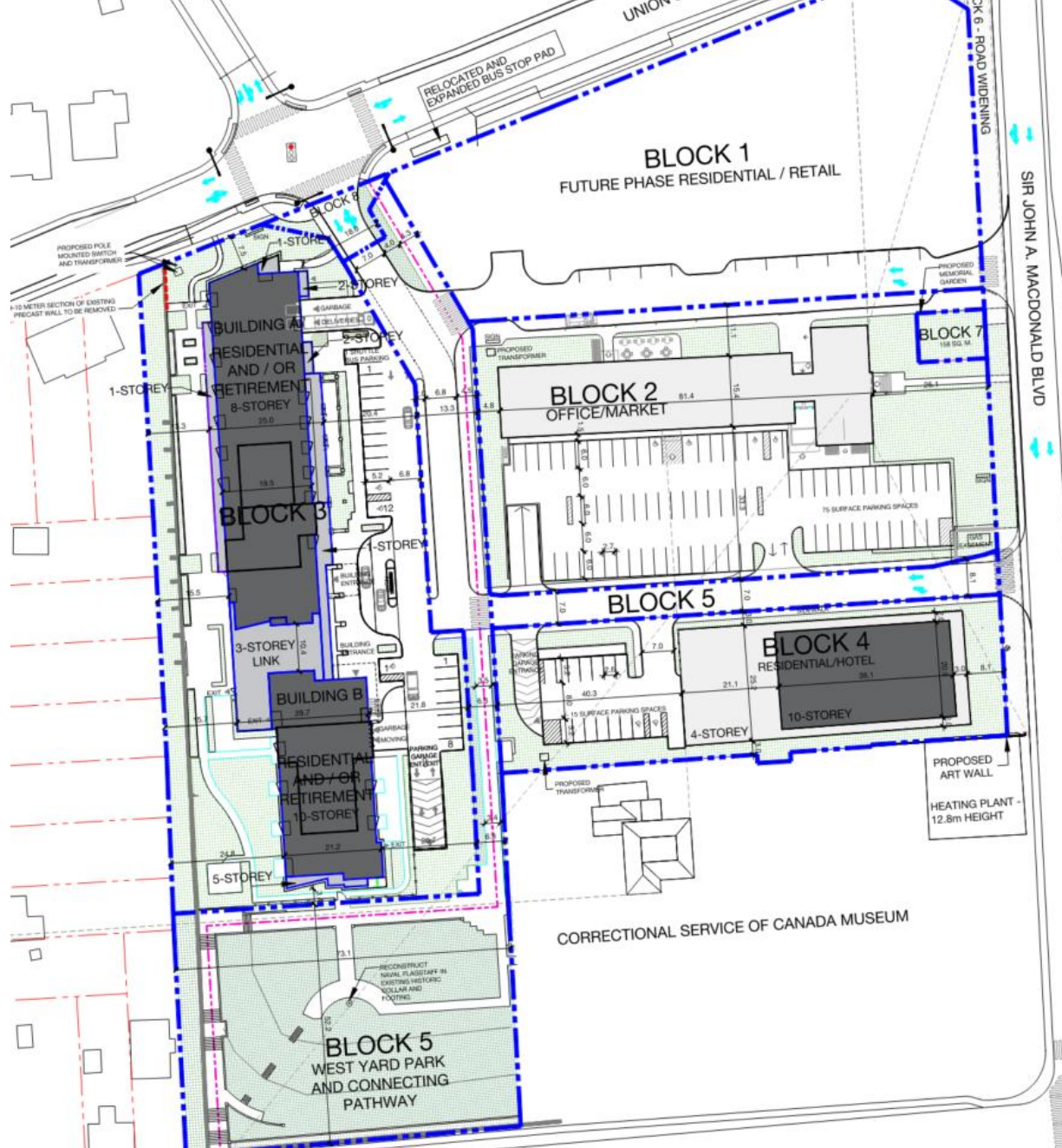




Traffic Impact Study

Union Park Mixed-Use Development – Kingston, ON

July 2026 | Project # 101192

Siderius Developments Ltd.

TYLin

Project Sheet

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EXECUTIVE SUMMARY

T.Y. Lin International Canada Inc. was retained by Siderius Developments to prepare a Transportation Impact Study for a proposed mixed-use development at the 40 Sir John A. Macdonald Boulevard in the City of Kingston. The study focuses on the traffic impacts of the proposed development on the boundary road intersections.

The subject lands are located west of Sir John A. Macdonald Boulevard, north of King Street West and south of Union Street. The study focuses on the traffic impacts of Blocks 2, 3 and 4 of the broader Union Park development. The proposed development consists of:

- Block 2: Market (GFA: 1,068 m²), office building (GFA: 2,651 m²) and 44 residential units
 - Block 3: 74 senior housing units and 141 retirement units
 - Block 4: 168 hotel rooms
- ▶ Vehicular access to the development is proposed via two right-in/right-out intersections along Sir John A. Macdonald Boulevard, as well as a full-moves intersection at the intersection of Union Street and Hargraves Way.
- ▶ This Transportation Impact Study has been completed in accordance with City of Kingston's Transportation Impact Study Guidelines and approved Terms of Reference agreed with the City of Kingston. The traffic impact study includes:
- Intersection capacity analysis for the three horizon years, consistent with the approved terms of reference issued to the City, and attached in **Appendix A**:
 - Existing (2026) conditions
 - Future Background conditions (2028 and 2033 horizons)
 - Future Total conditions (Background + Site traffic for 2028 and 2033 horizons)
 - Parking and loading space review
 - Site access and circulation review
 - Transportation Demand Management
- ▶ The turning movement counts were commissioned by TYLin for weekday AM and PM peak hours and conducted on Tuesday June 16, 2026.
- ▶ Existing conditions capacity analysis for the study area intersections was conducted using current lane configurations and signal timing plans. Analysis indicates that all intersections operate with excess capacity during the assessed peak hours
- ▶ Future Background traffic conditions assess network operations for future study horizons and reflect cumulative growth within the study area and surrounding lands independent of the proposed development. Background volumes incorporate:

- Growth of 1.8% per annum (based on consultation with the City of Kingston).
- ▶ As advised by the City of Kingston, the intersection of Union Street and Hargreaves Way is proposed to be signalized. As the implementation timeline has not yet been confirmed, this intersection was analyzed under both unsignalized and signalized conditions for the future scenario.
- Intersection capacity analysis was completed for the study area intersections under 2028 and 2033 future background conditions, utilizing existing lane configurations and signal timing plans. Analysis indicates that all intersections are anticipated to operate with excess capacity during the AM and PM peak hours.
- ▶ The proposed mixed-use development is estimated to generate:
 - 221 vehicle trips during the weekday AM peak hour
 - 298 vehicle trips during the weekday PM peak hour
- ▶ The future total conditions assessment determined the impact of the site generated traffic volumes of the proposed development on the study network.
 - Intersection capacity analysis for the study area intersections under 2028 and 2033 future total traffic, utilizing existing lane configurations and optimized signal timing plans. Analysis indicates that all intersections are anticipated to operate with excess capacity during the AM and PM peak hours.
- ▶ The parking review indicates that the proposed parking supply meets the anticipated demand.

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1 INTRODUCTION

1.1 Scope and Objective

T.Y. Lin International Canada Inc. (TYLin) has been retained by Siderius Developments to prepare a Transportation Impact Study in support of the proposed site plan application for a mixed-use development located on the west side of Sir John A. MacDonald Boulevard between Union Street and King Street West in the City of Kingston, Ontario. The existing site is currently occupied by the non-operational former Correctional Service of Canada (CSC) prison for Women (P4W).

A traffic impact study was previously prepared in April 2022 in support of the proposed development located at 40 Sir John A. MacDonald Boulevard in the City of Kingston, ON. This study provides an update to the previous TIS, incorporating updated site statistics and land uses.

The study focuses on the traffic impacts of Blocks 2, 3, 4 and 5 of the Union Park development, and evaluates the traffic impact of the proposed development on the boundary road network. The study includes the following:

- Establish baseline 2026 traffic conditions to the agreed study area, prepare forecasts for future background (2028 and 2033) traffic growth based on an annual growth rate, and complete intersection capacity analysis for the study area road network.
- Based on the development statistics, derive the estimated trip generation and distribution to the site accesses. Estimate the future total (2028 and 2033) traffic volumes and assess the operating conditions for the study area intersections.
- Evaluate compliance of proposed driveways with applicable design standards and guidelines. Ensure design vehicles can ingress, egress, and circulate the site without conflict
- Assessment of proposed parking supply and loading facilities against City of Kingston zoning by-law requirements.
- Develop a comprehensive TDM Plan to promote sustainable travel choices and reduce reliance on single-occupant vehicle trips.

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 to assess the impact of this traffic on the boundary road network.

A detailed scope for this work was submitted by TYLin to the City of Kingston staff for review and comments and is provided in **Appendix A**.

2 BACKGROUND INFORMATION

2.1 Study Area

The proposed development is located in the City of Kingston and is bounded by Sir John A. Macdonald Boulevard to the east, King Street West to the south, and Union Street West to the north. The site is located on Site Specific Policy Area 71, passed under By-Law 2022-180, and included in the City of Kingston's official plan amendments.

The site is proposed to accommodate a mixed-use development and is surrounded by residential and institutional land uses. The Correctional Service of Canada Museum is located in the southeast corner of the site. Queen's University Faculty of Education and Kingston Penitentiary are located to the north and south of the development site, respectively. The proposed site and the surrounding road network are illustrated **Figure 2-1**.



Figure 2-1 Site Location

2.2 Transportation Network

2.2.1 Existing Road Network

A description of the roadway network is provided below.

King Street West is an east-west arterial roadway under the jurisdiction of the City of Kingston. The roadway serves as a key transportation corridor connecting residential, institutional, recreational, and waterfront destinations in the west end of Kingston, while providing connectivity to major roadways including Portsmouth Avenue, Union Street, and Sir John A. Macdonald Boulevard. Within the study area, King Street West operates with a posted speed limit of 40 km/h and consists of a 2-lane undivided urban cross-section (one lane in each direction)

Union Street is an east-west collector roadway under the jurisdiction of the City of Kingston. The roadway serves as an important connection between the Queen's University campus, residential neighborhoods, and other key transportation corridors including Sir John A. Macdonald Boulevard, and Division Street. Within the study area, Union Street operates with a posted speed limit of 50 km/h and 40 km/h, east and west of Sir John A. Macdonald Boulevard, respectively.

Sir John A. Macdonald Boulevard is a north-south arterial road under the jurisdiction of the City of Kingston. The boulevard runs through the west-central part of Kingston and connects several important corridors, including Bath Road, Princess Street, and John Counter Boulevard. Within the study area it operates with a posted speed limit of 50 km/hr with a 4-lane urban cross section divided with a median (2 lanes in each direction, with center left-turning lane).

Hargreaves Way is a local roadway in the City of Kingston. The street acts as a proposed access to the site and a connection to Queen's University. It connects Johnson Street in the north to Union Street in the south.

The road classification for the road network part of the study area is shown in **Figure 2-2**.

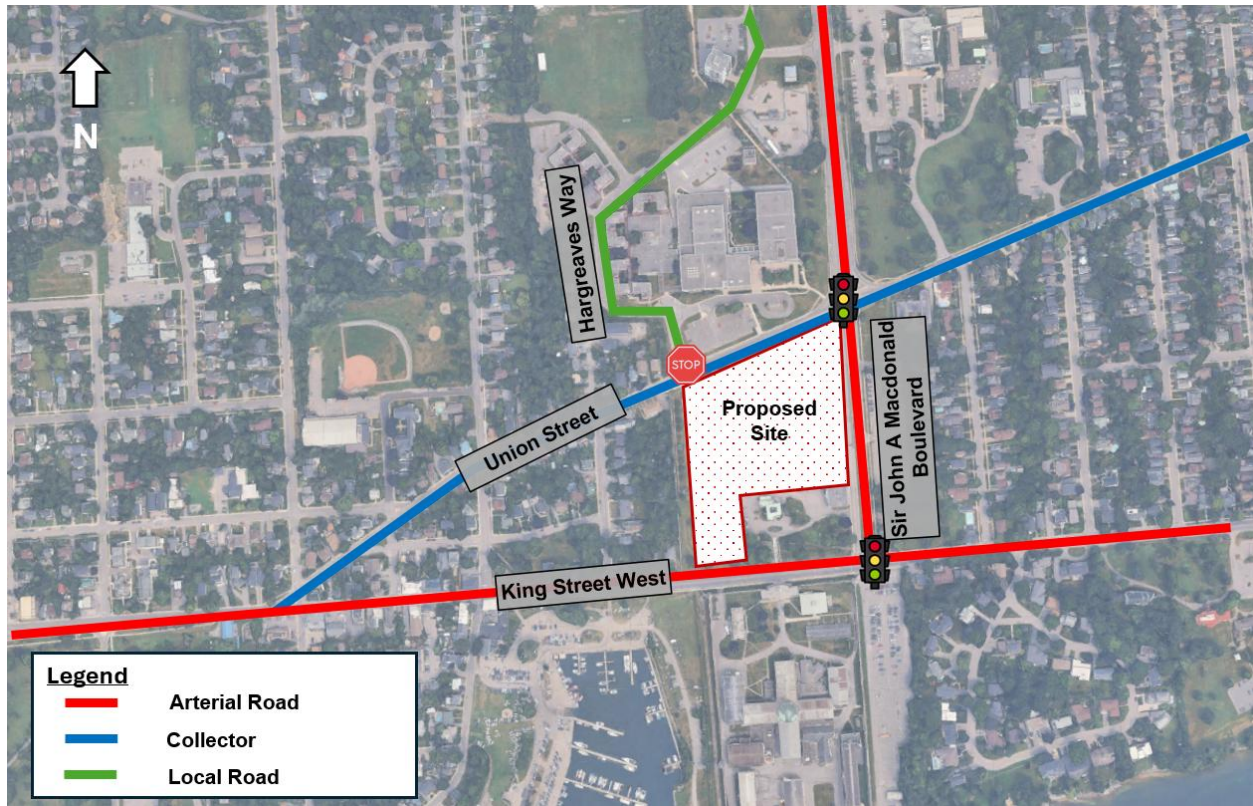


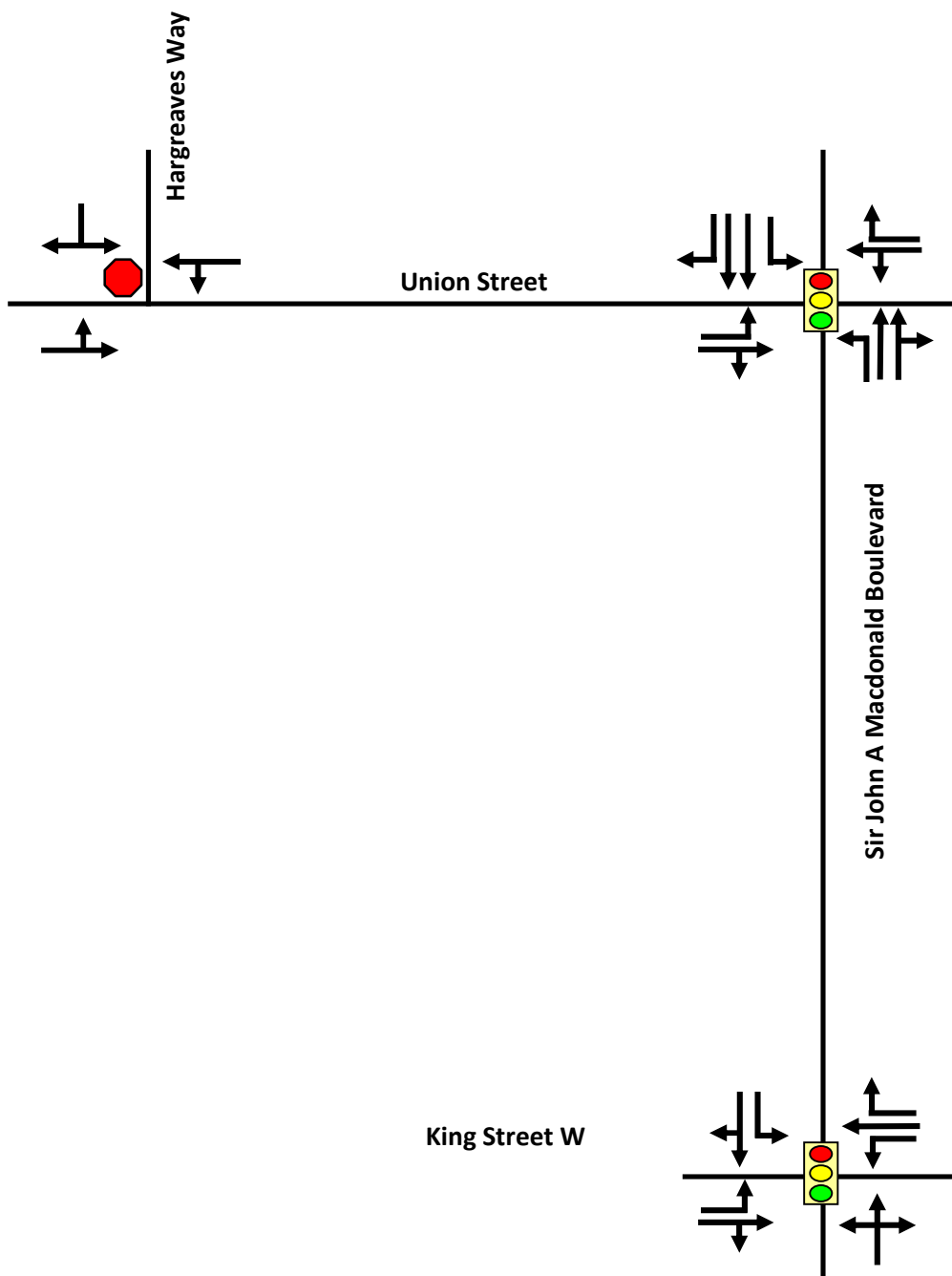
Figure 2-2 Existing Road Classification

2.2.2 Study Intersections

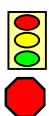
The proposed development will include the following study intersections:

- - a signalized four-legged full moves intersection. The north, south and west legs each provide one dedicated left-turn lane, while the north leg has one dedicated right-turn lane.
- **King Street West and Sir John A Macdonald Boulevard** - a signalized three-legged intersection with parking lot access on the south leg. The east, west and north legs each provide one dedicated left-turn lane, while the east leg has one dedicated right-turn lane.
- **Union Street and Hargreaves Way**- an unsignalized three-legged intersection with stop control on the north leg. The north leg provides access to Queen's University Faculty of Education.

The existing lane configurations at the study area intersections are illustrated in **Figure 2-3**.



Legend



Signalized Intersection



Stop Sign

2.2.3 Transit Locations

The following bus routes operate in the vicinity of the site. These routes are operated by Kingston Transit.

Route 1 Montreal Street- St. Lawrence College runs from St Lawrence College in the south to Montreal Street in the north via Union Street and Bagot Street. The route runs with 30-minute service on weekdays and Saturdays and 60-minute service on Sundays. The route stops at Hargreaves Way and Yonge Street in the vicinity of the site.

Route 2 Division Street- Train Station connects destinations along downtown to Inter City bus and train stations. It runs along Union Street in the east-west direction and Division Street and Portsmouth Avenue in the north-south direction. The route runs with 30-minute service on weekdays and weekends. The route stops at Hargreaves Way and Yonge Street in the vicinity of the site

Route 31/ 32 Providence Care Hospital- St. Lawrence College connects destinations along King Street in the south and Bath Road, Concession Street and Stephen Street in the north. The route provides access to the Kingston Center, St. Lawrence College and Providence Care Hospital. The route runs with 30-minute service on weekdays, and 60-minute service on weekends. The bus route stops at Sir John A. Macdonald Boulevard and Yonge Street in the vicinity of the site.

Route N1 is a Night Service Route that connects Kingston Center, St. Lawrence College, inter city bus and train stations and downtown. The route operates from midnight to 6 am with a 30-minute layover on weekdays and weekends. The route stops at Hargreaves Way and Yonge Street in the vicinity of the site.

Route 501/ 502 Cataraqui Centre- Downtown are express service routes which connects Cataraqui Center in the west to Downtown, passing through the Kingston Center and serving major stops along Princess Street. The route operates with a 15-minute headway on weekdays and weekends. The bus route stops at King Street and Sir John A. Macdonald Boulevard in the vicinity of the site.

Figure 2-4 shows the existing Kingston transit network surrounding the subject site.

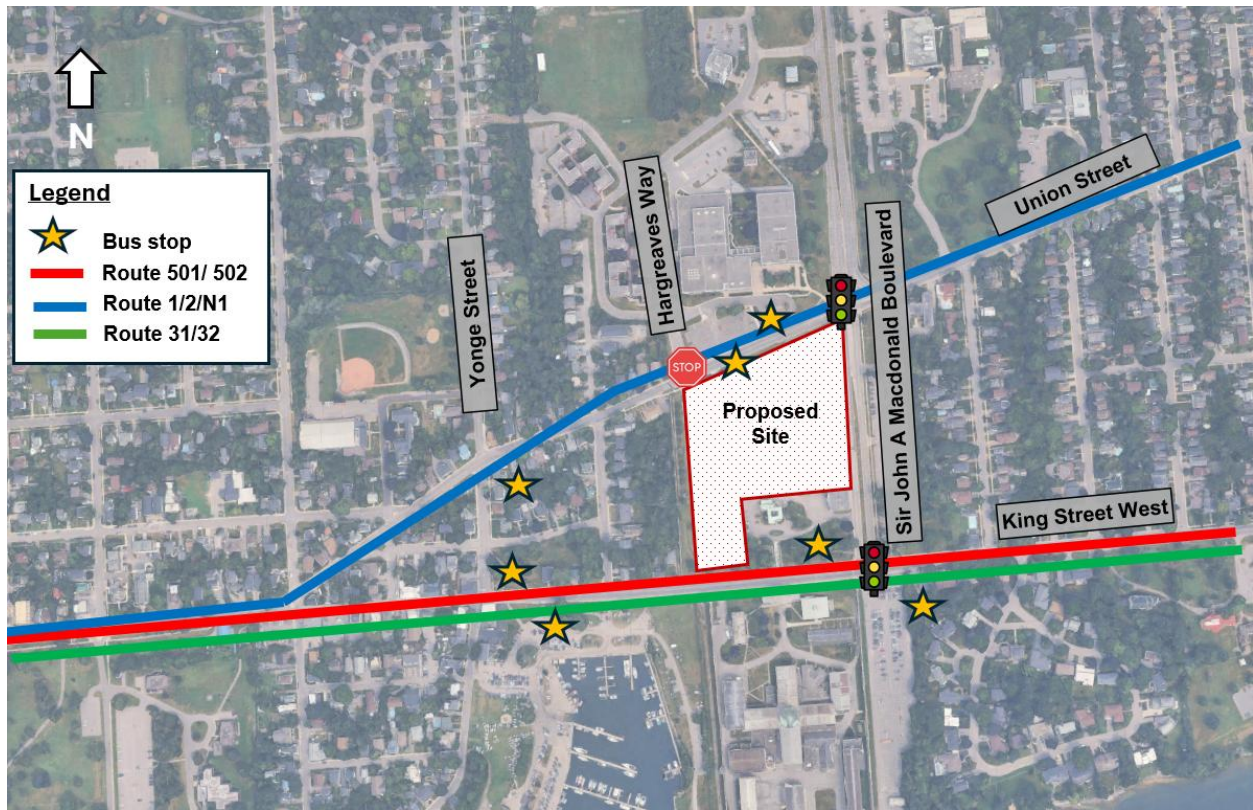


Figure 2-4 Kingston Transit Routes in Study Area.

Overall, the existing pedestrian infrastructure provides basic accessibility to surrounding roads and transit services, but opportunities remain to improve walkability and enhance direct connections between development blocks and transit stops.

2.2.4 Active Transportation

The existing active transportation network within the study area primarily consists of sidewalks for pedestrians and bicycle lanes for cyclists.

Sidewalks are present on both sides of Union Street, King Street, and Sir John A. MacDonald Boulevard in the vicinity of the site, except along the southwest corner of Union Street and Sir John A. MacDonald Boulevard intersection, where no sidewalk is provided for approximately 130 m. Pedestrian crossings are provided on all approaches of the signalized intersections of Union Street and John A. MacDonald Boulevard and King Street and John A. MacDonald Boulevard. Under existing conditions, no pedestrian crossing is provided at the intersection of Union Street and Hargreaves Way.

Cycling infrastructure in the vicinity of the site consists of bike lanes along Union Street, east of John A. MacDonald Boulevard and paved shoulders along King Street, west of Sir John A.

MacDonald Boulevard. **Figure 2-5** shows the existing context of the cycling network around the study area.

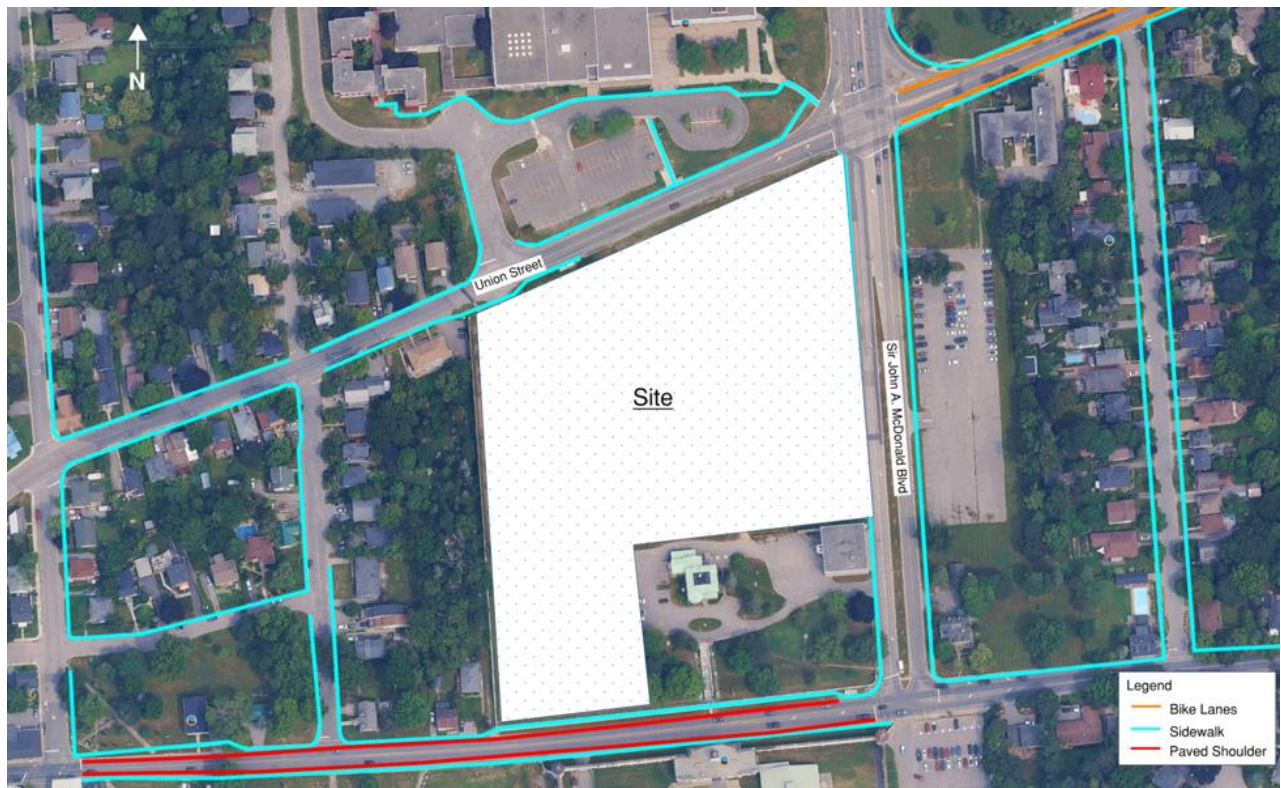


Figure 2-5 Study Area Sidewalks and Bike Lanes Map

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2.3 Existing Traffic Volume

Turning movement counts for the weekday AM and PM peak hours were collected by Accu-Traffic Inc. (commissioned by TYLin) at the study area intersections. A summary of the turning movement counts collected is provided in **Table 2-1**, below.

Table 2-1 Summary of TMC Data Collection

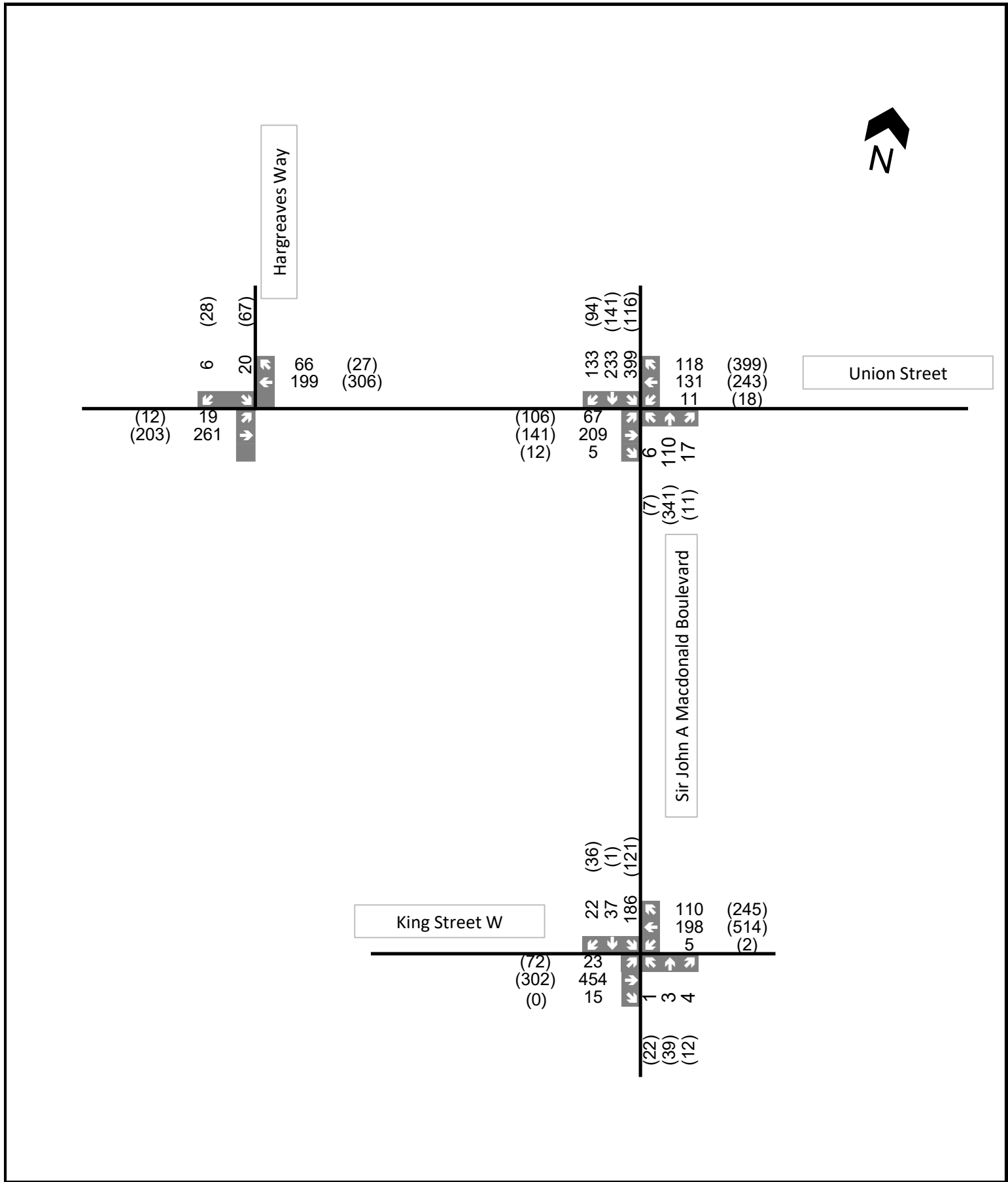
Intersection	Count Date	Peak Hour	Source
Union Street & Hargreaves Way (Queen's driveway connection) (un-signalized)	Tuesday, June 16, 2026	AM Peak Hour: 7:45 AM to 8:45 AM PM Peak Hour: 3:30 PM to 4:30 PM	Commissioned by TYLin
Union Street & Sir John A. MacDonald Boulevard (signalized)	Tuesday, June 16, 2026	AM Peak Hour: 7:45 AM to 8:45 AM PM Peak Hour: 3:45 PM to 4:45 PM	Commissioned by TYLin
King Street West & Sir John A. MacDonald Boulevard (signalized)	Tuesday, June 16, 2026	AM Peak Hour: 7:30 AM to 8:30 AM PM Peak Hour: 3:45 PM to 4:45 PM	Commissioned by TYLin

As a conservative measure individual intersection peak hour volumes were used for analysis for a general AM and PM peak hour network assessment. Turning movement volumes for network weekday AM and PM peak hours at the study area intersections are shown in **Figure 2-6**.

Signal timing plan (STP) were obtained from the City of Kingston for the intersections of:

- Union Street and Sir John A. MacDonald Boulevard
- King Street West and Sir John A. MacDonald Boulevard

The detailed TMCs and STPs are provided in **Appendix C**.



3 PROPOSED DEVELOPMENT

3.1 Site Characteristics

The study focuses on the traffic impacts of blocks 2, 3 and 4 of the broader Union Park development. The proposed development consists of:

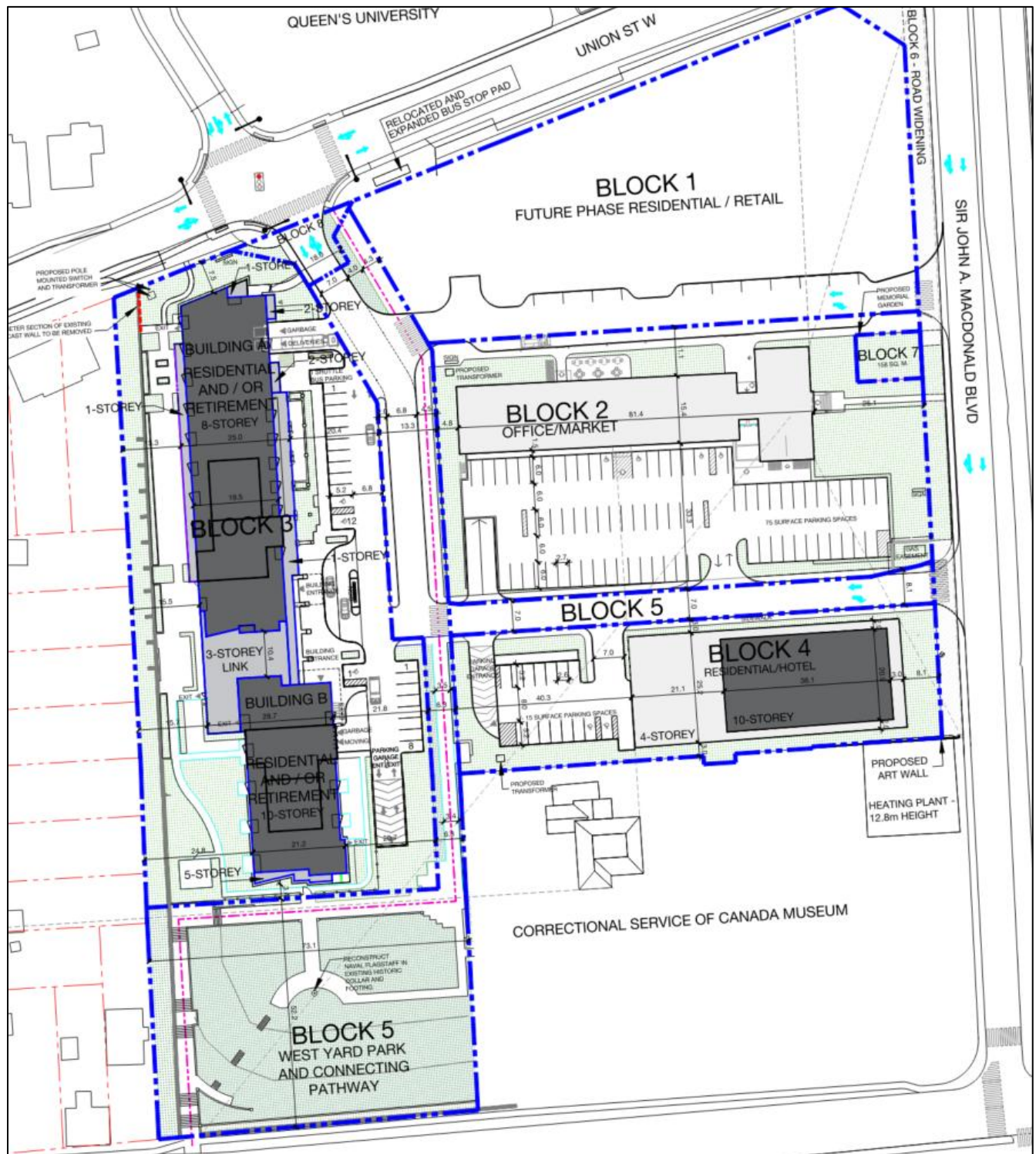
- Block 2: Market (GFA: 1,068 m²), office building (GFA: 2,651 m²) and 44 residential units
- Block 3: 74 senior housing units and 141 retirement units
- Block 4: 168 hotel rooms
- Block 5: West Yard Park and Connecting Pathway

Vehicular access to the development is proposed via Union Street and Sir John A. MacDonald Boulevard. Access from Union Street will be provided through the existing unsignalized intersection at Hargreaves Way, which connects to Queen's University on the north approach and will provide access to the site on the south approach. Two additional site accesses are proposed along Sir John A. MacDonald Boulevard, located between Blocks 1 and 2, and between Blocks 2 and 4. These accesses will operate as right-in/right-out only.

The draft plan of the proposed development is shown in Figure 3-1 and provided in full detail in **Appendix B**.

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Figure 3-1 Proposed Site Plan



4 FUTURE CONDITIONS

4.1 Horizon Years

The proposed mixed-use development will be completed in a single phase, with an estimated 2028 build-out year. A five-year post build-out horizon (2033) was evaluated to assess post build-out future conditions, as approved by City staff in accordance with the Terms of Reference (see **Appendix A**).

4.2 Background Growth

4.2.1 Background Growth Rate

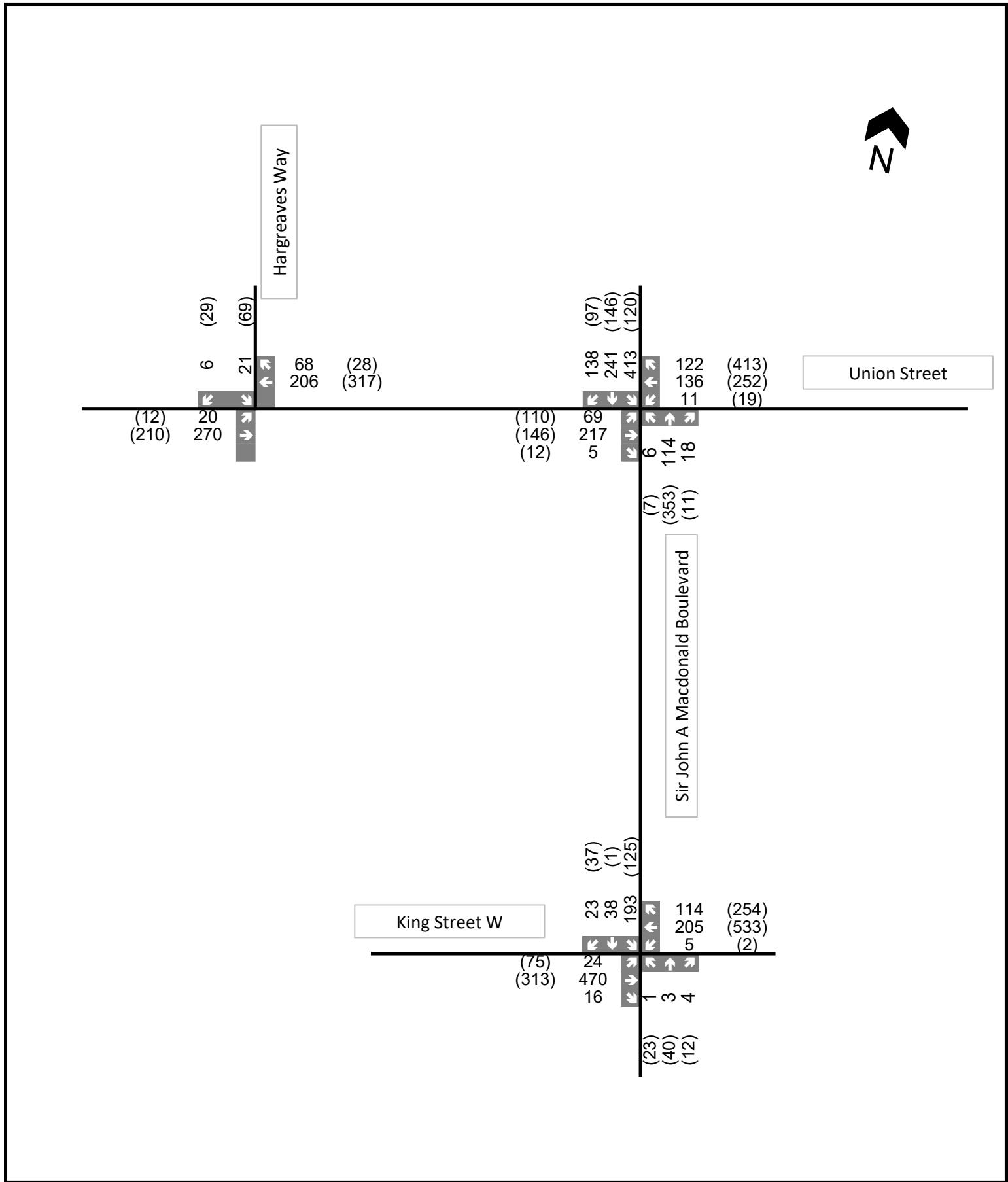
A background annual traffic growth rate of 1.8% was applied to existing traffic volumes based on consultation with the City of Kingston staff for the 2028 and 2033 future study horizons.

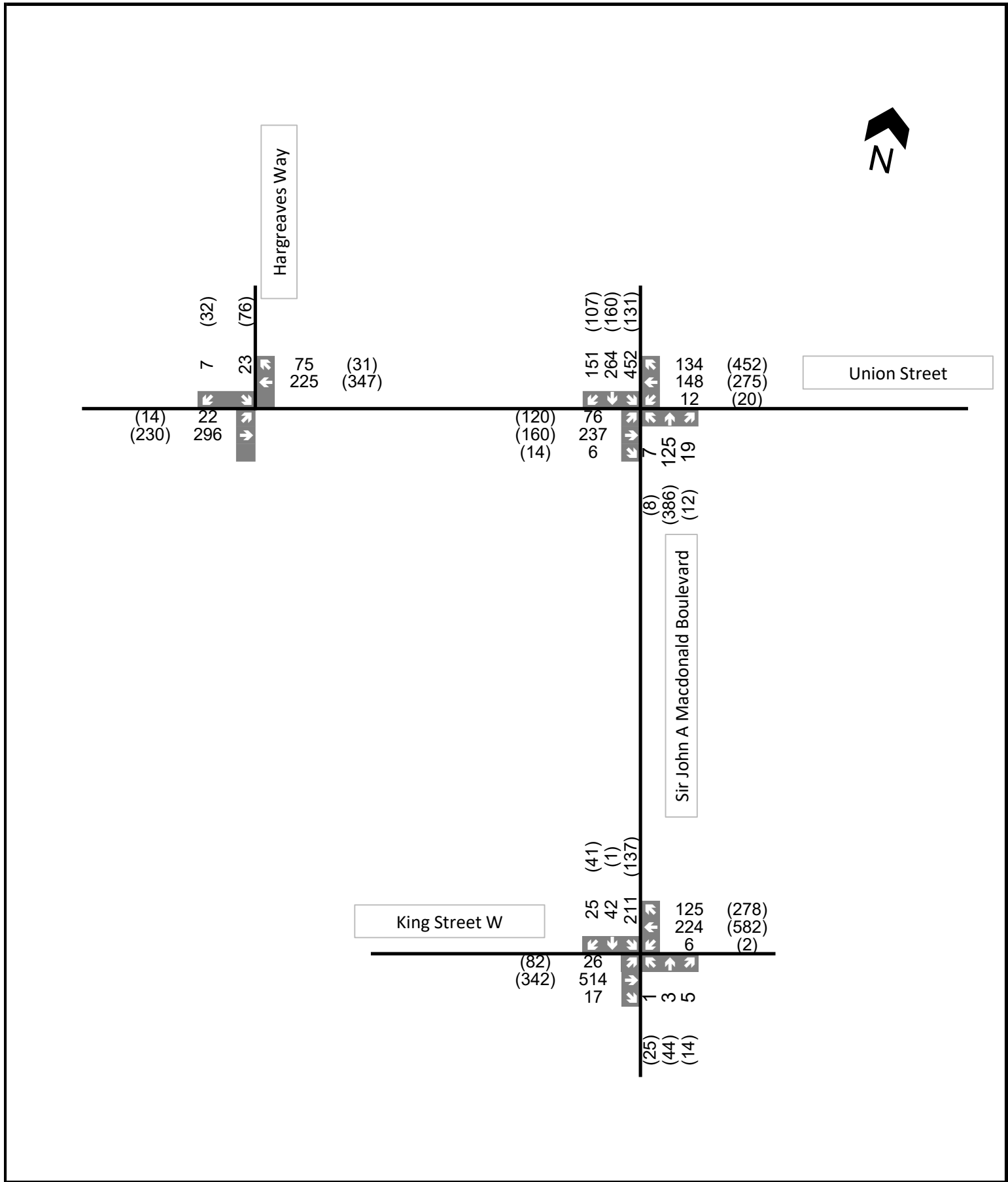
4.2.2 Background Developments

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.

4.2.3 Background Traffic Volumes

The 2028 and 2033 future background traffic volumes were derived by applying the background growth to the existing volumes for 2026. The resulting 2028 and 2033 future background traffic volumes are illustrated in **Figure 4-1** and **Figure 4-2**.





4.3 Site Trip Generation and Modal Split

Trips generated by the proposed mixed-use development were estimated in accordance with the Institute of Transportation Engineers (ITE) 12th Edition Trip Generation manual. Based on the latest site plan and site statistics, the site is comprised of a market, an office building, general residential units, senior housing, retirement units and a hotel. The trip generation analysis for this development was completed based on the following ITE land use codes:

- LUC 814 – Variety Store
- LUC 710 – General office building
- LUC 221 – Multifamily housing (mid-rise)
- LUC 251 – Senior Adult Housing- Single family
- LUC 255- Continuing Care Retirement Community
- LUC 310- Hotel

The automobile trips were then converted to person trips based on an assumed auto-driver rate of 1.36 as per the 2024 Kingston Moves Household Travel Survey.

As previously consulted with City of Kingston staff, transportation studies within the city limits have identified the need to apply modal split analysis for development site traffic generation. As part of phasing analysis, site generated trips were forecasted by applying mode shares based on the 2015 City of Kingston Transportation Master Plan (KTMP), the 2024 Household Travel Survey data, and 2034 target Mode Share as approved by Kingston City Council. Mode splits for 2028 future traffic horizons have been summarized in **Table 4-1**.

Table 4-1 Mode Share Summary

Mode	Mode Share - 2028
Auto + Passenger	65%
Active Transportation	20%
Transit	10%
TDM / Other	5%
Total	100%

4.3.1 Pass-by Trips

A commercial pass-by trip adjustment was applied to the traffic generating from the market, representing existing traffic on the adjacent corridor that temporarily diverts into the development and subsequently returns to the roadway, thereby reducing the net new traffic impact on the study area. The site trips associated with the proposed development, accounting for mode share reduction and pass by trips, are summarized in **Table 4-2**, below.

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Table 4-2 Site Trip Generation

Block	Site Component	ITE Code	GFA/ Number of Units	Item	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Block 2	Market	814 – Variety Store	1,068 m²	Directional Distribution	55%	45%	100%	51%	49%	100%
				(Fitted Curve)	Average Rate			Average Rate		
				Gross Trips	19	16	35	39	38	77
	Office	710 – General Office Building	2,651 m²	Directional Distribution	88%	12%	100%	16%	84%	100%
				(Fitted Curve)	T = 1.12(X) + 19.95			T = 0.99(X) + 31.14		
				Gross Trips	46	6	52	9	50	59
	Residential	221 – Multifamily housing (mid-rise)	44	Directional Distribution	23%	77%	100%	64%	36%	100%
				(Fitted Curve)	Average Rate			T = 0.36(X) + 3.07		
				Gross Trips	4	13	17	12	7	19
	Gross Vehicular Trips – Block 2				69	35	104	60	95	155
	Person Trips (x1.36) *				94	48	141	82	129	211
	2027 Non-Auto Adjustment (35%)				33	17	49	29	45	74
	Commercial Trip Adjustment (Pass-by) – Market Component Only (34%)				-	-	-	12	11	23
	Block 2 - Subtotal				61	31	92	41	73	114
Block 3	Seniors Adult Housing	251 – Senior Adult Housing	74	Directional Distribution	34%	66%	100%	61%	39%	100%
				(Fitted Curve)	Ln(T) = 0.71Ln(X) + 0.40			Ln(T) = 0.79Ln(X) + 0.15		
				Gross Trips	11	21	32	21	14	35
	Retirement Units	255 – Continuing Care Retirement Community	141	Directional Distribution	65%	35%	100%	39%	61%	100%
				(Fitted Curve)	T = 0.12(X) + 32.69			T = 0.13(X) + 66.22		
				Gross Trips	33	17	50	33	52	85
	Gross Vehicular Trips – Block 3				44	38	82	54	66	120
	Person Trips (x1.36) *				60	52	112	73	90	163
	2027 Non-Auto Adjustment (35%)				21	18	39	26	32	57
	Block 3 - Subtotal				39	34	73	47	58	106
Block 4	Hotel	310 – Hotel	168	Directional Distribution	52%	48%	100%	51%	49%	100%
				(Fitted Curve)	T = 0.49(X) - 18.48			T = 0.85(X) - 55.22		
				Gross Trips	33	31	64	45	43	88

	<i>Gross Vehicular Trips – Block 4</i>	33	31	64	45	43	88
	<i>Person Trips (x1.36) *</i>	45	42	87	61	58	120
	<i>2027 Non-Auto Adjustment (35%)</i>	16	15	30	21	20	42
	Block 4 - Subtotal	29	27	57	40	38	78
Total	Gross New Site Trips	146	104	250	159	204	363
	<i>Person Trips (x1.36) *</i>	199	141	340	216	277	494
	<i>Total Non-Auto Adjustment</i>	69	50	119	76	97	173
	<i>Commercial Trip Adjustment (Pass-by)</i>	-	-	-	9	8	17
	Total New Site Trips	129	92	221	129	169	298

* Person trip factor of 1.36 based off the 2024 Kingston Moves Household Travel Survey

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The site traffic estimated in accordance with ITE 12th Edition Trip Generation Manual shows that 221 site trips are anticipated in the AM peak hour (129 inbound and 92 outbound) and 298 site trips are anticipated in the PM peak hour (129 inbound and 169 outbound).

4.4 Trip Distribution

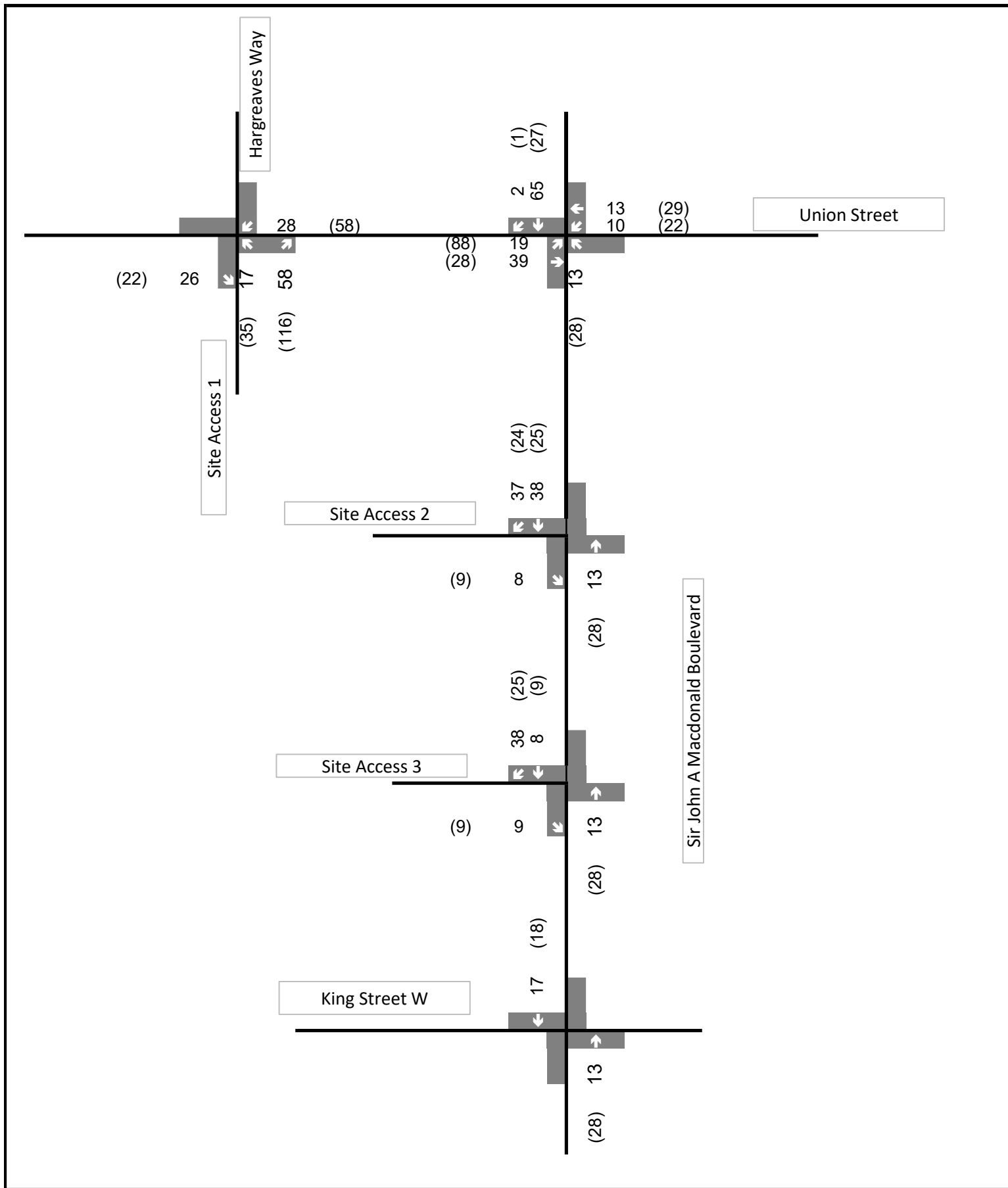
Site trips were assigned to the roadway network based on the overall distribution of travel patterns obtained from turning movement counts. The resulting site traffic distribution is summarized in **Table 4-3**, and the corresponding site traffic volumes are illustrated in **Figure 4-3**.

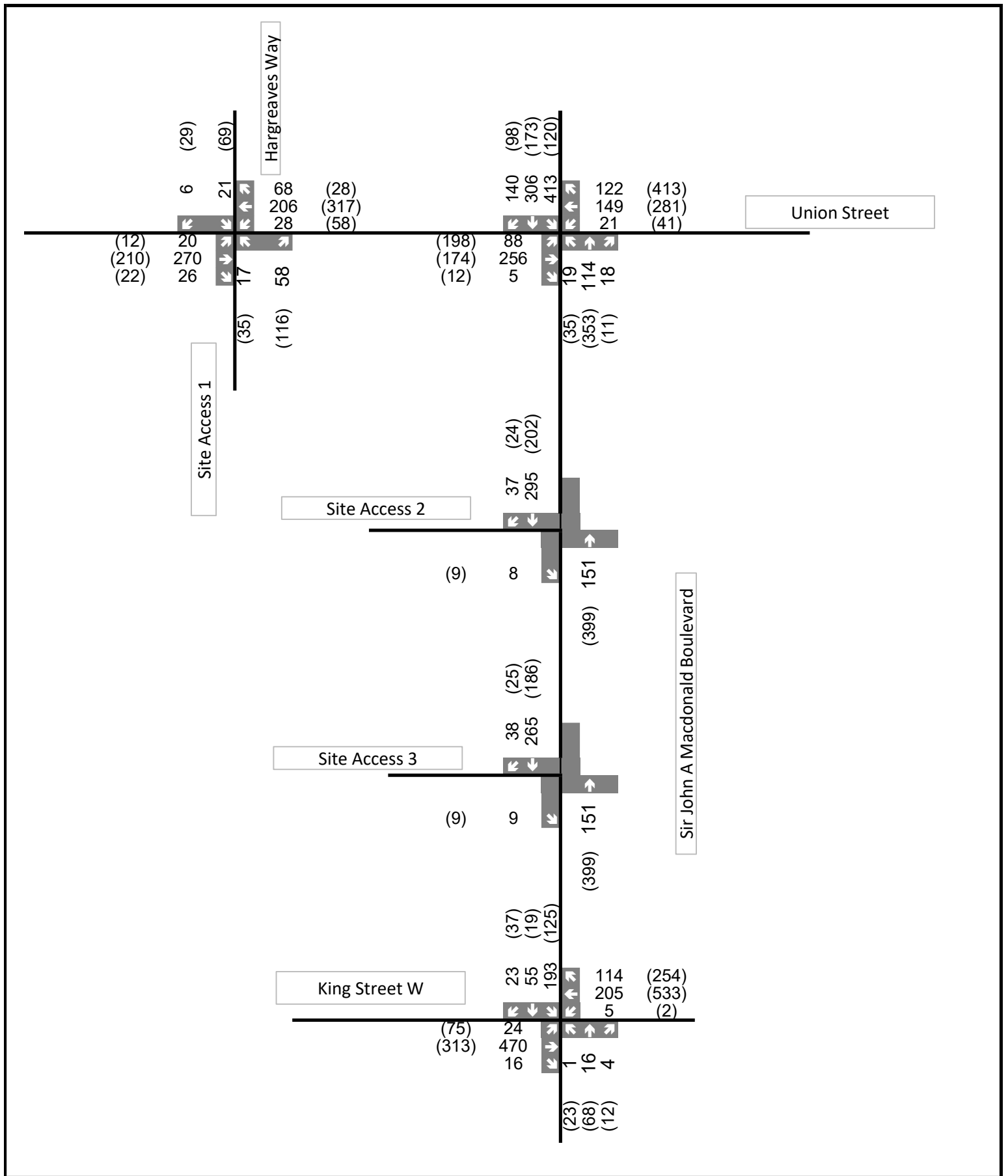
Table 4-3 Site Trip Distribution Ratios

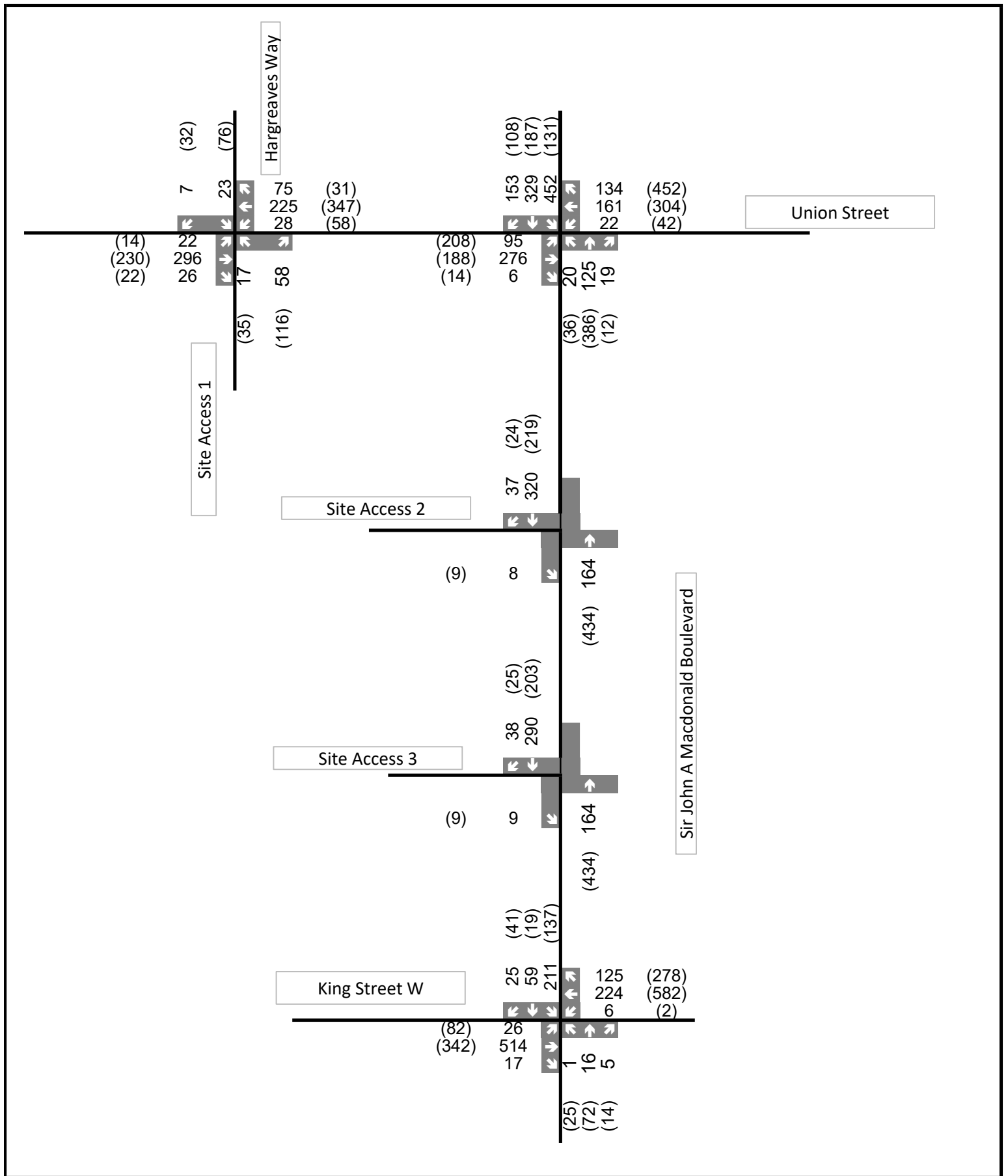
Direction	Via	AM Peak		PM Peak	
		IN	OUT	IN	OUT
North	Sir John A MacDonald Boulevard	53%	21%	22%	52%
South	Sir John A MacDonald Boulevard	9%	17%	22%	10%
West	Union Street	18%	43%	41%	16%
East	Union Street	20%	19%	16%	21%
Total		100%	100%	100%	100%

4.5 Future Total Traffic

The future total traffic volumes (2028 and 2033) were calculated by combining the future background volumes with site-generated trips. The resulting traffic volumes at the study area intersections are illustrated in **Figure 4-4** and **Figure 4-5**.







4.6 Signal Warrant

Signal warrant analysis was carried out for the Union Street and Hargreaves Way/ Site Access 1 under 2028 and 2033 future background and total conditions. Analysis indicates a traffic signal is not warranted for all scenarios based on OTM Book 12 – Justification 6 and 7.

It is noted that traffic signals have been recommended by the City of Kingston for this intersection and will be incorporated into the traffic study. Given that the proposed development includes a mix of residential and retail uses, significant pedestrian activity is anticipated around the Queen's University campus, which is expected to enhance the operation of the intersection. A pedestrian crossing at this intersection will enhance connectivity to nearby transit stops and reduce walking time. This will help reduce vehicle dependency and serve as a Transportation Demand Management strategy.

Since the implementation year has not been identified at the time of preparing this TIS, the intersection of Union Street West and Hargreaves Way was analyzed as both an unsignalized and a signalized intersection for all future background and total future scenario.

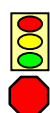
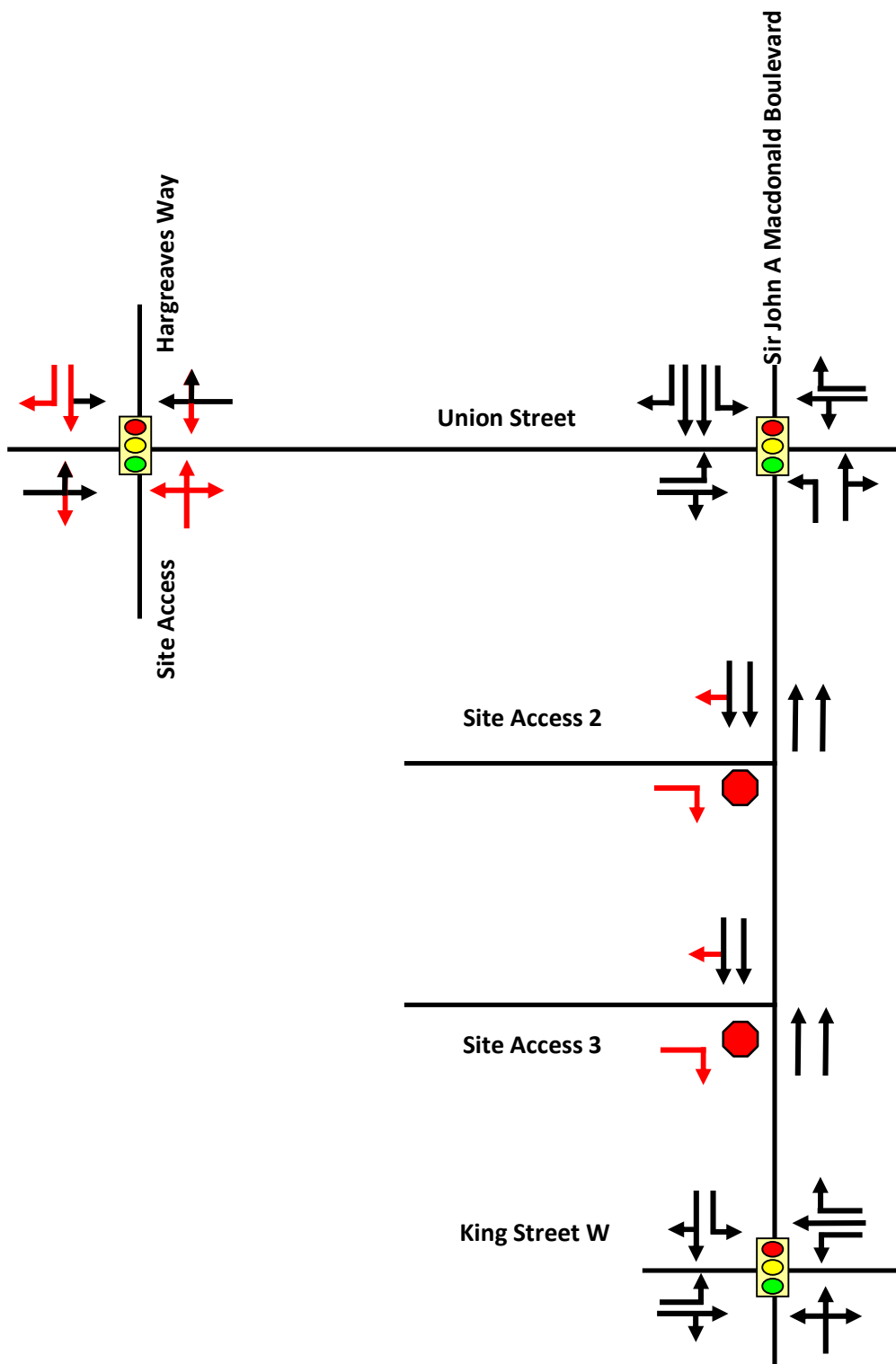
The traffic signal warrant analysis is shown in **Appendix D**.

4.7 Future Intersections

The proposed development is accessed via one access along Union Street and two access along Sir John A. MacDonald Boulevard. The proposed study intersections include:

- **Union Street and Hargreaves Way/ Site Access 1**– The proposal includes modifications to existing intersections, with a new south approach providing access to the site. Traffic signals are recommended, as advised by the City of Kingston
- **Sir John A. MacDonald Boulevard and Site Access 2** – proposed right-in/ right-out intersection
- **Sir John A. MacDonald Boulevard and Site Access 3** – proposed right-in/ right-out intersection

The proposed lane configuration is shown in **Figure 4-6**.



5 TRAFFIC CAPACITY ANALYSIS

Intersection analysis was conducted for the study area intersections for 2026 existing, 2028 buildout and the 2033 (5-year) post buildout horizon using Highway Capacity Manual (HCM) 6th techniques within the Synchro 12 Software package. Weekday AM and PM peak hour Turning Movement Counts (TMCs) and Signal Timing Plans (STPs) were obtained from the City of Kingston. STP and TMC for the study area intersections are provided in **Appendix C**.

Intersection operations performance metrics are reported in terms of Level of Service (LOS), delays and volume-to-capacity (v/c) ratios. **Table 5-1** summarizes the LOS thresholds as defined by Synchro for signalized intersections and for two-way stop controlled (TWSC) intersections as defined by HCM 6th edition.

Critical movements are identified as follows:

- Overall intersection operations, through movements or shared through/turning movements with a Level of Service (LOS) 'E' or 'F'.
- V/C ratios for overall intersection operations or turning movements increased to 0.85 or above.

Table 5-1 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 LOS F is reached if any movement exceeds capacity (i.e, v/c > 1.0)

5.1 2026 Existing Conditions

The intersection capacity analysis for the weekday AM and PM peak hours at the study area intersection has been prepared for the existing signal timing plan and exiting lane configurations, in accordance with the methodology presented in **Section 5**, above.

A summary of the intersection capacity analysis is provided **Table 5-2** for existing (2026) traffic conditions. The detailed Synchro 12 outputs are provided in **Appendix E**.

Table 5-2 2026 Existing Capacity Analysis

Intersection	Movement	Weekday AM			Weekday PM		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sir John A. MacDonald Boulevard & Union Street (signalized)	Overall	-	21	C	-	18	B
	EBL	0.12	16	17	0.27	20	C
	EBTR	0.29	18	18	0.24	18	B
	WBTL	0.19	17	17	0.38	20	B
	NBL	0.01	17	B	0.01	16	B
	NBTR	0.09	15	B	0.26	17	B
	SBL	0.72	31	C	0.31	23	C
	SBT	0.16	16	B	0.11	15	B
Sir John A. MacDonald Boulevard & King Street West (signalized)	Overall	-	15	B	-	14	B
	EBL	0.04	6	A	0.20	8	A
	EBTR	0.43	9	A	0.28	7	A
	WBL	0.01	11	B	0	8	A
	WBT	0.21	9	A	0.54	12	B
	WBR	0.13	8	A	0.31	10	A
	NBLTR	0.02	29	C	0.22	32	C
	SBL	0.59	36	D	0.41	34	C
	SBTR	0.18	31	C	0.14	31	C
Union Street & Hargreaves Way (un-signalized)	EBLT	0.02	0	A	0.01	8	A
	SBRL	0.08	0	B	0.3	18	C

Under existing (2026) traffic volumes, the intersections are operating with excess capacity in the AM and PM peak hour. No critical movements were identified under existing conditions.

5.2 2028 Future Background Conditions

The intersection capacity analysis for 2028 future background conditions is summarized in Table 5 3 for the AM and PM peak hours, for existing signal timing plan and lane configuration for Sir John A. MacDonald Boulevard and Union Street, and Sir John A. MacDonald Boulevard & King Street West intersections.

The intersection of Union Street and Hargreaves Way (Queen's driveway connection) is proposed to be signalized as a requirement of the 40 Sir John A. MacDonald Boulevard development, as advised by the City of Kingston. The traffic signals have not yet been implemented and are assumed to be in place by 2028. Therefore, two scenarios were analyzed for this traffic study:

- **Scenario 1:** The intersection of Union Street and Hargreaves Way (Queen's driveway connection) operates as a two-way stop-controlled intersection.
- **Scenario 2:** The intersection of Union Street and Hargreaves Way (Queen's driveway connection) is signalized.

To develop the signal timing plan for this intersection, the amber and all-red intervals were calculated based on the posted speed and crossing distance, in accordance with the methodologies outlined in OTM Book 12.

Table 5-3 2028 Future Background Capacity Analysis

Intersection	Movement	Weekday AM			Weekday PM		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sir John A. MacDonald Boulevard & Union Street (signalized)	Overall	-	22	C	-	19	B
	EBL	0.13	17	B	0.28	21	C
	EBTR	0.30	19	B	0.24	18	B
	WBTL	0.20	17	B	0.39	20	B
	NBL	0.01	17	B	0.01	16	B
	NBTR	0.09	15	B	0.27	17	B
	SBL	0.75	33	C	0.33	24	C
	SBT	0.16	16	B	0.11	15	B
Sir John A. MacDonald Boulevard & King Street West (signalized)	Overall	-	15	B	-	14	B
	EBL	0.04	6	A	0.21	9	A
	EBTR	0.45	9	A	0.29	7	A
	WBL	0.01	11	B	0	8	A
	WBT	0.21	9	A	0.56	12	B
	WBR	0.14	8	A	0.32	10	A
	NBLTR	0.02	29	C	0.23	32	C
	SBL	0.60	37	D	0.43	34	C
	SBTR	0.18	30	C	0.15	31	C
Union Street & Hargreaves Way (Scenario 1: un-signalized)	EBLT	0.02	8	A	0.01	8	A
	SBTL	0.71	16	C	0.26	20	C
	SBR	0.01	10	B	0.06	11	B
Union Street & Hargreaves Way (Scenario 2: signalized)	Overall	-	4	A	-	9	A
	EBLTR	0.22	2	A	0.19	3	A
	WBLTR	0.23	2	A	0.30	4	A
	SBTLR	0.35	43	D	0.69	44	D

Under 2028 future background traffic volumes, all the intersections are anticipated to operate with excess capacity in the AM and PM peak hours. No critical movements are anticipated at the study area intersections. The detailed Synchro 12 outputs are provided in **Appendix F**.

5.3 2033 Future Background Conditions

The traffic capacity analysis results for the study area intersections under 2033 future background conditions are summarized in **Table 5-4** for both the weekday AM and PM peak hours. Two scenarios were again considered for the intersection control at the intersection of Union Street and Hargreaves Way: unsignalized and signalized operation. All the remaining intersections were analyzed under existing signal timing plan and existing lane configuration.

Table 5-4 2033 Future Background Capacity Analysis

Intersection	Movement	Weekday AM			Weekday PM		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sir John A. MacDonald Boulevard & Union Street (signalized)	Overall	-	24	C	-	19	B
	EBL	0.14	17	B	0.32	22	C
	EBTR	0.33	19	B	0.27	18	B
	WBTL	0.22	18	B	0.43	20	C
	NBL	0.01	17	B	0.02	16	B
	NBTR	0.10	15	B	0.29	17	B
	SBL	0.83	39	D	0.37	25	C
	SBT	0.18	16	B	0.12	15	B
Sir John A. MacDonald Boulevard & King Street West (signalized)	Overall	-	16	B	-	15	B
	EBL	0.05	7	A	0.26	10	A
	EBTR	0.50	10	B	0.32	7	A
	WBL	0.01	13	B	0	9	A
	WBT	0.24	9	A	0.61	14	B
	WBR	0.16	9	A	0.35	11	B
	NBLTR	0.03	29	C	0.25	32	C
	SBL	0.65	38	D	0.47	34	C
	SBTR	0.20	30	C	0.16	31	C
Union Street & Hargreaves Way (Scenario 1: un-signalized)	EBLT	0.02	8	A	0.02	9	A
	SBTL	0.09	18	C	0.32	23	C
	SBR	0.01	10	B	0.07	12	B
Union Street & Hargreaves Way (Scenario 2: signalized)	Overall	-	4	A	-	10	A
	EBLTR	0.25	2	A	0.22	3	A
	WBLTR	0.25	2	A	0.34	4	A
	SBLR	0.38	43	D	0.71	43	D

Under 2033 future background traffic volumes, all the intersections are anticipated to operate with excess capacity in the AM and PM peak hours. The detailed Synchro 12 outputs are provided in **Appendix F**.

5.4 2028 Future Total Conditions

The intersection capacity analysis results for the study area intersections under 2028 future total conditions are summarized in **Table 5-5** for the weekday AM and PM peak hours consistent with background analysis.

Table 5-5 2028 Future Total Capacity Analysis

Intersection	Movement	Weekday AM			Weekday PM		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sir John A. MacDonald Boulevard & Union Street (signalized)	Overall	-	21	C	-	20	C
	EBL	0.16	17	B	0.54	28	C
	EBTR	0.36	19	B	0.29	18	B
	WBTL	0.24	18	B	0.48	21	C
	NBL	0.04	18	B	0.08	17	B
	NBTR	0.09	15	B	0.27	17	B
	SBL	0.72	31	C	0.33	24	C
	SBT	0.21	16	B	0.13	15	B
Sir John A. MacDonald Boulevard & King Street West (signalized)	Overall	-	15	B	-	15	B
	EBL	0.04	5	A	0.22	9	A
	EBTR	0.44	7	A	0.29	7	A
	WBL	0.01	10	B	0.00	8	A
	WBT	0.21	8	A	0.56	13	B
	WBR	0.13	8	A	0.32	10	B
	NBLTR	0.06	30	C	0.29	32	C
	SBL	0.61	36	D	0.44	35	C
Union Street & Hargreaves Way / Site Access 1 (Scenario 1: un-signalized)	SBTR	0.23	32	C	0.20	31	C
	EBLT	0.02	8	A	0.01	8	A
	WBTR	0.03	8	A	0.06	8	A
	NBLTR	0.16	13	B	0.39	17	C
	SBTL	0.10	21	C	0.49	44	E
Union Street & Hargreaves Way / Site Access 1 (Scenario 2: signalized)	SBR	0.01	10	B	0.06	11	B
	Overall	-	9	A	-	17	B
	EBLTR	0.27	4	A	0.31	13	B
	WBLTR	0.27	4	A	0.53	16	B
	NBLTR	0.36	37	D	0.32	23	C
	SBTL	0.09	35	D	0.18	22	C
Sir John A Macdonald Boulevard & Site Access 2	SBR	0.04	35	C	0.07	20	C
	EBR	0.01	9	A	0.01	9	A

Intersection	Movement	Weekday AM			Weekday PM		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sir John A Macdonald Boulevard & Site Access 3	EBR	0.01	9	A	0.01	9	A

Under 2028 future total traffic volumes, all the intersections are anticipated to operate with excess capacity in the AM and PM peak hours. Critical movements anticipated to exceed capacity are anticipated at the intersection of:

- Union Street and Hargreaves Way / Site Access 1 – The southbound shared left -through lane is anticipated to exceed capacity in the PM peak hour, with an anticipated v/c ratio of 0.49 and a LOS 'E' under the unsignalized intersection control.
- As advised by the City of Kingston, traffic signals are proposed at this intersection. Under Scenario 2, where the intersection is signalized, no critical movements are anticipated, and all movements are expected to operate with adequate capacity.

All the movements at the remaining study area intersections are anticipated to operate with excess capacity in the AM and PM peak hour.

The site traffic generated from proposed development is not anticipated to impact the operational performance of the study area intersections when traffic signals are proposed at the intersection of Union Street and Hargreaves Way / Site Access 1. Accordingly, traffic signals are recommended for implementation in the site's opening year (2028) to mitigate impacts and improve intersection capacity

The detailed Synchro 12 outputs are provided in **Appendix G**.

5.5 2033 Future Total Conditions

The traffic capacity analysis results for the study area intersections under 2033 future total conditions are summarized in **Table 5-6** for the weekday AM and PM peak hours consistent with 2028 Total conditions analysis.

Table 5-6 2033 Future Total Capacity Analysis

Intersection	Movement	Weekday AM			Weekday PM		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Sir John A. MacDonald Boulevard & Union Street (signalized)	Overall	-	24	C	-	21	C
	EBL	0.18	18	B	0.59	31	C
	EBTR	0.39	20	B	0.31	19	B
	WBTL	0.25	18	B	0.52	22	C
	NBL	0.05	18	B	0.08	17	B
	NBTR	0.10	15	B	0.29	17	B
	SBL	0.83	39	D	0.37	25	C
	SBT	0.22	16	B	0.14	15	B
Sir John A. MacDonald Boulevard & King Street West (signalized)	Overall	-	16	B	-	16	B
	EBL	0.05	7	A	0.26	10	B
	EBTR	0.50	10	B	0.32	8	A
	WBL	0.01	13	B	0	9	A
	WBT	0.24	9	A	0.62	14	B
	WBR	0.16	9	A	0.36	11	B
	NBLTR	0.06	29	C	0.31	32	C
	SBL	0.65	38	D	0.48	35	C
Union Street & Hargreaves Way / Site Access 1 (Scenario 1: un-signalized)	EBLT	0.02	8	A	0.02	9	A
	WBTR	0.03	8	A	0.06	8	A
	NBLTR	0.17	13	B	0.42	18	C
	SBTL	0.12	23	C	0.61	59	F
	SBR	0.01	10	B	0.07	12	B
Union Street & Hargreaves Way / Site Access 1 (Scenario 2: signalized)	Overall	-	9	A	-	17	B
	EBLTR	0.29	4	A	0.34	13	B
	WBLTR	0.30	4	A	0.57	16	B
	NBLTR	0.36	37	D	0.33	23	C
	SBTL	0.11	35	D	0.20	22	C
	SBR	0.04	35	C	0.08	20	C
Sir John A Macdonald Boulevard and Site Access 2	EBR	0.01	10	A	0.01	9	A
Sir John A Macdonald Boulevard and Site Access 3	EBR	0.01	9	A	0.01	9	A

Under 2033 future total traffic volumes, all the intersections are anticipated to operate with excess capacity in the AM and PM peak hours. Critical movements anticipated to exceed capacity are anticipated at the intersection of:

- Union Street and Hargreaves Way – The southbound shared left -through lane is anticipated to exceed capacity in the PM peak hour, with an anticipated v/c ratio of 0.61 and a LOS 'F' under the unsignalized intersection control.
- As advised by the City of Kingston, traffic signals are proposed at this intersection. Under Scenario 2, where the intersection is signalized, no critical movements are anticipated, and all movements are expected to operate with adequate capacity.

All the movements at the remaining study area intersections are anticipated to operate with excess capacity in the AM and PM peak hour.

The site traffic generated from proposed development is not anticipated to impact the operational performance of the study area intersections when traffic signals are proposed at the intersection of Union Street and Hargreaves Way / Site Access 1. Accordingly, traffic signals are recommended for implementation in the site's opening year (2028) to mitigate impacts and improve intersection capacity

The detailed Synchro 12 outputs are provided in **Appendix G**.

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6 PARKING ASSESSMENT

Parking assessments for the development will be provided to accommodate the land uses within each development block. Parking supplied within individual blocks is anticipated to support the needs of adjacent blocks. Accordingly, this section assesses the parking requirements for the development as a whole. Detailed parking reviews was considered for Block 2 only, as parking supplies for the additional blocks are yet to be confirmed.

6.1 Municipal By-Law

The required number of parking spaces was determined in accordance with the City of Kingston Zoning By-law 2022-62. The proposed development is located within parking zone PA3, and the required parking rates per the By-law are as follows:

- Residential Component
 - Residential parking rate of 2.1 parking space per dwelling unit under Exception E99 of the zoning by-law
 - Visitor parking rate of 0.06 parking space per dwelling unit in Zone PA3
 - One car share space must be provided for a lot containing 30 or more dwelling units, with 1 additional car-share space provided for every 50 dwelling units thereafter
 - One short-term delivery space must be provided for a lot containing 30 or more dwelling units.

The governing City of Kingston's 2022-62 Zoning By-law does is void of minimum parking requirements for commercial uses, thus allowing applicants to determine and provide the amount of vehicular parking required based on anticipated site-specific demand.

6.2 Block 2 Parking

The residential parking required was determined in accordance with the City of Kingston Zoning By-Law 2022-62. The maximum number of parking spaces per dwelling unit is determined under Exception E99. Block 2 is proposed to be developed either as a residential building containing 44 dwelling units or as a commercial building comprising a market use with 1,068 m² of gross floor area (GFA) and office uses with 2,651 m² of GFA.

Table 6-1 Block 2 Parking Review – Residential Component

Block 2 Component	Units	Required Parking Rate	Parking Required	Proposed Supply
Residential – apartment building ¹	44	Resident parking 2.1 spaces / dwelling unit ²	92	(+/-) 135 (75 surface + 60 underground) ³
		1 short-term delivery parking space for a lot containing 30 or more dwelling units	1	
		Visitor parking 0.06 spaces / dwelling unit	3	
Total			106	

¹Based on City of Kingston Zoning By-law 2022-62

²Based on City of Kingston Zoning By-law 2022-62 - Exception E99

³Block 2 parking supply includes 1 car share spaces

As per Zoning By-law 2022-62, a total of 96 parking spaces are required for the identified residential component of the proposed Block 2. If the site is developed with 44 residential units, the proposed supply of 135 parking spaces would be sufficient to satisfy the parking requirements of City of Kingston Zoning By-law Exception E99.

If the applicants decide to proceed with only the market and office components of Block 2, based on ITE Parking Generation manual 5th Edition (excerpts provided in **Appendix F**) the following *average parking rates* will apply for the following land uses:

- Office (LUC 710): 2.51 spaces / 1000 sq.ft of GFA resulting in 27 spaces
- Market (LUC 814): 2.31 spaces / 1000 sq.ft of GFA resulting in 72 spaces

The above parking rates result in a commercial parking requirement of 99 spaces.

Parking demand for Block 2 is anticipated to be higher than average rate requirements based on market feasibility assessment done for the site. As such an 85th percentile parking rate was identified and applied to the office land use (no reciprocal rate is available for market use). The following rate was identified for the office land use

- 3.42 spaces / 1000 sq.ft of GFA

Based on the 85th percentile rate the office land use would have a resulting parking requirement of 98 parking spaces, with a total commercial parking requirement of 125 spaces.

The required number of accessible parking spaces is determined in accordance with the City of Kingston Zoning By-law 2022-62. Based on the total supply of 135 parking spaces, the by-law requires that 3% be designated as accessible spaces. Accordingly, 4 barrier-free parking spaces are required. The proposed site plan for Block 2 meets the by-law requirements by providing four barrier-

free parking spaces.

The City of Kingston By-law also requires 1 short-term delivery parking space for a lot containing 30 or more dwelling units. The proposed site plan provides a layby area north of Block 2 which is intended for short term parking and food trucks. Therefore, the by-law requirements for short-term delivery has been met.

6.3 Bicycle Parking Requirement

The number of bicycle parking spaces required for the short-term and long-term scenarios were determined based on the City of Kingston Zoning By-Law 2022-62, and the parking rates are provided in **Table 6-3**, as outlines in Table 7.3.1 and Table 7.3.2 of the bylaw.

Table 6-3 Bicycle Parking Rates

Land Use	Short-term parking rate	Long-term parking rate
Residential	0.1 per dwelling units	0.9 per dwelling units
Non-residential in urban and mixed-use zones	0.2 spaces per 100 m ²	0.1 spaces per 100 m ²

The minimum number of short-term and long-term required bicycle parking spaces, as per the City of Kingston Zoning By-law are shown in **Table 6-4** and **Table 6-5** for the commercial and residential components of Block 2.

Table 6-4 Bicycle Parking Requirements and Provisions – Commercial Component

Block	Land use	GFA/ Units	Minimum short-term parking space	Minimum long-term parking space	Proposed Supply
Block 2	Market	1068 m ²	2	1	29
	Office	2651 m ²	5	3	
	Total		7	4	

Table 6-5 Bicycle Parking Requirements and Provisions – Residential Component

Block	Land use	GFA/ Units	Minimum short-term parking space	Minimum long-term parking space	Proposed Supply
Block 2	Residential Units	44	4	40	29
	Total		4	40	

Block 2

Based on the City of Kingston Zoning By-law, 7 short-term and 4 long-term bicycle parking spaces are required for the retail and office components of the site. The residential component requires 4 short-term and 40 long-term bicycle parking spaces.

The site provides 19 short-term parking spaces, and 10 long-term parking spaces at Block 2. The proposed bicycle parking supply meets the City of Kingston Zoning By-Law for the market and office components. It is the developer's intention to meet the bicycle parking requirements per the City of Kingston Zoning By-law 2022-62, if the residential component is adopted.

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7 SITE PLAN REVIEW

7.1 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 (AutoTURN) to simulate the required design vehicles. This review is based on the proposed site plan prepared dated May 26, 2026.

7.1.1 Curb Radii and Driveway Widths

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. Site Access 1 meets the minimum curb requirements while Site Access 2 and Site Access 3 have a width of 7.1m and 7.2m 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 7-1**.

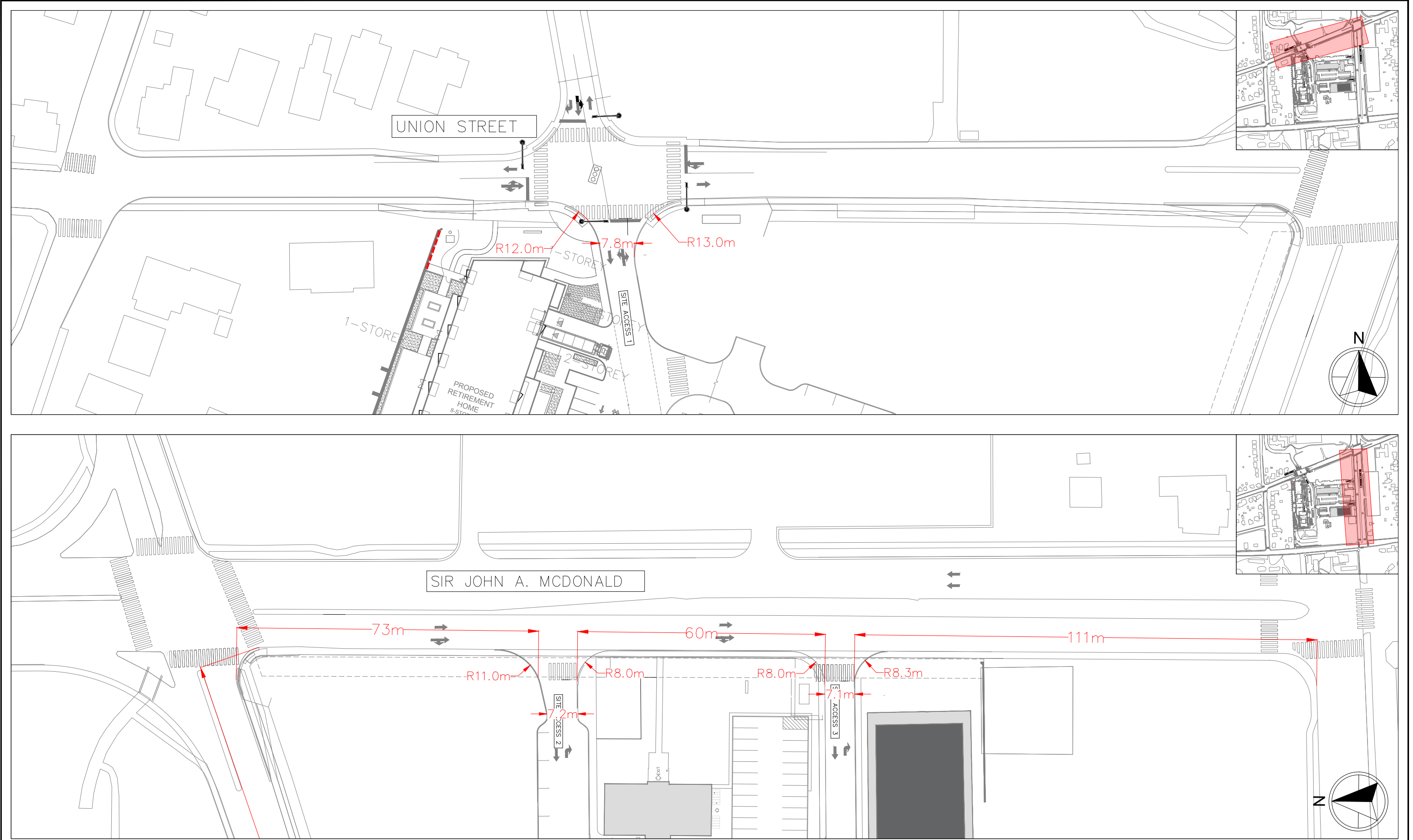
Driveway accesses designs for this development have previously been reviewed and approved by City of Kingston staff

7.1.2 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.

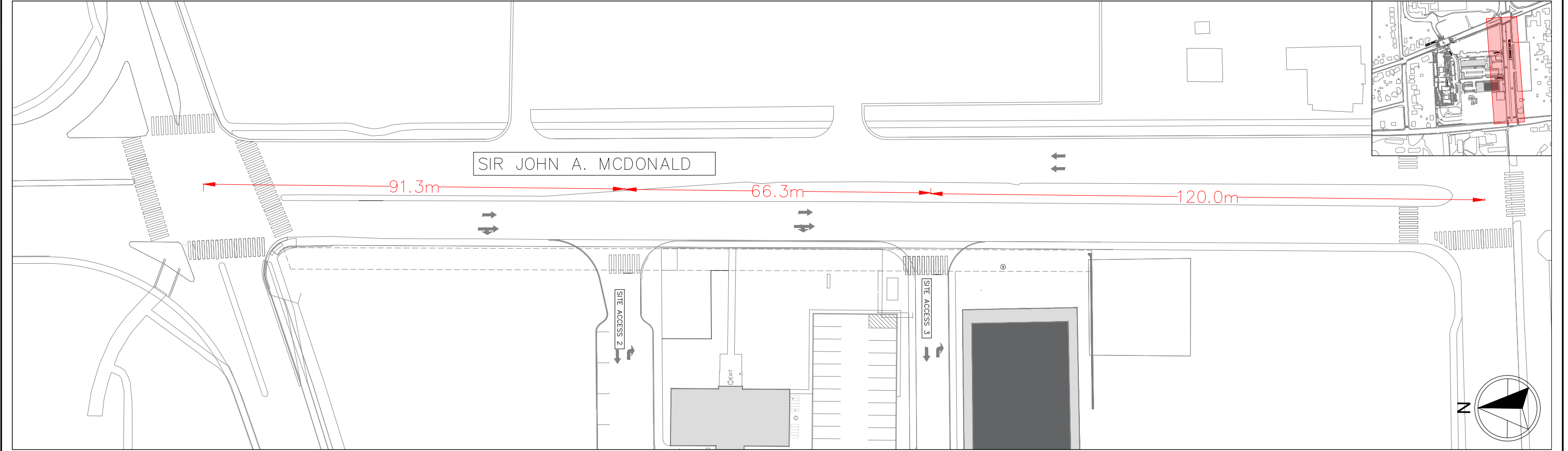
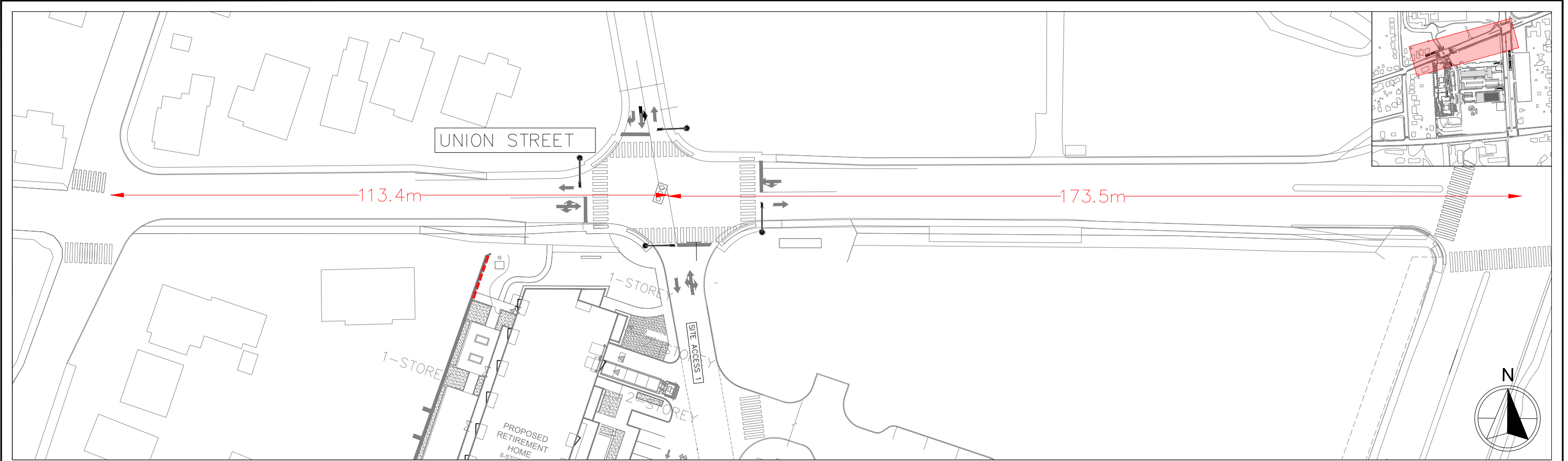
Site Access 2 and Site Access 3 along Sir John A. MacDonald Boulevard are located 60m apart, which is considered an acceptable spacing between site driveways. Driveway spacing reviews have been illustrated in **Figure 7-2**.

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 3381 STEELES AVE E, Suite 315 Toronto, ON M2H 3S8 P: 905.738.5700	INTERSECTION SPACING 101192 - UNION PARK TRAFFIC IMPACT STUDY			SCALE: N.T.S		PROJECT No. 101192	DRAWN BY N.C.	DRAWING No. 02
							CHECKED BY S.H.	DATE JUL 2026

MODIFIED: 7/9/2026 10:02 AM BY:nikita.chiduku

7.1.3 Sight Distance Review

A desktop review of available sightlines at the proposed site accesses was performed in accordance with guidelines set out in TAC Geometric Design Guide for Canadian Roads (June 2019).

The required intersection sight distance is determined by using the time gap required, based on the design vehicle, and the design speed along the main corridor. The sightline review was completed, assuming a passenger vehicle.

Sir John A. Macdonald Boulevard and Union Street have posted speed limits of 50 km/h and 40 km/h, respectively. The design speeds are assumed to be 60 km/h and 50 km/h for Sir John A. Macdonald Boulevard and Union Street, respectively.

TAC Chapter 9 guidelines indicate that three cases should be considered for an unsignalized intersection:

► TAC Chapter 9 – Intersections with stop control on the minor road:

- Case B1 – Left turn from the minor road;
- Case B2 – Right turn from the minor road; and
- Case F – Left turn from the major road.

For the intersection of Union Street West and Hargreaves Way/site access, all three cases were considered under the unsignalized intersection. For the site access intersections with Sir John A. Macdonald Boulevard, right-in/right-out movements are proposed. Therefore, only Case B2 was analyzed for these two intersections. **Table 7-1** summarizes the required and available sight distances at the proposed site access.

[Left Blank Intentionally]

Table 7-1 Sight Distance Review Summary

Access Location	Maneuver	Design Speed	TAC Requirement (m) Passenger Vehicle	Minimum Available Sight Distance (m)	Meets Standards (Y/N)
Sir John A Macdonald Boulevard & Site Access 2 and 3 (RIRO)	ISD - Case B2 - right turn from the minor road	60 km/h	110	110	Y
	SSD		85		Y
Union Street & Hargreaves Way / Site access 1 (full moves)	ISD - Case B1 - left turn from minor road	50 km/h	105	> 110	Y
	ISD - Case B2 - right turn from the minor road		95	> 110	Y
	ISD - Case F – left turn from major road		80	> 120	Y
	SSD		65	> 110	Y

The intersection sight-distance requirements were reviewed in accordance with TAC Chapter 9 guidelines. The review indicates that the sightline requirements are met at the proposed site accesses and the sightline drawings are provided in **Appendix I**.

7.2 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 J**. Site circulation figures are based on full-build operation of the site.

7.2.1 Emergency Vehicle

A 6.0 m 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.

7.2.2 Loading Review / Waste Disposal

Loading for the site was 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 was reviewed using a Wayne Titan front-loading truck and a Rear-

Load Garbage Truck to assess its ability to access and egress loading areas at the various development blocks. Waste operations at Block 2 and Block 3 is likely to be conducted using a front-loading garbage truck and waste collection at Block 4 will be completed using rear loading trucks.

Block 2 - The waste disposal and loading area will both be accommodated in a lay-by area at the north side of Block 2. It is anticipated that loading vehicles will enter the site via Union Street and access the Block 2 loading area in a forward motion. Loading vehicles will then exit the site via the 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 3 - Loading and waste collection will occur at two separate areas for Block 3, one at the north end for the residential/retirement residence and one at the south end for senior apartments. For loading operations an HSU truck will access the north loading area via Site Access 1 and leave via Site Access 2. For the north loading area, a frontloading 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 3 and then turn left onto the Block 2 driving aisle to exit the site. The garbage truck will exit the site via the right-out 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 3 will be conducted with a flag person onsite and will also occur during off-peak hours to mitigate any delay and overall impact on 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 4 - It is anticipated that both loading and waste disposal operations in a similar fashion as the vehicle will drive into Block 4 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 4.

7.2.3 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.

The end parking spot in the southeast corner of Block 2, shown in **Figure 7-3**, is to be designated as a compact car parking space to serve smaller vehicles. The compact car can pull-in, reverse-in, pull-out, and reverse-out of the parking spot without conflict.

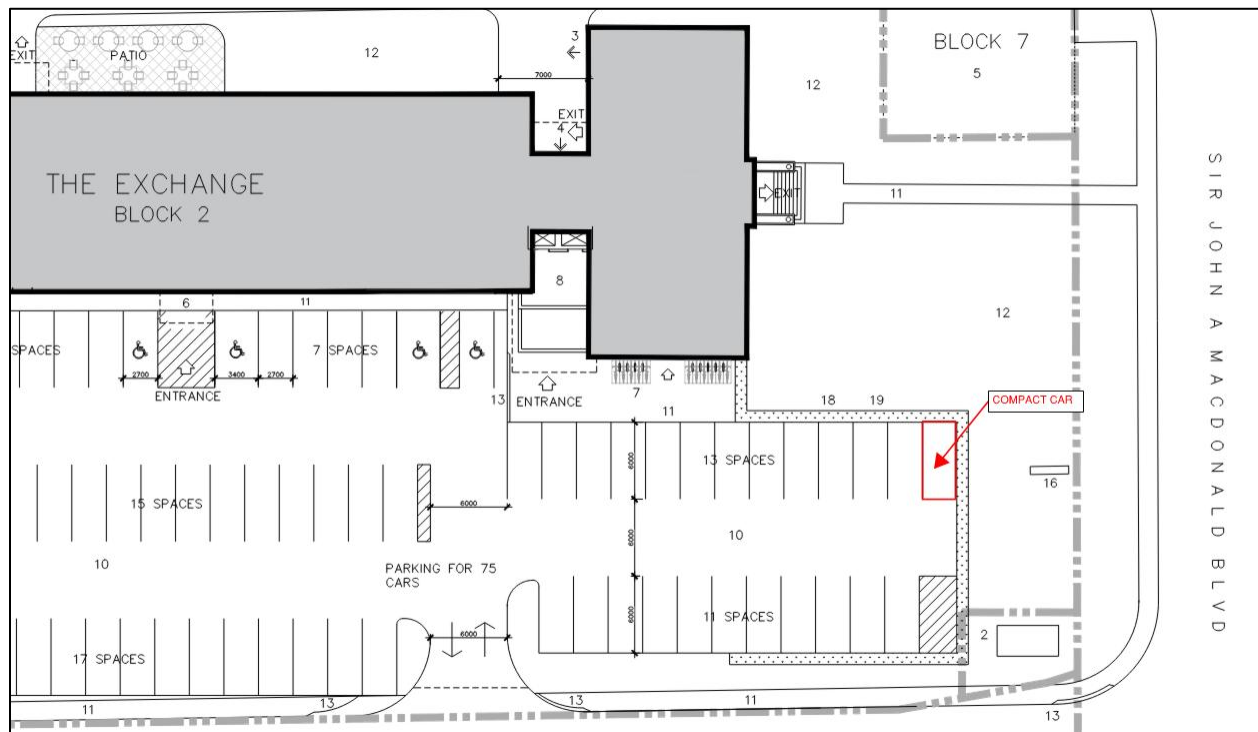


Figure 7-3 Compact Car Parking Space - Block 2

7.2.4 Bus / Shuttle Provisions

Block 3 - 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 indicate that buses can enter and exit without encroaching onto the driveway curbs.

Block 4 - 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 Site Access 2 right-out access onto Sir John A MacDonald Boulevard.

8 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. TDM strategies have multiple benefits including:

- ▶ Reduced auto-related emissions to improve air quality
- ▶ Decreased traffic congestion to reduce travel time
- ▶ Increased travel options for businesses and commuters
- ▶ Reduced personal transportation costs and energy consumption

The combined benefits assist in creating a more active and livable community through improvements to overall active transportation facilities for the local residents, businesses and the surrounding community.

TDM measures can be categorized into five categories and are listed as follows:

1. Introduction of Alternative Travel Modes
2. Core Commuter Information and Assistance
3. Financial Incentives
4. Supporting Infrastructure
5. TDM Program Support

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 service 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 meters away, within a two-minute walk of the site. A description of the existing transit services is provided in **Section 2.2**.

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, hospitals 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 recommended to provide bicycle spaces for general use to encourage cycling as a travel mode to and from the site. Information related to the use and availability of on-site bicycle facilities will be provided to residents, workers and visitors.

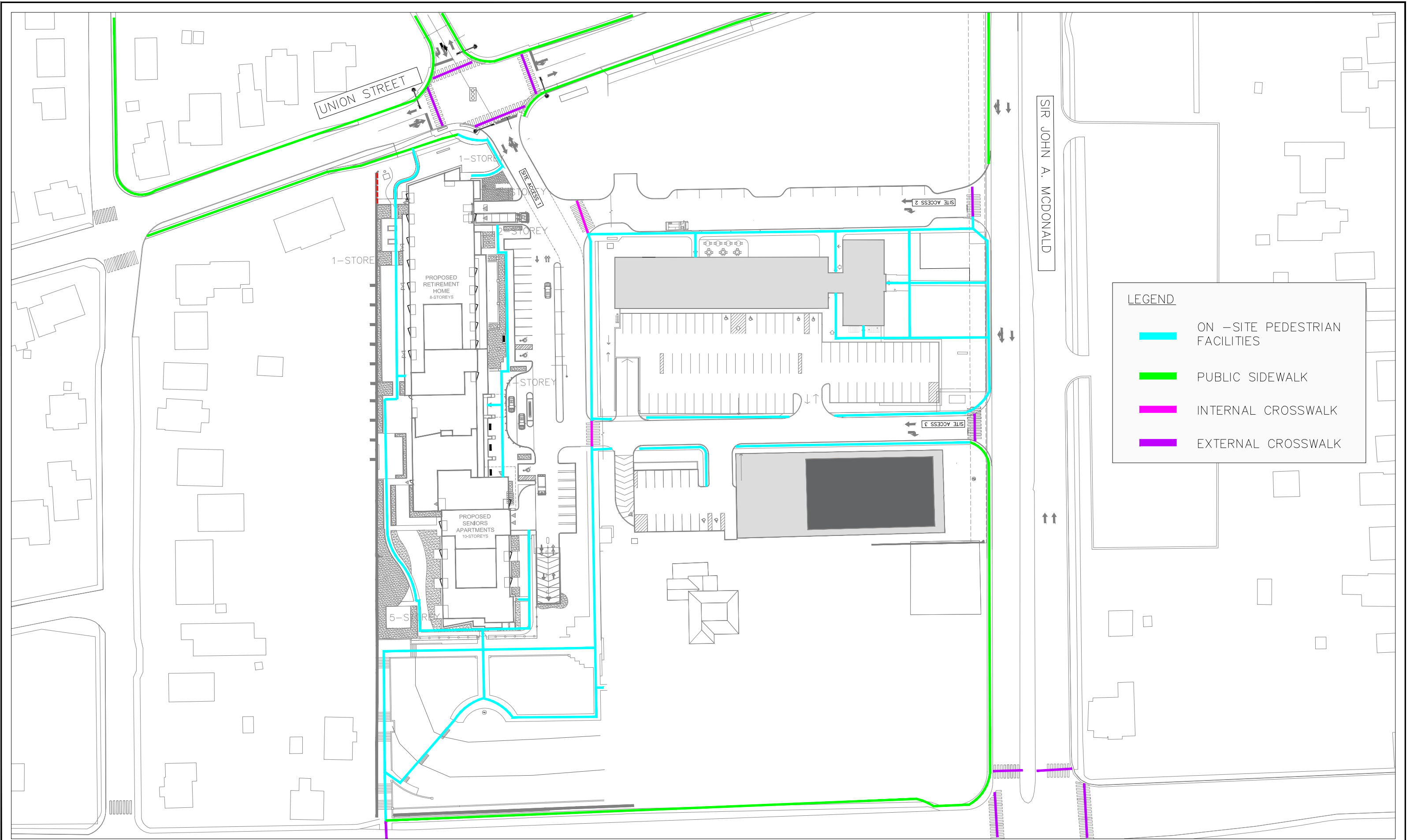
8.2.3 Pedestrian Facilities

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 connections from the site 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 provide safe access to bus stops located on Union Street and King Street West.

Internal pedestrian connections link each development block to existing boundary sidewalks on Union Street (north), Sir John A. Macdonald Boulevard (east), and King Street West (south), providing safe access to nearby bus stops on Union Street and King Street West.

As shown in **Figure 8-1**, internal pedestrian paths connect to the sidewalk on Union Street to the north, to the sidewalk along Sir John A. Macdonald Boulevard to the east via the two proposed site accesses, and to King Street West to the south via a pathway through Block 5.

G:\Projects\2026\101192- Union Park\03 Analysis\03 Site Review & Circulation\20260619 - VMD, Siteplan Review



MODIFIED: 7/18/2026 5:27 PM BY:nikita.chiduku

8.3 Financial Incentives

It is understood that one of the primary factors in behavioral change is monetary compensation. The purpose of providing financial incentives is to promote this change in behavior and incentivize commuters with trying out new alternate travel modes.

This financial support can come in the form of subsidizing travel such as transit passes or other future subsidies (such as rideshares). It is recommended that a pre-loaded transit passes, be provided for new employees to encourage the use of public transit and instill transit behavior in new users. The exact amount and provision of the pre-loaded transit passes is subject to the discretion of the applicant. The transit passes can be distributed at the TDM outreach event or provided to each tenant individually at the Owner's discretion.

Additionally, a program can be organized to provide financial incentives for carpool drivers on a per passenger basis to encourage more employees to participate. The exact amount and provision of the incentive is subject to the discretion of the applicant.

8.4 Supporting Infrastructure

Physical infrastructure is necessary to support transit and active transportation modes. The infrastructure should be developed and improved for both the site as well as the City. For the proposed development, some examples of supportive infrastructure include:

- ▶ Direct pedestrian connection to available transit
- ▶ Sheltered well maintained transit stops
- ▶ Excess of long-term and short-term bicycle parking
- ▶ Bicycle repair station
- ▶ Wayfinding signage for transit and active transportation paths
- ▶ Additional protected cycling facilities along travel corridors

8.5 TDM Program Support

The TDM programs can be further supported through the involvement with a Transportation Management Associations (TMA). TMA's can provide support to TDM programs through the provision of promotional material, coordination of programs and events, and recommendations on the appropriate measures to be implemented.

Facilitating the implementation and management of these TDM programs can be accomplished through the effective employment or assignment of a TDM coordinator. The role of the TDM coordinator is to implement, manage and monitor the TDM measures in place for development.

It is recommended that a TDM coordinator be assigned by the City to ensure the success of the TDM plan for the area.

In addition to implementation of these programs, it is important to monitor both the success and the opportunities for improvement for the TDM measures. It is recommended that a baseline survey be conducted at the full build-out of the development to identify employee travel behaviors. A follow-up monitoring survey should then be conducted every two years to measure the effectiveness of the TDM programs and provide recommendations for improvements. The provision of the monitoring survey, follow-up surveys and future TDM programs would be at the discretion of the TDM coordinator.

8.6 TDM Measures Summary

The City of Kingston will consider other recommendations beyond the requirements outlined in the checklist, as long as it meets the objectives and policies of the City. The TDM checklist is summarized in **Table 8-1**.

Table 8-1 TDM Checklist

TDM Measures	Responsibility
Marketing, information packages, and outreach programs	City of Kingston
Carpool ride-matching tool and carpool networking awareness campaign	City of Kingston
Subsidize travel (i.e transit passes or ride shares)	Applicant
Financial incentive for carpooling	Applicant
Active Transportation (Pedestrian and Cycling) connections including: - Accessible pedestrian/cycling circulation along internal roadways to sidewalks or bike lanes - Fine-Grid Active Transportation Network - Short-term and long-term bicycle parking - Illumination of pedestrian/cycling connections	Applicant / City of Kingston
Access to transit - Direct pedestrian connection to available transit - Sheltered well maintained stops	Applicant / City of Kingston
Monitoring program/report	Applicant / City of Kingston

9 FINDINGS AND RECOMMENDATIONS

TYLin prepared a traffic impact study for the proposed development in the City of Kingston, Ontario in accordance with City of Kingston's Transportation Impact Study Guidelines.

The key **findings** of the traffic impact study are:

The proposed commercial development is estimated to generate following trips in the weekday AM and PM peak hours and in the weekend mid-day peak hour:

- 205 vehicle trips during the weekday AM peak hour
- 271 vehicle trips during the weekday PM peak hour

The intersection capacity analysis indicates that all study area intersections will operate with sufficient capacity under 2028 and 2033 total traffic conditions, with no critical movements identified.

- The peak hour volumes generated by the proposed development can be accommodated on the boundary road network

Five bus transit routes serve stops located, on average, within a 2-minute walk of the site center, with connections provided through the surrounding active transportation network.

- ▶ Vehicle turning movement simulation indicates that all the anticipated design vehicles can ingress, egress, and circulate the site without conflict or encroachment.
- ▶ The proposed parking supply for Block 2 meets the anticipated demand

The key **recommendations** of the traffic impact study are:

- ▶ Traffic signals at Union Street West and Hargreaves Way are not warranted under future conditions, yet they were assumed to be based on correspondence with the City of Kingston
 - Pedestrian crossings should be implemented at the intersection
- ▶ TDM measures are recommended to reduce reliance on single occupancy vehicles and enhance active transportation and transit facilities

Appendix A

Terms of Reference

MEMORANDUM

DATE: June 15, 2026
TO: City of Kingston
FROM: Sary Hafez, TYLin
SUBJECT: **Union Park Mixed-Use Development City of Kingston, ON – Traffic Impact Study Update - Terms of Reference**

Introduction

TYLin has been retained by Siderius Developments Ltd. (hereinafter referred to as the 'Client') to prepare a new Transportation Impact Study (TIS) for the proposed mixed-use development, located at 40 Sir John A. MacDonald Boulevard in the City of Kingston, Ontario.

Based on the latest iteration of the Site Plan, the proposed development consists of approximately 823 residential units and 950 m² of commercial/ retail space. Site access is provided via one access on Union Street and two accesses on Sir John A. MacDonald Boulevard. The draft site plan is shown in **Attachment 1**. TYLin proposes the study area to include the following intersections, subject to confirmation from the City of Kingston:

- Hargreaves Way / Union Street (Queen's driveway connection) (un-signalized);
- Union Street & Sir John A. MacDonald (signalized); and
- Sir John A. MacDonald & King Street West (signalized)

1. Traffic Impact Study Terms of Reference

This Terms of Reference (ToR) outlines the proposed methodology and scope of work for the TIS of the mixed use development, in accordance with City of Kingston's Traffic Impact Study guidelines. It is respectfully submitted to the City of Kingston for review and approval.

- **Data Collection**

To support the preparation of the Transportation Impact Study, TYLin will commission individuals specialized in data collection to undertake the following data collection program:

- **Turning Movement Counts (TMCs):** Turning movement counts are requested from the City at all study area intersections, during the weekday AM and PM peak periods. Should the data not be available, TYLin will collect traffic data for:
 - Weekday counts, preferably Tuesday, Wednesday, or Thursday for the AM (6:00–10:00 AM) and PM (2:00–6:00 PM) peak periods

- **Horizon Years:**

TYLin proposes to evaluate the following analysis horizons in consultation with the City of Kingston:

- **Existing / Baseline year (2026):** Reflects turning-movement counts collected during the weekday AM and PM peak periods.
- **Future Total Build-Out year (2028):** Occupancy is currently assumed to occur in 2028 in a single-phase buildout and will be confirmed through discussions with the Client.
- **5-Year Post-Build-Out year (2033):** Represents traffic conditions approximately five years after full build-out of the proposed development.

- **Background Conditions:**

TYLin proposes the following background traffic assumptions in consultation with the City of Kingston:

- **Growth Projection:** Annual background growth rate of 1.8% will be applied to the roads.
- **Background Development:** TYLin has reviewed the City of Kingston's online Development Application Viewer and did not identify developments that would have an impact on the study area intersections. TYLin would like the City to confirm that no background developments should be incorporated in this study.
- **Planned Improvements:** TYLin would like to request confirmation on roadway and transit improvements within the development horizons, and that the City requires the study team to consider for future condition analysis.

- **Trip Generation:**

Development-generated trips will be estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 12th Edition.

- **Trip Distribution and Assignment:**

Site-generated trips will be distributed and assigned to the roadway network using the existing travel patterns based on count data, and engineering judgment.

- **Intersection capacity analysis:**

We propose to use Synchro/SimTraffic (v12) for traffic assessment for AM and PM peak hours, in accordance with the City of Kingston and will include standard measures of effectiveness such as level-of-service (LOS) review for the following scenarios:

- Existing (2026)
- Future Background Build-Out year (2028)
- Future Background 5-Year Post-Build-Out year (2033)
- Future Total Build-Out year (2028)
- Future Total 5-Year Post-Build-Out year (2033)
- **Mitigation Measures:** Roadway and intersection improvements will be tested based on TAC standards for receiving lanes, storage lanes, and signal phasing. The project team will also identify required lane configurations at reviewed intersections informed by the traffic analysis and include the turn lane warrant analysis when required.

- **Site Plan and Circulation Review**

- **Access Review:** TYLin will review the proposed site access to the boundary road network to confirm location, width, curb radii, corner clearance, and intersection spacing/angle meet applicable design standards.
- **Swept Path Analysis:** TYLin will conduct a vehicle swept path analyses (AutoTURN) at critical locations to confirm that design vehicles can access/egress the site.
- **Sightlines:** TYLin will determine sightlines at the right-in/right-out intersection to ensure compliance with applicable TAC guidelines.

- **Parking Review**

The required parking supply for the proposed development was reviewed in accordance with the City of Kingston's Zoning Parking By-Law 2022-62.

- **Transportation Demand Management (TDM):**

A TDM Plan will be updated to identify strategies that encourage sustainable travel and reduce single-occupant vehicle trips. The plan will incorporate realistic, site-appropriate modal split assumptions, informed City of Kingston planning policies.

2. Summary of Requested Information

- TYLin respectfully requests the following information from City of Kingston, to support completion of the TIS:
 - Confirmation of the above Terms of Reference;
 - Signal timing plan for the study area signalized intersections
 - Confirmation of growth rates
 - Information on background developments that are planned or approved in the vicinity of the site to be included in the TIS;
 - Information on planned roadway and transit improvements (new bus stops, change in transit routes) within the study area;

Thank you in advance for your attention to this matter. We look forward to your comments on the preceding scope of work and the requested information.

Should you have any questions, please do not hesitate to contact the undersigned.

Regards,



Sary Hafez
Traffic Engineering Planner
sary.hafez@tylin.com

SARY HAFEZ

From: Dickson,Mark <mdickson@cityofkingston.ca>
Sent: Monday, June 22, 2026 2:52 PM
To: SARY HAFEZ; Kish,Brett
Cc: Kassel Prince; William Sherwin; Kartik Narula
Subject: RE: Union Park Mixed-Use Development - TIS Terms of Reference

Categories: Approving agency Correspondence

Hi Sary,

Sorry for the delay on responding on this., The city has reviewed the terms of reference and has no additional comments at this time, applicant should be using a 1.8% growth rate as part of this plan and confirms the intersection being studied are sufficient. We would note the additional access points on SJA are currently noted as right in right out and the expectation is that remains the same as part of the revisions to site. No major changes to ROW is expected in this area expect for the signalization of the access to site for Union @ Hargraves Way. I believe timing plans have already been provided for both intersections requested.

Best Regards

Mark Dickson



Mark Dickson, P.Eng (he/him/his)

Manager, Transportation Systems

Transportation and Transit

City of Kingston

Office Location: 1211 John Counter Blvd,

216 Ontario Street Kingston, ON K7L 2Z3

613-546-4291 ext 3254

mdickson@cityofkingston.ca



The City of Kingston acknowledges that we are on the traditional homeland of the Anishinaabe, Haudenosaunee and the Huron-Wendat, and thanks these nations for their care and stewardship over this shared land.

From: SARY HAFEZ <sary.hafez@tylin.com>
Sent: June 19, 2026 11:24 AM
To: Kish,Brett <bkish@cityofkingston.ca>; Dickson,Mark <mdickson@cityofkingston.ca>
Cc: Kassel Prince <kassel.prince@tylin.com>; William Sherwin <william.sherwin@tylin.com>; Kartik Narula

<kartik.narula@tylin.com>

Subject: RE: Union Park Mixed-Use Development - TIS Terms of Reference

Caution: This email is from an external source. Please exercise caution when opening attachments or clicking links, especially from unknown senders.

Hi Brett and Mark,

Following up on our request for confirmation of the ToR for the proposed development located at 40 Sir John A. Macdonald Boulevard in the City of Kingston. We would appreciate receiving your response at your earliest convenience, as we are working under a very tight deadline to complete this study.

Appreciate your support in this.

Best Regards,

SARY HAFEZ

TRAFFIC ENGINEERING PLANNER

TYLin

From: SARY HAFEZ

Sent: Monday, June 15, 2026 3:38 PM

To: Kish,Brett <bkish@cityofkingston.ca>; Dickson,Mark <mdickson@cityofkingston.ca>

Cc: Kassel Prince <kassel.prince@tylin.com>; William Sherwin <william.sherwin@tylin.com>; Kartik Narula <kartik.narula@tylin.com>

Subject: Union Park Mixed-Use Development - TIS Terms of Reference

Hi Brett and Mark,

TYLin has been retained to prepare a traffic impact study for the proposed mixed-use development located at 40 Sir John A. MacDonald Boulevard, City of Kingston, Ontario. I have attached the terms of reference for this TIS for your review and approval.

Given the tight project timeline, we would appreciate your prompt response.

Thank you in advance and kindly confirm receipt of this email.

Best,

SARY HAFEZ

TRAFFIC ENGINEERING PLANNER

T +1 416.863.8029

TYLin

380 Wellington Street West

Toronto, ON M5V 1E3, Canada

TYLin.com



SARY HAFEZ

From: Dickson,Mark <mdickson@cityofkingston.ca>
Sent: Thursday, June 25, 2026 4:04 PM
To: SARY HAFEZ; Hollingsworth,Craig
Cc: Kassel Prince; William Sherwin; Kish,Brett
Subject: RE: Signal Timing Plan - City of Kingston

Categories: Approving agency Correspondence

Hi Sary,

The intersection is proposed to be signalized and is a requirement of 40 Sir John A Macdonald (a required mitigation strategy), it is a requirement for them to design and construct, in which they have designed. We do not have a timing plan for this intersection at this time so an optimized plan should be considered for analysis.

Regards

Mark



Mark Dickson, P.Eng (he/him/his)

Manager, Transportation Systems

Transportation and Transit

City of Kingston

Office Location: 1211 John Counter Blvd,

216 Ontario Street Kingston, ON K7L 2Z3

613-546-4291 ext 3254

mdickson@cityofkingston.ca



The City of Kingston acknowledges that we are on the traditional homeland of the Anishinaabe, Haudenosaunee and the Huron-Wendat, and thanks these nations for their care and stewardship over this shared land.

From: SARY HAFEZ <sary.hafez@tylin.com>
Sent: June 25, 2026 4:00 PM
To: Hollingsworth,Craig <chollingsworth@cityofkingston.ca>
Cc: Kassel Prince <kassel.prince@tylin.com>; William Sherwin <william.sherwin@tylin.com>; Kish,Brett <bkish@cityofkingston.ca>; Dickson,Mark <mdickson@cityofkingston.ca>
Subject: RE: Signal Timing Plan - City of Kingston

Caution: This email is from an external source. Please exercise caution when opening attachments or clicking links, especially from unknown senders.

Hi Craig,

Thank you for providing the signal timing plans.

It is our understanding that the intersection of Union Street and Hargraves Way is proposed to be signalized. Please confirm.

If confirmed, kindly provide the corresponding signal timing plan and the expected year of implementation.

Thank you,

SARY HAFEZ

TRAFFIC ENGINEERING PLANNER

TYLin

From: Hollingsworth, Craig <chollingsworth@cityofkingston.ca>

Sent: Friday, June 19, 2026 8:32 AM

To: SARY HAFEZ <sary.hafez@tylin.com>

Cc: Kassel Prince <kassel.prince@tylin.com>; William Sherwin <william.sherwin@tylin.com>; Kish, Brett <bkish@cityofkingston.ca>; Dickson, Mark <mdickson@cityofkingston.ca>

Subject: RE: Signal Timing Plan - City of Kingston

Hi Sary,

Attached are the signal timing sheets as requested.

Thank you,



Craig Hollingsworth (he/him/his)

Engineering Technologist - Transportation
Systems
Transportation Services

City of Kingston

Office Location: 1211 John Counter Blvd,

Mailing Address: 216 Ontario Street Kingston,
ON K7L 2Z3

613-546-4291 ext. 3141

chollingsworth@cityofkingston.ca

The City of Kingston acknowledges that we are on the traditional homeland of the Anishinaabe, Haudenosaunee and the Huron-Wendat, and thanks these nations for their care and stewardship over this shared land.

From: SARY HAFEZ <sary.hafez@tylin.com>

Sent: Thursday, June 18, 2026 4:24 PM

To: Hollingsworth,Craig <chollingsworth@cityofkingston.ca>

Cc: Kassel Prince <kassel.prince@tylin.com>; William Sherwin <william.sherwin@tylin.com>; Kish,Brett <bkish@cityofkingston.ca>; Dickson,Mark <mdickson@cityofkingston.ca>

Subject: Signal Timing Plan - City of Kingston

Caution: This email is from an external source. Please exercise caution when opening attachments or clicking links, especially from unknown senders.

Hi Craig,

TYLin has been retained to prepare a Transportation Impact Study (TIS) in the City of Kingston. Can you please provide the signal timing sheets for the following intersections:

- Union Street & Sir John A. Macdonald Boulevard
- Sir John A. Macdonald Boulevard & King Street West

Thank you in advance for your assistance

SARY HAFEZ

TRAFFIC ENGINEERING PLANNER

T +1 416.863.8029

TYLin

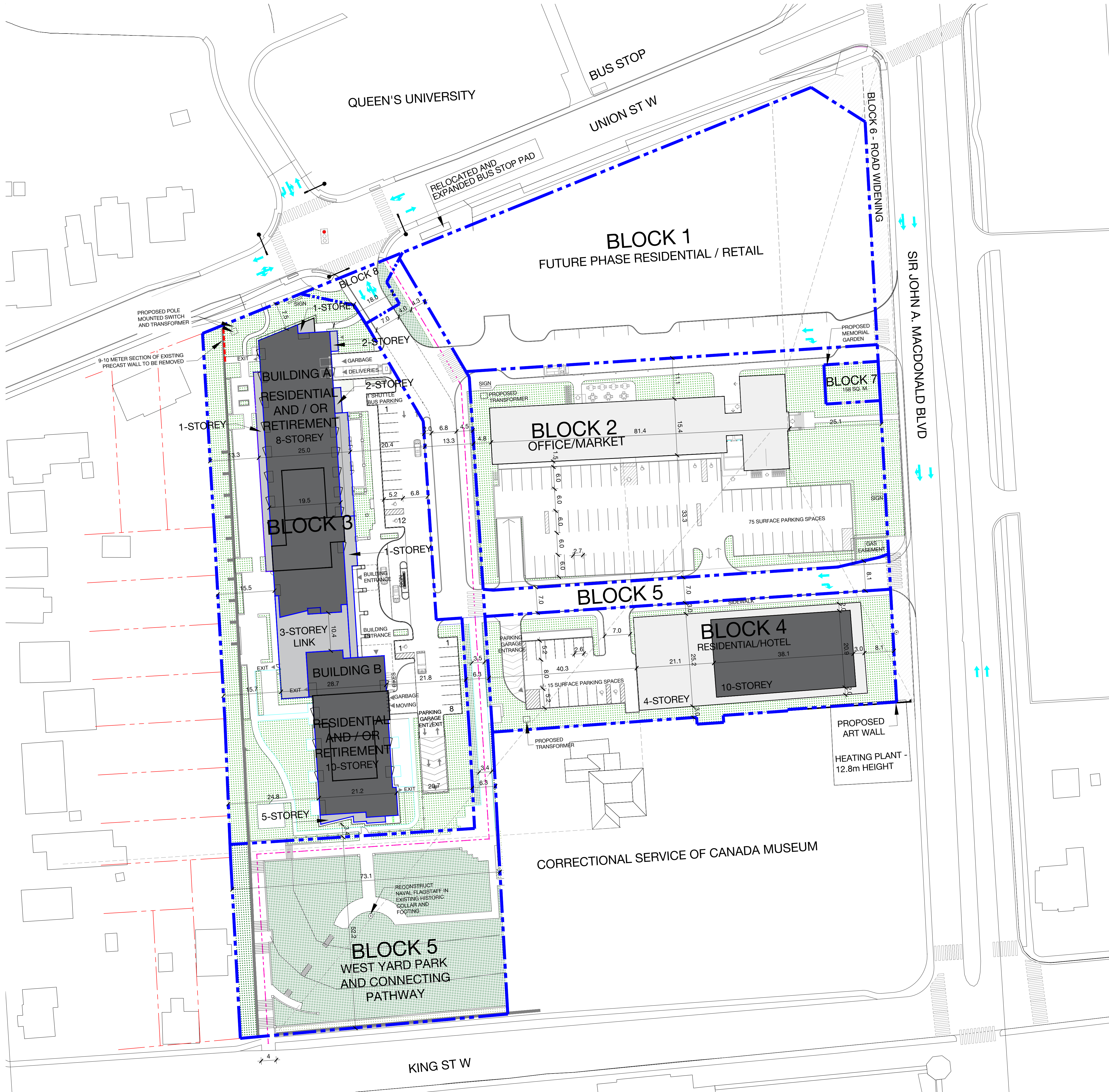
380 Wellington Street West

Toronto, ON M5V 1E3, Canada

TYLin.com |    

Appendix B

Site Plan



SITE STATISTICS

SITE AREA	
Total Site Area:	32,840 m ² (3.28 ha)
TOTAL GFA	
*Residential GFA:	33,095 m ² (356,232 sf)
*Office GFA:	2,651 m ² (28,536 sf)
*Market GFA:	1,068 m ² (11,494 sf)

DEVELOPMENT BLOCKS

BLOCK 1 (516-518 UNION ST.) -
FUTURE PHASE RESIDENTIAL/RETAIL
Lot Area: 6,645 m² (71,526 sf)

BLOCK 2 (40 SIR JOHN A MACDONALD BLVD.) -
MARKET / OFFICE
Lot Area: 6,480 m² (69,750 sf)
Total Market GFA: 1,068 m² (11,494 sf)
Total Office GFA: 2,651 m² (28,536 sf)
Total GFA: 3,719 m² (40,030 sf)
Ground Floor Area: 1,068 m² (11,494 sf)
Vehicle Parking: ± 135 spaces (± 75 surface, ± 60 underground)

BLOCK 3 (542-544 UNION ST.) -
SENIORS HOUSING CONTINUUM OF CARE / RESIDENTIAL
Lot Area: 8,660 m² (93,216 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: ± 157 spaces (± 22 surface, ± 135 underground)
Bicycle Parking: 12 spaces
Bus Parking: 1 space

BLOCK 4 (30 SIR JOHN A MACDONALD BLVD) -
RESIDENTIAL / HOTEL
Lot Area: 3,465 m² (37,297 sf)
Residential/Hotel GFA: 11,040 m² (118,834 sf)
Total GFA: 11,040 m² (118,834 sf)
Total Units: 168
Ground Floor Area: 1,775 m² (19,106 sf)
Vehicle Parking: ± 115 spaces (± 15 surface, ± 100 underground)

BLOCK 5 - WEST YARD PARK AND CONNECTING PATHWAY
Lot Area: 6,300 m² (67,813 sf)

BLOCK 6 - ROAD WIDENING
Lot Area: 916 m² (9,864 sf)

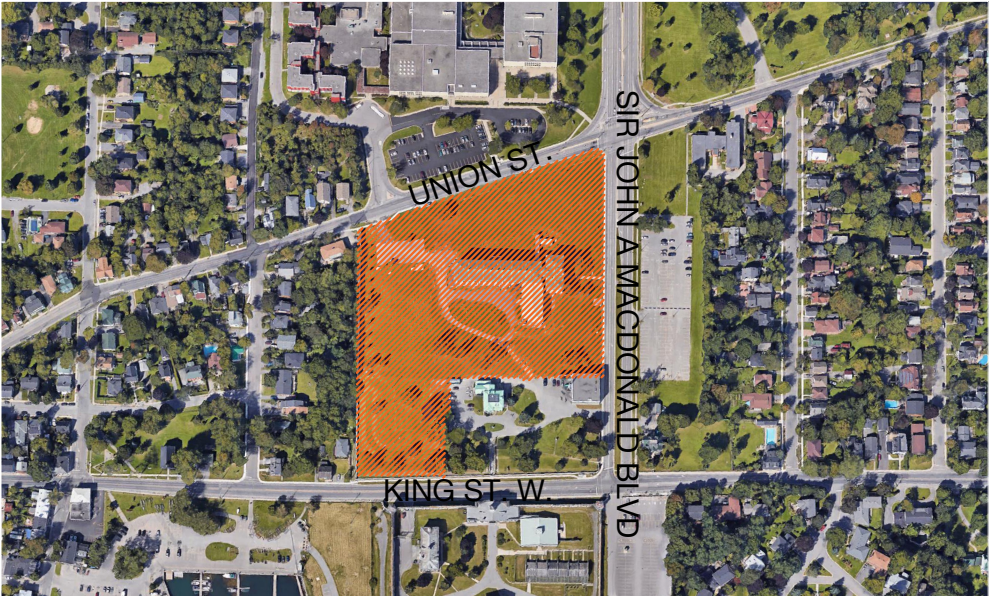
BLOCK 7 - PARKLAND
Lot Area: 158 m² (1,701 sf)

BLOCK 8 - ROAD WIDENING
Lot Area: 216 m² (2,325sf)

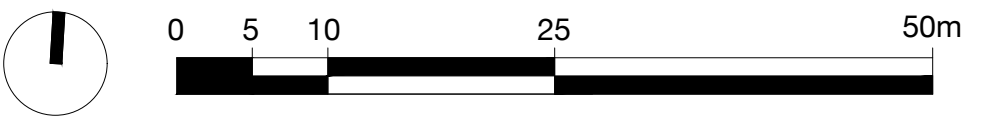
TOTAL # RESIDENTIAL UNITS: 383
TOTAL # VEHICLE PARKING SPACES: ± 407
- SURFACE: ± 112
- UNDERGROUND: ± 295

- NOTES
- For the purpose of this plan, Block 1 is conceptual and will be subject to future planning applications.
 - Assumes 85% efficiency, 55.7sm/unit
 - This plan is based on a survey.

UNION PARK
KINGSTON
CONCEPT PLAN



LEGEND	
	PODIUM
	MID-RISE BUILDING
	LANDSCAPE/ PARK
	WESTYARD PARK AND CONNECTION PATHWAY
	HIGH-QUALITY HARDSCAPING
	PROPOSED SEVERANCE LINE
	PROTECTED VIEW PLANE
	PUBLIC CONNECTION PATHWAY
	PROPOSED PEDESTRIAN CROSSING
	ACCESSIBLE PARKING STALL
	SIGNALIZED INTERSECTION
	SIGNAGE
	BIKE RACKS
	EXISTING WEST LIMESTONE AND PRISON WALL



34	REVISED PLAN	2026.07.06	JC
33	REVISED PLAN	2026.05.26	ET
32	REVISED PLAN	2023.03.17	JC
No.	REVISION	DATE	

CLIENT
SIDERIUS DEVELOPMENTS LTD.
FOTENN
Planning + Design

396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
613.730.5709 www.fotenn.com

DESIGNED	JC
REVIEWED	ET
DATE	2026.07.06

Appendix C

Turning Movement Count & Signal Timing Plan



MORNING PEAK DIAGRAM

Specified Period

From: 06:00:00

To: 10:00:00

One Hour Peak

From: 07:45:00

To: 08:45:00

Municipality: Kingston

Site #: 2608200001

Intersection: Union St & Hargreaves Way

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Not Signalized ****

Major Road: Union St runs E/W

North Leg Total: 111

North Entering: 26

North Peds: 22

Peds Cross:

West Exiting: 205

Buses	Cyclists	Trucks	Cars	Totals
5	6	6	188	205

	Right	Thru	Left	U-Turn	Total
Cyclists	0	0	0	0	0
Buses	0	0	0	0	0
Trucks	0	0	3	0	3
Cars	6	0	17	0	23
Totals	6	0	20	0	26

NORTH
Hargreaves Way

East Leg Total: 546

East Entering: 265

East Peds: 8

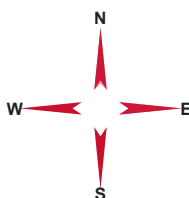
Peds Cross:

North Exiting: 85

Buses	Cyclists	Trucks	Cars	Totals
0	1	4	80	85

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	1	0	0	18	19
Thru	6	5	4	246	261
Right	0	0	0	0	0
Totals	7	5	4	264	280

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
U-Turn	66	62	4	0	0	Right
Left	199	182	6	5	6	Thru
Thru	0	0	0	0	0	Left
Right	0	0	0	0	0	U-Turn
Totals	265	244	10	5	6	

EAST
Union St

West Leg Total: 485

West Entering: 280

West Peds: 2

Peds Cross:

East Exiting: 281

Buses	Cyclists	Trucks	Cars	Totals
5	6	7	263	281

Pedestrian Summary (AM Peak):

N Peds: 22

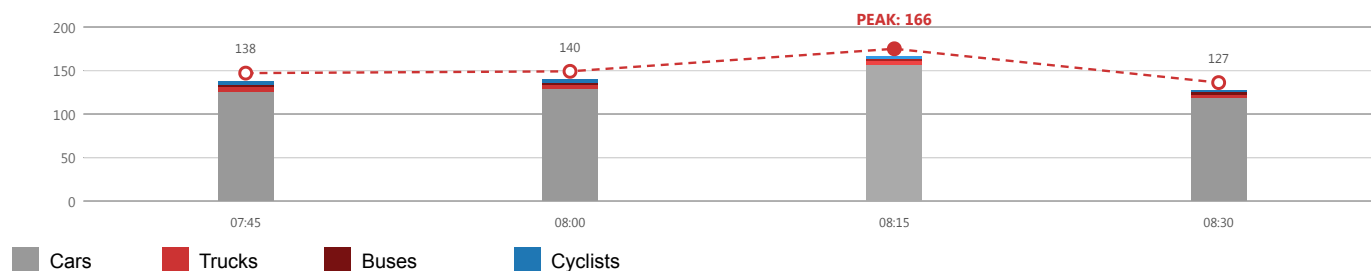
E Peds: 8

S Peds: —

W Peds: 2

Total Peds: 32

Peak-Hour Class Distribution (All Approaches)





MORNING PEAK DISTRIBUTION BY TOTAL APPROACH %

Specified Period
From: 06:00:00
To: 10:00:00

One Hour Peak
From: 07:45:00
To: 08:45:00

Municipality: Kingston
Site #: 2608200001
Intersection: Union St & Hargreaves Way
Count date: 16-Jun-2026 Tuesday

Weather conditions:
Prepared by:
Comments:

**** Not Signalized ****

Major Road: Union St runs E/W

North Leg Total: 111
North Entering: 26
North Peds: 22
Peds Cross:

West Exiting: 205

Buses	Cyclists	Trucks	Cars	Totals
2.4%	2.9%	2.9%	91.7%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	0%	0%	0%	0%	0%
Buses	0%	0%	0%	0%	0%
Trucks	0%	0%	11.5%	0%	11.5%
Cars	23.1%	0%	65.4%	0%	88.5%
Totals	23.1%	0%	76.9%	0%	100%

NORTH
Hargreaves Way

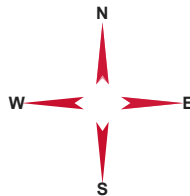
East Leg Total: 546
East Entering: 265
East Peds: 8
Peds Cross:

North Exiting: 85

Buses	Cyclists	Trucks	Cars	Totals
0%	1.2%	4.7%	94.1%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0.4%	0%	0%	6.4%	6.8%
Thru	2.1%	1.8%	1.4%	87.9%	93.2%
Right	0%	0%	0%	0%	0%
Totals	2.5%	1.8%	1.4%	94.3%	100%

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
	24.9%	23.4%	1.5%	0%	0%	Right
	75.1%	68.7%	2.3%	1.9%	2.3%	Thru
	0%	0%	0%	0%	0%	Left
	0%	0%	0%	0%	0%	U-Turn
Totals	100%	92.1%	3.8%	1.9%	2.3%	

EAST
Union St

West Leg Total: 485
West Entering: 280
West Peds: 2
Peds Cross:

East Exiting: 281

Buses	Cyclists	Trucks	Cars	Totals
1.8%	2.1%	2.5%	93.6%	100%

Pedestrian Summary (AM Peak): N Peds: 68.8% E Peds: 25.0% S Peds: — W Peds: 6.2% **Total Peds: 100%**

**AM PEAK SUMMARY****Specified Period**
From: 06:00:00
To: 10:00:00**One Hour Peak**
From: 07:45:00
To: 08:45:00**Intersection:** Union St & Hargreaves Way **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (AM Peak)**

Start Time	Right	Thru	Left	U-Turn	Total	Peds
07:45	0	0	1	0	1	3
08:00	1	0	6	0	7	4
08:15	4	0	7	0	11	6
08:30	1	0	6	0	7	9
N Total	6	0	20	0	26	22
PHF	0.38	--	0.71	--	0.59	
Individual Movement (%)						
Total	100%	--	100%	--	100%	
Cars	100%	--	85.0%	--	88.5%	
Trucks	0%	--	15.0%	--	11.5%	
Buses	0%	--	0%	--	0%	
Cyclists	0%	--	0%	--	0%	

South Approach (No Approach)

Start Time	U-Turn	Left	Thru	Right	Total	Peds
N/A	No approach					

West Approach (AM Peak)

Start Time	U-Turn	Left	Thru	Right	Total	Peds
07:45	0	3	75	0	78	1
08:00	0	6	62	0	68	0
08:15	0	9	65	0	74	0
08:30	0	1	59	0	60	1
W Total	0	19	261	0	280	2
PHF	--	0.53	0.87	--	0.90	
Individual Movement (%)						
Total	--	100%	100%	--	100%	
Cars	--	94.7%	94.3%	--	94.3%	
Trucks	--	0%	1.5%	--	1.4%	
Buses	--	0%	1.9%	--	1.8%	
Cyclists	--	5.3%	2.3%	--	2.5%	

East Approach (AM Peak)

Start Time	U-Turn	Left	Thru	Right	Total	Peds
07:45	0	0	52	7	59	0
08:00	0	0	48	17	65	1
08:15	0	0	50	31	81	4
08:30	0	0	49	11	60	3
E Total	0	0	199	66	265	8
PHF	--	--	0.96	0.53	0.82	
Individual Movement (%)						
Total	--	--	100%	100%	100%	
Cars	--	--	91.5%	93.9%	92.1%	
Trucks	--	--	3.0%	6.1%	3.8%	
Buses	--	--	2.5%	0%	1.9%	
Cyclists	--	--	3.0%	0%	2.3%	

North/South Combined Approach Volume:26

East/West Combined Approach Volume:545

Calculated Values for Traffic Crossing Major Street

15-Min Start	07:45	08:00	08:15	08:30
Crossing Values	138	140	166	127

Intersection Totals (All Approaches)**PHF: 0.86**

	07:45	08:00	08:15	08:30	Total
Total	138	140	166	127	571
Cars	126 (91.3%)	129 (92.1%)	157 (94.6%)	119 (93.7%)	531 (93.0%)
Trucks	5 (3.6%)	5 (3.6%)	4 (2.4%)	3 (2.4%)	17 (3.0%)
Buses	3 (2.2%)	2 (1.4%)	2 (1.2%)	3 (2.4%)	10 (1.8%)
Cyclists	4 (2.9%)	4 (2.9%)	3 (1.8%)	2 (1.6%)	13 (2.3%)



AFTERNOON PEAK DIAGRAM

Specified Period
From: 14:00:00
To: 18:00:00

One Hour Peak
From: 15:30:00
To: 16:30:00

Municipality: Kingston
Site #: 2608200001
Intersection: Union St & Hargreaves Way
Count date: 16-Jun-2026 Tuesday

Weather conditions:
Prepared by:
Comments:

**** Not Signalized ****

Major Road: Union St runs E/W

North Leg Total: 134
North Entering: 95
North Peds: 16
Peds Cross:

West Exiting: 334

Buses	Cyclists	Trucks	Cars	Totals
3	16	3	312	334

	Right	Thru	Left	U-Turn	Total
Cyclists	6	0	2	0	8
Buses	0	0	0	0	0
Trucks	0	0	1	0	1
Cars	22	0	64	0	86
Totals	28	0	67	0	95

NORTH
Hargreaves Way

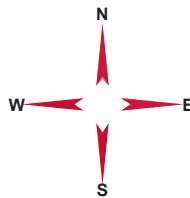
East Leg Total: 603
East Entering: 333
East Peds: 1
Peds Cross:

North Exiting: 39

Buses	Cyclists	Trucks	Cars	Totals
0	2	0	37	39

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	0	0	0	12	12
Thru	3	4	3	193	203
Right	0	0	0	0	0
Totals	3	4	3	205	215

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
U-Turn	27	25	0	0	2	Right
Left	306	290	3	3	10	Thru
Thru	0	0	0	0	0	Left
Right	0	0	0	0	0	U-Turn
Totals	333	315	3	3	12	

EAST
Union St

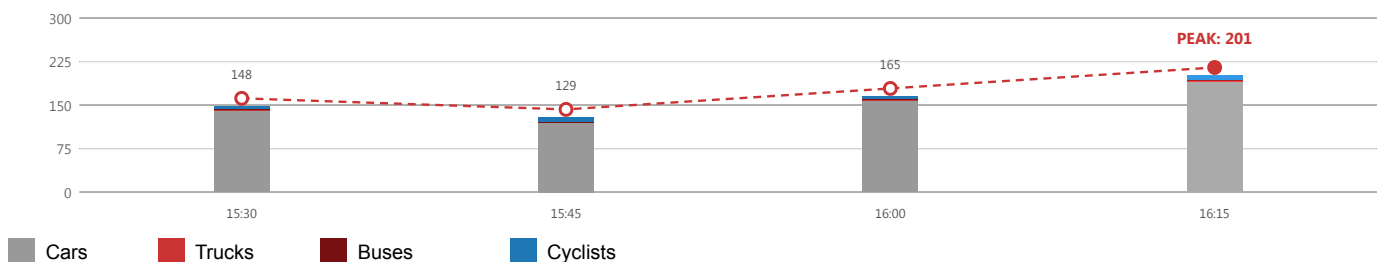
West Leg Total: 549
West Entering: 215
West Peds: 4
Peds Cross:

East Exiting: 270

Buses	Cyclists	Trucks	Cars	Totals
4	5	4	257	270

Pedestrian Summary (PM Peak): N Peds: 16 E Peds: 1 S Peds: — W Peds: 4 **Total Peds: 21**

Peak-Hour Class Distribution (All Approaches)





AFTERNOON PEAK DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 14:00:00
To: 18:00:00

One Hour Peak

From: 15:30:00
To: 16:30:00

Municipality: Kingston
Site #: 2608200001
Intersection: Union St & Hargreaves Way
Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Not Signalized ****

Major Road: Union St runs E/W

North Leg Total: 134

North Entering: 95

North Peds: 16

Peds Cross:

West Exiting: 334

Buses	Cyclists	Trucks	Cars	Totals
0.9%	4.8%	0.9%	93.4%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	6.3%	0%	2.1%	0%	8.4%
Buses	0%	0%	0%	0%	0%
Trucks	0%	0%	1.1%	0%	1.1%
Cars	23.2%	0%	67.4%	0%	90.5%
Totals	29.5%	0%	70.5%	0%	100%



East Leg Total: 603

East Entering: 333

East Peds: 1

Peds Cross:

North Exiting: 39

Buses	Cyclists	Trucks	Cars	Totals
0%	5.1%	0%	94.9%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0%	0%	0%	5.6%	5.6%
Thru	1.4%	1.9%	1.4%	89.8%	94.4%
Right	0%	0%	0%	0%	0%
Totals	1.4%	1.9%	1.4%	95.3%	100%

**WEST
Union St**

	Totals	Cars	Trucks	Buses	Cyclists
U-Turn	8.1%	7.5%	0%	0%	0.6%
Left	91.9%	87.1%	0.9%	0.9%	3.0%
Thru	0%	0%	0%	0%	0%
Right	0%	0%	0%	0%	0%
Totals	100%	94.6%	0.9%	0.9%	3.6%

**EAST
Union St**

West Leg Total: 549

West Entering: 215

West Peds: 4

Peds Cross:

East Exiting: 270

Buses	Cyclists	Trucks	Cars	Totals
1.5%	1.9%	1.5%	95.2%	100%

Pedestrian Summary (PM Peak):

N Peds: 76.2%

E Peds: 4.8%

S Peds: —

W Peds: 19.0%

Total Peds: 100%

**PM PEAK SUMMARY****Specified Period**From: 14:00:00
To: 18:00:00**One Hour Peak**From: 15:30:00
To: 16:30:00**Intersection:** Union St & Hargreaves Way **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (PM Peak)**

Start Time	Right	Thru	Left	U-Turn	Total	Peds
15:30	3	0	14	0	17	1
15:45	2	0	6	0	8	6
16:00	8	0	16	0	24	3
16:15	15	0	31	0	46	6
N Total	28	0	67	0	95	16
PHF	0.47	--	0.54	--	0.52	
Individual Movement (%)						
Total	100%	--	100%	--	100%	
Cars	78.6%	--	95.5%	--	90.5%	
Trucks	0%	--	1.5%	--	1.1%	
Buses	0%	--	0%	--	0%	
Cyclists	21.4%	--	3.0%	--	8.4%	

South Approach (No Approach)

Start Time	U-Turn	Left	Thru	Right	Total	Peds
N/A	No approach					

West Approach (PM Peak)

Start Time	U-Turn	Left	Thru	Right	Total	Peds
15:30	0	3	57	0	60	0
15:45	0	2	41	0	43	0
16:00	0	1	56	0	57	2
16:15	0	6	49	0	55	2
W Total	0	12	203	0	215	4
PHF	--	0.50	0.89	--	0.90	
Individual Movement (%)						
Total	--	100%	100%	--	100%	
Cars	--	100%	95.1%	--	95.3%	
Trucks	--	0%	1.5%	--	1.4%	
Buses	--	0%	2.0%	--	1.9%	
Cyclists	--	0%	1.5%	--	1.4%	

East Approach (PM Peak)

Start Time	U-Turn	Left	Thru	Right	Total	Peds
15:30	0	0	64	7	71	0
15:45	0	0	72	6	78	0
16:00	0	0	77	7	84	0
16:15	0	0	93	7	100	1
E Total	0	0	306	27	333	1
PHF	--	--	0.82	0.96	0.83	
Individual Movement (%)						
Total	--	--	100%	100%	100%	
Cars	--	--	94.8%	92.6%	94.6%	
Trucks	--	--	1.0%	0%	0.9%	
Buses	--	--	1.0%	0%	0.9%	
Cyclists	--	--	3.3%	7.4%	3.6%	

North/South Combined Approach Volume:**95**East/West Combined Approach Volume:**548****Calculated Values for Traffic Crossing Major Street**

15-Min Start	15:30	15:45	16:00	16:15
Crossing Values	148	129	165	201

Intersection Totals (All Approaches)**PHF: 0.80**

	15:30	15:45	16:00	16:15	Total
Total	148	129	165	201	643
Cars	139 (93.9%)	119 (92.2%)	158 (95.8%)	190 (94.5%)	606 (94.2%)
Trucks	3 (2.0%)	1 (0.8%)	1 (0.6%)	2 (1.0%)	7 (1.1%)
Buses	2 (1.4%)	2 (1.6%)	2 (1.2%)	1 (0.5%)	7 (1.1%)
Cyclists	4 (2.7%)	7 (5.4%)	4 (2.4%)	8 (4.0%)	23 (3.6%)



TOTAL COUNT DIAGRAM

Specified Period

From: 06:00:00

To: 18:15:00

Municipality: Kingston

Site #: 2608200001

Intersection: Union St & Hargreaves Way

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Not Signalized ****

Major Road: Union St runs E/W

North Leg Total: 445

North Entering: 202

North Peds: 92

Peds Cross:

West Exiting: 1477

Buses	Cyclists	Trucks	Cars	Totals
40	40	29	1368	1477

	Right	Thru	Left	U-Turn	Total
Cyclists	6	0	2	0	8
Buses	0	0	0	0	0
Trucks	1	0	8	0	9
Cars	47	0	138	0	185
Totals	54	0	148	0	202

NORTH
Hargreaves Way

East Leg Total: 3003

East Entering: 1607

East Peds: 24

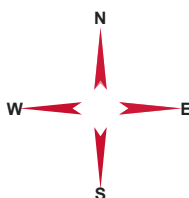
Peds Cross:

North Exiting: 243

Buses	Cyclists	Trucks	Cars	Totals
0	3	11	229	243

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	2	2
Left	1	0	1	60	62
Thru	31	39	18	1160	1248
Right	0	0	0	0	0
Totals	32	39	19	1222	1312

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
U-Turn	181	169	10	0	2	Right
Left	1423	1321	28	40	34	Thru
Thru	0	0	0	0	0	Left
Right	3	3	0	0	0	U-Turn
Totals	1607	1493	38	40	36	

EAST
Union St

West Leg Total: 2789

West Entering: 1312

West Peds: 15

Peds Cross:

East Exiting: 1396

Buses	Cyclists	Trucks	Cars	Totals
39	33	26	1298	1396

Pedestrian Summary (Total Count):

N Peds: 92

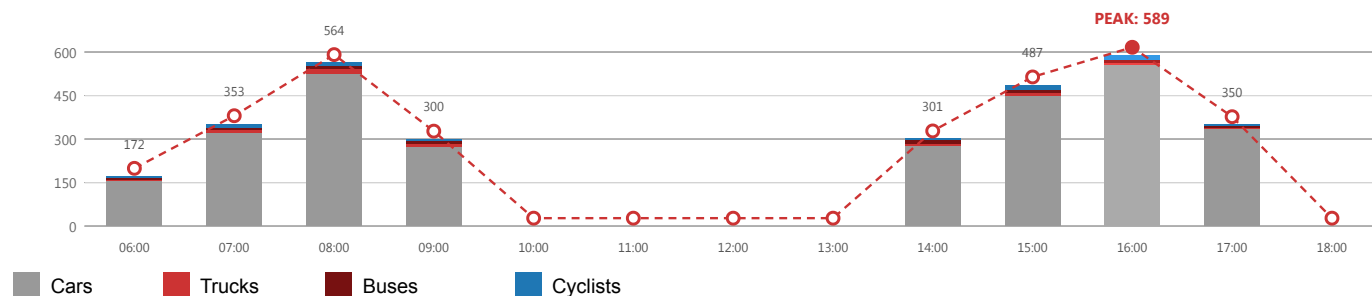
E Peds: 24

S Peds: —

W Peds: 15

Total Peds: 131

Total Count Class Distribution (All Approaches)





TOTAL COUNT DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 06:00:00
To: 18:15:00

Municipality: Kingston
Site #: 2608200001
Intersection: Union St & Hargreaves Way
Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Not Signalized ****

Major Road: Union St runs E/W

North Leg Total: 445
North Entering: 202
North Peds: 92
Peds Cross:

West Exiting: 1477

Buses	Cyclists	Trucks	Cars	Totals
2.7%	2.7%	2.0%	92.6%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	3.0%	0%	1.0%	0%	4.0%
Buses	0%	0%	0%	0%	0%
Trucks	0.5%	0%	4.0%	0%	4.5%
Cars	23.3%	0%	68.3%	0%	91.6%
Totals	26.7%	0%	73.3%	0%	100%

NORTH
Hargreaves Way

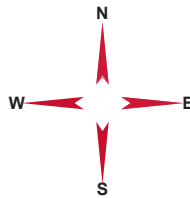
East Leg Total: 3003
East Entering: 1607
East Peds: 24
Peds Cross:

North Exiting: 243

Buses	Cyclists	Trucks	Cars	Totals
0%	1.2%	4.5%	94.2%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0.2%	0.2%
Left	0.1%	0%	0.1%	4.6%	4.7%
Thru	2.4%	3.0%	1.4%	88.4%	95.1%
Right	0%	0%	0%	0%	0%
	2.4%	3.0%	1.4%	93.1%	100%

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
	11.3%	10.5%	0.6%	0%	0.1%	Right
	88.6%	82.2%	1.7%	2.5%	2.1%	Thru
	0%	0%	0%	0%	0%	Left
	0.2%	0.2%	0%	0%	0%	U-Turn
	100%	92.9%	2.4%	2.5%	2.2%	

EAST
Union St

West Leg Total: 2789
West Entering: 1312
West Peds: 15
Peds Cross:

East Exiting: 1396

Buses	Cyclists	Trucks	Cars	Totals
2.8%	2.4%	1.9%	93.0%	100%

Pedestrian Summary (Total Count): N Peds: 70.2% E Peds: 18.3% S Peds: — W Peds: 11.5% **Total Peds: 100%**



TOTAL COUNT SUMMARY

Specified Period
From: 06:00:00
To: 18:15:00

Total Count

Intersection: Union St & Hargreaves Way **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston

North Approach (Total Count)

Start Time	↵ Right	↓ Thru	↶ Left	↷ U-Turn	Total	Peds
06:00	2	0	1	0	3	5
07:00	1	0	6	0	7	9
08:00	6	0	24	0	30	21
09:00	3	0	8	0	11	7
14:00	4	0	10	0	14	13
15:00	7	0	26	0	33	12
16:00	26	0	56	0	82	14
17:00	5	0	17	0	22	11
N Total	54	0	148	0	202	92
Individual Movement (%)						
Total	100%	--	100%	--	100%	
Cars	87.0%	--	93.2%	--	91.6%	
Trucks	1.9%	--	5.4%	--	4.5%	
Buses	0%	--	0%	--	0%	
Cyclists	11.1%	--	1.4%	--	4.0%	

South Approach (No Approach)

Start Time	↶ U-Turn	↵ Left	↑ Thru	↷ Right	Total	Peds
N/A	No approach					

West Approach (Total Count)

Start Time	↷ U-Turn	↵ Left	→ Thru	↶ Right	Total	Peds
06:00	0	3	71	0	74	0
07:00	1	3	211	0	215	4
08:00	0	16	254	0	270	2
09:00	0	4	132	0	136	0
14:00	0	5	108	0	113	1
15:00	0	7	175	0	182	0
16:00	0	10	182	0	192	4
17:00	1	14	115	0	130	4
W Total	2	62	1248	0	1312	15
Individual Movement (%)						
Total	100%	100%	100%	--	100%	
Cars	100%	96.8%	92.9%	--	93.1%	
Trucks	0%	1.6%	1.4%	--	1.4%	
Buses	0%	0%	3.1%	--	3.0%	
Cyclists	0%	1.6%	2.5%	--	2.4%	

East Approach (Total Count)

Start Time	↶ U-Turn	↵ Left	← Thru	↷ Right	Total	Peds
06:00	0	0	87	8	95	1
07:00	0	0	124	8	132	1
08:00	0	0	193	71	264	9
09:00	1	0	139	14	154	0
14:00	0	0	150	24	174	7
15:00	2	0	252	20	274	0
16:00	0	0	296	19	315	4
17:00	0	0	182	17	199	2
E Total	3	0	1423	181	1607	24
Individual Movement (%)						
Total	100%	--	100%	100%	100%	
Cars	100%	--	92.8%	93.4%	92.9%	
Trucks	0%	--	2.0%	5.5%	2.4%	
Buses	0%	--	2.8%	0%	2.5%	
Cyclists	0%	--	2.4%	1.1%	2.2%	

North/South Combined Approach Volume:**202**

East/West Combined Approach Volume:**2919**

Calculated Values for Traffic Crossing Major Street

15-Min Start	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
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Crossing Values	172	354	564	301	0	0	0	0	301	489	589	351	0
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Intersection Totals (All Approaches)					
Time	Total	Cars	Trucks	Buses	Cyclists
Total	3121	2900 (92.9%)	66 (2.1%)	79 (2.5%)	76 (2.4%)



MORNING PEAK DIAGRAM

Specified Period
From: 06:00:00
To: 10:00:00

One Hour Peak
From: 07:45:00
To: 08:45:00

Municipality: Kingston
Site #: 2608200002
Intersection: Sir John A MacDonald Blvd & Union St
Count date: 16-Jun-2026 Tuesday

Weather conditions:
Prepared by:
Comments:

**** Signalized Intersection ****

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

North Leg Total: 1060
North Entering: 765
North Peds: 85
Peds Cross:

West Exiting: 270

Buses	Cyclists	Trucks	Cars	Totals
5	9	10	246	270

	Right	Thru	Left	U-Turn	Total
Cyclists	0	0	0	0	0
Buses	0	2	1	0	3
Trucks	4	4	3	0	11
Cars	129	227	395	0	751
Totals	133	233	399	0	765



Sir John A MacDonald Blvd

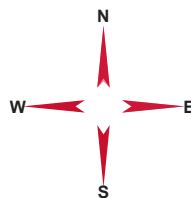
East Leg Total: 885
East Entering: 260
East Peds: 15
Peds Cross:

North Exiting: 295

Buses	Cyclists	Trucks	Cars	Totals
1	1	9	284	295

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	0	0	2	65	67
Thru	6	5	5	193	209
Right	0	0	0	5	5
Totals	6	5	7	263	281

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
Right	118	113	3	1	1	Right
Thru	131	111	6	5	9	Thru
Left	11	11	0	0	0	Left
U-Turn	0	0	0	0	0	U-Turn
Totals	260	235	9	6	10	

EAST
Union St

South Exiting: 249

Buses	Cyclists	Trucks	Cars	Totals
2	0	4	243	249

West Leg Total: 551
West Entering: 281
West Peds: 44
Peds Cross:

	U-Turn	Left	Thru	Right	Total
Totals	0	6	110	17	133
Cars	0	6	106	15	127
Trucks	0	0	4	1	5
Buses	0	0	0	0	0
Cyclists	0	0	0	1	1

SOUTH
Sir John A MacDonald Blvd

East Exiting: 625

Buses	Cyclists	Trucks	Cars	Totals
6	7	9	603	625

South Leg Total: 382
South Entering: 133
South Peds: 18
Peds Cross:

Pedestrian Summary (AM Peak):

N Peds: 85

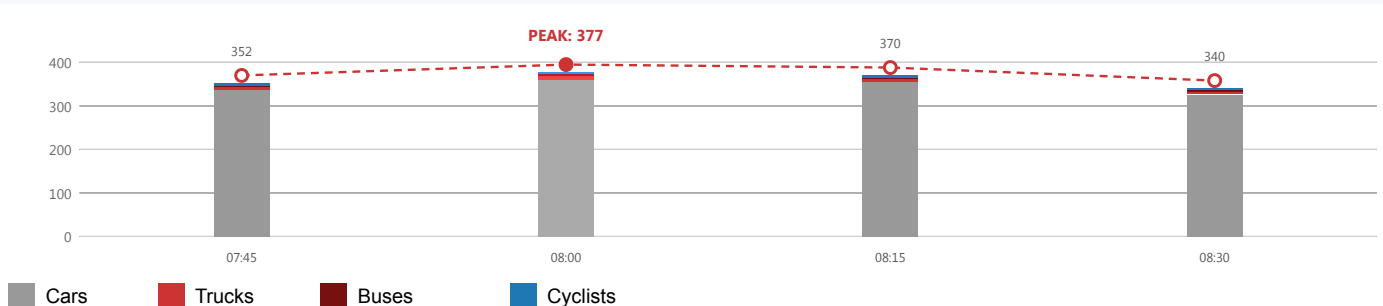
E Peds: 15

S Peds: 18

W Peds: 44

Total Peds: 162

Peak-Hour Class Distribution (All Approaches)





MORNING PEAK DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 06:00:00
To: 10:00:00

One Hour Peak

From: 07:45:00
To: 08:45:00

Municipality: Kingston

Site #: 2608200002

Intersection: Sir John A MacDonald Blvd & Union St

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

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

North Leg Total: 1060

North Entering: 765

North Peds: 85

Peds Cross:

West Exiting: 270

Buses	Cyclists	Trucks	Cars	Totals
1.9%	3.3%	3.7%	91.1%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	0%	0%	0%	0%	0%
Buses	0%	0.3%	0.1%	0%	0.4%
Trucks	0.5%	0.5%	0.4%	0%	1.4%
Cars	16.9%	29.7%	51.6%	0%	98.2%
Totals	17.4%	30.5%	52.2%	0%	100%



Sir John A MacDonald Blvd

East Leg Total: 885

East Entering: 260

East Peds: 15

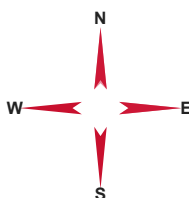
Peds Cross:

North Exiting: 295

Buses	Cyclists	Trucks	Cars	Totals
0.3%	0.3%	3.1%	96.3%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0%	0%	0.7%	23.1%	23.8%
Thru	2.1%	1.8%	1.8%	68.7%	74.4%
Right	0%	0%	0%	1.8%	1.8%
Totals	2.1%	1.8%	2.5%	93.6%	100%

**WEST
Union St**



	Totals	Cars	Trucks	Buses	Cyclists	
U-Turn	45.4%	43.5%	1.2%	0.4%	0.4%	Right
Left	50.4%	42.7%	2.3%	1.9%	3.5%	Thru
Thru	4.2%	4.2%	0%	0%	0%	Left
Right	0%	0%	0%	0%	0%	U-Turn
Totals	100%	90.4%	3.5%	2.3%	3.8%	

**EAST
Union St**

South Exiting: 249

Buses	Cyclists	Trucks	Cars	Totals
0.8%	0%	1.6%	97.6%	100%

West Leg Total: 551

West Entering: 281

West Peds: 44

Peds Cross:

	U-Turn	Left	Thru	Right	Total
Totals	0%	4.5%	82.7%	12.8%	100%
Cars	0%	4.5%	79.7%	11.3%	95.5%
Trucks	0%	0%	3.0%	0.8%	3.8%
Buses	0%	0%	0%	0%	0%
Cyclists	0%	0%	0%	0.8%	0.8%

**SOUTH
Sir John A MacDonald Blvd**

East Exiting: 625

Buses	Cyclists	Trucks	Cars	Totals
1.0%	1.1%	1.4%	96.5%	100%

South Leg Total: 382

South Entering: 133

South Peds: 18

Peds Cross:

Pedestrian Summary (AM Peak):

N Peds: 52.5%

E Peds: 9.3%

S Peds: 11.1%

W Peds: 27.2%

Total Peds: 100%

**AM PEAK SUMMARY****Specified Period**From: 06:00:00
To: 10:00:00**One Hour Peak**From: 07:45:00
To: 08:45:00**Intersection:** Sir John A MacDonald Blvd & Union St **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (AM Peak)**

Start Time	 Right	 Thru	 Left	 U-Turn	Total	Peds
07:45	28	50	106	0	184	7
08:00	33	58	103	0	194	7
08:15	40	67	96	0	203	59
08:30	32	58	94	0	184	12
N Total	133	233	399	0	765	85
PHF	0.83	0.87	0.94	--	0.94	
Individual Movement (%)						
Total	100%	100%	100%	--	100%	
Cars	97.0%	97.4%	99.0%	--	98.2%	
Trucks	3.0%	1.7%	0.8%	--	1.4%	
Buses	0%	0.9%	0.3%	--	0.4%	
Cyclists	0%	0%	0%	--	0%	

South Approach (AM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
07:45	0	0	31	4	35	1
08:00	0	2	35	3	40	3
08:15	0	2	24	5	31	11
08:30	0	2	20	5	27	3
S Total	0	6	110	17	133	18
PHF	--	0.75	0.79	0.85	0.83	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	96.4%	88.2%	95.5%	
Trucks	--	0%	3.6%	5.9%	3.8%	
Buses	--	0%	0%	0%	0%	
Cyclists	--	0%	0%	5.9%	0.8%	

West Approach (AM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
07:45	0	20	57	1	78	5
08:00	0	20	44	0	64	3
08:15	0	12	59	2	73	28
08:30	0	15	49	2	66	8
W Total	0	67	209	5	281	44
PHF	--	0.84	0.89	0.63	0.90	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	97.0%	92.3%	100%	93.6%	
Trucks	--	3.0%	2.4%	0%	2.5%	
Buses	--	0%	2.4%	0%	1.8%	
Cyclists	--	0%	2.9%	0%	2.1%	

East Approach (AM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
07:45	0	2	32	21	55	5
08:00	0	6	34	39	79	2
08:15	0	1	39	23	63	8
08:30	0	2	26	35	63	0
E Total	0	11	131	118	260	15
PHF	--	0.46	0.84	0.76	0.82	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	84.7%	95.8%	90.4%	
Trucks	--	0%	4.6%	2.5%	3.5%	
Buses	--	0%	3.8%	0.8%	2.3%	
Cyclists	--	0%	6.9%	0.8%	3.8%	

North/South Combined Approach Volume: **898**East/West Combined Approach Volume: **541****Calculated Values for Traffic Crossing Major Street**

15-Min Start	07:45	08:00	08:15	08:30
Crossing Values	352	377	370	340

Intersection Totals (All Approaches)**PHF: 0.95**

	07:45	08:00	08:15	08:30	Total
Total	352	377	370	340	1439
Cars	336 (95.5%)	360 (95.5%)	354 (95.7%)	326 (95.9%)	1376 (95.6%)
Trucks	7 (2.0%)	9 (2.4%)	9 (2.4%)	7 (2.1%)	32 (2.2%)
Buses	4 (1.1%)	4 (1.1%)	2 (0.5%)	4 (1.2%)	14 (1.0%)
Cyclists	5 (1.4%)	4 (1.1%)	5 (1.4%)	3 (0.9%)	17 (1.2%)



AFTERNOON PEAK DIAGRAM

Specified Period
From: 14:00:00
To: 18:00:00

One Hour Peak
From: 15:45:00
To: 16:45:00

Municipality: Kingston
Site #: 2608200002
Intersection: Sir John A MacDonald Blvd & Union St
Count date: 16-Jun-2026 Tuesday

Weather conditions:
Prepared by:
Comments:

**** Signalized Intersection ****

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

North Leg Total: 1197
North Entering: 351
North Peds: 220
Peds Cross:

West Exiting: 344

Buses	Cyclists	Trucks	Cars	Totals
4	14	4	322	344

	Right	Thru	Left	U-Turn	Total
Cyclists	0	0	0	0	0
Buses	0	1	1	0	2
Trucks	2	5	0	0	7
Cars	92	135	115	0	342
Totals	94	141	116	0	351



Sir John A MacDonald Blvd

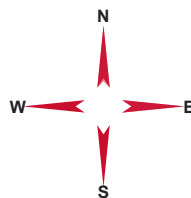
East Leg Total: 928
East Entering: 660
East Peds: 21
Peds Cross:

North Exiting: 846

Buses	Cyclists	Trucks	Cars	Totals
2	1	7	836	846

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	0	0	1	105	106
Thru	9	4	1	127	141
Right	1	0	0	11	12
Totals	10	4	2	243	259

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists	
Right	399	397	0	1	1	Right
Thru	243	223	2	4	14	Thru
Left	18	10	0	1	7	Left
U-Turn	0	0	0	0	0	U-Turn
Totals	660	630	2	6	22	

EAST
Union St

South Exiting: 171

Buses	Cyclists	Trucks	Cars	Totals
2	8	5	156	171

West Leg Total: 603
West Entering: 259
West Peds: 43
Peds Cross:

	U-Turn	Left	Thru	Right	Total
Totals	0	7	341	11	359
Cars	0	7	334	11	352
Trucks	0	0	6	0	6
Buses	0	0	1	0	1
Cyclists	0	0	0	0	0

SOUTH
Sir John A MacDonald Blvd

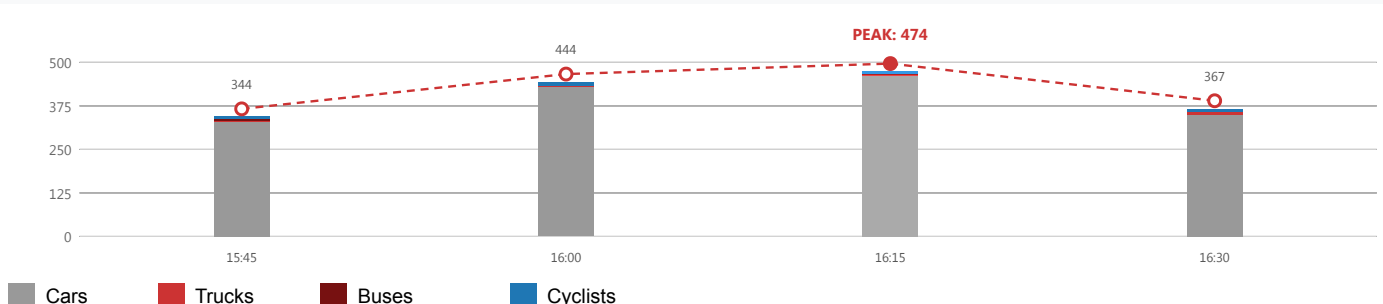
East Exiting: 268

Buses	Cyclists	Trucks	Cars	Totals
5	9	1	253	268

South Leg Total: 530
South Entering: 359
South Peds: 12
Peds Cross:

Pedestrian Summary (PM Peak): N Peds: 220 E Peds: 21 S Peds: 12 W Peds: 43 **Total Peds: 296**

Peak-Hour Class Distribution (All Approaches)





AFTERNOON PEAK DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 14:00:00
To: 18:00:00

One Hour Peak

From: 15:45:00
To: 16:45:00

Municipality: Kingston
Site #: 2608200002
Intersection: Sir John A MacDonald Blvd & Union St
Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

** Signalized Intersection **

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

North Leg Total: 1197

North Entering: 351

North Peds: 220

Peds Cross:

West Exiting: 344

Buses	Cyclists	Trucks	Cars	Totals
1.2%	4.1%	1.2%	93.6%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	0%	0%	0%	0%	0%
Buses	0%	0.3%	0.3%	0%	0.6%
Trucks	0.6%	1.4%	0%	0%	2.0%
Cars	26.2%	38.5%	32.8%	0%	97.4%
Totals	26.8%	40.2%	33.0%	0%	100%

NORTH
Sir John A MacDonald Blvd

East Leg Total: 928

East Entering: 660

East Peds: 21

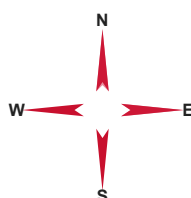
Peds Cross:

North Exiting: 846

Buses	Cyclists	Trucks	Cars	Totals
0.2%	0.1%	0.8%	98.8%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0%	0%	0.4%	40.5%	40.9%
Thru	3.5%	1.5%	0.4%	49.0%	54.4%
Right	0.4%	0%	0%	4.2%	4.6%
Totals	3.9%	1.5%	0.8%	93.8%	100%

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists
U-Turn	60.5%	60.2%	0%	0.2%	0.2%
Left	36.8%	33.8%	0.3%	0.6%	2.1%
Thru	2.7%	1.5%	0%	0.2%	1.1%
Right	0%	0%	0%	0%	0%
Totals	100%	95.5%	0.3%	0.9%	3.3%

EAST
Union St

South Exiting: 171

Buses	Cyclists	Trucks	Cars	Totals
1.2%	4.7%	2.9%	91.2%	100%

West Leg Total: 603

West Entering: 259

West Peds: 43

Peds Cross:

	U-Turn	Left	Thru	Right	Total
Totals	0%	1.9%	95.0%	3.1%	100%
Cars	0%	1.9%	93.0%	3.1%	98.1%
Trucks	0%	0%	1.7%	0%	1.7%
Buses	0%	0%	0.3%	0%	0.3%
Cyclists	0%	0%	0%	0%	0%

SOUTH
Sir John A MacDonald Blvd

East Exiting: 268

Buses	Cyclists	Trucks	Cars	Totals
1.9%	3.4%	0.4%	94.4%	100%

South Leg Total: 530

South Entering: 359

South Peds: 12

Peds Cross:

Pedestrian Summary (PM Peak):

N Peds: 74.3%

E Peds: 7.1%

S Peds: 4.1%

W Peds: 14.5%

Total Peds: 100%

**PM PEAK SUMMARY****Specified Period**From: 14:00:00
To: 18:00:00**One Hour Peak**From: 15:45:00
To: 16:45:00**Intersection:** Sir John A MacDonald Blvd & Union St **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (PM Peak)**

Start Time	 Right	 Thru	 Left	 U-Turn	Total	Peds
15:45	18	22	27	0	67	14
16:00	22	49	25	0	96	107
16:15	31	42	38	0	111	85
16:30	23	28	26	0	77	14
N Total	94	141	116	0	351	220
PHF	0.76	0.72	0.76	--	0.79	
Individual Movement (%)						
Total	100%	100%	100%	--	100%	
Cars	97.9%	95.7%	99.1%	--	97.4%	
Trucks	2.1%	3.5%	0%	--	2.0%	
Buses	0%	0.7%	0.9%	--	0.6%	
Cyclists	0%	0%	0%	--	0%	

South Approach (PM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
15:45	0	1	84	5	90	1
16:00	0	1	86	3	90	2
16:15	0	3	92	2	97	6
16:30	0	2	79	1	82	3
S Total	0	7	341	11	359	12
PHF	--	0.58	0.93	0.55	0.93	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	97.9%	100%	98.1%	
Trucks	--	0%	1.8%	0%	1.7%	
Buses	--	0%	0.3%	0%	0.3%	
Cyclists	--	0%	0%	0%	0%	

West Approach (PM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
15:45	0	26	19	1	46	6
16:00	0	19	46	4	69	20
16:15	0	35	44	6	85	14
16:30	0	26	32	1	59	3
W Total	0	106	141	12	259	43
PHF	--	0.76	0.77	0.50	0.76	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	99.1%	90.1%	91.7%	93.8%	
Trucks	--	0.9%	0.7%	0%	0.8%	
Buses	--	0%	2.8%	0%	1.5%	
Cyclists	--	0%	6.4%	8.3%	3.9%	

East Approach (PM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
15:45	0	3	59	79	141	2
16:00	0	7	63	119	189	5
16:15	0	3	71	107	181	6
16:30	0	5	50	94	149	8
E Total	0	18	243	399	660	21
PHF	--	0.64	0.86	0.84	0.87	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	55.6%	91.8%	99.5%	95.5%	
Trucks	--	0%	0.8%	0%	0.3%	
Buses	--	5.6%	1.6%	0.3%	0.9%	
Cyclists	--	38.9%	5.8%	0.3%	3.3%	

North/South Combined Approach Volume:**710**East/West Combined Approach Volume:**919****Calculated Values for Traffic Crossing Major Street**

15-Min Start	15:45	16:00	16:15	16:30
Crossing Values	344	444	474	367

Intersection Totals (All Approaches)**PHF: 0.86**

	15:45	16:00	16:15	16:30	Total
Total	344	444	474	367	1629
Cars	329 (95.6%)	428 (96.4%)	462 (97.5%)	348 (94.8%)	1567 (96.2%)
Trucks	4 (1.2%)	3 (0.7%)	2 (0.4%)	8 (2.2%)	17 (1.0%)
Buses	4 (1.2%)	3 (0.7%)	3 (0.6%)	3 (0.8%)	13 (0.8%)
Cyclists	7 (2.0%)	10 (2.3%)	7 (1.5%)	8 (2.2%)	32 (2.0%)



TOTAL COUNT DIAGRAM

Specified Period

From: 06:00:00

To: 18:15:00

Municipality: Kingston

Site #: 2608200002

Intersection: Sir John A MacDonald Blvd & Union St

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

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

North Leg Total: 6731

North Entering: 3449

North Peds: 479

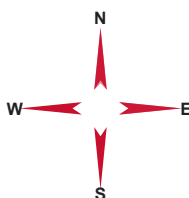
Peds Cross:

West Exiting: 1629

Buses	Cyclists	Trucks	Cars	Totals
40	45	39	1505	1629

	Right	Thru	Left	U-Turn	Total
Cyclists	0	1	0	0	1
Buses	2	8	13	0	23
Trucks	17	31	17	0	65
Cars	630	1246	1484	0	3360
Totals	649	1286	1514	0	3449

Sir John A MacDonald Blvd



East Leg Total: 4827

East Entering: 2362

East Peds: 170

Peds Cross:

North Exiting: 3282

Buses	Cyclists	Trucks	Cars	Totals
16	6	56	3204	3282

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	0	2	6	484	492
Thru	31	37	19	783	870
Right	3	0	1	33	37
Totals	34	39	26	1300	1399

WEST
Union St

	Totals	Cars	Trucks	Buses	Cyclists	
Right	1360	1324	20	10	6	Right
Thru	936	834	19	38	45	Thru
Left	66	47	1	6	12	Left
U-Turn	0	0	0	0	0	U-Turn
Totals	2362	2205	40	54	63	

EAST
Union St

South Exiting: 1389

Buses	Cyclists	Trucks	Cars	Totals
14	16	33	1326	1389

West Leg Total: 3028

West Entering: 1399

West Peds: 137

Peds Cross:

	U-Turn	Left	Thru	Right	Total
Cars	0	41	1396	77	1514
Trucks	0	3	30	1	34
Buses	0	0	4	1	5
Cyclists	0	0	0	2	2
Totals	0	44	1430	81	1555

SOUTH
Sir John A MacDonald Blvd

East Exiting: 2465

Buses	Cyclists	Trucks	Cars	Totals
51	33	37	2344	2465

South Leg Total: 2944

South Entering: 1555

South Peds: 54

Peds Cross:

Pedestrian Summary (Total Count):

N Peds: 479

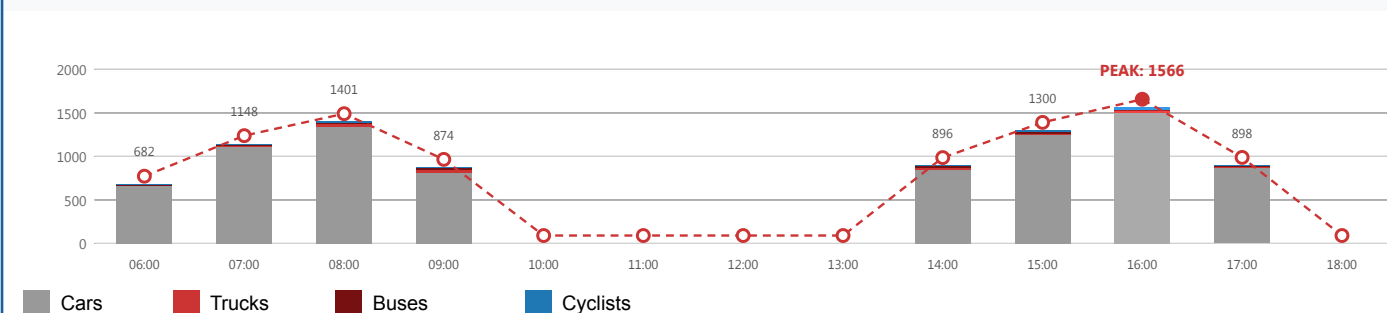
E Peds: 170

S Peds: 54

W Peds: 137

Total Peds: 840

Total Count Class Distribution (All Approaches)





TOTAL COUNT DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 06:00:00

To: 18:15:00

Municipality: Kingston

Site #: 2608200002

Intersection: Sir John A MacDonald Blvd & Union St

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

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

North Leg Total: 6731

North Entering: 3449

North Peds: 479

Peds Cross:

West Exiting: 1629

Buses	Cyclists	Trucks	Cars	Totals
2.5%	2.8%	2.4%	92.4%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	0%	0.0%	0%	0%	0.0%
Buses	0.1%	0.2%	0.4%	0%	0.7%
Trucks	0.5%	0.9%	0.5%	0%	1.9%
Cars	18.3%	36.1%	43.0%	0%	97.4%
Totals	18.8%	37.3%	43.9%	0%	100%

NORTH
Sir John A MacDonald Blvd

East Leg Total: 4827

East Entering: 2362

East Peds: 170

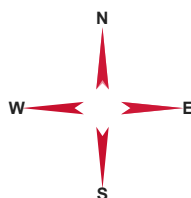
Peds Cross:

North Exiting: 3282

Buses	Cyclists	Trucks	Cars	Totals
0.5%	0.2%	1.7%	97.6%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0%	0.1%	0.4%	34.6%	35.2%
Thru	2.2%	2.6%	1.4%	56.0%	62.2%
Right	0.2%	0%	0.1%	2.4%	2.6%
Totals	2.4%	2.8%	1.9%	92.9%	100%

WEST
Union St



	Totals	Cars	Trucks	Buses	Cyclists
Right	57.6%	56.1%	0.8%	0.4%	0.3%
Thru	39.6%	35.3%	0.8%	1.6%	1.9%
Left	2.8%	2.0%	0.0%	0.3%	0.5%
U-Turn	0%	0%	0%	0%	0%
Totals	100%	93.4%	1.7%	2.3%	2.7%

EAST
Union St

South Exiting: 1389

Buses	Cyclists	Trucks	Cars	Totals
1.0%	1.2%	2.4%	95.5%	100%

West Leg Total: 3028

West Entering: 1399

West Peds: 137

Peds Cross:

	U-Turn	Left	Thru	Right	Total
Totals	0%	2.8%	92.0%	5.2%	100%
Cars	0%	2.6%	89.8%	5.0%	97.4%
Trucks	0%	0.2%	1.9%	0.1%	2.2%
Buses	0%	0%	0.3%	0.1%	0.3%
Cyclists	0%	0%	0%	0.1%	0.1%

SOUTH
Sir John A MacDonald Blvd

East Exiting: 2465

Buses	Cyclists	Trucks	Cars	Totals
2.1%	1.3%	1.5%	95.1%	100%

South Leg Total: 2944

South Entering: 1555

South Peds: 54

Peds Cross:

Pedestrian Summary (Total Count):

N Peds: 57.0%

E Peds: 20.2%

S Peds: 6.4%

W Peds: 16.3%

Total Peds: 100%

**TOTAL COUNT SUMMARY****Specified Period**

From: 06:00:00

To: 18:15:00

Total Count**Intersection:** Sir John A MacDonald Blvd & Union St **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (Total Count)**

Start Time	 Right	 Thru	 Left	 U-Turn	Total	Peds
06:00	66	172	226	0	464	5
07:00	68	208	329	0	605	14
08:00	131	229	356	0	716	89
09:00	68	174	166	0	408	18
14:00	69	131	124	0	324	46
15:00	89	113	112	0	314	53
16:00	92	148	112	0	352	216
17:00	66	111	89	0	266	38
N Total	649	1286	1514	0	3449	479
Individual Movement (%)						
Total	100%	100%	100%	--	100%	
Cars	97.1%	96.9%	98.0%	--	97.4%	
Trucks	2.6%	2.4%	1.1%	--	1.9%	
Buses	0.3%	0.6%	0.9%	--	0.7%	
Cyclists	0%	0.1%	0%	--	0.0%	

South Approach (Total Count)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
06:00	0	3	62	4	69	0
07:00	0	1	136	11	148	4
08:00	0	8	112	14	134	17
09:00	0	5	123	9	137	6
14:00	0	8	193	14	215	7
15:00	0	7	299	9	315	5
16:00	0	6	314	11	331	12
17:00	0	6	191	9	206	3
S Total	0	44	1430	81	1555	54
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	93.2%	97.6%	95.1%	97.4%	
Trucks	--	6.8%	2.1%	1.2%	2.2%	
Buses	--	0%	0.3%	1.2%	0.3%	
Cyclists	--	0%	0%	2.5%	0.1%	

West Approach (Total Count)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
06:00	0	25	46	0	71	1
07:00	0	55	158	2	215	11
08:00	0	70	198	8	276	41
09:00	0	46	88	5	139	3
14:00	0	48	68	2	118	16
15:00	0	98	98	7	203	16
16:00	0	91	144	11	246	38
17:00	0	59	70	2	131	11
W Total	0	492	870	37	1399	137
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	98.4%	90.0%	89.2%	92.9%	
Trucks	--	1.2%	2.2%	2.7%	1.9%	
Buses	--	0.4%	4.3%	0%	2.8%	
Cyclists	--	0%	3.6%	8.1%	2.4%	

East Approach (Total Count)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
06:00	0	4	29	45	78	14
07:00	0	4	63	113	180	48
08:00	0	10	133	132	275	11
09:00	0	14	78	98	190	3
14:00	0	7	102	130	239	1
15:00	0	8	181	279	468	39
16:00	0	16	225	396	637	20
17:00	0	3	125	167	295	34
E Total	0	66	936	1360	2362	170
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	71.2%	89.1%	97.4%	93.4%	
Trucks	--	1.5%	2.0%	1.5%	1.7%	
Buses	--	9.1%	4.1%	0.7%	2.3%	
Cyclists	--	18.2%	4.8%	0.4%	2.7%	

North/South Combined Approach Volume: **5004**East/West Combined Approach Volume: **3761****Calculated Values for Traffic Crossing Major Street****15-Min Start**

06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00

Crossing Values	682	1148	1401	874	0	0	0	0	896	1300	1566	898	0
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Intersection Totals (All Approaches)					
Time	Total	Cars	Trucks	Buses	Cyclists
Total	8765	8379 (95.6%)	165 (1.9%)	121 (1.4%)	100 (1.1%)



MORNING PEAK DIAGRAM

Specified Period

From: 06:00:00

To: 10:00:00

One Hour Peak

From: 07:30:00

To: 08:30:00

Municipality: Kingston

Site #: 2608200003

Intersection: King St W & Sir John A MacDonald Blvd

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

Major Road: King St W runs E/W

North Leg Total: 383

North Entering: 247

North Peds: 20

Peds Cross:

West Exiting: 221

Buses	Cyclists	Trucks	Cars	Totals
10	2	1	208	221

	Right	Thru	Left	U-Turn	Total
Cyclists	0	0	0	0	0
Buses	0	0	1	0	1
Trucks	0	0	5	0	5
Cars	22	37	180	2	241
Totals	22	37	186	2	247



Sir John A MacDonald Blvd

East Leg Total: 957

East Entering: 313

East Peds: 34

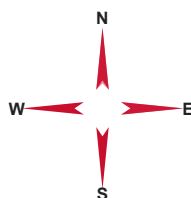
Peds Cross:

North Exiting: 136

Buses	Cyclists	Trucks	Cars	Totals
0	0	4	132	136

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	0	0	2	21	23
Thru	3	8	3	440	454
Right	0	0	0	15	15
Totals	3	8	5	476	492

WEST
King St W



	Totals	Cars	Trucks	Buses	Cyclists	
Right	110	108	2	0	0	Right
Thru	198	185	1	10	2	Thru
Left	5	5	0	0	0	Left
U-Turn	0	0	0	0	0	U-Turn
Totals	313	298	3	10	2	

EAST
King St W

SOUTH
driveway

	U-Turn	Left	Thru	Right	Total
Totals	0	1	3	4	8
Cars	0	1	3	4	8
Trucks	0	0	0	0	0
Buses	0	0	0	0	0
Cyclists	0	0	0	0	0

South Exiting: 57

Buses	Cyclists	Trucks	Cars	Totals
0	0	0	57	57

West Leg Total: 713

West Entering: 492

West Peds: 24

Peds Cross:

East Exiting: 644

Buses	Cyclists	Trucks	Cars	Totals
9	3	8	624	644

South Leg Total: 65

South Entering: 8

South Peds: 35

Peds Cross:

Pedestrian Summary (AM Peak):

N Peds: 20

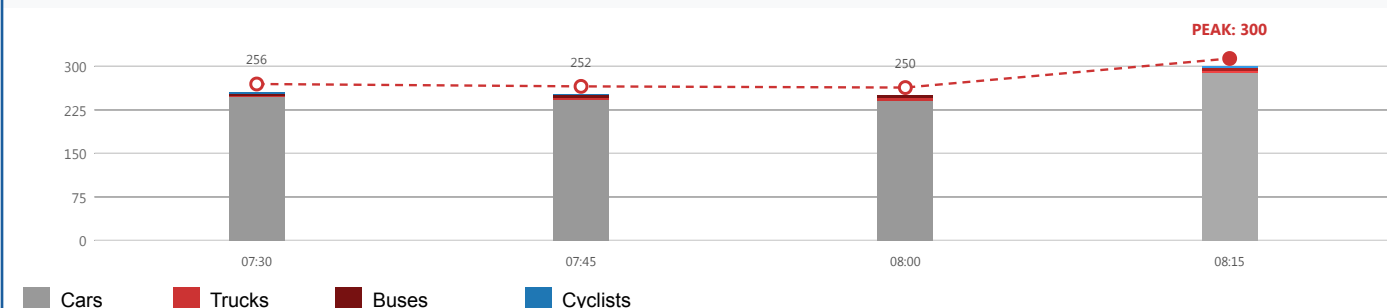
E Peds: 34

S Peds: 35

W Peds: 24

Total Peds: 113

Peak-Hour Class Distribution (All Approaches)





MORNING PEAK DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 06:00:00
To: 10:00:00

One Hour Peak

From: 07:30:00
To: 08:30:00

Municipality: Kingston

Site #: 2608200003

Intersection: King St W & Sir John A MacDonald Blvd

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

Major Road: King St W runs E/W

North Leg Total: 383

North Entering: 247

North Peds: 20

Peds Cross:

West Exiting: 221

Buses	Cyclists	Trucks	Cars	Totals
4.5%	0.9%	0.5%	94.1%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	0%	0%	0%	0%	0%
Buses	0%	0%	0.4%	0%	0.4%
Trucks	0%	0%	2.0%	0%	2.0%
Cars	8.9%	15.0%	72.9%	0.8%	97.6%
Totals	8.9%	15.0%	75.3%	0.8%	100%

NORTH
Sir John A MacDonald Blvd

East Leg Total: 957

East Entering: 313

East Peds: 34

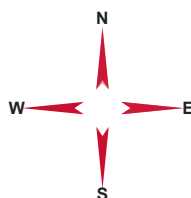
Peds Cross:

North Exiting: 136

Buses	Cyclists	Trucks	Cars	Totals
0%	0%	2.9%	97.1%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0%	0%	0.4%	4.3%	4.7%
Thru	0.6%	1.6%	0.6%	89.4%	92.3%
Right	0%	0%	0%	3.0%	3.0%
Totals	0.6%	1.6%	1.0%	96.7%	100%

WEST
King St W



	Totals	Cars	Trucks	Buses	Cyclists
U-Turn	35.1%	34.5%	0.6%	0%	0%
Left	63.3%	59.1%	0.3%	3.2%	0.6%
Thru	1.6%	1.6%	0%	0%	0%
Right	0%	0%	0%	0%	0%
Totals	100%	95.2%	1.0%	3.2%	0.6%

EAST
King St W

SOUTH
driveway

	U-Turn	Left	Thru	Right	Total
Cars	0%	12.5%	37.5%	50.0%	100%
Trucks	0%	0%	0%	0%	0%
Buses	0%	0%	0%	0%	0%
Cyclists	0%	0%	0%	0%	0%
Totals	0%	12.5%	37.5%	50.0%	100%

South Exiting: 57

Buses	Cyclists	Trucks	Cars	Totals
0%	0%	0%	100%	100%

West Leg Total: 713

West Entering: 492

West Peds: 24

Peds Cross:

East Exiting: 644

Buses	Cyclists	Trucks	Cars	Totals
1.4%	0.5%	1.2%	96.9%	100%

South Leg Total: 65

South Entering: 8

South Peds: 35

Peds Cross:

Pedestrian Summary (AM Peak):

N Peds: 17.7%

E Peds: 30.1%

S Peds: 31.0%

W Peds: 21.2%

Total Peds: 100%

**AM PEAK SUMMARY****Specified Period**From: 06:00:00
To: 10:00:00**One Hour Peak**From: 07:30:00
To: 08:30:00**Intersection:** King St W & Sir John A MacDonald Blvd **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (AM Peak)**

Start Time	 Right	 Thru	 Left	 U-Turn	Total	Peds
07:30	7	15	43	0	65	4
07:45	4	7	41	1	53	4
08:00	5	11	49	1	66	7
08:15	6	4	53	0	63	5
N Total	22	37	186	2	247	20
PHF	0.79	0.62	0.88	0.50	0.94	
Individual Movement (%)						
Total	100%	100%	100%	100%	100%	
Cars	100%	100%	96.8%	100%	97.6%	
Trucks	0%	0%	2.7%	0%	2.0%	
Buses	0%	0%	0.5%	0%	0.4%	
Cyclists	0%	0%	0%	0%	0%	

South Approach (AM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
07:30	0	1	0	1	2	1
07:45	0	0	0	1	1	9
08:00	0	0	2	1	3	17
08:15	0	0	1	1	2	8
S Total	0	1	3	4	8	35
PHF	--	0.25	0.38	1.00	0.67	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	100%	100%	100%	
Trucks	--	0%	0%	0%	0%	
Buses	--	0%	0%	0%	0%	
Cyclists	--	0%	0%	0%	0%	

West Approach (AM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
07:30	0	7	105	4	116	1
07:45	0	7	106	3	116	5
08:00	0	5	98	5	108	14
08:15	0	4	145	3	152	4
W Total	0	23	454	15	492	24
PHF	--	0.82	0.78	0.75	0.81	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	91.3%	96.9%	100%	96.7%	
Trucks	--	8.7%	0.7%	0%	1.0%	
Buses	--	0%	1.8%	0%	1.6%	
Cyclists	--	0%	0.7%	0%	0.6%	

East Approach (AM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
07:30	0	1	46	26	73	9
07:45	0	2	51	30	83	3
08:00	0	1	43	30	74	19
08:15	0	1	58	24	83	3
E Total	0	5	198	110	313	34
PHF	--	0.63	0.85	0.92	0.94	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	93.4%	98.2%	95.2%	
Trucks	--	0%	0.5%	1.8%	1.0%	
Buses	--	0%	5.1%	0%	3.2%	
Cyclists	--	0%	1.0%	0%	0.6%	

North/South Combined Approach Volume:**255**East/West Combined Approach Volume:**805****Calculated Values for Traffic Crossing Major Street**

15-Min Start	07:30	07:45	08:00	08:15
Crossing Values	256	253	251	300

Intersection Totals (All Approaches)**PHF: 0.88**

	07:30	07:45	08:00	08:15	Total
Total	256	253	251	300	1060
Cars	248 (96.9%)	243 (96.0%)	241 (96.0%)	289 (96.3%)	1023 (96.5%)
Trucks	2 (0.8%)	3 (1.2%)	4 (1.6%)	4 (1.3%)	13 (1.2%)
Buses	4 (1.6%)	5 (2.0%)	5 (2.0%)	5 (1.7%)	19 (1.8%)
Cyclists	2 (0.8%)	1 (0.4%)	0 (0.0%)	2 (0.7%)	5 (0.5%)



AFTERNOON PEAK DIAGRAM

Specified Period

From: 14:00:00

To: 18:00:00

One Hour Peak

From: 15:45:00

To: 16:45:00

Municipality: Kingston

Site #: 2608200003

Intersection: King St W & Sir John A MacDonald Blvd

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

Major Road: King St W runs E/W

North Leg Total: 514

North Entering: 158

North Peds: 22

Peds Cross:

West Exiting: 572

Buses	Cyclists	Trucks	Cars	Totals
11	8	2	551	572

	Right	Thru	Left	U-Turn	Total
Cyclists	0	0	0	0	0
Buses	0	0	2	0	2
Trucks	0	0	5	0	5
Cars	36	1	114	0	151
Totals	36	1	121	0	158



Sir John A MacDonald Blvd

East Leg Total: 1196

East Entering: 761

East Peds: 23

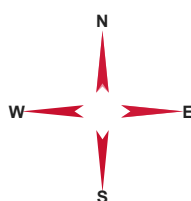
Peds Cross:

North Exiting: 356

Buses	Cyclists	Trucks	Cars	Totals
1	0	6	349	356

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	0	0	1	71	72
Thru	3	8	1	290	302
Right	0	0	0	0	0
Totals	3	8	2	361	374

WEST
King St W



	Totals	Cars	Trucks	Buses	Cyclists	
U-Turn	245	239	5	1	0	Right
Left	514	493	2	11	8	Thru
Thru	2	2	0	0	0	Left
Right	0	0	0	0	0	U-Turn
Totals	761	734	7	12	8	

EAST
King St W

SOUTH
driveway

	U-Turn	Left	Thru	Right	Total
Totals	0	22	39	12	73
Cars	0	22	39	12	73
Trucks	0	0	0	0	0
Buses	0	0	0	0	0
Cyclists	0	0	0	0	0

South Exiting: 3

Buses	Cyclists	Trucks	Cars	Totals
0	0	0	3	3

West Leg Total: 946

West Entering: 374

West Peds: 46

Peds Cross:

East Exiting: 435

Buses	Cyclists	Trucks	Cars	Totals
10	3	6	416	435

South Leg Total: 76

South Entering: 73

South Peds: 24

Peds Cross:

Pedestrian Summary (PM Peak):

N Peds: 22

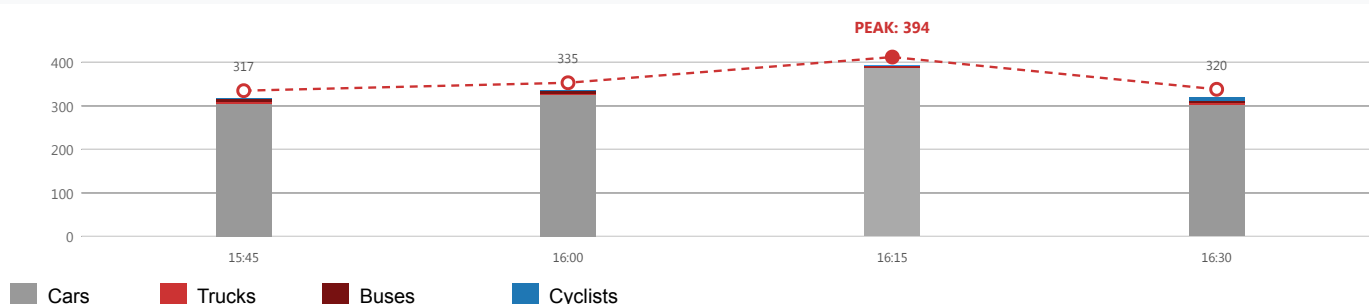
E Peds: 23

S Peds: 24

W Peds: 46

Total Peds: 115

Peak-Hour Class Distribution (All Approaches)





AFTERNOON PEAK DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 14:00:00
To: 18:00:00

One Hour Peak

From: 15:45:00
To: 16:45:00

Municipality: Kingston
Site #: 2608200003
Intersection: King St W & Sir John A MacDonald Blvd
Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

** Signalized Intersection **

Major Road: King St W runs E/W

North Leg Total: 514
North Entering: 158
North Peds: 22
Peds Cross:

West Exiting: 572

Buses	Cyclists	Trucks	Cars	Totals	
1.9%	1.4%	0.3%	96.3%	100%	

	Right	Thru	Left	U-Turn	Total
Cyclists	0%	0%	0%	0%	0%
Buses	0%	0%	1.3%	0%	1.3%
Trucks	0%	0%	3.2%	0%	3.2%
Cars	22.8%	0.6%	72.2%	0%	95.6%
Totals	22.8%	0.6%	76.6%	0%	100%

NORTH
Sir John A MacDonald Blvd

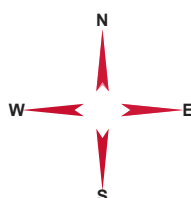
East Leg Total: 1196
East Entering: 761
East Peds: 23
Peds Cross:

North Exiting: 356

Buses	Cyclists	Trucks	Cars	Totals	
0.3%	0%	1.7%	98.0%	100%	

	Cyclists	Buses	Trucks	Cars	Totals	
U-Turn	0%	0%	0%	0%	0%	
Left	0%	0%	0.3%	19.0%	19.3%	
Thru	0.8%	2.1%	0.3%	77.5%	80.7%	
Right	0%	0%	0%	0%	0%	
Totals	0.8%	2.1%	0.5%	96.5%	100%	

WEST
King St W



	Totals	Cars	Trucks	Buses	Cyclists	
	32.2%	31.4%	0.7%	0.1%	0%	Right
	67.5%	64.8%	0.3%	1.4%	1.1%	Thru
	0.3%	0.3%	0%	0%	0%	Left
	0%	0%	0%	0%	0%	U-Turn
Totals	100%	96.5%	0.9%	1.6%	1.1%	

EAST
King St W

South Exiting: 3

Buses	Cyclists	Trucks	Cars	Totals	
0%	0%	0%	100%	100%	

West Leg Total: 946
West Entering: 374
West Peds: 46
Peds Cross:

Totals	0%	30.1%	53.4%	16.4%	100%	
Cars	0%	30.1%	53.4%	16.4%	100%	
Trucks	0%	0%	0%	0%	0%	
Buses	0%	0%	0%	0%	0%	
Cyclists	0%	0%	0%	0%	0%	
	U-Turn	Left	Thru	Right	Total	

SOUTH
driveway

East Exiting: 435

Buses	Cyclists	Trucks	Cars	Totals	
2.3%	0.7%	1.4%	95.6%	100%	

South Leg Total: 76
South Entering: 73
South Peds: 24
Peds Cross:

Pedestrian Summary (PM Peak):

N Peds: 19.1%

E Peds: 20.0%

S Peds: 20.9%

W Peds: 40.0%

Total Peds: 100%

**PM PEAK SUMMARY****Specified Period**From: 14:00:00
To: 18:00:00**One Hour Peak**From: 15:45:00
To: 16:45:00**Intersection:** King St W & Sir John A MacDonald Blvd **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (PM Peak)**

Start Time	 Right	 Thru	 Left	 U-Turn	Total	Peds
15:45	10	0	16	0	26	5
16:00	10	1	39	0	50	5
16:15	10	0	37	0	47	5
16:30	6	0	29	0	35	7
N Total	36	1	121	0	158	22
PHF	0.90	0.25	0.78	--	0.79	
Individual Movement (%)						
Total	100%	100%	100%	--	100%	
Cars	100%	100%	94.2%	--	95.6%	
Trucks	0%	0%	4.1%	--	3.2%	
Buses	0%	0%	1.7%	--	1.3%	
Cyclists	0%	0%	0%	--	0%	

South Approach (PM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
15:45	0	4	7	4	15	0
16:00	0	2	13	1	16	1
16:15	0	9	14	4	27	13
16:30	0	7	5	3	15	10
S Total	0	22	39	12	73	24
PHF	--	0.61	0.70	0.75	0.68	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	100%	100%	100%	
Trucks	--	0%	0%	0%	0%	
Buses	--	0%	0%	0%	0%	
Cyclists	--	0%	0%	0%	0%	

West Approach (PM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
15:45	0	18	76	0	94	4
16:00	0	15	71	0	86	10
16:15	0	24	82	0	106	13
16:30	0	15	73	0	88	19
W Total	0	72	302	0	374	46
PHF	--	0.75	0.92	--	0.88	
Individual Movement (%)						
Total	--	100%	100%	--	100%	
Cars	--	98.6%	96.0%	--	96.5%	
Trucks	--	1.4%	0.3%	--	0.5%	
Buses	--	0%	2.6%	--	2.1%	
Cyclists	--	0%	1.0%	--	0.8%	

East Approach (PM Peak)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
15:45	0	1	119	62	182	2
16:00	0	0	125	58	183	3
16:15	0	1	148	65	214	12
16:30	0	0	122	60	182	6
E Total	0	2	514	245	761	23
PHF	--	0.50	0.87	0.94	0.89	
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	95.9%	97.6%	96.5%	
Trucks	--	0%	0.4%	2.0%	0.9%	
Buses	--	0%	2.1%	0.4%	1.6%	
Cyclists	--	0%	1.6%	0%	1.1%	

North/South Combined Approach Volume: **231**East/West Combined Approach Volume: **1135****Calculated Values for Traffic Crossing Major Street**

15-Min Start	15:45	16:00	16:15	16:30
Crossing Values	317	335	394	320

Intersection Totals (All Approaches)**PHF: 0.87**

	15:45	16:00	16:15	16:30	Total
Total	317	335	394	320	1366
Cars	305 (96.2%)	325 (97.0%)	388 (98.5%)	301 (94.1%)	1319 (96.6%)
Trucks	4 (1.3%)	3 (0.9%)	0 (0.0%)	7 (2.2%)	14 (1.0%)
Buses	7 (2.2%)	6 (1.8%)	5 (1.3%)	4 (1.3%)	22 (1.6%)
Cyclists	1 (0.3%)	1 (0.3%)	1 (0.3%)	8 (2.5%)	11 (0.8%)



TOTAL COUNT DIAGRAM

Specified Period

From: 06:00:00
To: 18:15:00

Municipality: Kingston

Site #: 2608200003

Intersection: King St W & Sir John A MacDonald Blvd

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

Major Road: King St W runs E/W

North Leg Total: 2895

North Entering: 1354

North Peds: 119

Peds Cross:

West Exiting: 2652

Buses	Cyclists	Trucks	Cars	Totals
70	35	15	2532	2652

	Right	Thru	Left	U-Turn	Total
Cyclists	2	0	1	0	3
Buses	7	1	5	0	13
Trucks	3	0	31	0	34
Cars	218	84	995	7	1304
Totals	230	85	1032	7	1354



Sir John A MacDonald Blvd

East Leg Total: 7129

East Entering: 3576

East Peds: 119

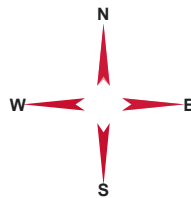
Peds Cross:

North Exiting: 1541

Buses	Cyclists	Trucks	Cars	Totals
5	1	37	1498	1541

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0	0	0	0	0
Left	1	1	8	283	293
Thru	27	68	18	2353	2466
Right	0	0	0	50	50
Totals	28	69	26	2686	2809

WEST
King St W



	Totals	Cars	Trucks	Buses	Cyclists	
Right	1168	1136	29	3	0	Right
Thru	2368	2260	12	63	33	Thru
Left	40	40	0	0	0	Left
U-Turn	0	0	0	0	0	U-Turn
Totals	3576	3436	41	66	33	

EAST
King St W

South Exiting: 175

Buses	Cyclists	Trucks	Cars	Totals
1	0	0	174	175

	U-Turn	Left	Thru	Right	Total
Totals	0	54	80	55	189
Cars	0	54	79	54	187
Trucks	0	0	0	1	1
Buses	0	0	1	0	1
Cyclists	0	0	0	0	0

SOUTH
driveway

East Exiting: 3553

Buses	Cyclists	Trucks	Cars	Totals
73	28	50	3402	3553

West Leg Total: 5461

West Entering: 2809

West Peds: 269

Peds Cross:

South Leg Total: 364

South Entering: 189

South Peds: 168

Peds Cross:

Pedestrian Summary (Total Count):

N Peds: 119

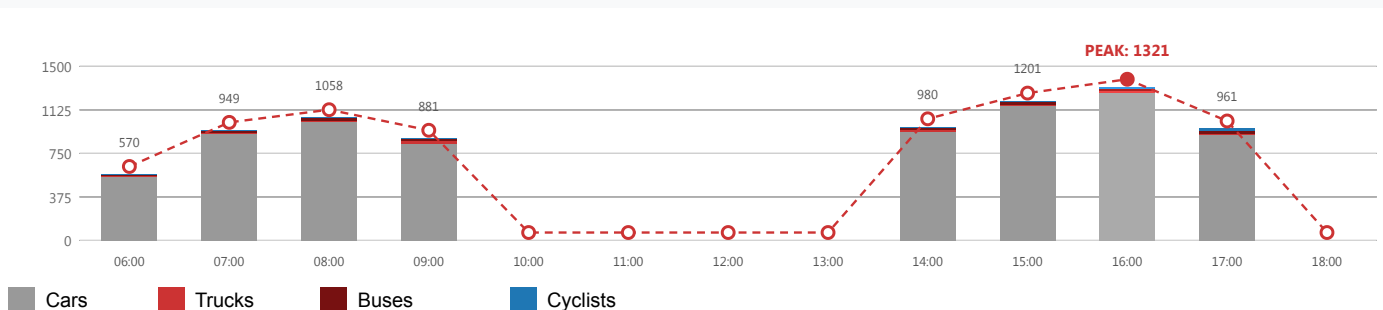
E Peds: 119

S Peds: 168

W Peds: 269

Total Peds: 675

Total Count Class Distribution (All Approaches)





TOTAL COUNT DISTRIBUTION BY TOTAL APPROACH %

Specified Period

From: 06:00:00

To: 18:15:00

Municipality: Kingston

Site #: 2608200003

Intersection: King St W & Sir John A MacDonald Blvd

Count date: 16-Jun-2026 Tuesday

Weather conditions:

Prepared by:

Comments:

**** Signalized Intersection ****

Major Road: King St W runs E/W

North Leg Total: 2895

North Entering: 1354

North Peds: 119

Peds Cross:

West Exiting: 2652

Buses	Cyclists	Trucks	Cars	Totals
2.6%	1.3%	0.6%	95.5%	100%

	Right	Thru	Left	U-Turn	Total
Cyclists	0.1%	0%	0.1%	0%	0.2%
Buses	0.5%	0.1%	0.4%	0%	1.0%
Trucks	0.2%	0%	2.3%	0%	2.5%
Cars	16.1%	6.2%	73.5%	0.5%	96.3%
Totals	17.0%	6.3%	76.2%	0.5%	100%

NORTH
Sir John A MacDonald Blvd

East Leg Total: 7129

East Entering: 3576

East Peds: 119

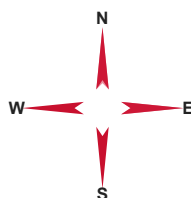
Peds Cross:

North Exiting: 1541

Buses	Cyclists	Trucks	Cars	Totals
0.3%	0.1%	2.4%	97.2%	100%

	Cyclists	Buses	Trucks	Cars	Totals
U-Turn	0%	0%	0%	0%	0%
Left	0.0%	0.0%	0.3%	10.1%	10.4%
Thru	1.0%	2.4%	0.6%	83.8%	87.8%
Right	0%	0%	0%	1.8%	1.8%
Totals	1.0%	2.5%	0.9%	95.6%	100%

WEST
King St W



	Totals	Cars	Trucks	Buses	Cyclists	
U-Turn	32.7%	31.8%	0.8%	0.1%	0%	Right
Left	66.2%	63.2%	0.3%	1.8%	0.9%	Thru
Thru	1.1%	1.1%	0%	0%	0%	Left
Right	0%	0%	0%	0%	0%	U-Turn
Totals	100%	96.1%	1.1%	1.8%	0.9%	

EAST
King St W

SOUTH
driveway

South Exiting: 175

Buses	Cyclists	Trucks	Cars	Totals
0.6%	0%	0%	99.4%	100%

	U-Turn	Left	Thru	Right	Total
Totals	0%	28.6%	42.3%	29.1%	100%
Cars	0%	28.6%	41.8%	28.6%	98.9%
Trucks	0%	0%	0%	0.5%	0.5%
Buses	0%	0%	0.5%	0%	0.5%
Cyclists	0%	0%	0%	0%	0%

East Exiting: 3553

Buses	Cyclists	Trucks	Cars	Totals
2.1%	0.8%	1.4%	95.8%	100%

West Leg Total: 5461

West Entering: 2809

West Peds: 269

Peds Cross:

South Leg Total: 364

South Entering: 189

South Peds: 168

Peds Cross:

Pedestrian Summary (Total Count):

N Peds: 17.6%

E Peds: 17.6%

S Peds: 24.9%

W Peds: 39.9%

Total Peds: 100%

**TOTAL COUNT SUMMARY****Specified Period**
From: 06:00:00
To: 18:15:00**Total Count****Intersection:** King St W & Sir John A MacDonald Blvd **Count Date:** 16-Jun-2026 Tuesday **Municipality:** Kingston**North Approach (Total Count)**

Start Time	 Right	 Thru	 Left	 U-Turn	Total	Peds
06:00	12	14	142	0	168	8
07:00	20	33	158	1	212	14
08:00	26	22	195	2	245	15
09:00	39	8	138	0	185	10
14:00	35	3	105	1	144	15
15:00	38	4	79	1	122	17
16:00	31	1	128	0	160	19
17:00	29	0	87	2	118	21
N Total	230	85	1032	7	1354	119
Individual Movement (%)						
Total	100%	100%	100%	100%	100%	
Cars	94.8%	98.8%	96.4%	100%	96.3%	
Trucks	1.3%	0%	3.0%	0%	2.5%	
Buses	3.0%	1.2%	0.5%	0%	1.0%	
Cyclists	0.9%	0%	0.1%	0%	0.2%	

South Approach (Total Count)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
06:00	0	0	1	2	3	15
07:00	0	1	0	2	3	13
08:00	0	1	4	5	10	31
09:00	0	1	2	3	6	21
14:00	0	2	7	8	17	25
15:00	0	24	19	12	55	13
16:00	0	21	38	9	68	33
17:00	0	4	9	14	27	17
S Total	0	54	80	55	189	168
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	98.8%	98.2%	98.9%	
Trucks	--	0%	0%	1.8%	0.5%	
Buses	--	0%	1.2%	0%	0.5%	
Cyclists	--	0%	0%	0%	0%	

West Approach (Total Count)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
06:00	0	12	231	9	252	0
07:00	0	23	367	15	405	7
08:00	0	25	456	10	491	24
09:00	0	36	319	6	361	115
14:00	0	38	262	6	306	35
15:00	0	55	270	4	329	32
16:00	0	66	300	0	366	45
17:00	0	38	261	0	299	11
W Total	0	293	2466	50	2809	269
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	96.6%	95.4%	100%	95.6%	
Trucks	--	2.7%	0.7%	0%	0.9%	
Buses	--	0.3%	2.8%	0%	2.5%	
Cyclists	--	0.3%	1.1%	0%	1.0%	

East Approach (Total Count)

Start Time	 U-Turn	 Left	 Thru	 Right	Total	Peds
06:00	0	1	88	58	147	11
07:00	0	3	200	127	330	18
08:00	0	4	204	106	314	23
09:00	0	9	227	93	329	9
14:00	0	7	339	168	514	9
15:00	0	11	447	238	696	15
16:00	0	1	502	224	727	26
17:00	0	4	361	154	519	8
E Total	0	40	2368	1168	3576	119
Individual Movement (%)						
Total	--	100%	100%	100%	100%	
Cars	--	100%	95.4%	97.3%	96.1%	
Trucks	--	0%	0.5%	2.5%	1.1%	
Buses	--	0%	2.7%	0.3%	1.8%	
Cyclists	--	0%	1.4%	0%	0.9%	

North/South Combined Approach Volume: **1543**East/West Combined Approach Volume: **6385****Calculated Values for Traffic Crossing Major Street**

15-Min Start	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
---------------------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Crossing Values	570	950	1060	881	0	0	0	0	981	1202	1321	963	0
-----------------	-----	-----	------	-----	---	---	---	---	-----	------	------	-----	---

Intersection Totals (All Approaches)					
Time	Total	Cars	Trucks	Buses	Cyclists
Total	7928	7613 (96.0%)	102 (1.3%)	149 (1.9%)	64 (0.8%)

Location: **King & Sir John A**

Edit Date: 2015 retime
Design For: Updated Clearance Intervals

Analysis: DG/DB

Problems:
Recommendations:

Special Notes:

Detailed Timings:	Direction	EBL	MSG King E/W	SJA N/S
	Phase			
	Intergreen	3+0	3.3+2.5	3.3+2.4
	Ped. Clr.		26+5.8	16+5.7
	Walk		7	7

	Cycle	Offset			
Pattern 1	95	80	5 - 7	48.2 min	10 - 25.3
Pattern 2	95	6	5 - 7	48.2 min	10 - 25.3
Pattern 3	80	78	5 - 7	33.2 min	10 - 25.3
	Free	n/a	5 - 10	20 - 40	10 - 25.3

Day Plans

M-F **Pattern 1** 07:30-09:30
 Pattern 2 09:30-18:30
 Pattern 3 18:30-21:30
 Free Rest of Time

S-S **Pattern 3** 08:30-21:30
 Free Rest of Time

Location: Sir John A & Union

Analysis: DG/DB

Analysis Date: 2016 Retime
Implementation Date:

Design For: Updated offsets & timings
Problems:
Recommendations:
Special Notes: No loops
Fixed Times
No pedestrian buttons

Detailed Timings:	MSG		
	Direction	SJA N/S	Union E/W
	Phase	↓ ↑	← →
	Intergreen	4.0+2.3	3.7+2.6
	Ped. Clr.	19+6.3	25+6.3
Walk	7	7	

	Cycle	Offset		
Free All times	n/a	n/a	40	32

Appendix D

Signal Warrant Analysis

Input Data Sheet

[Analysis Sheet](#)
[Results Sheet](#)
[Justification 5A](#)
[Justification 7](#)
[GO TO Justification:](#)

What are the intersecting roadways?

Union Street and Site Access 1

What is the direction of the Main Road street?

East-West

When was the data collected? 2023-01-01

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	148	0	0	0	0	0	0	
Factored 8 hour pedestrian volume	148		0		0		0		
% Assigned to crossing rate	100%		50%		0%		0%		
Net 8 Hour Pedestrian Volume at Crossing									
Net 8 Hour Vehicular Volume on Street Being Crossed									148
									6,411

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	148	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	0	0	0	0	0	0	0	0	
Factored volume of total pedestrians	148		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	100%		50%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									148
Net 8 Hour Volume of Delayed Pedestrians									0

6. Pedestrians	A Volume	Justification not met	☐	☒
	B Delay	Justification not met		

Justification 7 - Projected Volumes

Intersection: Union Street and Site Access 1

Count Date: 2023-01-01

[Return to Justifications 1 - 6](#)

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist?

b.- What kind of count estimate available?

Proceed to c2

c1.- 8-Hour Count Estimate

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

c2.- Peak Hour Estimate

Peak Hour	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour	22	296	26	17		58	27	225	75	23		7	36
PM Peak Hour	14	230	22	35		116	58	347	31	76		32	24
AHV	9	132	12	13	0	44	21	143	27	25	0	10	15
	Main Street AHV Sum			Minor Street AHV Sum									
	343			91									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
	0	0	0	0	0	0	0	0	0	0	0	0	0
AHV	Main Street AHV Sum			Minor Street AHV Sum									
	0			0									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	720	-	-	434	60.3	Case 3 - Warrant is Unlikely
	B. Vehicle volume, along minor streets (average hour)	-	170	-	-	91	53.5	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	720	-	-	343	47.7	
	B. Combined vehicle and pedestrian volume crossing	-	75	-	-	53	70.3	

Appendix E

Baseline SYNCHRO Capacity and Queuing Analysis Reports

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	261	199	66	20	6
Future Vol, veh/h	19	261	199	66	20	6
Conflicting Peds, #/hr	22	0	0	22	8	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	3	6	6	15	2
Mvmt Flow	22	303	231	77	23	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	330	0	-	0	647	294
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	4.12	-	-	-	6.55	6.22
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	2.218	-	-	-	3.635	3.318
Pot Cap-1 Maneuver	1229	-	-	-	416	745
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	682	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1206	-	-	-	396	730
Mov Cap-2 Maneuver	-	-	-	-	396	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	677	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.5	0		13.7		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1206	-	-	-	443	
HCM Lane V/C Ratio	0.018	-	-	-	0.068	
HCM Ctrl Dly (s/v)	8	0	-	-	13.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0.1	-	-	-	0.2	

HCM 6th Signalized Intersection Summary
2: Sir John A. MacDonald Blvd & Union St W

40 Sir John A Macdonald Boulevard
Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	209	5	11	131	118	6	110	17	399	233	133
Future Volume (veh/h)	67	209	5	11	131	118	6	110	17	399	233	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.93	0.96		1.00	0.97		0.95	0.96		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1781	1856	1870	1841	1811	1885	1856	1856
Adj Flow Rate, veh/h	71	220	5	12	138	0	6	116	18	420	245	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	5	2	2	8	3	2	4	6	1	3	3
Cap, veh/h	586	748	17	72	701		516	1330	201	586	1551	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	1183	1774	40	70	1663	1572	1098	3022	457	1215	3526	1572
Grp Volume(v), veh/h	71	0	225	150	0	0	6	66	68	420	245	0
Grp Sat Flow(s),veh/h/ln	1183	0	1815	1733	0	1572	1098	1749	1730	1215	1763	1572
Q Serve(g_s), s	0.0	0.0	7.4	0.0	0.0	0.0	0.3	2.0	2.1	28.0	3.8	0.0
Cycle Q Clear(g_c), s	3.0	0.0	7.4	4.8	0.0	0.0	4.1	2.0	2.1	30.1	3.8	0.0
Prop In Lane	1.00		0.02	0.08		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	586	0	765	773	0		516	769	761	586	1551	
V/C Ratio(X)	0.12	0.00	0.29	0.19	0.00		0.01	0.09	0.09	0.72	0.16	
Avail Cap(c_a), veh/h	586	0	765	773	0		516	769	761	586	1551	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	17.4	16.6	0.0	0.0	16.5	14.8	14.8	23.6	15.3	0.0
Incr Delay (d2), s/veh	0.4	0.0	1.0	0.6	0.0	0.0	0.0	0.2	0.2	7.3	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.8	0.0	0.0	0.0	0.3	0.3	3.9	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	18.4	17.2	0.0	0.0	16.6	15.0	15.1	30.9	15.5	0.0
LnGrp LOS	B		B	B			B	B	B	C	B	
Approach Vol, veh/h	296			150			140			665		
Approach Delay, s/veh	17.9			17.2			15.1			25.3		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	46.3			44.6			46.3			44.6		
Change Period (Y+Rc), s	6.3			6.3			6.3			6.3		
Max Green Setting (Gmax), s	40.0			38.3			40.0			38.3		
Max Q Clear Time (g_c+I1), s	6.1			9.4			32.1			6.8		
Green Ext Time (p_c), s	0.9			2.0			2.6			1.0		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	21.4											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
3: Sir John A. MacDonald Blvd & King St W

40 Sir John A Macdonald Boulevard
Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	454	15	5	198	110	1	3	4	186	37	22
Future Volume (veh/h)	23	454	15	5	198	110	1	3	4	186	37	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.93		0.92	0.92		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1811	1870	1870	1870	1870	1856	1870	1870
Adj Flow Rate, veh/h	26	516	17	6	225	125	1	3	5	211	42	25
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	6	2	2	2	2	3	2	2
Cap, veh/h	681	1188	39	527	1092	928	59	137	192	359	232	138
Arrive On Green	0.03	0.66	0.66	0.60	0.60	0.60	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1797	59	862	1811	1538	78	626	880	1290	1062	632
Grp Volume(v), veh/h	26	0	533	6	225	125	9	0	0	211	0	67
Grp Sat Flow(s),veh/h/ln	1781	0	1856	862	1811	1538	1585	0	0	1290	0	1694
Q Serve(g_s), s	0.5	0.0	13.0	0.3	5.3	3.3	0.0	0.0	0.0	14.0	0.0	3.1
Cycle Q Clear(g_c), s	0.5	0.0	13.0	7.8	5.3	3.3	0.4	0.0	0.0	14.4	0.0	3.1
Prop In Lane	1.00		0.03	1.00		1.00	0.11		0.56	1.00		0.37
Lane Grp Cap(c), veh/h	681	0	1227	527	1092	928	388	0	0	359	0	369
V/C Ratio(X)	0.04	0.00	0.43	0.01	0.21	0.13	0.02	0.00	0.00	0.59	0.00	0.18
Avail Cap(c_a), veh/h	766	0	1227	527	1092	928	462	0	0	421	0	451
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	6.2	0.0	7.7	10.8	8.5	8.1	29.2	0.0	0.0	34.6	0.0	30.2
Incr Delay (d2), s/veh	0.0	0.0	1.1	0.0	0.1	0.1	0.0	0.0	0.0	1.5	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.0	2.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.2	0.0	8.8	10.8	8.6	8.2	29.2	0.0	0.0	36.2	0.0	30.5
LnGrp LOS	A		A		B	A	A	C		D		C
Approach Vol, veh/h	559				356		9				278	
Approach Delay, s/veh	8.7				8.5		29.2				34.8	
Approach LOS	A				A		C				C	
Timer - Assigned Phs	2		4		5	6	8					
Phs Duration (G+Y+Rc), s	68.6		26.4		5.5	63.1	26.4					
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	15.0		16.4		2.5	9.8	2.4					
Green Ext Time (p_c), s	4.9		0.9		0.0	2.4	0.0					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			14.8									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	203	306	27	67	28
Future Vol, veh/h	12	203	306	27	67	28
Conflicting Peds, #/hr	16	0	0	16	1	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	15	254	383	34	84	35
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	433	0	-	0	701	420
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1127	-	-	-	405	633
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1112	-	-	-	392	622
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	762	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.5	0		16.2		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1112	-	-	-	440	
HCM Lane V/C Ratio	0.013	-	-	-	0.27	
HCM Ctrl Dly (s/v)	8.3	0	-	-	16.2	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q (veh)	0	-	-	-	1.1	

HCM 6th Signalized Intersection Summary
2: Sir John A. MacDonald Blvd & Union St W

40 Sir John A Macdonald Boulevard
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	141	12	18	243	399	7	341	11	116	141	94
Future Volume (veh/h)	106	141	12	18	243	399	7	341	11	116	141	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		0.83	0.89		1.00	0.96		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1841	1870	1826	1856	1885	1870	1870	1870	1885	1841	1870
Adj Flow Rate, veh/h	123	164	14	21	283	0	8	397	13	135	164	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	4	2	5	3	1	2	2	2	1	4	2
Cap, veh/h	461	692	59	67	739		565	1542	50	433	1539	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	1004	1642	140	59	1753	1598	1177	3505	114	960	3497	1585
Grp Volume(v), veh/h	123	0	178	304	0	0	8	201	209	135	164	0
Grp Sat Flow(s),veh/h/ln	1004	0	1782	1812	0	1598	1177	1777	1843	960	1749	1585
Q Serve(g_s), s	1.3	0.0	5.8	0.0	0.0	0.0	0.4	6.5	6.5	9.4	2.5	0.0
Cycle Q Clear(g_c), s	11.6	0.0	5.8	10.3	0.0	0.0	2.9	6.5	6.5	15.9	2.5	0.0
Prop In Lane	1.00		0.08	0.07		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	461	0	751	806	0		565	782	811	433	1539	
V/C Ratio(X)	0.27	0.00	0.24	0.38	0.00		0.01	0.26	0.26	0.31	0.11	
Avail Cap(c_a), veh/h	461	0	751	806	0		565	782	811	433	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.8	0.0	16.9	18.2	0.0	0.0	15.8	16.1	16.1	21.1	15.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.7	1.3	0.0	0.0	0.0	0.8	0.8	1.9	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.0	1.8	0.0	0.0	0.0	1.0	1.0	1.1	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.2	0.0	17.7	19.5	0.0	0.0	15.8	16.9	16.8	23.0	15.1	0.0
LnGrp LOS	C		B	B			B	B	B	C	B	
Approach Vol, veh/h		301			304			418			299	
Approach Delay, s/veh		18.7			19.5			16.8			18.7	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.3		44.6		46.3		44.6				
Change Period (Y+Rc), s		6.3		6.3		6.3		6.3				
Max Green Setting (Gmax), s		40.0		38.3		40.0		38.3				
Max Q Clear Time (g_c+I1), s		8.5		13.6		17.9		12.3				
Green Ext Time (p_c), s		3.2		2.0		2.1		2.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			18.3									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th Signalized Intersection Summary
3: Sir John A. MacDonald Blvd & King St W

40 Sir John A Macdonald Boulevard
Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	302	0	2	514	245	22	39	12	121	1	36
Future Volume (veh/h)	72	302	0	2	514	245	22	39	12	121	1	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.97	0.90		0.89	0.91		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1856	1870	1870	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	83	347	0	2	591	282	25	45	14	139	1	41
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	6	2	2
Cap, veh/h	415	1247	0	682	1102	916	122	203	55	335	7	286
Arrive On Green	0.05	0.67	0.00	0.59	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1856	0	1021	1856	1543	353	980	267	1181	34	1383
Grp Volume(v), veh/h	83	347	0	2	591	282	84	0	0	139	0	42
Grp Sat Flow(s),veh/h/ln	1781	1856	0	1021	1856	1543	1599	0	0	1181	0	1417
Q Serve(g_s), s	1.6	7.2	0.0	0.1	18.0	8.6	0.0	0.0	0.0	4.9	0.0	2.3
Cycle Q Clear(g_c), s	1.6	7.2	0.0	0.1	18.0	8.6	3.7	0.0	0.0	8.7	0.0	2.3
Prop In Lane	1.00		0.00	1.00		1.00	0.30		0.17	1.00		0.98
Lane Grp Cap(c), veh/h	415	1247	0	682	1102	916	380	0	0	335	0	293
V/C Ratio(X)	0.20	0.28	0.00	0.00	0.54	0.31	0.22	0.00	0.00	0.41	0.00	0.14
Avail Cap(c_a), veh/h	463	1247	0	682	1102	916	472	0	0	405	0	377
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.1	6.3	0.0	7.9	11.5	9.6	31.4	0.0	0.0	33.1	0.0	30.8
Incr Delay (d2), s/veh	0.2	0.6	0.0	0.0	0.5	0.2	0.3	0.0	0.0	0.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	0.3	0.1	0.9	0.0	0.0	1.7	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	6.8	0.0	7.9	12.0	9.8	31.7	0.0	0.0	33.9	0.0	31.0
LnGrp LOS	A	A		A	B	A	C			C		C
Approach Vol, veh/h	430		875			84			181			
Approach Delay, s/veh	7.1		11.3			31.7			33.2			
Approach LOS	A		B			C			C			
Timer - Assigned Phs	2		4		5	6	8					
Phs Duration (G+Y+Rc), s	69.6		25.4		7.4	62.2	25.4					
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	9.2		10.7		3.6	20.0	5.7					
Green Ext Time (p_c), s	2.9		0.8		0.1	7.0	0.4					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			13.8									
HCM 6th LOS			B									

Appendix F

Future Background SYNCHRO Capacity and Queuing Analysis Reports

2028 Future Background

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	270	206	68	21	6
Future Vol, veh/h	20	270	206	68	21	6
Conflicting Peds, #/hr	22	0	0	22	8	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	3	6	6	15	2
Mvmt Flow	23	314	240	79	24	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	341	0	-	0	670	304
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	368	-
Critical Hdwy	4.12	-	-	-	6.55	6.22
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	2.218	-	-	-	3.635	3.318
Pot Cap-1 Maneuver	1218	-	-	-	403	736
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1195	-	-	-	384	721
Mov Cap-2 Maneuver	-	-	-	-	384	-
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	667	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.6	0		14.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1195	-	-	-	429	
HCM Lane V/C Ratio	0.019	-	-	-	0.073	
HCM Ctrl Dly (s/v)	8.1	0	-	-	14.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0.1	-	-	-	0.2	

HCM 6th Signalized Intersection Summary

1: Union St W & Hargreaves Way

40 Sir John A Macdonald Boulevard
FB AM 2028- Scenario 2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	↰
Traffic Volume (veh/h)	20	270	206	68	21	6
Future Volume (veh/h)	20	270	206	68	21	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99			0.96	1.00	0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1856	1811	1811	1678	1870
Adj Flow Rate, veh/h	23	314	240	79	24	7
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	3	6	6	15	2
Cap, veh/h	107	1401	1054	347	69	20
Arrive On Green	0.82	0.82	0.82	0.82	0.06	0.06
Sat Flow, veh/h	79	1715	1291	425	1149	335
Grp Volume(v), veh/h	337	0	0	319	32	0
Grp Sat Flow(s),veh/h/ln	1794	0	0	1716	1532	0
Q Serve(g_s), s	0.0	0.0	0.0	3.8	1.8	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	3.8	1.8	0.0
Prop In Lane	0.07			0.25	0.75	0.22
Lane Grp Cap(c), veh/h	1508	0	0	1401	92	0
V/C Ratio(X)	0.22	0.00	0.00	0.23	0.35	0.00
Avail Cap(c_a), veh/h	1508	0	0	1401	511	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.99	1.00	0.00
Uniform Delay (d), s/veh	1.8	0.0	0.0	1.9	40.6	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.4	2.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	2.2	0.0	0.0	2.2	42.9	0.0
LnGrp LOS	A			A	D	
Approach Vol, veh/h		337	319		32	
Approach Delay, s/veh		2.2	2.2		42.9	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		79.6		10.4		79.6
Change Period (Y+Rc), s		6.1		5.0		6.1
Max Green Setting (Gmax), s		48.9		30.0		48.9
Max Q Clear Time (g_c+I1), s		5.7		3.8		5.8
Green Ext Time (p_c), s		2.8		0.1		2.7
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			4.1			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
2: Sir John A. MacDonald Blvd & Union St W

40 Sir John A Macdonald Boulevard
FB AM 2028- Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	217	5	11	136	122	6	114	18	413	241	138
Future Volume (veh/h)	69	217	5	11	136	122	6	114	18	413	241	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.93	0.96		1.00	0.97		0.95	0.96		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1781	1856	1870	1841	1811	1885	1856	1856
Adj Flow Rate, veh/h	73	228	5	12	143	0	6	120	19	435	254	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	5	2	2	8	3	2	4	6	1	3	3
Cap, veh/h	582	748	16	71	703		511	1326	204	583	1551	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	1178	1776	39	67	1668	1572	1089	3012	465	1210	3526	1572
Grp Volume(v), veh/h	73	0	233	155	0	0	6	68	71	435	254	0
Grp Sat Flow(s),veh/h/ln	1178	0	1815	1735	0	1572	1089	1749	1728	1210	1763	1572
Q Serve(g_s), s	0.0	0.0	7.7	0.0	0.0	0.0	0.3	2.1	2.2	29.8	4.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	7.7	5.0	0.0	0.0	4.3	2.1	2.2	31.9	4.0	0.0
Prop In Lane	1.00		0.02	0.08		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	582	0	765	774	0		511	769	761	583	1551	
V/C Ratio(X)	0.13	0.00	0.30	0.20	0.00		0.01	0.09	0.09	0.75	0.16	
Avail Cap(c_a), veh/h	582	0	765	774	0		511	769	761	583	1551	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	17.5	16.7	0.0	0.0	16.6	14.8	14.9	24.2	15.4	0.0
Incr Delay (d2), s/veh	0.4	0.0	1.0	0.6	0.0	0.0	0.0	0.2	0.2	8.5	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.3	0.8	0.0	0.0	0.0	0.3	0.3	4.2	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.6	0.0	18.5	17.3	0.0	0.0	16.7	15.1	15.1	32.6	15.6	0.0
LnGrp LOS	B		B	B			B	B	B	C	B	
Approach Vol, veh/h		306			155			145			689	
Approach Delay, s/veh		18.0			17.3			15.1			26.4	
Approach LOS		B			B			B			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.3		44.6		46.3		44.6				
Change Period (Y+Rc), s		6.3		6.3		6.3		6.3				
Max Green Setting (Gmax), s		40.0		38.3		40.0		38.3				
Max Q Clear Time (g_c+I1), s		6.3		9.7		33.9		7.0				
Green Ext Time (p_c), s		1.0		2.1		2.2		1.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				22.0								
HCM 6th LOS				C								
Notes												
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th Signalized Intersection Summary
3: Sir John A. MacDonald Blvd & King St W

40 Sir John A Macdonald Boulevard
FB AM 2028- Scenario 1

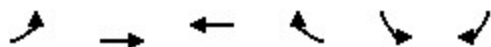


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	470	16	5	205	114	1	3	4	193	38	23
Future Volume (veh/h)	24	470	16	5	205	114	1	3	4	193	38	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.94		0.92	0.92		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1811	1870	1870	1870	1870	1856	1870	1870
Adj Flow Rate, veh/h	27	534	18	6	233	130	1	3	5	219	43	26
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	6	2	2	2	2	3	2	2
Cap, veh/h	670	1182	40	511	1086	922	59	138	194	362	233	141
Arrive On Green	0.03	0.66	0.66	0.60	0.60	0.60	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1795	61	847	1811	1538	79	626	881	1291	1055	638
Grp Volume(v), veh/h	27	0	552	6	233	130	9	0	0	219	0	69
Grp Sat Flow(s),veh/h/ln	1781	0	1856	847	1811	1538	1586	0	0	1291	0	1693
Q Serve(g_s), s	0.5	0.0	13.7	0.3	5.6	3.5	0.0	0.0	0.0	14.6	0.0	3.1
Cycle Q Clear(g_c), s	0.5	0.0	13.7	8.5	5.6	3.5	0.4	0.0	0.0	15.0	0.0	3.1
Prop In Lane	1.00		0.03	1.00		1.00	0.11		0.56	1.00		0.38
Lane Grp Cap(c), veh/h	670	0	1222	511	1086	922	392	0	0	362	0	373
V/C Ratio(X)	0.04	0.00	0.45	0.01	0.21	0.14	0.02	0.00	0.00	0.60	0.00	0.18
Avail Cap(c_a), veh/h	754	0	1222	511	1086	922	463	0	0	421	0	451
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	6.3	0.0	7.9	11.3	8.7	8.3	29.0	0.0	0.0	34.6	0.0	30.1
Incr Delay (d2), s/veh	0.0	0.0	1.2	0.0	0.1	0.1	0.0	0.0	0.0	1.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.0	2.8	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.3	0.0	9.1	11.3	8.8	8.4	29.0	0.0	0.0	36.5	0.0	30.3
LnGrp LOS	A		A		B	A	A	C		D		C
Approach Vol, veh/h	579		369			9			288			
Approach Delay, s/veh	9.0		8.7			29.0			35.0			
Approach LOS	A		A			C			D			
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+Rc), s	68.3		26.7		5.5	62.8		26.7				
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8		5.7				
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2		25.3				
Max Q Clear Time (g_c+I1), s	15.7		17.0		2.5	10.5		2.4				
Green Ext Time (p_c), s	5.2		0.9		0.0	2.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	15.1											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	210	317	28	69	29
Future Vol, veh/h	12	210	317	28	69	29
Conflicting Peds, #/hr	16	0	0	16	1	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	15	263	396	35	86	36
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	447	0	-	0	724	434
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1113	-	-	-	393	622
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	756	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1098	-	-	-	381	611
Mov Cap-2 Maneuver	-	-	-	-	381	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	755	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.4	0		16.7		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1098	-	-	-	-	429
HCM Lane V/C Ratio	0.014	-	-	-	-	0.286
HCM Ctrl Dly (s/v)	8.3	0	-	-	-	16.7
HCM Lane LOS	A	A	-	-	-	C
HCM 95th %tile Q (veh)	0	-	-	-	-	1.2

HCM 6th Signalized Intersection Summary
1: Union St W & Hargreaves Way

40 Sir John A Macdonald Boulevard
FB PM 2028- Scenario 2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	
Traffic Volume (veh/h)	12	210	317	28	69	29
Future Volume (veh/h)	12	210	317	28	69	29
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	262	396	35	86	36
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	3	2	2	2	2
Cap, veh/h	84	1349	1302	115	124	52
Arrive On Green	0.77	0.77	0.77	0.77	0.11	0.11
Sat Flow, veh/h	54	1749	1688	149	1179	493
Grp Volume(v), veh/h	277	0	0	431	123	0
Grp Sat Flow(s),veh/h/ln	1803	0	0	1837	1686	0
Q Serve(g_s), s	0.0	0.0	0.0	6.3	6.3	0.0
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.3	6.3	0.0
Prop In Lane	0.05			0.08	0.70	0.29
Lane Grp Cap(c), veh/h	1433	0	0	1417	177	0
V/C Ratio(X)	0.19	0.00	0.00	0.30	0.69	0.00
Avail Cap(c_a), veh/h	1433	0	0	1417	562	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.95	1.00	0.00
Uniform Delay (d), s/veh	2.8	0.0	0.0	3.1	38.9	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.5	4.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.2	1.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	3.1	0.0	0.0	3.6	43.7	0.0
LnGrp LOS	A			A	D	
Approach Vol, veh/h		277	431		123	
Approach Delay, s/veh		3.1	3.6		43.7	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		75.5		14.5		75.5
Change Period (Y+Rc), s		6.1		5.0		6.1
Max Green Setting (Gmax), s		48.9		30.0		48.9
Max Q Clear Time (g_c+I1), s		5.6		8.3		8.3
Green Ext Time (p_c), s		2.2		0.5		3.7
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			9.3			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
2: Sir John A. MacDonald Blvd & Union St W

40 Sir John A Macdonald Boulevard
FB PM 2028- Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	146	12	19	252	413	7	353	11	120	146	97
Future Volume (veh/h)	110	146	12	19	252	413	7	353	11	120	146	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		0.83	0.89		1.00	0.96		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1841	1870	1826	1856	1885	1870	1870	1870	1885	1841	1870
Adj Flow Rate, veh/h	128	170	14	22	293	0	8	410	13	140	170	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	4	2	5	3	1	2	2	2	1	4	2
Cap, veh/h	454	694	57	68	737		561	1544	49	426	1539	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	997	1648	136	61	1749	1598	1171	3509	111	949	3497	1585
Grp Volume(v), veh/h	128	0	184	315	0	0	8	207	216	140	170	0
Grp Sat Flow(s),veh/h/ln	997	0	1784	1810	0	1598	1171	1777	1844	949	1749	1585
Q Serve(g_s), s	1.7	0.0	6.1	0.0	0.0	0.0	0.4	6.7	6.8	10.0	2.6	0.0
Cycle Q Clear(g_c), s	12.5	0.0	6.1	10.8	0.0	0.0	3.0	6.7	6.8	16.7	2.6	0.0
Prop In Lane	1.00		0.08	0.07		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	454	0	752	805	0		561	782	811	426	1539	
V/C Ratio(X)	0.28	0.00	0.24	0.39	0.00		0.01	0.26	0.27	0.33	0.11	
Avail Cap(c_a), veh/h	454	0	752	805	0		561	782	811	426	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.1	0.0	17.0	18.3	0.0	0.0	15.9	16.1	16.1	21.4	15.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.8	1.4	0.0	0.0	0.0	0.8	0.8	2.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.0	1.8	0.0	0.0	0.0	1.0	1.1	1.1	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.7	0.0	17.7	19.8	0.0	0.0	15.9	17.0	16.9	23.5	15.1	0.0
LnGrp LOS	C		B	B			B	B	B	C	B	
Approach Vol, veh/h		312			315			431			310	
Approach Delay, s/veh		18.9			19.8			16.9			18.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.3		44.6		46.3		44.6				
Change Period (Y+Rc), s		6.3		6.3		6.3		6.3				
Max Green Setting (Gmax), s		40.0		38.3		40.0		38.3				
Max Q Clear Time (g_c+I1), s		8.8		14.5		18.7		12.8				
Green Ext Time (p_c), s		3.3		2.1		2.2		2.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			18.5									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th Signalized Intersection Summary
3: Sir John A. MacDonald Blvd & King St W

40 Sir John A Macdonald Boulevard
FB PM 2028- Scenario 1



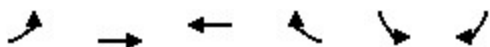
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	313	0	2	533	254	23	40	12	125	1	37
Future Volume (veh/h)	75	313	0	2	533	254	23	40	12	125	1	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.97	0.90		0.89	0.91		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1856	1870	1870	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	86	360	0	2	613	292	26	46	14	144	1	43
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	6	2	2
Cap, veh/h	400	1245	0	673	1099	913	124	203	54	337	7	288
Arrive On Green	0.05	0.67	0.00	0.59	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1856	0	1009	1856	1542	361	976	260	1181	32	1386
Grp Volume(v), veh/h	86	360	0	2	613	292	86	0	0	144	0	44
Grp Sat Flow(s),veh/h/ln	1781	1856	0	1009	1856	1542	1597	0	0	1181	0	1418
Q Serve(g_s), s	1.6	7.5	0.0	0.1	19.1	9.0	0.0	0.0	0.0	5.2	0.0	2.4
Cycle Q Clear(g_c), s	1.6	7.5	0.0	0.1	19.1	9.0	3.8	0.0	0.0	9.0	0.0	2.4
Prop In Lane	1.00		0.00	1.00		1.00	0.30		0.16	1.00		0.98
Lane Grp Cap(c), veh/h	400	1245	0	673	1099	913	382	0	0	337	0	295
V/C Ratio(X)	0.21	0.29	0.00	0.00	0.56	0.32	0.23	0.00	0.00	0.43	0.00	0.15
Avail Cap(c_a), veh/h	448	1245	0	673	1099	913	472	0	0	406	0	378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	6.4	0.0	7.9	11.8	9.7	31.3	0.0	0.0	33.1	0.0	30.7
Incr Delay (d2), s/veh	0.3	0.6	0.0	0.0	0.6	0.2	0.3	0.0	0.0	0.9	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	0.4	0.1	1.0	0.0	0.0	1.7	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.8	7.0	0.0	7.9	12.4	9.9	31.6	0.0	0.0	33.9	0.0	31.0
LnGrp LOS	A	A		A	B	A	C			C		C
Approach Vol, veh/h	446		907			86			188			
Approach Delay, s/veh	7.3		11.6			31.6			33.3			
Approach LOS	A		B			C			C			
Timer - Assigned Phs	2		4		5	6	8					
Phs Duration (G+Y+Rc), s	69.5		25.5		7.5	62.1	25.5					
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	9.5		11.0		3.6	21.1	5.8					
Green Ext Time (p_c), s	3.0		0.8		0.1	7.3	0.4					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			14.0									
HCM 6th LOS			B									

2033 Future Background

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	296	225	75	23	7
Future Vol, veh/h	22	296	225	75	23	7
Conflicting Peds, #/hr	22	0	0	22	8	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	3	6	6	15	2
Mvmt Flow	26	344	262	87	27	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	371	0	-	0	732	330
Stage 1	-	-	-	-	328	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	4.12	-	-	-	6.55	6.22
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	2.218	-	-	-	3.635	3.318
Pot Cap-1 Maneuver	1188	-	-	-	370	712
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	647	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	350	698
Mov Cap-2 Maneuver	-	-	-	-	350	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	642	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.6	0		15		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1166	-	-	-	396	
HCM Lane V/C Ratio	0.022	-	-	-	0.088	
HCM Ctrl Dly (s/v)	8.2	0	-	-	15	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q (veh)	0.1	-	-	-	0.3	

HCM 6th Signalized Intersection Summary
1: Union St W & Hargreaves Way

40 Sir John A Macdonald Boulevard
FB AM 2033- Scenario 2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	296	225	75	23	7
Future Volume (veh/h)	22	296	225	75	23	7
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99			0.96	1.00	0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1856	1811	1811	1678	1870
Adj Flow Rate, veh/h	26	344	262	87	27	8
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	3	6	6	15	2
Cap, veh/h	109	1390	1049	348	71	21
Arrive On Green	0.81	0.81	0.81	0.81	0.06	0.06
Sat Flow, veh/h	82	1706	1288	428	1149	340
Grp Volume(v), veh/h	370	0	0	349	36	0
Grp Sat Flow(s),veh/h/ln	1788	0	0	1715	1531	0
Q Serve(g_s), s	0.0	0.0	0.0	4.3	2.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	4.3	2.0	0.0
Prop In Lane	0.07			0.25	0.75	0.22
Lane Grp Cap(c), veh/h	1499	0	0	1397	95	0
V/C Ratio(X)	0.25	0.00	0.00	0.25	0.38	0.00
Avail Cap(c_a), veh/h	1499	0	0	1397	510	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.98	1.00	0.00
Uniform Delay (d), s/veh	1.9	0.0	0.0	1.9	40.5	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	2.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	2.3	0.0	0.0	2.4	43.0	0.0
LnGrp LOS	A			A	D	
Approach Vol, veh/h		370	349		36	
Approach Delay, s/veh		2.3	2.4		43.0	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		79.4		10.6		79.4
Change Period (Y+Rc), s		6.1		5.0		6.1
Max Green Setting (Gmax), s		48.9		30.0		48.9
Max Q Clear Time (g_c+I1), s		6.2		4.0		6.3
Green Ext Time (p_c), s		3.1		0.1		3.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			4.3			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
2: Sir John A. MacDonald Blvd & Union St W

40 Sir John A Macdonald Boulevard
FB AM 2033- Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	237	6	12	148	134	7	125	19	452	264	151
Future Volume (veh/h)	76	237	6	12	148	134	7	125	19	452	264	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.93	0.96		1.00	0.97		0.95	0.96		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1781	1856	1870	1841	1811	1885	1856	1856
Adj Flow Rate, veh/h	80	249	6	13	156	0	7	132	20	476	278	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	5	2	2	8	3	2	4	6	1	3	3
Cap, veh/h	571	746	18	70	703		498	1334	197	575	1551	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	1166	1771	43	66	1667	1572	1067	3033	448	1197	3526	1572
Grp Volume(v), veh/h	80	0	255	169	0	0	7	75	77	476	278	0
Grp Sat Flow(s),veh/h/ln	1166	0	1814	1733	0	1572	1067	1749	1732	1197	1763	1572
Q Serve(g_s), s	0.0	0.0	8.6	0.0	0.0	0.0	0.4	2.3	2.4	35.2	4.4	0.0
Cycle Q Clear(g_c), s	3.8	0.0	8.6	5.5	0.0	0.0	4.7	2.3	2.4	37.5	4.4	0.0
Prop In Lane	1.00		0.02	0.08		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	571	0	764	773	0		498	769	762	575	1551	
V/C Ratio(X)	0.14	0.00	0.33	0.22	0.00		0.01	0.10	0.10	0.83	0.18	
Avail Cap(c_a), veh/h	571	0	764	773	0		498	769	762	575	1551	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.3	0.0	17.7	16.8	0.0	0.0	16.9	14.9	14.9	25.9	15.5	0.0
Incr Delay (d2), s/veh	0.5	0.0	1.2	0.7	0.0	0.0	0.1	0.3	0.3	12.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.4	0.9	0.0	0.0	0.0	0.3	0.3	5.4	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.8	0.0	18.9	17.5	0.0	0.0	17.0	15.1	15.2	38.9	15.7	0.0
LnGrp LOS	B		B	B			B	B	B	D	B	
Approach Vol, veh/h	335			169			159			754		
Approach Delay, s/veh	18.4			17.5			15.2			30.3		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	46.3			44.6			46.3			44.6		
Change Period (Y+Rc), s	6.3			6.3			6.3			6.3		
Max Green Setting (Gmax), s	40.0			38.3			40.0			38.3		
Max Q Clear Time (g_c+I1), s	6.7			10.6			39.5			7.5		
Green Ext Time (p_c), s	1.1			2.3			0.2			1.2		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	24.3											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
3: Sir John A. MacDonald Blvd & King St W

40 Sir John A Macdonald Boulevard
FB AM 2033- Scenario 1

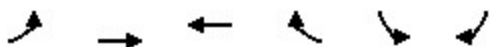


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	26	514	17	6	224	125	1	3	5	211	42	25	
Future Volume (veh/h)	26	514	17	6	224	125	1	3	5	211	42	25	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.94		0.93	0.93		0.93	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1811	1870	1870	1870	1870	1856	1870	1870	
Adj Flow Rate, veh/h	30	584	19	7	255	142	1	3	6	240	48	28	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
Percent Heavy Veh, %	2	2	2	2	6	2	2	2	2	3	2	2	
Cap, veh/h	641	1172	38	467	1071	909	57	128	215	371	244	142	
Arrive On Green	0.03	0.65	0.65	0.59	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23	
Sat Flow, veh/h	1781	1798	58	809	1811	1537	67	564	946	1293	1072	626	
Grp Volume(v), veh/h	30	0	603	7	255	142	10	0	0	240	0	76	
Grp Sat Flow(s),veh/h/ln	1781	0	1856	809	1811	1537	1576	0	0	1293	0	1698	
Q Serve(g_s), s	0.6	0.0	15.9	0.4	6.4	4.0	0.0	0.0	0.0	16.1	0.0	3.4	
Cycle Q Clear(g_c), s	0.6	0.0	15.9	10.6	6.4	4.0	0.5	0.0	0.0	16.6	0.0	3.4	
Prop In Lane	1.00		0.03	1.00		1.00	0.10		0.60	1.00		0.37	
Lane Grp Cap(c), veh/h	641	0	1210	467	1071	909	400	0	0	371	0	386	
V/C Ratio(X)	0.05	0.00	0.50	0.01	0.24	0.16	0.03	0.00	0.00	0.65	0.00	0.20	
Avail Cap(c_a), veh/h	721	0	1210	467	1071	909	460	0	0	422	0	452	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.99	0.00	0.99	
Uniform Delay (d), s/veh	6.6	0.0	8.5	12.8	9.2	8.7	28.5	0.0	0.0	34.7	0.0	29.7	
Incr Delay (d2), s/veh	0.0	0.0	1.5	0.0	0.1	0.1	0.0	0.0	0.0	2.8	0.0	0.2	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.5	0.0	0.1	0.1	0.1	0.0	0.0	3.2	0.0	0.8	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d), s/veh	6.6	0.0	10.0	12.8	9.3	8.8	28.6	0.0	0.0	37.5	0.0	29.9	
LnGrp LOS	A		B		B	A	A	C		D		C	
Approach Vol, veh/h	633			404			10			316			
Approach Delay, s/veh	9.8			9.2			28.6			35.7			
Approach LOS	A			A			C			D			
Timer - Assigned Phs	2			4		5	6	8					
Phs Duration (G+Y+Rc), s	67.7			27.3		5.7	62.0	27.3					
Change Period (Y+Rc), s	5.8			5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2			25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	17.9			18.6		2.6	12.6	2.5					
Green Ext Time (p_c), s	5.8			0.9		0.0	2.8	0.0					
Intersection Summary													
HCM 6th Ctrl Delay, s/veh				15.8									
HCM 6th LOS				B									

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	230	347	31	76	32
Future Vol, veh/h	14	230	347	31	76	32
Conflicting Peds, #/hr	16	0	0	16	1	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	18	288	434	39	95	40
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	489	0	-	0	795	474
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1074	-	-	-	357	590
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1059	-	-	-	345	580
Mov Cap-2 Maneuver	-	-	-	-	345	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	731	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.5	0		18.9		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1059	-	-	-	392	
HCM Lane V/C Ratio	0.017	-	-	-	0.344	
HCM Ctrl Dly (s/v)	8.5	0	-	-	18.9	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q (veh)	0.1	-	-	-	1.5	

HCM 6th Signalized Intersection Summary
1: Union St W & Hargreaves Way

40 Sir John A Macdonald Boulevard
FB PM 2033- Scenario 2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	
Traffic Volume (veh/h)	14	230	347	31	76	32
Future Volume (veh/h)	14	230	347	31	76	32
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	288	434	39	95	40
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	3	2	2	2	2
Cap, veh/h	89	1321	1286	116	134	56
Arrive On Green	0.76	0.76	0.76	0.76	0.11	0.11
Sat Flow, veh/h	61	1731	1685	151	1178	496
Grp Volume(v), veh/h	306	0	0	473	136	0
Grp Sat Flow(s),veh/h/ln	1792	0	0	1836	1687	0
Q Serve(g_s), s	0.0	0.0	0.0	7.4	7.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	7.4	7.0	0.0
Prop In Lane	0.06			0.08	0.70	0.29
Lane Grp Cap(c), veh/h	1410	0	0	1401	192	0
V/C Ratio(X)	0.22	0.00	0.00	0.34	0.71	0.00
Avail Cap(c_a), veh/h	1410	0	0	1401	562	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.93	1.00	0.00
Uniform Delay (d), s/veh	3.0	0.0	0.0	3.4	38.5	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.6	4.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.2	2.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	3.4	0.0	0.0	4.0	43.2	0.0
LnGrp LOS	A			A	D	
Approach Vol, veh/h		306	473		136	
Approach Delay, s/veh		3.4	4.0		43.2	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		74.8		15.2		74.8
Change Period (Y+Rc), s		6.1		5.0		6.1
Max Green Setting (Gmax), s		48.9		30.0		48.9
Max Q Clear Time (g_c+I1), s		6.2		9.0		9.4
Green Ext Time (p_c), s		2.5		0.5		4.2
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			9.6			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
2: Sir John A. MacDonald Blvd & Union St W

40 Sir John A Macdonald Boulevard
FB PM 2033- Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	160	14	20	275	452	8	386	12	131	160	107
Future Volume (veh/h)	120	160	14	20	275	452	8	386	12	131	160	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.83	0.89		1.00	0.96		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1841	1870	1826	1856	1885	1870	1870	1870	1885	1841	1870
Adj Flow Rate, veh/h	140	186	16	23	320	0	9	449	14	152	186	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	4	2	5	3	1	2	2	2	1	4	2
Cap, veh/h	437	691	59	67	737		551	1545	48	407	1539	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	978	1640	141	59	1750	1598	1155	3512	109	917	3497	1585
Grp Volume(v), veh/h	140	0	202	343	0	0	9	227	236	152	186	0
Grp Sat Flow(s),veh/h/ln	978	0	1781	1809	0	1598	1155	1777	1844	917	1749	1585
Q Serve(g_s), s	2.8	0.0	6.7	0.0	0.0	0.0	0.4	7.4	7.5	11.6	2.9	0.0
Cycle Q Clear(g_c), s	14.7	0.0	6.7	11.9	0.0	0.0	3.3	7.4	7.5	19.1	2.9	0.0
Prop In Lane	1.00		0.08	0.07		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	437	0	751	805	0		551	782	811	407	1539	
V/C Ratio(X)	0.32	0.00	0.27	0.43	0.00		0.02	0.29	0.29	0.37	0.12	
Avail Cap(c_a), veh/h	437	0	751	805	0		551	782	811	407	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.0	0.0	17.2	18.7	0.0	0.0	16.0	16.3	16.3	22.5	15.1	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.9	1.7	0.0	0.0	0.1	0.9	0.9	2.6	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.1	2.1	0.0	0.0	0.0	1.1	1.2	1.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.9	0.0	18.0	20.3	0.0	0.0	16.1	17.3	17.3	25.1	15.2	0.0
LnGrp LOS	C		B	C			B	B	B	C	B	
Approach Vol, veh/h		342			343			472			338	
Approach Delay, s/veh		19.6			20.3			17.2			19.7	
Approach LOS		B			C			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.3		44.6		46.3		44.6				
Change Period (Y+Rc), s		6.3		6.3		6.3		6.3				
Max Green Setting (Gmax), s		40.0		38.3		40.0		38.3				
Max Q Clear Time (g_c+I1), s		9.5		16.7		21.1		13.9				
Green Ext Time (p_c), s		3.6		2.3		2.3		2.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				19.0								
HCM 6th LOS				B								

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
3: Sir John A. MacDonald Blvd & King St W

40 Sir John A Macdonald Boulevard
FB PM 2033- Scenario 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	342	0	2	582	278	25	44	14	137	1	41
Future Volume (veh/h)	82	342	0	2	582	278	25	44	14	137	1	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.97	0.91		0.89	0.91		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1856	1870	1870	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	94	393	0	2	669	320	29	51	16	157	1	47
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	6	2	2
Cap, veh/h	363	1237	0	641	1089	905	126	205	56	338	6	296
Arrive On Green	0.05	0.67	0.00	0.59	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1856	0	980	1856	1542	362	967	266	1178	30	1391
Grp Volume(v), veh/h	94	393	0	2	669	320	96	0	0	157	0	48
Grp Sat Flow(s),veh/h/ln	1781	1856	0	980	1856	1542	1595	0	0	1178	0	1421
Q Serve(g_s), s	1.8	8.5	0.0	0.1	22.1	10.3	0.0	0.0	0.0	6.2	0.0	2.6
Cycle Q Clear(g_c), s	1.8	8.5	0.0	1.0	22.1	10.3	4.3	0.0	0.0	10.4	0.0	2.6
Prop In Lane	1.00		0.00	1.00		1.00	0.30		0.17	1.00		0.98
Lane Grp Cap(c), veh/h	363	1237	0	641	1089	905	388	0	0	338	0	302
V/C Ratio(X)	0.26	0.32	0.00	0.00	0.61	0.35	0.25	0.00	0.00	0.47	0.00	0.16
Avail Cap(c_a), veh/h	408	1237	0	641	1089	905	471	0	0	401	0	378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.6	6.7	0.0	8.5	12.7	10.2	31.1	0.0	0.0	33.3	0.0	30.5
Incr Delay (d2), s/veh	0.4	0.7	0.0	0.0	1.0	0.2	0.3	0.0	0.0	1.0	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	0.7	0.2	1.1	0.0	0.0	1.9	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.0	7.4	0.0	8.5	13.7	10.5	31.5	0.0	0.0	34.3	0.0	30.7
LnGrp LOS	A	A		A	B	B	C			C		C
Approach Vol, veh/h	487					991		96		205		
Approach Delay, s/veh	7.9					12.7		31.5		33.5		
Approach LOS	A					B		C		C		
Timer - Assigned Phs	2		4		5	6	8					
Phs Duration (G+Y+Rc), s	69.1		25.9		7.6	61.5	25.9					
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	10.5		12.4		3.8	24.1	6.3					
Green Ext Time (p_c), s	3.3		0.9		0.1	7.9	0.5					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			14.8									
HCM 6th LOS			B									

Appendix G

Future Total SYNCHRO Capacity and Queuing Analysis Reports

2028 Future Total

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	20	270	26	27	206	68	17	0	58	21	0	6
Future Vol, veh/h	20	270	26	27	206	68	17	0	58	21	0	6
Conflicting Peds, #/hr	22	0	0	0	0	22	2	0	8	8	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	3	2	2	6	6	2	2	2	15	2	2
Mvmt Flow	23	314	30	31	240	79	20	0	67	24	0	7
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	341	0	0	344	0	0	722	778	337	781	754	304
Stage 1	-	-	-	-	-	-	375	375	-	364	364	-
Stage 2	-	-	-	-	-	-	347	403	-	417	390	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.25	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.25	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.25	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.635	4.018	3.318
Pot Cap-1 Maneuver	1218	-	-	1215	-	-	342	328	705	297	338	736
Stage 1	-	-	-	-	-	-	646	617	-	629	624	-
Stage 2	-	-	-	-	-	-	669	600	-	588	608	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1195	-	-	1215	-	-	324	304	700	251	314	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	324	304	-	251	314	-
Stage 1	-	-	-	-	-	-	630	602	-	603	593	-
Stage 2	-	-	-	-	-	-	641	571	-	515	593	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.5			0.7			12.7			18.5		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	554	1195	-	-	1215	-	-	251	721			
HCM Lane V/C Ratio	0.157	0.019	-	-	0.026	-	-	0.097	0.01			
HCM Ctrl Dly (s/v)	12.7	8.1	0	-	8	0	-	20.9	10			
HCM Lane LOS	B	A	A	-	A	A	-	C	B			
HCM 95th %tile Q (veh)	0.6	0.1	-	-	0.1	-	-	0.3	0			

HCM 6th Signalized Intersection Summary
1: Site Access 1/Hargreaves Way & Union St W

40 Sir John A Macdonald Boulevard
FT AM 2028- Scenario 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	270	26	27	206	68	17	0	58	21	0	6
Future Volume (veh/h)	20	270	26	27	206	68	17	0	58	21	0	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.97		0.97	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1811	1811	1870	1870	1870	1678	1870	1870
Adj Flow Rate, veh/h	23	314	30	31	240	79	20	0	67	24	0	7
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	3	2	2	6	6	2	2	2	15	2	2
Cap, veh/h	92	1172	109	120	881	279	75	18	148	253	0	192
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	66	1560	145	101	1172	371	207	146	1182	1382	0	1534
Grp Volume(v), veh/h	367	0	0	350	0	0	87	0	0	24	0	7
Grp Sat Flow(s),veh/h/ln	1771	0	0	1644	0	0	1535	0	0	1382	0	1534
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s	5.6	0.0	0.0	5.7	0.0	0.0	4.5	0.0	0.0	1.3	0.0	0.4
Prop In Lane	0.06		0.08	0.09		0.23	0.23		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	1373	0	0	1279	0	0	242	0	0	253	0	192
V/C Ratio(X)	0.27	0.00	0.00	0.27	0.00	0.00	0.36	0.00	0.00	0.09	0.00	0.04
Avail Cap(c_a), veh/h	1373	0	0	1279	0	0	552	0	0	524	0	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.98	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.5	0.0	0.0	3.5	0.0	0.0	36.4	0.0	0.0	35.0	0.0	34.6
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.0	0.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	1.1	0.0	0.0	0.3	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.0	0.0	0.0	4.0	0.0	0.0	37.3	0.0	0.0	35.1	0.0	34.7
LnGrp LOS	A			A			D			D		C
Approach Vol, veh/h		367			350			87				31
Approach Delay, s/veh		4.0			4.0			37.3				35.0
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.7		16.3		73.7		16.3				
Change Period (Y+Rc), s		6.1		5.0		6.1		5.0				
Max Green Setting (Gmax), s		48.9		30.0		48.9		30.0				
Max Q Clear Time (g_c+I1), s		7.6		3.3		7.7		6.5				
Green Ext Time (p_c), s		3.1		0.1		3.0		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			8.6									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

2: Sir John A Macdonald Boulevard/Sir John A. MacDonald Blvd & Union St - Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	256	5	21	148	122	19	114	18	413	306	140
Future Volume (veh/h)	88	256	5	21	148	122	19	114	18	413	306	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.96		1.00	0.97		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1781	1856	1870	1870	1870	1885	1870	1856
Adj Flow Rate, veh/h	93	269	5	23	156	0	21	124	20	435	333	0
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.95	0.92	0.95
Percent Heavy Veh, %	3	5	2	2	8	3	2	2	2	1	2	3
Cap, veh/h	568	752	14	104	647		468	1353	214	601	1564	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	1166	1784	33	140	1536	1572	1018	3074	486	1254	3554	1572
Grp Volume(v), veh/h	93	0	274	179	0	0	21	71	73	435	333	0
Grp Sat Flow(s),veh/h/ln	1166	0	1817	1676	0	1572	1018	1777	1783	1254	1777	1572
Q Serve(g_s), s	0.0	0.0	9.3	0.0	0.0	0.0	1.2	2.1	2.2	28.2	5.3	0.0
Cycle Q Clear(g_c), s	4.7	0.0	9.3	5.9	0.0	0.0	6.4	2.1	2.2	30.4	5.3	0.0
Prop In Lane	1.00		0.02	0.13		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	568	0	766	751	0		468	782	785	601	1564	
V/C Ratio(X)	0.16	0.00	0.36	0.24	0.00		0.04	0.09	0.09	0.72	0.21	
Avail Cap(c_a), veh/h	568	0	766	751	0		468	782	785	601	1564	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.6	0.0	17.9	16.9	0.0	0.0	17.7	14.8	14.9	23.7	15.7	0.0
Incr Delay (d2), s/veh	0.6	0.0	1.3	0.7	0.0	0.0	0.2	0.2	0.2	7.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.6	1.0	0.0	0.0	0.1	0.3	0.3	4.0	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.2	0.0	19.2	17.7	0.0	0.0	17.9	15.1	15.1	31.1	16.0	0.0
LnGrp LOS	B		B	B			B	B	B	C	B	
Approach Vol, veh/h	367			179			165			768		
Approach Delay, s/veh	18.7			17.7			15.4			24.6		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	46.3			44.6			46.3			44.6		
Change Period (Y+Rc), s	6.3			6.3			6.3			6.3		
Max Green Setting (Gmax), s	40.0			38.3			40.0			38.3		
Max Q Clear Time (g_c+I1), s	8.4			11.3			32.4			7.9		
Green Ext Time (p_c), s	1.1			2.5			2.9			1.3		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	21.3											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

3: Sir John A. MacDonald Blvd/Sir John A Macdonald Boulevard & King St W - Scenario 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	470	16	5	205	114	1	16	4	193	55	23
Future Volume (veh/h)	24	470	16	5	205	114	1	16	4	193	55	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.98	1.00		0.92	0.92		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	534	18	6	233	124	1	17	5	210	60	25
Peak Hour Factor	0.92	0.88	0.88	0.88	0.88	0.92	0.88	0.92	0.88	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	691	1210	41	529	1116	960	43	279	78	342	257	107
Arrive On Green	0.03	0.67	0.67	0.62	0.62	0.62	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1795	61	847	1811	1558	16	1358	381	1281	1254	522
Grp Volume(v), veh/h	26	0	552	6	233	124	23	0	0	210	0	85
Grp Sat Flow(s),veh/h/ln	1781	0	1856	847	1811	1558	1754	0	0	1281	0	1776
Q Serve(g_s), s	0.5	0.0	13.1	0.3	5.4	3.2	0.0	0.0	0.0	13.5	0.0	3.8
Cycle Q Clear(g_c), s	0.5	0.0	13.1	8.0	5.4	3.2	1.0	0.0	0.0	14.5	0.0	3.8
Prop In Lane	1.00		0.03	1.00		1.00	0.04		0.22	1.00		0.29
Lane Grp Cap(c), veh/h	691	0	1250	529	1116	960	400	0	0	342	0	365
V/C Ratio(X)	0.04	0.00	0.44	0.01	0.21	0.13	0.06	0.00	0.00	0.61	0.00	0.23
Avail Cap(c_a), veh/h	775	0	1250	529	1116	960	505	0	0	421	0	473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	0.0	7.2	10.3	8.0	7.6	30.4	0.0	0.0	35.6	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.0	1.1	0.0	0.1	0.1	0.1	0.0	0.0	1.8	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	2.8	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.8	0.0	8.3	10.3	8.1	7.7	30.5	0.0	0.0	37.4	0.0	31.8
LnGrp LOS	A		A		B	A	A	C		D		C
Approach Vol, veh/h	578		363			23			295			
Approach Delay, s/veh	8.2		8.0			30.5			35.8			
Approach LOS	A		A			C			D			
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+Rc), s	69.8		25.2		5.5	64.3		25.2				
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8		5.7				
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2		25.3				
Max Q Clear Time (g_c+I1), s	15.1		16.5		2.5	10.0		3.0				
Green Ext Time (p_c), s	5.2		1.0		0.0	2.5		0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			15.0									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	8	0	151	295	37
Future Vol, veh/h	0	8	0	151	295	37
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	2	2	2
Mvmt Flow	0	9	0	164	321	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	181	-	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	831	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	831	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9.4	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 831		-	-		
HCM Lane V/C Ratio	- 0.01		-	-		
HCM Ctrl Dly (s/v)	- 9.4		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	9	0	151	265	38
Future Vol, veh/h	0	9	0	151	265	38
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	2	2	2
Mvmt Flow	0	10	0	164	288	41
Major/Minor	Minor2	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	EB	NB		SB		
HCM Ctrl Dly, s/v	9.3	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 850		-	-		
HCM Lane V/C Ratio	- 0.012		-	-		
HCM Ctrl Dly (s/v)	- 9.3		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	210	22	58	317	28	35	0	116	69	0	29
Future Vol, veh/h	12	210	22	58	317	28	35	0	116	69	0	29
Conflicting Peds, #/hr	16	0	0	0	0	16	4	0	1	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	3	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	263	28	73	396	35	44	0	145	86	0	36
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	447	0	0	291	0	0	889	900	278	957	897	434
Stage 1	-	-	-	-	-	-	307	307	-	576	576	-
Stage 2	-	-	-	-	-	-	582	593	-	381	321	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1113	-	-	1271	-	-	264	278	761	237	279	622
Stage 1	-	-	-	-	-	-	703	661	-	503	502	-
Stage 2	-	-	-	-	-	-	499	493	-	641	652	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1098	-	-	1271	-	-	230	249	760	176	250	611
Mov Cap-2 Maneuver	-	-	-	-	-	-	230	249	-	176	250	-
Stage 1	-	-	-	-	-	-	692	650	-	488	457	-
Stage 2	-	-	-	-	-	-	432	449	-	510	642	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.4			1.2			16.7			34.1		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	495	1098	-	-	1271	-	-	176	611			
HCM Lane V/C Ratio	0.381	0.014	-	-	0.057	-	-	0.49	0.059			
HCM Ctrl Dly (s/v)	16.7	8.3	0	-	8	0	-	43.7	11.3			
HCM Lane LOS	C	A	A	-	A	A	-	E	B			
HCM 95th %tile Q (veh)	1.8	0	-	-	0.2	-	-	2.4	0.2			

HCM 6th Signalized Intersection Summary
1: Site Access 1/Hargreaves Way & Union St W

40 Sir John A Macdonald Boulevard
FT PM 2028- Scenario 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	210	22	58	317	28	35	0	116	69	0	29
Future Volume (veh/h)	12	210	22	58	317	28	35	0	116	69	0	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	262	28	72	396	35	44	0	145	86	0	36
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	3	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	842	87	142	751	63	146	27	408	485	0	528
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	37	1582	164	181	1411	119	280	80	1185	1176	0	1534
Grp Volume(v), veh/h	305	0	0	503	0	0	189	0	0	86	0	36
Grp Sat Flow(s),veh/h/ln	1783	0	0	1710	0	0	1545	0	0	1176	0	1534
Q Serve(g_s), s	0.0	0.0	0.0	4.8	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.4
Cycle Q Clear(g_c), s	8.5	0.0	0.0	16.4	0.0	0.0	7.8	0.0	0.0	5.6	0.0	1.4
Prop In Lane	0.05		0.09	0.14		0.07	0.23		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	991	0	0	956	0	0	582	0	0	485	0	528
V/C Ratio(X)	0.31	0.00	0.00	0.53	0.00	0.00	0.32	0.00	0.00	0.18	0.00	0.07
Avail Cap(c_a), veh/h	991	0	0	956	0	0	582	0	0	485	0	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.92	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	0.0	0.0	13.6	0.0	0.0	21.9	0.0	0.0	21.2	0.0	19.8
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.9	0.0	0.0	1.5	0.0	0.0	0.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.3	0.0	0.0	1.5	0.0	0.0	0.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	0.0	15.5	0.0	0.0	23.4	0.0	0.0	22.0	0.0	20.1
LnGrp LOS	B			B			C			C		C
Approach Vol, veh/h		305			503			189			122	
Approach Delay, s/veh		12.6			15.5			23.4			21.4	
Approach LOS		B			B			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		54.0		36.0		54.0		36.0				
Change Period (Y+Rc), s		6.1		5.0		6.1		5.0				
Max Green Setting (Gmax), s		47.9		31.0		47.9		31.0				
Max Q Clear Time (g_c+I1), s		10.5		7.6		18.4		9.8				
Green Ext Time (p_c), s		2.5		0.7		4.5		1.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				16.7								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

2: Sir John A Macdonald Boulevard/Sir John A. MacDonald Blvd & Union St - 2028- Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	198	174	12	41	281	413	35	353	11	120	173	98
Future Volume (veh/h)	198	174	12	41	281	413	35	353	11	120	173	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.83	0.89		1.00	0.97		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1885	1841	1870	1826	1856	1885	1870	1870	1870	1885	1841	1870
Adj Flow Rate, veh/h	230	202	14	48	327	0	41	410	13	140	201	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	4	2	5	3	1	2	2	2	1	4	2
Cap, veh/h	427	706	49	107	670		542	1544	49	426	1539	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	974	1676	116	149	1589	1598	1141	3509	111	949	3497	1585
Grp Volume(v), veh/h	230	0	216	375	0	0	41	207	216	140	201	0
Grp Sat Flow(s),veh/h/ln	974	0	1792	1738	0	1598	1141	1777	1844	949	1749	1585
Q Serve(g_s), s	10.4	0.0	7.2	1.6	0.0	0.0	2.0	6.7	6.8	10.0	3.1	0.0
Cycle Q Clear(g_c), s	23.9	0.0	7.2	13.5	0.0	0.0	5.1	6.7	6.8	16.7	3.1	0.0
Prop In Lane	1.00		0.06	0.13		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	427	0	755	777	0		542	782	811	426	1539	
V/C Ratio(X)	0.54	0.00	0.29	0.48	0.00		0.08	0.26	0.27	0.33	0.13	
Avail Cap(c_a), veh/h	427	0	755	777	0		542	782	811	426	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.6	0.0	17.3	19.1	0.0	0.0	16.6	16.1	16.1	21.4	15.1	0.0
Incr Delay (d2), s/veh	4.8	0.0	1.0	2.1	0.0	0.0	0.3	0.8	0.8	2.0	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	1.2	2.4	0.0	0.0	0.2	1.0	1.1	1.1	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.4	0.0	18.3	21.2	0.0	0.0	16.9	17.0	16.9	23.5	15.3	0.0
LnGrp LOS	C		B	C			B	B	B	C	B	
Approach Vol, veh/h	446				375				464			
Approach Delay, s/veh	23.5				21.2				16.9			
Approach LOS	C				C				B			
Timer - Assigned Phs	2				4				6			
Phs Duration (G+Y+Rc), s	46.3				44.6				46.3			
Change Period (Y+Rc), s	6.3				6.3				6.3			
Max Green Setting (Gmax), s	40.0				38.3				40.0			
Max Q Clear Time (g_c+I1), s	8.8				25.9				18.7			
Green Ext Time (p_c), s	3.5				2.4				2.9			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	20.1											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

3: Sir John A. MacDonald Blvd/Sir John A Macdonald Boulevard & King St PM 2028- Scenario 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	313	0	2	533	254	23	68	12	125	19	37
Future Volume (veh/h)	75	313	0	2	533	254	23	68	12	125	19	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.97	0.91		0.89	0.92		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1856	1870	1870	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	86	360	0	2	613	292	26	78	14	144	22	43
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	6	2	2
Cap, veh/h	396	1237	0	667	1090	906	98	263	42	324	111	217
Arrive On Green	0.05	0.67	0.00	0.59	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1856	0	1009	1856	1542	241	1236	199	1158	522	1019
Grp Volume(v), veh/h	86	360	0	2	613	292	118	0	0	144	0	65
Grp Sat Flow(s),veh/h/ln	1781	1856	0	1009	1856	1542	1676	0	0	1158	0	1541
Q Serve(g_s), s	1.7	7.6	0.0	0.1	19.3	9.1	0.0	0.0	0.0	5.1	0.0	3.3
Cycle Q Clear(g_c), s	1.7	7.6	0.0	0.2	19.3	9.1	5.2	0.0	0.0	10.4	0.0	3.3
Prop In Lane	1.00		0.00	1.00		1.00	0.22		0.12	1.00		0.66
Lane Grp Cap(c), veh/h	396	1237	0	667	1090	906	402	0	0	324	0	327
V/C Ratio(X)	0.22	0.29	0.00	0.00	0.56	0.32	0.29	0.00	0.00	0.44	0.00	0.20
Avail Cap(c_a), veh/h	443	1237	0	667	1090	906	489	0	0	387	0	410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	6.6	0.0	8.2	12.1	10.0	31.5	0.0	0.0	33.5	0.0	30.8
Incr Delay (d2), s/veh	0.3	0.6	0.0	0.0	0.7	0.2	0.4	0.0	0.0	1.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	0.5	0.2	1.3	0.0	0.0	1.8	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.0	7.2	0.0	8.2	12.7	10.2	31.9	0.0	0.0	34.5	0.0	31.1
LnGrp LOS	A	A		A	B	B	C			C		C
Approach Vol, veh/h	446		907			118			209			
Approach Delay, s/veh	7.5		11.9			31.9			33.4			
Approach LOS	A		B			C			C			
Timer - Assigned Phs	2		4		5	6	8					
Phs Duration (G+Y+Rc), s	69.1		25.9		7.5	61.6	25.9					
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	9.6		12.4		3.7	21.3	7.2					
Green Ext Time (p_c), s	3.0		0.9		0.1	7.3	0.6					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.8											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	9	0	399	202	24
Future Vol, veh/h	0	9	0	399	202	24
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	2	2	2
Mvmt Flow	0	10	0	434	220	26
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	123	-	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	905	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	905	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 905		-	-		
HCM Lane V/C Ratio	- 0.011		-	-		
HCM Ctrl Dly (s/v)	- 9		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	9	0	399	186	25
Future Vol, veh/h	0	9	0	399	186	25
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	2	2	2
Mvmt Flow	0	10	0	434	202	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	115	-	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	916	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	916	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 916		-	-		
HCM Lane V/C Ratio	- 0.011		-	-		
HCM Ctrl Dly (s/v)	- 9		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

2033 Future Total

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	22	296	26	27	225	75	17	0	58	23	0	7
Future Vol, veh/h	22	296	26	27	225	75	17	0	58	23	0	7
Conflicting Peds, #/hr	22	0	0	0	0	22	2	0	8	8	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	3	2	2	6	6	2	2	2	15	2	2
Mvmt Flow	26	344	30	31	262	87	20	0	67	27	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	371	0	0	374	0	0	785	844	367	843	816	330
Stage 1	-	-	-	-	-	-	411	411	-	390	390	-
Stage 2	-	-	-	-	-	-	374	433	-	453	426	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.25	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.25	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.25	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.635	4.018	3.318
Pot Cap-1 Maneuver	1188	-	-	1184	-	-	310	300	678	269	311	712
Stage 1	-	-	-	-	-	-	618	595	-	609	608	-
Stage 2	-	-	-	-	-	-	647	582	-	562	586	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1166	-	-	1184	-	-	292	277	673	225	287	698
Mov Cap-2 Maneuver	-	-	-	-	-	-	292	277	-	225	287	-
Stage 1	-	-	-	-	-	-	601	578	-	581	577	-
Stage 2	-	-	-	-	-	-	617	552	-	488	570	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.5			0.7			13.3			20.1		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	519	1166	-	-	1184	-	-	225	698
HCM Lane V/C Ratio	0.168	0.022	-	-	0.027	-	-	0.119	0.012
HCM Ctrl Dly (s/v)	13.3	8.2	0	-	8.1	0	-	23.1	10.2
HCM Lane LOS	B	A	A	-	A	A	-	C	B
HCM 95th %tile Q (veh)	0.6	0.1	-	-	0.1	-	-	0.4	0

HCM 6th Signalized Intersection Summary
1: Site Access 1/Hargreaves Way & Union St W

40 Sir John A Macdonald Boulevard
FT AM 2033- Scenario 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	296	26	27	225	75	17	0	58	23	0	7
Future Volume (veh/h)	22	296	26	27	225	75	17	0	58	23	0	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.97		0.97	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1811	1811	1870	1870	1870	1678	1870	1870
Adj Flow Rate, veh/h	26	344	30	31	262	87	20	0	67	27	0	8
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	3	2	2	6	6	2	2	2	15	2	2
Cap, veh/h	95	1176	100	111	887	283	75	18	148	253	0	192
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	70	1566	133	90	1180	377	207	146	1182	1382	0	1534
Grp Volume(v), veh/h	400	0	0	380	0	0	87	0	0	27	0	8
Grp Sat Flow(s),veh/h/ln	1768	0	0	1648	0	0	1535	0	0	1382	0	1534
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s	6.3	0.0	0.0	6.3	0.0	0.0	4.5	0.0	0.0	1.4	0.0	0.4
Prop In Lane	0.06		0.07	0.08		0.23	0.23		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	1371	0	0	1281	0	0	242	0	0	253	0	192
V/C Ratio(X)	0.29	0.00	0.00	0.30	0.00	0.00	0.36	0.00	0.00	0.11	0.00	0.04
Avail Cap(c_a), veh/h	1371	0	0	1281	0	0	552	0	0	524	0	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.98	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.6	0.0	0.0	3.6	0.0	0.0	36.4	0.0	0.0	35.1	0.0	34.6
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.6	0.0	0.0	0.9	0.0	0.0	0.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	1.1	0.0	0.0	0.3	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.1	0.0	0.0	4.1	0.0	0.0	37.3	0.0	0.0	35.2	0.0	34.7
LnGrp LOS	A			A			D			D		C
Approach Vol, veh/h		400			380			87				35
Approach Delay, s/veh		4.1			4.1			37.3				35.1
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.7		16.3		73.7		16.3				
Change Period (Y+Rc), s		6.1		5.0		6.1		5.0				
Max Green Setting (Gmax), s		48.9		30.0		48.9		30.0				
Max Q Clear Time (g_c+I1), s		8.3		3.4		8.3		6.5				
Green Ext Time (p_c), s		3.5		0.1		3.3		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			8.5									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

2: Sir John A Macdonald Boulevard/Sir John A. MacDonald Blvd & Union St - Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	276	6	22	160	134	20	125	19	452	329	153
Future Volume (veh/h)	95	276	6	22	160	134	20	125	19	452	329	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		1.00	0.97		0.95	0.96		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1781	1856	1870	1841	1811	1885	1856	1856
Adj Flow Rate, veh/h	100	291	6	23	168	0	21	132	20	476	346	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	5	2	2	8	3	2	4	6	1	3	3
Cap, veh/h	559	750	15	98	654		461	1334	197	575	1551	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	1155	1779	37	128	1553	1572	1007	3033	448	1197	3526	1572
Grp Volume(v), veh/h	100	0	297	191	0	0	21	75	77	476	346	0
Grp Sat Flow(s),veh/h/ln	1155	0	1816	1681	0	1572	1007	1749	1732	1197	1763	1572
Q Serve(g_s), s	0.0	0.0	10.3	0.0	0.0	0.0	1.2	2.3	2.4	35.2	5.5	0.0
Cycle Q Clear(g_c), s	5.5	0.0	10.3	6.3	0.0	0.0	6.7	2.3	2.4	37.5	5.5	0.0
Prop In Lane	1.00		0.02	0.12		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	559	0	765	752	0		461	769	762	575	1551	
V/C Ratio(X)	0.18	0.00	0.39	0.25	0.00		0.05	0.10	0.10	0.83	0.22	
Avail Cap(c_a), veh/h	559	0	765	752	0		461	769	762	575	1551	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.8	0.0	18.2	17.0	0.0	0.0	17.9	14.9	14.9	25.9	15.8	0.0
Incr Delay (d2), s/veh	0.7	0.0	1.5	0.8	0.0	0.0	0.2	0.3	0.3	12.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.7	1.0	0.0	0.0	0.1	0.3	0.3	5.4	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.5	0.0	19.7	17.9	0.0	0.0	18.1	15.1	15.2	38.9	16.1	0.0
LnGrp LOS	B		B	B			B	B	B	D	B	
Approach Vol, veh/h	397			191			173			822		
Approach Delay, s/veh	19.1			17.9			15.5			29.3		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	46.3			44.6			46.3			44.6		
Change Period (Y+Rc), s	6.3			6.3			6.3			6.3		
Max Green Setting (Gmax), s	40.0			38.3			40.0			38.3		
Max Q Clear Time (g_c+I1), s	8.7			12.3			39.5			8.3		
Green Ext Time (p_c), s	1.2			2.8			0.3			1.4		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	23.9											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

3: Sir John A. MacDonald Blvd/Sir John A Macdonald Boulevard & King St W - Scenario 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	514	17	6	224	125	1	16	5	211	59	25
Future Volume (veh/h)	26	514	17	6	224	125	1	16	5	211	59	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.94		0.93	0.93		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1811	1870	1870	1870	1870	1856	1870	1870
Adj Flow Rate, veh/h	30	584	19	7	255	142	1	18	6	240	67	28
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	6	2	2	2	2	3	2	2
Cap, veh/h	641	1171	38	467	1070	909	43	299	95	371	278	116
Arrive On Green	0.03	0.65	0.65	0.59	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1781	1798	58	809	1811	1537	14	1314	419	1279	1220	510
Grp Volume(v), veh/h	30	0	603	7	255	142	25	0	0	240	0	95
Grp Sat Flow(s),veh/h/ln	1781	0	1856	809	1811	1537	1747	0	0	1279	0	1730
Q Serve(g_s), s	0.6	0.0	15.9	0.4	6.4	4.0	0.0	0.0	0.0	15.5	0.0	4.3
Cycle Q Clear(g_c), s	0.6	0.0	15.9	10.6	6.4	4.0	1.1	0.0	0.0	16.6	0.0	4.3
Prop In Lane	1.00		0.03	1.00		1.00	0.04		0.24	1.00		0.29
Lane Grp Cap(c), veh/h	641	0	1209	467	1070	909	437	0	0	371	0	394
V/C Ratio(X)	0.05	0.00	0.50	0.01	0.24	0.16	0.06	0.00	0.00	0.65	0.00	0.24
Avail Cap(c_a), veh/h	721	0	1209	467	1070	909	504	0	0	421	0	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.6	0.0	8.6	12.8	9.2	8.8	28.8	0.0	0.0	34.6	0.0	30.0
Incr Delay (d2), s/veh	0.0	0.0	1.5	0.0	0.1	0.1	0.1	0.0	0.0	2.9	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.5	0.0	0.1	0.1	0.3	0.0	0.0	3.2	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.6	0.0	10.0	12.8	9.4	8.8	28.8	0.0	0.0	37.5	0.0	30.3
LnGrp LOS	A		B		B	A	A	C		D		C
Approach Vol, veh/h	633		404			25			335			
Approach Delay, s/veh	9.9		9.2			28.8			35.4			
Approach LOS	A		A			C			D			
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+Rc), s	67.7		27.3		5.7	61.9		27.3				
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8		5.7				
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2		25.3				
Max Q Clear Time (g_c+I1), s	17.9		18.6		2.6	12.6		3.1				
Green Ext Time (p_c), s	5.8		1.0		0.0	2.8		0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			16.2									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	8	0	164	320	37
Future Vol, veh/h	0	8	0	164	320	37
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	2	2	2
Mvmt Flow	0	9	0	178	348	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	194	-	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	815	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	815	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9.5	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 815		-	-		
HCM Lane V/C Ratio	- 0.011		-	-		
HCM Ctrl Dly (s/v)	- 9.5		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	9	0	164	290	38
Future Vol, veh/h	0	9	0	164	290	38
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	2	2	2
Mvmt Flow	0	10	0	178	315	41
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	178	-	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	834	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	834	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9.4	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 834		-	-		
HCM Lane V/C Ratio	- 0.012		-	-		
HCM Ctrl Dly (s/v)	- 9.4		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Intersection												
Int Delay, s/veh	8.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	14	230	22	58	347	31	35	0	116	76	0	32
Future Vol, veh/h	14	230	22	58	347	31	35	0	116	76	0	32
Conflicting Peds, #/hr	16	0	0	0	0	16	4	0	1	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	3	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	288	28	73	434	39	44	0	145	95	0	40
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	489	0	0	316	0	0	962	973	303	1028	968	474
Stage 1	-	-	-	-	-	-	338	338	-	616	616	-
Stage 2	-	-	-	-	-	-	624	635	-	412	352	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1074	-	-	1244	-	-	235	252	737	212	254	590
Stage 1	-	-	-	-	-	-	676	641	-	478	482	-
Stage 2	-	-	-	-	-	-	473	472	-	617	632	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1059	-	-	1244	-	-	201	224	736	155	226	580
Mov Cap-2 Maneuver	-	-	-	-	-	-	201	224	-	155	226	-
Stage 1	-	-	-	-	-	-	662	628	-	462	437	-
Stage 2	-	-	-	-	-	-	404	428	-	485	619	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.4			1.1			18.4			45.3		
HCM LOS							C			E		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	455	1059	-	-	1244	-	-	155	580			
HCM Lane V/C Ratio	0.415	0.017	-	-	0.058	-	-	0.613	0.069			
HCM Ctrl Dly (s/v)	18.4	8.5	0	-	8.1	0	-	59.4	11.7			
HCM Lane LOS	C	A	A	-	A	A	-	F	B			
HCM 95th %tile Q (veh)	2	0.1	-	-	0.2	-	-	3.3	0.2			

HCM 6th Signalized Intersection Summary
1: Site Access 1/Hargreaves Way & Union St W

40 Sir John A Macdonald Boulevard
FT PM 2033- Scenario 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	230	22	58	347	31	35	0	116	76	0	32
Future Volume (veh/h)	14	230	22	58	347	31	35	0	116	76	0	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	288	28	72	434	39	44	0	145	95	0	40
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	3	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	844	79	134	758	65	146	27	408	485	0	528
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	43	1585	149	166	1424	123	280	80	1185	1176	0	1534
Grp Volume(v), veh/h	334	0	0	545	0	0	189	0	0	95	0	40
Grp Sat Flow(s),veh/h/ln	1777	0	0	1713	0	0	1544	0	0	1176	0	1534
Q Serve(g_s), s	0.0	0.0	0.0	6.8	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.6
Cycle Q Clear(g_c), s	9.5	0.0	0.0	18.6	0.0	0.0	7.8	0.0	0.0	6.3	0.0	1.6
Prop In Lane	0.05		0.08	0.13		0.07	0.23		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	988	0	0	957	0	0	581	0	0	485	0	528
V/C Ratio(X)	0.34	0.00	0.00	0.57	0.00	0.00	0.33	0.00	0.00	0.20	0.00	0.08
Avail Cap(c_a), veh/h	988	0	0	957	0	0	581	0	0	485	0	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.90	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	14.1	0.0	0.0	21.9	0.0	0.0	21.4	0.0	19.9
Incr Delay (d2), s/veh	0.9	0.0	0.0	2.2	0.0	0.0	1.5	0.0	0.0	0.9	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	0.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.0	0.0	0.0	16.3	0.0	0.0	23.4	0.0	0.0	22.3	0.0	20.1
LnGrp LOS	B			B			C			C		C
Approach Vol, veh/h		334			545			189			135	
Approach Delay, s/veh		13.0			16.3			23.4			21.7	
Approach LOS		B			B			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		54.0		36.0		54.0		36.0				
Change Period (Y+Rc), s		6.1		5.0		6.1		5.0				
Max Green Setting (Gmax), s		47.9		31.0		47.9		31.0				
Max Q Clear Time (g_c+I1), s		11.5		8.3		20.6		9.8				
Green Ext Time (p_c), s		2.8		0.8		4.9		1.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				17.1								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

2: Sir John A Macdonald Boulevard/Sir John A. MacDonald Blvd & Union St - 2023- Scenario 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	188	14	42	304	452	36	386	12	131	187	108
Future Volume (veh/h)	208	188	14	42	304	452	36	386	12	131	187	108
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.83	0.90		1.00	0.97		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1841	1870	1826	1856	1885	1870	1870	1870	1885	1841	1870
Adj Flow Rate, veh/h	242	219	16	49	353	0	42	449	14	152	217	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	4	2	5	3	1	2	2	2	1	4	2
Cap, veh/h	409	703	51	105	672		533	1545	48	407	1539	
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.44	0.44	0.44	0.44	0.44	0.00
Sat Flow, veh/h	956	1668	122	143	1596	1598	1125	3512	109	917	3497	1585
Grp Volume(v), veh/h	242	0	235	402	0	0	42	227	236	152	217	0
Grp Sat Flow(s),veh/h/ln	956	0	1789	1739	0	1598	1125	1777	1844	917	1749	1585
Q Serve(g_s), s	12.2	0.0	8.0	3.2	0.0	0.0	2.1	7.4	7.5	11.6	3.4	0.0
Cycle Q Clear(g_c), s	27.2	0.0	8.0	14.9	0.0	0.0	5.5	7.4	7.5	19.1	3.4	0.0
Prop In Lane	1.00		0.07	0.12		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	409	0	754	777	0		533	782	811	407	1539	
V/C Ratio(X)	0.59	0.00	0.31	0.52	0.00		0.08	0.29	0.29	0.37	0.14	
Avail Cap(c_a), veh/h	409	0	754	777	0		533	782	811	407	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	0.0	17.5	19.4	0.0	0.0	16.8	16.3	16.3	22.5	15.2	0.0
Incr Delay (d2), s/veh	6.2	0.0	1.1	2.5	0.0	0.0	0.3	0.9	0.9	2.6	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.3	2.6	0.0	0.0	0.2	1.1	1.2	1.3	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.1	0.0	18.6	21.9	0.0	0.0	17.1	17.3	17.3	25.1	15.4	0.0
LnGrp LOS	C		B	C			B	B	B	C	B	
Approach Vol, veh/h	477			402			505			369		
Approach Delay, s/veh	24.9			21.9			17.3			19.4		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	46.3			44.6			46.3			44.6		
Change Period (Y+Rc), s	6.3			6.3			6.3			6.3		
Max Green Setting (Gmax), s	40.0			38.3			40.0			38.3		
Max Q Clear Time (g_c+I1), s	9.5			29.2			21.1			16.9		
Green Ext Time (p_c), s	3.8			2.2			2.6			3.0		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	20.9											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

40 Sir John A Macdonald Boulevard

3: Sir John A. MacDonald Blvd/Sir John A Macdonald Boulevard & King St PM 2033- Scenario 1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	342	0	2	582	278	25	72	14	137	19	41
Future Volume (veh/h)	82	342	0	2	582	278	25	72	14	137	19	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.97	0.91		0.89	0.92		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1856	1870	1870	1856	1870	1870	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	94	393	0	2	669	320	29	83	16	157	22	47
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	6	2	2
Cap, veh/h	359	1228	0	635	1080	898	101	262	45	325	106	227
Arrive On Green	0.05	0.66	0.00	0.58	0.58	0.58	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1856	0	980	1856	1542	252	1207	208	1155	490	1046
Grp Volume(v), veh/h	94	393	0	2	669	320	128	0	0	157	0	69
Grp Sat Flow(s),veh/h/ln	1781	1856	0	980	1856	1542	1667	0	0	1155	0	1536
Q Serve(g_s), s	1.8	8.6	0.0	0.1	22.4	10.4	0.0	0.0	0.0	6.1	0.0	3.5
Cycle Q Clear(g_c), s	1.8	8.6	0.0	1.1	22.4	10.4	5.7	0.0	0.0	11.8	0.0	3.5
Prop In Lane	1.00		0.00	1.00		1.00	0.23		0.12	1.00		0.68
Lane Grp Cap(c), veh/h	359	1228	0	635	1080	898	408	0	0	325	0	333
V/C Ratio(X)	0.26	0.32	0.00	0.00	0.62	0.36	0.31	0.00	0.00	0.48	0.00	0.21
Avail Cap(c_a), veh/h	404	1228	0	635	1080	898	488	0	0	382	0	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.8	6.9	0.0	8.8	13.0	10.5	31.4	0.0	0.0	33.8	0.0	30.5
Incr Delay (d2), s/veh	0.4	0.7	0.0	0.0	1.1	0.2	0.4	0.0	0.0	1.1	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	0.8	0.2	1.4	0.0	0.0	1.9	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.2	7.6	0.0	8.8	14.1	10.7	31.8	0.0	0.0	34.9	0.0	30.8
LnGrp LOS	B	A		A	B	B	C			C		C
Approach Vol, veh/h	487		991			128			226			
Approach Delay, s/veh	8.1		13.0			31.8			33.6			
Approach LOS	A		B			C			C			
Timer - Assigned Phs	2		4		5	6	8					
Phs Duration (G+Y+Rc), s	68.7		26.3		7.6	61.1	26.3					
Change Period (Y+Rc), s	5.8		5.7		3.0	5.8	5.7					
Max Green Setting (Gmax), s	58.2		25.3		7.0	48.2	25.3					
Max Q Clear Time (g_c+I1), s	10.6		13.8		3.8	24.4	7.7					
Green Ext Time (p_c), s	3.3		0.9		0.1	7.9	0.7					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			15.5									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	9	0	434	219	24
Future Vol, veh/h	0	9	0	434	219	24
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	2	2	2
Mvmt Flow	0	10	0	472	238	26
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	132	-	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	893	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	893	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9.1	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 893		-	-		
HCM Lane V/C Ratio	- 0.011		-	-		
HCM Ctrl Dly (s/v)	- 9.1		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	9	0	434	203	25
Future Vol, veh/h	0	9	0	434	203	25
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	2	2	2
Mvmt Flow	0	10	0	472	221	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	124	-	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	904	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	904	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 904		-	-		
HCM Lane V/C Ratio	- 0.011		-	-		
HCM Ctrl Dly (s/v)	- 9		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q (veh)	- 0		-	-		

Appendix H

ITE Parking Rates



Parking Generation Manual

5th Edition

JANUARY 2019

General Office Building (710)

Peak Period Parking Demand vs: Occupied 1000 Sq. Ft. GFA

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 9:00 a.m. - 3:00 p.m.

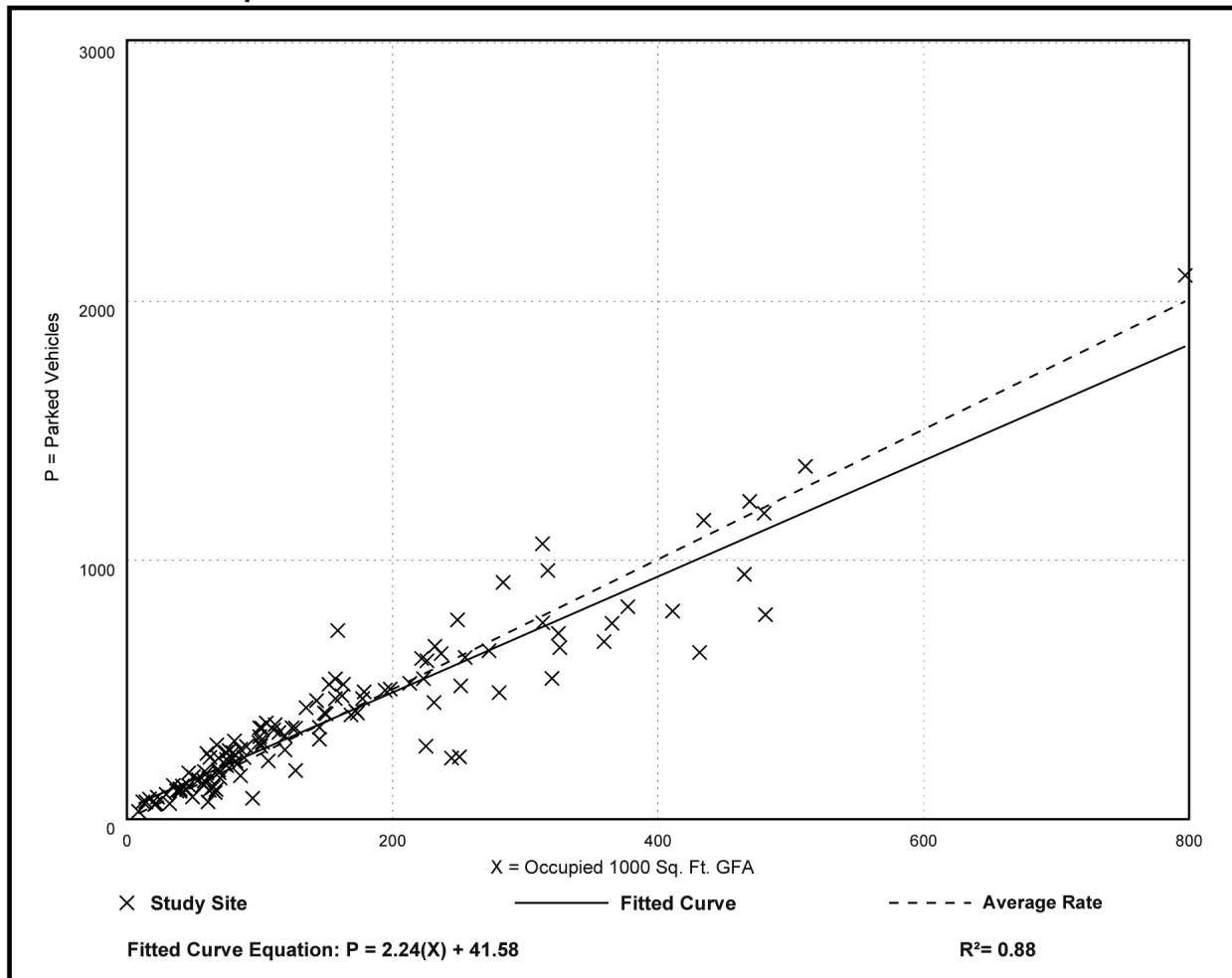
Number of Studies: 124

Avg. Occupied 1000 Sq. Ft. GFA: 156

Peak Period Parking Demand per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.51	0.86 - 5.58	2.46 / 3.42	2.39 - 2.63	0.66 (26%)

Data Plot and Equation



Variety Store - December (814)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 5:00 - 7:00 p.m.

Number of Studies: 1

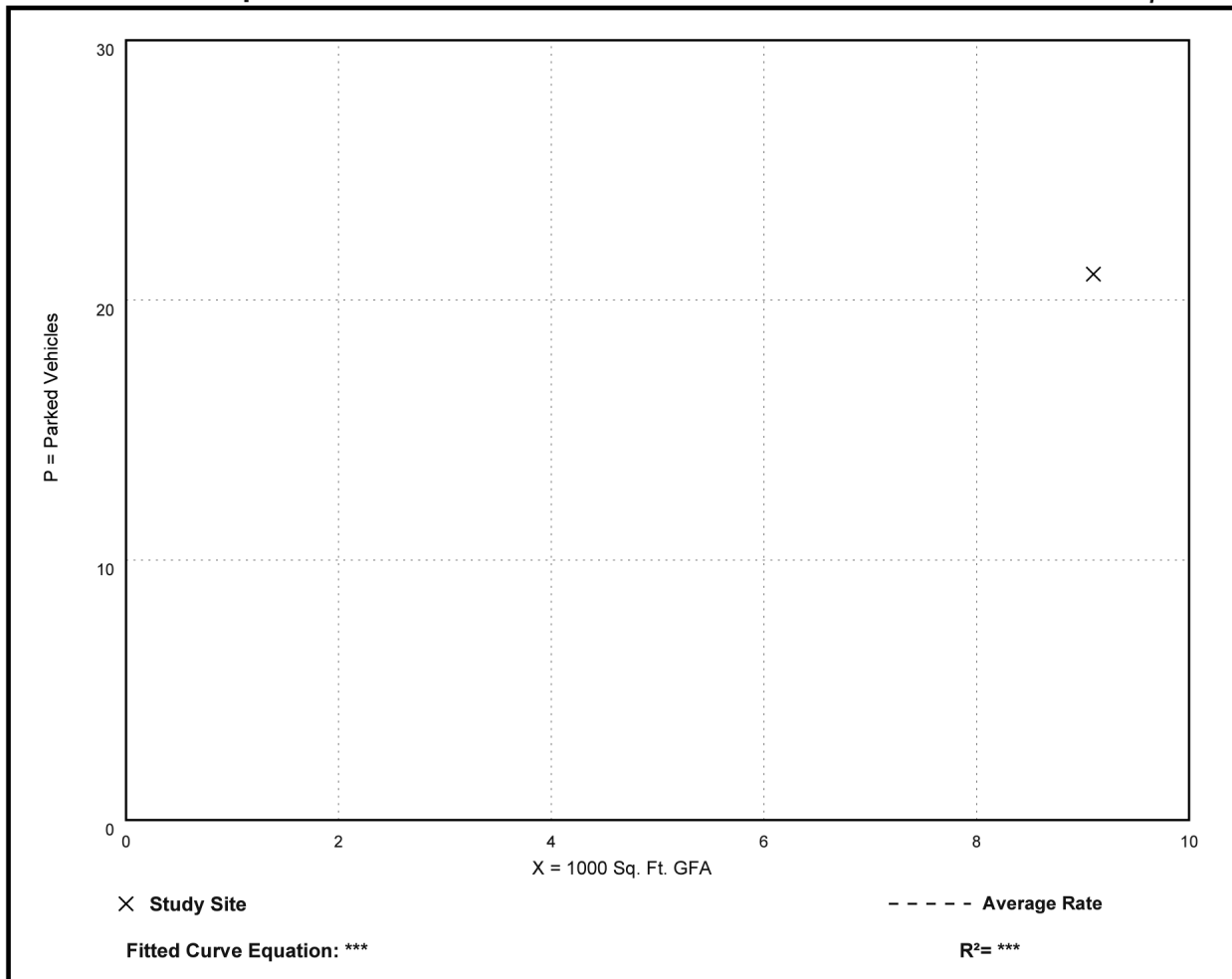
Avg. 1000 Sq. Ft. GFA: 9.1

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.31	2.31 - 2.31	*** / ***	***	*** (***)

Data Plot and Equation

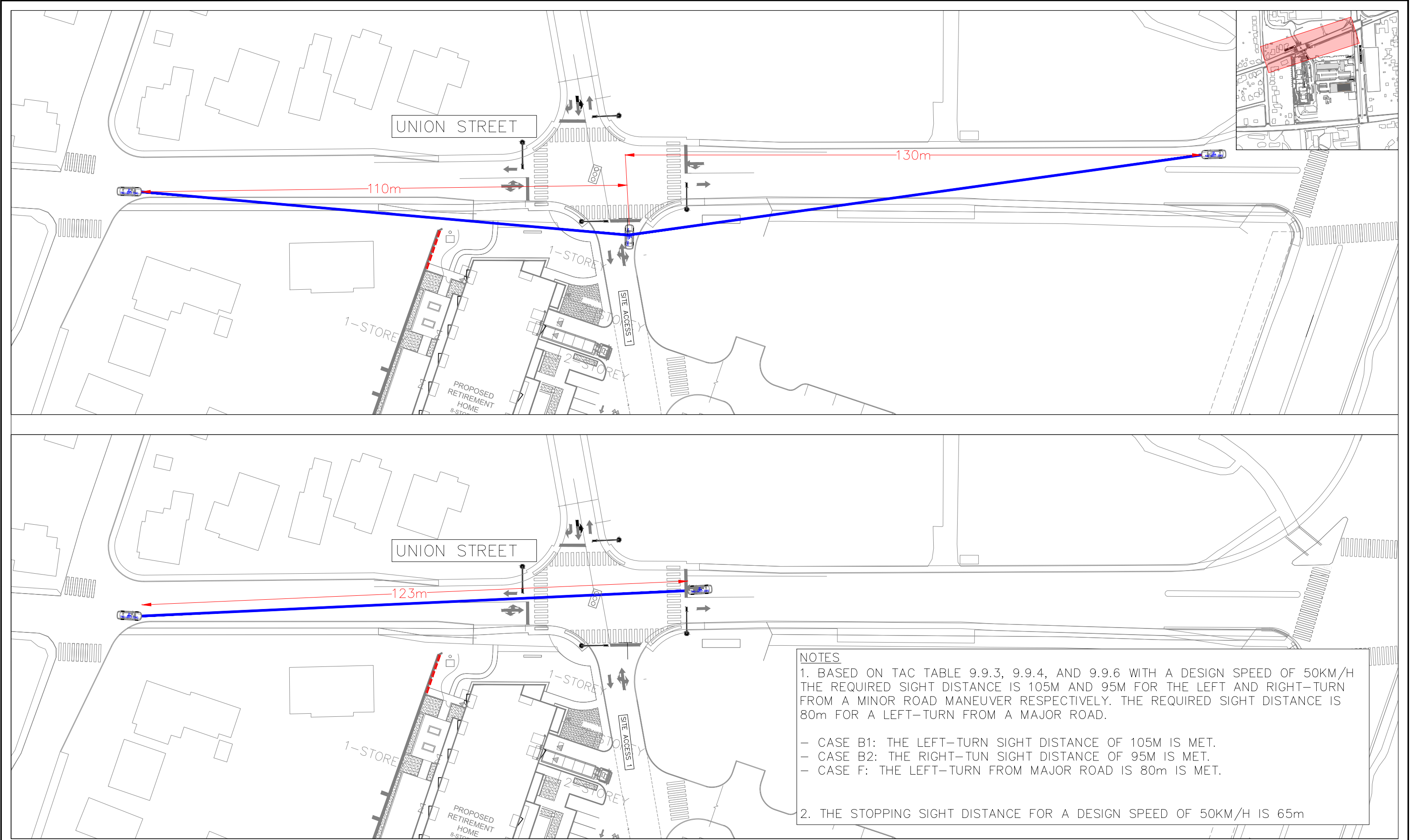
Caution – Small Sample Size



Appendix I

Sightline Analysis

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NOTES

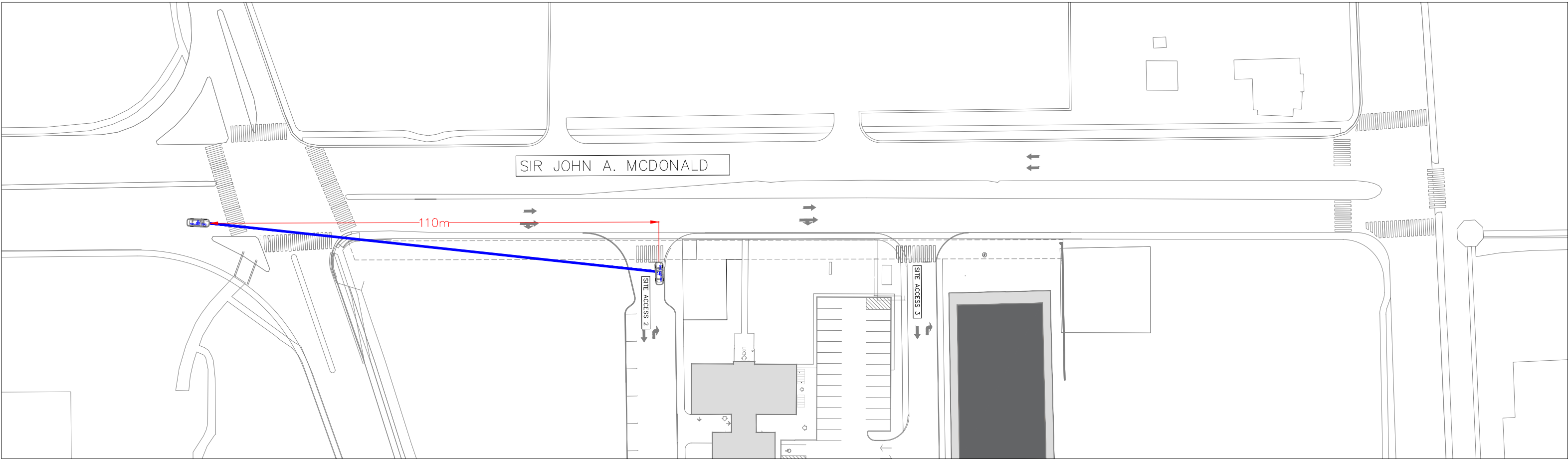
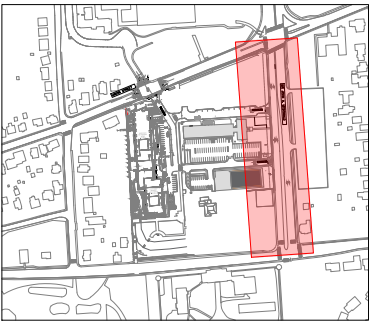
1. BASED ON TAC TABLE 9.9.3, 9.9.4, AND 9.9.6 WITH A DESIGN SPEED OF 50KM/H THE REQUIRED SIGHT DISTANCE IS 105M AND 95M FOR THE LEFT AND RIGHT-TURN FROM A MINOR ROAD MANEUVER RESPECTIVELY. THE REQUIRED SIGHT DISTANCE IS 80m FOR A LEFT-TURN FROM A MAJOR ROAD.

– CASE B1: THE LEFT-TURN SIGHT DISTANCE OF 105M IS MET.
– CASE B2: THE RIGHT-TUN SIGHT DISTANCE OF 95M IS MET.
– CASE F: THE LEFT-TURN FROM MAJOR ROAD IS 80m IS MET.

2. THE STOPPING SIGHT DISTANCE FOR A DESIGN SPEED OF 50KM/H IS 65m

MODIFIED: 7/8/2026 5:16 PM BY:nikita.chiduku

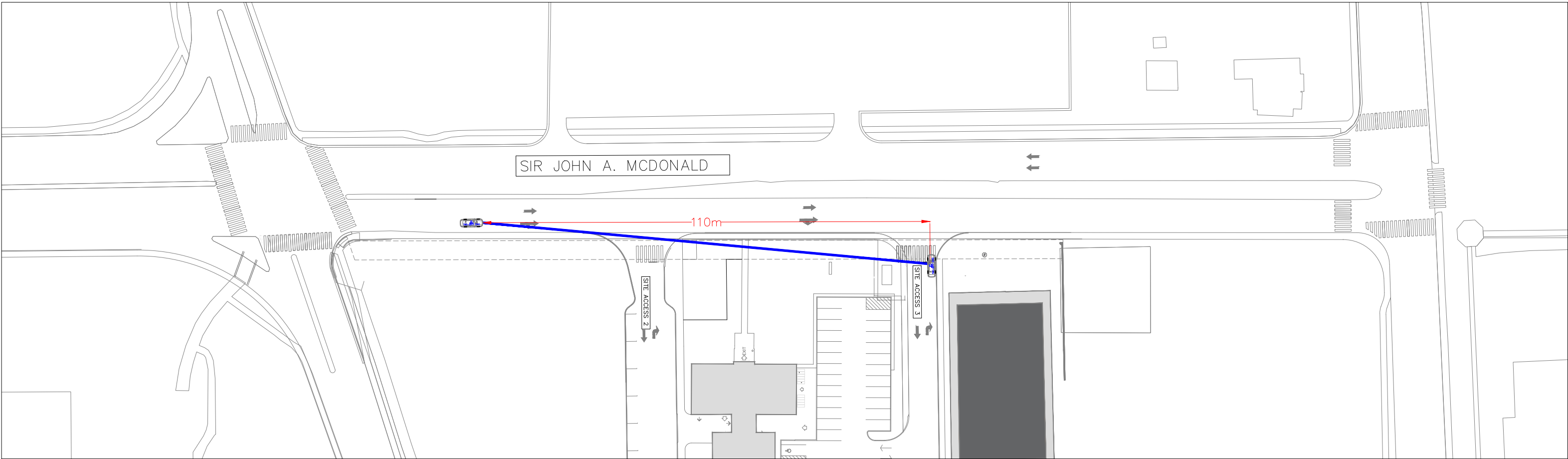
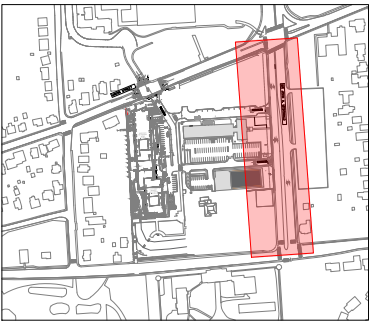
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- NOTES
- 1. BASED ON TAC TABLE 9.9.3, 9.9.4, AND 9.9.6 THE REQUIRED SIGHT DISTANCE IS 110mAND RIGHT-TURN MANEUVER.
 - 2. THE RIGHT-TUN SIGHT DISTANCE OF 110m MET.

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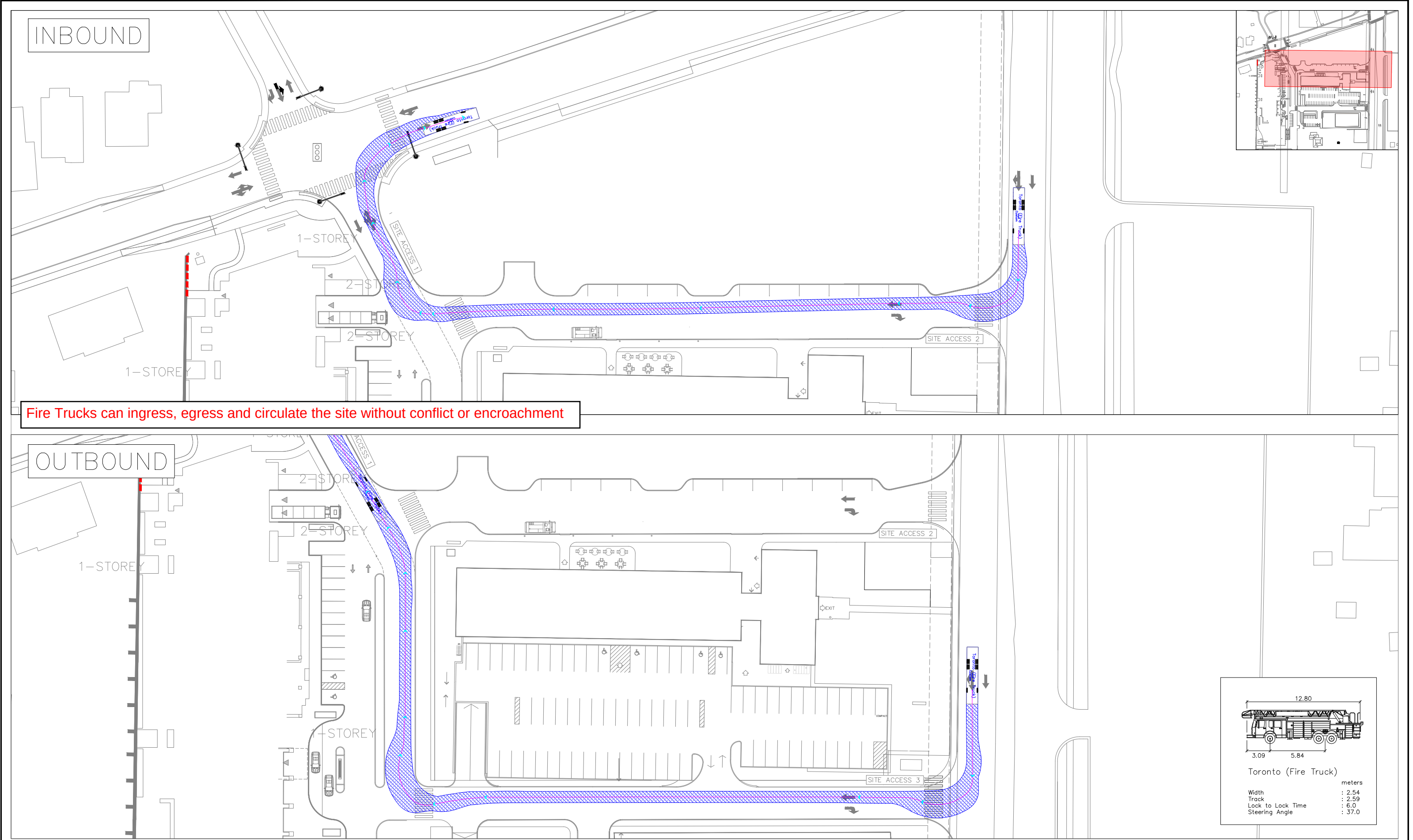
- NOTES
1. BASED ON TAC TABLE 9.9.3, 9.9.4, AND 9.9.6 THE REQUIRED SIGHT DISTANCE IS 110mAND RIGHT-TURN MANEUVER.
 2. THE RIGHT-TUN SIGHT DISTANCE OF 110m MET.



Appendix J

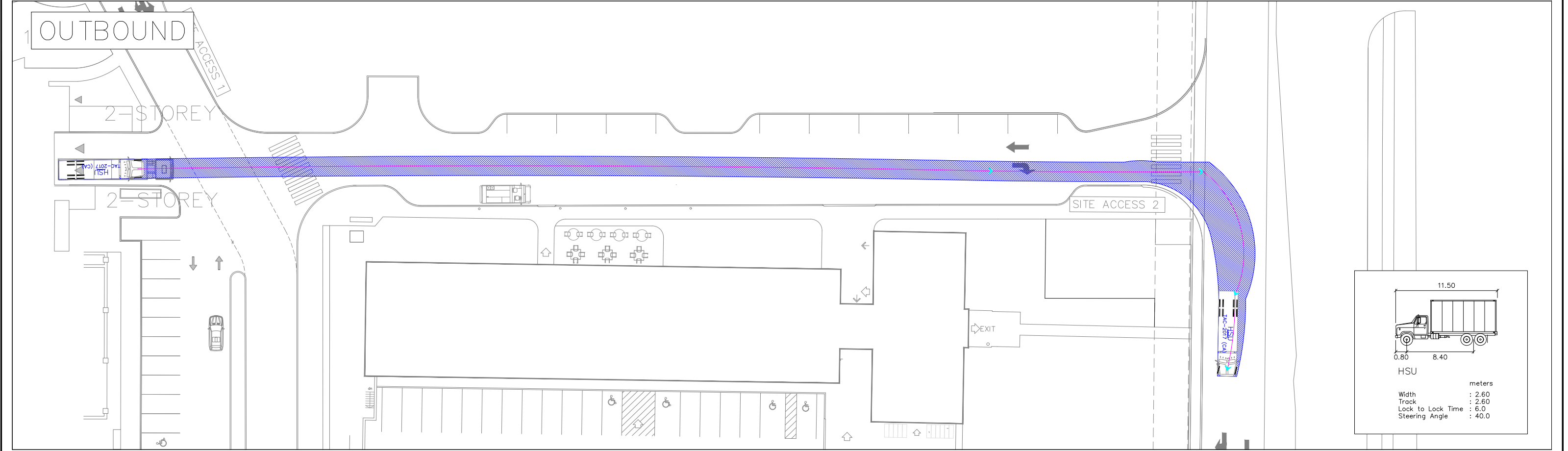
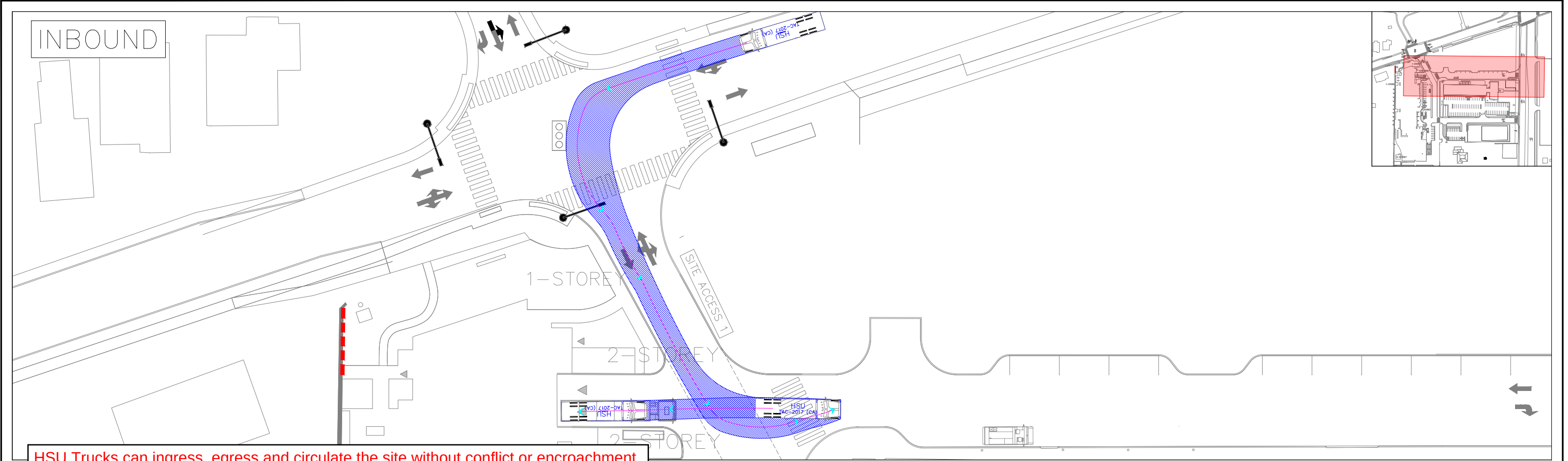
Site Circulation

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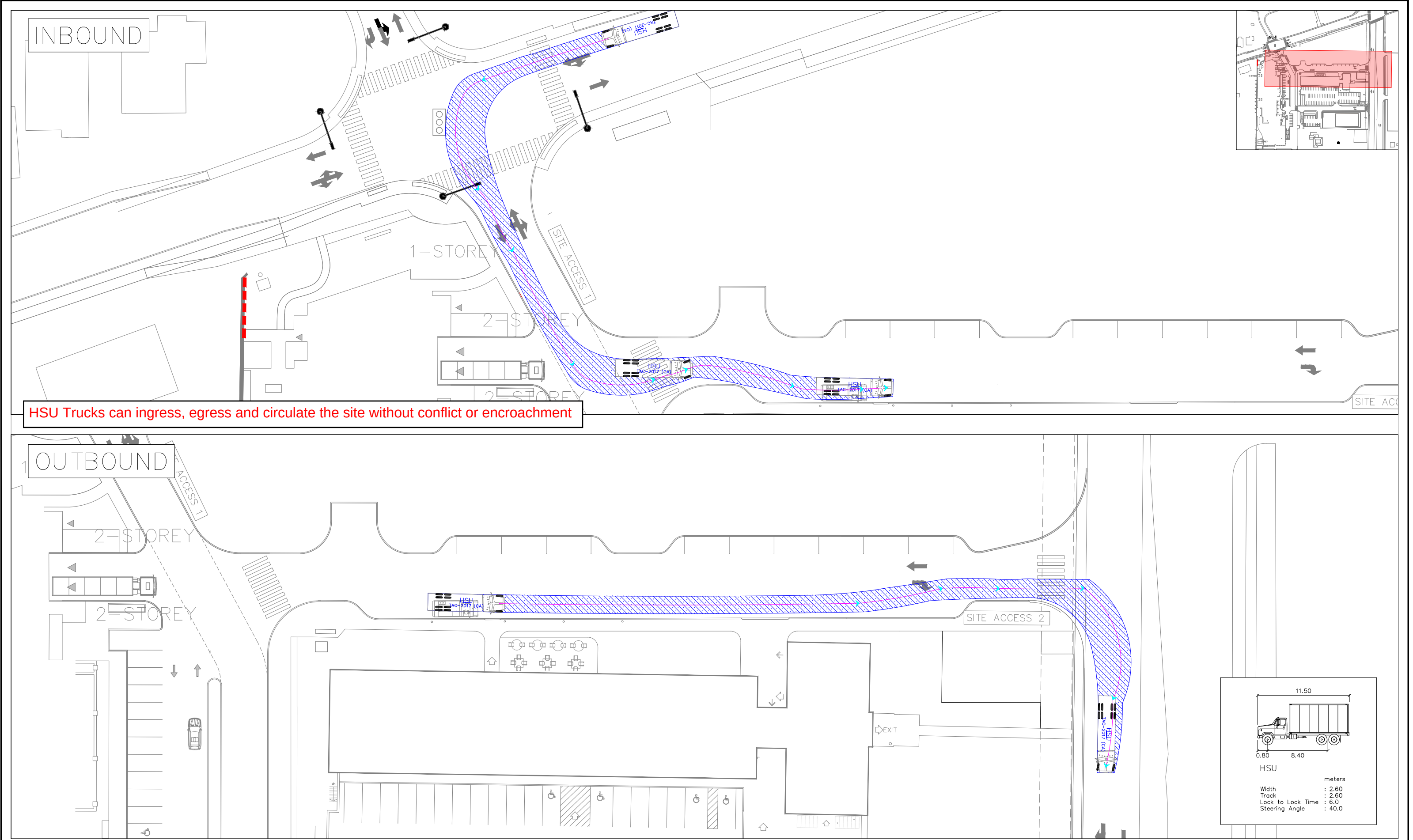
Fire Trucks can ingress, egress and circulate the site without conflict or encroachment

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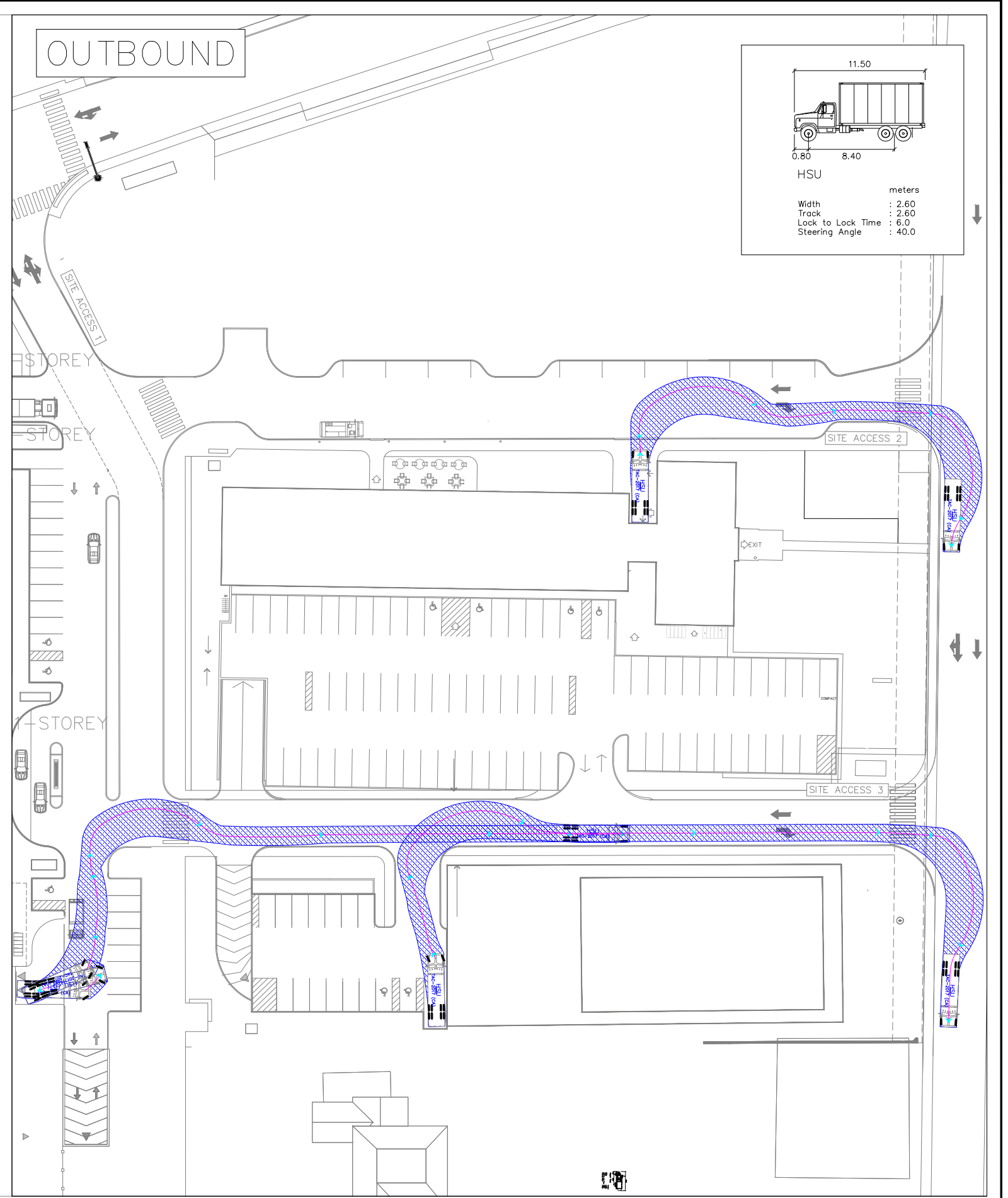
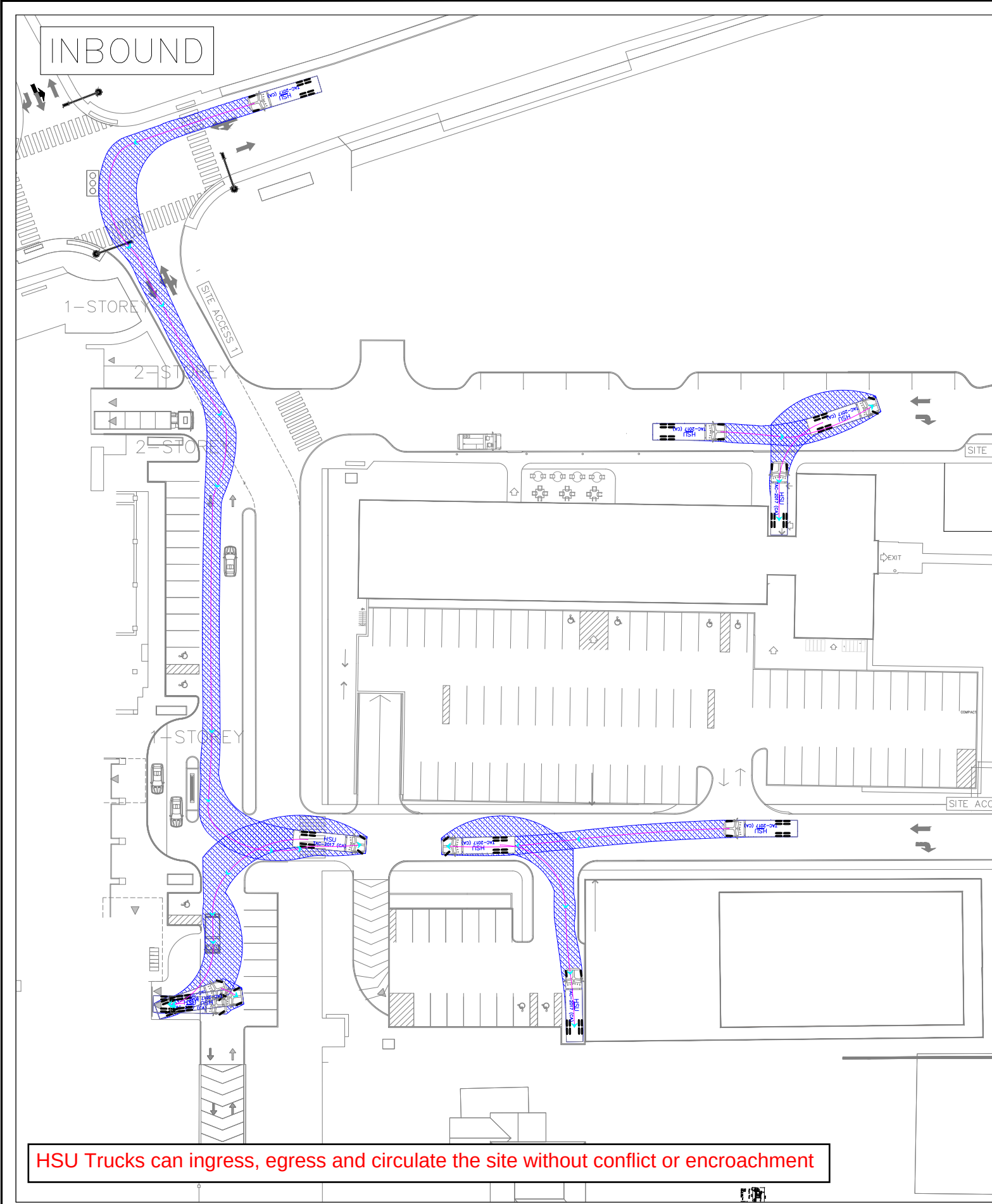
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HSU Trucks can ingress, egress and circulate the site without conflict or encroachment

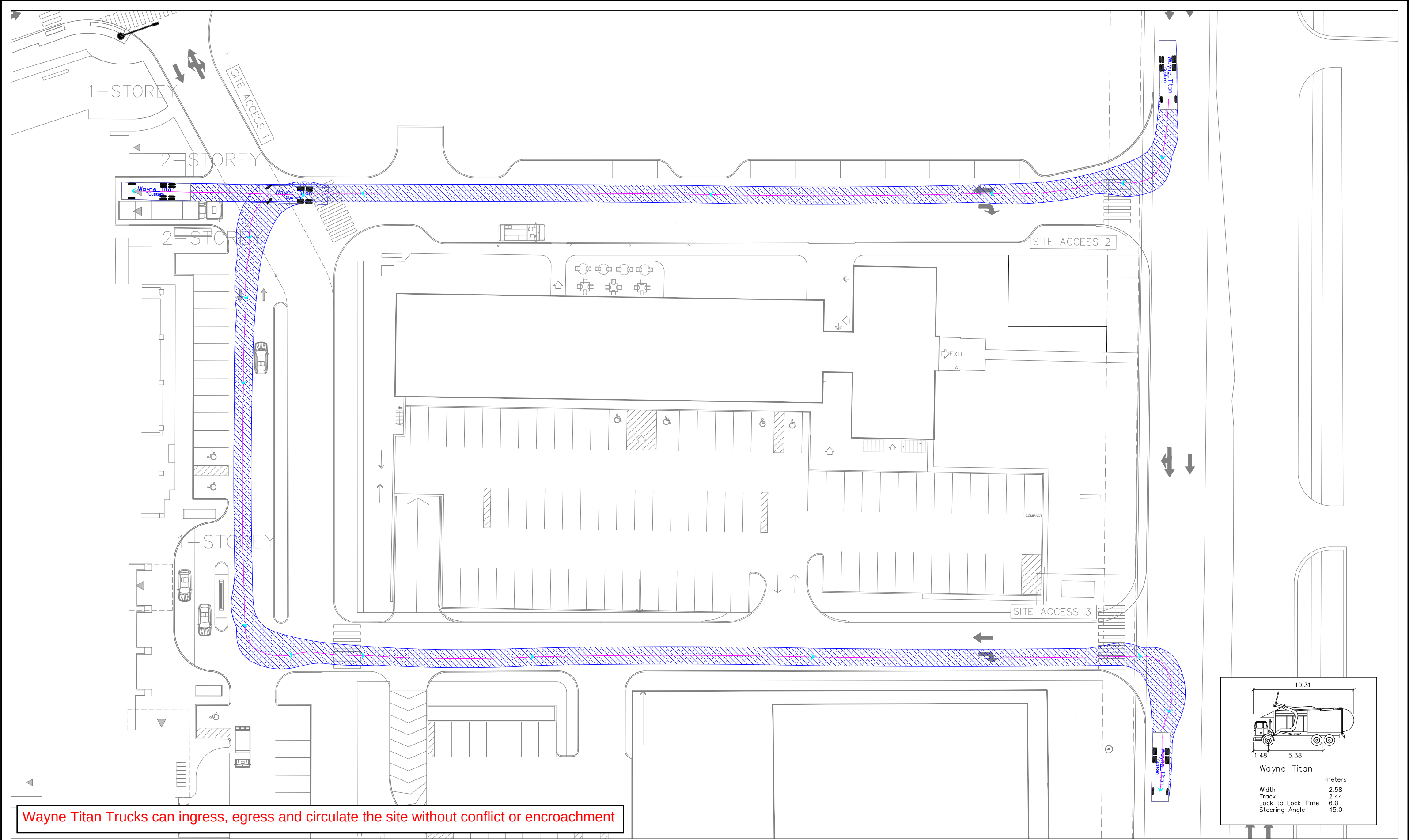
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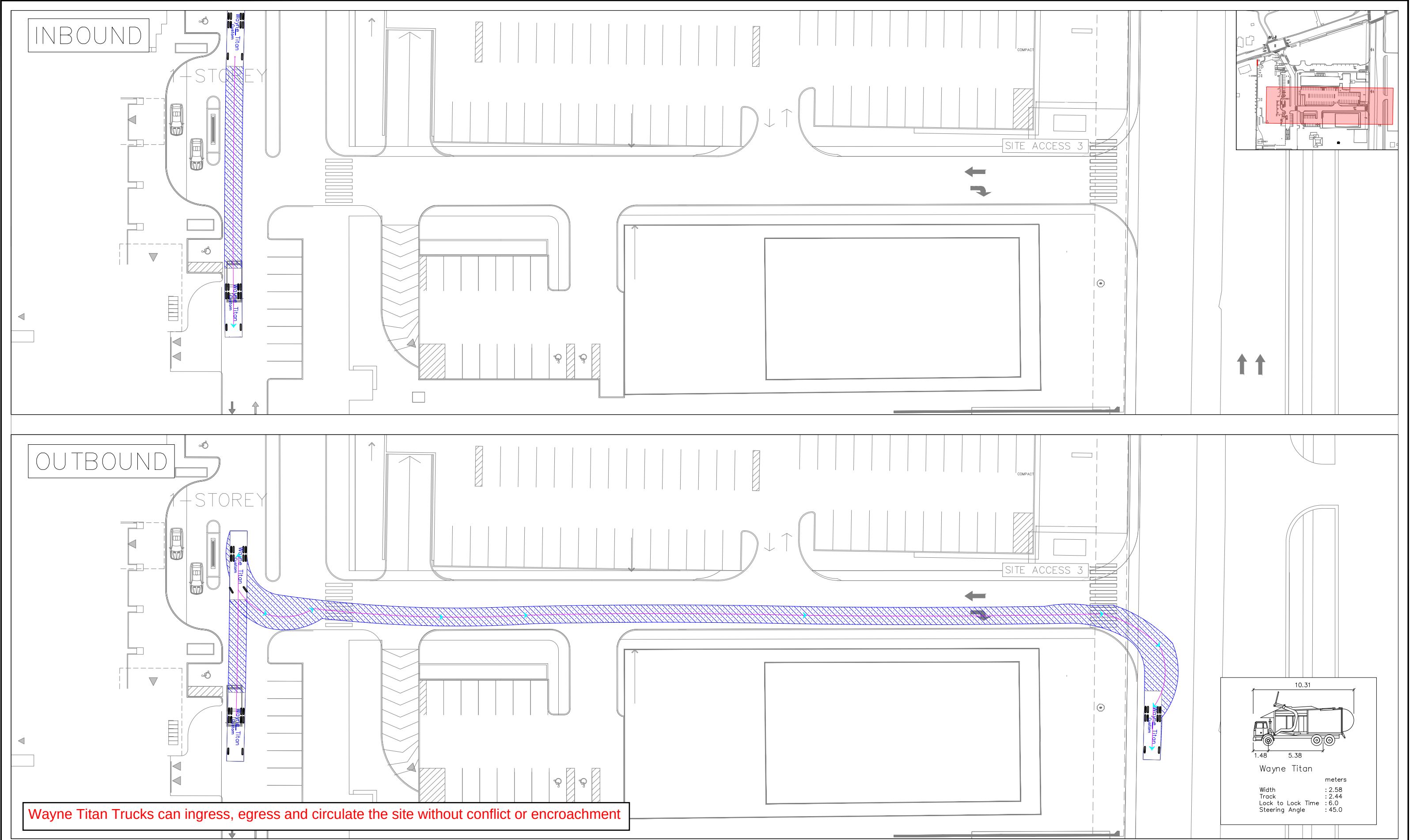
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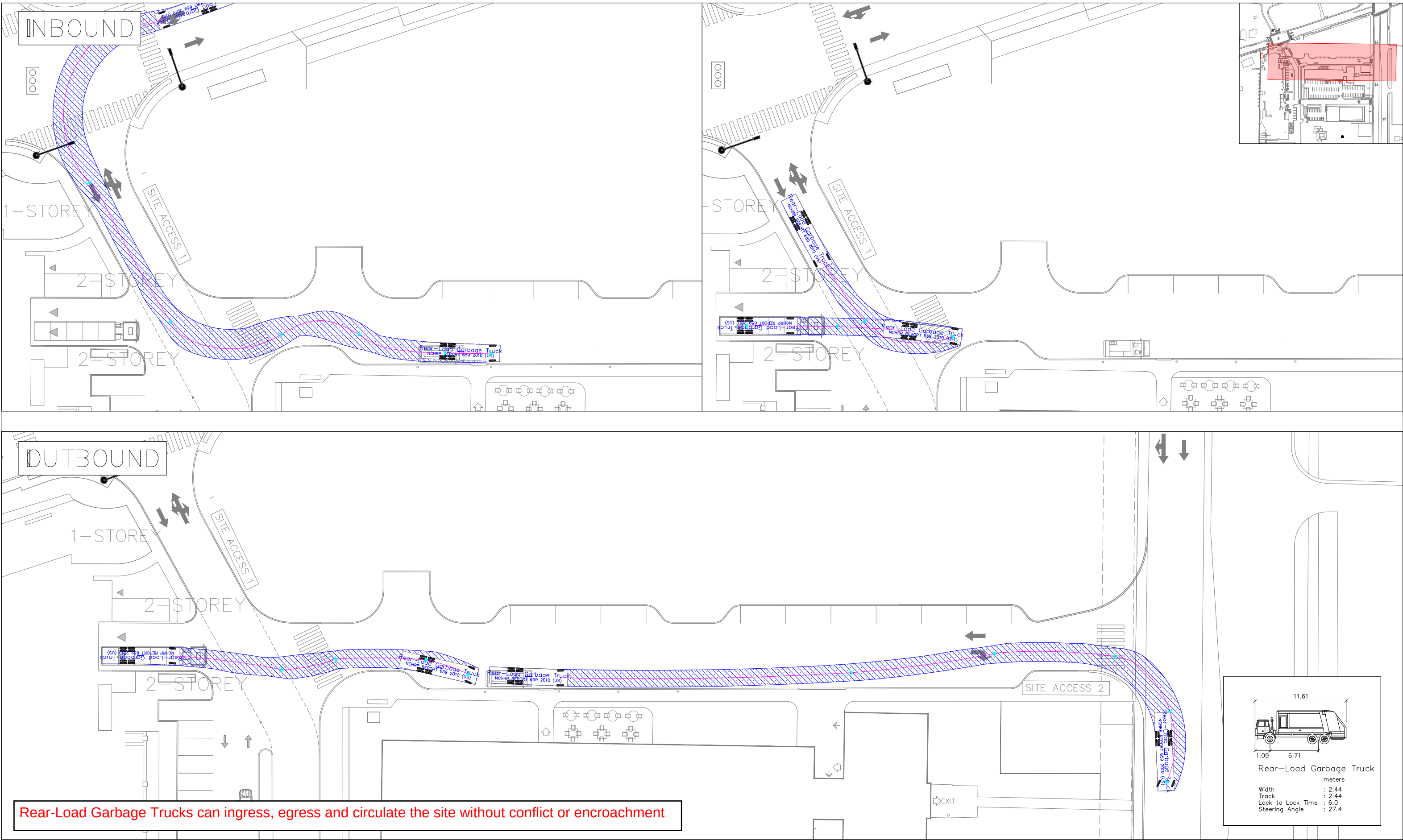
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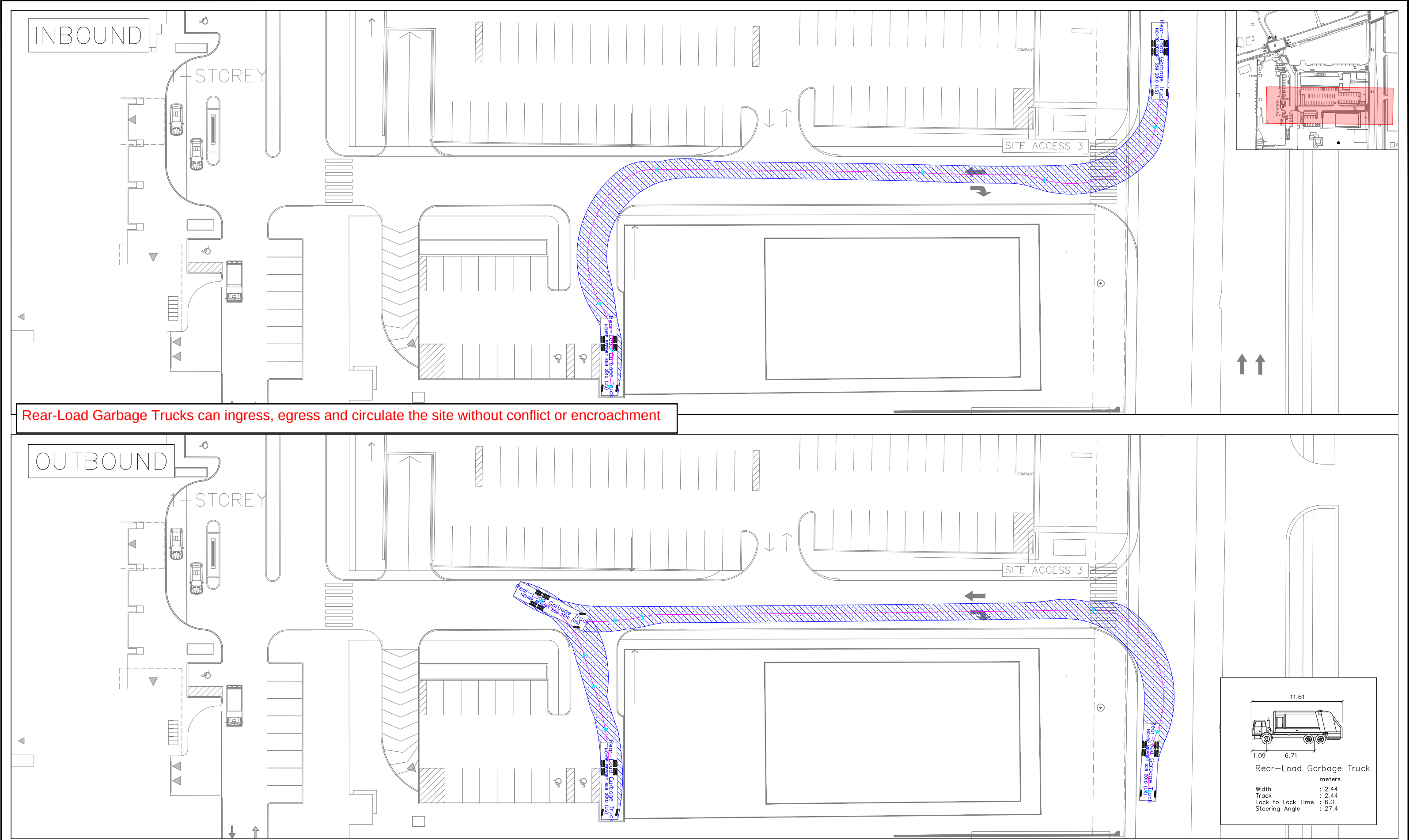
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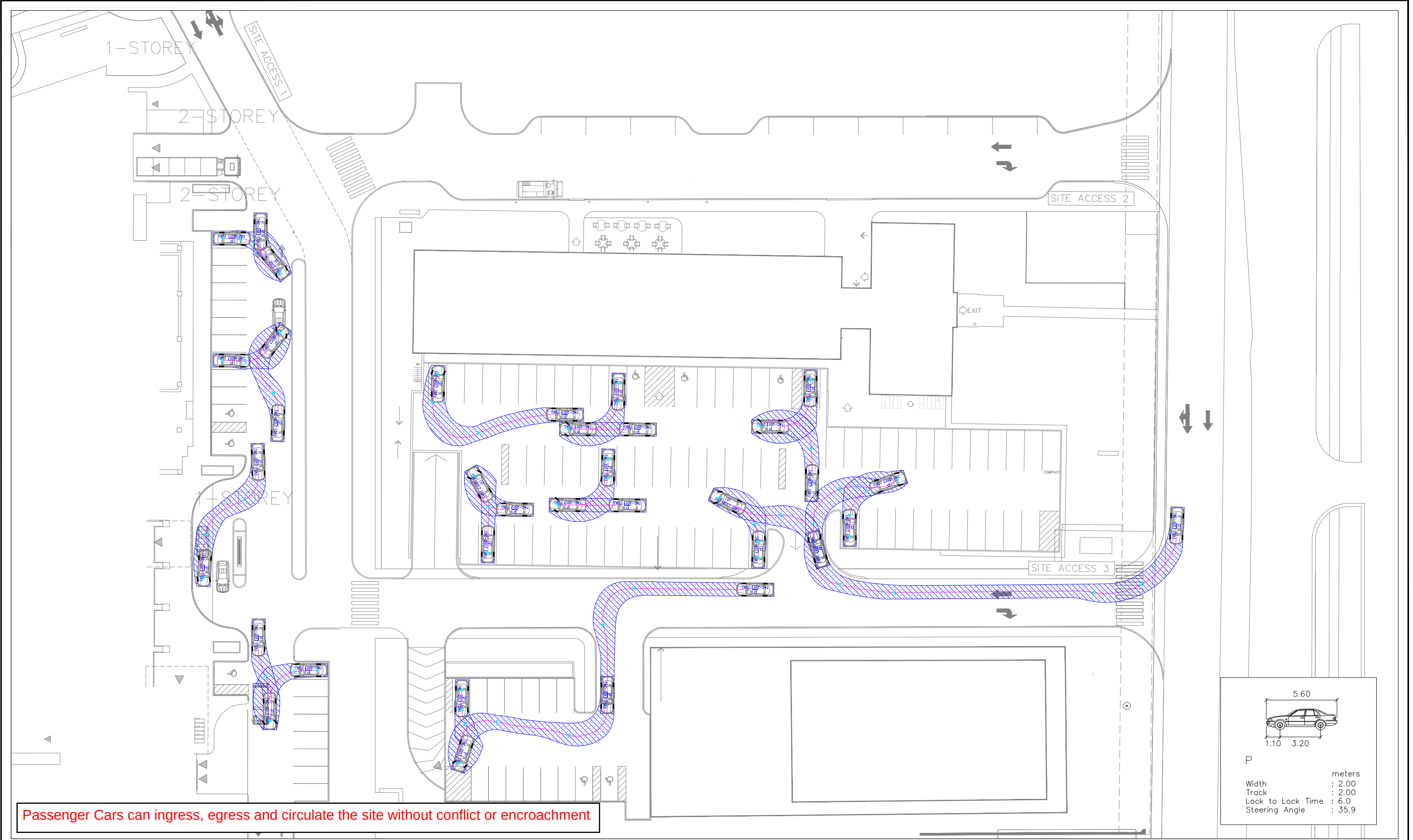
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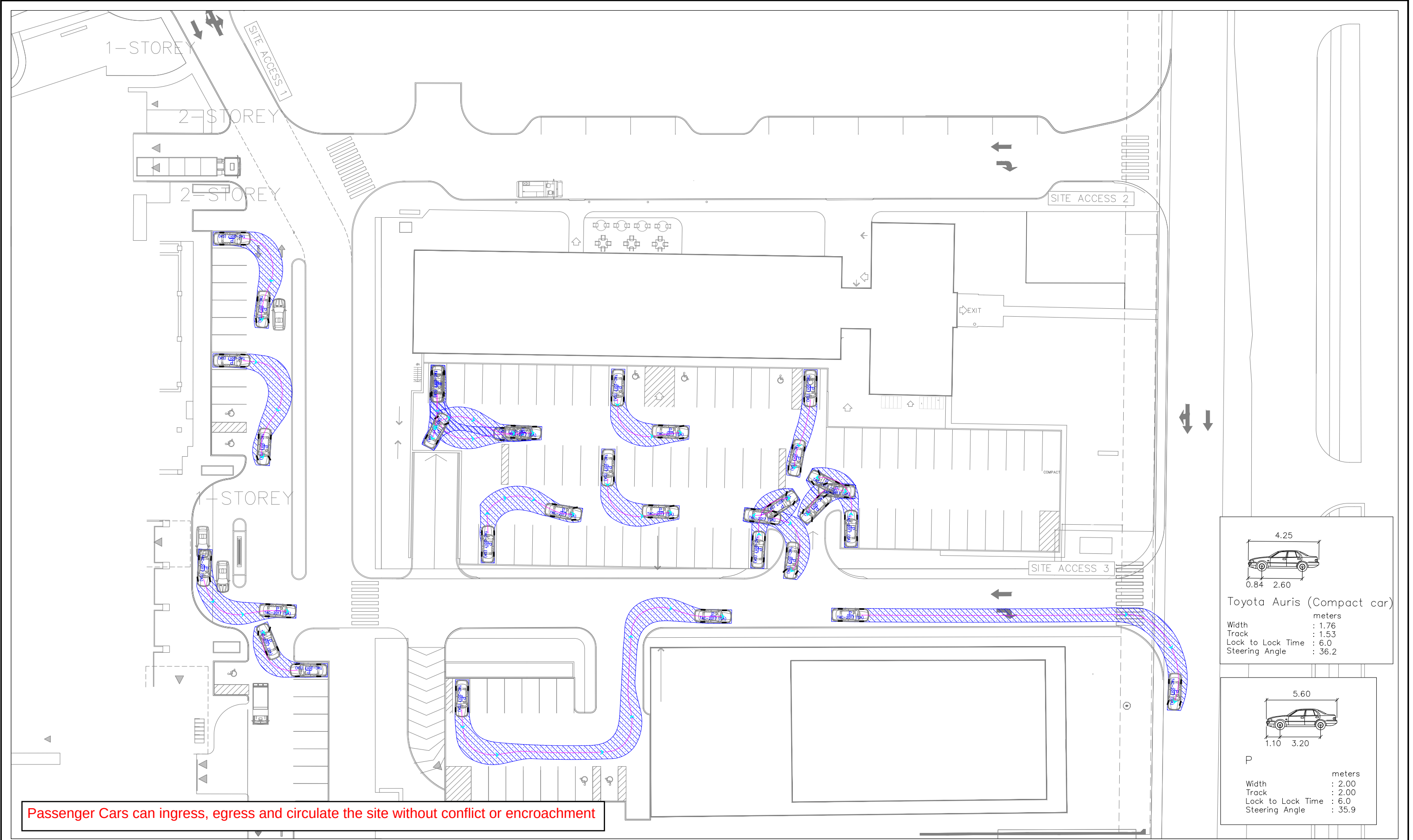
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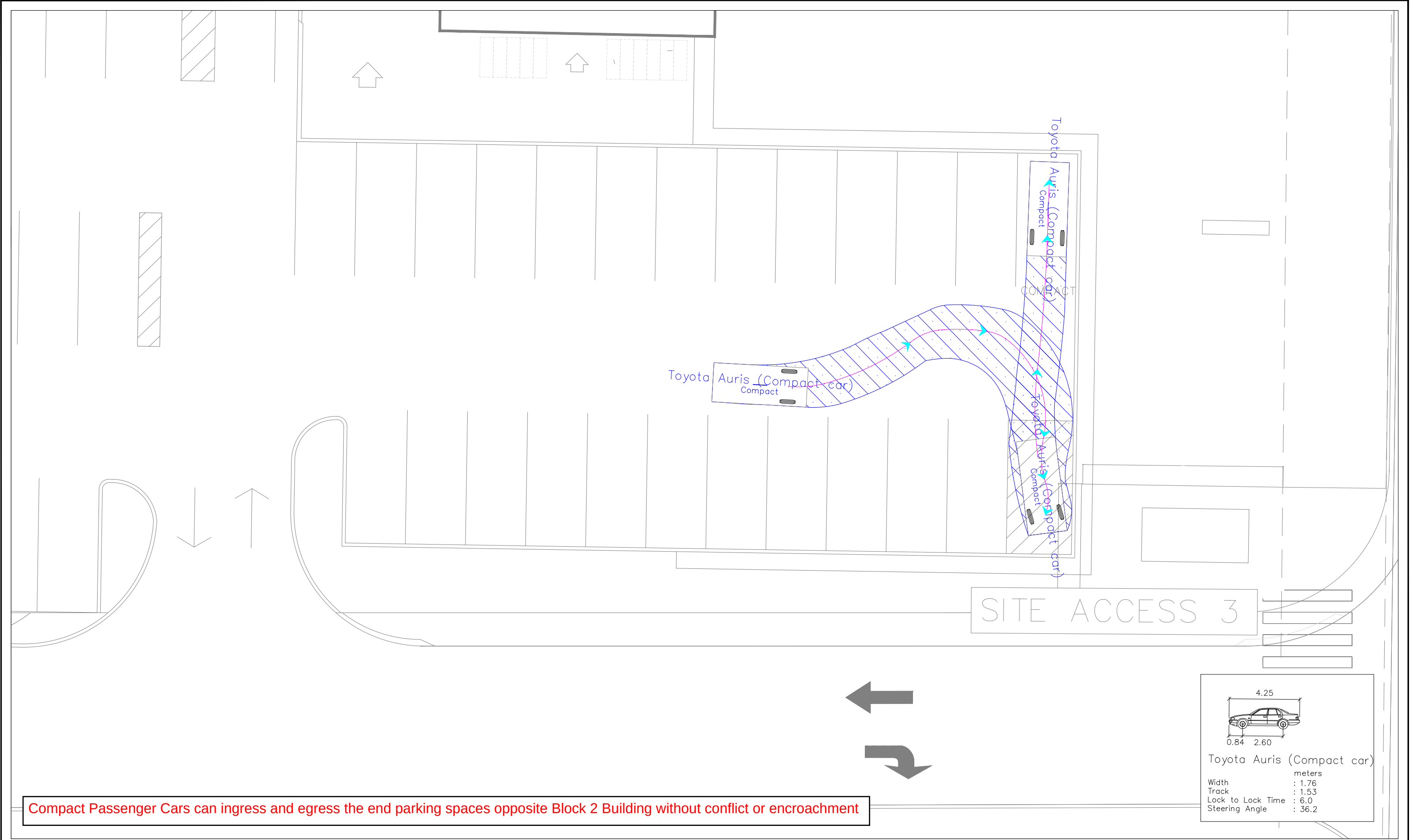
Toyota Auris (Compact car)

Width	: 1.76
Track	: 1.53
Lock to Lock Time	: 6.0
Steering Angle	: 36.2

P

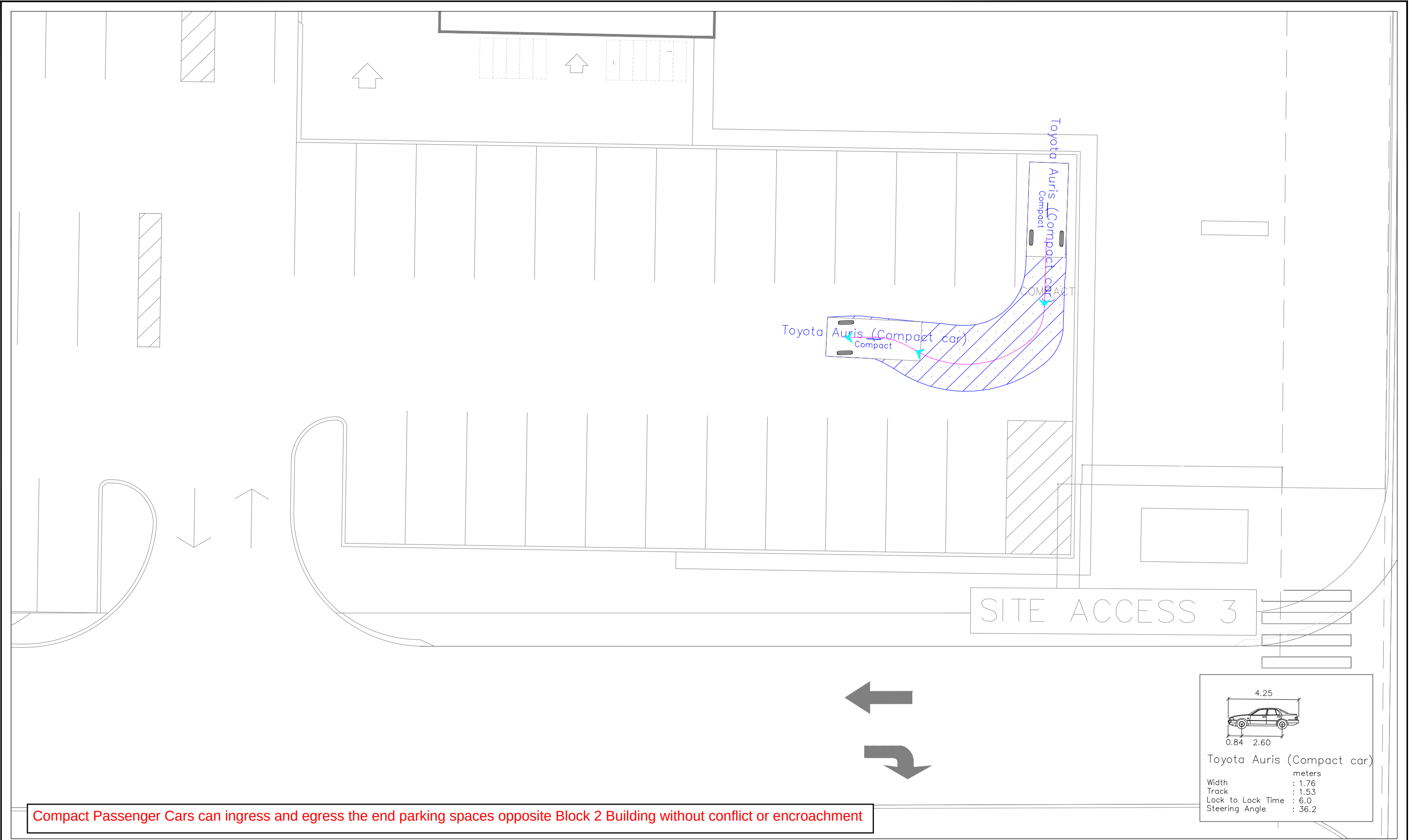
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

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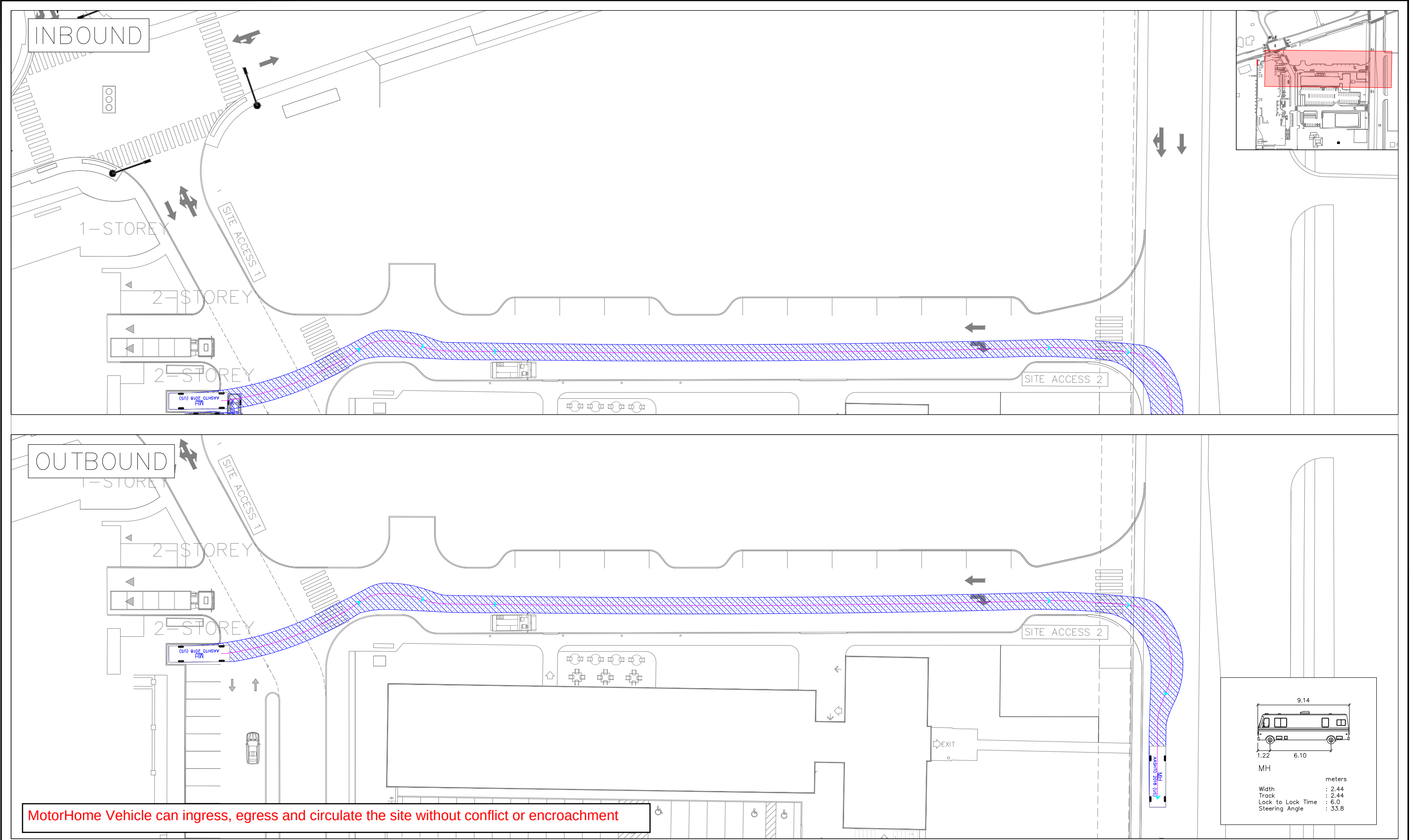
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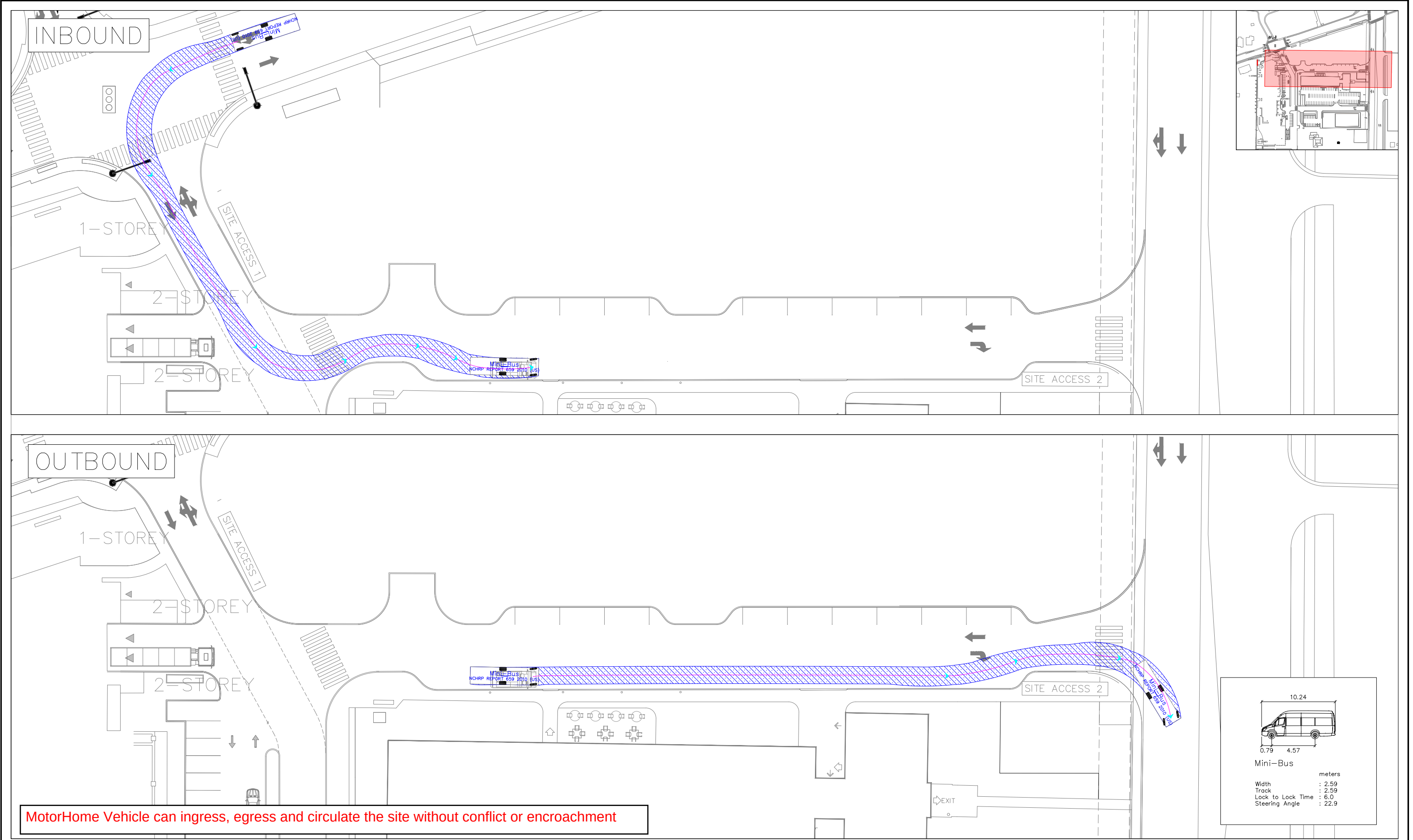
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MotorHome Vehicle can ingress, egress and circulate the site without conflict or encroachment

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10.24

0.79 4.57

Mini-Bus

meters

Width : 2.59

Track : 2.59

Lock to Lock Time : 6.0

Steering Angle : 22.9

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