvd & Union St W

2025 Total
AM Peak Hour

	→	→	→	←	←	↑	↑	↑	↓	↓	←	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	119	399	7	24	128	140	9	151	39	523	303	114
Future Volume (vph)	119	399	7	24	128	140	9	151	39	523	303	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0					45.0	58.0		0.0	74.0		55.0
Storage Lanes	1					1	1		0	1		1
Taper Length (m)	20.0				7.5			40.0			53.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.98	1.00			1.00	0.97	0.99	0.99		0.99		0.96
Fr _t		0.996				0.850		0.963				0.850
Flt Protected	0.950				0.988		0.950			0.950		
Satd. Flow (prot)	1787	1799	0	0	1783	1553	1357	3302	0	1770	3505	1553
Flt Permitted	0.638				0.693		0.560			0.573		
Satd. Flow (perm)	1179	1799	0	0	1249	1499	791	3302	0	1059	3505	1493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				159		53				144
Link Speed (k/h)		40			40		50			50		
Link Distance (m)		186.6			261.0		70.4			191.9		
Travel Time (s)		16.8			23.5		5.1			13.8		
Confl. Peds. (#/hr)	26		13	13		26	10		6	6		10
Confl. Bikes (#/hr)			15			1						2
Peak Hour Factor	0.75	0.98	0.58	0.56	0.95	0.88	0.75	0.92	0.73	0.98	0.96	0.79
Heavy Vehicles (%)	1%	4%	43%	0%	7%	4%	33%	5%	3%	2%	3%	4%
Adj. Flow (vph)	159	407	12	43	135	159	12	164	53	534	316	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	419	0	0	178	159	12	217	0	534	316	144
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6		3.6			3.6		
Link Offset(m)		0.0			0.0		0.0			0.0		
Crosswalk Width(m)		4.8			4.8		4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4		9.4			9.4		
Detector 2 Size(m)		0.6			0.6		0.6			0.6		
Detector 2 Type		Cl+Ex			Cl+Ex		Cl+Ex			Cl+Ex		
Detector 2 Channel												

Lanes, Volumes, Timings
2: Sir John A. MacDonald Blvd & Union St W

2025 Total
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		5.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		8.0	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		8.0	54.3	54.3
Total Split (%)	41.4%	41.4%		41.4%	41.4%	41.4%	50.0%	50.0%		8.6%	58.6%	58.6%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		5.0	48.0	48.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		0.0	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		3.0	6.3	6.3
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0			51.3	48.0	48.0
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.43	0.43			0.55	0.52	0.52
v/c Ratio	0.39	0.67		0.41	0.26	0.04	0.15			0.85	0.17	0.17
Control Delay	26.5	32.2		26.8	4.8	15.7	12.3			32.0	12.1	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	26.5	32.2		26.8	4.8	15.7	12.3			32.0	12.1	2.6
LOS	C	C		C	A	B	B			C	B	A
Approach Delay		30.6			16.4			12.4			21.4	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 92.6

Actuated Cycle Length: 92.6

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.1

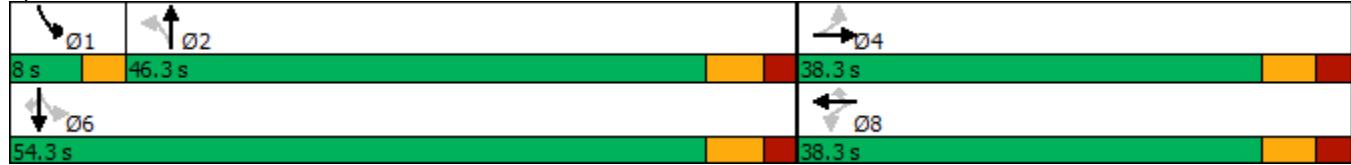
Intersection LOS: C

Intersection Capacity Utilization 141.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Sir John A. MacDonald Blvd & Union St W



Lanes, Volumes, Timings
6: King St W & Sir John A. MacDonald Blvd

2025 Total
AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	55	533	12	0	308	133	1	3	1	250	14	52
Future Volume (vph)	55	533	12	0	308	133	1	3	1	250	14	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0		0.0	26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.98		0.99	0.99	0.99	0.96		
Fr _t		0.997				0.850		0.973			0.881	
Flt Protected	0.950							0.990		0.950		
Satd. Flow (prot)	1770	1856	0	1900	1845	1509	0	1818	0	1736	1503	0
Flt Permitted	0.481							0.970		0.754		
Satd. Flow (perm)	892	1856	0	1900	1845	1480	0	1772	0	1358	1503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			145			1			57	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			73.2	
Travel Time (s)		24.7			19.9			9.8			5.3	
Confl. Peds. (#/hr)	9		18	18		9	14		7	7		14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	0%	3%	7%	0%	0%	0%	4%	0%	9%
Adj. Flow (vph)	60	579	13	0	335	145	1	3	1	272	15	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	592	0	0	335	145	0	5	0	272	72	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
6: King St W & Sir John A. MacDonald Blvd

2025 Total
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	0	0	0		0	0	
Act Effct Green (s)	61.1	58.3		48.3	48.3		21.8		21.8	21.8		
Actuated g/C Ratio	0.67	0.64		0.53	0.53		0.24		0.24	0.24		
v/c Ratio	0.09	0.50		0.34	0.17		0.01		0.84	0.18		
Control Delay	6.5	11.3		14.5	2.7		24.0		56.6	11.5		
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		
Total Delay	6.5	11.3		14.5	2.7		24.0		56.6	11.5		
LOS	A	B		B	A		C		E	B		
Approach Delay		10.9		10.9			24.0			47.2		
Approach LOS		B		B			C			D		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 91.7

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.4

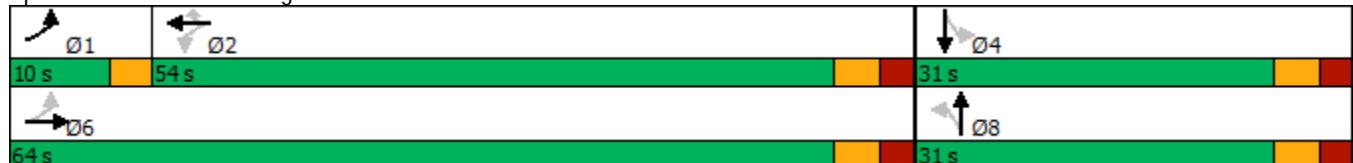
Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: King St W & Sir John A. MacDonald Blvd



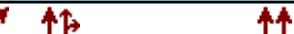
HCM 6th TWSC
4: Sir John A. MacDonald Blvd & East Parking Lot

2025 Total
AM Peak Hour

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations 

Traffic Vol, veh/h 0 11 188 1 0 326

Future Vol, veh/h 0 11 188 1 0 326

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - 0 - - - -

Veh in Median Storage, # 0 - 0 - - 0

Grade, % 0 - 0 - - 0

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 7 2 2 4

Mvmt Flow 0 12 204 1 0 354

Major/Minor	Minor1	Major1	Major2
-------------	--------	--------	--------

Conflicting Flow All - 103 0 0 - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - 6.94 - - - -

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - 3.32 - - - -

Pot Cap-1 Maneuver 0 932 - - 0 -

Stage 1 0 - - - 0 -

Stage 2 0 - - - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - 932 - - - -

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach	WB	NB	SB
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HCM Control Delay, s 8.9 0 0

HCM LOS A

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
-----------------------	-----	-----	-------	-----

Capacity (veh/h) - - 932 -

HCM Lane V/C Ratio - - 0.013 -

HCM Control Delay (s) - - 8.9 -

HCM Lane LOS - - A -

HCM 95th %tile Q(veh) - - 0 -

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	13	5	15	176	311	15
Future Vol, veh/h	13	5	15	176	311	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	7	4	2
Mvmt Flow	14	5	16	191	338	16
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	474	177	354	0	-	0
Stage 1	346	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	519	835	1201	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	511	835	1201	-	-	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.5	0.7		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1201	-	573	-	-	
HCM Lane V/C Ratio	0.014	-	0.034	-	-	
HCM Control Delay (s)	8	0.1	11.5	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	0	6	0	199	320	14
Future Vol, veh/h	0	6	0	199	320	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	7	4	2
Mvmt Flow	0	7	0	216	348	15

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	-	182	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	829	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	829	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	-	829	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	9.4	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Total
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	206	31	24	418	29	32	1	61	19	0	23
Future Volume (vph)	12	206	31	24	418	29	32	1	61	19	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						1.00		0.98			0.98	
Frt						0.988		0.915			0.941	
Flt Protected						0.998		0.984			0.973	
Satd. Flow (prot)	0	1798	0	0	1822	0	0	1683	0	0	1709	0
Flt Permitted						0.979		0.856			0.767	
Satd. Flow (perm)	0	1691	0	0	1787	0	0	1455	0	0	1344	0
Right Turn on Red				Yes			Yes		Yes			Yes
Satd. Flow (RTOR)		17				13		66			37	
Link Speed (k/h)		50				50		50			50	
Link Distance (m)		112.7				186.6		69.7			78.8	
Travel Time (s)		8.1				13.4		5.0			5.7	
Confl. Peds. (#/hr)	5		4	4		5	15		4	4		15
Confl. Bikes (#/hr)			4									
Peak Hour Factor	0.42	0.91	0.92	0.92	0.94	0.60	0.92	0.25	0.92	0.40	0.92	0.62
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	226	34	26	445	48	35	4	66	48	0	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	289	0	0	519	0	0	105	0	0	85	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Total
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	4.5			4.5			4.5			4.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.6			22.6			6.9			6.9		
Actuated g/C Ratio	0.59			0.59			0.18			0.18		
v/c Ratio	0.29			0.49			0.33			0.31		
Control Delay	5.0			6.9			10.1			12.2		
Queue Delay	0.0			0.0			0.0			0.0		
Total Delay	5.0			6.9			10.1			12.2		
LOS	A			A			B			B		
Approach Delay	5.0			6.9			10.1			12.2		
Approach LOS	A			A			B			B		

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 38.5

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 7.1

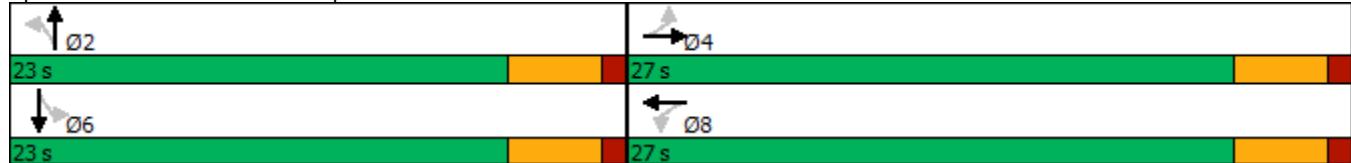
Intersection LOS: A

Intersection Capacity Utilization 48.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Lot/Campus Ln & Union St W



Lanes, Volumes, Timings
2: Sir John A. MacDonald Blvd & Union St W

2025 Total
PM Peak Hour

	→	→	→	←	←	↑	↑	↑	↓	↓	←	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑	↑	↑	↑		↑	↑↑	↑
Traffic Volume (vph)	118	164	4	46	390	214	17	318	15	153	158	64
Future Volume (vph)	118	164	4	46	390	214	17	318	15	153	158	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00			1.00	0.96	0.99	1.00		0.99		0.97
Fr _t		0.991				0.850		0.989				0.850
Flt Protected	0.950				0.994		0.950			0.950		
Satd. Flow (prot)	1805	1715	0	0	1856	1553	1612	3527	0	1752	3471	1583
Flt Permitted	0.311				0.933		0.637			0.514		
Satd. Flow (perm)	583	1715	0	0	1741	1486	1070	3527	0	937	3471	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				246		13				74
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		186.6			261.0			70.4			191.9	
Travel Time (s)		16.8			23.5			5.1			13.8	
Confl. Peds. (#/hr)	37		7	7		37	8		13	13		8
Confl. Bikes (#/hr)			2			4						
Peak Hour Factor	0.96	0.91	0.33	0.80	0.96	0.85	0.71	0.85	0.50	0.89	0.87	0.87
Heavy Vehicles (%)	0%	7%	50%	0%	2%	4%	12%	1%	0%	3%	4%	2%
Adj. Flow (vph)	123	180	12	58	406	252	24	374	30	172	182	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	192	0	0	464	252	24	404	0	172	182	74
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
2: Sir John A. MacDonald Blvd & Union St W

2025 Total
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (%)	45.3%	45.3%		45.3%	45.3%	45.3%	54.7%	54.7%		54.7%	54.7%	54.7%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.47	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.56	0.29		0.71	0.35	0.05	0.24	0.39	0.11	0.10		
Control Delay	32.5	19.5		29.3	4.3	12.5	13.3		17.7	12.7	3.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	32.5	19.5		29.3	4.3	12.5	13.3		17.7	12.7	3.6	
LOS	C	B		C	A	B	B		B	B	A	
Approach Delay		24.6			20.5			13.2			13.1	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 84.6

Actuated Cycle Length: 84.6

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 17.9

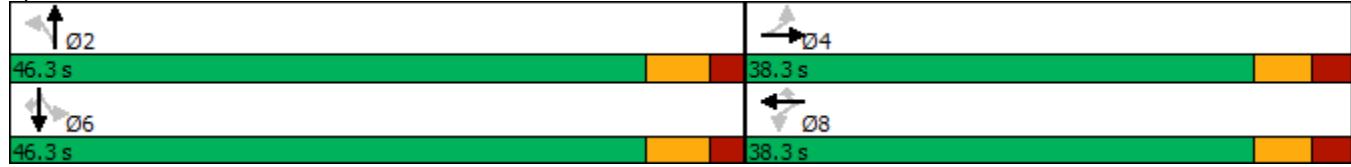
Intersection LOS: B

Intersection Capacity Utilization 141.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 4

Lanes, Volumes, Timings
6: King St W & Sir John A. MacDonald Blvd

2025 Total
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	63	309	29	6	492	236	16	21	1	116	0	47
Future Volume (vph)	63	309	29	6	492	236	16	21	1	116	0	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0			26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1			1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99		0.98		0.98		0.97	0.93	
Fr _t		0.987				0.850		0.997			0.850	
Flt Protected	0.950			0.950				0.980		0.950		
Satd. Flow (prot)	1805	1836	0	1805	1863	1583	0	1854	0	1752	1400	0
Flt Permitted	0.355			0.542				0.875		0.730		
Satd. Flow (perm)	672	1836	0	1022	1863	1548	0	1621	0	1302	1400	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				257		1			365	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			73.2	
Travel Time (s)		24.7			19.9			9.8			5.3	
Confl. Peds. (#/hr)	12		9	9		12	26		17	17		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	3%	0%	7%
Adj. Flow (vph)	68	336	32	7	535	257	17	23	1	126	0	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	368	0	7	535	257	0	41	0	126	51	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
6: King St W & Sir John A. MacDonald Blvd

2025 Total
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0		16.0	16.0		
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0	0		
Act Effct Green (s)	61.1	58.3		48.3	48.3	48.3	13.8		13.8	13.8		
Actuated g/C Ratio	0.73	0.70		0.58	0.58	0.58	0.17		0.17	0.17		
v/c Ratio	0.12	0.29		0.01	0.50	0.26		0.15		0.59	0.10	
Control Delay	4.3	5.8		9.0	13.1	2.1	30.1		43.8	0.4		
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	4.3	5.8		9.0	13.1	2.1	30.1		43.8	0.4		
LOS	A	A		A	B	A	C		D	A		
Approach Delay		5.6			9.5		30.1			31.3		
Approach LOS		A			A		C			C		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 83.6

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 11.6

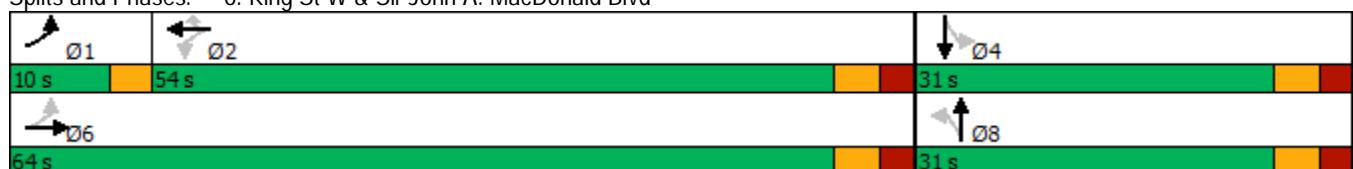
Intersection LOS: B

Intersection Capacity Utilization 78.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: King St W & Sir John A. MacDonald Blvd



HCM 6th TWSC
4: Sir John A. MacDonald Blvd & East Parking Lot

2025 Total
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Vol, veh/h	0	48	302	2	0	179
Future Vol, veh/h	0	48	302	2	0	179
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	2	2	4
Mvmt Flow	0	52	328	2	0	195
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	165	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	850	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	850	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.5	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	850	-		
HCM Lane V/C Ratio	-	-	0.061	-		
HCM Control Delay (s)	-	-	9.5	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	0.2	-		

HCM 6th TWSC
5: Sir John A. MacDonald Blvd & Access 3

2025 Total
PM Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	16	7	32	288	156	23
Future Vol, veh/h	16	7	32	288	156	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	4	2
Mvmt Flow	17	8	35	313	170	25
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	410	98	195	0	-	0
Stage 1	183	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	570	939	1375	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	552	939	1375	-	-	-
Mov Cap-2 Maneuver	552	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.9	0.9		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1375	-	631	-	-	
HCM Lane V/C Ratio	0.025	-	0.04	-	-	
HCM Control Delay (s)	7.7	0.1	10.9	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑	↑↑	
Traffic Vol, veh/h	0	15	0	350	164	44
Future Vol, veh/h	0	15	0	350	164	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	1	4	2
Mvmt Flow	0	16	0	380	178	48
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	113	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	918	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	918	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	9	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	918	-	-		
HCM Lane V/C Ratio	-	0.018	-	-		
HCM Control Delay (s)	-	9	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Sensitivity Analysis

AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	437	15	57	205	33	28	0	76	36	0	6
Future Volume (vph)	9	437	15	57	205	33	28	0	76	36	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.986				0.990			0.901			0.977
Flt Protected		0.998				0.978			0.987			0.960
Satd. Flow (prot)	0	1804	0	0	1771	0	0	1631	0	0	1774	0
Flt Permitted		0.973				0.645			0.886			0.753
Satd. Flow (perm)	0	1759	0	0	1168	0	0	1461	0	0	1390	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		15				10			83			33
Link Speed (k/h)		50				50			50			50
Link Distance (m)		112.7				186.6			69.7			78.8
Travel Time (s)		8.1				13.4			5.0			5.7
Confl. Peds. (#/hr)	2		1	1		2	5		1	1		5
Confl. Bikes (#/hr)			1			1						
Peak Hour Factor	0.38	0.90	0.25	0.25	0.84	0.92	0.92	0.92	0.92	0.60	0.92	0.50
Heavy Vehicles (%)	0%	4%	0%	0%	5%	18%	2%	0%	2%	0%	0%	0%
Adj. Flow (vph)	24	486	60	228	244	36	30	0	83	60	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	570	0	0	508	0	0	113	0	0	72	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Sensitivity Analysis

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	4.5			4.5			4.5			4.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.6			22.6			6.8			6.8		
Actuated g/C Ratio	0.59			0.59			0.18			0.18		
v/c Ratio	0.55			0.74			0.35			0.26		
Control Delay	7.6			16.1			9.2			11.4		
Queue Delay	0.0			0.0			0.0			0.0		
Total Delay	7.6			16.1			9.2			11.4		
LOS	A			B			A			B		
Approach Delay	7.6			16.1			9.2			11.4		
Approach LOS	A			B			A			B		

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 38.4

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 11.4

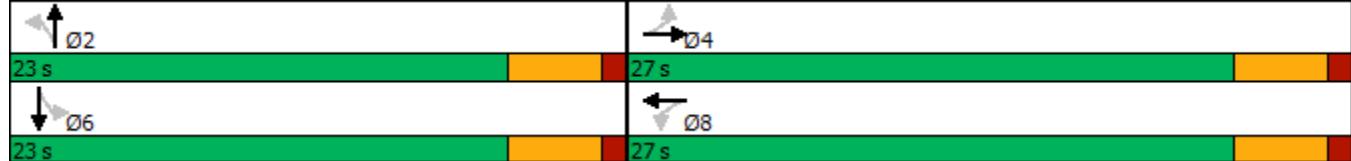
Intersection LOS: B

Intersection Capacity Utilization 59.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Lot/Campus Ln & Union St W



Lanes, Volumes, Timings

2: Sir John A. MacDonald Blvd & Union St W

2025 Sensitivity Analysis

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓			↑	↑	↑	↑↓	↑	↑	↑↓	↑
Traffic Volume (vph)	129	402	18	9	143	140	24	142	35	523	289	128
Future Volume (vph)	129	402	18	9	143	140	24	142	35	523	289	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.98	1.00			1.00	0.97	0.99	0.99		0.99		0.96
Fr _t		0.989				0.850		0.964				0.850
Flt Protected	0.950				0.995		0.950			0.950		
Satd. Flow (prot)	1787	1756	0	0	1778	1553	1357	3305	0	1770	3505	1553
Flt Permitted	0.651				0.938		0.568			0.581		
Satd. Flow (perm)	1203	1756	0	0	1675	1499	802	3305	0	1074	3505	1493
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				159		48				162
Link Speed (k/h)		40			40		50			50		
Link Distance (m)		186.6			261.0		70.4			191.9		
Travel Time (s)		16.8			23.5		5.1			13.8		
Confl. Peds. (#/hr)	26		13	13		26	10		6	6		10
Confl. Bikes (#/hr)			15			1						2
Peak Hour Factor	0.75	0.98	0.58	0.56	0.95	0.88	0.75	0.92	0.73	0.98	0.96	0.79
Heavy Vehicles (%)	1%	4%	43%	0%	7%	4%	33%	5%	3%	2%	3%	4%
Adj. Flow (vph)	172	410	31	16	151	159	32	154	48	534	301	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	441	0	0	167	159	32	202	0	534	301	162
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6		3.6			3.6		
Link Offset(m)		0.0			0.0		0.0			0.0		
Crosswalk Width(m)		4.8			4.8		4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4		9.4			9.4		
Detector 2 Size(m)		0.6			0.6		0.6			0.6		
Detector 2 Type		Cl+Ex			Cl+Ex		Cl+Ex			Cl+Ex		
Detector 2 Channel												

Lanes, Volumes, Timings

2: Sir John A. MacDonald Blvd & Union St W

2025 Sensitivity Analysis

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		1	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		5.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		8.0	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		8.0	54.3	54.3
Total Split (%)	41.4%	41.4%		41.4%	41.4%	41.4%	50.0%	50.0%		8.6%	58.6%	58.6%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		5.0	48.0	48.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		0.0	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		3.0	6.3	6.3
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0			51.3	48.0	48.0
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.43	0.43			0.55	0.52	0.52
v/c Ratio	0.41	0.72		0.29	0.26	0.09	0.14			0.84	0.17	0.19
Control Delay	26.9	34.3		23.8	4.8	16.6	12.3			30.9	12.1	2.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	26.9	34.3		23.8	4.8	16.6	12.3			30.9	12.1	2.5
LOS	C	C		C	A	B	B			C	B	A
Approach Delay		32.2			14.5			12.9			20.6	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 92.6

Actuated Cycle Length: 92.6

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 22.1

Intersection LOS: C

Intersection Capacity Utilization 141.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 4

Lanes, Volumes, Timings
6: King St W & Sir John A. MacDonald Blvd

2025 Sensitivity Analysis

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	533	12	0	308	133	1	3	1	250	14	52
Future Volume (vph)	55	533	12	0	308	133	1	3	1	250	14	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0		0.0	26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.98		0.99	0.99	0.99	0.96		
Fr _t		0.997				0.850		0.973			0.881	
Flt Protected	0.950						0.990			0.950		
Satd. Flow (prot)	1770	1856	0	1900	1845	1509	0	1818	0	1736	1503	0
Flt Permitted	0.481						0.970			0.754		
Satd. Flow (perm)	892	1856	0	1900	1845	1480	0	1772	0	1358	1503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				145		1			57	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			73.2	
Travel Time (s)		24.7			19.9			9.8			5.3	
Confl. Peds. (#/hr)	9		18	18		9	14		7	7		14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	0%	3%	7%	0%	0%	0%	4%	0%	9%
Adj. Flow (vph)	60	579	13	0	335	145	1	3	1	272	15	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	592	0	0	335	145	0	5	0	272	72	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings

6: King St W & Sir John A. MacDonald Blvd

2025 Sensitivity Analysis

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0		16.0	16.0		
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0	0		
Act Effct Green (s)	61.1	58.3		48.3	48.3		21.8		21.8	21.8		
Actuated g/C Ratio	0.67	0.64		0.53	0.53		0.24		0.24	0.24		
v/c Ratio	0.09	0.50		0.34	0.17		0.01		0.84	0.18		
Control Delay	6.5	11.3		14.5	2.7		24.0		56.6	11.5		
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		
Total Delay	6.5	11.3		14.5	2.7		24.0		56.6	11.5		
LOS	A	B		B	A		C		E	B		
Approach Delay		10.9		10.9			24.0			47.2		
Approach LOS		B		B			C			D		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 91.7

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.4

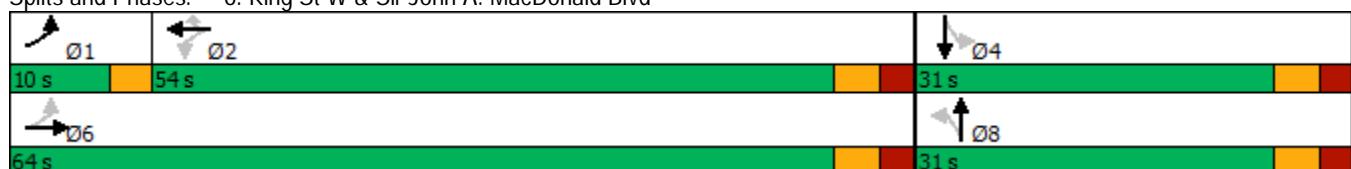
Intersection LOS: B

Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: King St W & Sir John A. MacDonald Blvd



Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Vol, veh/h	0	11	190	1	0	316
Future Vol, veh/h	0	11	190	1	0	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	2	2	4
Mvmt Flow	0	12	207	1	0	343
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	104	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	931	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	931	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	8.9	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	931	-		
HCM Lane V/C Ratio	-	-	0.013	-		
HCM Control Delay (s)	-	-	8.9	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	0	-		

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Sensitivity Analysis
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	207	30	124	413	29	38	1	94	19	0	23
Future Volume (vph)	12	207	30	124	413	29	38	1	94	19	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt												
Flt Protected												
Satd. Flow (prot)	0	1799	0	0	1818	0	0	1667	0	0	1709	0
Flt Permitted												
Satd. Flow (perm)	0	1674	0	0	1587	0	0	1474	0	0	1456	0
Right Turn on Red												
Satd. Flow (RTOR)												
Link Speed (k/h)												
Link Distance (m)												
Travel Time (s)												
Confl. Peds. (#/hr)	5		4	4		5	15		4	4		15
Confl. Bikes (#/hr)			4									
Peak Hour Factor	0.42	0.91	0.92	0.92	0.94	0.60	0.92	0.25	0.92	0.40	0.92	0.62
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	29	227	33	135	439	48	41	4	102	48	0	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	289	0	0	622	0	0	147	0	0	85	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)												
Link Offset(m)												
Crosswalk Width(m)												
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)												
Detector 2 Size(m)												
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)												
Turn Type	Perm	NA										
Protected Phases				4		8		2			6	

Lanes, Volumes, Timings
1: Lot/Campus Ln & Union St W

2025 Sensitivity Analysis

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	22.5	22.5		22.5	22.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	4.5			4.5			4.5			4.5		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	22.5			22.5			7.1			7.1		
Actuated g/C Ratio	0.58			0.58			0.18			0.18		
v/c Ratio	0.29			0.67			0.42			0.29		
Control Delay	5.2			11.2			9.9			11.4		
Queue Delay	0.0			0.0			0.0			0.0		
Total Delay	5.2			11.2			9.9			11.4		
LOS	A			B			A			B		
Approach Delay	5.2			11.2			9.9			11.4		
Approach LOS	A			B			A			B		

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 38.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 9.6

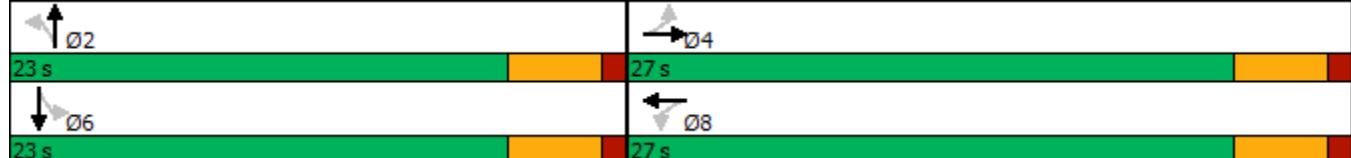
Intersection LOS: A

Intersection Capacity Utilization 66.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Lot/Campus Ln & Union St W



Lanes, Volumes, Timings

2: Sir John A. MacDonald Blvd & Union St W

2025 Sensitivity Analysis

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑ ↗	↑ ↘			↖ ↗	↖ ↘	↑ ↗	↑ ↘		↑ ↗	↑ ↘	↑ ↗
Traffic Volume (vph)	130	168	22	16	421	214	49	307	10	153	125	96
Future Volume (vph)	130	168	22	16	421	214	49	307	10	153	125	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		45.0	58.0		0.0	74.0		55.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	20.0			7.5			40.0			53.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00			1.00	0.96	0.99	1.00		0.99		0.97
Fr _t		0.960				0.850		0.992				0.850
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	1805	1532	0	0	1861	1553	1612	3540	0	1752	3471	1583
Flt Permitted	0.316				0.980		0.661			0.526		
Satd. Flow (perm)	593	1532	0	0	1827	1486	1109	3540	0	958	3471	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				249		9				110
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		186.6			261.0			70.4			191.9	
Travel Time (s)		16.8			23.5			5.1			13.8	
Confl. Peds. (#/hr)	37		7	7		37	8		13	13		8
Confl. Bikes (#/hr)		2			4							
Peak Hour Factor	0.96	0.91	0.33	0.80	0.96	0.85	0.71	0.85	0.50	0.89	0.87	0.87
Heavy Vehicles (%)	0%	7%	50%	0%	2%	4%	12%	1%	0%	3%	4%	2%
Adj. Flow (vph)	135	185	67	20	439	252	69	361	20	172	144	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	252	0	0	459	252	69	381	0	172	144	110
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings

2: Sir John A. MacDonald Blvd & Union St W

2025 Sensitivity Analysis

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Minimum Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (s)	38.3	38.3		38.3	38.3	38.3	46.3	46.3		46.3	46.3	46.3
Total Split (%)	45.3%	45.3%		45.3%	45.3%	45.3%	54.7%	54.7%		54.7%	54.7%	54.7%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	40.0	40.0		40.0	40.0	40.0
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.6	2.6		2.6	2.6	2.6	2.3	2.3		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	None		None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	25.0	25.0		25.0	25.0	25.0	19.0	19.0		19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effect Green (s)	32.0	32.0		32.0	32.0	40.0	40.0	40.0		40.0	40.0	40.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.47	0.47	0.47		0.47	0.47	0.47
v/c Ratio	0.60	0.42		0.66	0.35	0.13	0.23	0.38		0.09	0.14	
Control Delay	34.9	20.1		27.5	4.1	13.5	13.3		17.5	12.5	3.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	34.9	20.1		27.5	4.1	13.5	13.3		17.5	12.5	3.2	
LOS	C	C		C	A	B	B		B	B	A	
Approach Delay		25.3			19.2			13.3			12.1	
Approach LOS		C			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 84.6

Actuated Cycle Length: 84.6

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 141.0%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Sir John A. MacDonald Blvd & Union St W



Baseline

Synchro 10 Report

Page 4

Lanes, Volumes, Timings
6: King St W & Sir John A. MacDonald Blvd

2025 Sensitivity Analysis

PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↑	↑	↓	↓		↑	↓	
Traffic Volume (vph)	63	309	29	6	492	236	16	21	1	116	0	47
Future Volume (vph)	63	309	29	6	492	236	16	21	1	116	0	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	29.0			26.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1			1		1	0		0	1		0
Taper Length (m)	40.0			42.0			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99		0.98		0.98		0.97	0.93	
Fr _t		0.987				0.850		0.997			0.850	
Flt Protected	0.950			0.950				0.980		0.950		
Satd. Flow (prot)	1805	1836	0	1805	1863	1583	0	1854	0	1752	1400	0
Flt Permitted	0.355			0.542				0.875		0.730		
Satd. Flow (perm)	672	1836	0	1022	1863	1548	0	1621	0	1302	1400	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				257		1			365	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		274.6			221.0			135.8			73.2	
Travel Time (s)		24.7			19.9			9.8			5.3	
Confl. Peds. (#/hr)	12		9	9		12	26		17	17		26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	3%	0%	7%
Adj. Flow (vph)	68	336	32	7	535	257	17	23	1	126	0	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	368	0	7	535	257	0	41	0	126	51	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings

6: King St W & Sir John A. MacDonald Blvd

2025 Sensitivity Analysis

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2		2	8			4		
Detector Phase	1	6		2	2	2	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	48.2		48.2	48.2	48.2	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	54.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (s)	10.0	64.0		54.0	54.0	54.0	31.0	31.0		31.0	31.0	
Total Split (%)	10.5%	67.4%		56.8%	56.8%	56.8%	32.6%	32.6%		32.6%	32.6%	
Maximum Green (s)	7.0	58.2		48.2	48.2	48.2	25.3	25.3		25.3	25.3	
Yellow Time (s)	3.0	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	0.0	2.5		2.5	2.5	2.5	2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.8		5.8	5.8	5.8	5.7	5.7		5.7	5.7	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Min		Min	Min	Min	Min	Min		Min	Min	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	26.0		26.0	26.0	26.0	16.0	16.0		16.0	16.0		
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0	0		
Act Effct Green (s)	61.1	58.3		48.3	48.3	48.3	13.8		13.8	13.8		
Actuated g/C Ratio	0.73	0.70		0.58	0.58	0.58	0.17		0.17	0.17	0.17	
v/c Ratio	0.12	0.29		0.01	0.50	0.26		0.15		0.59	0.10	
Control Delay	4.3	5.8		9.0	13.1	2.1	30.1		43.8	0.4		
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	4.3	5.8		9.0	13.1	2.1	30.1		43.8	0.4		
LOS	A	A		A	B	A	C		D	A		
Approach Delay		5.6			9.5		30.1			31.3		
Approach LOS		A			A		C			C		

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 83.6

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 11.6

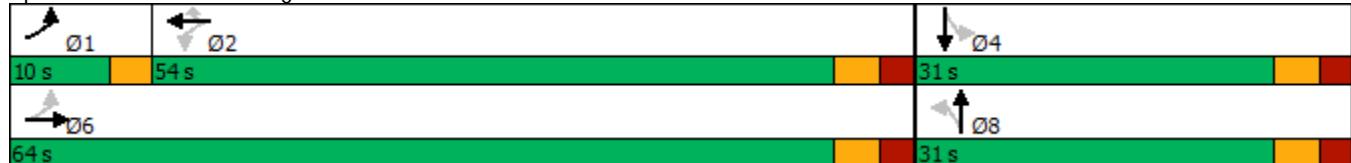
Intersection LOS: B

Intersection Capacity Utilization 78.6%

ICU Level of Service D

Analysis Period (min) 15

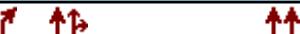
Splits and Phases: 6: King St W & Sir John A. MacDonald Blvd



Intersection

Int Delay, s/veh 0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
----------	-----	-----	-----	-----	-----	-----

Lane Configurations 

Traffic Vol, veh/h 0 48 318 2 0 176

Future Vol, veh/h 0 48 318 2 0 176

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - 0 - - - -

Veh in Median Storage, # 0 - 0 - - 0

Grade, % 0 - 0 - - 0

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 1 2 2 4

Mvmt Flow 0 52 346 2 0 191

Major/Minor	Minor1	Major1	Major2
-------------	--------	--------	--------

Conflicting Flow All - 174 0 0 - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - 6.94 - - - -

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - 3.32 - - - -

Pot Cap-1 Maneuver 0 839 - - 0 -

Stage 1 0 - - - 0 -

Stage 2 0 - - - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - 839 - - - -

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach	WB	NB	SB
----------	----	----	----

HCM Control Delay, s 9.6 0 0

HCM LOS A

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
-----------------------	-----	-----	-------	-----

Capacity (veh/h) - - 839 -

HCM Lane V/C Ratio - - 0.062 -

HCM Control Delay (s) - - 9.6 -

HCM Lane LOS - - A -

HCM 95th %tile Q(veh) - - 0.2 -

APPENDIX D – TRAFFIC SIGNAL WARRANTS

McINTOSH PERRY

Analysis Sheet

[Input Sheet](#)

[Results Sheet](#)

[Proposed Collision](#)

GO TO Justification:

Intersection: Union St and Campus Lane

Count Date: Background 2025

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent	
	1 Lanes		2 or More Lanes		Hour Ending										
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	8:00	9:00	10:00	12:00	13:00	15:00	16:00	17:00			
1A	480	720	600	900	576	660	390	390	543	567	606	699			
	COMPLIANCE FULFILLED %				80	80	54	54	75	79	80	80	583	73	
1B	180	255	180	255	34	38	22	22	32	33	36	42			
	COMPLIANCE FULFILLED %				13	15	9	9	13	13	14	16	102	13	
Restricted Flow				Both 1A and 1B 100% Fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Signal Justification 1:				Lesser of 1A or 1B at least 80% fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent	
	1 lanes		2 or More lanes		Hour Ending										
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	8:00	9:00	10:00	12:00	13:00	15:00	16:00	17:00			
2A	480	720	600	900	542	622	368	368	511	534	570	657			
	COMPLIANCE FULFILLED %				75	80	51	51	71	74	79	80	562	70	
2B	50	75	50	75	51	225	115	130	74	91	92	45			
	COMPLIANCE FULFILLED %				68	100	100	100	80	100	100	60	708	89	
Restricted Flow				Both 2A and 2B 100% Fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Signal Justification 2:				Lesser of 2A or 2B at least 80% fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More			
Justification 1	Minimun Vehicular Volume		YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		NOT JUSTIFIED	
Justification 2	Delay Cross Traffic		YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>				

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
			X			
Justification 4	8:00	542	34	244	14 %	17 %
	9:00	622	38	212	18 %	
	16:00	570	36	232	15 %	
	17:00	657	42	199	21 %	

Analysis Sheet**Input Sheet****Results Sheet****Proposed Collision**

GO TO Justification:

Intersection: Union St and Campus Lane

Count Date: Background 2025

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume**Pedestrian Volume Analysis**

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600					
	2601 - 7000				Justified	
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200			
	200 - 300			
	> 300		Justified	

Analysis Sheet

[Input Sheet](#)

[Results Sheet](#)

[Proposed Collision](#)

GO TO Justification:

Intersection: Union St and Campus Lane

Count Date: Total Traffic 2025

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent	
	1 Lanes		2 or More Lanes		Hour Ending										
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	8:00	9:00	10:00	12:00	13:00	15:00	16:00	17:00			
1A	480	720	600	900	660	757	447	447	653	680	727	838			
	COMPLIANCE FULFILLED %				80	100	62	62	80	80	100	100	664	83	
1B	120	170	120	170	97	110	65	65	104	107	116	134			
	COMPLIANCE FULFILLED %				57	65	38	38	61	63	68	79	469	59	
Restricted Flow				Both 1A and 1B 100% Fulfilled each of 8 hours										Yes <input type="checkbox"/>	
Signal Justification 1:				Lesser of 1A or 1B at least 80% fulfilled each of 8 hours										No <input checked="" type="checkbox"/>	
														Yes <input type="checkbox"/>	
														No <input checked="" type="checkbox"/>	

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent	
	1 lanes		2 or More lanes		Hour Ending										
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	8:00	9:00	10:00	12:00	13:00	15:00	16:00	17:00			
2A	480	720	600	900	563	647	382	382	549	573	611	704			
	COMPLIANCE FULFILLED %				78	80	53	53	76	80	80	80	580	73	
2B	50	75	50	75	77	254	132	147	103	121	126	81			
	COMPLIANCE FULFILLED %				100	100	100	100	100	100	100	100	800	100	
Restricted Flow				Both 2A and 2B 100% Fulfilled each of 8 hours										Yes <input type="checkbox"/>	
Signal Justification 2:				Lesser of 2A or 2B at least 80% fulfilled each of 8 hours										No <input checked="" type="checkbox"/>	
														Yes <input type="checkbox"/>	
														No <input checked="" type="checkbox"/>	

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More			
Justification 1	Minimun Vehicular Volume		YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
Justification 2	Delay Cross Traffic		YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	NOT JUSTIFIED			

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach		Required Value	Average % Compliance	Overall % Compliance
			X	Y (actual)			
Justification 4	9:00	647	72	203	36 %	39 %	39 %
	15:00	573	74	231	32 %		
	16:00	611	80	216	37 %		
	17:00	704	92	182	50 %		

Analysis Sheet

Input Sheet

Results Sheet

Proposed Collision

GO TO Justification:

Intersection: Union St and Campus Lane

Count Date: Total Traffic 2025

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume**Pedestrian Volume Analysis**

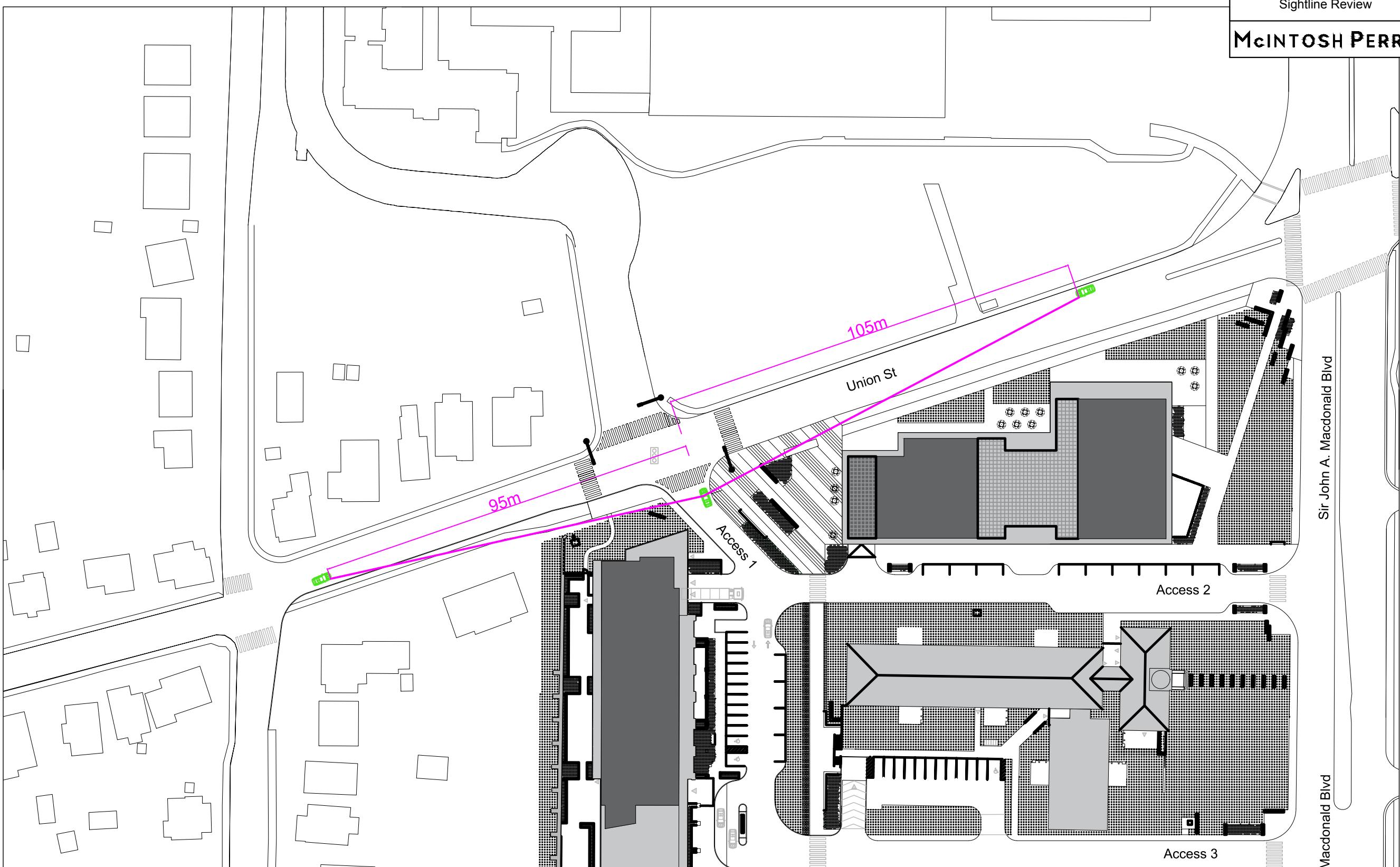
8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600					
	2601 - 7000				Justified	
	> 7000					

Pedestrian Delay Analysis

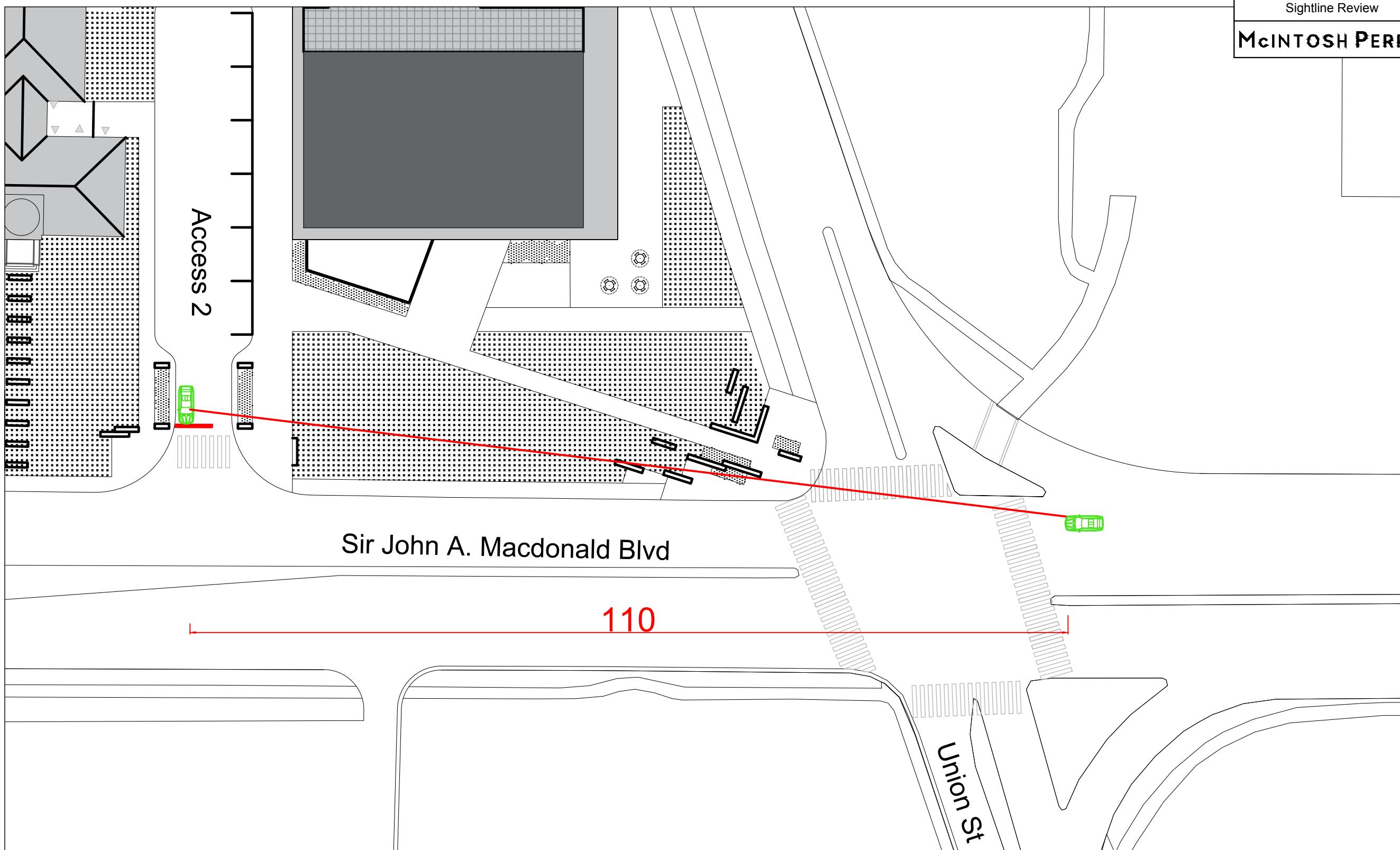
Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200			
	200 - 300			
	> 300		Justified	

APPENDIX E – DRIVEWAY SPACING AND SIGHT DISTANCE REVIEW

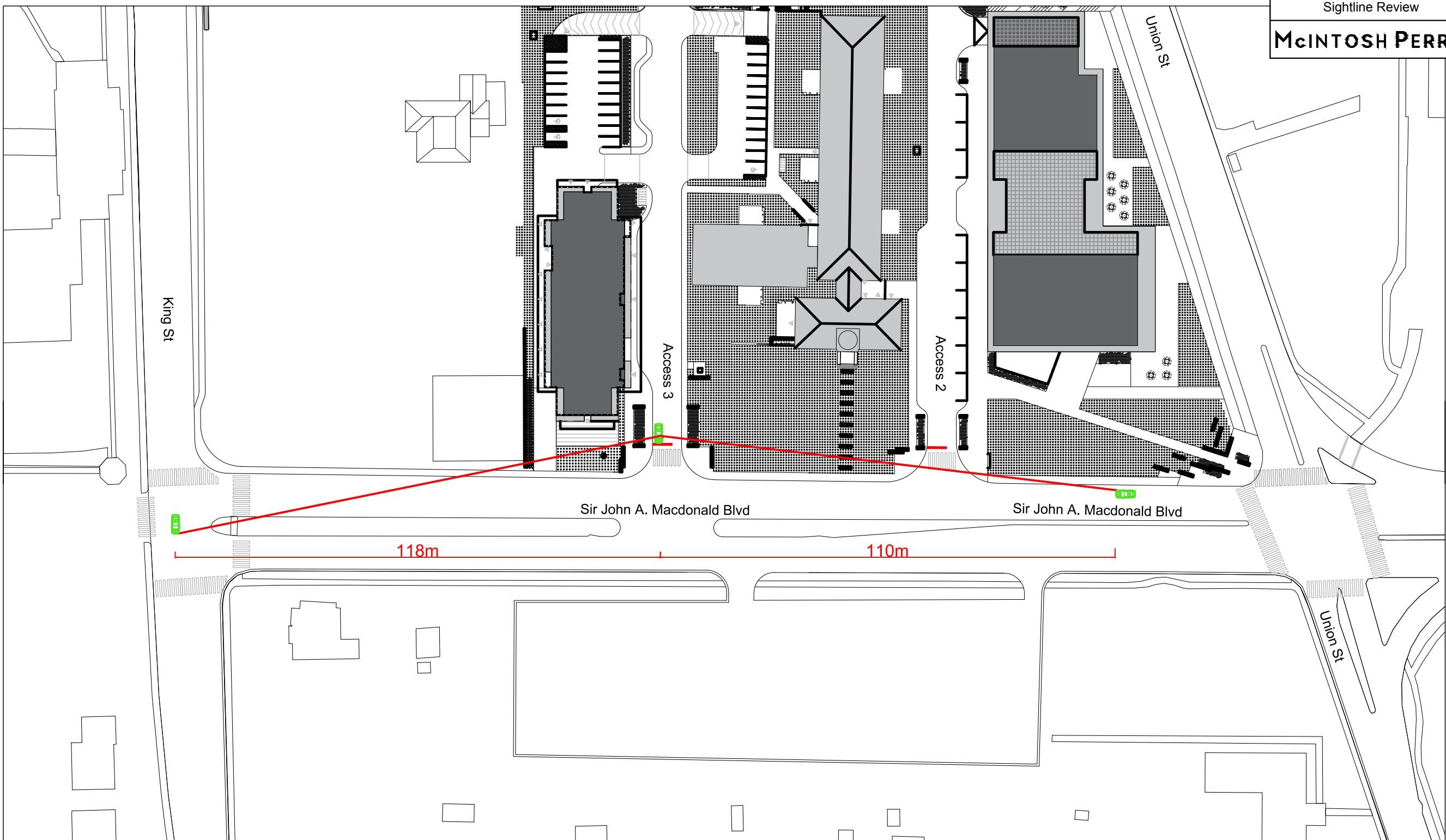
McINTOSH PERRY

**MCINTOSH PERRY****NOTES:**

1. BASED ON TAC 9.9.4, AND 9.9.6 THE REQUIRED SIGHT DISTANCE IS 105m AND 95m FOR THE LEFT AND RIGHT-TURN MANEUVER RESPECTIVELY.
2. THE LEFT AND RIGHT-TURN SIGHT DISTANCE OF 105m AND 95m RESPECTIVELY IS MET

**NOTES:**

1. BASED ON TAC TABLE 9.9.6 THE REQUIRED SIGHT DISTANCE IS 110m FOR THE RIGHT-TURN MANEUVER.
2. THE RIGHT-TURN SIGHT DISTANCE OF 110m IS MET

**NOTES:**

1. BASED ON TAC TABLE 9.9.3, 9.9.4, AND 9.9.6 THE REQUIRED SIGHT DISTANCE IS 142m AND 110m FOR THE LEFT AND RIGHT-TURN MANEUVER RESPECTIVELY.
2. THE RIGHT-TURN SIGHT DISTANCE OF 110m IS MET
3. A SIGHT DISTANCE OF 118m IS AVAILABLE FOR LEFT-TURNS AND IS CONSIDERED ACCEPTABLE (SEE SECTION 6.1.3).

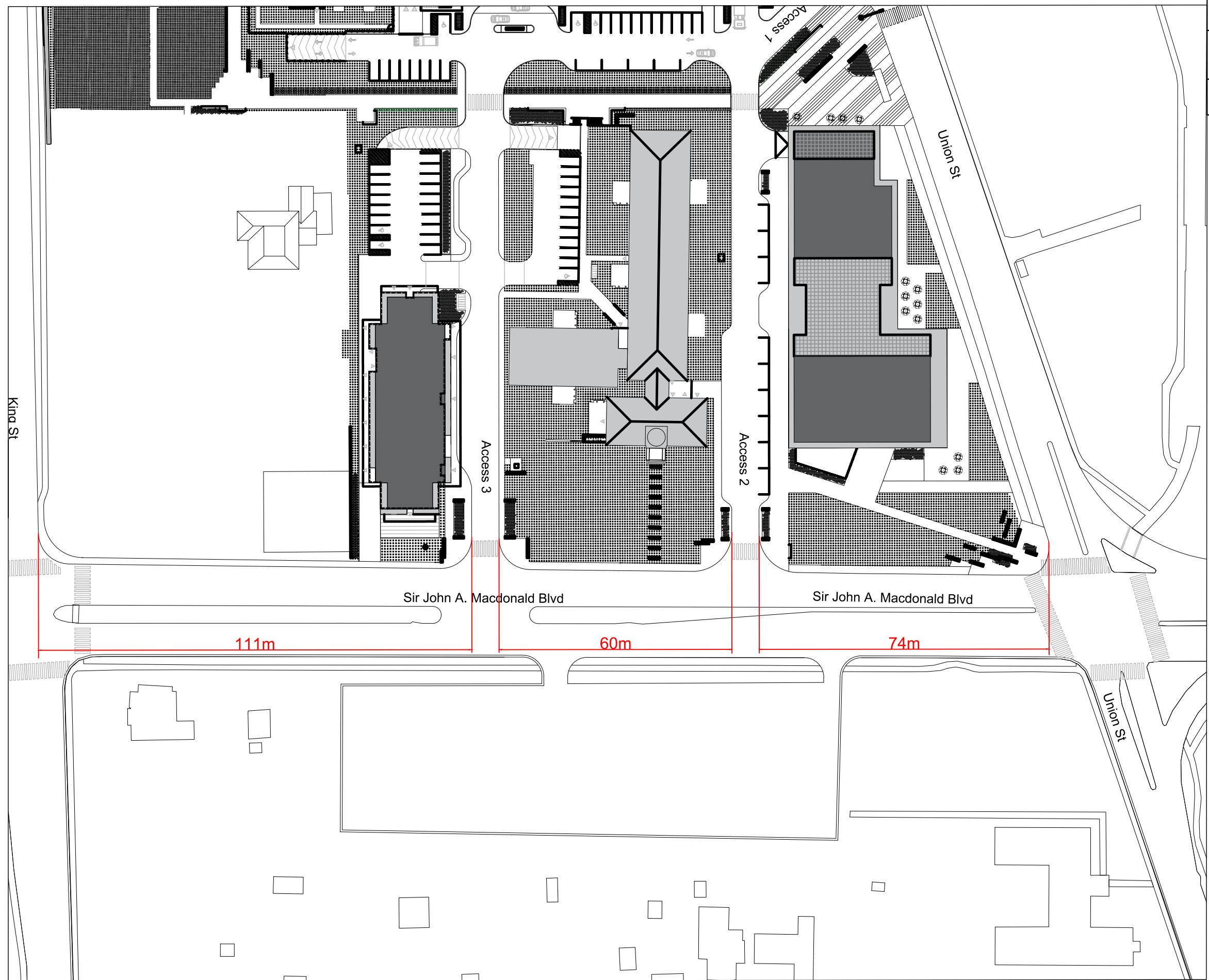
CITY OF KINGSTON

METRIC

PROJECT - P4W
40 Sir John A Macdonald Blvd

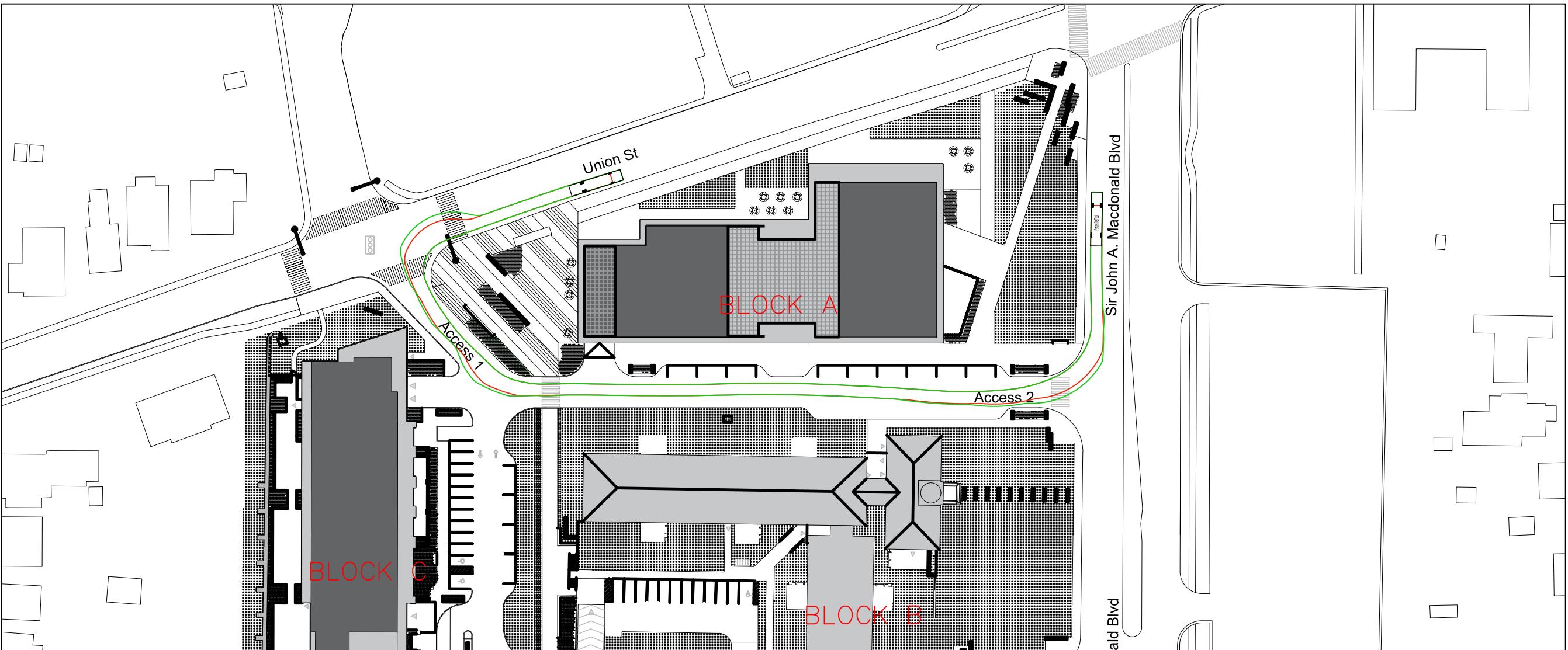


Driveway Spacing

SHEET
4**MCINTOSH PERRY**

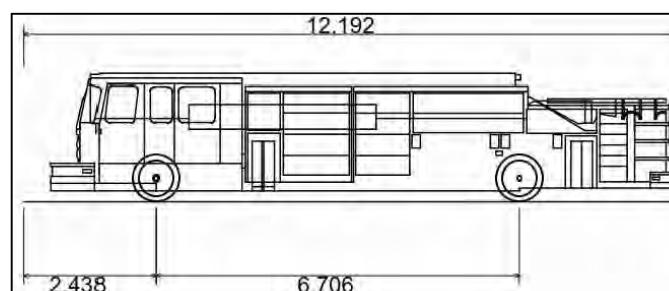
APPENDIX F – VEHICLE TURNING MOVMENTS SIMULATIONS

McINTOSH PERRY



PUMPER FIRE TRUCK SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

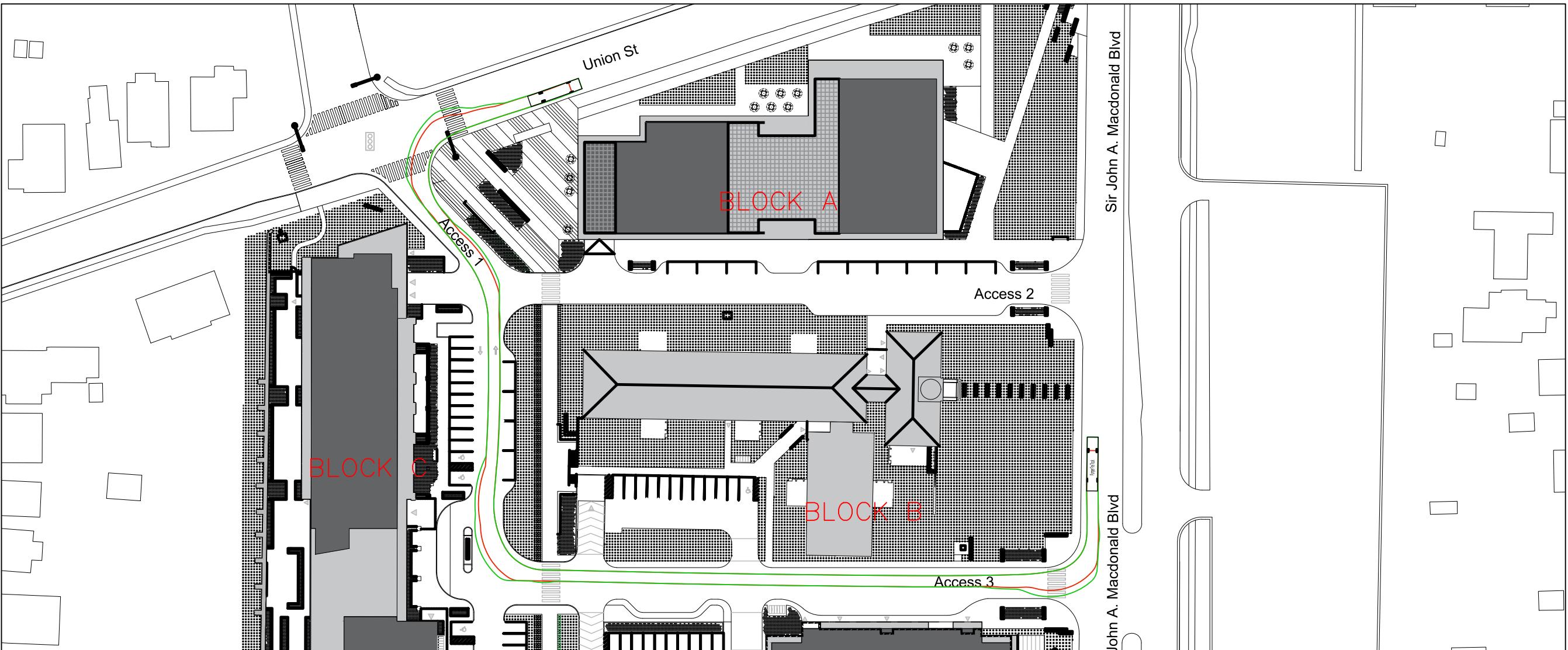
FIRE TRUCK ENTERING
VIA SITE ACCESS 2 AND
EXITING VIA UNION STREET
TRUCK TURNING SIMULATION

SCALE 1:500



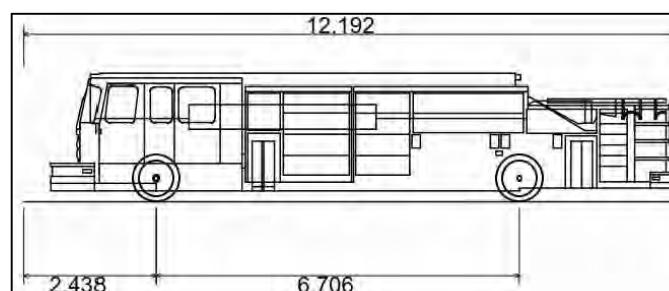
METRIC

McINTOSH PERRY



PUMPER FIRE TRUCK SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

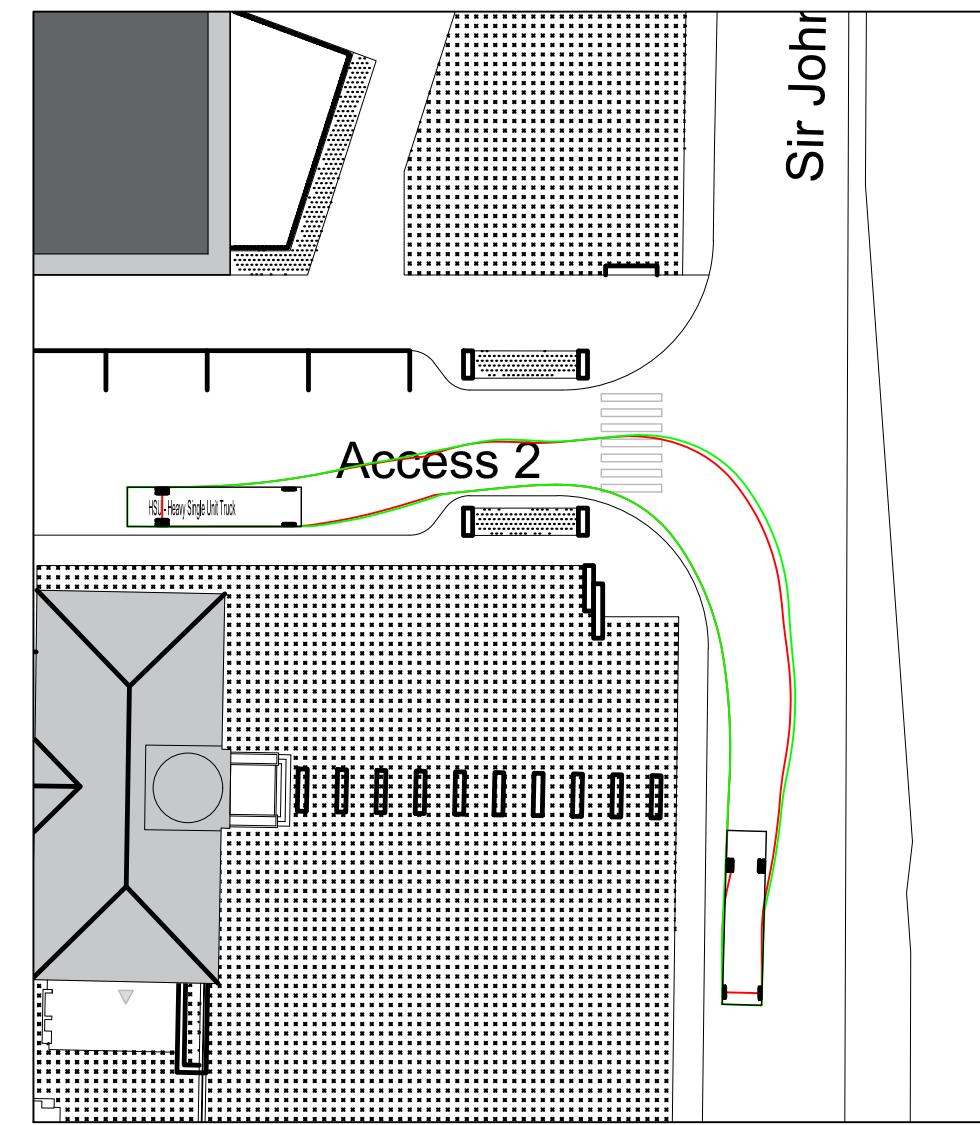
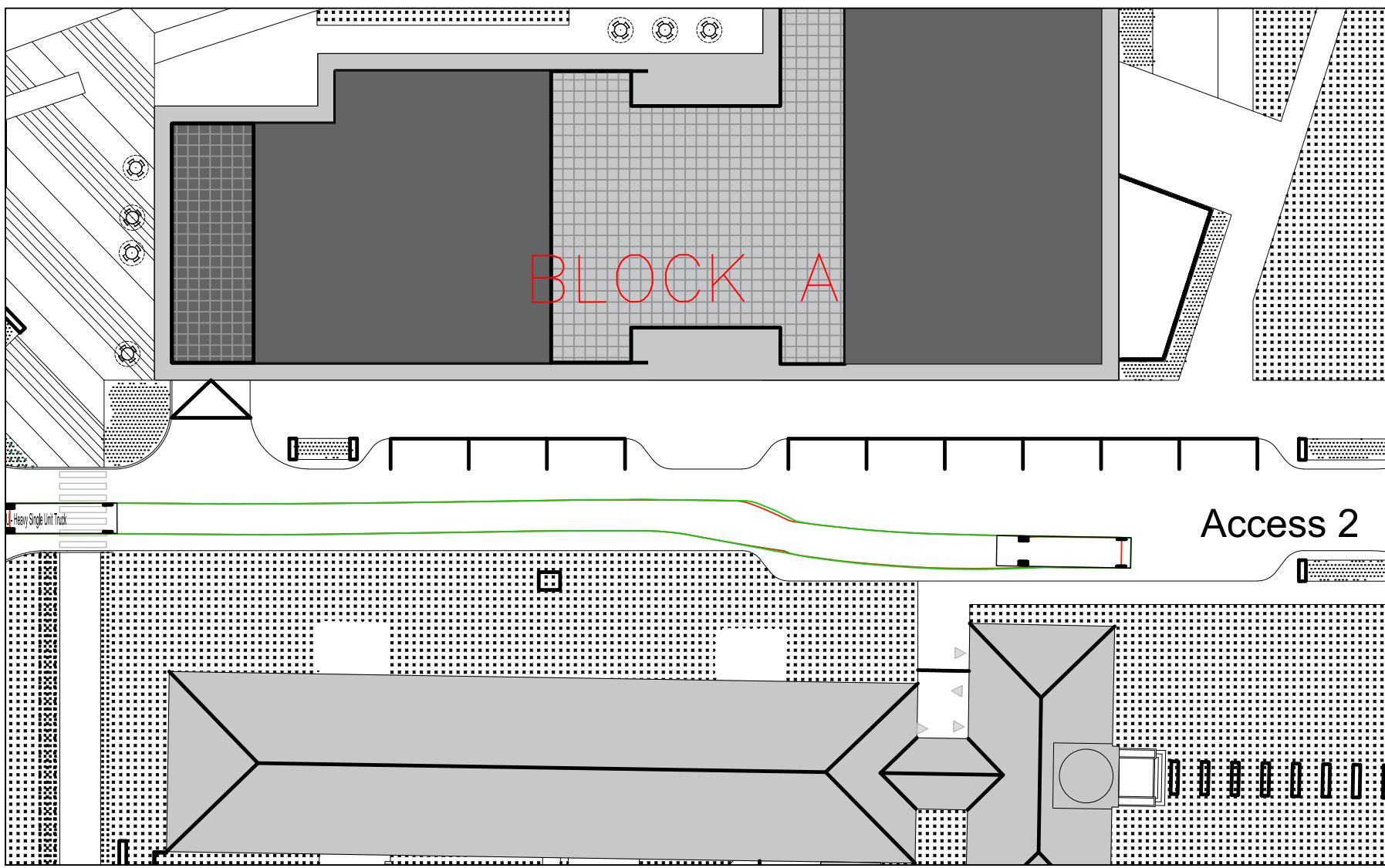
FIRE TRUCK ENTERING
VIA SITE ACCESS 3 AND
EXITING VIA UNION STREET
TRUCK TURNING SIMULATION

SCALE 1:500

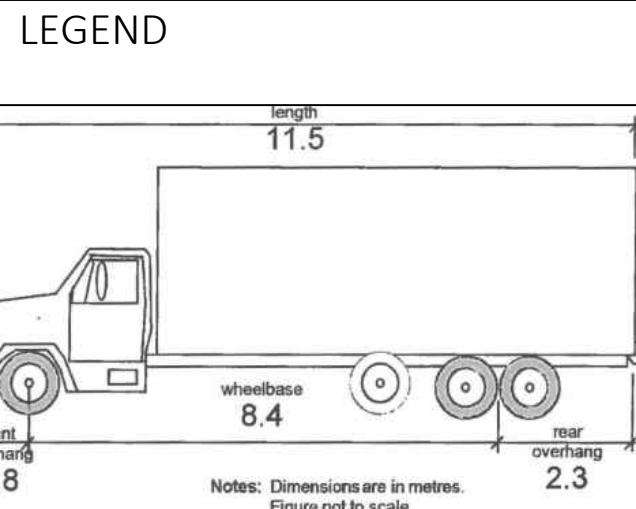


METRIC

McINTOSH PERRY



HSU SITE CIRCULATION



OPERATION DESCRIPTION

HSU ENTERING BLOCK B
LOADING SPACE ALONG BLOCK
A AND EXITING ONTO SIR JOHN A
MACDONALD VIA ACCESS 2
TRUCK TURNING SIMULATION

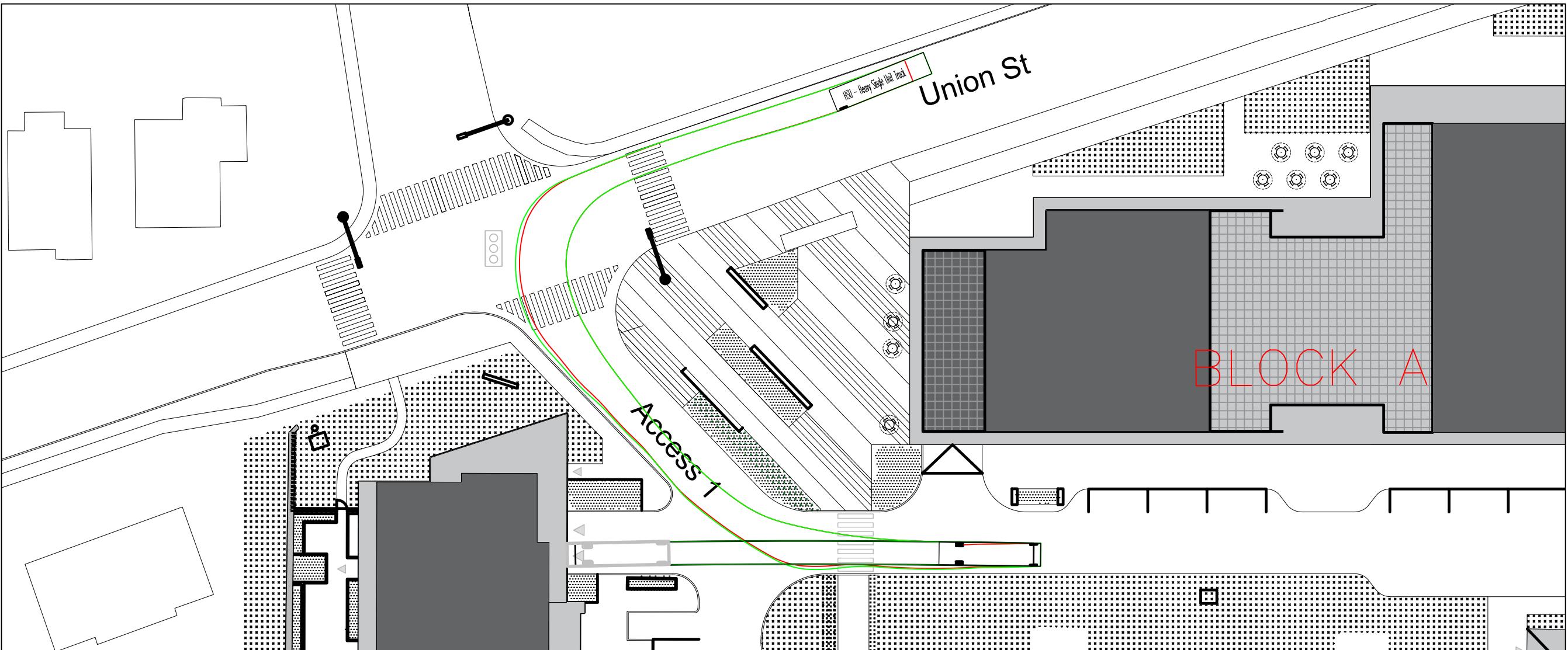
SCALE 1:250



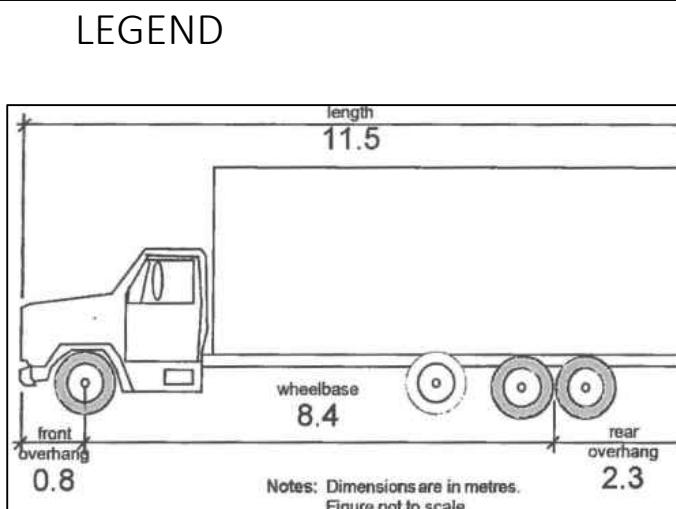
METRIC

McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	3



HSU SITE CIRCULATION



OPERATION DESCRIPTION

HSU ENTERING
VIA SITE ACCESS 1 AND
REVERSING INTO BLOCK C
NORTH LOADING DOCK
TRUCK TURNING SIMULATION

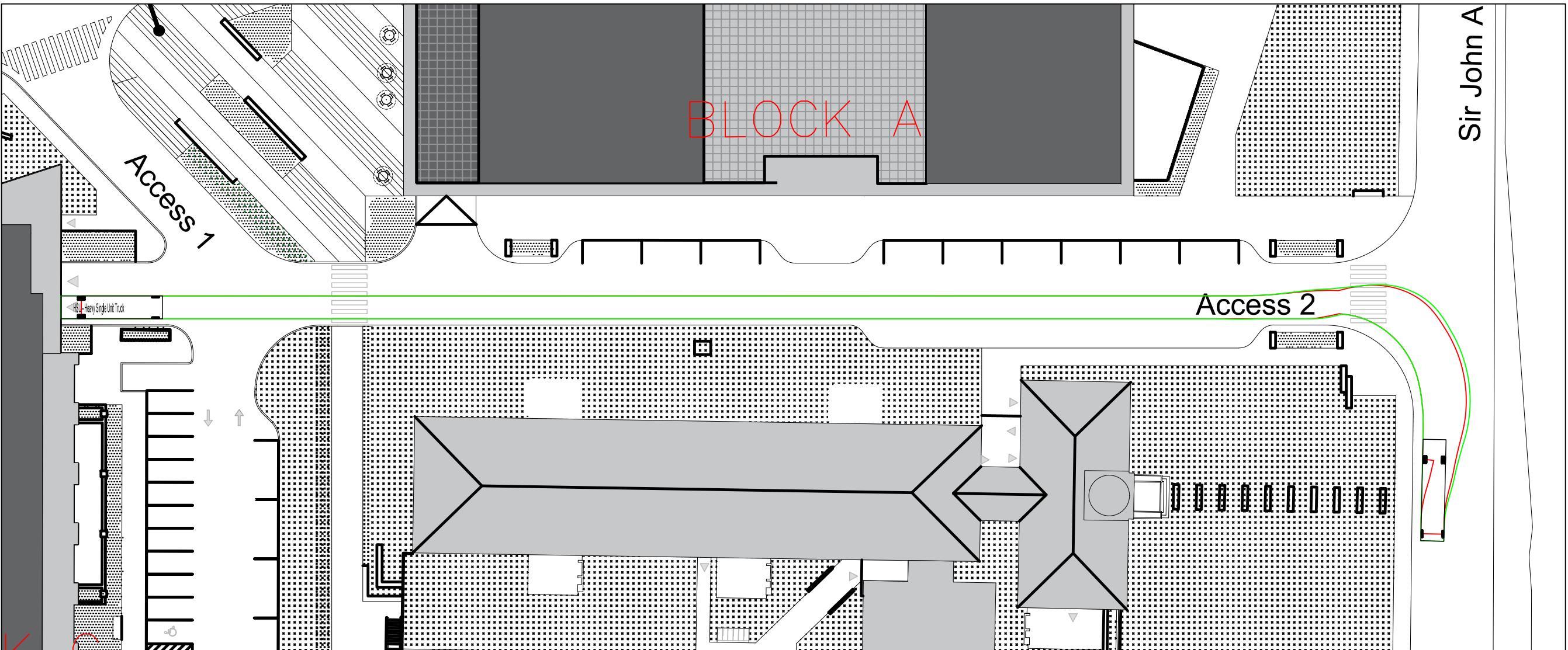
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METRIC

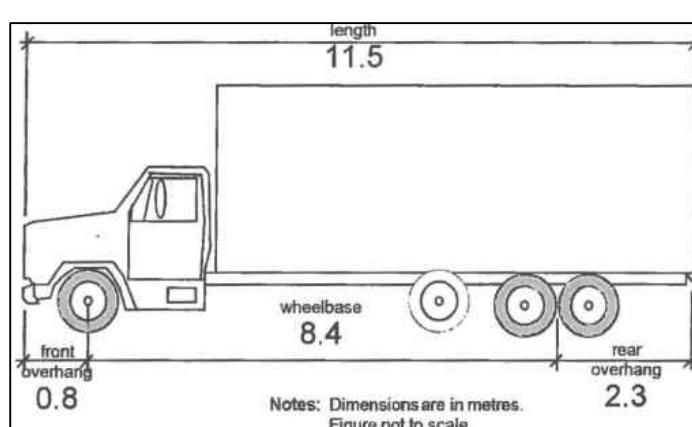
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	4



HSU SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

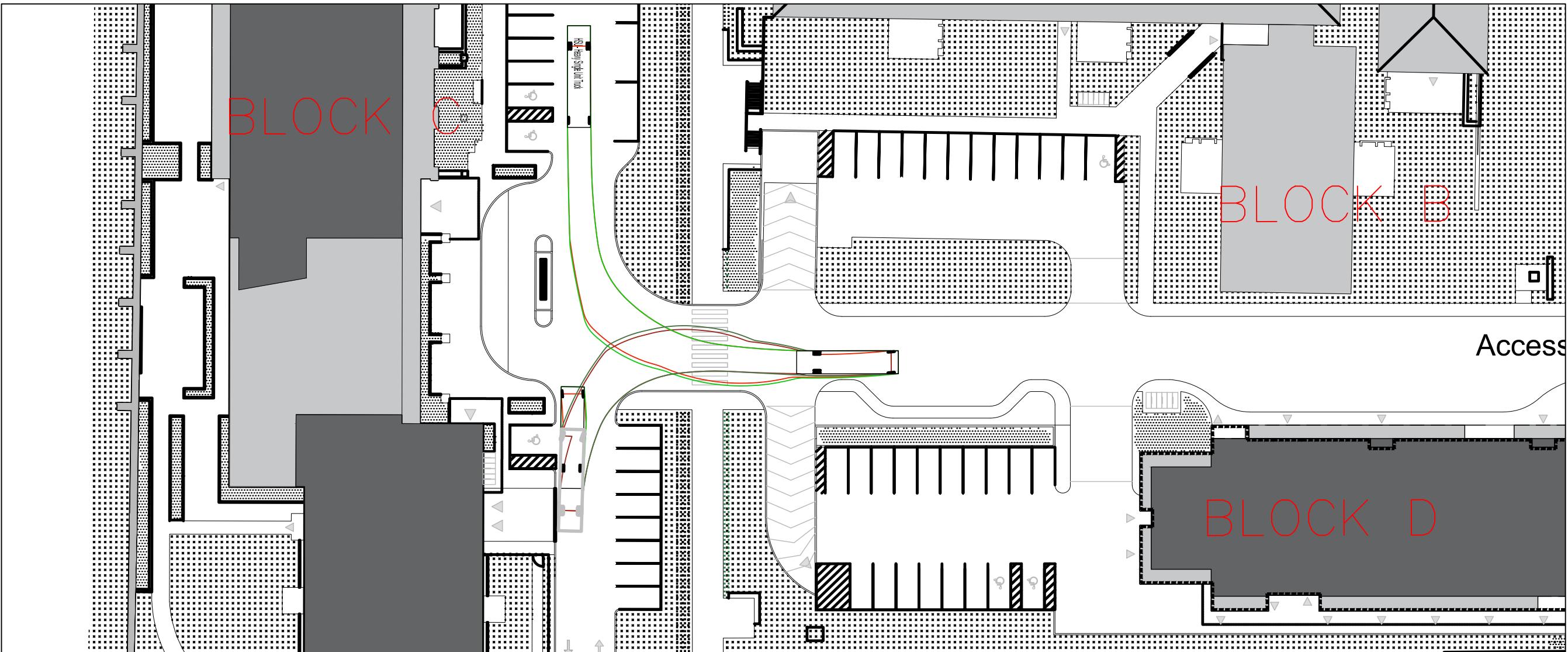
HSU EXITING BLOCK C NORTH
LOADING DOCK VIA SITE
ACCESS 2 AND ONTO SIR JOHN A
MACDONALD BLVD
TRUCK TURNING SIMULATION

SCALE 1:250

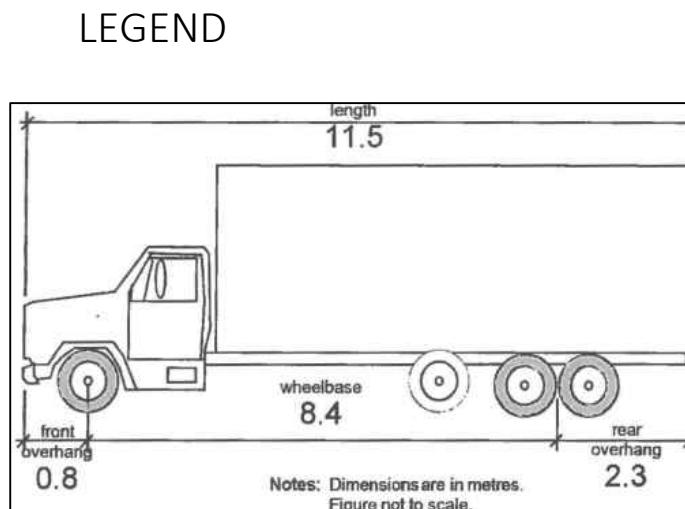


McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	5



**HSU
SITE CIRCULATION**



OPERATION DESCRIPTION

**HSU ENTERING VIA ACCESS 1 TO
BLOCK B DRIVING AISLE AND
REVERSING INTO BLOCK C
SOUTH LOADING AREA
TRUCK TURNING SIMULATION**

SCALE 1:250



METRIC

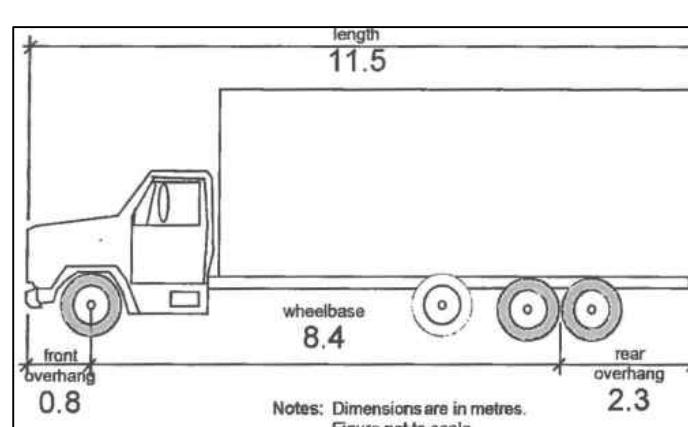
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	6



HSU SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

HSU EXISTING SOUTH LOADING
AREA TO UNION ST VIA ACCESS 1
TRUCK TURNING SIMULATION

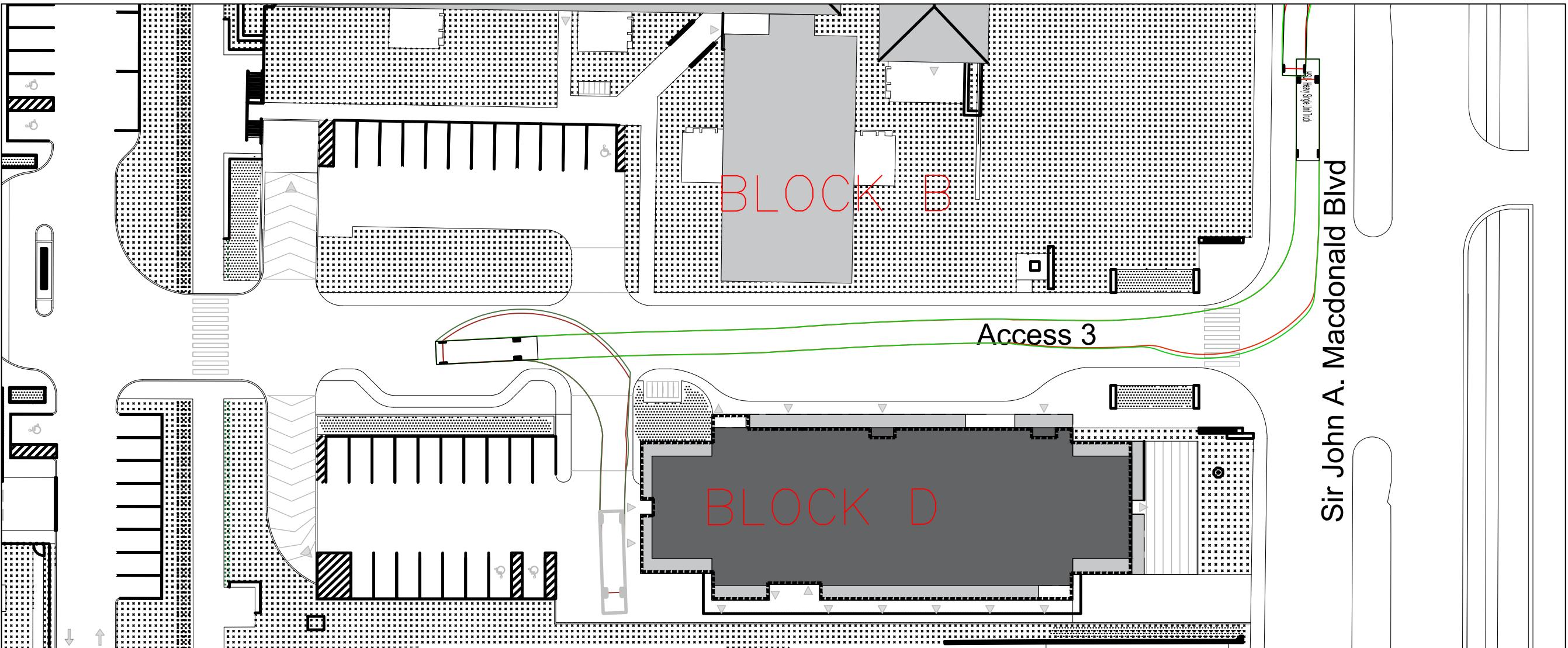
SCALE 1:250



METRIC

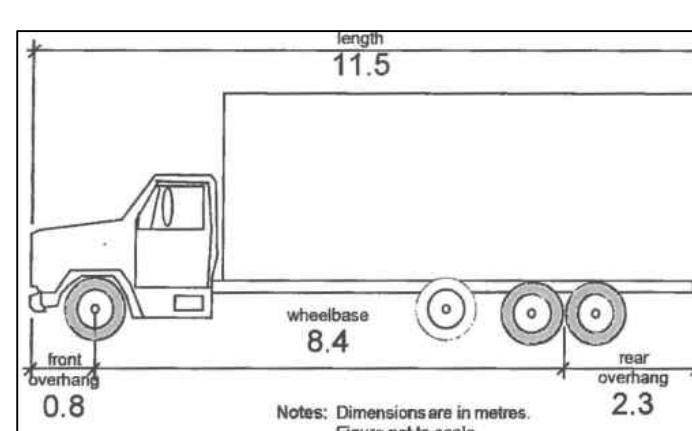
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	7



HSU SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

HSU REVERSING INTO BLOCK D
LOADING SPACE FROM BLOCK B
DRIVING AISLE
TRUCK TURNING SIMULATION

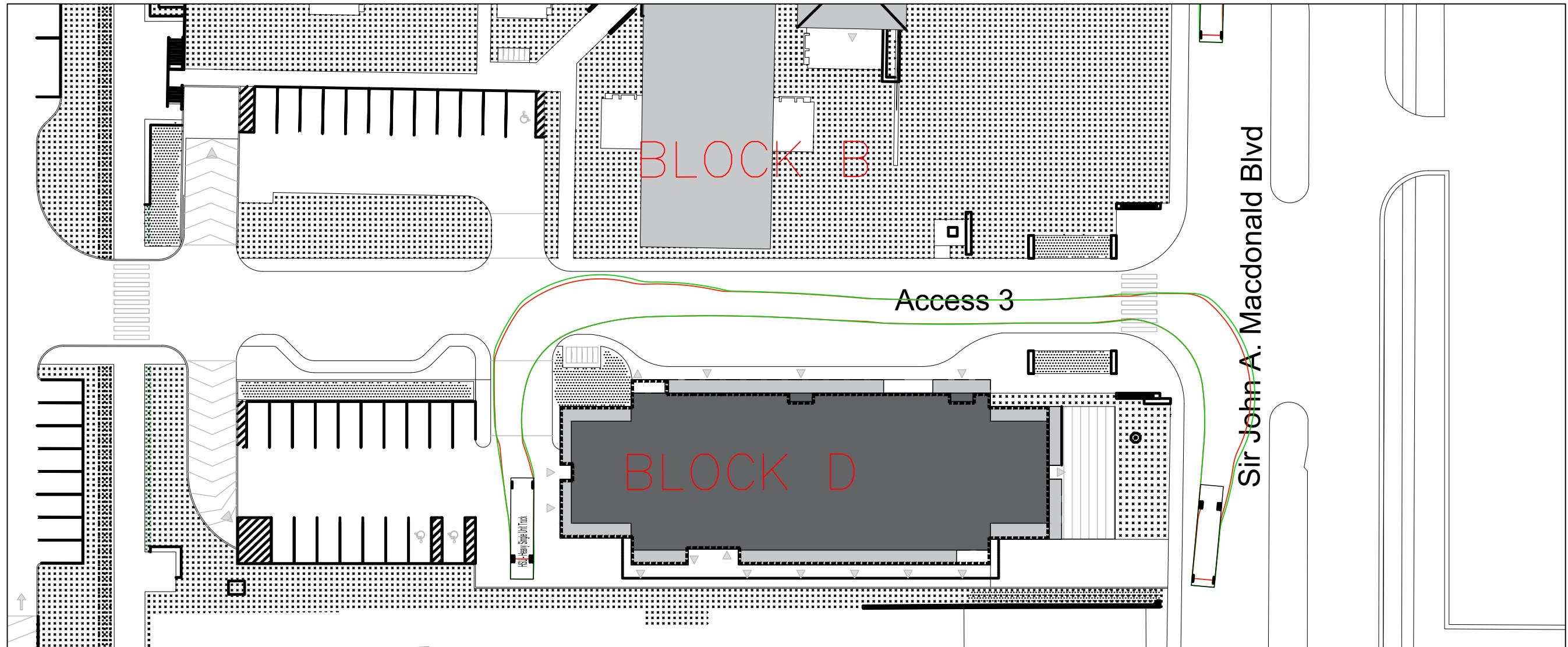
SCALE 1:250



METRIC

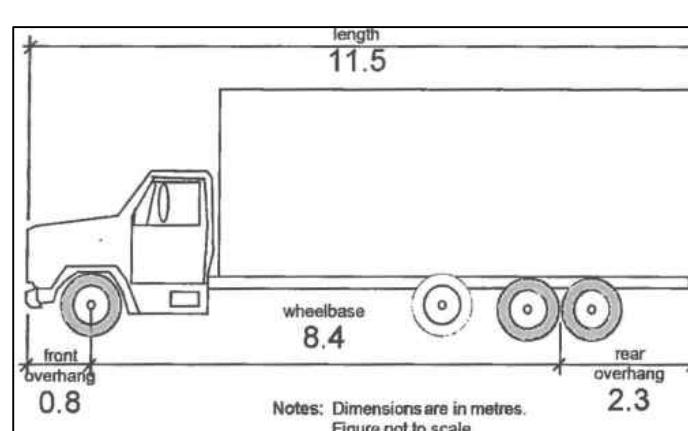
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	8



**HSU
SITE CIRCULATION**

LEGEND



OPERATION DESCRIPTION

**HSU EXISTING LOADING SPACE
TO SIR JOHN A. MACDONALD VIA
ACCESS 3
TRUCK TURNING SIMULATION**

SCALE 1:250

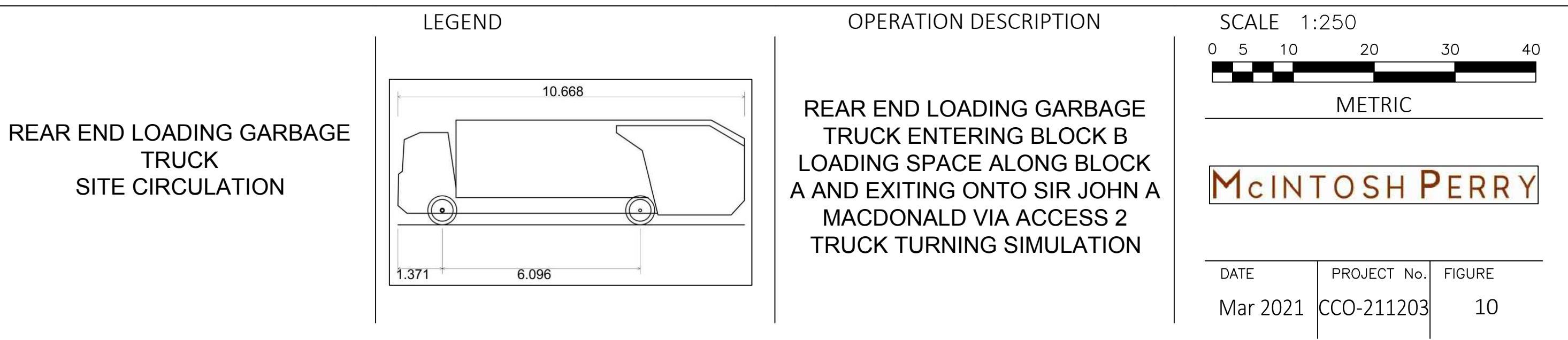
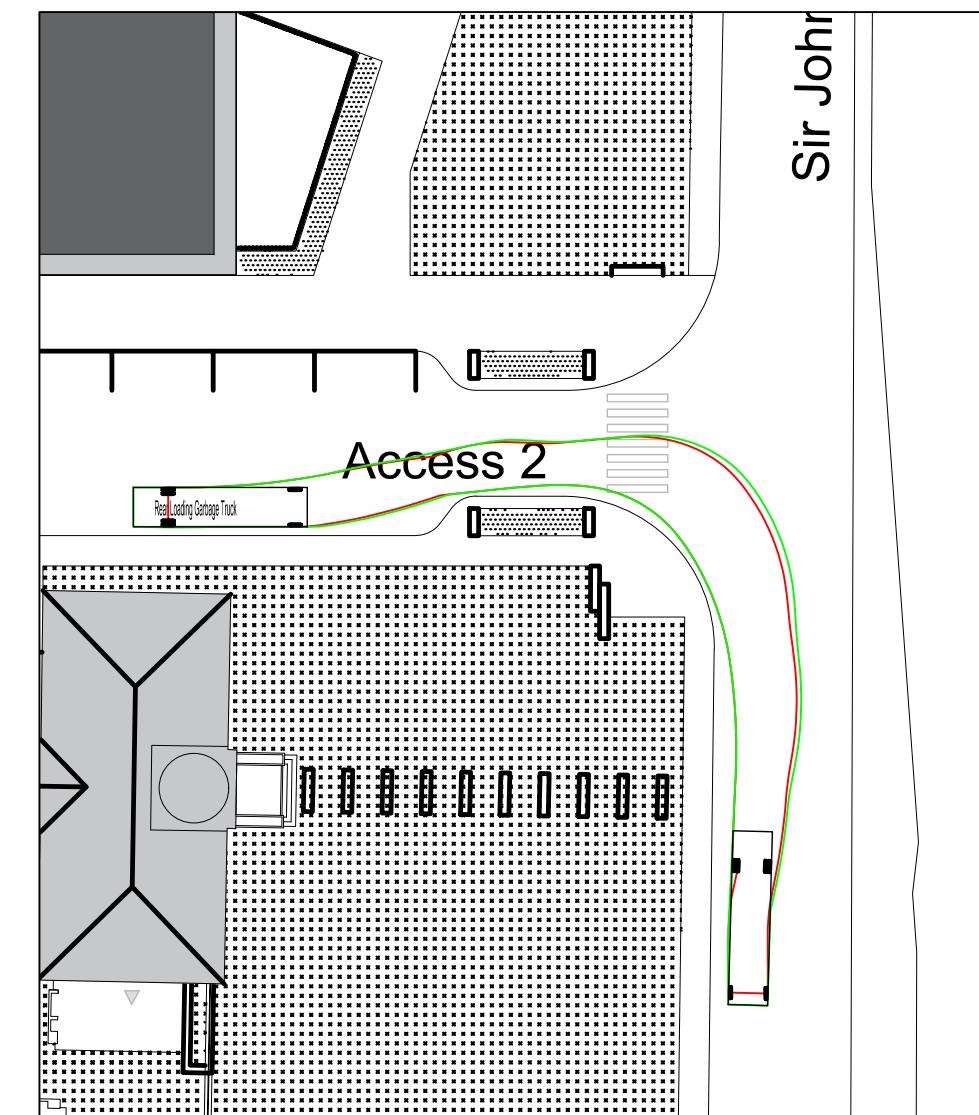
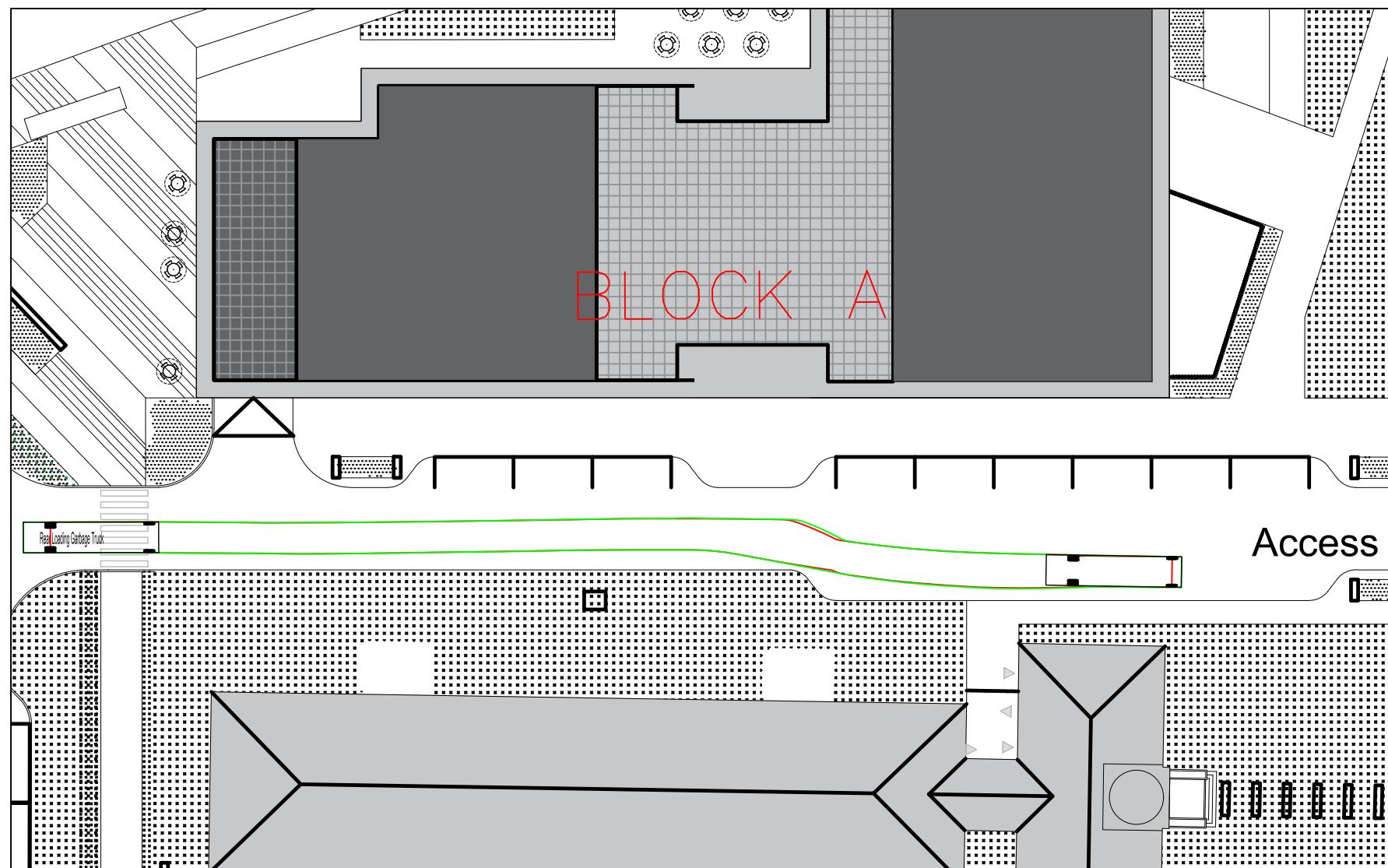


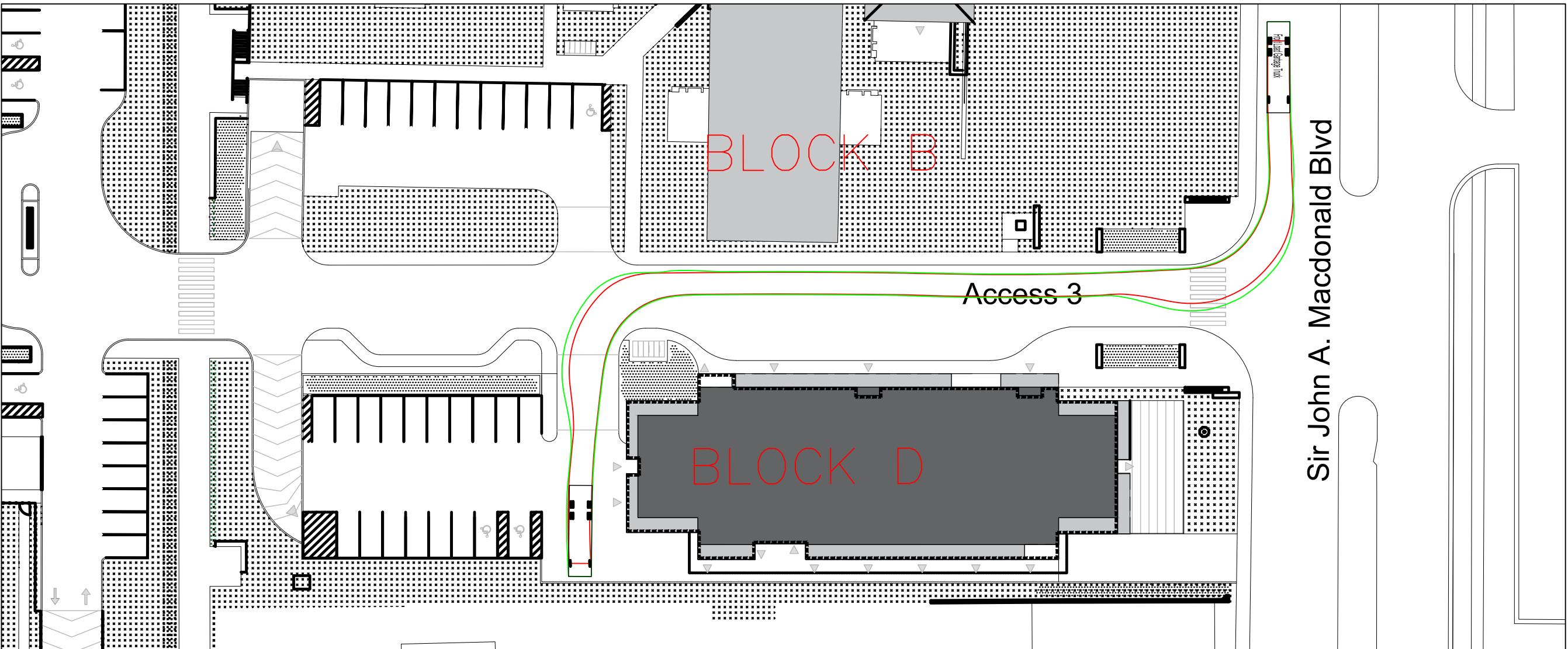
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	9

NOTES:

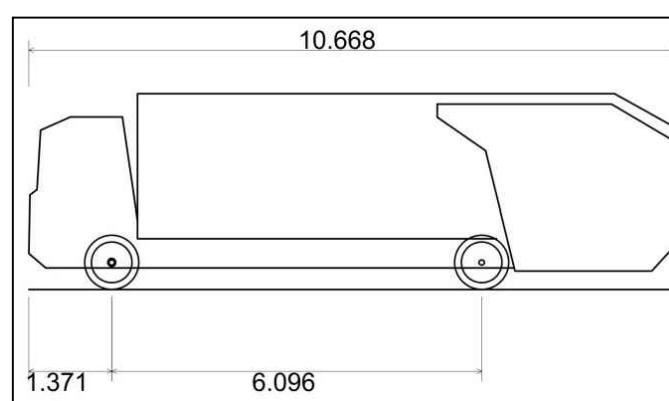
1. TRUCK WILL STOP JUST SHORT OF THE DROP CURB WITH BINS BEING WHEELED OUT FOR THE TRUCK TO PICK UP.





**REAR END LOADING GARBAGE
TRUCK
SITE CIRCULATION**

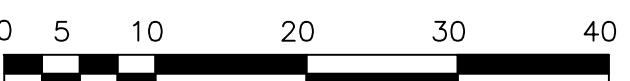
LEGEND



OPERATION DESCRIPTION

**REAR END LOADING GARBAGE
TRUCK ENTERING FROM SIR
JOHN A. MACDONALD BLVD VIA
ACCESS 3 TO BLOCK D GARBAGE
REMOVAL AREA
TRUCK TURNING SIMULATION**

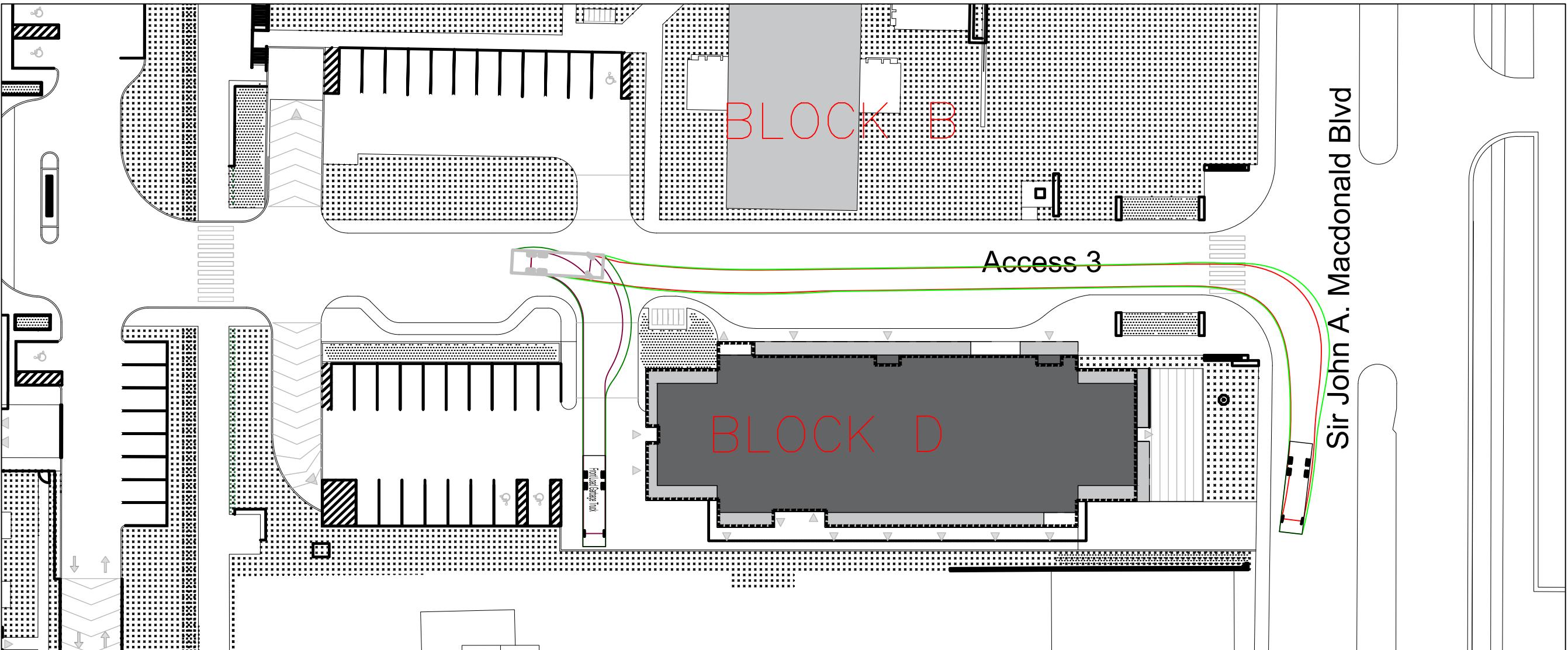
SCALE 1:250



METRIC

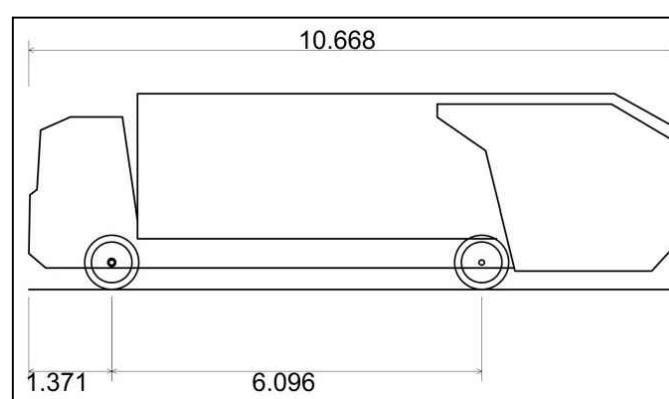
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	11



**REAR END LOADING GARBAGE
TRUCK
SITE CIRCULATION**

LEGEND



OPERATION DESCRIPTION

**REAR END LOADING GARBAGE
TRUCK EXITING BLOCK D
GARBAGE REMOVAL AREA TO
SIR JOHN A. MACDONALD BLVD
VIA ACCESS 3
TRUCK TURNING SIMULATION**

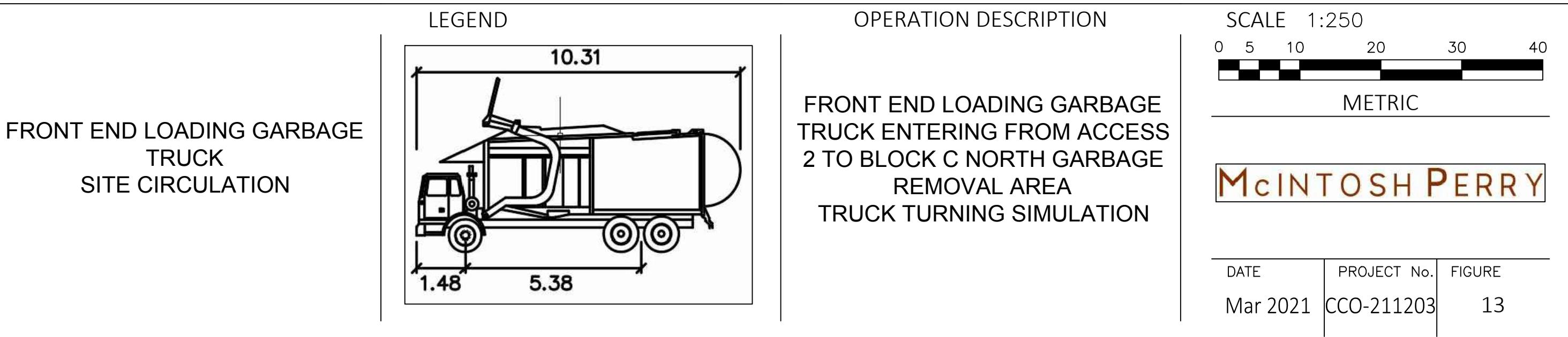
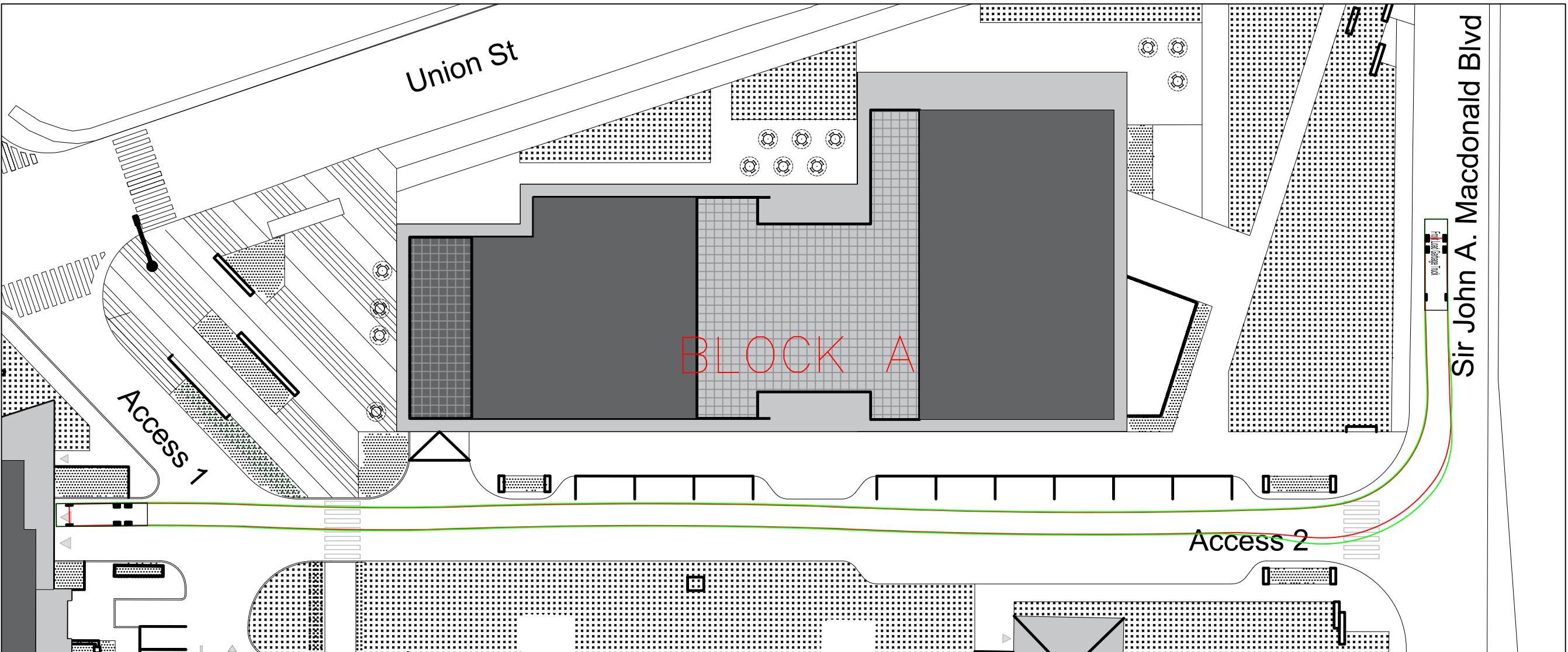
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METRIC

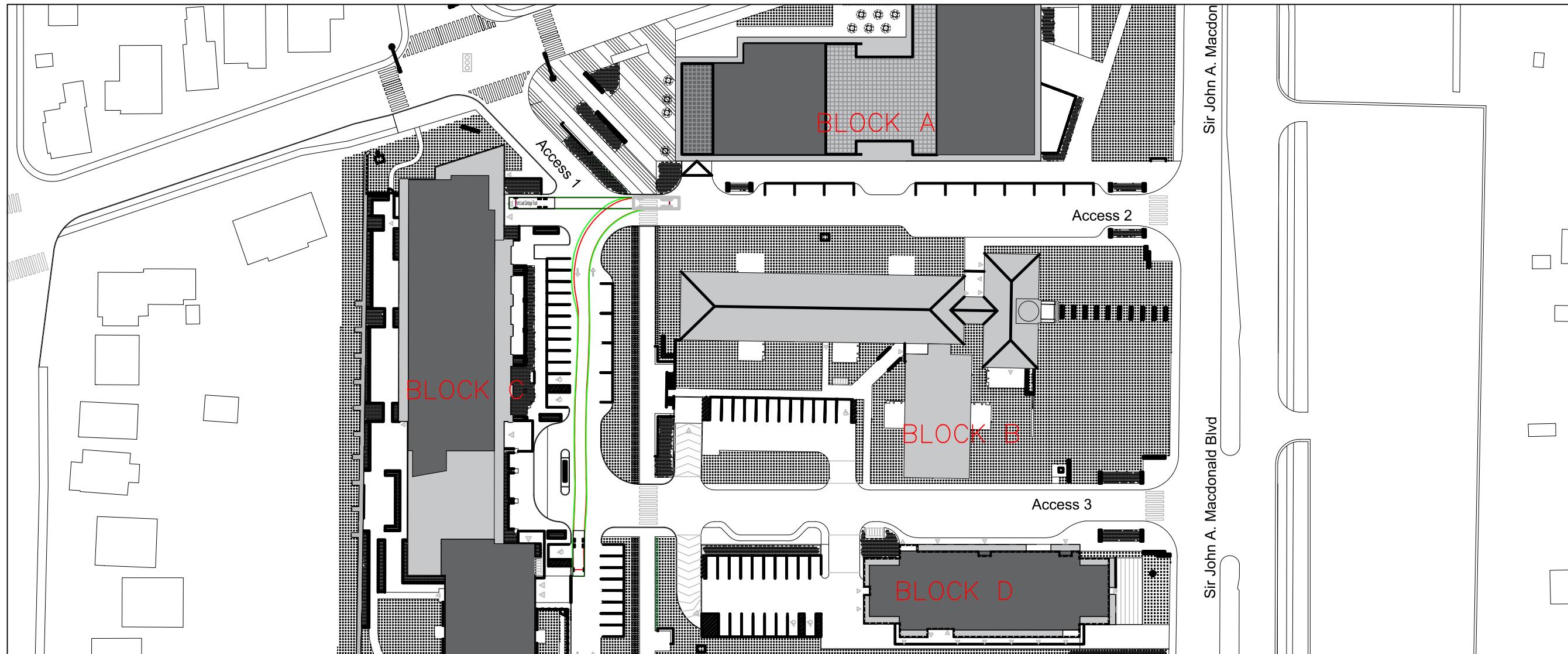
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	12

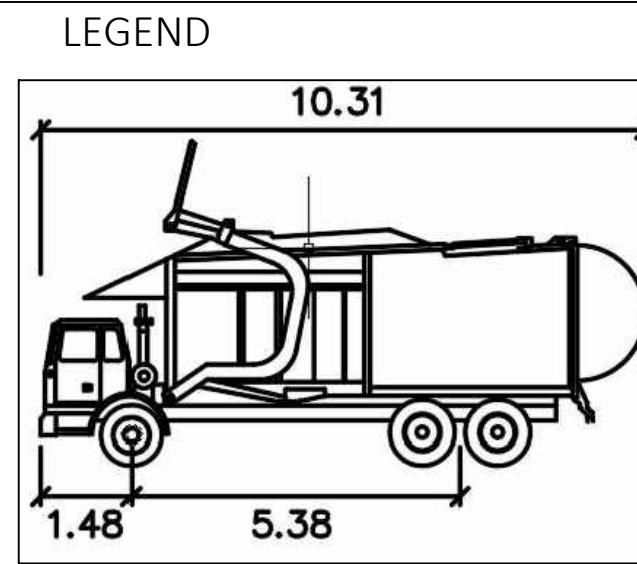


NOTES:

1. TRUCK WILL STOP JUST SHORT OF THE DROP CURB WITH BINS BEING WHEELED OUT FOR THE TRUCK TO PICK UP.



FRONT END LOADING GARBAGE
TRUCK
SITE CIRCULATION

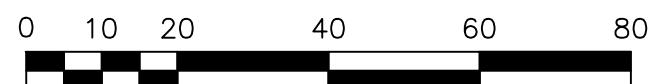


LEGEND

OPERATION DESCRIPTION

FRONT END LOADING GARBAGE
TRUCK EXITING BLOCK C NORTH
GARBAGE REMOVAL AREA TO
BLOCK C SOUTH GARBAGE
REMOVAL AREA
TRUCK TURNING SIMULATION

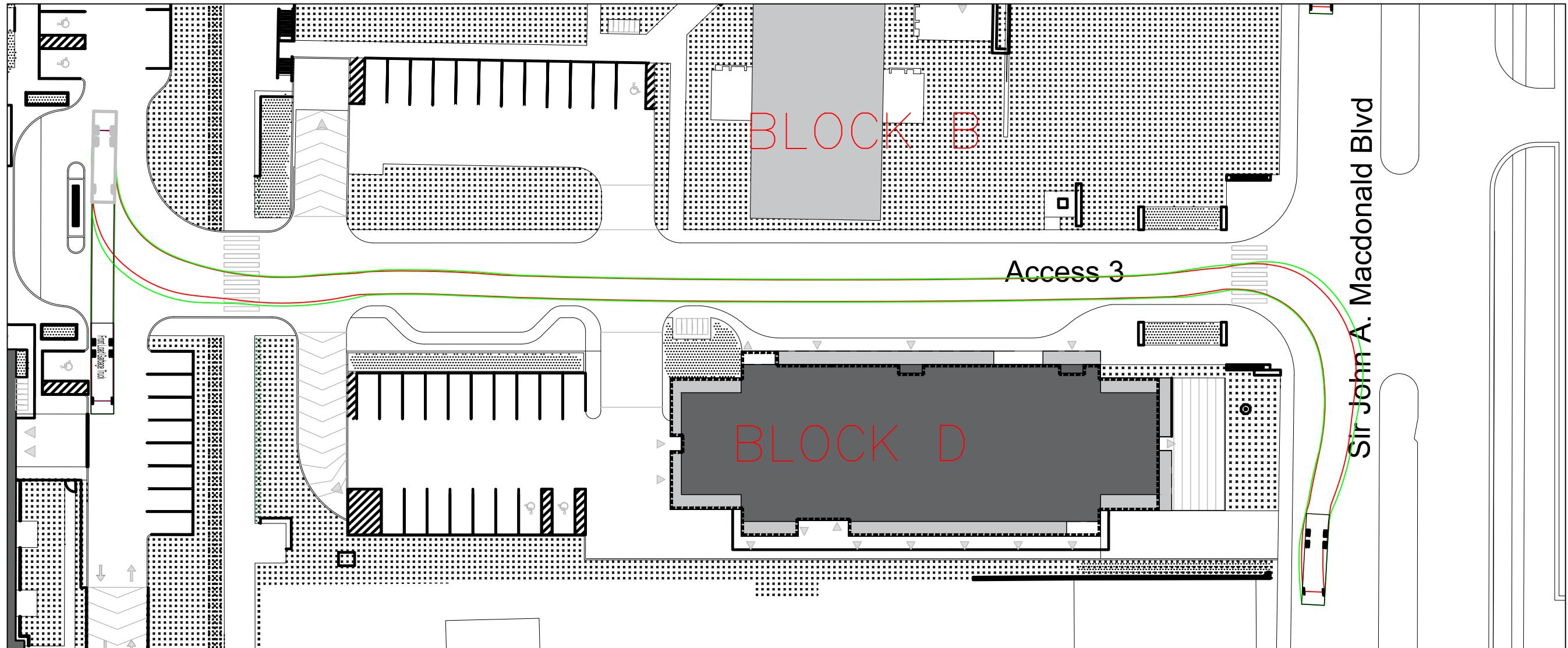
SCALE 1:500



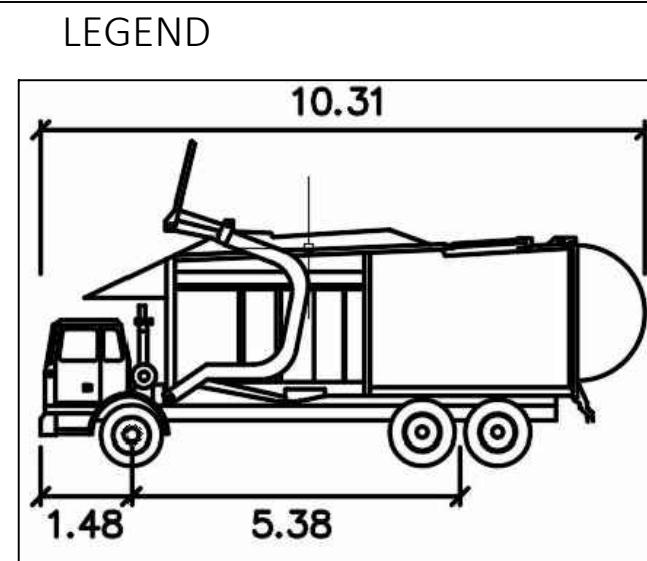
METRIC

McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	14



FRONT END LOADING GARBAGE
TRUCK
SITE CIRCULATION



OPERATION DESCRIPTION

FRONT END LOADING GARBAGE
TRUCK EXITING FROM BLOCK C
SOUTH GARBAGE REMOVAL
AREA TOWARDS SIR JOHN A.
MACDONALD BLVD VIA ACCESS 3
TRUCK TURNING SIMULATION

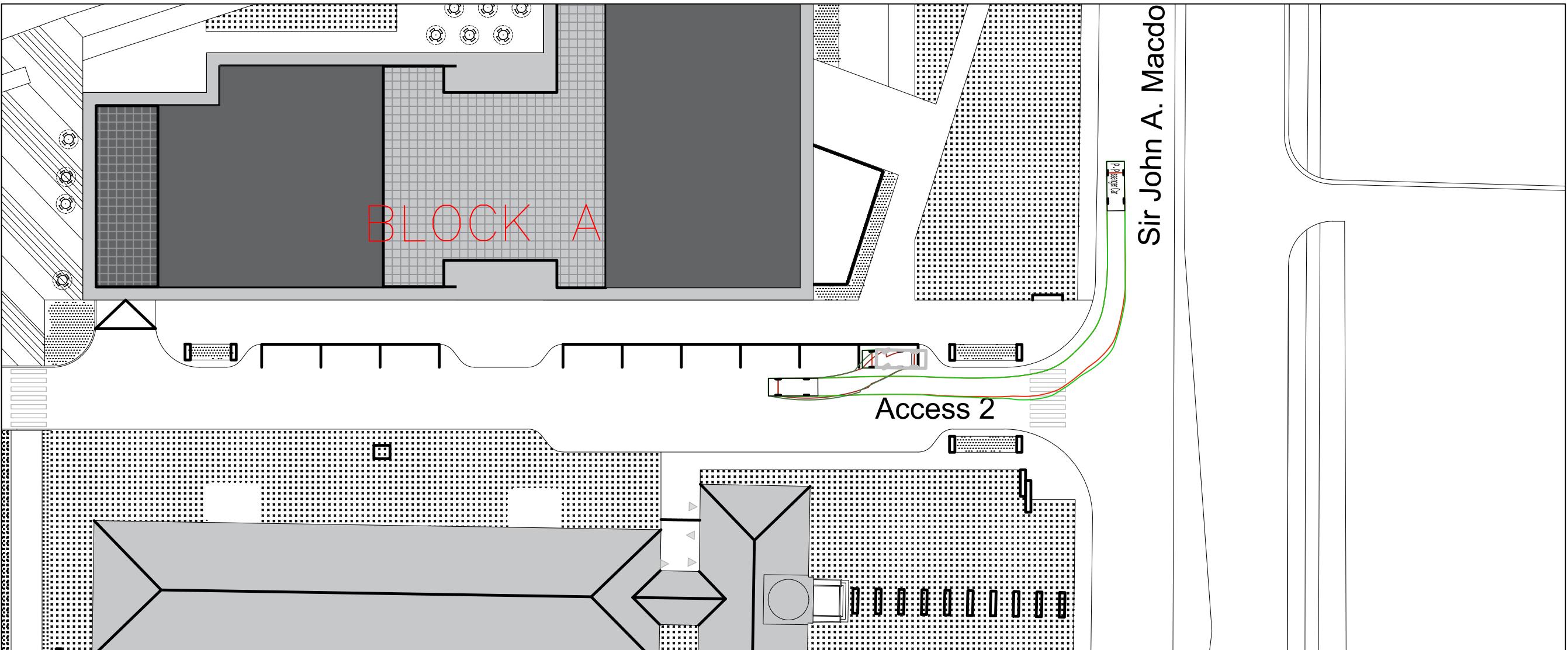
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METRIC

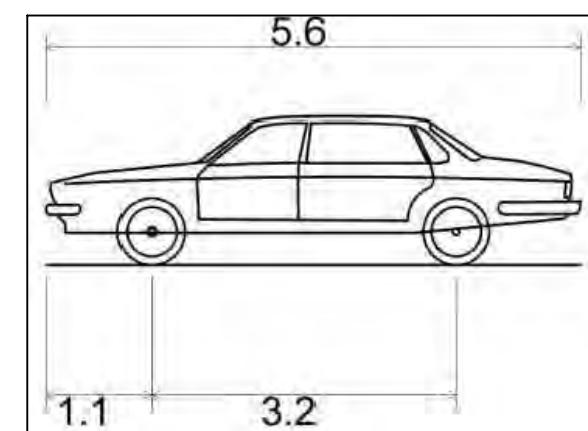
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	15



PASSENGER CAR
SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

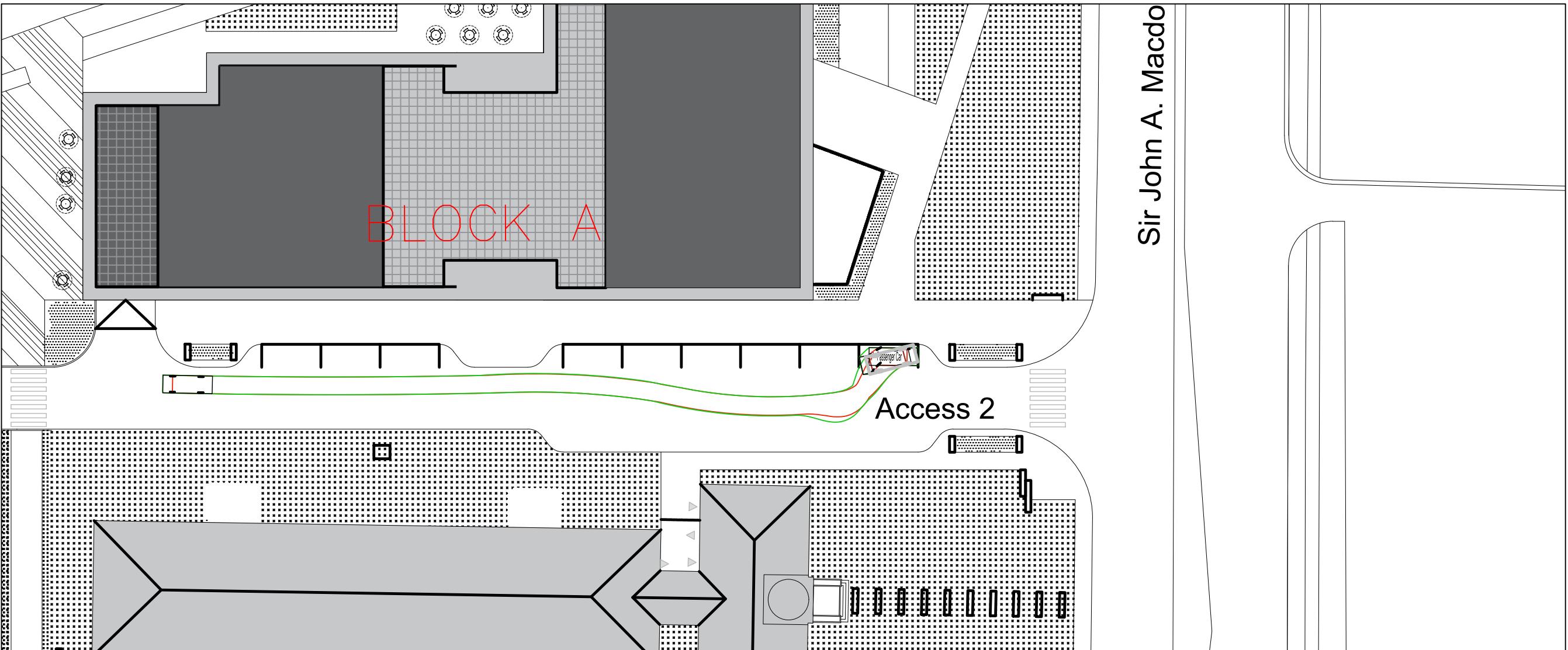
PASSENGER CAR FROM SIR
JOHN A. MACDONALD BLVD
ENTERING ACCESS 2 AND
PARKING IN FIRST SPOT ON
BLOCK A
TRUCK TURNING SIMULATION

SCALE 1:250



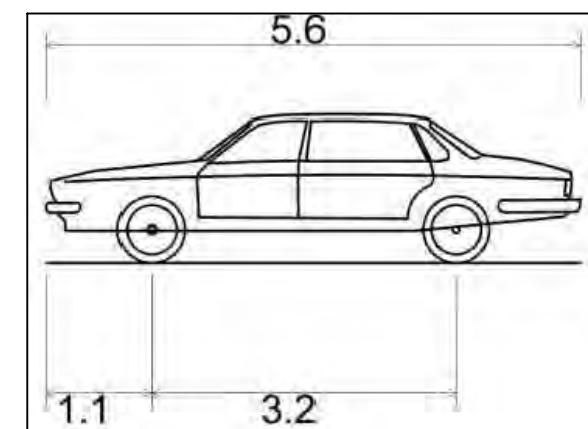
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	16



PASSENGER CAR
SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

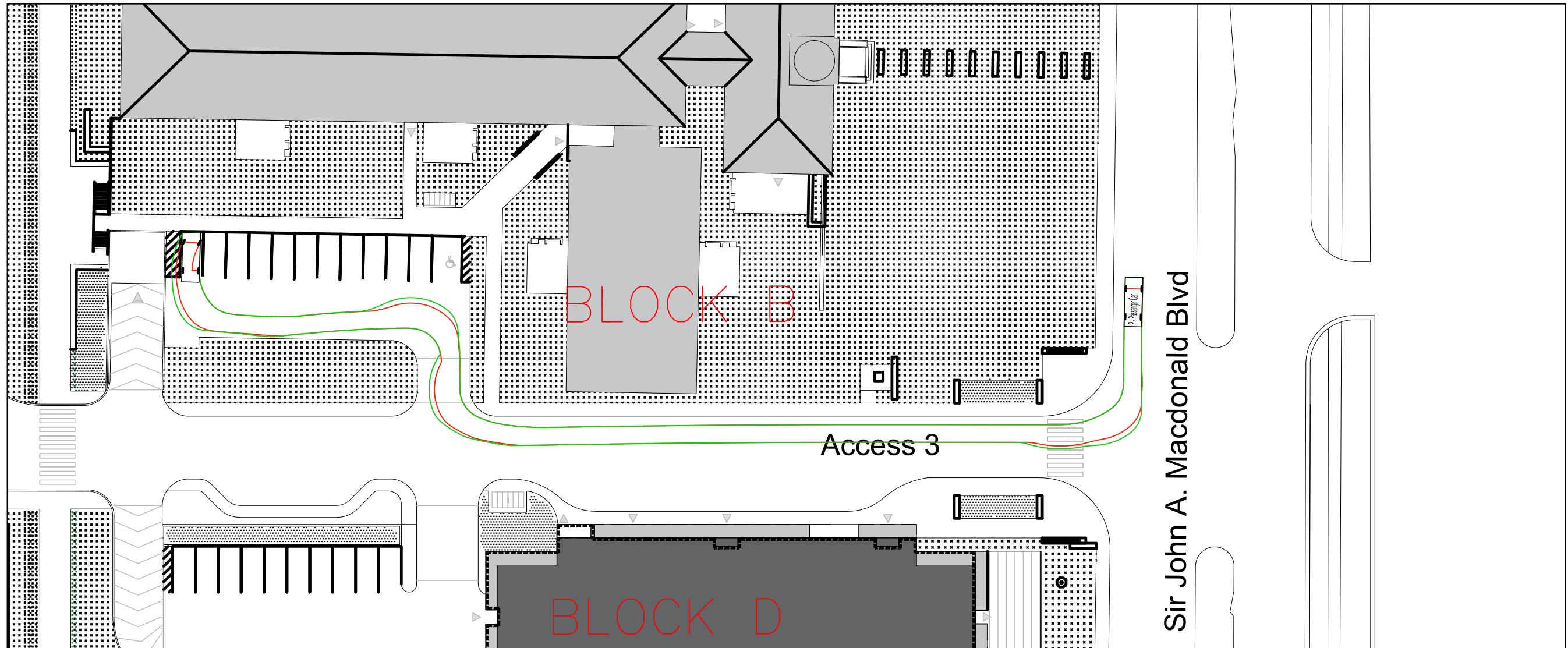
PASSENGER CAR FROM FIRST
PARKING SPOT ON BLOCK A
TOWARDS UNION ST
TRUCK TURNING SIMULATION

SCALE 1:250



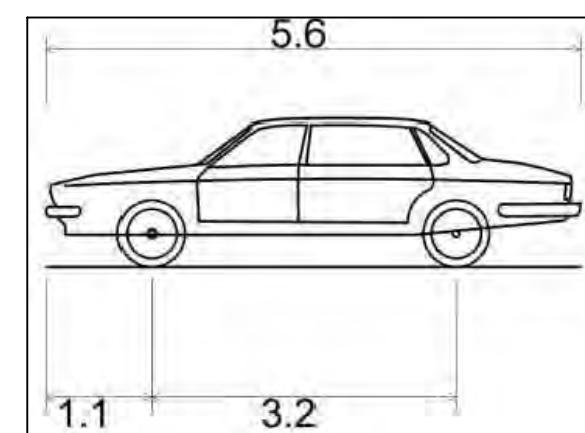
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	17



PASSENGER CAR
SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

PASSENGER CAR ENTERING
FROM SIR JOHN A MACDONALD
BLVD VIA ACCESS 3 TO BLOCK B
FAR NORTH-WEST PARKING
SPOT
TRUCK TURNING SIMULATION

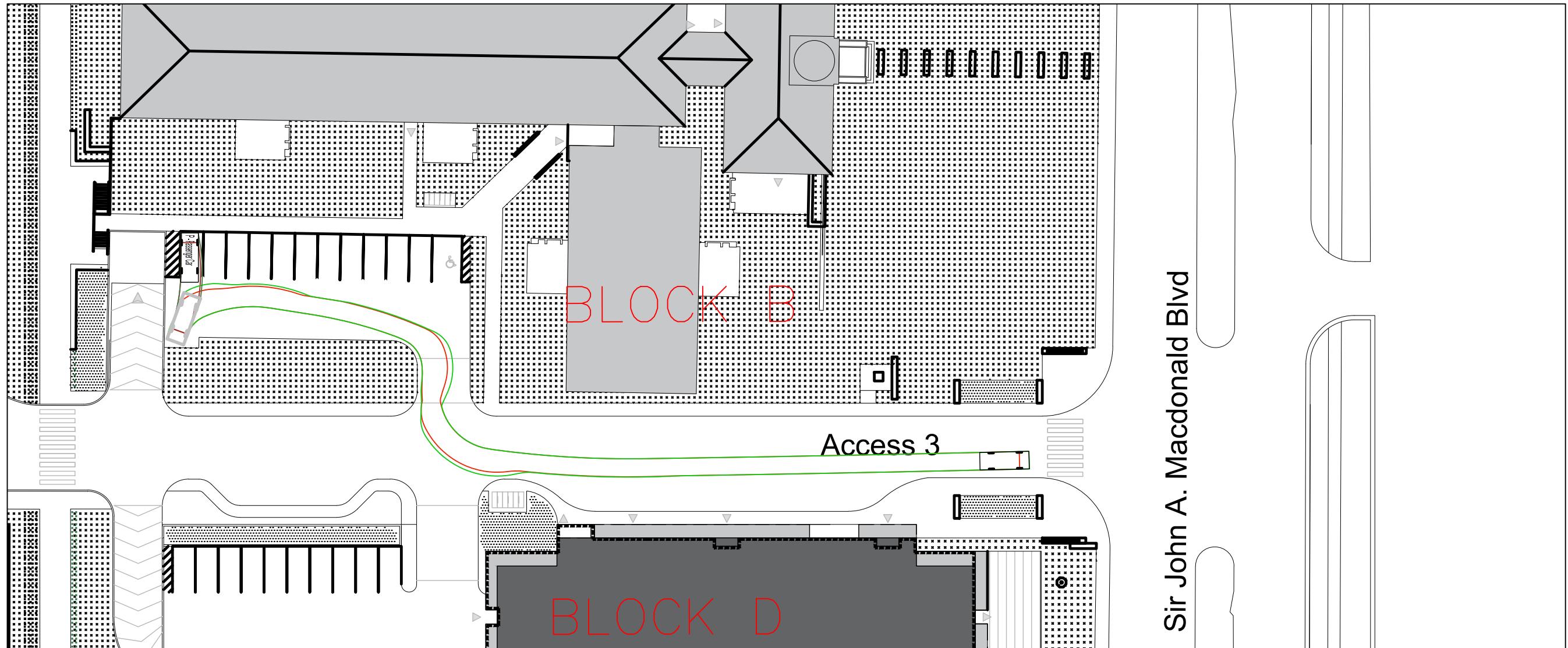
SCALE 1:250



METRIC

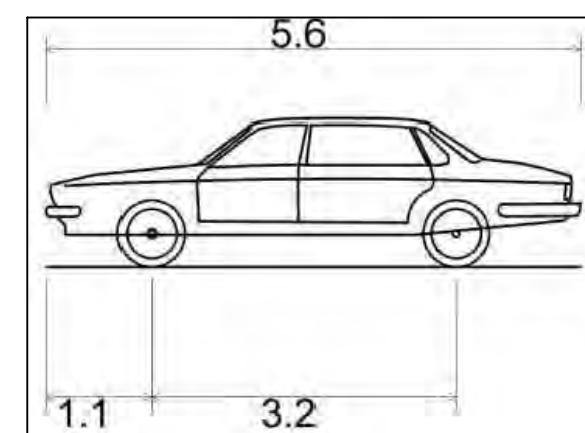
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	18



PASSENGER CAR
SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

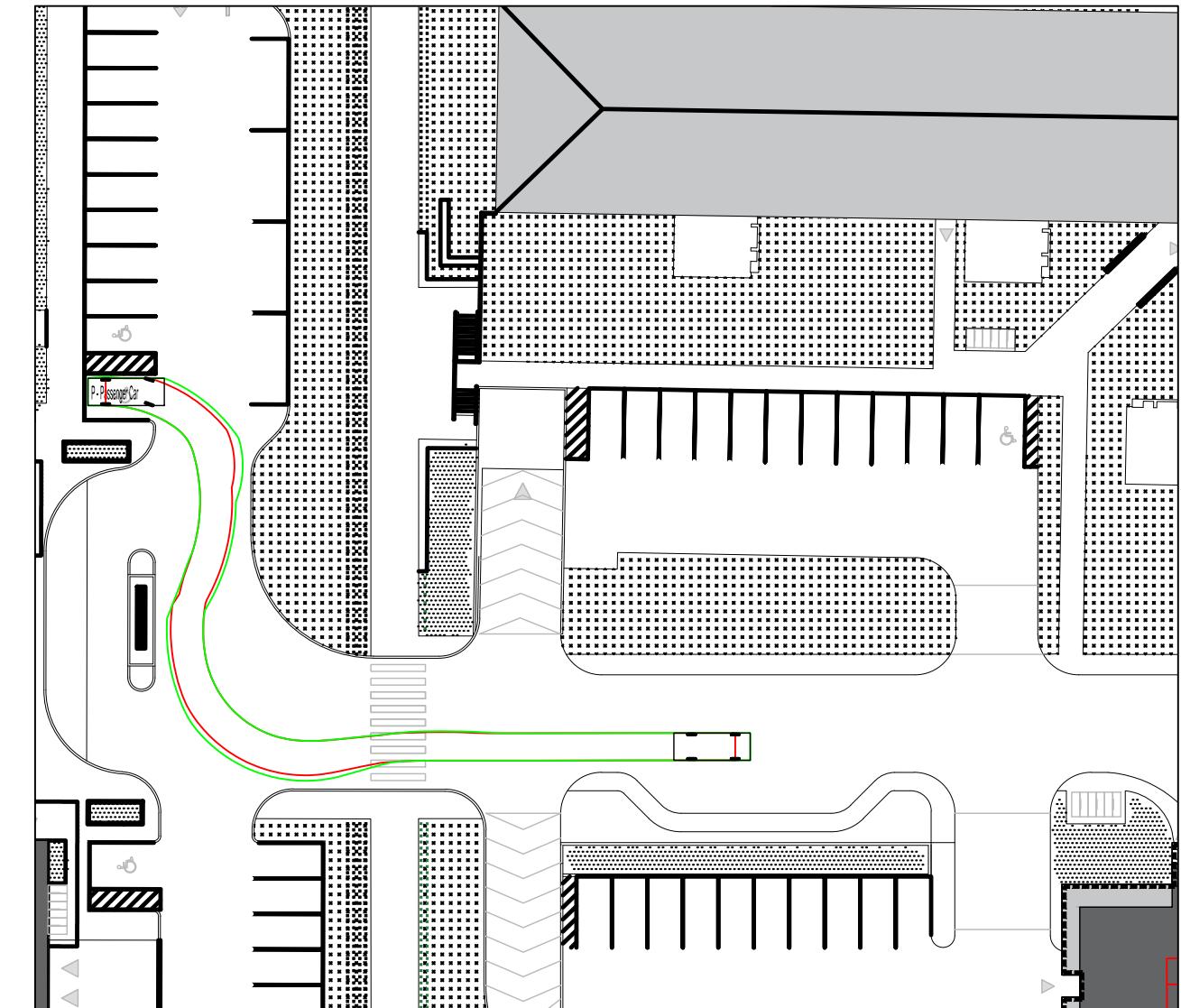
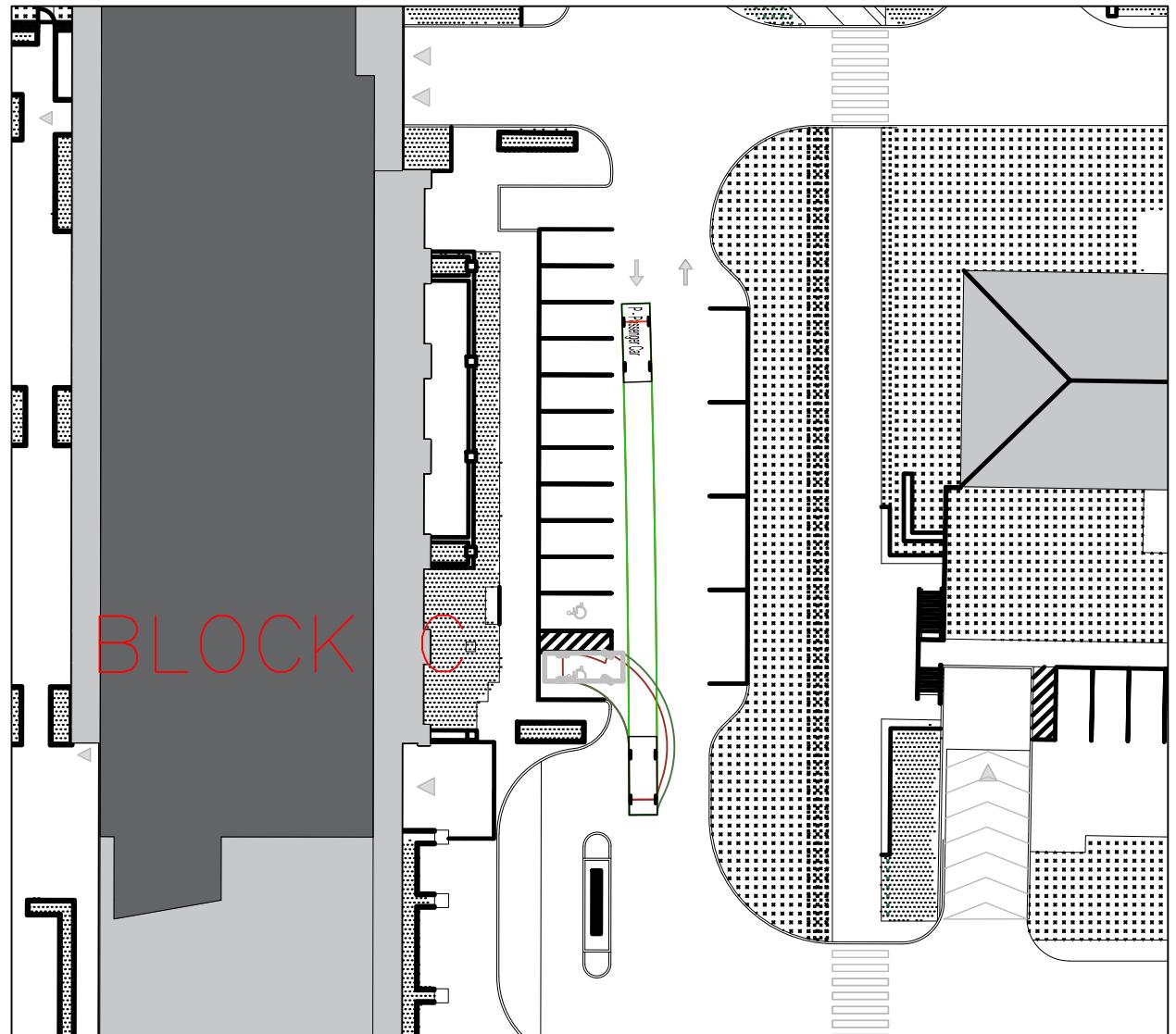
PASSENGER CAR EXITING FROM
BLOCK B FAR NORTH-WEST
PARKING SPOT TO SIR JOHN A.
MACDONALD BLVD VIA ACCESS 3
TRUCK TURNING SIMULATION

SCALE 1:250



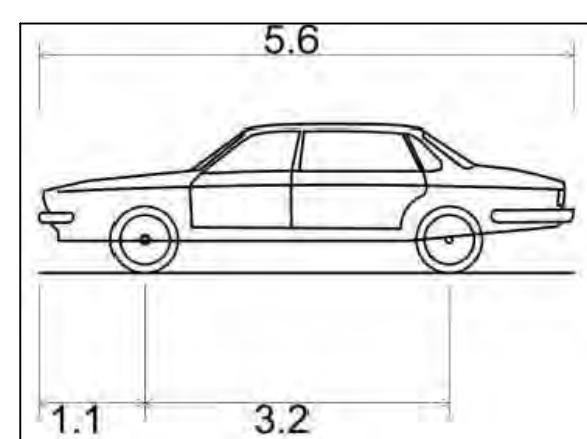
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	19



PASSENGER CAR
SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

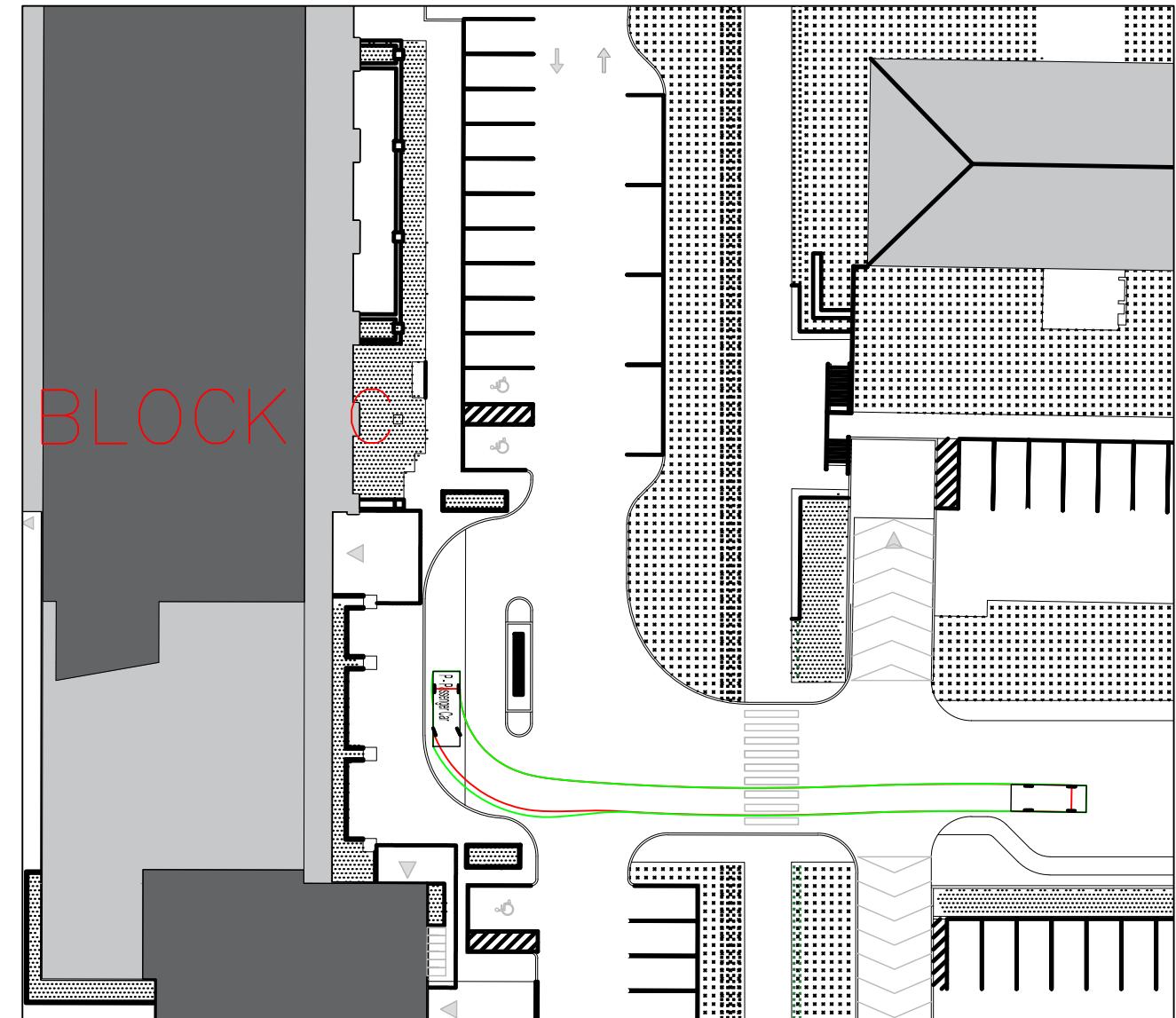
PASSENGER CAR REVERSE
PARKING INTO BARRIER FREE
PARKING SPACE AND EXITING
PARKING SPACE TOWARDS
ACCESS 3
TRUCK TURNING SIMULATION

SCALE 1:250



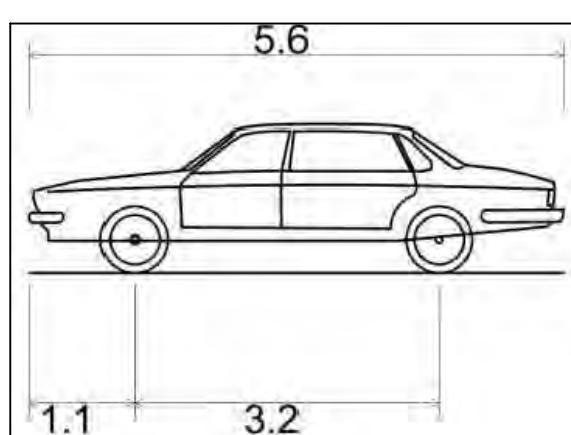
METRIC

McINTOSH PERRY



PASSENGER CAR SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

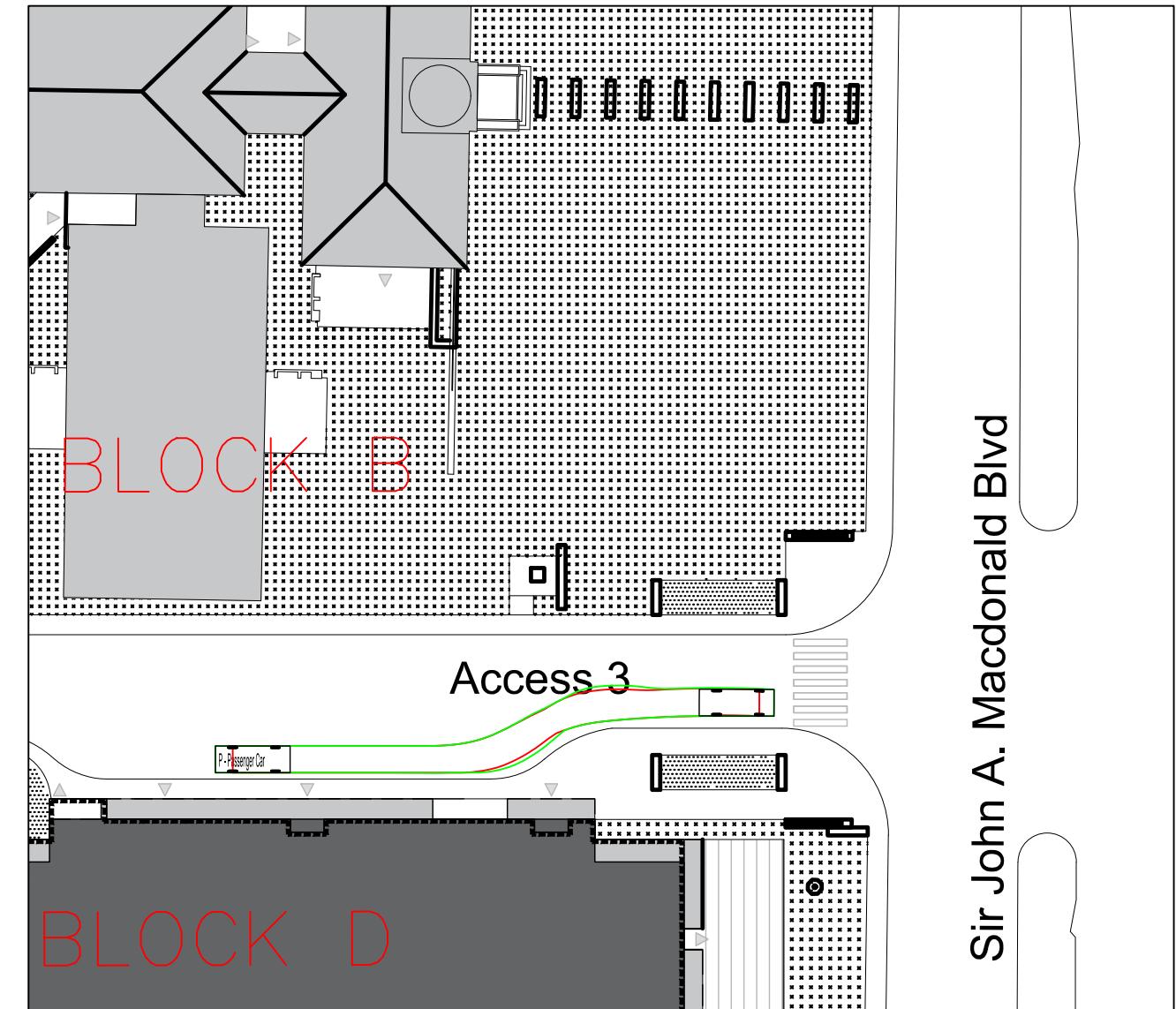
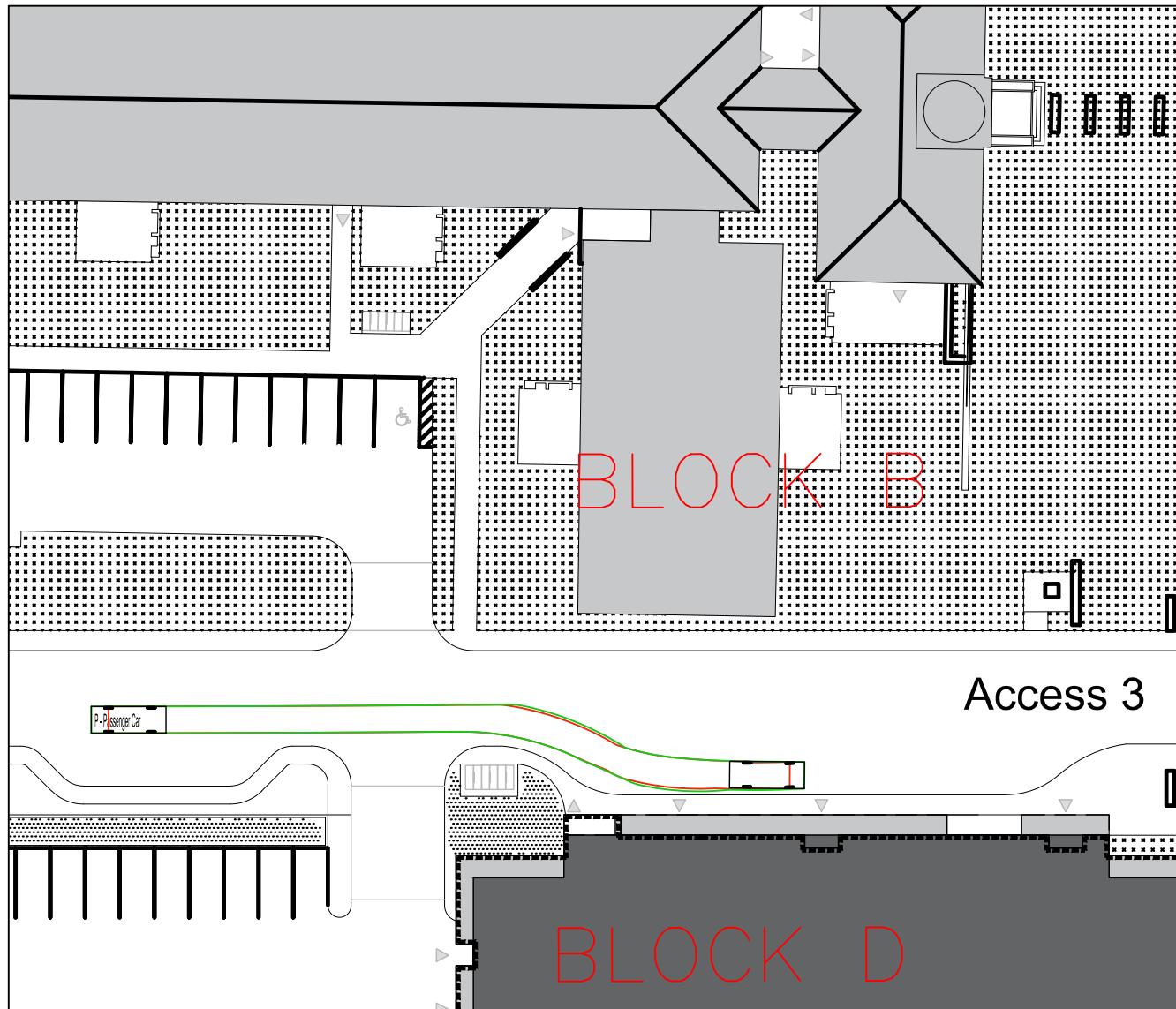
PASSENGER CAR ENTERING
BLOCK C DROP OFF LOOP AND
EXITING TOWARDS SIR JOHN A.
MACDONALD BLVD VIA ACCESS 3
TRUCK TURNING SIMULATION

SCALE 1:250

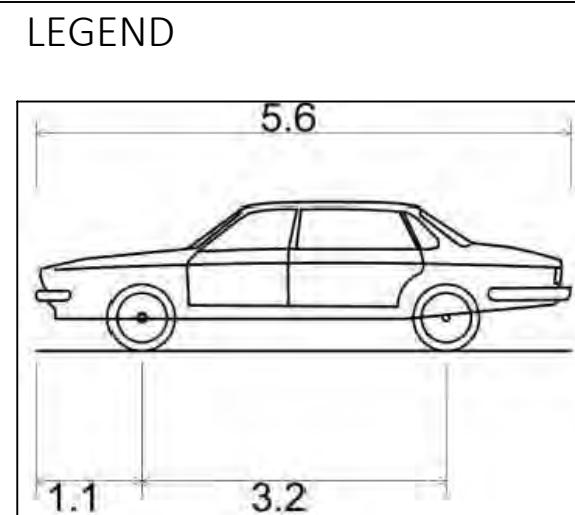


METRIC

McINTOSH PERRY



PASSENGER CAR SITE CIRCULATION



OPERATION DESCRIPTION

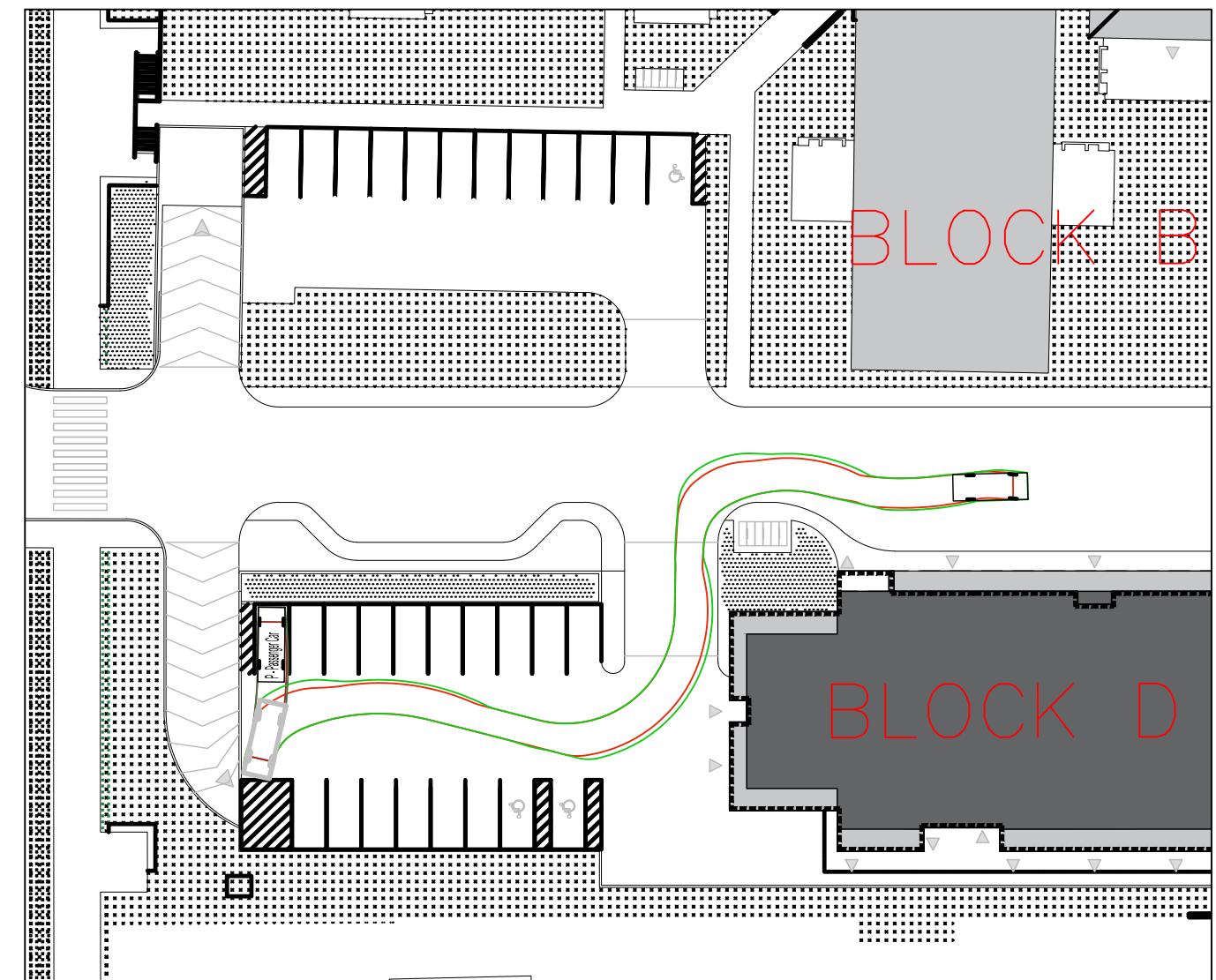
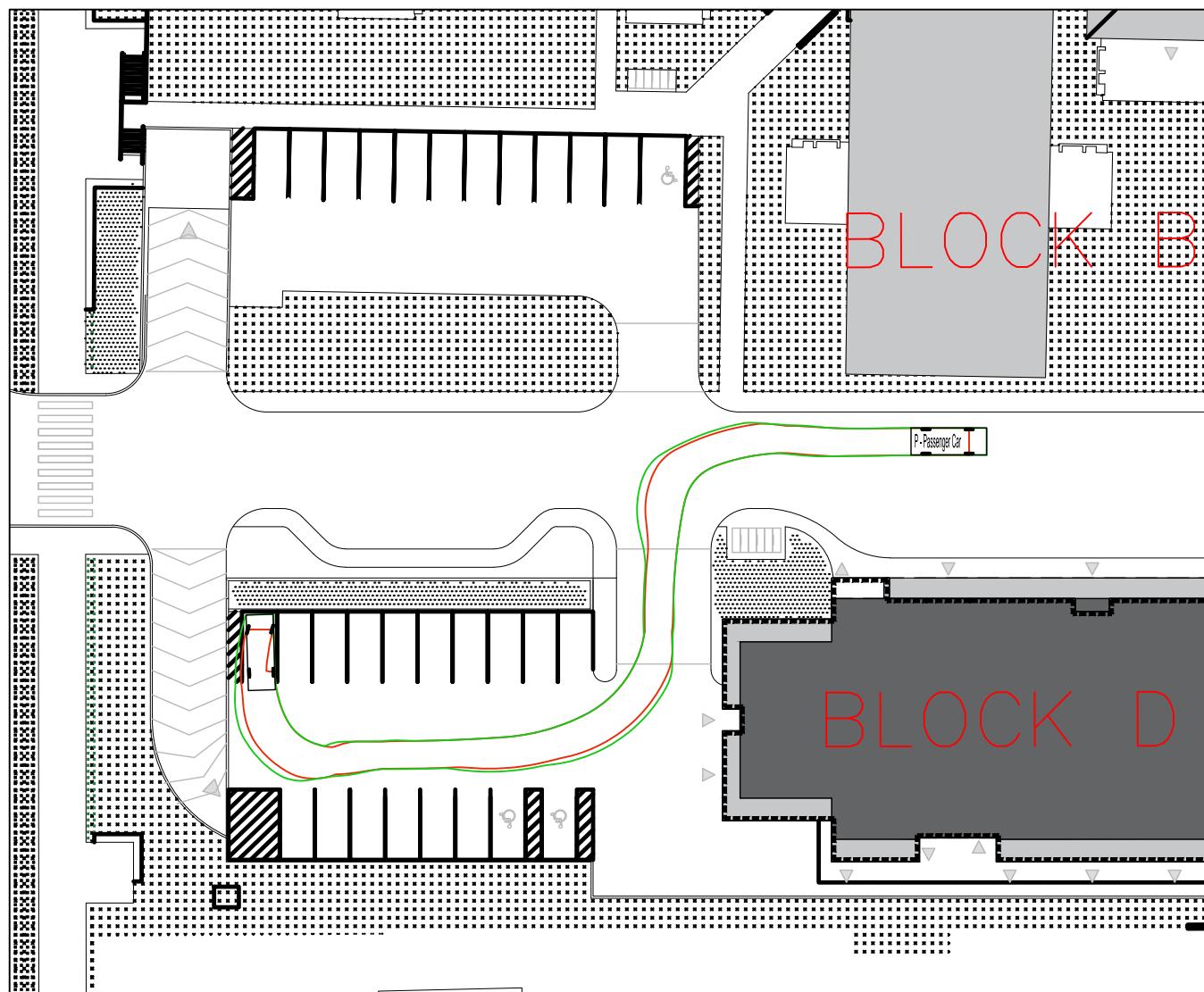
PASSENGER CAR ENTERING
BLOCK D DROP OFF LOOP AND
EXITING TOWARDS SIR JOHN A.
MACDONALD BLVD VIA ACCESS 3
TRUCK TURNING SIMULATION

SCALE 1:250

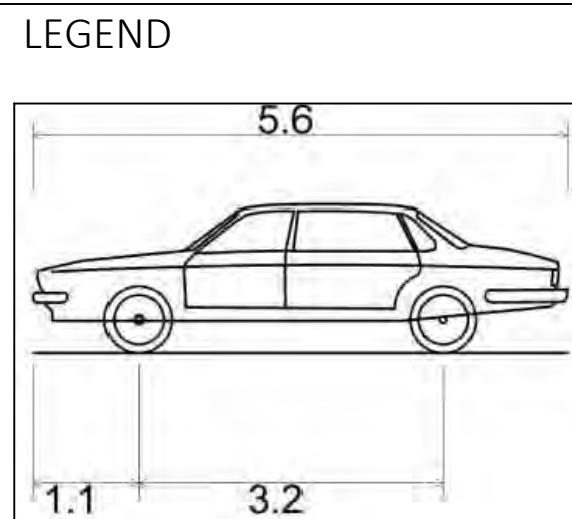


METRIC

McINTOSH PERRY



PASSENGER CAR SITE CIRCULATION

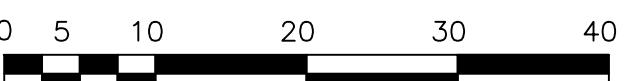


LEGEND

OPERATION DESCRIPTION

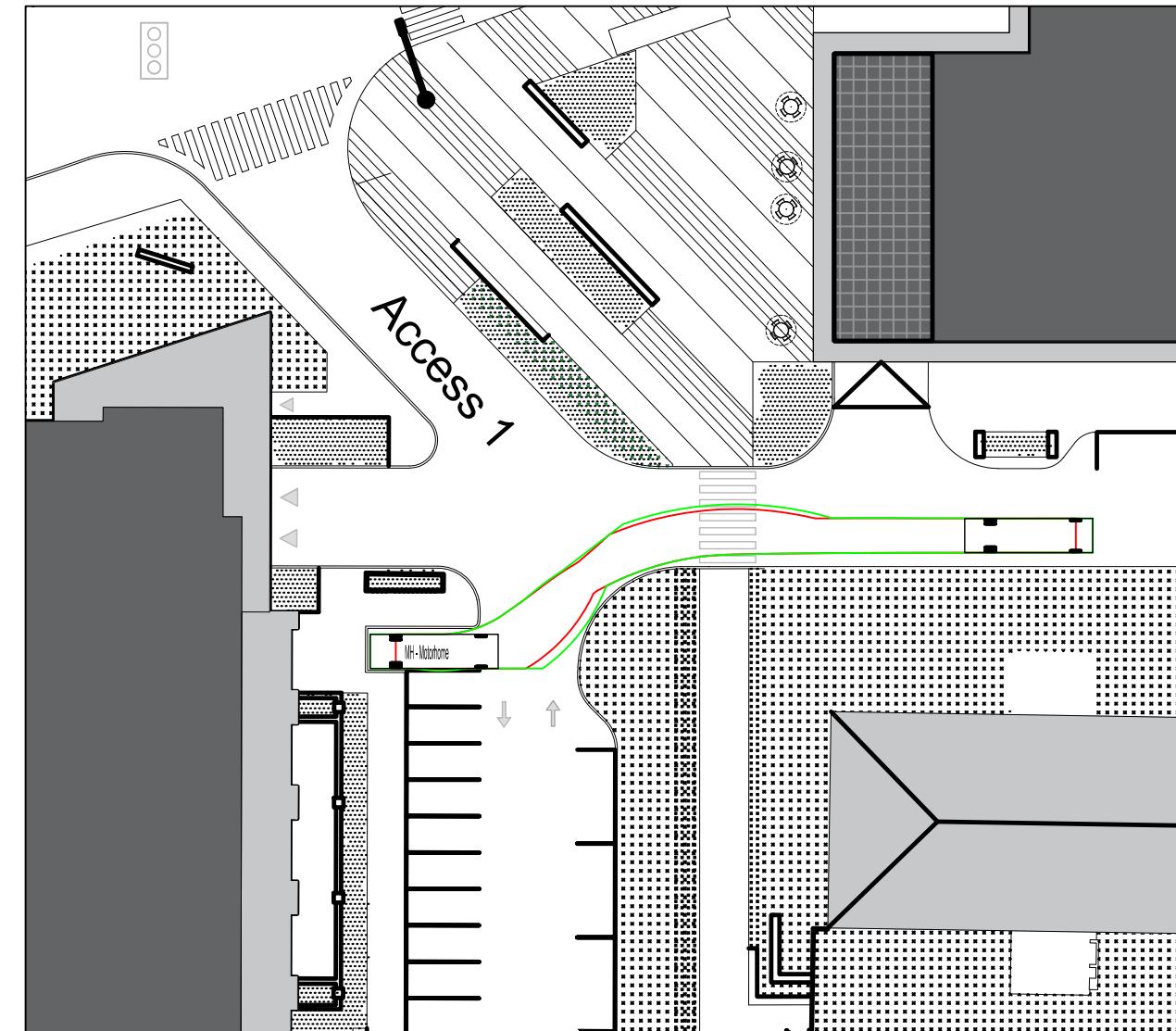
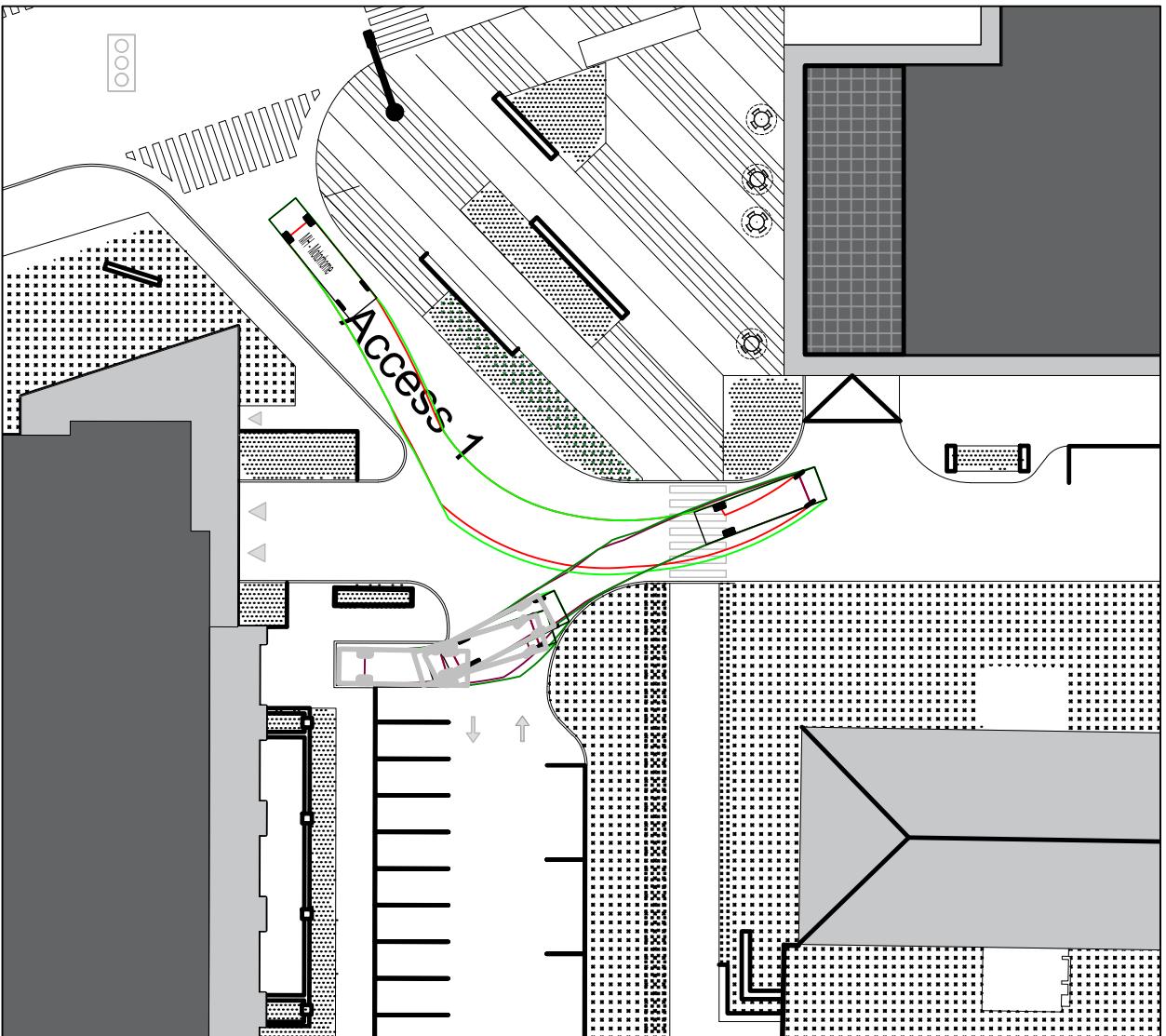
PASSENGER CAR ENTERING AND
EXITING BLOCK D NORTH-WEST
PARKING SPACE FROM SIR JOHN
A. MACDONALD BLVD VIA
ACCESS 3
TRUCK TURNING SIMULATION

SCALE 1:250



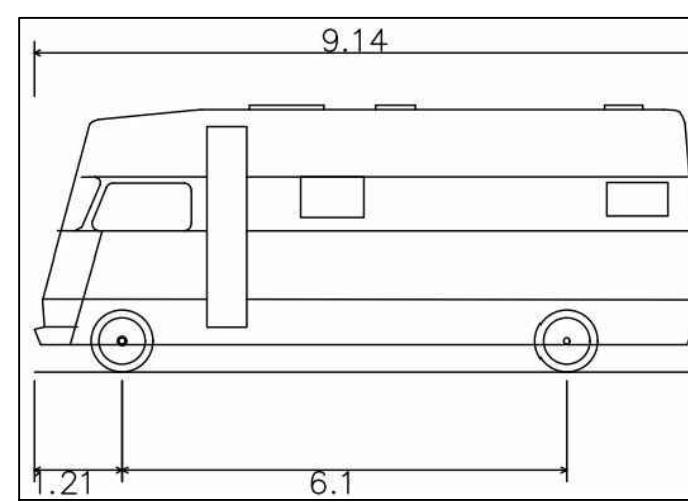
METRIC

McINTOSH PERRY



MOTORHOME SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

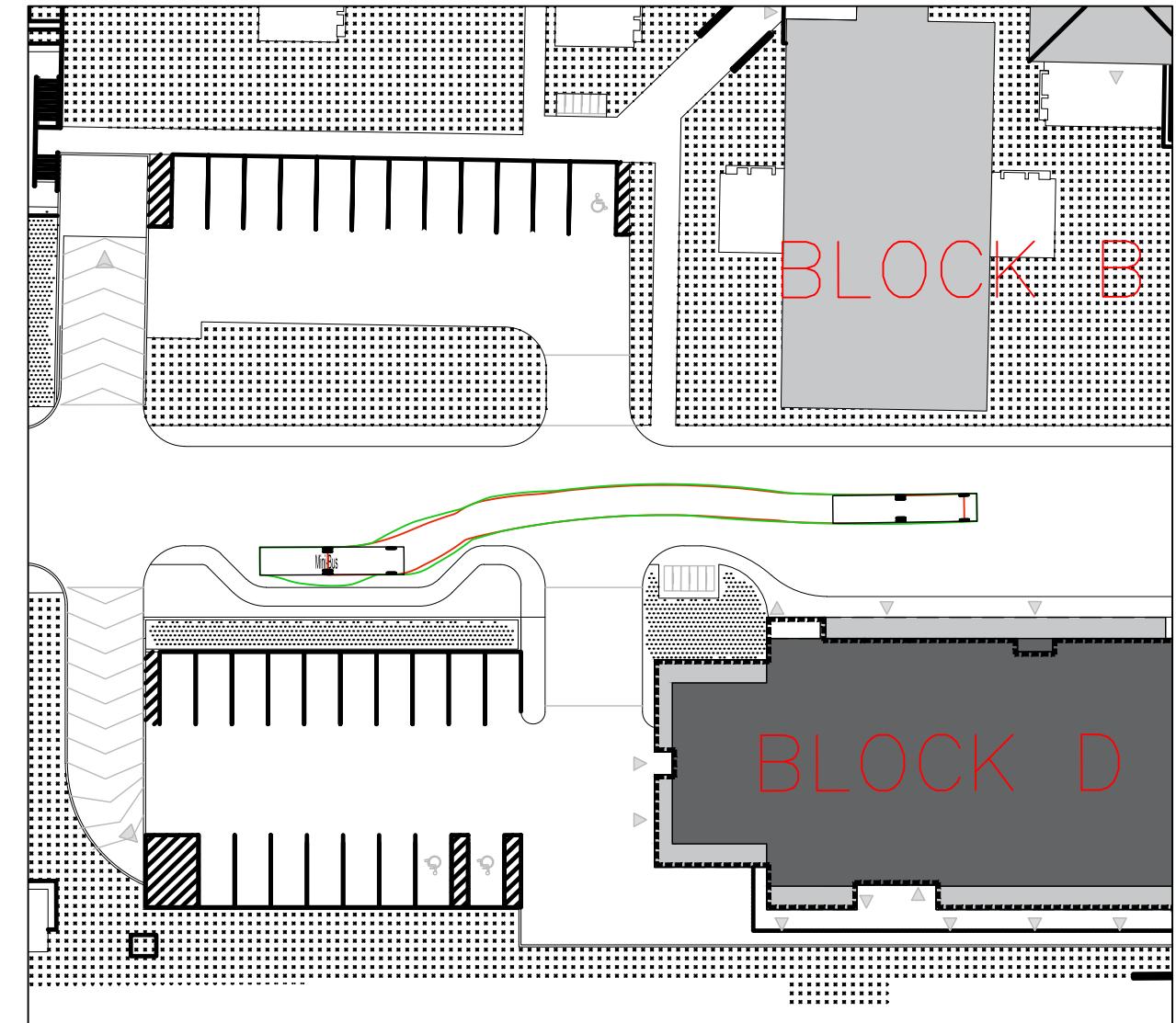
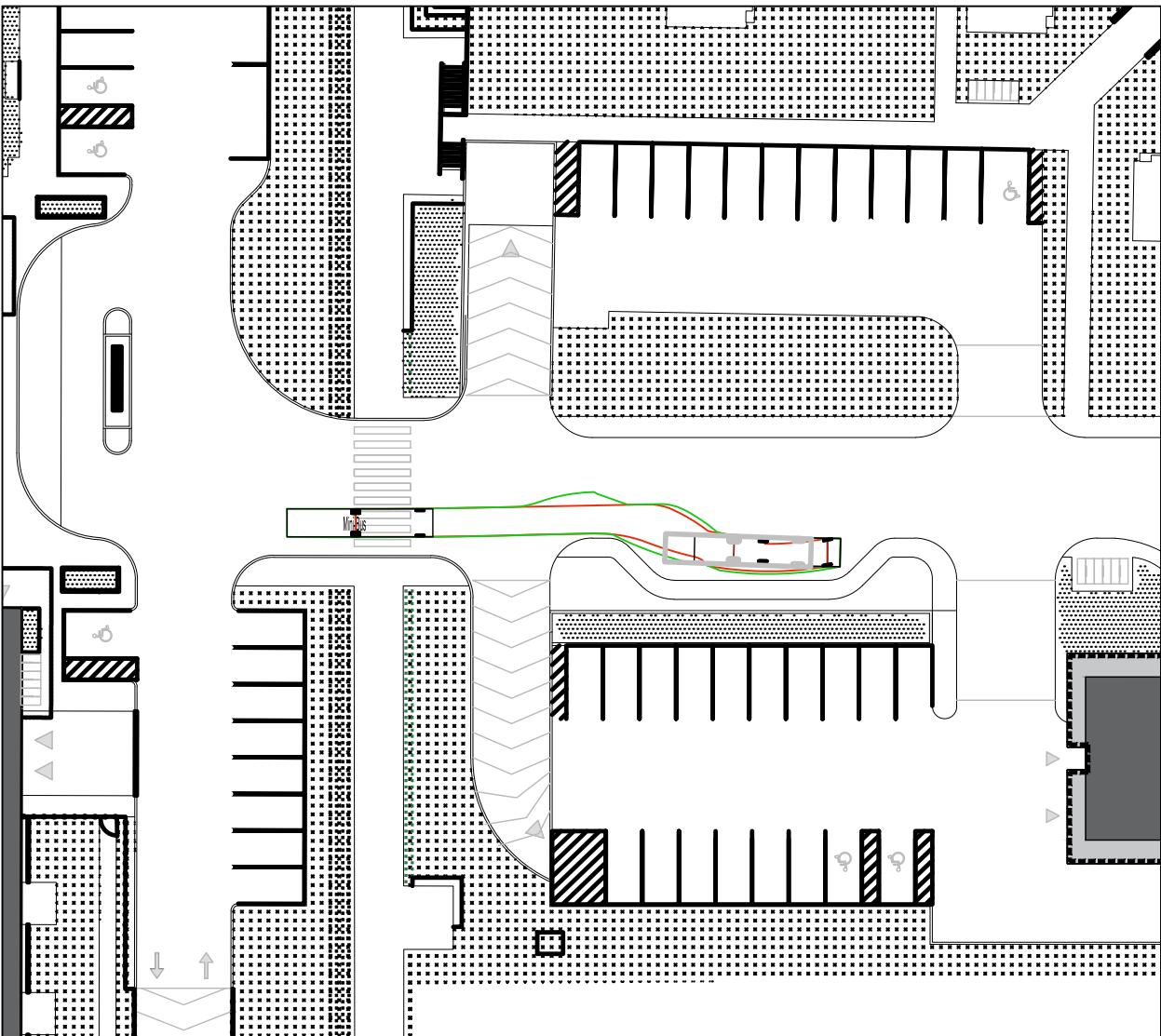
MOTORHOME ENTERING AND
EXITING BLOCK C BUS SHUTTLE
PARKING SPACE
TRUCK TURNING SIMULATION

SCALE 1:250



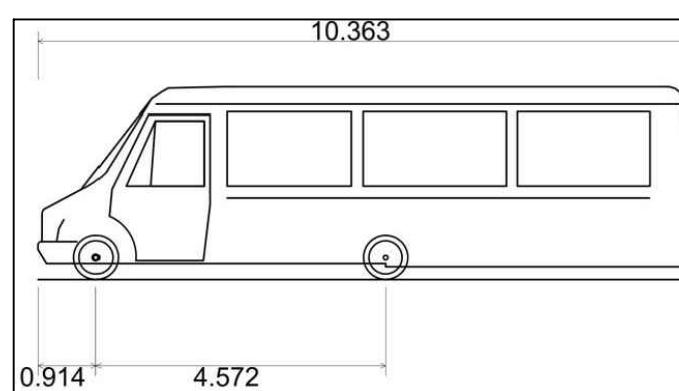
McINTOSH PERRY

DATE	PROJECT No.	FIGURE
Mar 2021	CCO-211203	24



BUS
SITE CIRCULATION

LEGEND



OPERATION DESCRIPTION

BUS ENTERING AND EXITING
BLOCK B BUS DROP OFF
LOCATION
TRUCK TURNING SIMULATION

SCALE 1:250



METRIC

McINTOSH PERRY

APPENDIX G – PARKING RATE REVIEW

McINTOSH PERRY

Exhibit 6.75: Peer Review – Hotel

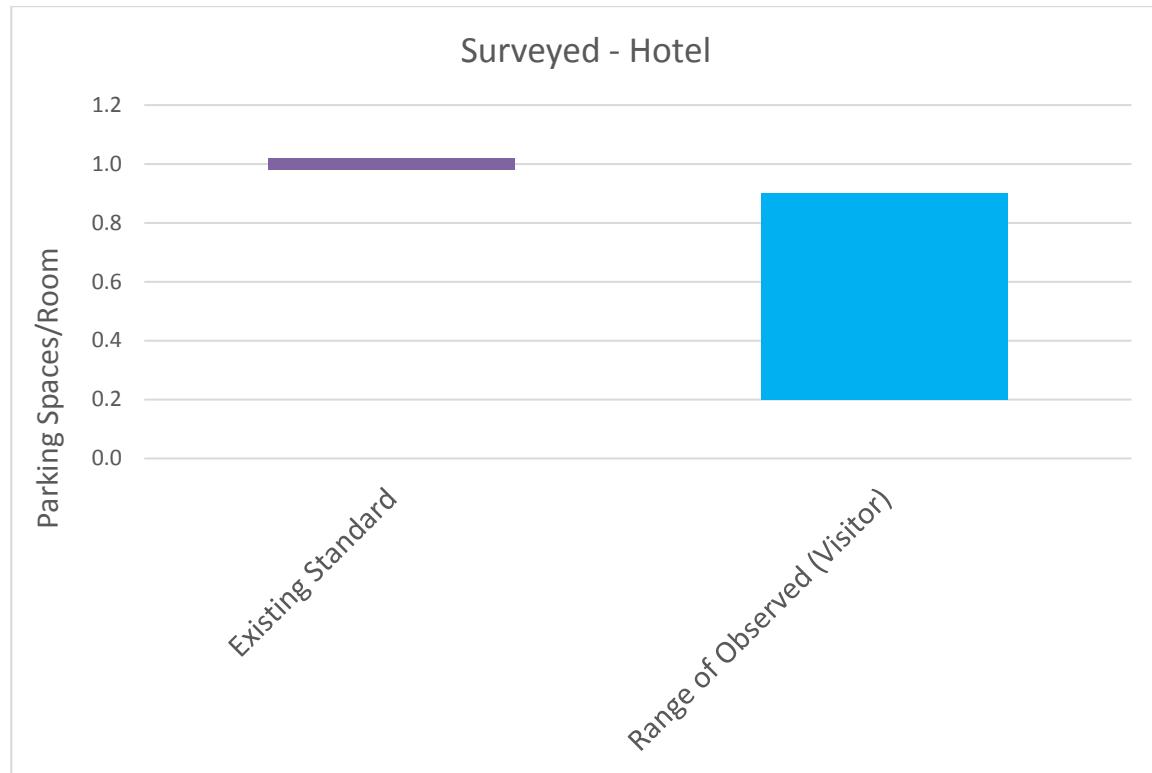


Observed

A total of 40 spot surveys were conducted at three different hotels during the peak parking demand period (Weekends and Weekdays between 23:00 and 00:00).

The maximum observed rate was 0.9 spaces/room. Although the observed rates were surveyed during peak occupancy times of the day, the hotel may not have been at full occupancy during these times.

Exhibit 6.76: Surveyed - Hotel



Recommendation

The existing standards should be maintained.

Exhibit 6.77: Recommendation – Hotel (Parking Spaces/Room)

LAND USE	EXISTING RATE	MAX OBSERVED RATE	INTENSIFICATION AREAS		BURLINGTON – OTHER AREAS
			Maximum	Minimum	Minimum
Hotel	1.0	0.9	No max	1.0	1.0

6.7.4 Conference Centre/Banquet Hall

Zoning By-law Definition: A banquet hall is defined as a building or part of a building used for the purpose of catering to banquets, weddings, receptions or similar functions for which food and beverages are prepared and served on the premises and may include a caterer service.

Parking Characteristics: Parking is provided off-street, in a surface, structured, or underground parking lot.

Existing Requirements

The existing general provisions for conference centres and banquet halls require a minimum of 10 spaces/100 m² GFA

6.3 Required Parking

6.3.1 Parking Requirements for the VMC Zones

1. Where a building or structure in any Vaughan Metropolitan Centre zone is erected or used for any of the uses permitted by this By-law, the required parking spaces established by Table 6-2: Parking Requirements for the Vaughan Metropolitan Centre Zones shall be provided and maintained on the lot to which the parking spaces are required.
2. The requirements of Table 6-2: Parking Requirements for the Vaughan Metropolitan Centre Zones, shall be interpreted as the required minimum parking space(s) per 100.0 m² GFA, unless otherwise expressly noted:

Table 6-2: Parking Requirements for the Vaughan Metropolitan Centre Zones

Use	Minimum Parking Spaces	Maximum Parking Spaces
Residential Uses		
<u>Apartment dwelling, stacked townhouse, and back-to-back stacked townhouse dwelling</u>	0.6 per <u>dwelling unit</u> plus 0.15 <u>visitor parking spaces</u> per <u>dwelling unit</u>	1.5 per <u>dwelling unit</u> (the maximum shall not apply to <u>visitor parking spaces</u>)
<u>Live-work unit</u>	1 per <u>live-work unit</u>	2 per <u>live-work unit</u>
<u>Any townhouse dwelling, excluding a stacked townhouse dwelling and back-to-back stacked townhouse dwelling</u>	1 per <u>dwelling unit</u>	2 per <u>dwelling unit</u>
Commercial Uses		
<u>Art studio</u>	No requirement	3
<u>Business service</u>	No requirement	3
<u>Commercial school</u>	No requirement	5 per classroom/ auditorium
<u>Financial institution</u>	No requirement	3

Use	Minimum Parking Spaces	Maximum Parking Spaces
<u>Health club</u>	No requirement	2
<u>Hotel</u>	No requirement	0.75 per guest room
<u>Micro-manufacturing</u>	No requirement	2.5
<u>Place of entertainment</u>	No requirement	3
<u>Personal service</u>	No requirement	2.5
<u>Public hall</u>	No requirement	3
<u>Restaurant</u>	No requirement	2.5
<u>Retail, including major retail and convenience retail</u>	No requirement	3
<u>Theatre</u>	No requirement	2
Employment Uses		
<u>Office</u>	No requirement	2.5
<u>Light manufacturing use</u>	No requirement	1.5
<u>Research and development</u>	No requirement	2.5
Community Uses		
<u>College or university</u>	No requirement	5 per classroom or auditorium
<u>Community facility</u>	No requirement	3
<u>Community garden</u>	No requirement	1 per community garden
<u>Day care centre</u>	No requirement	0.6
<u>Emergency service</u>	1 per emergency vehicle bay	No requirement
<u>Long term care facility</u>	No requirement	1 per 4 beds
<u>Place of worship</u>	No requirement	6.5 per 100 m ² of worship space

Use	Minimum Parking Spaces	Maximum Parking Spaces
<u>School</u>	No requirement	1 per classroom or auditorium
<u>Urban square</u>	No requirement	No requirement
Specified Accessory Uses		
<u>Home occupation</u>	No requirement	1 per home occupation
<u>Outdoor display area</u>	No requirement	1.5
<u>Outdoor patio</u>	No requirement	2.5
Parking Requirements for All Other Uses		
All other <u>uses</u>	No requirement	2.5

6.3.2 Parking Requirements for the MMU, HMU, CMU and EMU Zones

- Where a building or structure in any Mid-rise Mixed Use (MMU), High-rise Mixed-use (HMU), Community Commercial Mixed Use (CMU), or Employment Mixed Use (EMU) zone is erected or used for any of the uses permitted by this By-law, the parking spaces established by Table 6-3: Required Parking in the MMU, HMU, CMU and EMU Zones shall be provided and maintained on the lot to which the parking spaces are required.
- The requirements of Table 6-3: Required Parking in the MMU, HMU, CMU and EMU Zones shall be interpreted as parking space(s) per 100 m² GFA, unless otherwise expressly noted:

Table 6-3: Required Parking in the MMU, HMU, CMU and EMU Zones

Use	Minimum Parking Spaces	Maximum Parking Spaces
Residential Uses		
<u>Apartment dwelling unit</u>	0.8 per <u>dwelling unit</u> plus 0.2 designated <u>visitor parking spaces</u> per <u>dwelling unit</u>	2 per <u>dwelling unit</u> (this maximum shall not apply to any designated visitor parking spaces)
<u>Live-work unit</u>	1 per <u>live-work unit</u>	2 per <u>live-work unit</u>

Use	Minimum Parking Spaces	Maximum Parking Spaces
<u>Podium townhouse</u>	1 per dwelling unit	2 per dwelling unit
Commercial Uses		
<u>Art studio</u>	2.6	4.5
<u>Business service</u>	2.6	4.5
<u>Clinic</u>	3	6
<u>Club</u>	2	4.5
<u>Commercial school</u>	1 per classroom or auditorium	5 per classroom or auditorium
<u>Financial institution</u>	2	4.5
<u>Funeral home</u>	4	No requirement
<u>Gas station</u>	0.25 per gas pump	No requirement
<u>Health club</u>	2	4.5
<u>Hotel</u>	0.5 per guest room	1.5 per guest room
<u>Hotel (small-scale)</u>	0.5 per guest room	1.5 per guest room
<u>Light manufacturing use</u>	2.7	No requirement
<u>Micro-manufacturing</u>	2	4.5
<u>Office</u>	2	4.5
<u>Personal service</u>	2	4.5
<u>Pet care establishment</u>	2	4.5
<u>Place of entertainment</u>	2.5	No requirement
<u>Public hall</u>	4	No requirement
<u>Restaurant</u>	2.7	6
<u>Retail, including major retail and convenience retail</u>	2	5.5
<u>Service or repair shop</u>	2	4.5

Use	Minimum Parking Spaces	Maximum Parking Spaces
<u>Theatre</u>	4	8
<u>Veterinary clinic</u>	2	4.5
Community Uses		
<u>College or university</u>	1 per classroom or auditorium	No requirement
<u>Community facility</u>	2	No requirement
<u>Community garden</u>	1 <u>parking space</u> per <u>community garden</u>	1 <u>parking space</u> per <u>community garden</u>
<u>Day care centre</u>	3	No requirement
<u>Emergency service</u>	2 per emergency vehicle bay	No requirement
<u>Group home</u>	1 per 4 beds	1 per 2 beds
<u>Long term care facility</u>	1 per 4 beds	1 per 2 beds
<u>Place of worship</u>	8 per 100 m ² of worship space	No requirement
<u>School</u>	1 per classroom or auditorium	3 per classroom or auditorium
<u>Urban square</u>	No requirement	No requirement
Specified Accessory Uses		
<u>Drive through</u>	No requirement (<u>stacking space</u> requirements shall apply as per Section 5.6)	No requirement (<u>stacking space</u> requirements shall apply as per Section 5.6)
<u>Home occupation</u>	1 for the <u>home occupation</u> plus the minimum <u>parking</u> required for the <u>dwelling unit</u>	2 for the <u>home occupation</u> plus the minimum <u>parking</u> required for the <u>dwelling unit</u>
<u>Outdoor display area</u>	No requirement	1.5
<u>Outdoor patio</u>	2.7	6
<u>Secondary suite</u>	1 for the <u>secondary suite</u> plus the minimum <u>parking</u>	No requirement

Use	Minimum Parking Spaces	Maximum Parking Spaces
	required for the <u>dwelling unit</u>	
Parking Requirements for All Other Uses		
All other uses	2	4.5

6.3.3 **Parking Requirements for the LMU, KMS, MMS and WMS Zones**

1. Where a building or structure in the Low-rise Mixed Use Zone (LMU) or any Main Street Mixed-Use zone is erected or used for any of the uses permitted by this By-law, the parking spaces established by Table 6-4: Parking Requirements for the LMU, KMS, MMS and WMS Zones shall be provided and maintained on the lot to which the parking spaces are required.
2. The requirements of Table 6-4: Parking Requirements for the LMU, KMS, MMS and WMS Zones shall be calculated per 100 m² of GFA, unless otherwise expressly noted:

Table 6-4: Parking Requirements for the LMU, KMS, MMS and WMS Zones

Use	Minimum Parking Spaces	Maximum Parking Spaces
Residential Uses		
<u>Apartment dwelling, stacked townhouse dwelling, or back-to-back townhouse dwelling</u>	1 per <u>dwelling unit</u> , plus 0.2 <u>visitor parking spaces per dwelling unit</u>	No requirement
<u>Block townhouse dwelling</u>	2 per <u>dwelling unit</u> , plus 0.2 <u>visitor parking spaces per dwelling unit</u>	No requirement
<u>Live-work dwelling</u>	1 per <u>dwelling unit</u> , plus 1 <u>visitor parking space per dwelling unit</u>	No requirement
<u>Single detached dwelling</u>	2 per <u>dwelling unit</u>	No requirement
<u>Street townhouse dwelling</u>	2 per <u>dwelling unit</u>	No requirement

Use	Minimum Parking Spaces	Maximum Parking Spaces
Commercial Uses		
<u>Art studio</u>	3	8
<u>Business service</u>	3.5	8
<u>Clinic</u>	4.5	10
<u>Club</u>	3	8
<u>Commercial school</u>	1 per classroom or auditorium	8 per classroom or auditorium
<u>Financial institution</u>	2	8
<u>Funeral home</u>	4	No requirement
<u>Hotel</u>	0.6 per guest room	1.5 per guest room
<u>Hotel (small-scale)</u>	0.6 per guest room	1.5 per guest room
<u>Micro-manufacturing</u>	3	8
<u>Personal service</u>	2	6
<u>Pet care establishment</u>	3	No requirement
<u>Restaurant</u>	2.7	10
<u>Retail, including Retail convenience</u>	2.7	8
<u>Service or repair shop</u>	2	4.5
<u>Theatre</u>	4	10
<u>Veterinary clinic</u>	2	4.5
Community Uses		
<u>Community facility</u>	2	No requirement
<u>Community garden</u>	1 parking space per community garden	No requirement
<u>Day care centre</u>	3	No requirement
<u>Emergency service</u>	2 per emergency vehicle bay	No requirement

Use	Minimum Parking Spaces	Maximum Parking Spaces
<u>Group home</u>	1 per 4 beds	No requirement
<u>Long term care facility</u>	1 per 4 beds	1 per 2 beds
<u>Place of worship</u>	10 per 100 m ² of worship space	No requirement
<u>School</u>	0.5 per classroom or auditorium	3 per classroom or auditorium
<u>Urban square</u>	No requirement	No requirement
Specified Accessory Uses		
<u>Bed and breakfast</u>	1 per guest room plus the minimum required <u>parking</u> for the <u>dwelling unit</u>	1.5 per guest room plus the <u>minimum required parking</u> for the <u>dwelling unit</u>
<u>Drive through</u>	No requirement (<u>stacking space</u> requirements shall apply as per Section 5.6)	No requirement (<u>stacking space</u> requirements shall apply as per Section 5.6)
<u>Home occupation</u>	1 for the <u>home occupation</u> plus the minimum parking required for the <u>dwelling unit</u>	1 for the <u>home occupation</u> plus the minimum <u>parking</u> required for the <u>dwelling unit</u>
<u>Outdoor display area</u>	No requirement	No requirement
<u>Outdoor patio</u>	2.7	10
<u>Secondary suite</u>	1 for the <u>secondary suite</u> plus the minimum required <u>parking</u> required for the <u>dwelling unit</u>	No requirement
Parking Requirements for All Other Uses		
All other <u>uses</u>	2	No requirement

6.3.4 Parking Requirements for All Other Zones

- Where a building or structure within any other zone not subject to the requirements of Sections 6.3, 6.3.2, or 6.3.3 and is erected or used for any of the uses permitted by this By-law, the minimum parking spaces established by Table 6-5: Parking

Requirements for All Other Zones shall be provided and maintained on the lot to which the parking spaces are required.

2. The requirements of Table 6-5: Parking Requirements for All Other Zones shall be calculated per 100 m² GFA, unless otherwise expressly noted:

Table 6-5: Parking Requirements for All Other Zones

Use	Minimum Parking Spaces	Maximum Parking Spaces
Residential Uses		
<u>Apartment dwelling, back-to-back townhouse dwelling or stacked townhouse dwelling</u>	1 per <u>dwelling unit</u> , plus 0.2 <u>visitor parking spaces per dwelling unit</u>	No requirement
<u>Block townhouse dwelling unit</u>	2 per <u>dwelling unit</u> , plus 0.2 <u>visitor parking spaces per dwelling unit</u>	No requirement
<u>Single detached dwelling</u>	2 per <u>dwelling unit</u>	No requirement
<u>Semi-detached dwelling</u>	2 per <u>dwelling unit</u>	No requirement
<u>Street townhouse dwelling unit</u>	2 per <u>dwelling unit</u>	No requirement
Commercial Uses		
<u>Art studio</u>	3	No requirement
<u>Automobile body repair</u>	2 per service bay	No requirement
<u>Automobile rental</u>	3	No requirement
<u>Automobile repair</u>	2 per service bay	No requirement
<u>Automobile sales</u>	4	No requirement
<u>Business service</u>	3.5	No requirement
<u>Car wash</u>	No requirement (<u>stacking space requirements apply under Section 5.6</u>)	No requirement (<u>stacking space requirements shall apply as per Section 5.6</u>)
<u>Club</u>	6	No requirement

Use	Minimum Parking Spaces	Maximum Parking Spaces
<u>Clinic</u>	4.5	No requirement
<u>Commercial school</u>	2 per classroom or auditorium	No requirement
<u>Education or training facility</u>	3.5	No requirement
<u>Financial institution</u>	4.5	No requirement
<u>Funeral home</u>	4	No requirement
<u>Garden centre</u>	4	No requirement
<u>Gas station</u>	0.25 per gas pump	No requirement
<u>Health club</u>	7	No requirement
<u>Hotel</u>	1 per guest room	No requirement
<u>Hotel (small-scale)</u>	1 per guest room	No requirement
<u>Micro-manufacturing</u>	4.5	No requirement
<u>Office</u>	4	No requirement
<u>Personal service</u>	4.5	No requirement
<u>Pet care establishment</u>	4.5	No requirement
<u>Place of entertainment</u>	8	No requirement
<u>Public hall</u>	6	No requirement
<u>Research and development</u>	4	No requirement
<u>Restaurant</u>	8	No requirement
<u>Retail, including Major Retail</u>	4.5	No requirement
<u>Service or repair shop</u>	3.5	No requirement
<u>Taxi stand</u>	3	No requirement
<u>Theatre</u>	8	No requirement
<u>Veterinary clinic</u>	4.5	No requirement
Employment Uses		

Hotel (310)

Peak Period Parking Demand vs: Rooms

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 11:00 p.m. - 8:00 a.m.

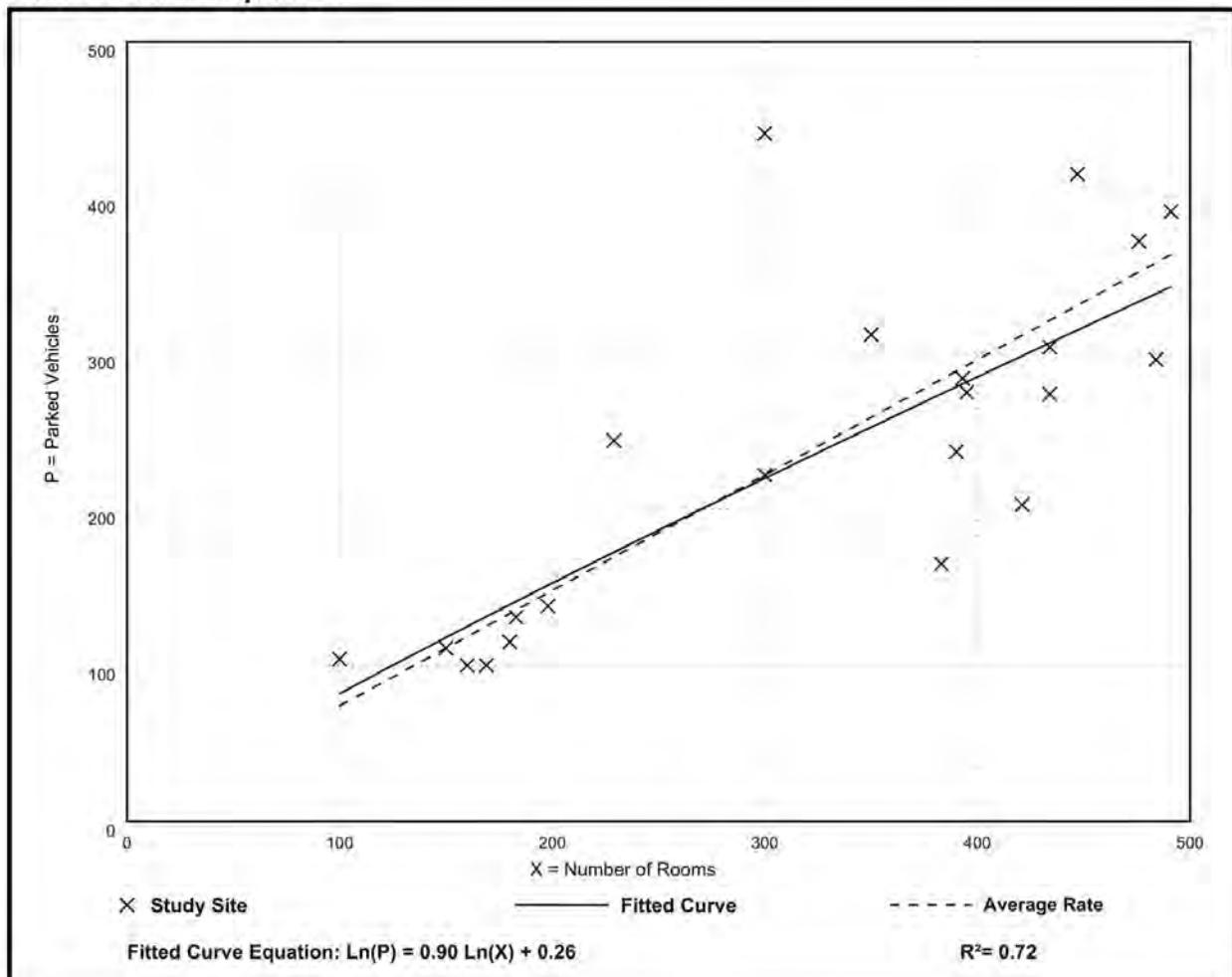
Number of Studies: 22

Avg. Num. of Rooms: 321

Peak Period Parking Demand per Room

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.74	0.43 - 1.47	0.64 / 0.99	0.65 - 0.83	0.22 (30%)

Data Plot and Equation



Hotel (310)

Peak Period Parking Demand vs: Occupied Rooms

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 11:00 p.m. - 8:00 a.m.

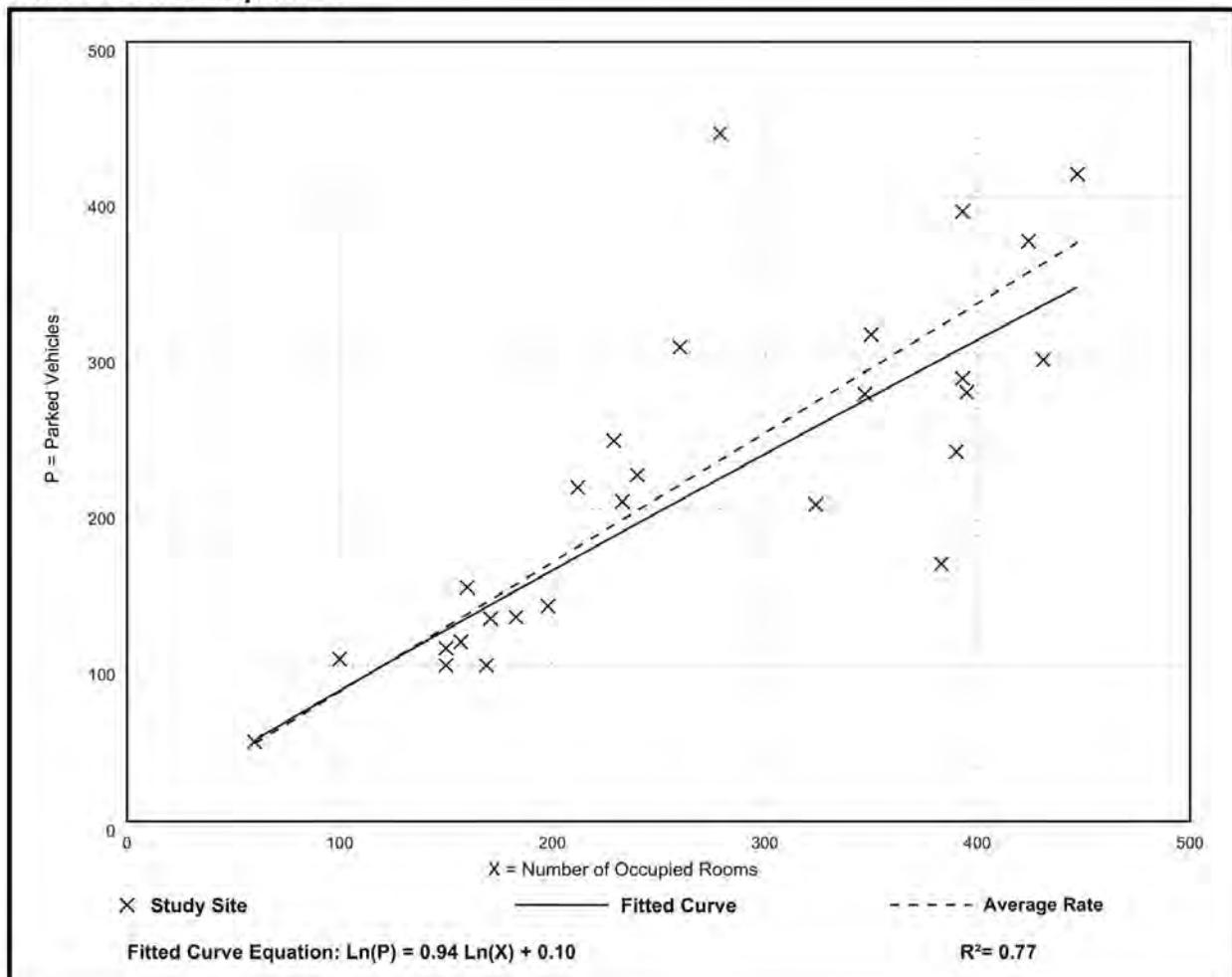
Number of Studies: 27

Avg. Num. of Occupied Rooms: 268

Peak Period Parking Demand per Occupied Room

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.83	0.43 - 1.58	0.72 / 1.03	0.74 - 0.92	0.23 (28%)

Data Plot and Equation



Hotel (310)

Peak Period Parking Demand vs: Rooms

On a: Weekday (Monday - Friday)

Setting/Location: Dense Multi-Use Urban

Peak Period of Parking Demand: 11:00 p.m. - 8:00 a.m.

Number of Studies: 3

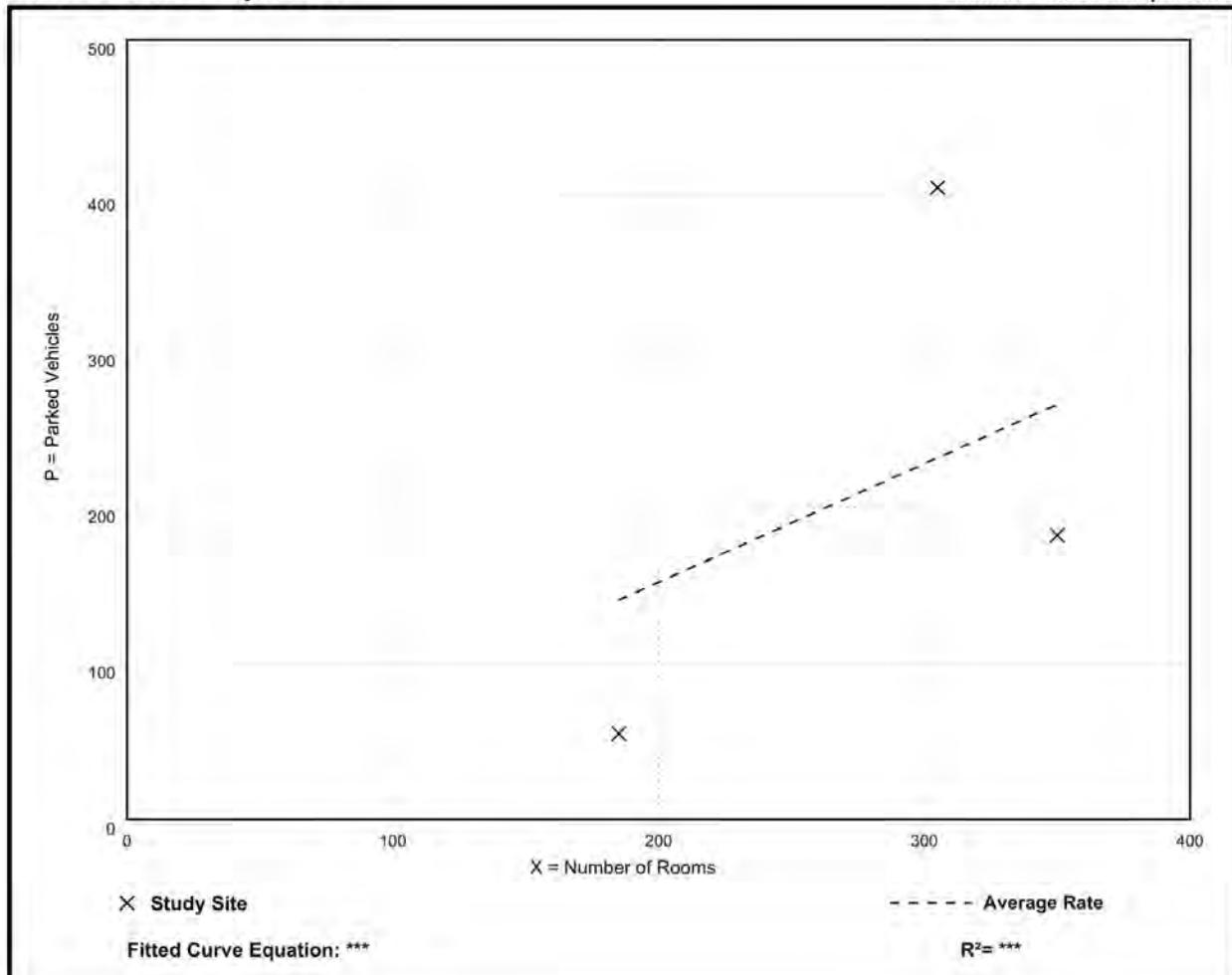
Avg. Num. of Rooms: 280

Peak Period Parking Demand per Room

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.76	0.30 - 1.33	0.37 / 1.33	***	0.53 (70%)

Data Plot and Equation

Caution – Small Sample Size



Land Use: 310 Hotel

Description

A hotel is a place of lodging that provides sleeping accommodations and supporting facilities such as a full-service restaurant, cocktail lounge, meeting rooms, banquet room, and convention facilities. It typically provides a swimming pool or another recreational facility such as a fitness room. All suites hotel (Land Use 311), business hotel (Land Use 312), motel (Land Use 320), and resort hotel (Land Use 330) are related uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand (1) on a weekday (four study sites) and a Saturday (five study sites) in a general urban/suburban setting and (2) on a weekday (one study site) and a Saturday (one study site) in a dense multi-use urban setting.

Hour Beginning	Percent of Peak Parking Demand				
	General Urban/Suburban		Dense Multi-Use Urban		
	Weekday	Saturday	Weekday	Weekday	Saturday
12:00–4:00 a.m.	96	74	93	100	
5:00 a.m.	—	—	—	—	—
6:00 a.m.	91	62	97	95	
7:00 a.m.	89	62	100	95	
8:00 a.m.	90	72	93	89	
9:00 a.m.	100	74	72	85	
10:00 a.m.	98	76	69	74	
11:00 a.m.	89	77	65	61	
12:00 p.m.	85	79	78	47	
1:00 p.m.	75	78	78	42	
2:00 p.m.	81	67	63	41	
3:00 p.m.	70	64	59	43	
4:00 p.m.	74	67	58	48	
5:00 p.m.	65	73	52	53	
6:00 p.m.	73	83	63	64	
7:00 p.m.	78	92	74	67	
8:00 p.m.	93	97	78	78	
9:00 p.m.	96	100	72	81	
10:00 p.m.	95	91	84	93	
11:00 p.m.	95	83	92	98	

Land Use: 820 Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand **during the month of December** on a weekday (seven study sites), a Friday (eight study sites), and a Saturday (19 study sites).

Hour Beginning	Percent of Peak Parking Demand during December		
	Weekday	Friday	Saturday
12:00–4:00 a.m.	—	—	—
5:00 a.m.	—	—	—
6:00 a.m.	—	—	—
7:00 a.m.	—	—	—
8:00 a.m.	—	—	—
9:00 a.m.	—	—	—
10:00 a.m.	—	74	—
11:00 a.m.	—	87	85
12:00 p.m.	77	97	97
1:00 p.m.	100	100	98
2:00 p.m.	98	92	100
3:00 p.m.	90	85	97
4:00 p.m.	76	84	88
5:00 p.m.	82	78	77
6:00 p.m.	89	75	64
7:00 p.m.	90	63	—
8:00 p.m.	84	—	—
9:00 p.m.	—	—	—
10:00 p.m.	—	—	—
11:00 p.m.	—	—	—

Hotel (310)

Peak Period Parking Demand vs: Occupied Rooms

On a: Weekday (Monday - Friday)

Setting/Location: Dense Multi-Use Urban

Peak Period of Parking Demand: 11:00 p.m. - 8:00 a.m.

Number of Studies: 4

Avg. Num. of Occupied Rooms: 215

Peak Period Parking Demand per Occupied Room

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.89	0.30 - 1.33	0.59 / 1.33	***	0.44 (49%)

Data Plot and Equation

Caution – Small Sample Size

