1531 St-Laurent Boulevard

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report (Rev#1)

Prepared for:

1531 St Laurent Limited Partnership
265 Carling Ave unit 401
Ottawa, ON K1S 2E1

Prepared by:

CGH TRANSPORTATION
6 Plaza Court
Ottawa, ON K2H 7W1

June 2024

PN: 2023-053

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1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required, and this study has been prepared to support a zoning bylaw amendment and site plan application.

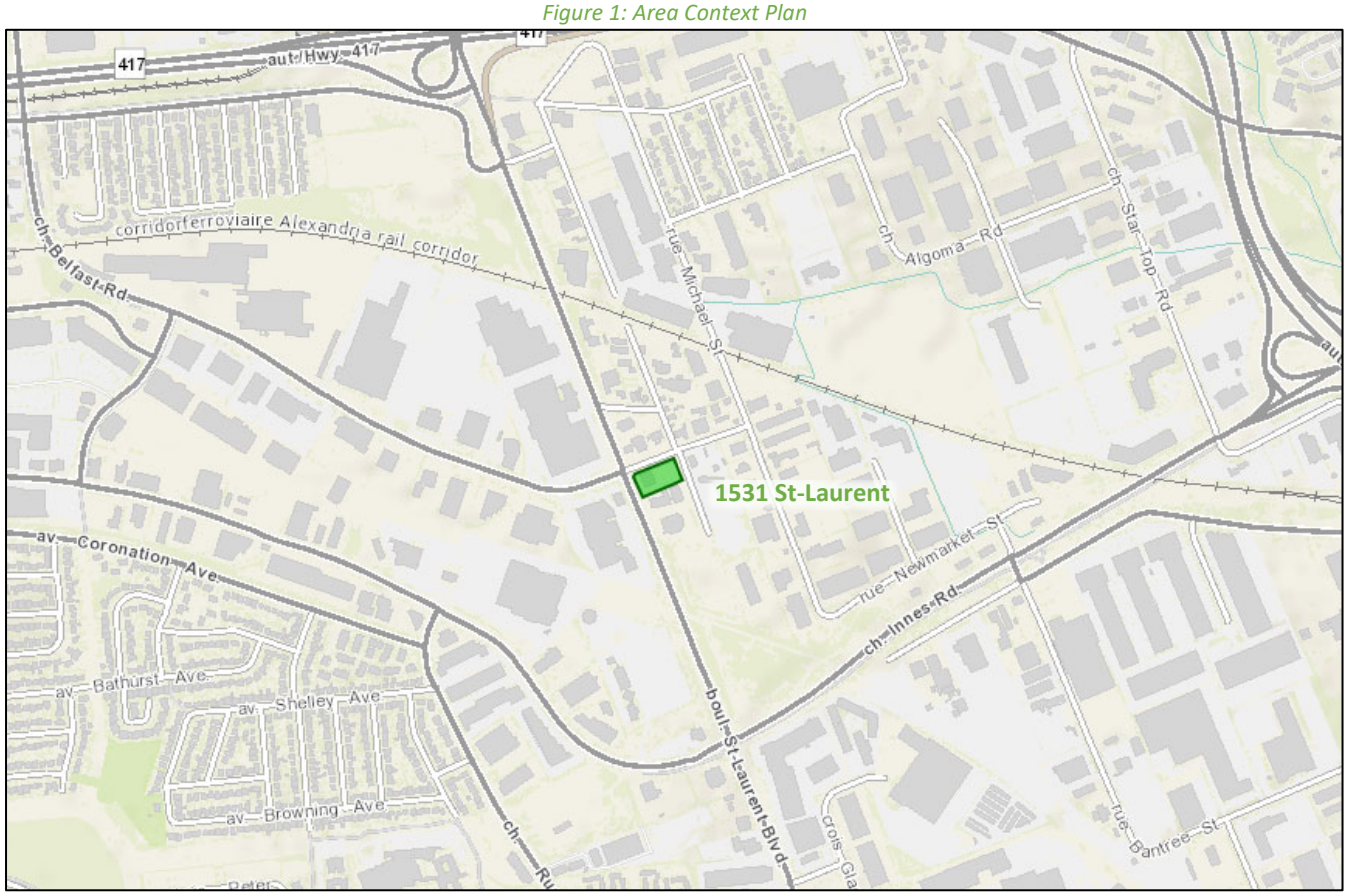
2 Existing and Planned Conditions

2.1 Proposed Development

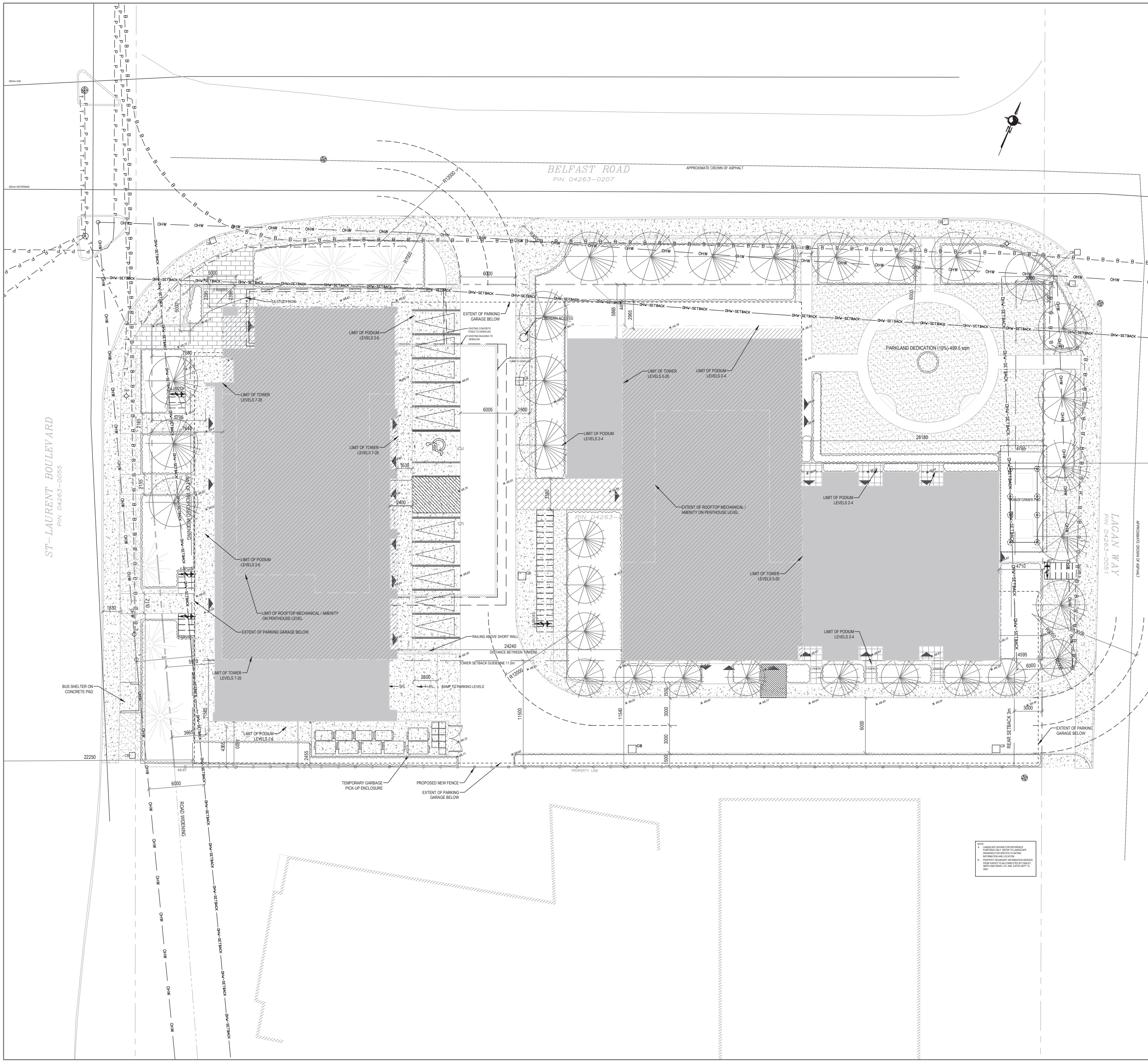
The development site is located at 1531 St-Laurent Boulevard and is zoned as Arterial Mainstreet (AM, AM[263]). The proposed development consists of a 25-storey mixed-use building with 247 dwelling units fronting St-Laurent Boulevard, a 20-storey residential building comprising 188 dwelling units on the east side of the parcel, and a total of 3,085 ft^2 of retail space. Access is proposed via a one-way drive aisle with an inbound access on Belfast Road and an outbound access on Lagan Way. The site proposes a total of 395 vehicle parking spaces, including 354 residential, 30 visitor, and 11 retail vehicle spaces. A total of 407 internal bicycle parking spaces and 40 external bicycle parking spaces are proposed. Construction will occur in a single phase with an anticipated full build-out and occupancy horizon of 2026.

Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 2, 2023



KEY PLAN

PROPERTY DESCRIPTION

25 & 20 STOREY RESIDENTIAL BUILDINGS

CITY OF OTTAWA PIN NUMBER	04263-0011
MUNICIPAL ADDRESS	1531 St-Laurent Blvd

SITE INFORMATION

LOT AREA: 4984.1sqm

LOT FRONTAGE: 198.36m (3 sides)

LOT DEPTH: 96.43m (E to W) and 52.20m (N to S)

BUILDING INFORMATION

BUILDING AREA: TOWER A = 964sqm / TOWER B = 1268 sqm

BUILDING FLOOR AREA: TOWER A = 20914 sqm / TOWER B = 16676 sqm

PROPOSED USE: MIXED USE RESIDENTIAL, HIGH-RISE

UNIT BREAKDOWN - TOWER A:

		UNIT MIX:
LEVEL 1:	0 UNITS	0
LEVEL 2:	11 UNITS	7x1BD, 4x2BD
LEVEL 3-6:	11 UNITS	6x1BD, 3x2BD, 2x3BD
LEVEL 7:	12 UNITS	2xST, 5x1BD, 3x2BD, 2x3BD
LEVEL 8-23:	10 UNITS	2xST, 5x1BD, 3x2BD
LEVEL 24-25:	10 UNITS	2xST, 5x1BD, 2x2BD, 1x3BD

TOTAL 247 UNITS

UNIT BREAKDOWN - TOWER B:

		UNIT MIX:
LEVEL 1:	6 UNITS	4x1BD, 2x 2BD
LEVEL 2-4:	13 UNITS	1x ST, 6x1BD, 4x2BD, 2x3BD
LEVEL 5 :	8 UNITS	3x1BD, 2x2BD, 3x3BD
LEVEL 6-20:	9 UNITS	1xST, 4x1BD, 4x2BD

TOTAL 188 UNITS

TOWERS A+B TOTAL 435 UNITS

ZONING TABLE AM

CITY OF OTTAWA ZONING BY-LAW No. 2008-250	REQUIRED	PROPOSED
MINIMUM LOT AREA	no minimum	4984.1 sq.m
MINIMUM LOT WIDTH	no minimum	
MINIMUM FRONT YARD SETBACK (ST-LAURENT)	no minimum	3.25m
MINIMUM CORNER SIDE YARD SETBACK (BELFAST)	no minimum	1.9m
MINIMUM INTERIOR SIDE YARD SETBACK (SOUTH)	no minimum	2.9m
MINIMUM REAR YARD SETBACK (LAGAN WAY)	3 m	4.6m
MAXIMUM BUILDING HEIGHT	30 m, BUT IN NO CASE GREATER THAN 9 STOREYS	81m
HYDRO SETBACK	6m	6m
VEHICLE PARKING REQUIREMENTS (AREA C SCHEDULE 1A)	Mixed-Use Residential: 1 space/unit = 435 spaces Residential Visitor: 0.2/unit Retail: 3.4 spaces/100sqm of gross floor area (288 sqm = 10 spaces)	395 SPACES TOTAL 30 VISITOR 11 RETAIL
PARKLAND DEDICATION	10% MIN OF Land area = 498.4 sqm	500 sqm
PARKING AREA AND SURROUNDING LANDSCAPING	15% MIN OF Parking lot area (15% of 840 sq.m = 126 sq.m) must be provided as perimeter or interior landscaped area. 1.5m landscaped buffer to be provided between the perimeter of the parking lot and a lot line (a driveway may cross the buffer)	Site Landscaping = 1663 sqm
AMENITY AREA REQUIREMENTS	6 square metres per unit (minimum 50% must be communal) 435 units x 6 sqm = 2610 sqm Minimum 1305 sqm communal	COMMUNAL: 1474 sqm PRIVATE BALCONIES: 2092 sqm TOTAL = 3566 sqm
BICYCLE PARKING SPACES	0.5 spaces per unit = 218 spaces	407 INTERIOR SPACES 40 EXTERIOR SPACES

LEGEND

SOFT LANDSCAPING

PAVERS REFER TO LANDSCAPE

ASPHALT PAVING

CONCRETE

RIVERSTONE REFER TO LANDSCAPE

EXISTING BUILDING ELEMENT TO BE REMOVED

EXISTING FENCE

NEW BOARD FENCE REFER TO LANDSCAPE

LOT LINE

SETBACK LINE

DESIGNATED BUILDING ENTRANCE / EXIT

FH FIRE HYDRANT. REFER TO CIVIL

CB CB CATCH BASIN

MH MANHOLE

FD FLOOR DRAIN

UP UTILITY POLE

OHW OVERHEAD UTILITY WIRES

LIGHT STANDARD

DC DEPRESSED CURB

NEW TREE (REFER TO LANDSCAPE DRAWINGS)

EXISTING TREE (REFER TO LANDSCAPE DRAWINGS)

NEW PLANTING AREA (REFER TO LANDSCAPE DRAWINGS)

77.70 EXISTING GROUND ELEVATION [TO DETERMINE EXISTING AVERAGE GRADE]

X58.84 NEW GROUND ELEVATION REFER TO CIVIL

NOTE: 'X'-E INDICATES EXISTING TO REMAIN

No.	Date	Émis pour / Object
01	2023-06-01	SPC
02	2023-12-14	COORDINATION
03	2024-01-16	COORDINATION
04	2024-02-20	SPC
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Ingénieur / *Engineer* (Mécanique & Électricité / *Mechanical & Electrical*)

Ingénieur / *Engineer* (Structure / *Structure*)

Architecte / *Architect* (paysagiste / *Landscape*)

GJA

GJA INC. GINO J AIELLO | LANDSCAPE ARCHITECT GJALA.COM | (613) 286 - 5130 | GINO@GJALA.COM 110 DIDSBURY ROAD UNIT # 9 | OTTAWA ONTARIO | K2T 0C2

Ingénieur / *Engineer* (Civil / *Civil*)

egis

Client / *Client*

KTS PROPERTIES

Architecte / *Architect* — Collectif d'architectes / Architects Collective

fig. 1 3550, Saint-Antoine O. Montréal QC H4C 1A9 T. 514 861-5122

fig. 2 190 Somerset St W #206 Ottawa ON K2P 0J4 T. 613 695-6122

figurr www.figurr.ca

Sceau / *Seal*

Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / *Project*

ST-LAURENT DEVELOPMENT

1531 St-Laurent Blvd

2023-06-01

Titre / *Title*

SITE PLAN

Dessiné par / *Drawn by*: ZK

No. projet / *Project number*: *2303*

Vérifié par / *Verified by*: RC

No. dessin / *Drawing number*: A010

Révision / Revision: 0

Échelle / Scale: *1:200*

Date de création du dessin / *Drawing creation date*: 03/01/2023

2.2 Existing Conditions

2.2.1 Area Road Network

St-Laurent Boulevard: St-Laurent Boulevard is a City of Ottawa arterial road. Within the study area, it has a divided six-lane urban cross-section north of Tremblay Road, a divided four-lane urban cross-section between Tremblay Road and Innes Road, and a divided six-lane urban cross-section and includes dedicated bus lanes and cycletracks on both sides of the road south of Innes Road. Sidewalks are present on both sides of the road. North of Tremblay Road the posted speed limit is 60 km/h and is 70 km/h to the south. The Official Plan reserves a 44.5-metre right-of-way within the study area, and the St-Laurent Boulevard Transit Priority Corridor Environmental Assessment Study will require widening beyond the Official Plan designation. St-Laurent Boulevard is designated as a truck route.

Industrial Avenue: Industrial Avenue is a City of Ottawa arterial road with a four-lane urban cross-section with a sidewalk on the north side of the road, and, within the study area for 200 metres west of St-Laurent Boulevard, with a bike lane that diverts onto the boulevard around the bus stop on the north side of the road and a mixed-use path (MUP) on the south side of the road. The posted speed limit is 60 km/h, and the Official Plan reserves a 37.5-metre right-of-way. Industrial Avenue is designated as a truck route.

Innes Road: and Innes Road is a City of Ottawa arterial road with a divided four-lane urban cross-section with a MUP on the south side of the road. Within the study area, the posted speed limit is 60 km/h, and the Official Plan reserves a 44.5-metre right-of-way. Innes Road is designated as a truck route.

Tremblay Road: Tremblay Road is a City of Ottawa major collector road with a two-lane urban cross-section. West of the Avenue U, a sidewalk is present on the south side of the road, and a MUP is present on the north side of the road. East of Avenue U, a sidewalk is present on the south side of the road. The posted speed limit is 50 km/h. West of St-Laurent Boulevard. The Official Plan reserves a s 26.0-metre right-of-way, and the measured right-of-way is 18.0 metres to the east.

Belfast Road: Belfast Road is a City of Ottawa collector road west of St-Laurent Boulevard and a local road to the east, each with a two-lane cross-section. Within the study area, the cross-section is urban and includes sidewalks on both sides of the road east of 940 Belfast Road, and alternates between rural and semi-urban to the west, where a sidewalk, discontinuous through site accesses, is present on the north side of the road. The posted speed limit is 50 km/h. The Official Plan reserves a 26.9-metre to a 29.2-metre right-of-way between Trainyards Drive and St-Laurent Boulevard subject to the Hospital Link and Cumberland Transitway Westerly EA, and the measured right-of-way is 26.0 metres east of St-Laurent Boulevard. Belfast Road is designated as a truck route.

2.2.2 Existing Intersections

The existing key area intersections have been summarized below:

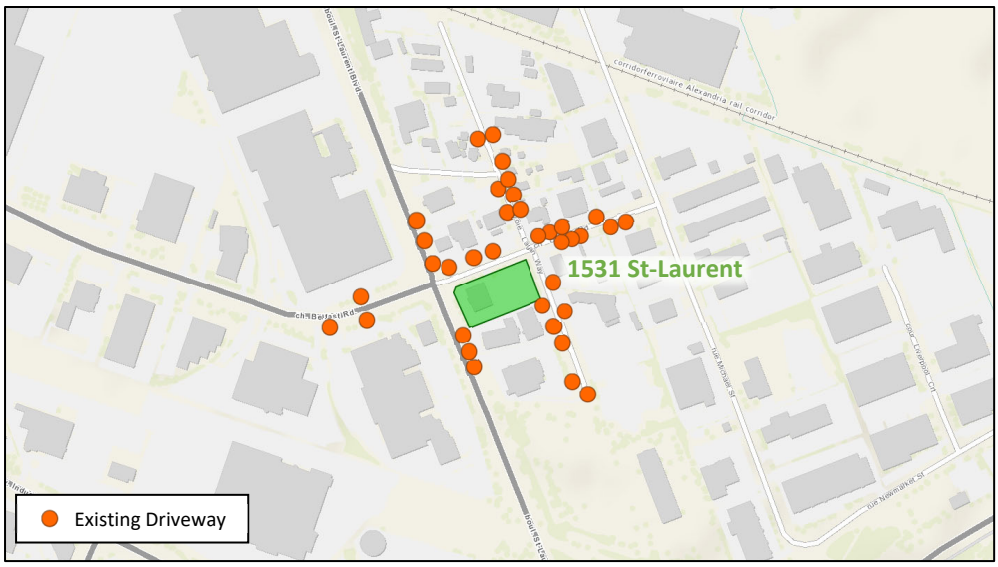
St-Laurent Boulevard at Tremblay Road	The intersection of Tremblay Road at St-Laurent Boulevard is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, two through lanes, and a shared through/right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, two through lanes, and an auxiliary right-turn lane. The eastbound and westbound approaches each consists of an auxiliary left-turn lane and a shared through/right-turn lane. No turn restrictions are noted.
St-Laurent Boulevard at Belfast Road	The intersection of St-Laurent Boulevard at Belfast Road is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, two through lanes, and an auxiliary channelized

	right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary channelized right-turn lane, and the westbound approach consists of an auxiliary left-turn lane and a shared through/channelized right-turn lane. No turn restrictions were noted.
St-Laurent Boulevard at Industrial Avenue / Innes Road	The intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road is a signalized intersection. The northbound approach consists of two auxiliary left-turn lanes, two through lanes, a transit priority queue jump, and an auxiliary channelized right-turn lane and the southbound approach consists of two auxiliary left-turn lanes, two through lanes, a transit priority queue jump, and an auxiliary channelized right-turn lane. The eastbound approach consists of two auxiliary left-turn lanes, two through lanes, and an auxiliary channelized right-turn lane, and the westbound approach consists of two auxiliary left-turn lanes, two through lanes, a bike pocket that connects to the curbside bike lane on the approach through the right-turn channel, and an auxiliary channelized right-turn lane. An east-west two-way crossride is located on the south side of the intersection. The east and west pedestrian crossings pass through the two-way crossride across the south leg of the intersection, with the east crossing possessing an additional refuge island between the crossride and the westbound right-turn channel. Southbound, eastbound, and westbound U-turns are prohibited at this intersection.
Lagan Way at Belfast Road	The intersection of Lagan Way at Belfast Road is an unsignalized intersection with stop control on the minor approaches of Lagan Way. All approaches consist of a shared all-movements lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site access, 15 driveways are present on Belfast Road auto parts, service, and sales businesses, a gas station, the Belfast Park commercial plaza, an OC Transpo facility, and other commercial service businesses. Fifteen driveways are present on Lagan Way to various industrial, heavy equipment rental or storage, auto parts, service, and sales businesses, commercial service businesses, and a small commercial plaza. Six driveways are present on St-Laurent Boulevard to a commercial plaza, auto parts, service, and sales businesses, a gas station, and a restaurant are present. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



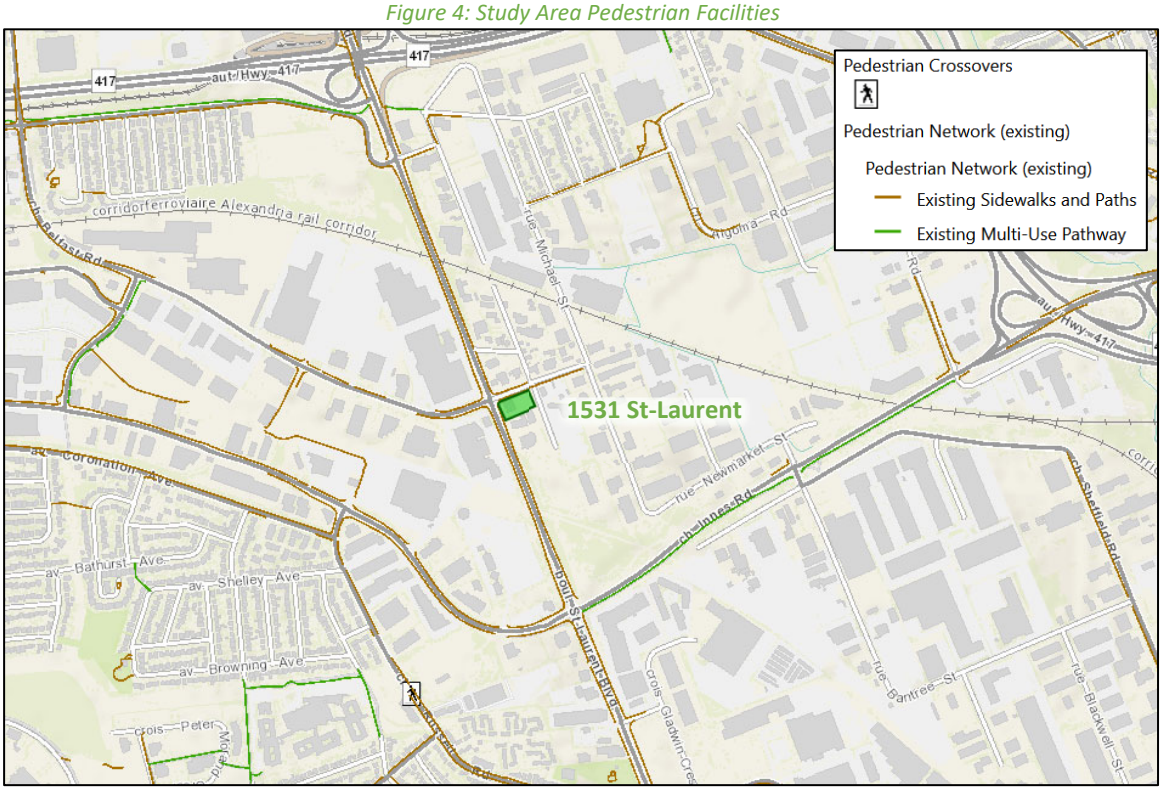
2.2.4 Cycling and Pedestrian Facilities

Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

Within the study area, sidewalks are provided along both sides of St-Laurent Boulevard and Belfast Road east of the 940 Belfast Road parcel, and a sidewalk is provided on the south side of Tremblay Road and the north side of Industrial Avenue. Industrial Avenue and Innes Road have a MUP on the south of the road.

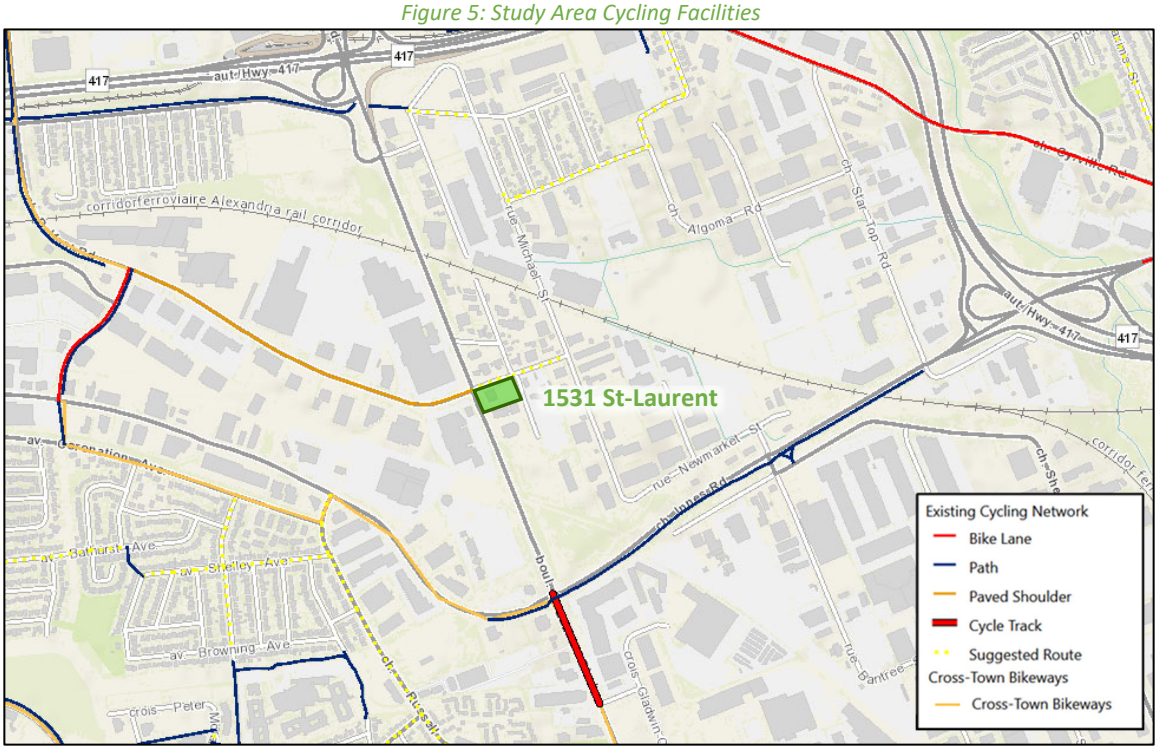
Beyond facilities provided at intersections, study area cycling facilities include a cycletrack on each side of St-Laurent Boulevard south of Innes Road. Within the study area, St-Laurent Boulevard south of Industrial Avenue and Industrial Avenue are Cross-Town Bikeways.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 2, 2023

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: June 14, 2024

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively. The City of Ottawa notes that the active mode volumes collected in winter may vary from counts conducted at other times of the year.

Figure 6: Existing Pedestrian Volumes

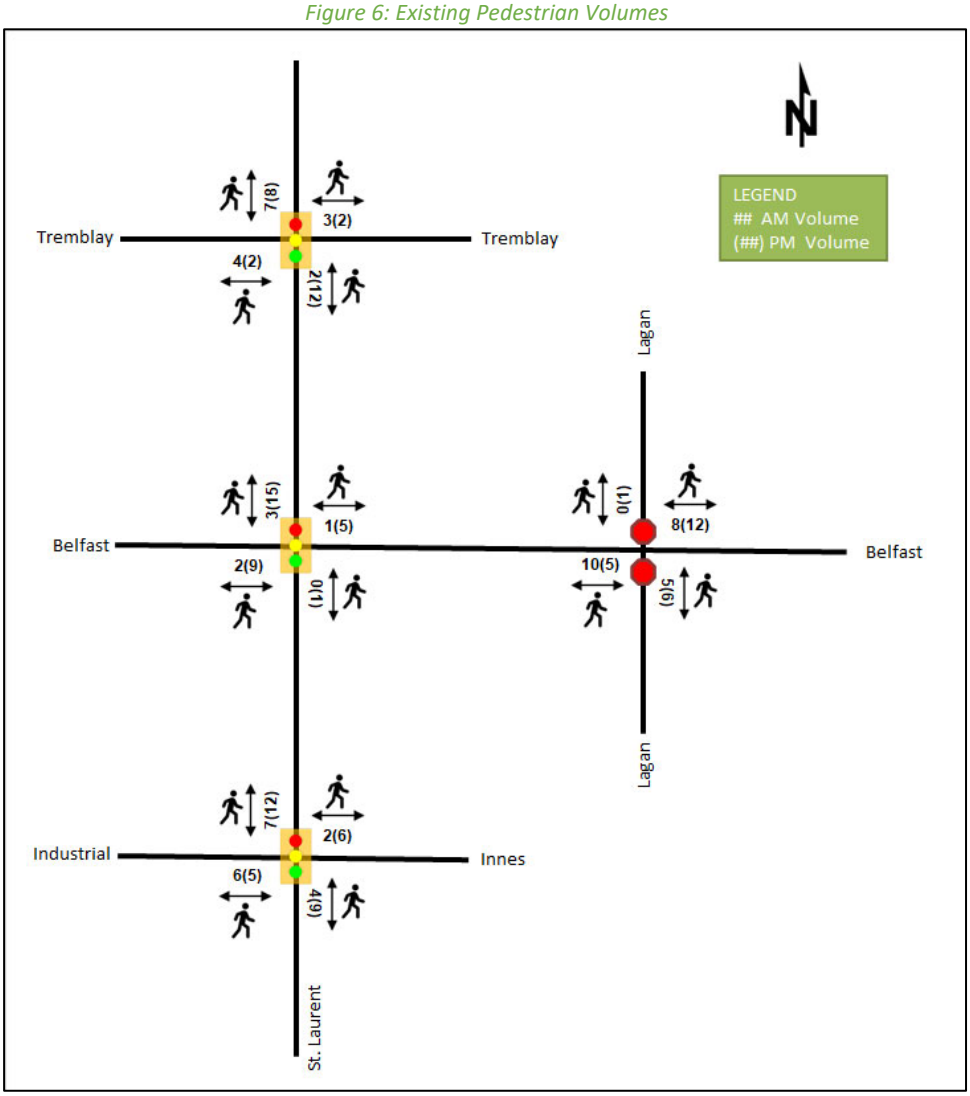
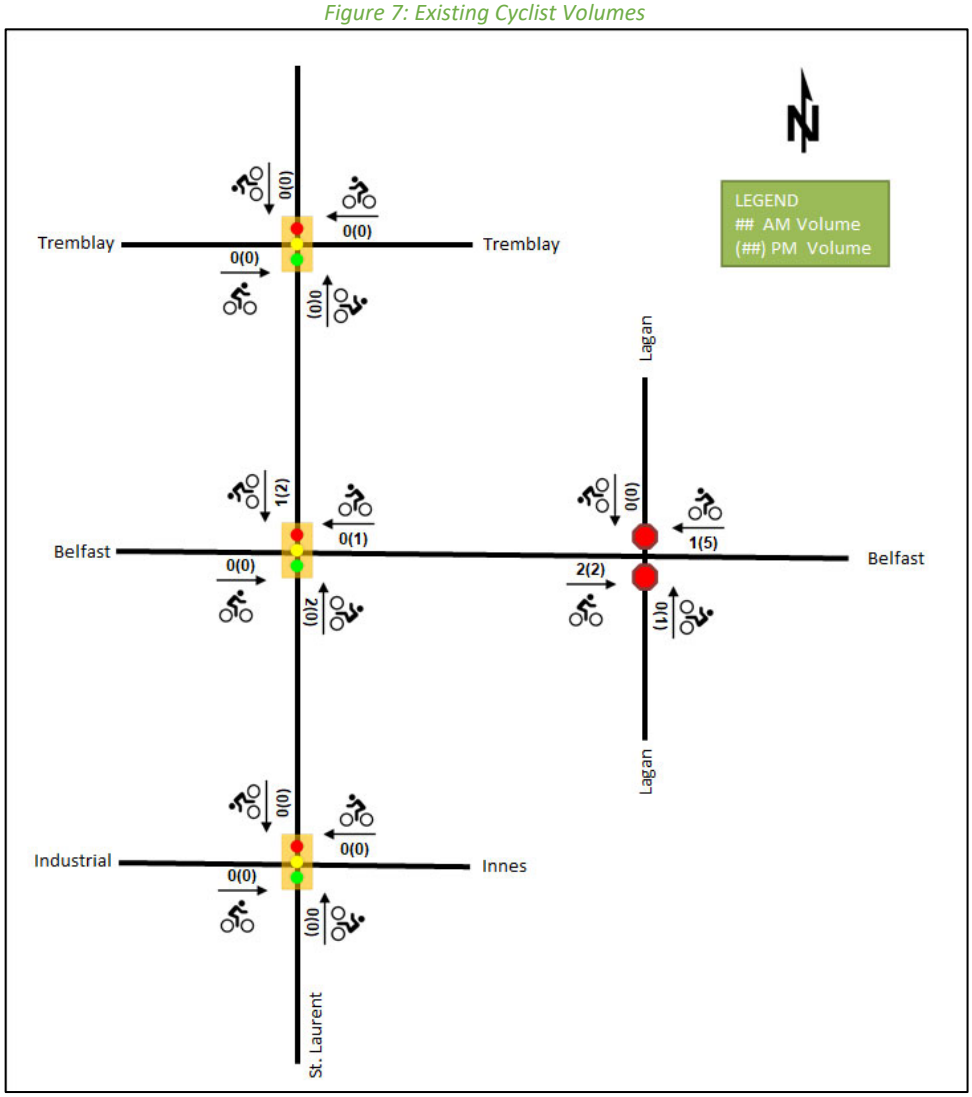


Figure 7: Existing Cyclist Volumes



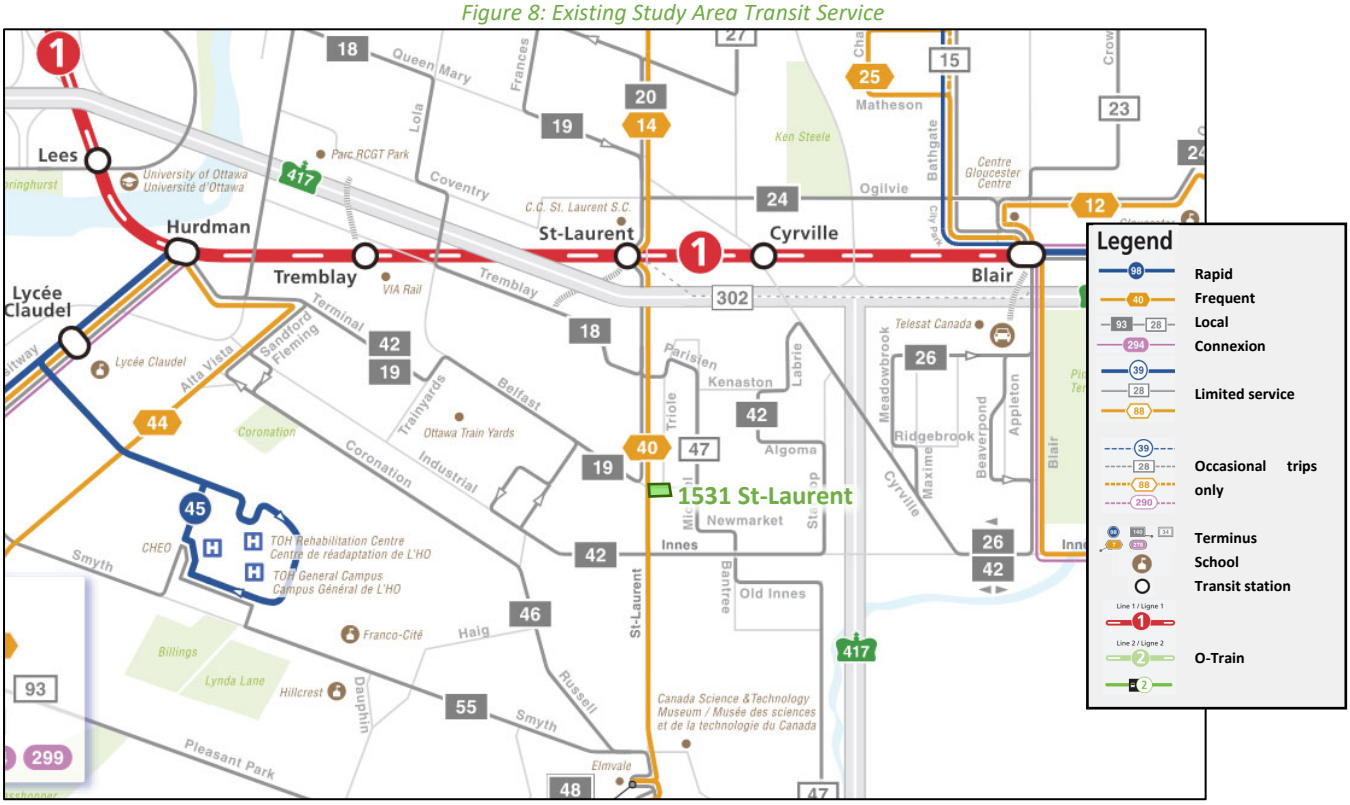
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from May 3, 2023 and is included for general information purposes and context to the surrounding area.

Within the study area, route #19 travels along St-Laurent Boulevard continuing to Belfast Road, the route #40 travels along St-Laurent Boulevard, and the route #47 travels along Michael Street to the east of the site. Additionally, while an OC Transpo garage and maintenance facility is on the northwest corner of the intersection of St-Laurent Boulevard and Belfast Road and a high volume of bus traffic is anticipated from the facility at all times of day. The frequency of these routes within proximity of the proposed site based on May 3, 2023 service levels are:

- Route # 19 – 30-minute service all day
- Route # 40 – 15-minute daytime service, 30-minute service after 7:00PM
- Route # 47 – Eight buses in the peak direction/period only

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: May 3, 2023

Figure 9: Existing Study Area Transit Stops

Source: http://www.octranspo.com/ Accessed: May 3, 2023

2.2.6 Existing Area Traffic Management Measures

There are no existing area traffic management measures within the study area.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa and the Traffic Specialist for the existing study area intersections. Table 1 summarizes the intersection count dates and sources.

Table 1: Intersection Count Date

Intersection	Count Date	Source
St-Laurent Blvd at Tremblay Rd	Wednesday, January 30, 2019	City of Ottawa
St-Laurent Blvd at Belfast Rd	Tuesday, February 6, 2018	City of Ottawa
St-Laurent Blvd at Industrial Ave/Innes Rd	Wednesday, January 30, 2019	City of Ottawa
Lagan Wy at Belfast Rd	Thursday, May 11, 2023	The Traffic Specialist

Figure 10 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

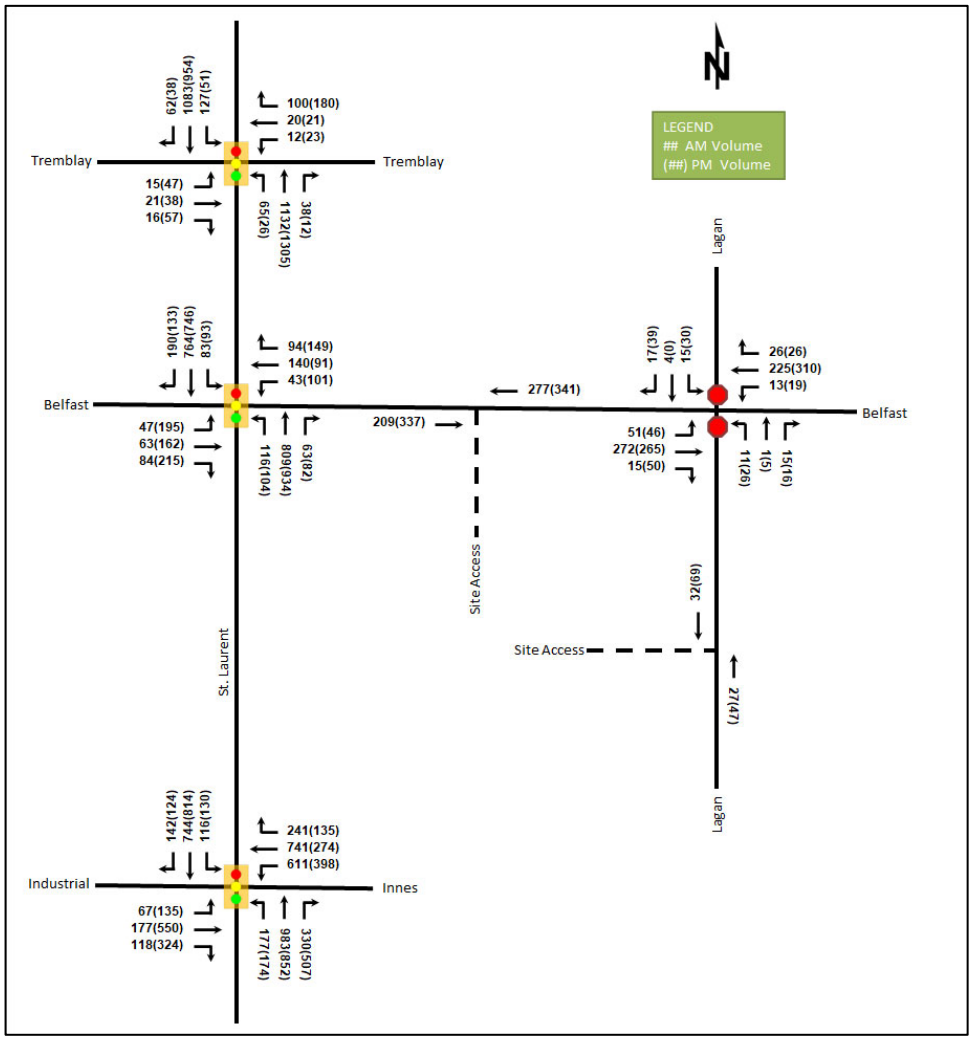


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
St-Laurent Blvd at Tremblay Rd *Signalized*	EBL	A	0.21	54.3	10.0	D	0.83	**118.0**	23.5
	EBT/R	A	0.21	33.5	13.8	A	0.40	23.8	21.7
	WBL/T	A	0.10	48.9	8.1	A	0.16	43.4	11.9
	WBR	A	0.53	20.2	21.0	B	0.62	18.6	29.0
	NBL	A	0.26	13.6	22.7	A	0.09	14.5	m5.8
	NBT/R	A	0.43	10.9	93.5	A	0.45	12.2	m94.0
	SBL	A	0.44	8.3	20.0	A	0.22	6.9	9.5
	SBT	A	0.50	6.7	103.9	A	0.44	7.1	84.7
	SBR	A	0.07	1.6	5.0	A	0.04	2.3	4.1
	Overall	**A**	**0.48**	**10.0**	-	**A**	**0.52**	**13.1**	-
St-Laurent Blvd at Belfast Rd *Signalized*	EBL	A	0.26	30.4	17.1	**F**	**1.07**	**117.7**	**#85.0**
	EBT	A	0.14	28.6	21.5	A	0.38	34.2	48.8
	EBR	A	0.21	6.6	11.1	A	0.41	7.2	20.5
	WBL	A	0.23	42.3	20.3	B	0.61	58.6	41.0
	WBT/R	D	0.87	69.7	**#92.9**	D	0.83	56.2	73.0
	NBL	A	0.42	16.5	24.2	A	0.36	15.0	22.4
	NBT	A	0.57	25.4	109.2	B	0.65	27.0	130.7
	NBR	A	0.09	0.2	0.1	A	0.14	1.7	3.9
	SBL	A	0.33	15.5	18.1	A	0.44	21.5	25.8
	SBT	A	0.56	25.5	102.8	A	0.52	19.2	52.8
	SBR	A	0.31	4.1	14.0	A	0.19	2.3	5.9
	Overall	**C**	-	**26.4**	-	**C**	-	**30.9**	-
Lagan Way at Belfast Rd *Unsignalized*	EB	A	0.05	8.2	1.5	A	0.05	8.7	1.5
	WB	A	0.01	8.3	0.0	A	0.02	8.1	0.8
	NB	C	0.08	15.3	2.3	C	0.17	18.7	4.5
	SB	C	0.10	15.0	2.3	C	0.20	17.1	6.0
	Overall	**A**	-	**2.2**	-	**A**	-	**3.1**	-
St-Laurent Blvd at Industrial Ave / Innes Rd *Signalized*	EBL	A	0.39	68.6	18.2	A	0.56	66.6	32.9
	EBT	A	0.42	54.5	35.6	D	0.83	58.7	**#112.0**
	EBR	A	0.36	4.4	5.1	B	0.64	14.6	46.9
	WBL	**F**	**1.01**	**90.6**	**#138.6**	C	0.77	60.2	77.6
	WBT	D	0.81	50.6	128.7	A	0.30	33.7	44.5
	WBR	A	0.44	6.3	20.5	A	0.26	5.9	14.7
	NBL	B	0.65	70.9	39.8	A	0.59	64.0	39.3
	NBT	E	0.95	60.4	**#241.3**	E	0.97	68.2	**#197.5**
	NBR	A	0.51	9.8	42.7	C	0.75	15.5	76.5
	SBL	A	0.52	69.1	28.0	A	0.53	64.5	31.1
	SBT	C	0.74	46.6	**#163.6**	E	0.97	70.2	**#192.7**
	SBR	A	0.29	5.0	12.3	A	0.26	4.1	9.7
	Overall	**E**	**0.95**	**51.2**	-	**D**	**0.85**	**50.5**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, capacity issues are noted individual movements, but the network intersections typically operate adequately.

The eastbound left movement at the intersection of St-Laurent Boulevard at Tremblay Road may be subject to high delays during the PM peak hour.

At the intersection of St-Laurent Boulevard at Belfast Road, during the AM peak hour, the westbound through/right movement may exhibit extended queues and during the PM peak hour, the eastbound left movement is over capacity with high delays and extended queues. Shifting two seconds of split during the PM peak hour from the westbound through phase to the eastbound left phase would reduce v/c of all movements at the intersection to 1.00 or below.

At the intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road, during the AM peak hour, the westbound left-turn movement is over theoretical capacity during with high delays and extended queues, and the northbound through and southbound through movements may exhibit extended queues. During the PM peak hour, the eastbound through, northbound through, and southbound through movements may exhibit extended queues. Shifting one second of split during the AM peak hour from the northbound through/southbound through phase to the westbound left/eastbound through phase would reduce v/c of all movements at the intersection to 1.00 or below.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 3 summarizes the collision types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**101**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	22	22%
	Property Damage Only	79	78%
Initial Impact Type	**Approaching**	1	1%
	Angle	12	12%
	Rear end	32	32%
	Sideswipe	14	14%
	Turning Movement	30	30%
	SMV Unattended	2	2%
	SMV Other	7	7%
	Other	3	3%
Road Surface Condition	**Dry**	66	65%
	Wet	16	16%
	Loose Snow	7	7%
	Slush	9	9%
	Packed Snow	1	1%
	Ice	2	2%
Pedestrian Involved		2	2%
Cyclists Involved		0	0%

Figure 11: Study Area Collision Records, 2018-2022

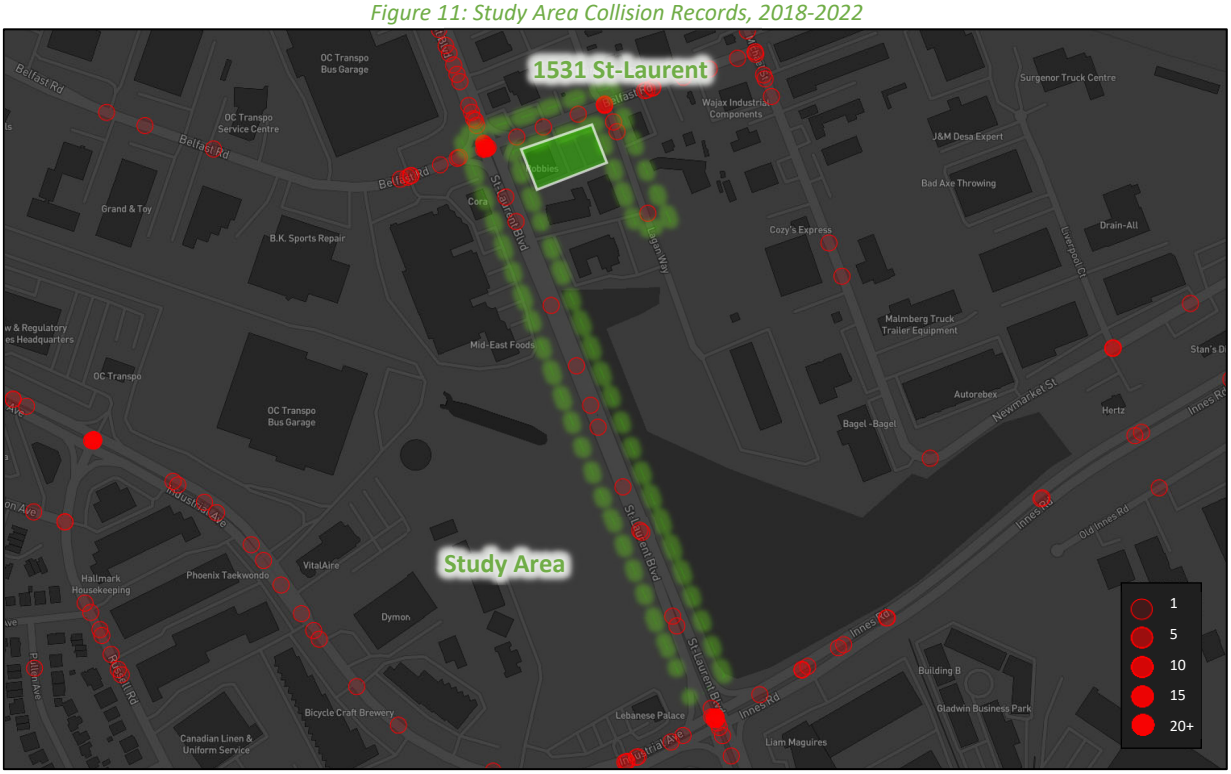


Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**119**	**100%**
Belfast Rd @ St-Laurent Blvd	75	74%
St-Laurent Blvd btwn Belfast Rd & Industrial Ave	13	13%
Belfast Rd @ Lagan Wy	7	7%
Lagan Wy btwn Belfast Rd & End	3	3%
Belfast Rd btwn St-Laurent Blvd & Lagan Wy	3	3%

Within the study area, the intersection of Belfast Road at St-Laurent Boulevard and the segment of St-Laurent Boulevard between Belfast Road and Industrial Avenue are noted to have experienced higher collisions than other locations. Table 5 and Table 6 summarize the collision types and conditions for these locations, respectively.

Outside of these locations, one collision at the intersection of Belfast Road at Lagan Way involved a pedestrian during the five-year period. The collision occurred at 1:35 PM in clear conditions with slush on the roadway. No patterns can be discerned from a single pedestrian collision, and no modifications outside of the proposed redevelopment of the southwest corner of the intersection, removing a fence at the property line and providing a 3.0-metre by 3.0-metre sight triangle is recommended to address collisions at this location. No further review for collisions at this location is required as part of this study.

Table 5: Intersection of Belfast Rd at St-Laurent Blvd Collision Summary

		Number	%
Total Collisions		**75**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	17	23%
	Property Damage Only	58	77%
Initial Impact Type	**Angle**	7	9%

		Number	%
Total Collisions		**75**	**100%**
	Rear end	25	33%
	Sideswipe	6	8%
	Turning Movement	29	39%
	SMV Unattended	1	1%
	SMV Other	5	7%
	Other	2	3%
Road Surface Condition	**Dry**	51	68%
	Wet	10	13%
	Loose Snow	4	5%
	Slush	7	9%
	Packed Snow	1	1%
	Ice	2	3%
Pedestrian Involved		1	1%
Cyclists Involved		0	0%

The Belfast Road at Coventry Road intersection had a total of 75 collisions during the 2018-2022 time period, with 58 involving property damage only and the remaining 17 having non-fatal injuries. The collision types are most represented by turning movement with 29 collisions and rear end with 25 collisions, followed by seven angle collisions, six sideswipe collisions, five SMV (other) collisions, two collisions as other, and one collision as SMV (unattended). Turning movement and angle collisions may be influenced by the four right-turn channels at the intersection or by the interaction of the bus movements between the north and west legs or the bus stops on both sides of the south leg. Rear end and sideswipe collisions are typical of congested conditions. One collision involving a pedestrian was noted during the five-year period, occurring at 11:30 AM in clear, dry conditions, and no patterns can be discerned from a single pedestrian collision. Weather conditions are not considered to impact collisions at this location.

It is anticipated that any geometric design factors contributing to collisions will be reviewed and mitigated as part of the St-Laurent Boulevard Transit Priority Corridor Environmental Assessment (EA) Study discussed in Section 2.3.1.3. No further collision analysis is required as part of this study.

Table 6: Segment of St-Laurent Blvd btwn Belfast Rd & Industrial Ave Collision Summary

		Number	%
Total Collisions		**13**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	1	8%
	Property Damage Only	12	92%
Initial Impact Type	**Rear end**	5	38%
	Sideswipe	6	46%
	SMV Unattended	1	8%
	SMV Other	1	8%
Road Surface Condition	**Dry**	7	54%
	Wet	4	31%
	Loose Snow	2	15%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The segment of St-Laurent Boulevard between Belfast Road and Industrial Avenue had a total of 13 collisions during the 2018-2022 time period, with 12 involving property damage only and the remaining one having non-

fatal injuries. The collision types are most represented by sideswipe with six collisions, followed by rear end with five collisions, and one collision each as SMV (other) and SMV (unattended). Higher incidence of rear end and sideswipe collisions are typical of congested conditions. Weather conditions may affect collisions at this location and paving treatments may be investigated to address collisions on this segment.

It is anticipated that any geometric design factors contributing to collisions will be reviewed and mitigated as part of the St-Laurent Boulevard Transit Priority Corridor EA Study discussed in Section 2.3.1.3. No further collision analysis is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The subject development is not within a Community Design Plan (CDP) Area.

2.3.1.1 Transportation Master Plan (2013)

Within the legacy Transportation Master Plan (TMP) (2013), the Rapid Transit and Transit Priority Network's Network Concept diagram shows an at-grade bus rapid transit (BRT) corridor along St-Laurent Boulevard south of Industrial Avenue. Within the Affordable Network diagram, however, this section and the remaining corridor are shown as having isolated transit priority measures which have been partially implemented as part of corridor upgrades in 2017.

Within the TMP (2013), the Road Network's Network Concept diagram shows Tremblay Road as widened collector. Within the Affordable Network diagram, this project is shown as a phase 3 (2026-2031) widening. The scope of the work per the Affordable Network is the widening of Tremblay Road from two lanes to four between Pickering Place and St-Laurent Boulevard. Since the project timeline is unknown, it is assumed that the widening will be completed beyond the study horizons.

2.3.1.2 Transportation Master Plan – Part 1 (2023)

The 2023 TMP Part 1 includes pedestrian infrastructure projects on the north side of Belfast Road west of St-Laurent Boulevard to connect existing sidewalks, and sidewalks along Michael Street and Parisien Street in the neighbourhood to the northeast of the site.

2.3.1.3 St-Laurent Boulevard Transit Priority Corridor Environmental Assessment (EA) Study

The City of Ottawa has initiated an EA study to assess the options for improvements to transit, and all travel modes, along the St-Laurent Boulevard transit priority corridor between Hemlock Road and Innes Road. No timeline for design and implementation of a future plan are available, and the improvements are assumed to occur outside of the study horizons.

2.3.1.4 St-Laurent TOD Plan

Approximately 400 metres north of the site is the St-Laurent TOD Plan area. The TOD plan outlines the realignment of Tremblay Road west of St-Laurent Boulevard, new sidewalks on both sides of Belfast Road and Michael Street, and dedicated cycling facilities along St-Laurent Boulevard and Tremblay Road. Figure 12, Figure 13, and Figure 14 illustrate the St-Laurent TOD street, pedestrian, and cycling plans, respectively.

Figure 12: St-Laurent TOD Street Network

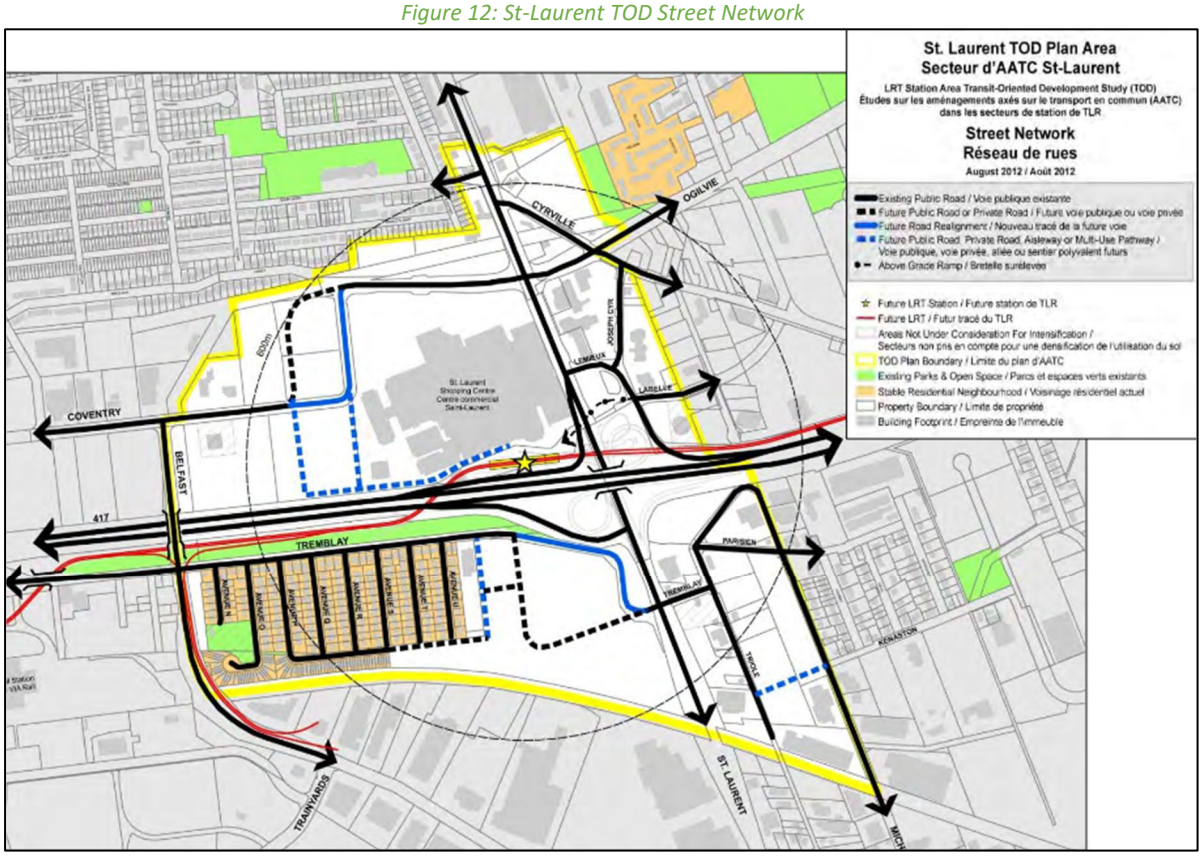


Figure 13: St-Laurent TOD Pedestrian Network

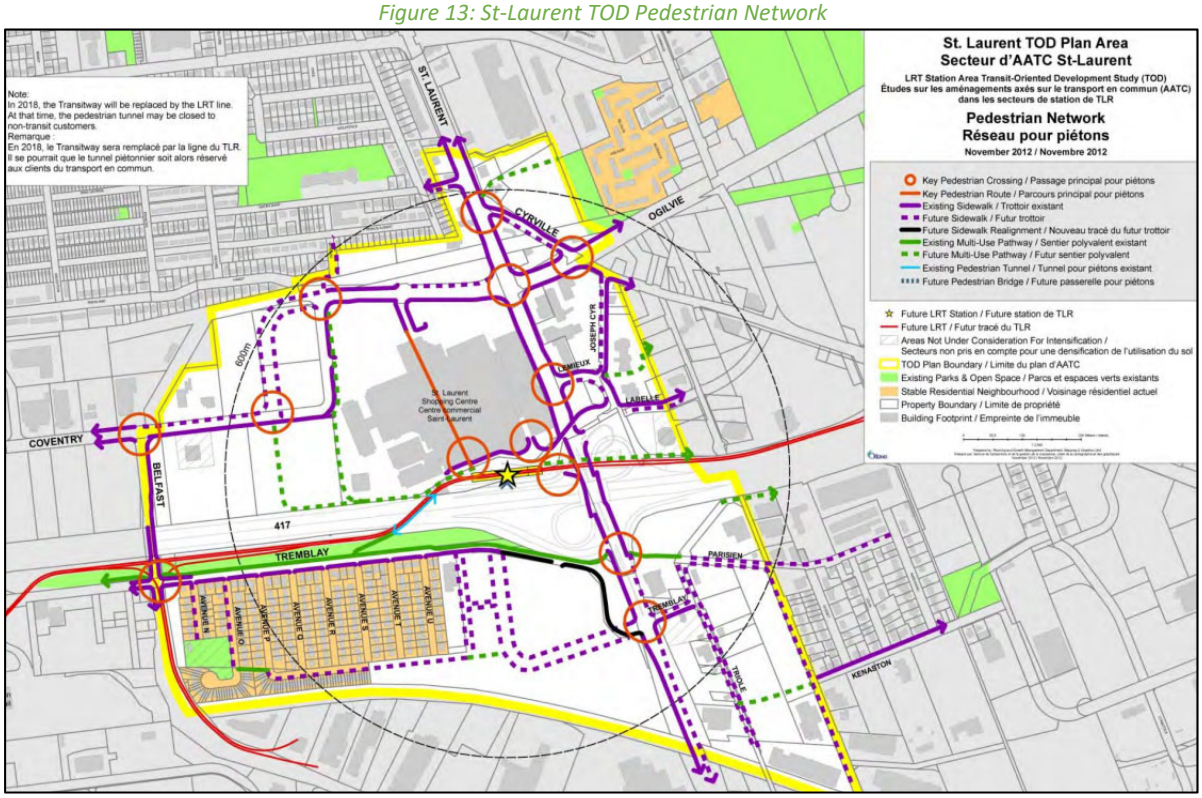
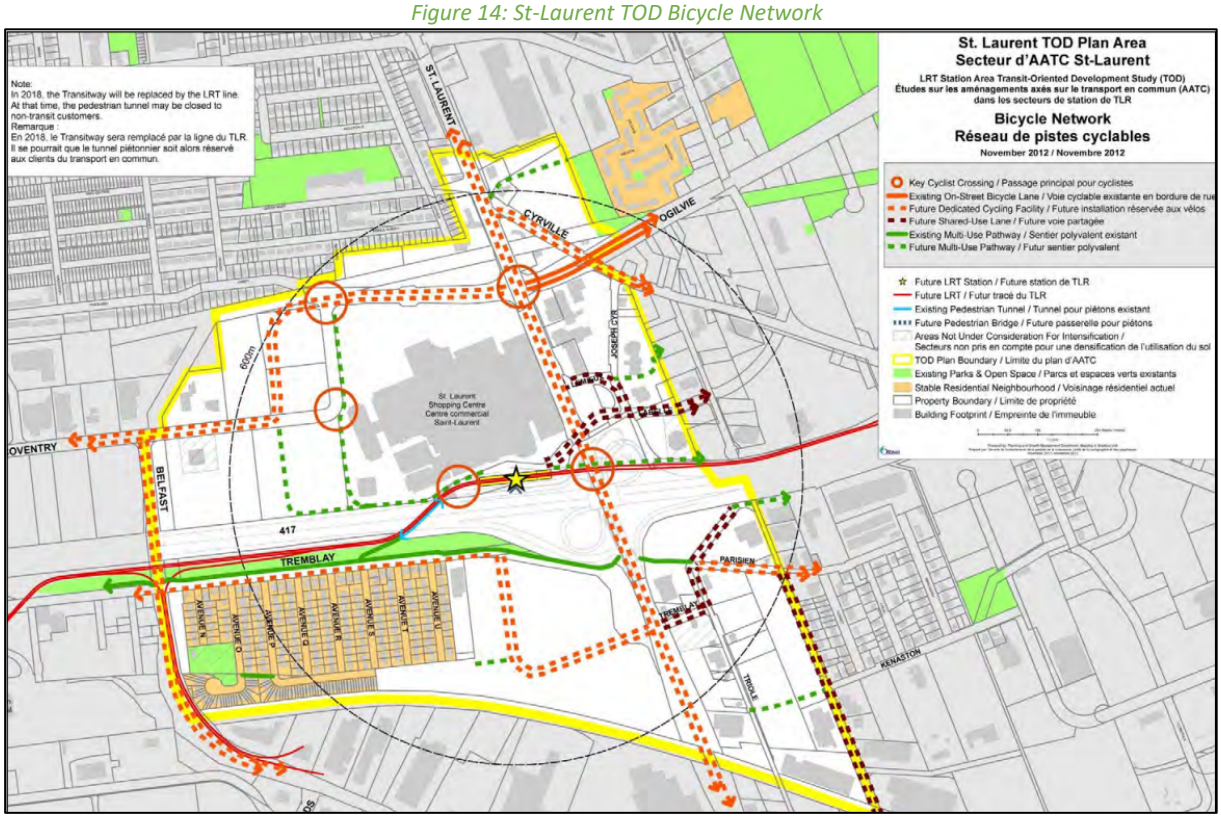


Figure 14: St-Laurent TOD Bicycle Network



2.3.2 Other Study Area Developments

1330 Avenue K

The proposed development application includes a Zoning By-Law Amendment to include residential uses along with complementary commercial uses. No TIA is available.

200, 230, 260 Streamline Street

The proposed development application includes a site plan for seven-storey high-rise buildings with a total of 1890 units. Phase one is to construct 420 dwelling units and was forecast to be built out by 2021. Phase two is to comprise 865 dwelling units is forecast to be built out by 2027. Phase three is to comprise the remaining 605 dwelling units is forecast to be built out by 2031. Phase one has not been constructed and it will be assumed to be completed by 2023. (Halpenny, 2018)

25 Pickering Place

The proposed development application includes a site plan for a hotel, a senior residence, and four high-rise residential towers. Phase one is to construct a nine-storey hotel with 119 units, a twelve-storey senior residence comprising 164 dwelling units, and a 20-storey tower comprising 211 dwelling units and is forecast to be built out by 2025. Phase two is to construct three high-rise towers with a total of 849 units is forecast to be built out by 2030. (CIMA+, 2020)

400 Coventry Road

The proposed development application includes a Zoning By-Law Amendment to allow seven towers on mixed use podiums totalling 1,690 residential dwelling units and 18,299 sq. ft. of commercial space. The development is forecast to be built out by 2032 and to generate 107 new AM and 130 new PM peak hour two-way auto trips. (CGH, 2022)

453 & 455 Coventry Road
The proposed development application includes a Zoning By-Law Amendment to allow 650 residential units and 1,115m² gross floor area (GFA) of commercial space. The development is forecast to be built out by 2027 and to generate 113 new AM and 135 new PM two-way peak hour auto trips. (Novatech, 2022)

500, 525, 535 Coventry Road & 1200 St-Laurent Boulevard
The proposed development application includes a Zoning By-Law amendment to permit the construction of freestanding retail buildings with associated surface parking areas. No TIA is included as part of this application, and the file was last updated in 2014.

530 Tremblay Road & 2098 Avenue P & 1399 Avenue U
The proposed development application includes a site plan to construct two apartment buildings with a total of 124 dwelling units. The development is forecast to be built out by 2023. (CGH Transportation, 2019)

599 Tremblay Road
The proposed development application includes a plan of subdivision for the construction of 500 apartment units and 150,000 m^2 of federal Office in three phases. Phase one is to comprise 200 dwelling units and 150,000 m^2 of office space and is forecast to be built out by 2025. Phase two is to comprise 200 dwelling units and is forecast to be built out by 2029. Phase three is to comprise the remaining 100 units, is forecast to be built out by 2033. (WSP, 2021)

1209 St-Laurent Boulevard & 1200 Lemieux Street
The proposed development application includes a site plan for two 30-storey residential buildings including 640 units. The development is expected to generate 35 new AM and 38 new PM peak hour two-way auto trips, and the anticipated build-out horizon is assumed to be 2026. (CGH Transportation, 2022)

1500 St-Laurent Boulevard
The proposed development application includes a site plan to include OC Transpo E-Bus Facility. No TIA is available.

1740-1760 St-Laurent Boulevard
The proposed development application includes a site plan for the construction of four buildings, two mixed use towers at 15-storeys and two residential towers at 12-storeys. The development is anticipated to be built-out by 2024 and to generate 228 new AM and 263 new PM peak hour two-way auto trips. (Parsons, 2021)

1802 St-Laurent Boulevard
The proposed development application includes a zoning amendment to allow the construction of two residential buildings comprising 512 dwelling units. The development is anticipated to be built-out by 2025 and to generate 185 new AM and 212 new PM peak hour two-way auto trips. (CGH, 2021)

1300 Michael Street
The proposed development application includes a site plan for approximately 15,000 sq. ft. of commercial and/or industrial space. The anticipated build-out horizon is 2023. No TIA is available.

1591-1611 Michael Street
The proposed development application includes a site plan for approximately 40,900 sq. ft. of light industrial space. No TIA is available.

1195 Newmarket Street

The proposed development application includes a site plan for approximately 115,000 sq. ft. warehouse space. The development is anticipated to be built out by 2025 and to generate 35 two-way AM and 37 two-way PM peak hour auto trips. (Ortam Groupe, 2022)

3 Study Area and Time Periods

3.1 Study Area

While only one signalized intersection is present within 400 metres of the site, to better understand area impacts, the study area has been expanded to include the intersections of:

- St-Laurent Boulevard at:
  - Tremblay Road
  - Belfast Road
  - Industrial Avenue/Innes Road
- Belfast Road at:
  - Lagan Way
  - Site Access (Future Conditions)
- Lagan Way at Site Access (Future Conditions)

The boundary roads will be St-Laurent Boulevard, Belfast Road, and Lagan Way. TRANS screenline SL 54 is located south of Innes Road, and no screenline analysis will be performed as part of the study.

3.2 Time Periods

As the proposed development is composed primarily of residential units the AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2026. As a result, the full build-out plus five years horizon year is 2031.

4 Development-Generated Travel Demand

4.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Alta Vista have been summarized in Table 7.

Table 7: TRANS Trip Generation Manual Recommended Mode Shares – Alta Vista

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	38%	45%	64%	60%
Auto Passenger	12%	16%	9%	20%
Transit	41%	28%	12%	9%
Cycling	2%	2%	1%	0%
Walking	7%	9%	14%	11%
Total	**100%**	**100%**	**100%**	**100%**

4.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11th Edition (2021) using the City-prescribed conversion factor of 1.28. Table 8 summarizes the person trip rates for the proposed residential land use for each peak period and the person trip rates for the non-residential land use by peak hour.

Table 8: Trip Generation Person Trip Rates

Land Use	Land Use Code	Peak	Peak Period		Peak Hour	
			Vehicle Trip Rate	Person Trip Rates	Vehicle Trip Rate	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	-	0.80	-	-
		PM	-	0.90	-	
Retail <40k sq. ft	822 (ITE)	AM	-	-	2.36	3.02
		PM	-	-	6.59	8.44

Using the above person trip rates, the total person trip generation has been estimated. Table 9 summarizes the total person trip generation for the residential land use by peak period and for the non-residential land use by peak hour.

Table 9: Total Person Trip Generation

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	435	108	240	348	227	165	392
Land Use	**GFA (sq. ft.)**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Retail <40k sq. ft	3,085	5	4	9	13	13	26

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 10 represent the percentage of trips to/from the retail use based on the residential component.

Table 10: Internal Capture Rates

Land Use	AM		PM	
	In	Out	In	Out
Residential to/from Shopping Centre	17%	14%	10%	26%

Typical pass-by reductions applied to the retail land use's trip generation are 40%, which is derived from the recommended value presented in the ITE Trip Generation Manual 11th Edition (2021) for the most similar land use with a recommended rate, "Retail (40k – 150k sq. ft)." The subject development is one quadrant of an intersection with an arterial as the major roadway and with a collector and local as the minor roadway. Given this proximity, and that the site access is onto the lower classification roadway, the application of the pass-by percentage to Belfast Road would not be considered to reflect the expected pass-by component of the site trips. Due to this context, the analysis will forgo the application of diverted trips and will apply the 40% pass-by to the major movements at the intersection of St-Laurent Boulevard at Belfast Road.

Using the above mode share targets, the internal capture and pass-by rates, and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component.

Table 11 summarizes the residential trip generation and the non-residential trip generation by mode and peak hour.

Table 11: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**38%**	20	44	63	**45%**	45	33	77
	Auto Passenger	**12%**	6	14	20	**16%**	16	11	28
	Transit	**41%**	24	54	79	**28%**	30	22	52
	Cycling	**2%**	1	3	4	**2%**	2	1	4
	Walking	**7%**	5	10	14	**9%**	10	8	18
	Total	**100%**	**56**	**125**	**180**	**100%**	**103**	**75**	**179**
Retail <40k sq. ft.	Auto Driver	**64%**	1	1	2	**60%**	2	2	4
	Auto Passenger	**9%**	0	0	0	**20%**	2	2	4
	Transit	**12%**	0	0	0	**9%**	1	1	2
	Cycling	**1%**	0	0	0	**0%**	0	0	0
	Walking	**14%**	1	1	2	**11%**	1	1	2
	Pass-by	*40%*	*-2*	*-2*	*-4*	*40%*	*-5*	*-5*	*-10*
	Internal Capture	*varies*	*-1*	*0*	*-1*	*varies*	*-1*	*-2*	*-3*
	Total	**100%**	**2**	**2**	**4**	**100%**	**6**	**6**	**12**
Total	Auto Driver	-	21	45	65	-	47	35	81
	Auto Passenger	-	6	14	20	-	18	13	32
	Transit	-	24	54	79	-	31	23	54
	Cycling	-	1	3	4	-	2	1	4
	Walking	-	6	11	16	-	11	9	20
	Total	-	**58**	**127**	**184**	-	**109**	**81**	**191**

As shown above, a total of 65 AM and 81 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Alta Vista. Table 12 below summarizes the distributions.

Table 12: OD Survey Distribution – Alta Vista

To/From	Residential % of Trips	Via
North	15%	15% St-Laurent Blvd (N)
South	35%	35% St-Laurent Blvd (S)
East	5%	5% Innes Rd (E)
West	45%	20% St-Laurent Blvd (N) 5% Tremblay Rd (W), 15% Belfast Rd (W), 5% St-Laurent Blvd (S)
Total	**100%**	**100%**

4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Figure 15 illustrates the new site generated volumes and Figure 16 illustrates the new site pass-by volumes.

Figure 15: New Site Generation Auto Volumes

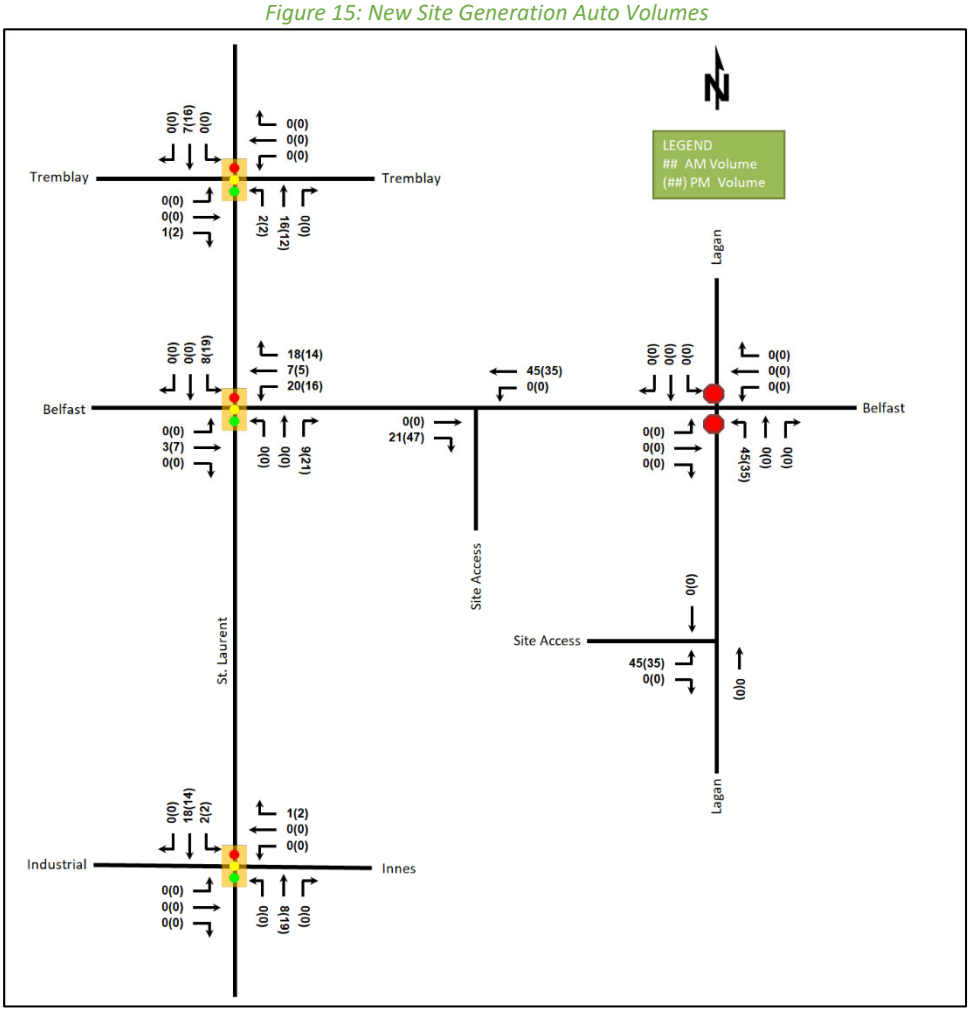
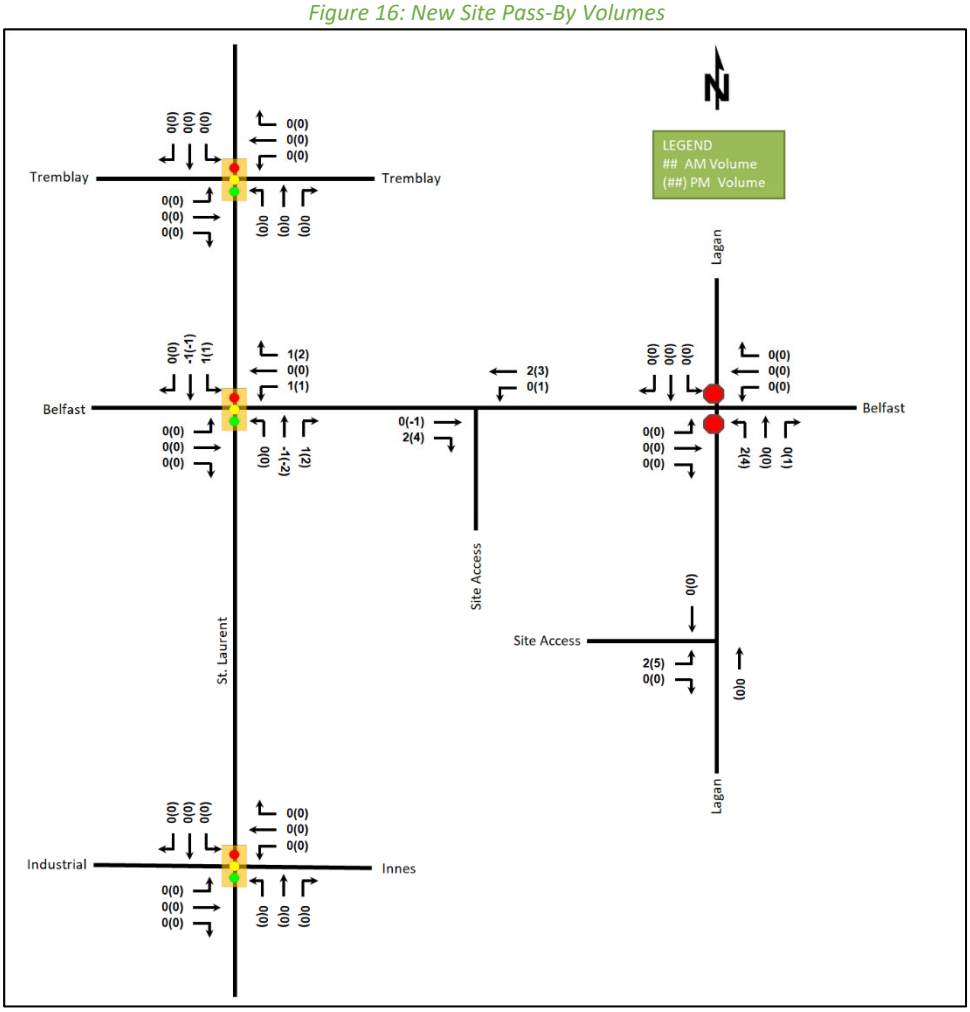


Figure 16: New Site Pass-By Volumes



5 Exemption Review

Table 13 summarizes the exemptions for this TIA.

Table 13: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Required
4.3 Boundary Street Design		All applications	Required
4.5 Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required

Module	Element	Explanation	Exempt/Required
Network Impact			
3.2 Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered	Required
3.3 Demand Rationalization		Only required when one or more other Network Impact Modules are triggered	Required
4.6 Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential • lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	Exempt
4.7 Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Required
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Required
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt
4.9 Intersection Design	4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Required

Module	Element	Explanation	Exempt/Required
	4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	

6 Development Design

6.1 Design for Sustainable Modes

The proposed development is comprised of one mixed use building and one residential building separated by a one-way drive aisle with surface parking. Hard surface connections are provided between the building entrances and the surrounding sidewalks and internal pedestrian walkways and the public park on the northeast corner of the parcel. Bicycle parking is located in secure rooms on the main floor, within the underground parking levels and in surface racks interspersed around the site. Stops for the bus routes discussed in Section 2.2.5 are within 400 metres walking distance of all building entrances.

The infrastructure TDM Checklist is provided in Appendix E.

6.2 Circulation and Access

Access is provided via a one-way drive aisle from Belfast Road to Lagan Way. Garbage collection will occur on-site, and emergency services can circulate the site via the 6.0-metre-wide internal drive aisle with 12.0-metre centreline radius on the 90-degree bend in the aisle. Turning templates are provided in Appendix F.

7 Parking

7.1 Parking Supply

The site proposes 395 total vehicle parking spaces, including 354 residential, 30 visitor, and 11 retail vehicle spaces. A total of 407 bicycle parking spaces are to be provided internal to the building across the parking levels and the main floor, and 40 spaces are to be provided in surface racks throughout the site.

While the site is located within Area C of the Zoning By-Law's Schedule 1A, Area B is located directly on the opposite side of St-Laurent Boulevard and is considered to be applicable for the parcels with direct frontage on the east side of St-Laurent Boulevard. This analysis is more consistent with the direction of the new Official Plan policy framework concerning corridors but is a departure from how current Zoning By-Law 2008-250, which historically uses the centreline of the roadway to delineate changes in policy areas. The subject development is at an intersection, and no difference in character or context is distinguishable for parcels facing one side or the other of St-Laurent Boulevard. The proposed changes to the Zoning By-Law are expected to include no minimum parking requirements and render this rationalization obsolete upon adoption.

Considering the Area B rates, the Zoning By-Law requires a minimum tenant vehicle parking of 218 spaces (0.5 spaces/dwelling unit), minimum visitor vehicle parking of 60 spaces (0.2 spaces/dwelling unit after the first twelve units to a max of 60), a minimum retail vehicle parking of seven spaces (2.5 spaces/100 m^2 of GFA) and a minimum bicycle parking of 219 spaces (0.5 spaces/dwelling unit and 1 per 250 m^2 of retail GFA). Area C rates would require a minimum tenant vehicle parking of 522 (1.2 spaces/dwelling unit), visitor vehicle parking of 87 spaces (0.2 spaces/dwelling unit), and retail vehicle parking of ten spaces (3.4 spaces/100 m^2 of GFA).

The current allocation of vehicle spaces noted on the site plan do not meet the minimum visitor or retail parking space minimums for Area B, the tenant parking exceeds the minimum and can be re-allocated to meet each land use requirement. Therefore, the site is considered to meet the Area B minimum parking requirements. Bicycle parking minimums are proposed as being exceeded by more than a factor of two.

8 Boundary Street Design

Table 14 summarizes the MMLOS analysis for the boundary streets of St-Laurent Boulevard, Belfast Road, and Lagan Way. It is anticipated that in the ultimate conditions, pedestrian and cycling facilities and transit lanes will be modified as part of the St-Laurent Boulevard Transit Priority Corridor project, and these modifications will be considered in the future conditions for the MMLOS analysis. Belfast Road LOS will be the same existing and future conditions, and these are considered in one row. The boundary street analysis is based on the land use designation of "Arterial Mainstreet" for St-Laurent Boulevard, and "Employment Area" for Belfast Road and Lagan Way. The MMLOS worksheets has been provided in Appendix G.

Table 14: Boundary Street MMLOS Analysis

Segment	Horizon	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
St-Laurent Blvd	Ex.	C	C	**F**	C	D	D	A	D
	Fut.	A	C	A	C	D	D	A	D
Belfast Rd	Ex./Fut.	**E**	C	**F**	C	-	-	B	B
Lagan Way	Ex.	**F**	C	D	-	-	-	-	-
	Fut.	B	C	D	-	-	-	-	-

Belfast Road and the existing configuration of Lagan Way do not meet the pedestrian MMLOS targets. To meet the PLOS target along the segment of Belfast Road, operating speed would need to be lower than 50 km/h or at least two metres of boulevard width would need to be provided. PLOS targets will be met in the future along Lagan Way with the planned provision of a sidewalk. It is expected that once the St-Laurent Boulevard Transit Priority Corridor project is completed, the St-Laurent Boulevard PLOS will be improved from C to A.

Belfast Road and the existing configuration of St-Laurent Boulevard do not meet the bicycle LOS targets. It is anticipated that the bicycle LOS along boundary street of St-Laurent Boulevard will become 'A' once the St-Laurent Boulevard Transit Priority Corridor project is completed. A curbside bike lane would be required along Belfast Road to meet BLOS targets, the preliminary St-Laurent Boulevard Transit Priority Corridor project includes approximately 40 meters of cycletrack along the south side of Belfast Road east of the St-Laurent Boulevard. No additional improvements are recommended beyond the new sidewalk to be provided on Lagan Way.

9 Transportation Demand Management

9.1 Context for TDM

The mode shares used within the TIA represent the unmodified recommended shares for the Alta Vista TRANS district. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided to encourage shifts towards sustainable mode.

9.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel and transit, and those assumptions have been carried through the analysis. The unmodified district mode shares have been applied, risks to other network users from failing to meet mode share targets are low.

9.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists. The checklist is provided in Appendix E. The key TDM measures recommended include:

- Display local area maps with walking and cycling routes, and transit route information and schedules at major entrances
- Inclusion of a 6-month Presto card for first time new condo purchase or apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
- Unbundle parking cost from purchase/rental costs

10 Background Network Travel Demands

10.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. No recommended plan has been arrived at by the transit priority EA study, and no improvements associated with this project are included as part of the future conditions within the study horizons. No other changes to the approach geometries at network intersections are planned within the study horizons.

10.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The TRANS model plots are provided in Appendix H.

Growth rates derived from the existing horizon to the 2031 model horizon rounded to the nearest 0.25% will be peak-directionally applied to the appropriate roadway's mainline volumes and to the appropriate major turning movements at the intersections. Table 15 summarizes the growth rates applied within the study area.

Table 15: TRANS Regional Model Projections – Study Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	**Westbound**	**Eastbound**	**Westbound**
Tremblay Rd	0.25%	1.75%	1.75%	0.25%
Belfast Rd	-	-	-	-
Industrial Ave	0.75%	0.25%	0.25%	0.75%
Innes Rd	-	-	-	-
	Northbound	**Southbound**	**Northbound**	**Southbound**
St-Laurent Blvd	0.25%	-	-	0.25%

10.3 Other Developments

The background developments explicitly considered in the background conditions (Section 10.2) include:

- 200, 230, 260 Streamline Street
- 25 Pickering Place
- 400 Coventry Road
- 453 & 455 Coventry Road
- 530 Tremblay Road & 2098 Avenue P & 1399 Avenue U
- 599 Tremblay Road
- 1209 St-Laurent Boulevard & 1200 Lemieux Street
- 1740-1760 St-Laurent Boulevard
- 1802 St-Laurent Boulevard

The background development volumes within the study area have been provided in Appendix I.

11 Demand Rationalization

11.1 2026 Future Background Operations

Figure 17 illustrates the 2026 background volumes and Table 16 summarizes the 2026 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2026 future background horizon are provided in Appendix J.

Figure 17: 2026 Future Background Volumes

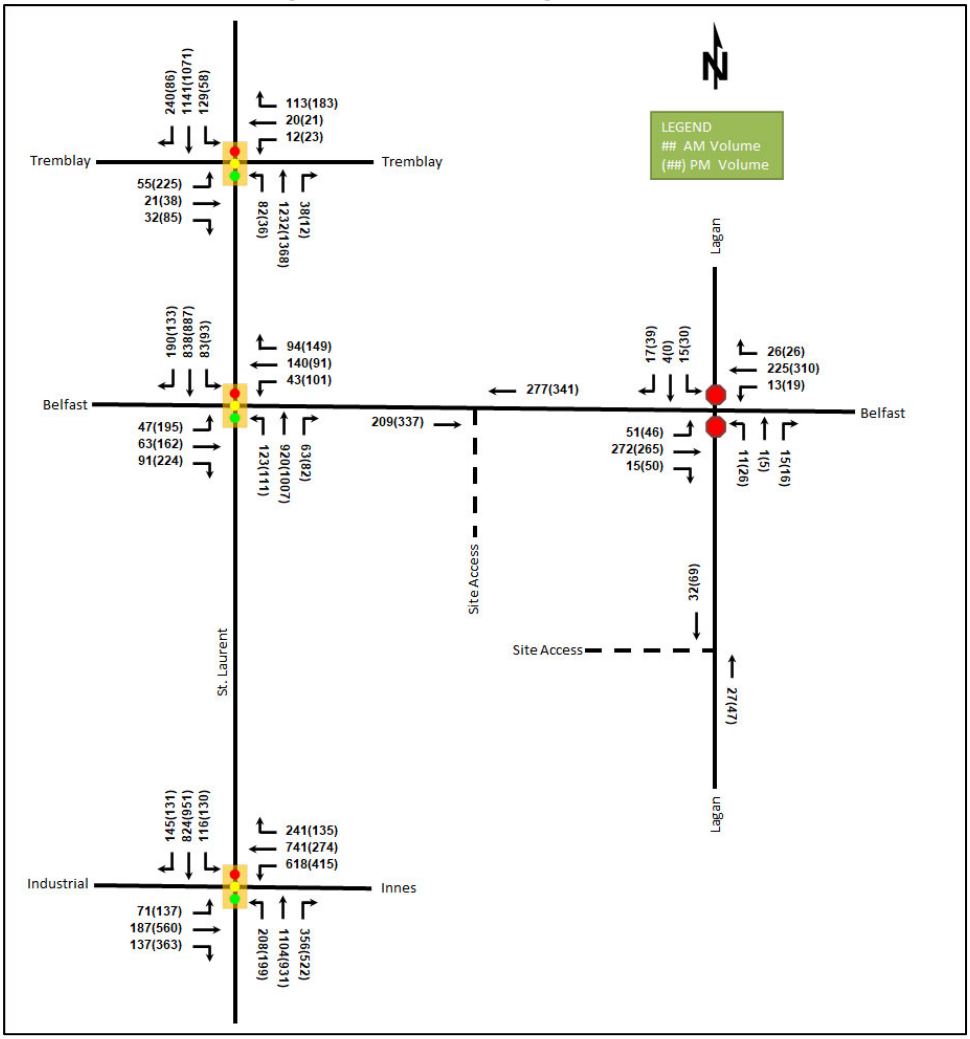


Table 16: 2026 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
St-Laurent Blvd at Tremblay Rd *Signalized*	EBL	A	0.58	74.3	24.2	**F**	**1.01**	**106.5**	**#104.1**
	EBT/R	A	0.24	25.2	14.7	A	0.26	13.7	21.5
	WBL/T	A	0.09	46.3	7.7	A	0.07	32.7	10.6
	WBR	A	0.49	17.8	20.6	A	0.37	8.8	22.2
	NBL	A	0.28	14.6	25.1	A	0.16	19.3	m7.9
	NBT/R	A	0.43	11.5	89.7	A	0.54	18.0	m88.2
	SBL	A	0.40	8.0	18.3	A	0.26	11.5	10.0
	SBT	A	0.48	7.0	95.6	A	0.55	14.7	89.3
	SBR	A	0.23	1.4	8.6	A	0.10	2.2	6.0
	Overall	**A**	**0.51**	**10.7**	-	**C**	**0.72**	**22.0**	-
St-Laurent Blvd at Belfast Rd *Signalized*	EBL	A	0.23	30.4	15.9	E	0.95	**86.6**	**#68.0**
	EBT	A	0.13	29.0	19.9	A	0.35	34.7	44.1
	EBR	A	0.22	6.7	10.9	A	0.40	7.3	19.4
	WBL	A	0.22	42.7	18.7	A	0.59	58.9	37.5
	WBT/R	D	0.84	66.1	**#75.9**	C	0.79	53.0	63.9
	NBL	A	0.38	15.2	23.2	A	0.36	14.4	21.5
	NBT	A	0.55	23.6	112.7	B	0.61	24.9	125.4
	NBR	A	0.08	0.2	0.0	A	0.12	1.1	2.4
	SBL	A	0.29	14.4	16.7	A	0.38	17.2	20.9
	SBT	A	0.54	24.0	100.9	A	0.54	18.3	59.4
	SBR	A	0.27	4.1	13.3	A	0.17	2.8	6.6
	Overall	**A**	**0.60**	**24.8**	-	**C**	**0.72**	**27.1**	-
Lagan Way at Belfast Rd *Unsignalized*	EB	A	0.04	8.1	0.8	A	0.04	8.5	0.8
	WB	A	0.01	8.2	0.0	A	0.02	8.0	0.0
	NB	B	0.06	14.1	1.5	C	0.13	16.5	3.0
	SB	B	0.08	13.9	2.3	C	0.16	15.2	4.5
	Overall	**A**	-	**2.1**	-	**A**	-	**2.8**	-
St-Laurent Blvd at Industrial Ave / Innes Rd *Signalized*	EBL	A	0.38	68.5	17.7	A	0.51	64.0	30.3
	EBT	A	0.46	57.4	34.0	C	0.80	57.0	99.1
	EBR	A	0.40	5.5	7.1	B	0.66	14.9	46.4
	WBL	E	0.93	76.4	**#120.0**	C	0.75	58.8	73.0
	WBT	C	0.78	51.2	113.0	A	0.28	34.0	40.5
	WBR	A	0.42	6.2	17.8	A	0.25	6.3	14.2
	NBL	B	0.67	71.2	41.7	A	0.59	62.2	39.9
	NBT	D	0.89	50.8	**#242.2**	E	0.91	56.0	**#186.0**
	NBR	A	0.48	9.4	42.2	B	0.67	10.1	48.7
	SBL	A	0.49	69.0	25.7	A	0.49	63.1	28.7
	SBT	B	0.70	43.3	**#162.7**	E	1.00	73.1	**#204.8**
	SBR	A	0.26	3.5	8.8	A	0.24	3.4	7.5
	Overall	**E**	**0.91**	**46.6**	-	**D**	**0.83**	**48.1**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections at the 2026 future background horizon operate similarly to the existing conditions. Some improved operations are noted on various movements throughout the study area with the peak hour factor of 1.00 for future conditions.

During the PM peak hour, the eastbound left movement at the intersection of St-Laurent Boulevard at Tremblay Road is forecast to be over theoretical capacity and may exhibit extended queues at this horizon. Shifting one second of split from the north-south phases to the east-west phases would reduce v/c of all movements at the intersection to 1.00 or lower.

11.2 2031 Future Background Operations

Figure 18 illustrates the 2031 background volumes and Table 17 summarizes the 2031 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2031 future background horizon are provided in Appendix K.

Figure 18: 2031 Future Background Volumes

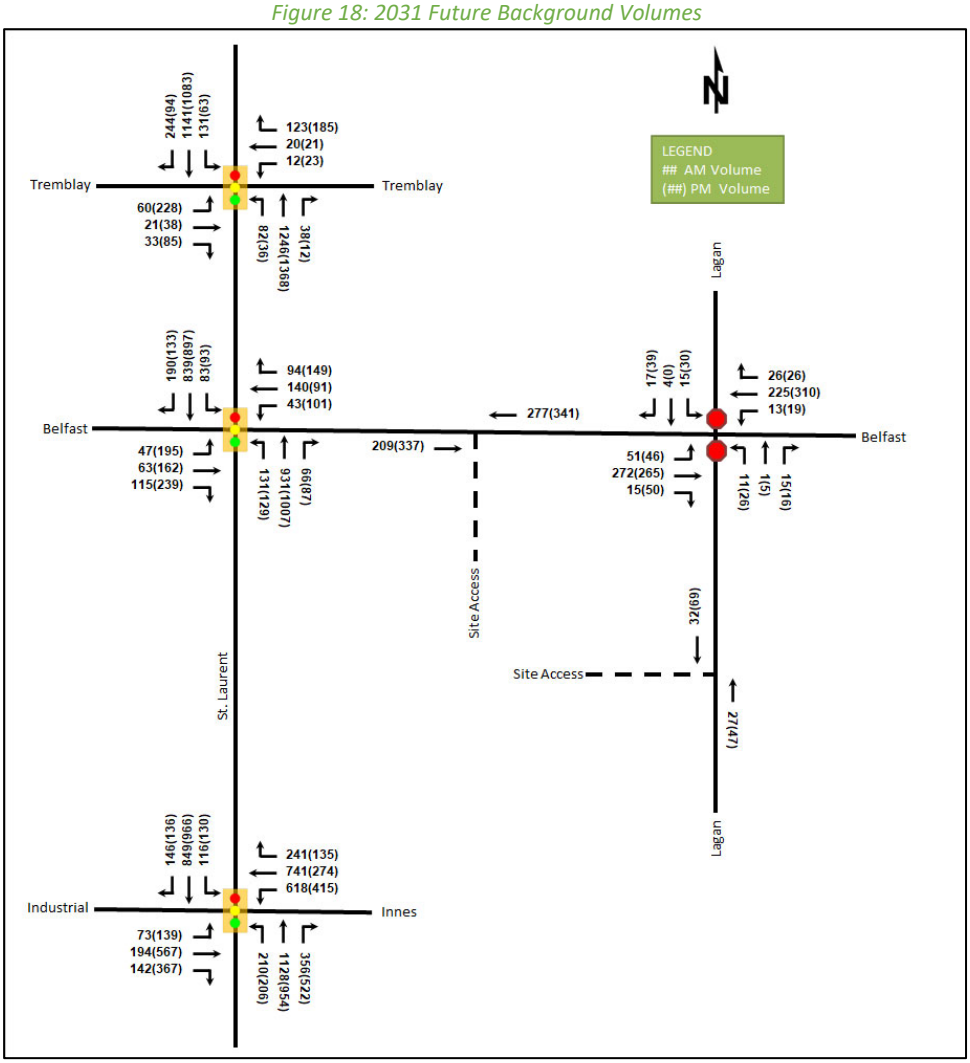


Table 17: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
St-Laurent Blvd at Tremblay Rd *Signalized*	EBL	B	0.65	**80.6**	26.3	**F**	**1.03**	**112.2**	**#106.4**
	EBT/R	A	0.24	24.5	14.9	A	0.26	13.7	21.5
	WBL/T	A	0.08	45.7	7.7	A	0.07	32.7	10.6
	WBR	A	0.50	17.1	21.1	A	0.38	9.0	22.7
	NBL	A	0.28	14.9	25.1	A	0.16	19.5	m7.9
	NBT/R	A	0.44	11.9	91.2	A	0.54	18.1	m88.3
	SBL	A	0.41	8.4	18.7	A	0.28	11.8	10.8
	SBT	A	0.48	7.2	95.6	A	0.55	14.8	90.8
	SBR	A	0.24	1.4	8.6	A	0.11	2.2	6.2
	Overall	**A**	**0.52**	**11.2**	-	**C**	**0.73**	**22.4**	-
St-Laurent Blvd at Belfast Rd *Signalized*	EBL	A	0.23	30.4	15.9	E	0.95	**86.6**	**#68.0**
	EBT	A	0.13	29.0	19.9	A	0.35	34.7	44.1
	EBR	A	0.26	6.4	12.3	A	0.43	8.6	23.2
	WBL	A	0.22	42.7	18.7	A	0.59	58.9	37.5
	WBT/R	D	0.84	66.1	**#75.9**	C	0.79	53.0	63.9
	NBL	A	0.41	15.6	24.6	A	0.41	15.3	24.6
	NBT	A	0.55	23.8	114.3	B	0.61	24.9	125.4
	NBR	A	0.08	0.2	0.0	A	0.13	1.4	3.2
	SBL	A	0.30	14.5	16.7	A	0.38	17.1	20.8
	SBT	A	0.54	24.1	101.1	A	0.55	18.6	60.6
	SBR	A	0.27	4.1	13.3	A	0.17	2.9	7.0
	Overall	**A**	**0.60**	**24.7**	-	**C**	**0.73**	**27.1**	-
Lagan Way at Belfast Rd *Unsignalized*	EB	A	0.04	8.1	0.8	A	0.04	8.5	0.8
	WB	A	0.01	8.2	0.0	A	0.02	8.0	0.0
	NB	B	0.06	14.1	1.5	C	0.13	16.5	3.0
	SB	B	0.08	13.9	2.3	C	0.16	15.2	4.5
	Overall	**A**	-	**2.1**	-	**A**	-	**2.8**	-
St-Laurent Blvd at Industrial Ave / Innes Rd *Signalized*	EBL	A	0.39	68.5	18.1	A	0.52	64.4	30.7
	EBT	A	0.47	57.7	35.1	D	0.81	57.5	101.0
	EBR	A	0.41	6.0	8.2	B	0.67	15.4	48.2
	WBL	E	0.93	76.4	**#120.0**	C	0.75	59.1	73.3
	WBT	C	0.78	51.2	113.1	A	0.28	34.1	40.7
	WBR	A	0.42	6.2	17.8	A	0.25	6.3	14.2
	NBL	B	0.68	71.4	42.2	A	0.60	62.5	41.3
	NBT	E	0.92	53.0	**#249.5**	E	0.93	58.7	**#193.0**
	NBR	A	0.49	9.9	44.2	B	0.68	10.7	52.7
	SBL	A	0.49	69.0	25.7	A	0.49	63.3	28.6
	SBT	C	0.72	44.2	**#170.6**	**F**	**1.02**	**78.0**	**#210.3**
	SBR	A	0.26	3.6	9.0	A	0.25	3.8	9.1
	Overall	**E**	**0.92**	**47.4**	-	**D**	**0.85**	**50.0**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections at the 2031 operate similarly to the 2026 future background conditions.

As in the 2026 future background conditions, shifting one second of split from the north-south phases to the east-west phases at the intersection of St-Laurent Boulevard at Tremblay Road would reduce v/c of all movements at the intersection to 1.00 or lower during the PM peak hour at this horizon.

At the intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road, during the PM peak hour, the southbound through movement is forecast to be over theoretical capacity at this horizon. Shifting one second of split from the northbound and southbound left-turn phases to the northbound and southbound through phases would reduce the v/c of all movements to 1.00 or lower at the intersection at this horizon.

11.3 2026 Future Total Operations

The 2026 future total intersection volumes are illustrated in Figure 19 and the intersection operations are summarized below in Table 18. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection The synchro worksheets for the 2026 total horizon are provided in Appendix L.

Figure 19: 2026 Future Total Volumes

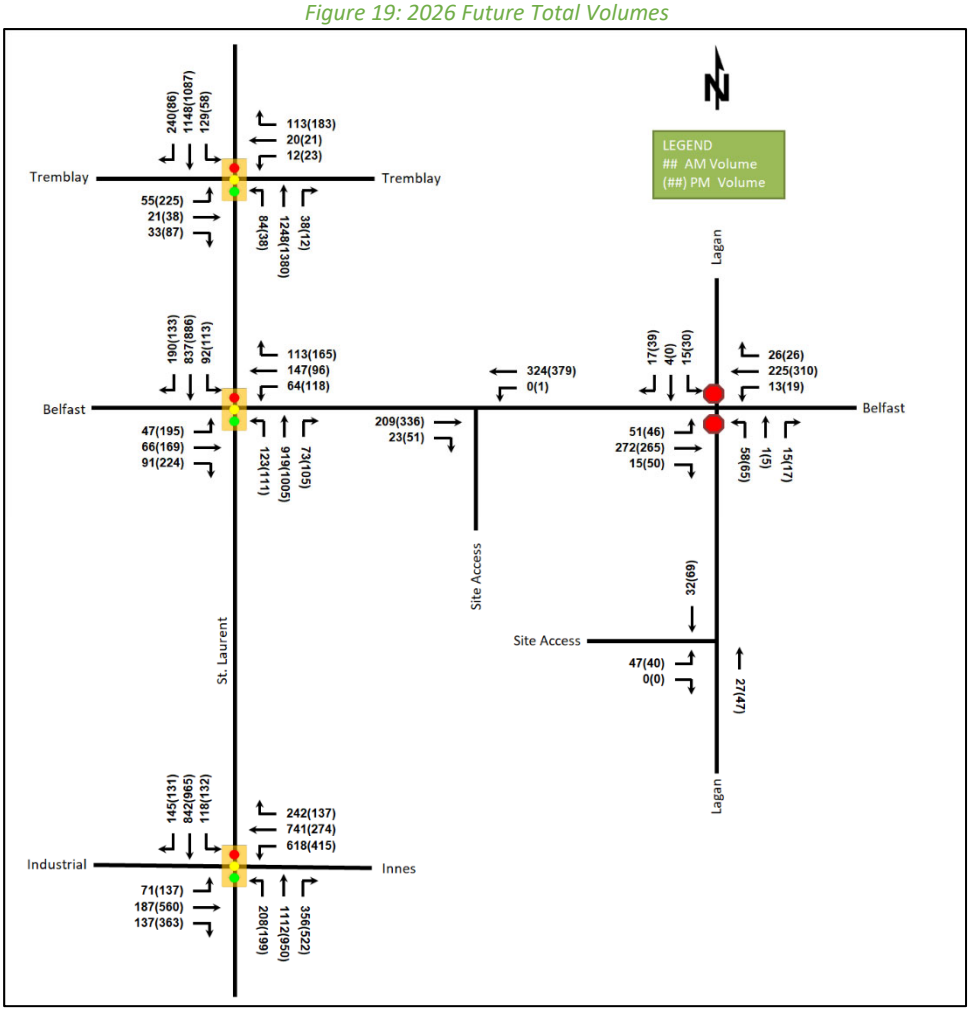


Table 18: 2026 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
St-Laurent Blvd at Tremblay Rd *Signalized*	EBL	A	0.57	73.4	24.2	**F**	**1.01**	**106.5**	**#104.1**
	EBT/R	A	0.24	24.9	14.9	A	0.26	13.6	21.5
	WBL/T	A	0.09	46.2	7.7	A	0.07	32.7	10.6
	WBR	A	0.49	17.7	20.6	A	0.37	8.9	22.5
	NBL	A	0.29	14.9	26.0	A	0.17	20.0	m8.0
	NBT/R	A	0.44	11.6	91.2	A	0.55	18.7	m89.3
	SBL	A	0.41	8.2	18.3	A	0.26	11.6	10.0
	SBT	A	0.48	7.1	96.4	A	0.55	14.8	91.3
	SBR	A	0.23	1.4	8.6	A	0.10	2.2	6.0
	Overall	**A**	**0.51**	**10.8**	-	**C**	**0.73**	**22.2**	-
St-Laurent Blvd at Belfast Rd Signalized	EBL	A	0.24	30.0	15.9	E	0.96	**89.1**	**#70.5**
	EBT	A	0.13	28.5	20.5	A	0.36	34.0	45.9
	EBR	A	0.22	6.7	10.9	A	0.41	7.5	20.2
	WBL	A	0.33	45.3	25.8	B	0.68	64.8	43.6
	WBT/R	D	0.88	69.5	**#92.6**	D	0.82	55.3	70.4
	NBL	A	0.40	16.0	23.2	A	0.37	15.1	21.5
	NBT	A	0.58	25.6	112.4	B	0.63	26.3	125.1
	NBR	A	0.10	0.4	0.7	A	0.16	2.5	6.5
	SBL	A	0.34	15.7	18.1	A	0.46	23.4	29.0
	SBT	A	0.55	25.1	100.8	A	0.55	19.0	60.4
	SBR	A	0.28	4.2	13.4	A	0.18	2.9	7.1
	Overall	**B**	**0.62**	**26.6**	-	**C**	**0.75**	**28.7**	-
Lagan Way at Belfast Rd *Unsignalized*	EB	A	0.04	8.1	0.8	A	0.04	8.5	0.8
	WB	A	0.01	8.2	0.0	A	0.02	8.0	0.0
	NB	C	0.24	20.2	6.8	C	0.28	20.9	8.3
	SB	B	0.08	13.9	2.3	C	0.17	15.3	4.5
	Overall	**A**	-	**3.5**	-	**A**	-	**3.9**	-
St-Laurent Blvd at Industrial Ave / Innes Rd *Signalized*	EBL	A	0.38	68.5	17.7	A	0.51	64.0	30.3
	EBT	A	0.46	57.4	34.0	C	0.80	57.0	99.1
	EBR	A	0.40	5.5	7.1	B	0.66	15.0	46.4
	WBL	E	0.93	76.4	**#120.0**	C	0.75	58.8	73.0
	WBT	C	0.78	51.2	113.0	A	0.28	34.0	40.5
	WBR	A	0.42	6.2	18.0	A	0.26	6.3	14.4
	NBL	B	0.67	71.2	41.7	A	0.59	62.2	39.9
	NBT	D	0.90	51.6	**#245.3**	E	0.93	58.6	**#192.2**
	NBR	A	0.49	9.6	43.0	B	0.68	10.8	52.3
	SBL	A	0.50	69.0	26.1	A	0.50	63.0	28.8
	SBT	C	0.71	43.8	**#168.4**	**F**	**1.01**	**76.3**	**#209.1**
	SBR	A	0.26	3.5	8.8	A	0.24	3.4	7.5
	Overall	**E**	**0.92**	**46.9**	-	**D**	**0.84**	**49.5**	-
Lagan Way at Site Access *Unsignalized*	EBL/R	A	0.05	9.0	1.5	A	0.05	9.3	0.8
	NBL/T	-	-	-	-	-	-	-	-
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**4.0**	-	**A**	**-**	**2.4**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections at the 2026 future total horizon operate similarly to the 2026 future background horizon.

As in the 2026 future background conditions, shifting one second of split from the north-south phases to the east-west phases at the intersection of St-Laurent Boulevard at Tremblay Road would reduce v/c of all movements at the intersection to 1.00 or lower during the PM peak hour at this horizon.

At the intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road, the southbound through movement's v/c has increased by 0.01 to be over theoretical capacity with the addition of site-generated traffic, similar to the 2031 future background conditions. Shifting one second of split from the northbound and southbound left-turn phases to the northbound and southbound through phases would reduce the v/c of all movements to 1.00 or lower at the intersection at this horizon.

11.4 2031 Future Total Operations

Figure 20 illustrates the 2031 total volumes and Table 19 summarizes the 2031 total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets for the 2031 future total horizon are provided in Appendix M.

Figure 20: 2031 Future Total Volumes

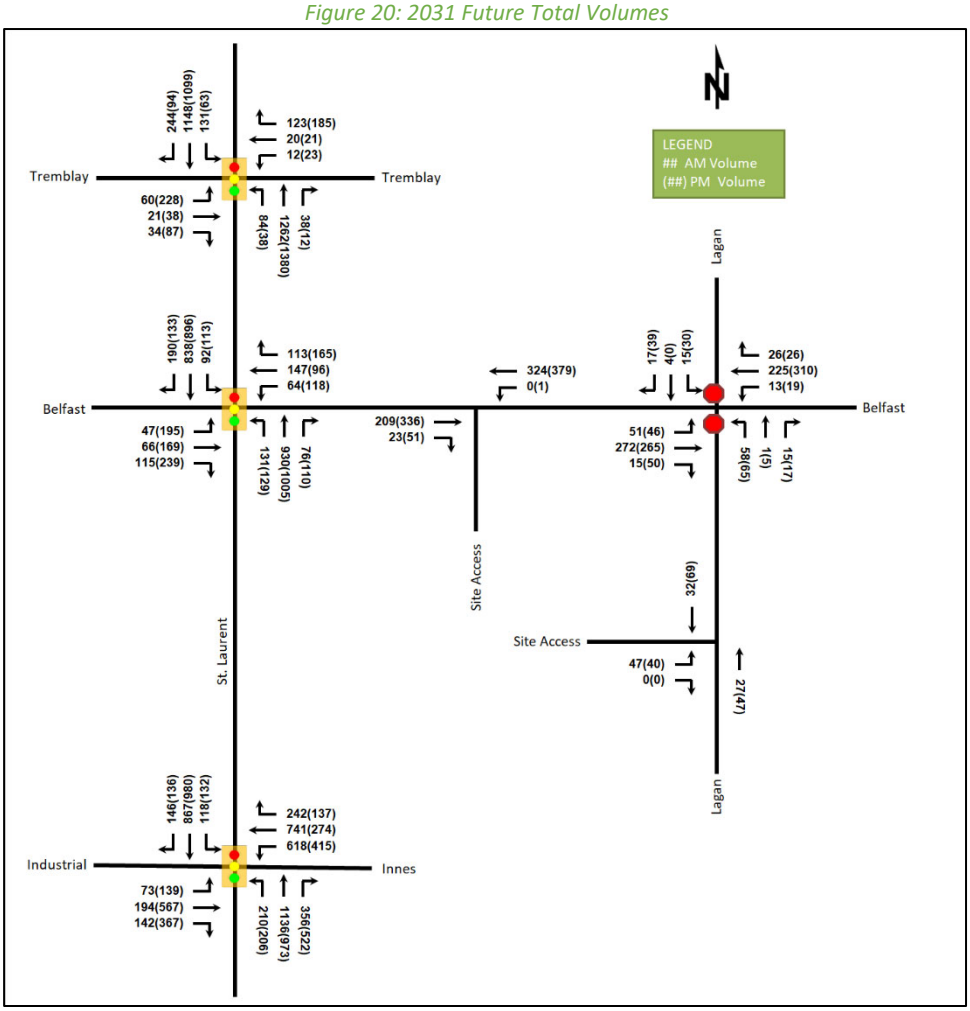


Table 19: 2031 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
St-Laurent Blvd at Tremblay Rd *Signalized*	EBL	B	0.63	78.9	26.3	**F**	**1.03**	**112.2**	**#106.4**
	EBT/R	A	0.24	24.1	14.9	A	0.26	13.6	21.5
	WBL/T	A	0.08	45.5	7.7	A	0.07	32.7	10.6
	WBR	A	0.50	17.0	21.1	A	0.38	9.1	23.0
	NBL	A	0.29	15.3	26.0	A	0.18	20.2	m8.1
	NBT/R	A	0.45	12.0	92.8	A	0.55	18.7	m89.3
	SBL	A	0.42	8.7	18.7	A	0.28	11.9	10.8
	SBT	A	0.48	7.3	96.4	A	0.56	15.0	92.8
	SBR	A	0.24	1.4	8.6	A	0.11	2.2	6.2
	Overall	**A**	**0.53**	**11.3**	-	**C**	**0.74**	**22.7**	-
St-Laurent Blvd at Belfast Rd Signalized	EBL	A	0.24	30.0	15.9	E	0.96	**89.1**	**#70.5**
	EBT	A	0.13	28.5	20.5	A	0.36	34.0	45.9
	EBR	A	0.27	6.5	12.3	A	0.44	8.9	24.3
	WBL	A	0.33	45.2	25.8	B	0.68	64.8	43.6
	WBT/R	D	0.87	69.1	**#92.5**	D	0.82	55.3	70.4
	NBL	A	0.42	16.4	24.6	A	0.42	16.1	24.6
	NBT	A	0.59	25.6	114.3	B	0.63	26.3	125.1
	NBR	A	0.10	0.6	1.3	A	0.17	3.0	7.5
	SBL	A	0.35	15.8	18.1	A	0.47	23.3	28.9
	SBT	A	0.55	25.1	100.9	A	0.56	19.4	61.8
	SBR	A	0.28	4.2	13.4	A	0.18	3.1	7.5
	Overall	**B**	**0.63**	**26.4**	-	**C**	**0.75**	**28.7**	-
Lagan Way at Belfast Rd *Unsignalized*	EB	A	0.04	8.1	0.8	A	0.04	8.5	0.8
	WB	A	0.01	8.2	0.0	A	0.02	8.0	0.0
	NB	C	0.24	20.2	6.8	C	0.28	20.9	8.3
	SB	B	0.08	13.9	2.3	C	0.17	15.3	4.5
	Overall	**A**	-	**3.5**	-	**A**	-	**3.9**	-
St-Laurent Blvd at Industrial Ave / Innes Rd *Signalized*	EBL	A	0.39	68.5	18.1	A	0.52	64.4	30.7
	EBT	A	0.47	57.7	35.1	D	0.81	57.5	101.0
	EBR	A	0.41	6.0	8.2	B	0.67	15.4	48.2
	WBL	E	0.93	76.4	**#120.0**	C	0.75	59.1	73.3
	WBT	C	0.78	51.2	113.1	A	0.28	34.1	40.7
	WBR	A	0.42	6.2	18.0	A	0.26	6.3	14.4
	NBL	B	0.68	71.4	42.2	A	0.60	62.5	41.3
	NBT	E	0.92	54.1	**#252.6**	E	0.95	61.8	**#199.1**
	NBR	A	0.49	10.1	45.0	B	0.68	11.5	56.8
	SBL	A	0.50	69.0	26.1	A	0.50	63.4	28.8
	SBT	C	0.74	44.7	**#176.3**	**F**	**1.03**	**81.6**	**#214.6**
	SBR	A	0.26	3.6	9.0	A	0.25	3.8	9.1
	Overall	**E**	**0.93**	**47.7**	-	**D**	**0.85**	**51.5**	-
Lagan Way at Site Access *Unsignalized*	EBL/R	A	0.05	9.0	1.5	A	0.05	9.3	0.8
	NBL/T	-	-	-	-	-	-	-	-
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	-	**4.0**	-	**A**	-	**2.4**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections at the 2031 future total horizon operate similarly to the 2031 future background conditions.

Similarly to in the future background conditions, at the intersection of St-Laurent Boulevard at Tremblay Road, shifting one second of split from the north-south phases to the east-west phases would reduce v/c of all movements at the intersection to 1.00 or lower.

At the intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road, during the PM peak hour the southbound through movement may be subject to high delays with an increase of 3.6 seconds from the background conditions. Shifting two seconds of split from the northbound and southbound left-turn phases to the northbound and southbound through phases would reduce the v/c of all movements at the intersection to 1.00 or lower at this horizon.

11.5 Modal Share Sensitivity and Demand Rationalization Conclusions

11.5.1 Network Rationalization

No capacity issues were noted at the study area intersections that could not be mitigated through minor readjustments to signal timing phase splits. It is also noted that the future St Laurent Transit Priority improvements may increase transit adoption, reducing the network auto dependency. Therefore, no rationalization for background travel demand is required for this study.

11.5.2 Development Rationalization

The mode shares used within the TIA represent the unmodified district mode shares for Alta Vista. The selected mode shares and resultant site trip generation was found to have minor impact on the network. As in the background conditions, no capacity issues were noted at the study area intersections that could not be mitigated through minor readjustments to signal timing phase splits. Therefore, no further rationalization for site traffic or modal share selection is required.

12 Transit

12.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 20 summarizes the transit trip generation.

Table 20: Trip Generation by Transit Mode

Travel Mode	Residential Mode Share AM(PM)	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	41% (28%)	24	54	79	31	23	54

The proposed development is anticipated to generate an additional 79 AM and 54 PM peak hour two-way transit trips. From the trip distribution found in section 5.3, these values can be further broken down, where trips east and west can be made through the connection to the LRT Confederation Line approximately a 1.5-kilometre bus trip north of the site. Table 21 summarizes forecasted site-generated transit ridership trips by direction and the equivalent bus loads.

Table 21: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Service Type	Approximate Equivalent Peak Hour/Direction Bus Loads
	In	Out	In	Out		
North	4	8	5	3	Bus	Negligible
South	8	19	11	8	Bus	One-third of a standard bus

Direction	AM Peak Hour		PM Peak Hour		Service Type	Approximate Equivalent Peak Hour/Direction Bus Loads
	In	Out	In	Out		
East	1	3	2	1	Bus, Bus/LRT	Negligible
West	11	24	14	10	Bus, Bus/LRT	Half of a standard bus

12.2 Transit Priority

Increases in outbound transit ridership during the AM peak hour is equivalent to a single standard bus load over the hour and is not anticipated to impact the current or future transit priority corridor on St-Laurent Boulevard. No changes to transit LOS on any study area intersection approaches are resultant from the addition of site vehicle traffic to the network. The site will accommodate the space anticipated for the future St-Laurent transit priority lanes and cross-sectional elements through the reserved right-of-way on the St-Laurent Boulevard frontage.

13 Intersection Design

13.1 Location and Design of Access

Access is proposed via a one-way drive aisle with an inbound access on Belfast Road and an outbound access on Lagan Way. The driveways are proposed to be 6.0 metres in width, meeting the fire route minimum width.

While the corner radius of the inbound access is 7.0 metres to support the vehicle turning movements, the effective throat length from the back of the sidewalk to the first parking stall is 8.0 metres, permitting storage of a single vehicle on the access. The effective throat length of the outbound access on Lagan Way between a move-in room and the back of the proposed sidewalk is approximately 31 metres. Given the local road designations of Belfast Road and Lagan Way along the site frontage, a minimum throat length of 8 metres is recommended for these locations which are effectively satisfied by the site plan.

The access on Belfast Road is approximately 39 metres from the St-Laurent Boulevard roadway approaching the Belfast Road intersection and the access on Lagan Way is approximately 52 metres from the Lagan Way at Belfast Road intersection. The TAC Geometric Design Guidelines' suggested minimum corner clearance is 15 metres for the accesses on Belfast Road and Lagan Way which are proposed to be met by the site plan.

The Private Approach By-Law's provision 25(1)(m) stipulates that private approaches for developments providing access to over 300 parking spaces be offset a minimum of 60 metres from the nearest intersecting street line. The proposed driveway on Belfast Road is located 33 metres from the existing and 29 metres from the future St-Laurent Boulevard right-of-way. While the access location meets the TAC requirements, the operation of the access has been proposed as a one-way inbound access to mitigate the Private Approach By-Law requirement. It is recommended that an exemption to the above-cited Private Approach By-Law provisions be granted.

The outbound access on Lagan Way is proposed to be located 1.5 metres from the adjacent property line, which is lower than the 3.0-metre minimum stipulated in provision 25(1)(p) of the Private Approach By-Law, but is recommended to be approved in accordance with provision 25(1)(r) given clear sightlines are present between the proposed access and that of the adjacent parcel, and demand will be towards Belfast Road given Lagan Way is no exit south of the site access.

13.2 Access Intersection Control

Based upon the projected volumes and functions, the access on Belfast Road, which is inbound only will be uncontrolled, and the access on Lagan Way, which is outbound only, will have stop-control on the minor site access approach.

13.3 Access Intersection Design

13.3.1 Future Access Intersection Operations

The operations are noted in Section 7.4 and both 2026 and 2031 future total horizons, the access intersection at Lagan Way operates well with all movements and the overall intersection operating at LOS A. As the access intersection on Belfast Road is inbound only, no operational issues are anticipated.

13.3.2 Access Intersection MMLOS

As the access intersections are unsignalized, MMLOS analysis is possible or required.

13.3.3 Recommended Design Elements

The proposed site accesses on both Belfast Road and Lagan Way are recommended to be constructed in compliance with City standard SC7.1, including a continuous sidewalk through a depressed curb. One-way signage will be included at each access and at the ramp to the underground parking, to restrict the aisle to one-way. The signage plan for proposed signs visible from the public right-of-way is included in Appendix N.

14 Network Intersection Design

14.1 Network Intersection Control

No change to the existing signalized control is recommended for the network intersections.

14.2 Network Intersection Design

14.2.1 Future Total Network Intersection Operations

The operations are noted in Section 11.3 and 11.4. No capacity issues were noted that could not be mitigated through signal timing optimization.

14.2.2 Network Intersection MMLOS

Table 22 summarizes the MMLOS analysis for the network intersections. It is anticipated that in the ultimate conditions, the pedestrian and cycling facilities and transit lanes will be modified as part of the St-Laurent Boulevard Transit Priority Corridor project, and these modifications will be considered in the future conditions for the MMLOS analysis. Since the St-Laurent Boulevard Transit Priority Corridor project are anticipated to be completed beyond the study horizons, the future LOS and auto LOS are not available for the ultimate conditions.

The intersection analysis is based on the policy area of “Within 600m of a rapid transit station” for the intersection of St-Laurent Boulevard at Tremblay Road, and on the land use designation of “Arterial Mainstreet” for the intersections of St-Laurent Boulevard at Belfast Road and St-Laurent Boulevard at Industrial Avenue/Innes Road. The MMLOS worksheets has been provided in Appendix G.

Table 22: Study Area Intersection MMLOS Analysis

Intersection	Horizon	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
St-Laurent Blvd at Tremblay Road	Ex.	F	A	F	B	F	D	C	D	C	E
	Fut.	F	A	A	B	-	D	C	D	-	E
St-Laurent Blvd at Belfast Rd	Ex.	F	C	F	C	F	B	C	D	C	D
	Fut.	F	C	A	A	-	B	C	D	-	D
St-Laurent Blvd at Industrial Ave/Innes Rd	Ex.	F	C	F	C	F	B	A	D	E	D
	Fut.	F	C	A	C	-	B	A	D	-	D

The study area intersections do not meet the pedestrian LOS targets. The crossing distances do not permit the PLOS targets to be met, which is a common result of the MMLOS methodology for arterial road intersections. To meet pedestrian LOS targets within this methodology, the maximum crossing distance on all pedestrian crossings would need to be reduced to two lane-widths at the intersection of St-Laurent Boulevard at Tremblay Road and three lane widths at the intersections of St-Laurent Boulevard at Belfast Road and St-Laurent Boulevard at Industrial Avenue/Innes Road. This is not recommended.

The study area intersections do not meet the bicycle LOS targets in the existing conditions. It is anticipated that once the St-Laurent Boulevard Transit Priority Corridor project is completed, all study area intersections will meet the bicycle LOS targets with separated facilities.

The study area intersections do not meet the transit LOS targets, and the delay would need to be reduced to below 30 seconds to achieve the MMLOS targets. Given the need to balance all modes, this is not expected to be achievable.

The intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road does not meet the auto LOS targets during the AM peak hour. All movements operate at LOS E or better, therefore not improvements are recommended.

It is recommended that the City continue to assess the St Laurent Boulevard intersections as part of the Transit Corridor project to ensure the balancing operations for all modes is considered.

14.2.3 Recommended Design Elements

No study area intersection design elements are proposed as part of this study.

15 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Site and Screening

- The proposed site plan consists of a 25-storey mixed-use building with 247 dwelling units fronting St-Laurent Boulevard, a 20-storey residential building comprising 188 dwelling units on the east side of the parcel and a total of 3,085 ft^2 of retail space
- Access is proposed via a one-way drive aisle with an inbound access on Belfast Road and an outbound access on Lagan Way
- The site proposes a total of 395 vehicle parking spaces, including 354 residential, 30 visitor, and 11 retail vehicle spaces

- A total of 407 internal bicycle parking spaces and 40 external bicycle parking spaces are proposed
- Construction will occur in a single phase with an anticipated full build-out and occupancy horizon of 2026
- The trip generation and safety triggers were met for the TIA Screening

Existing Conditions

- St-Laurent Boulevard, Industrial Avenue, and Innes Road are arterial roads, and Tremblay Road and Belfast Road are collector roads in the study area
- Sidewalks are provided along both sides of St-Laurent Boulevard, Belfast Road east of the 940 Belfast Road parcel, and of Smyth Road, on the south side of Tremblay Road, and on the north side of Industrial Avenue
- MUPs ae provided on the south side of Industrial Avenue and Innes Road
- Cycletracks are provided on each side of St-Laurent Boulevard south of Innes Road
- St-Laurent Boulevard, Industrial Avenue, and Innes Road are spine routes, and Belfast Road and Tremblay Road east of St-Laurent Boulevard are local routes
- The intersection of Belfast Road at St-Laurent Boulevard is noted to have experienced a high incidence of collisions which may be influenced by the four right-turn channels at the intersection, by the interaction with the bus movements with intersection bus stops, and by congestion
- During both the AM and PM peak hours, capacity issues are noted on individual movements, but the network intersections typically operate adequately
- Signal timing adjustment would reduce v/c of all movements within the study area to 1.00 or below
- A transit priority EA study is presently ongoing for St-Laurent Boulevard north of Innes Road through the study area which is presently engaging in consultation and has no recommendations

Development Generated Travel Demand

- A total of 65 AM and 81 PM new peak hour two-way vehicle trips are projected as a result of the proposed development
- Unmodified recommended district mode shares have been applied to the development traffic including a 38% AM and 45% PM peak period auto mode share for the residential dwellings
- Of the forecasted trips, 15% are anticipated to travel north, 35% travel south, 5% travel east, and 45 % travel west

Development Design

- Hard surface connections are provided between the building entrances and the surrounding sidewalks and internal pedestrian walkways and the public park on the northeast corner of the parcel
- Bicycle parking is located in secure rooms on the main floor and within the underground parking levels, and in surface racks interspersed around the site
- Garbage collection will occur on-site, and emergency services can circulate the site via the 6.0-metre-wide internal drive aisle with 12.0-metre centreline radius on the 90-degree bend in the aisle

Parking

- The site is to provide 395 vehicle parking spaces including 30 visitor and 11 retail vehicle spaces
- A total of 407 bicycle parking spaces are to be provided internal to the building across the parking levels and the main floor, and 40 spaces are to be provided in surface racks throughout the site

- The total parking does not meet the required minimums based on a mid-street delineation for the areas in Zoning By-Law Schedule 1A, but meets the requirements of a parcel fronting the opposite side of St-Laurent Boulevard, re-allocated to meet each land use requirement
- The proposed Zoning By-Law update is expected to include no minimum parking requirements, and the parking rate context discussion would no longer be relevant upon its adoption

Boundary Street Design

- Belfast Road and the existing configuration of Lagan Way do not meet the pedestrian MMLOS targets
- PLOS targets will be met in the future on Lagan Way with the planned provision of a sidewalk
- The St-Laurent Boulevard PLOS is expected to be improved from C to A once the St-Laurent Boulevard Transit Priority Corridor project is completed
- The existing configuration of St-Laurent Boulevard and Belfast Road do not meet the bicycle LOS targets
- The St-Laurent Boulevard bicycle LOS are anticipated to become 'A' once the St-Laurent Boulevard Transit Priority Corridor project is completed
- Approximately 40 meters of cycletrack is anticipated to be provided along the boundary street of Belfast Road to the St-Laurent Boulevard at Belfast Road intersection as part of the St-Laurent Boulevard Transit Priority Corridor project
- No improvements are recommended on boundary streets beyond the sidewalks proposed as part of the site plan

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Display local area maps with walking and cycling routes, and transit route information and schedules at major entrances
    - Inclusion of a 6-month Presto card for first time new condo purchase or apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
    - Unbundle parking cost from purchase/rental costs

Background and Total Conditions

- The background developments were explicitly included in the background conditions, along with a total background growth applied to Tremblay Road, Industrial Avenue, and St-Laurent Boulevard along the mainline volumes and major turning movements
- During both the AM and PM peak hours, the study area intersections at the future background conditions operate similarly to the existing conditions
- No capacity issues were noted at the study area intersections that could not be mitigated through minor readjustments to signal timing phase splits
- The St-Laurent Transit Priority improvements may increase transit adoption in the future, reducing the network auto dependency
- The study area intersections at the future total horizons are forecast to operate similarly to the background conditions
- No rationalization for background or development travel demand is required for this study

Transit

- The proposed development is anticipated to generate an additional 79 AM and 54 PM peak hour two-way transit trips
- Peak hour increases in transit ridership resulting from the site equate to one-third of a standard bus load southerly of the site, half of a standard bus load westerly of the site, and negligible impact northerly and easterly
- Increases in outbound transit ridership during the AM peak hour is equivalent to a single standard bus load over the hour and is not anticipated to impact the existing or future transit priority corridor on St-Laurent Boulevard
- No changes to transit LOS on any study area intersection approaches are resultant from the addition of site vehicle traffic to the network
- The future transit priority corridor requirements will be accommodated on site through the reserved right-of-way on the frontage

Intersection Design

- Access is proposed via a one-way drive aisle with an inbound access on Belfast Road and an outbound access on Lagan Way, each proposed to be 6.0 metres in width
- The effective throat length of the inbound access on Belfast Road is 8.0 metres, and the throat length of the outbound access on Lagan Way is approximately 31 metres which meet or exceed the recommended eight metres
- The access on Belfast Road is approximately 39 metres from the St-Laurent Boulevard at Belfast Road intersection and access on Lagan Way is approximately 52 metres from the Lagan Way at Belfast Road intersection which exceed the suggested 15-metre minimum corner clearance
- The proposed access on Belfast Road is located 33 metres from the existing and 29 metres from the future St-Laurent Boulevard right-of-way, which is less than the 60 metres stipulated in the Private Approach By-Law, and it is recommended that the TAC criteria govern the design
- The inbound access on Belfast Road will be uncontrolled, and the outbound access on Lagan Way will have stop-control on the minor site access approach
- The proposed site accesses on both Belfast Road and Lagan Way are recommended to be constructed in compliance with City standard SC7.1, including a continuous sidewalk through a depressed curb
- One-way signage will be included as appropriate along the drive aisle and site accesses

Network Intersection Design

- The study area intersections will not meet the pedestrian LOS targets, subject to the constraints of the MMLOS methodology
- To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings would need to be reduced to two or three lanes for all area intersections and this is not considered feasible
- The study area intersections are expected to meet the bicycle LOS targets once the St-Laurent Boulevard Transit Priority Corridor project is completed
- The study area intersections do not meet the transit LOS targets, which would require the signal timing to be adjusted to prioritize all transit movements so that no delay above 30 seconds was imposed on transit vehicles
- The adjustments above are not considered feasible for the balancing of all modes at these intersections

- The intersection of St-Laurent Boulevard at Industrial Avenue/Innes Road does not meet the auto LOS targets during the AM peak hour, although all movements operate at an LOS E or better and do not require mitigation
- It is recommended that the City continue to assess the St Laurent Boulevard intersections as part of the Transit Corridor project to ensure the balancing operations for all modes is considered.

16 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

Prepared By:

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Transportation Engineering Intern

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 09-May-23
Project Number: 2023-053
Project Reference: 1531 St-Laurent

1.1 Description of Proposed Development	
Municipal Address	1531 St-Laurent Blvd
Description of Location	Southeast corner of the intersection of St-Laurent Blvd at Belfast Rd
Land Use Classification	Arterial Mainstreet (AM, AM[263])
Development Size	409 dwelling units, plus ground floor retail
Accesses	One inbound on Belfast Rd, one outbound on Lagan Wy
Phase of Development	Single
Buildout Year	2026
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	409	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	No
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?	No
Location Trigger	No

1.4. Safety Triggers		
Are posted speed limits on a boundary street 80 km/hr or greater?	No	
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	Yes	
Is the proposed driveway within auxiliary lanes of an intersection?	Yes	
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	Yes	High collisions at St-Laurent Blvd at Belfast Rd
Does the development include a drive-thru facility?	No	
Safety Trigger	Yes	

TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering √ or transportation planning □.

[1,2] License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

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Dated at Ottawa (City) this 20 day of September, 2018.

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer

Signature of Individual certifier that s/he meets the above four criteria

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa / K2H 7W1
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Appendix B

Turning Movement Counts

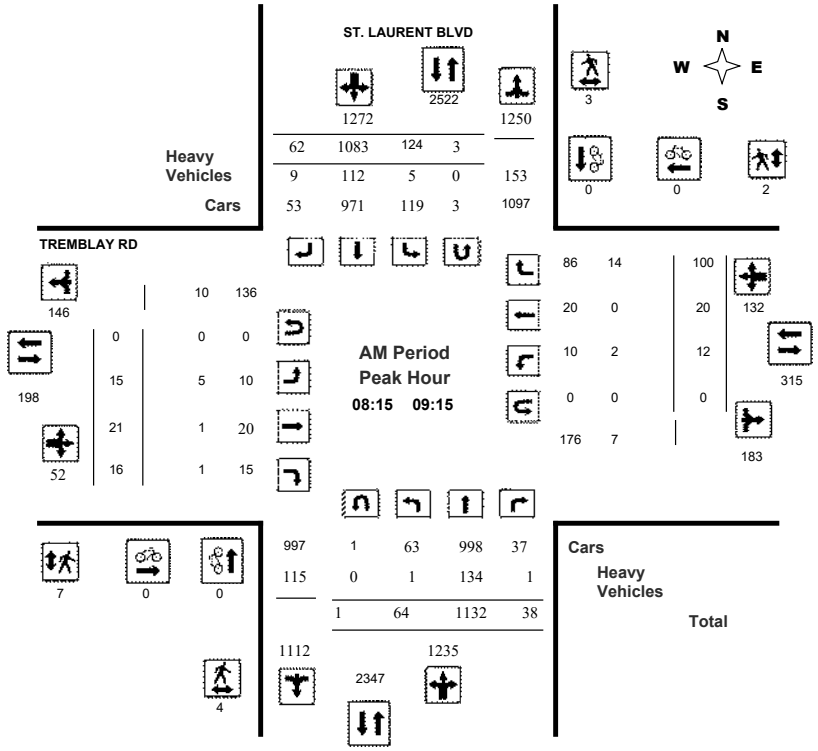
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38338

Start Time: 07:00 **Device:** Miovision



Comments

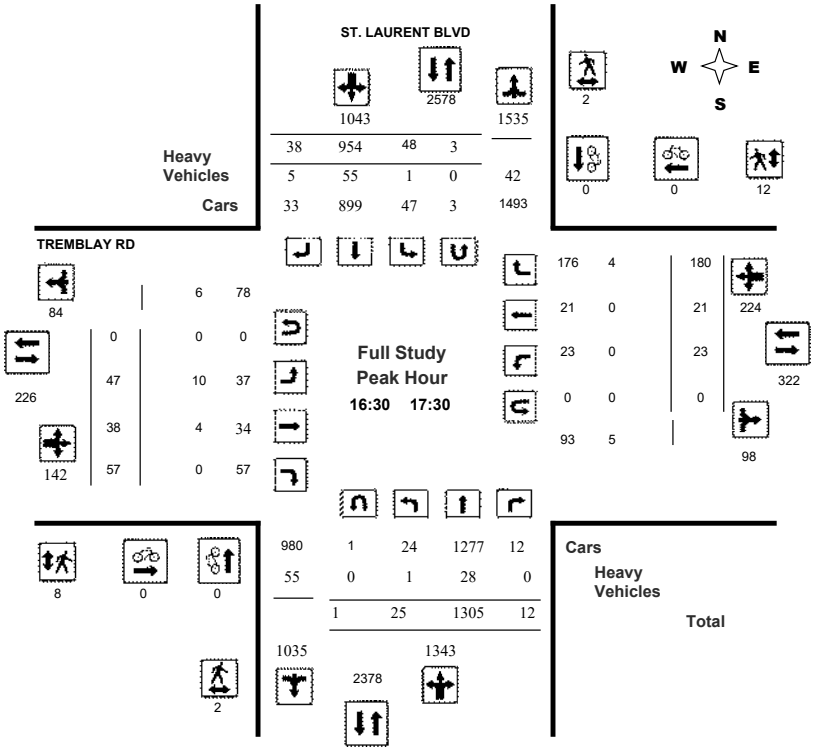
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38338

Start Time: 07:00 **Device:** Miovision



Comments

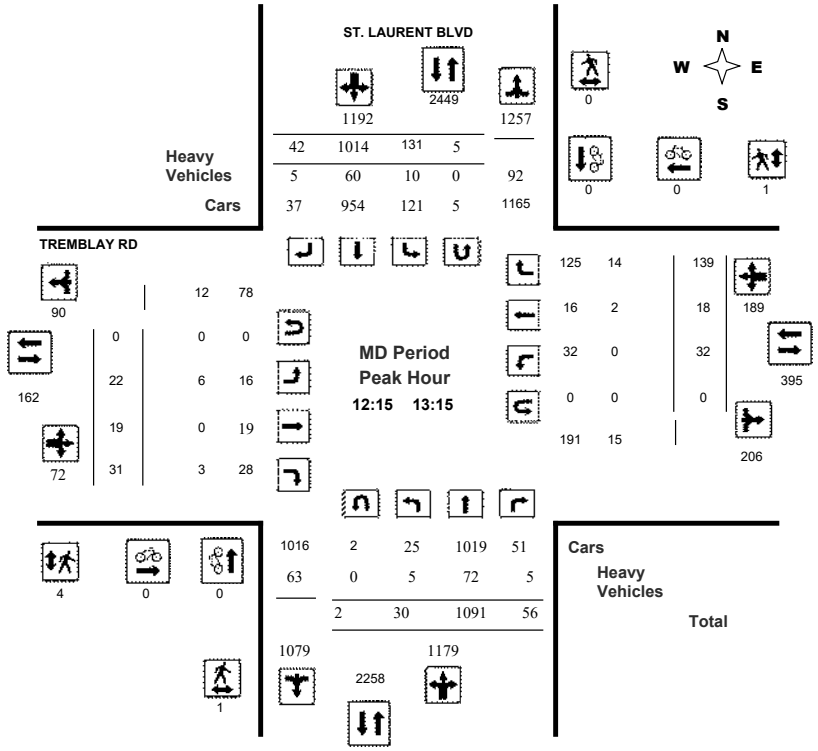
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38338

Start Time: 07:00 **Device:** Miovision



Comments

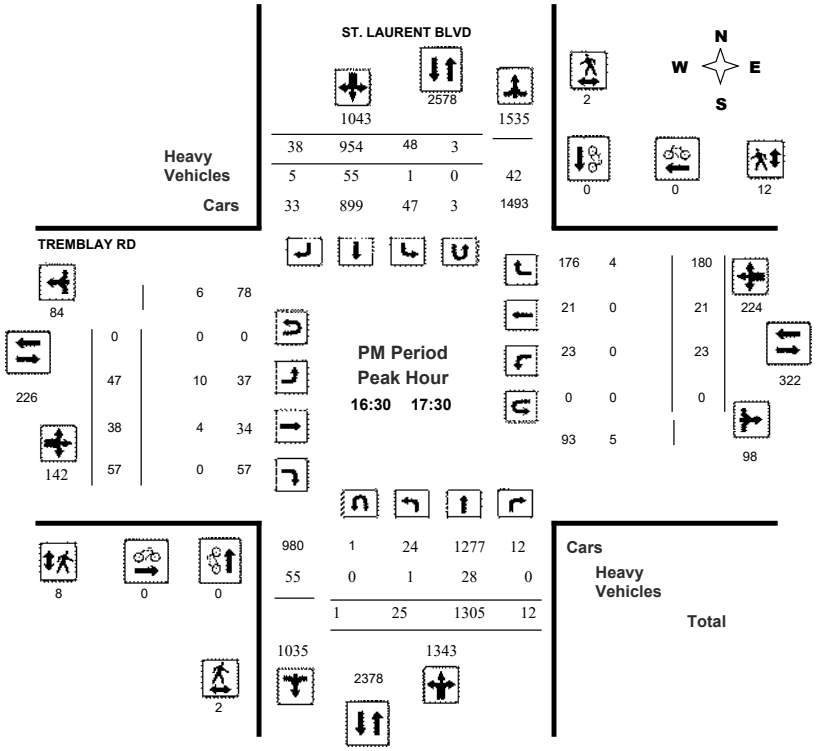
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38338

Start Time: 07:00 **Device:** Miovision



Comments

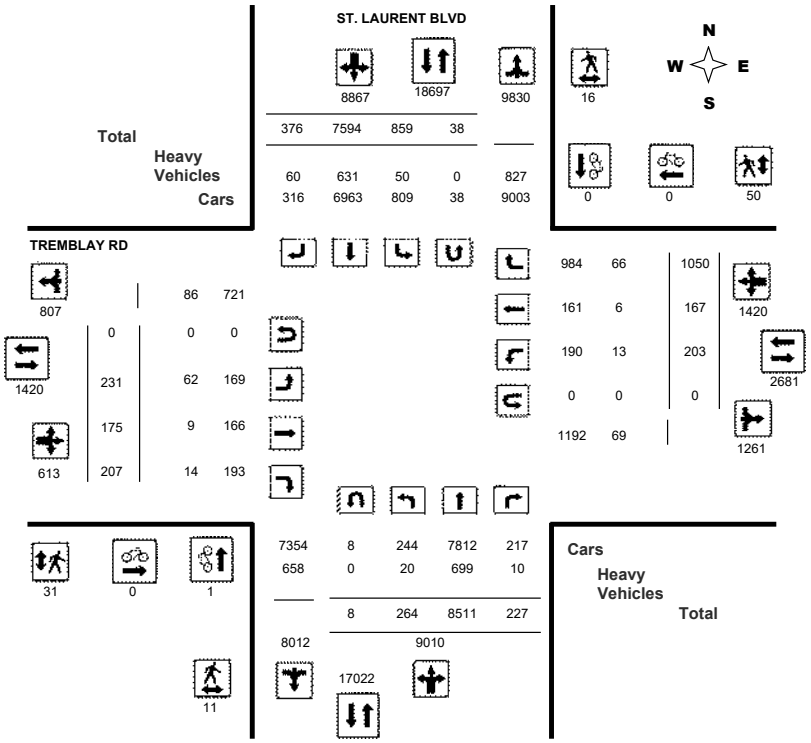
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019 **WO#:** 38338

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 38338

Turning Movement Count - Full Study Summary Report

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 201

Total Observed U-Turns

Northbound: 8 Southbound: 38

Eastbound: 0 Westbound: 0

AADT Factor 1.00

Full Study

	ST. LAURENT BLVD									TREMBLAY RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	34	827	29	**890**	168	978	58	**1204**	**2094**	21	25	15	**61**	13	19	68	**100**	**161**	**2255**
08:00 09:00	62	1157	40	**1259**	108	1055	67	**1230**	**2489**	14	20	21	**55**	16	17	101	**134**	**189**	**2678**
09:00 10:00	29	885	23	**937**	133	1038	46	**1217**	**2154**	23	23	17	**63**	12	21	76	**109**	**172**	**2326**
11:30 12:30	32	1008	37	**1077**	113	1004	48	**1165**	**2242**	29	10	28	**67**	41	24	144	**209**	**276**	**2518**
12:30 13:30	28	1058	48	**1134**	133	975	38	**1146**	**2280**	24	20	30	**74**	30	19	140	**189**	**263**	**2543**
15:00 16:00	31	1182	19	**1232**	100	787	34	**921**	**2153**	34	21	23	**78**	34	24	186	**244**	**322**	**2475**
16:00 17:00	34	1192	23	**1249**	68	807	41	**916**	**2165**	42	31	29	**102**	36	23	193	**252**	**354**	**2519**
17:00 18:00	14	1202	8	**1224**	36	950	44	**1030**	**2254**	44	25	44	**113**	21	20	142	**183**	**296**	**2550**
Sub Total	264	8511	227	**9002**	859	7594	376	**8829**	**17831**	231	175	207	**613**	203	167	1050	**1420**	**2033**	**19864**
U Turns				**8**				**38**	**46**				**0**				**0**	**0**	**46**
Total	264	8511	227	**9010**	859	7594	376	**8867**	**17877**	231	175	207	**613**	203	167	1050	**1420**	**2033**	**19910**
EQ 12Hr	367	11830	316	**12524**	1194	10556	523	**12325**	**24849**	321	243	288	**852**	282	232	1460	**1974**	**2826**	**27675**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	367	11830	316	**12524**	1194	10556	523	**12325**	**24849**	321	243	288	**852**	282	232	1460	**1974**	**2826**	**27675**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	481	15498	413	**16406**	1564	13828	685	**16146**	**32552**	421	319	377	**1116**	370	304	1912	**2586**	**3702**	**36254**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 38338

Turning Movement Count - 15 Minute Summary Report

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019

Total Observed U-Turns

Northbound: 8 Southbound: 38

Eastbound: 0 Westbound: 0

		ST. LAURENT BLVD									TREMBLAY RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	3	159	9	**171**	42	228	12	**283**	**454**	5	6	5	**16**	5	2	14	**21**	**37**	**491**
07:15	07:30	10	189	6	**205**	42	234	14	**290**	**495**	2	7	3	**12**	1	1	13	**15**	**27**	**522**
07:30	07:45	9	228	9	**246**	45	241	14	**300**	**546**	6	5	4	**15**	5	10	23	**38**	**53**	**599**
07:45	08:00	12	251	5	**268**	39	275	18	**334**	**602**	8	7	3	**18**	2	6	18	**26**	**44**	**646**
08:00	08:15	14	277	11	**302**	22	235	18	**275**	**577**	4	5	8	**17**	7	5	20	**32**	**49**	**626**
08:15	08:30	13	294	10	**317**	26	279	14	**319**	**636**	2	6	5	**13**	5	1	23	**29**	**42**	**678**
08:30	08:45	17	283	12	**313**	29	270	23	**322**	**635**	3	4	2	**9**	3	6	26	**35**	**44**	**679**
08:45	09:00	18	303	7	**328**	31	271	12	**316**	**644**	5	5	6	**16**	1	5	32	**38**	**54**	**698**
09:00	09:15	16	252	9	**277**	38	263	13	**315**	**592**	5	6	3	**14**	3	8	19	**30**	**44**	**636**
09:15	09:30	4	212	4	**221**	24	271	18	**313**	**534**	3	9	3	**15**	3	3	17	**23**	**38**	**572**
09:30	09:45	5	222	5	**232**	32	252	8	**295**	**527**	7	5	5	**17**	5	3	18	**26**	**43**	**570**
09:45	10:00	4	199	5	**208**	39	252	7	**300**	**508**	8	3	6	**17**	1	7	22	**30**	**47**	**555**
11:30	11:45	5	237	7	**250**	21	248	7	**277**	**527**	11	4	4	**19**	7	5	30	**42**	**61**	**588**
11:45	12:00	8	258	8	**274**	34	250	15	**302**	**576**	7	2	6	**15**	7	7	43	**57**	**72**	**648**
12:00	12:15	9	241	8	**258**	33	223	10	**267**	**525**	8	4	11	**23**	19	7	39	**65**	**88**	**613**
12:15	12:30	10	272	14	**297**	25	283	16	**325**	**622**	3	0	7	**10**	8	5	32	**45**	**55**	**677**
12:30	12:45	6	277	16	**300**	36	237	12	**285**	**585**	4	4	7	**15**	9	4	37	**50**	**65**	**650**
12:45	13:00	6	257	12	**275**	39	263	7	**312**	**587**	9	8	10	**27**	6	6	32	**44**	**71**	**658**
13:00	13:15	8	285	14	**307**	31	231	7	**270**	**577**	6	7	7	**20**	9	3	38	**50**	**70**	**647**
13:15	13:30	8	239	6	**253**	27	244	12	**285**	**538**	5	1	6	**12**	6	6	33	**45**	**57**	**595**
15:00	15:15	9	295	2	**307**	31	219	14	**266**	**573**	7	4	5	**16**	11	8	59	**78**	**94**	**667**
15:15	15:30	5	316	6	**327**	22	226	4	**253**	**580**	8	4	4	**16**	7	5	40	**52**	**68**	**648**
15:30	15:45	9	307	6	**322**	19	190	9	**218**	**540**	10	6	11	**27**	7	5	47	**59**	**86**	**626**
15:45	16:00	8	264	5	**277**	28	152	7	**189**	**466**	9	7	3	**19**	9	6	40	**55**	**74**	**540**
16:00	16:15	6	270	8	**284**	14	168	13	**195**	**479**	10	10	1	**21**	13	8	68	**89**	**110**	**589**
16:15	16:30	10	284	6	**300**	23	150	13	**188**	**488**	8	5	4	**17**	10	5	35	**50**	**67**	**555**
16:30	16:45	9	299	3	**311**	9	232	9	**250**	**561**	16	9	17	**42**	9	5	66	**80**	**122**	**683**
16:45	17:00	9	339	6	**354**	22	257	6	**286**	**640**	8	7	7	**22**	4	5	24	**33**	**55**	**695**
17:00	17:15	3	318	1	**322**	10	237	13	**261**	**583**	13	11	16	**40**	8	5	54	**67**	**107**	**690**
17:15	17:30	4	349	2	**356**	7	228	10	**246**	**602**	10	11	17	**38**	2	6	36	**44**	**82**	**684**
17:30	17:45	4	282	3	**289**	9	212	11	**235**	**524**	9	1	7	**17**	6	5	25	**36**	**53**	**577**
17:45	18:00	3	253	2	**259**	10	273	10	**295**	**554**	12	2	4	**18**	5	4	27	**36**	**54**	**608**
TOTAL:		264	8511	227	**9010**	859	7594	376	**8867**	**17877**	231	175	207	**613**	203	167	1050	**1420**	**2033**	**19910**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 38338

ST. LAURENT BLVD @ TREMBLAY RD

Count Date: Wednesday, January 30, 2019

Start Time: 07:00

	ST. LAURENT BLVD			TREMBLAY RD			
Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	1	0	**1**	0	0	**0**	**1**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	1	0	**1**	0	0	**0**	**1**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 38338

Turning Movement Count - Heavy Vehicle Report

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019

Time Period	ST. LAURENT BLVD Northbound LT	ST	RT	N TOT	ST. LAURENT BLVD Southbound LT	ST	RT	S TOT	STR TOT	TREMBLAY RD Eastbound LT	ST	RT	E TOT	TREMBLAY RD Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 08:00	2	134	1	**137**	10	52	10	**72**	**209**	9	1	0	**10**	4	0	9	**13**	**23**	**232**
08:00 09:00	2	124	1	**127**	3	80	11	**94**	**221**	4	1	1	**6**	4	0	15	**19**	**25**	**246**
09:00 10:00	3	116	1	**120**	6	183	5	**194**	**314**	9	1	1	**11**	0	2	8	**10**	**21**	**335**
11:30 12:30	2	66	1	**69**	8	68	8	**84**	**153**	8	0	5	**13**	1	0	11	**12**	**25**	**178**
12:30 13:30	5	80	5	**90**	7	62	7	**76**	**166**	6	0	3	**9**	0	2	11	**13**	**22**	**188**
15:00 16:00	4	112	0	**116**	10	74	5	**89**	**205**	7	1	3	**11**	3	2	6	**11**	**22**	**227**
16:00 17:00	2	40	1	**43**	3	65	10	**78**	**121**	10	1	1	**12**	0	0	2	**2**	**14**	**135**
17:00 18:00	0	27	0	**27**	3	47	4	**54**	**81**	9	4	0	**13**	1	0	4	**5**	**18**	**99**
Sub Total	20	699	10	**729**	50	631	60	**741**	**1470**	62	9	14	**85**	13	6	66	**85**	**170**	**1640**
U-Turns (Heavy Vehicles)				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	20	699	10	**0**	50	631	60	**741**	**1470**	62	9	14	**85**	13	6	66	**85**	**170**	**1640**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order 38338

Turning Movement Count - Pedestrian Volume Report

ST. LAURENT BLVD @ TREMBLAY RD

Count Date: Wednesday, January 30, 2019 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	1	**1**	0	6	**6**	**7**
07:15 07:30	0	0	**0**	0	1	**1**	**1**
07:30 07:45	1	0	**1**	2	4	**6**	**7**
07:45 08:00	1	0	**1**	1	1	**2**	**3**
07:00 08:00	2	1	**3**	3	12	**15**	**18**
08:00 08:15	0	0	**0**	0	0	**0**	**0**
08:15 08:30	1	0	**1**	0	0	**0**	**1**
08:30 08:45	0	0	**0**	1	0	**1**	**1**
08:45 09:00	3	1	**4**	3	1	**4**	**8**
08:00 09:00	4	1	**5**	4	1	**5**	**10**
09:00 09:15	0	2	**2**	3	1	**4**	**6**
09:15 09:30	0	0	**0**	1	4	**5**	**5**
09:30 09:45	0	0	**0**	0	0	**0**	**0**
09:45 10:00	0	0	**0**	1	2	**3**	**3**
09:00 10:00	0	2	**2**	5	7	**12**	**14**
11:30 11:45	0	0	**0**	0	1	**1**	**1**
11:45 12:00	0	1	**1**	0	1	**1**	**2**
12:00 12:15	0	0	**0**	0	0	**0**	**0**
12:15 12:30	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	1	**1**	0	2	**2**	**3**
12:30 12:45	0	0	**0**	1	0	**1**	**1**
12:45 13:00	1	0	**1**	1	1	**2**	**3**
13:00 13:15	0	0	**0**	2	0	**2**	**2**
13:15 13:30	0	1	**1**	0	1	**1**	**2**
12:30 13:30	1	1	**2**	4	2	**6**	**8**
15:00 15:15	0	0	**0**	1	2	**3**	**3**
15:15 15:30	1	4	**5**	2	2	**4**	**9**
15:30 15:45	0	1	**1**	0	3	**3**	**4**
15:45 16:00	0	1	**1**	1	0	**1**	**2**
15:00 16:00	1	6	**7**	4	7	**11**	**18**
16:00 16:15	0	1	**1**	0	3	**3**	**4**
16:15 16:30	1	0	**1**	1	2	**3**	**4**
16:30 16:45	2	0	**2**	3	5	**8**	**10**
16:45 17:00	0	1	**1**	2	4	**6**	**7**
16:00 17:00	3	2	**5**	6	14	**20**	**25**
17:00 17:15	0	0	**0**	1	1	**2**	**2**
17:15 17:30	0	1	**1**	2	2	**4**	**5**
17:30 17:45	0	1	**1**	2	1	**3**	**4**
17:45 18:00	0	0	**0**	0	1	**1**	**1**
17:00 18:00	0	2	**2**	5	5	**10**	**12**
Total	11	16	**27**	31	50	**81**	**108**

Comment:

Transportation Services - Traffic Services

Work Order 38338

Turning Movement Count - 15 Min U-Turn Total Report

ST. LAURENT BLVD @ TREMBLAY RD

Survey Date: Wednesday, January 30, 2019

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	1	0	0	1
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	2	0	0	2
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	1	0	0	0	1
08:45	09:00	0	2	0	0	2
09:00	09:15	0	1	0	0	1
09:15	09:30	1	0	0	0	1
09:30	09:45	0	3	0	0	3
09:45	10:00	0	2	0	0	2
11:30	11:45	1	1	0	0	2
11:45	12:00	0	3	0	0	3
12:00	12:15	0	1	0	0	1
12:15	12:30	1	1	0	0	2
12:30	12:45	1	0	0	0	1
12:45	13:00	0	3	0	0	3
13:00	13:15	0	1	0	0	1
13:15	13:30	0	2	0	0	2
15:00	15:15	1	2	0	0	3
15:15	15:30	0	1	0	0	1
15:30	15:45	0	0	0	0	0
15:45	16:00	0	2	0	0	2
16:00	16:15	0	0	0	0	0
16:15	16:30	0	2	0	0	2
16:30	16:45	0	0	0	0	0
16:45	17:00	0	1	0	0	1
17:00	17:15	0	1	0	0	1
17:15	17:30	1	1	0	0	2
17:30	17:45	0	3	0	0	3
17:45	18:00	1	2	0	0	3
Total		8	38	0	0	46

Transportation Services - Traffic Services

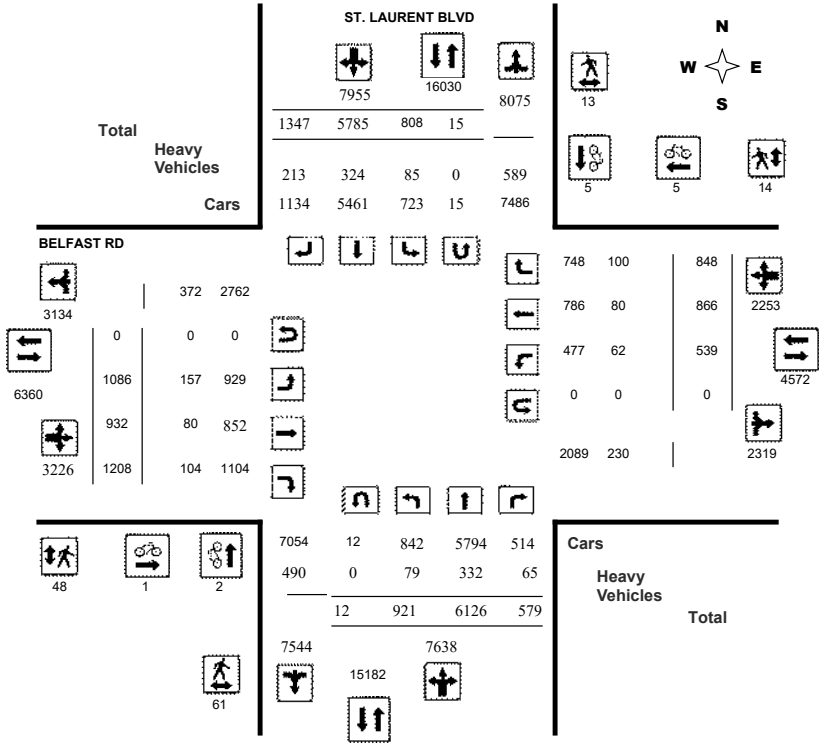
Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study Diagram



Transportation Services - Traffic Services

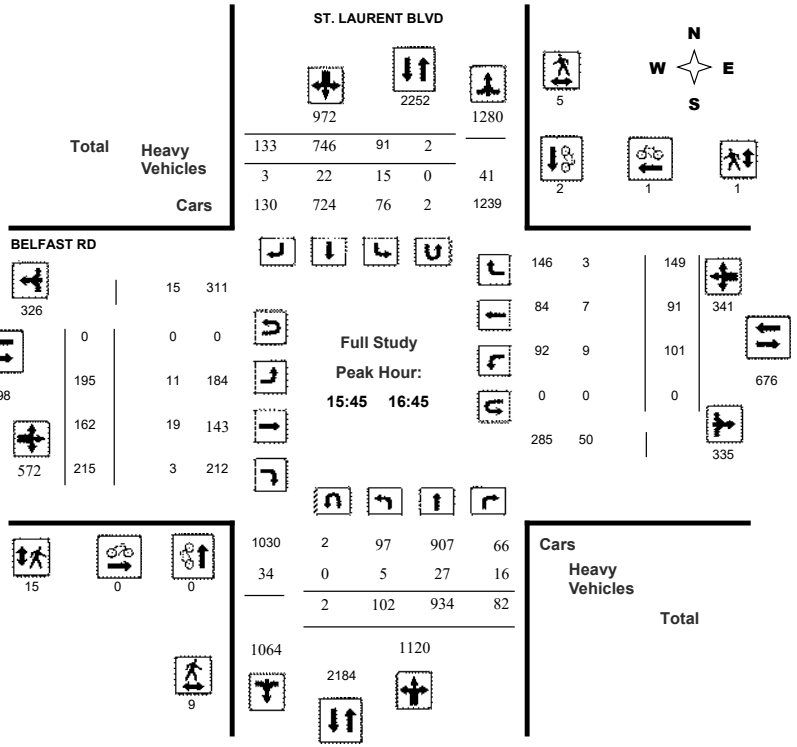
Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



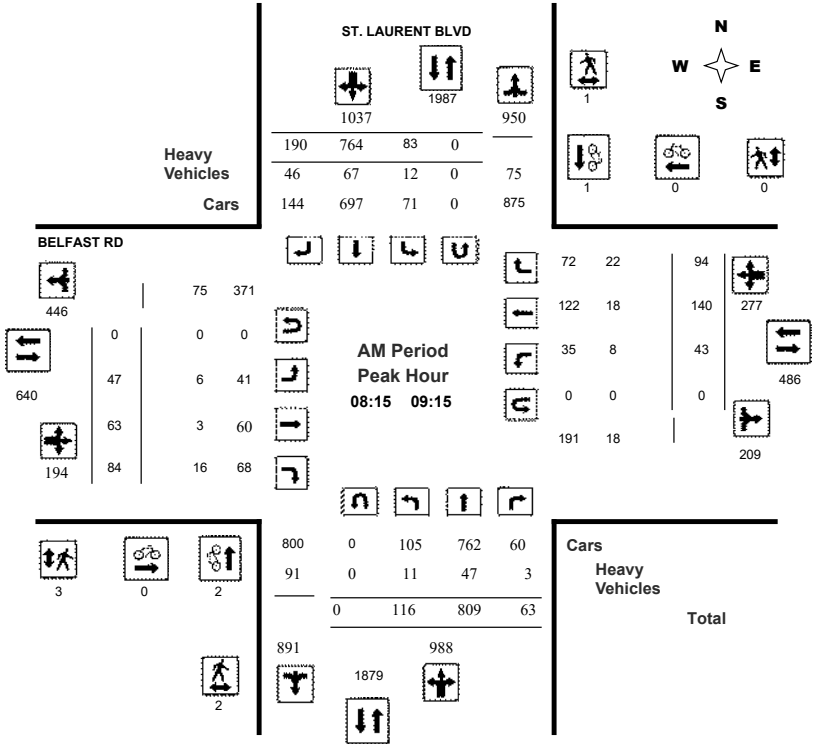
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision



Comments

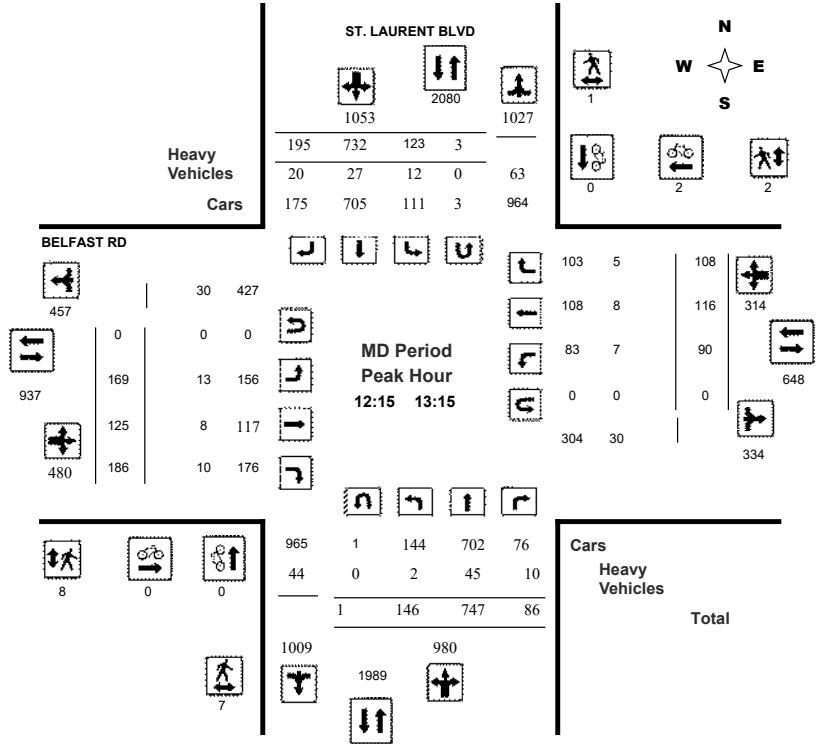
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision



Comments

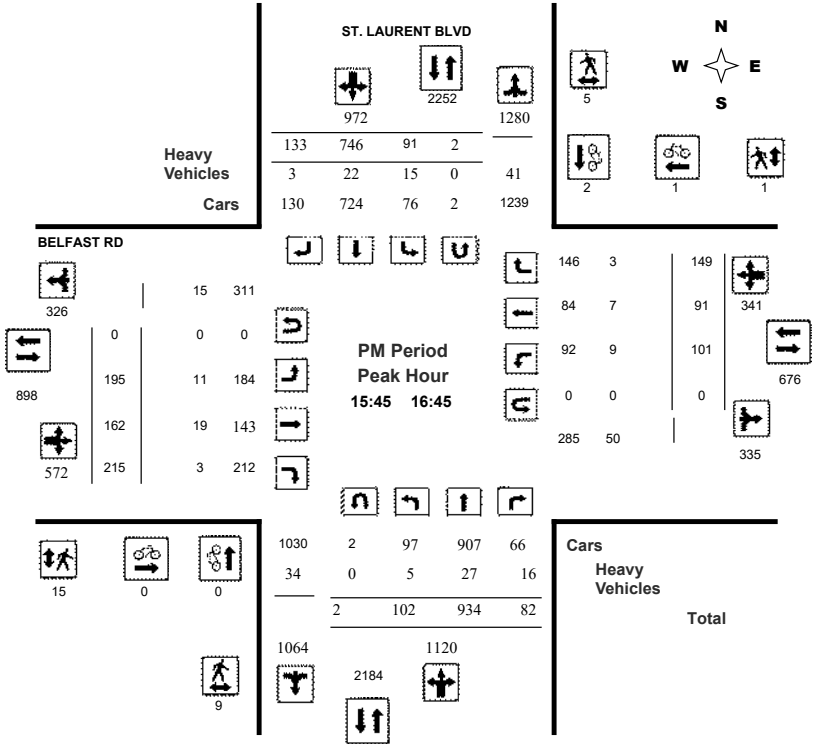
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, February 06, 2018

Total Observed U-Turns

Northbound: 12 Southbound: 15

Eastbound: 0 Westbound: 0

AADT Factor 1.00

	ST. LAURENT BLVD								BELFAST RD									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	111	693	51	**855**	101	745	143	**989**	**1844**	69	75	102	**246**	33	101	94	**228**	**474**	**2318**
08:00 09:00	116	848	66	**1030**	85	780	156	**1021**	**2051**	49	69	66	**184**	44	136	81	**261**	**445**	**2496**
09:00 10:00	123	648	62	**833**	100	656	233	**989**	**1822**	80	91	115	**286**	47	125	91	**263**	**549**	**2371**
11:30 12:30	154	661	97	**912**	143	722	202	**1067**	**1979**	172	128	175	**475**	80	120	111	**311**	**786**	**2765**
12:30 13:30	139	754	79	**972**	112	722	194	**1028**	**2000**	152	122	177	**451**	85	111	108	**304**	**755**	**2755**
15:00 16:00	103	843	65	**1011**	88	774	144	**1006**	**2017**	220	169	218	**607**	62	86	113	**261**	**868**	**2885**
16:00 17:00	95	919	89	**1103**	87	714	129	**930**	**2033**	184	163	211	**558**	96	89	146	**331**	**889**	**2922**
17:00 18:00	80	760	70	**910**	92	672	146	**910**	**1820**	160	115	144	**419**	92	98	104	**294**	**713**	**2533**
Sub Total	921	6126	579	**7626**	808	5785	1347	**7940**	**15566**	1086	932	1208	**3226**	539	866	848	**2253**	**5479**	**21045**
U Turns	12			**12**	15			**15**	**27**	**0**			**0**	0			**0**	**0**	**27**
Total	933	6126	579	**7638**	823	5785	1347	**7955**	**15593**	1086	932	1208	**3226**	539	866	848	**2253**	**5479**	**21072**
EQ 12Hr	1297	8515	805	**10617**	1144	8041	1872	**11057**	**21674**	1510	1295	1679	**4484**	749	1204	1179	**3132**	**7616**	**29290**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	1297	8515	805	**10617**	1144	8041	1872	**11057**	**21674**	1510	1295	1679	**4484**	749	1204	1179	**3132**	**7616**	**29290**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	1699	11155	1055	**13909**	1499	10534	2452	**14485**	**28394**	1978	1696	2199	**5873**	981	1577	1544	**4102**	**9975**	**38369**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		ST. LAURENT BLVD									BELFAST RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15		139	17			141	33		**375**		22	27			21	13		**121**	**496**
07:15	07:30		175	6			174	39		**455**		16	25			22	24		**104**	**559**
07:30	07:45		180	13			183	34		**466**		19	27			34	30		**134**	**600**
07:45	08:00		199	15			247	37		**549**		18	23			24	27		**115**	**664**
08:00	08:15		188	14			180	26		**465**		23	16			37	15		**118**	**583**
08:15	08:30		222	15			199	34		**516**		14	16			30	27		**103**	**619**
08:30	08:45		204	17			192	43		**501**		20	14			44	19		**117**	**618**
08:45	09:00		234	20			209	53		**569**		12	20			25	20		**107**	**676**
09:00	09:15		149	11			164	60		**439**		17	34			41	28		**144**	**583**
09:15	09:30		184	17			166	66		**488**		15	20			23	18		**108**	**596**
09:30	09:45		173	18			161	43		**457**		31	36			27	20		**148**	**605**
09:45	10:00		142	16			165	64		**440**		28	25			34	25		**149**	**589**
11:30	11:45		164	25			169	46		**477**		26	46			26	33		**186**	**663**
11:45	12:00		163	21			170	50		**480**		32	39			34	20		**193**	**673**
12:00	12:15		168	21			185	46		**493**		36	35			31	26		**180**	**673**
12:15	12:30		166	30			198	60		**536**		34	55			29	32		**227**	**763**
12:30	12:45		212	15			179	51		**520**		31	53			22	18		**185**	**705**
12:45	13:00		194	22			161	44		**492**		29	36			29	27		**179**	**671**
13:00	13:15		175	19			194	40		**485**		31	42			36	31		**203**	**688**
13:15	13:30		173	23			188	59		**507**		31	46			24	32		**188**	**695**
15:00	15:15		224	17			186	38		**516**		48	62			20	21		**238**	**754**
15:15	15:30		217	18			210	36		**528**		34	60			23	23		**216**	**744**
15:30	15:45		203	16			181	29		**480**		52	48			23	37		**210**	**690**
15:45	16:00		199	14			197	41		**497**		35	48			20	32		**204**	**701**
16:00	16:15		231	21			190	23		**518**		26	54			20	46		**224**	**742**
16:15	16:30		267	27			193	30		**565**		48	69			24	30		**247**	**812**
16:30	16:45		237	20			166	39		**512**		53	44			27	41		**238**	**750**
16:45	17:00		184	21			165	37		**441**		36	44			18	29		**180**	**621**
17:00	17:15		216	18			158	39		**476**		39	34			36	48		**229**	**705**
17:15	17:30		172	19			181	39		**450**		34	48			32	22		**209**	**659**
17:30	17:45		208	19			163	31		**463**		25	27			15	19		**139**	**602**
17:45	18:00		164	14			170	37		**437**		17	35			15	15		**136**	**573**
Total:		0	6126	579	0	0	5785	1347	0	**15593**	0	932	1208	0	0	866	848	0	**15593**	**21,072**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		ST. LAURENT BLVD			BELFAST RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	1	0	**1**	**1**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	1	1	**2**	0	0	**0**	**2**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	1	0	**1**	0	0	**0**	**1**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	2	**2**	**2**
12:15	12:30	0	0	**0**	0	2	**2**	**2**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	2	**2**	0	1	**1**	**3**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	1	**1**	0	0	**0**	**1**
17:45	18:00	0	1	**1**	0	0	**0**	**1**
Total		2	5	**7**	1	5	**6**	**13**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

Time Period		ST. LAURENT BLVD			BELFAST RD			
		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	2	0	**2**	1	1	**2**	**4**
07:15	07:30	0	1	**1**	1	0	**1**	**2**
07:30	07:45	1	1	**2**	0	1	**1**	**3**
07:45	08:00	1	0	**1**	1	2	**3**	**4**
08:00	08:15	2	1	**3**	1	0	**1**	**4**
08:15	08:30	2	0	**2**	3	0	**3**	**5**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	1	**1**	0	0	**0**	**1**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	3	0	**3**	**3**
09:30	09:45	1	0	**1**	1	0	**1**	**2**
09:45	10:00	3	0	**3**	0	0	**0**	**3**
11:30	11:45	2	0	**2**	2	3	**5**	**7**
11:45	12:00	0	0	**0**	3	0	**3**	**3**
12:00	12:15	5	0	**5**	4	1	**5**	**10**
12:15	12:30	0	1	**1**	2	0	**2**	**3**
12:30	12:45	2	0	**2**	2	2	**4**	**6**
12:45	13:00	1	0	**1**	1	0	**1**	**2**
13:00	13:15	4	0	**4**	3	0	**3**	**7**
13:15	13:30	4	1	**5**	0	2	**2**	**7**
15:00	15:15	2	1	**3**	0	1	**1**	**4**
15:15	15:30	3	0	**3**	2	0	**2**	**5**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	4	0	**4**	2	0	**2**	**6**
16:00	16:15	2	3	**5**	7	0	**7**	**12**
16:15	16:30	0	1	**1**	5	1	**6**	**7**
16:30	16:45	3	1	**4**	1	0	**1**	**5**
16:45	17:00	4	0	**4**	0	0	**0**	**4**
17:00	17:15	8	0	**8**	1	0	**1**	**9**
17:15	17:30	2	0	**2**	0	0	**0**	**2**
17:30	17:45	1	1	**2**	2	0	**2**	**4**
17:45	18:00	2	0	**2**	0	0	**0**	**2**
Total		61	13	**74**	48	14	**62**	**136**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		ST. LAURENT BLVD									BELFAST RD										
		Northbound				Southbound					Eastbound					Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	12	0		3	16	0		**31**	21	3	15		5	4	2		**50**	**81**
07:15	07:30	2	21	1		0	10	1		**35**	5	1	12		4	2	13		**37**	**72**
07:30	07:45	1	13	2		1	9	0		**26**	4	0	5		3	5	15		**32**	**58**
07:45	08:00	0	14	0		1	8	2		**25**	1	1	1		1	1	7		**12**	**37**
08:00	08:15	0	16	1		2	8	1		**28**	1	0	1		2	5	2		**11**	**39**
08:15	08:30	3	14	1		1	6	4		**29**	2	0	2		1	5	8		**18**	**47**
08:30	08:45	2	10	0		0	21	9		**42**	0	1	3		2	5	4		**15**	**57**
08:45	09:00	3	11	2		5	22	11		**54**	3	1	0		3	4	4		**15**	**69**
09:00	09:15	3	12	0		6	18	22		**61**	1	1	11		2	4	6		**25**	**86**
09:15	09:30	4	20	5		3	20	30		**82**	3	3	2		1	3	3		**15**	**97**
09:30	09:45	7	13	2		0	23	27		**72**	3	6	3		2	6	1		**21**	**93**
09:45	10:00	7	21	2		1	10	24		**65**	2	1	1		4	4	4		**16**	**81**
11:30	11:45	6	7	5		3	16	7		**44**	1	1	3		3	2	2		**12**	**56**
11:45	12:00	3	8	2		5	5	5		**28**	4	2	2		1	0	6		**15**	**43**
12:00	12:15	2	6	2		5	9	6		**30**	1	4	1		1	3	2		**12**	**42**
12:15	12:30	1	7	2		2	6	5		**23**	3	1	3		0	1	1		**9**	**32**
12:30	12:45	0	17	0		3	9	5		**34**	3	0	6		1	2	2		**14**	**48**
12:45	13:00	0	14	2		3	1	5		**25**	2	5	0		0	1	2		**10**	**35**
13:00	13:15	1	7	6		4	11	5		**34**	5	2	1		6	4	0		**18**	**52**
13:15	13:30	1	9	2		3	9	3		**27**	5	2	5		0	2	6		**20**	**47**
15:00	15:15	2	11	1		4	10	4		**32**	32	7	10		0	0	2		**51**	**83**
15:15	15:30	3	8	1		4	6	0		**22**	21	2	10		2	2	1		**38**	**60**
15:30	15:45	3	7	4		3	8	1		**26**	14	4	2		2	2	1		**25**	**51**
15:45	16:00	2	8	3		3	6	1		**23**	6	6	1		2	0	1		**16**	**39**
16:00	16:15	2	3	4		6	4	1		**20**	0	2	0		3	2	1		**8**	**28**
16:15	16:30	1	4	7		3	5	1		**21**	4	5	0		2	3	0		**14**	**35**
16:30	16:45	0	12	2		3	7	0		**24**	1	6	2		2	2	1		**14**	**38**
16:45	17:00	2	7	2		1	9	0		**21**	1	5	1		2	1	2		**12**	**33**
17:00	17:15	3	9	2		0	7	5		**26**	1	3	1		0	2	0		**7**	**33**
17:15	17:30	3	4	1		2	9	6		**25**	2	4	0		1	3	0		**10**	**35**
17:30	17:45	3	5	1		3	10	10		**32**	1	0	0		2	0	1		**4**	**36**
17:45	18:00	9	2	0		2	6	12		**31**	4	1	0		2	0	0		**7**	**38**
Total:	None	79	332	65	**0**	85	324	213	**0**	**1098**	157	80	104	**0**	62	80	100	**0**	**583**	**1,681**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BELFAST RD @ ST. LAURENT BLVD

Survey Date: Tuesday, February 06, 2018 **WO No:** 37494

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

		ST. LAURENT BLVD	ST. LAURENT BLVD	BELFAST RD	BELFAST RD	
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	1	0	0	**1**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	1	0	0	0	**1**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	1	0	0	0	**1**
11:30	11:45	0	2	0	0	**2**
11:45	12:00	1	0	0	0	**1**
12:00	12:15	1	2	0	0	**3**
12:15	12:30	0	1	0	0	**1**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	1	1	0	0	**2**
13:00	13:15	0	1	0	0	**1**
13:15	13:30	1	0	0	0	**1**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	1	1	0	0	**2**
15:30	15:45	1	0	0	0	**1**
15:45	16:00	0	1	0	0	**1**
16:00	16:15	0	1	0	0	**1**
16:15	16:30	1	0	0	0	**1**
16:30	16:45	1	0	0	0	**1**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	1	0	0	0	**1**
17:15	17:30	0	2	0	0	**2**
17:30	17:45	1	1	0	0	**2**
17:45	18:00	0	1	0	0	**1**
Total		12	15	0	0	**27**

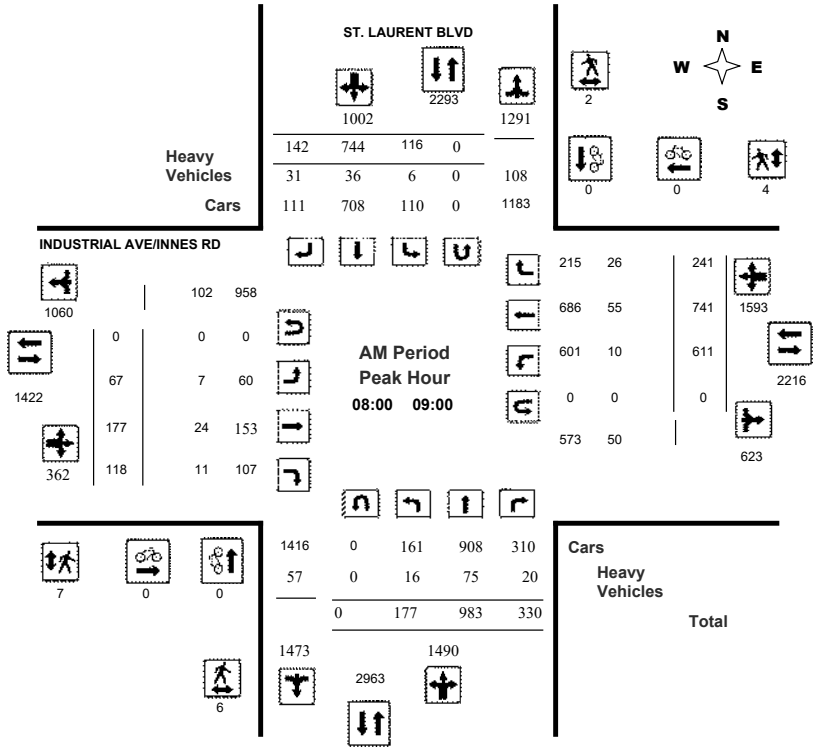
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38336

Start Time: 07:00 **Device:** Miovision



Comments

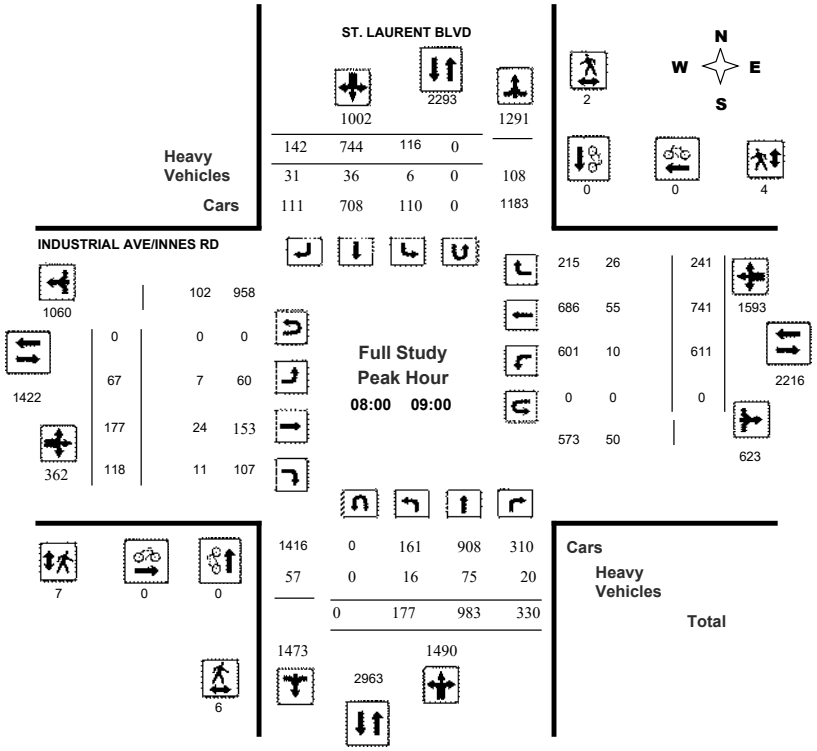
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38336

Start Time: 07:00 **Device:** Miovision



Comments

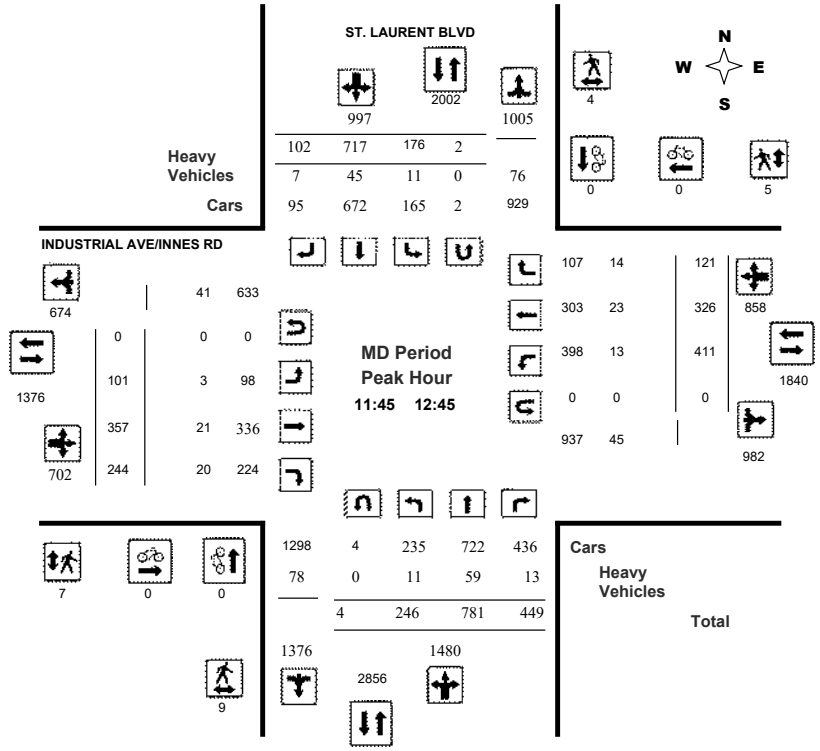
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38336

Start Time: 07:00 **Device:** Miovision



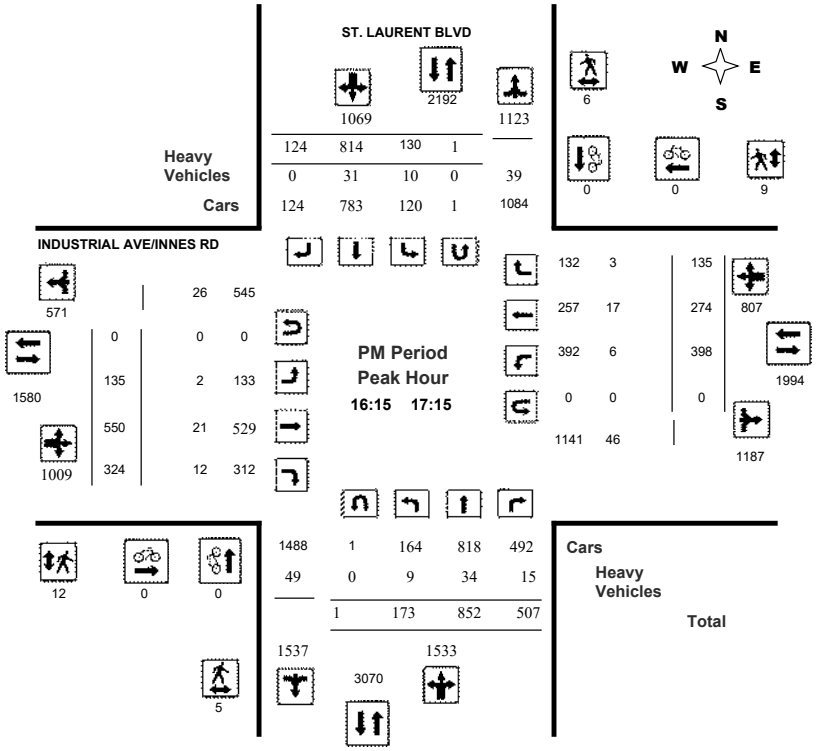
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019 **WO No:** 38336

Start Time: 07:00 **Device:** Miovision



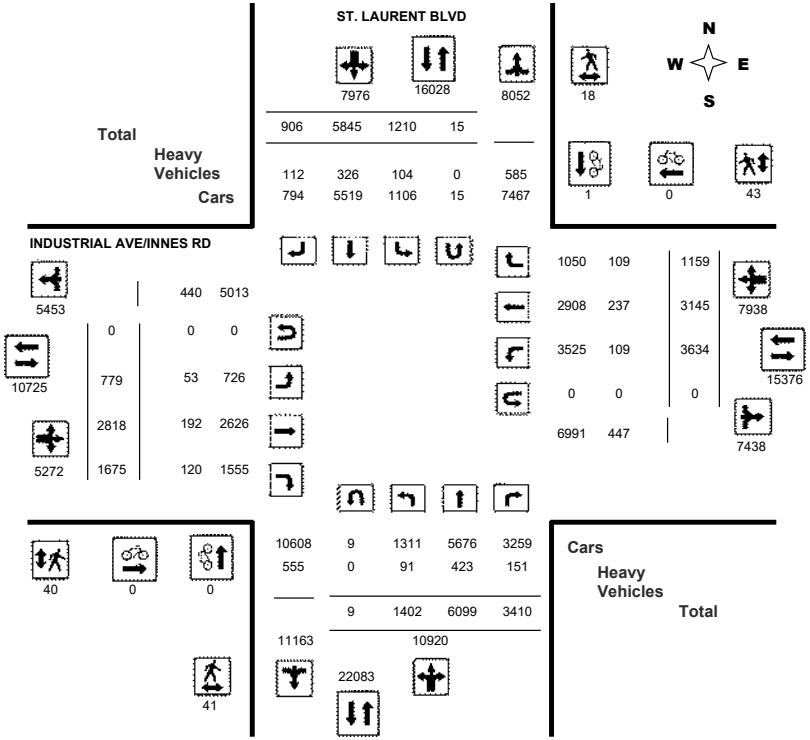
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019 **WO#:** 38336

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 38336

Turning Movement Count - Full Study Summary Report

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 201

Total Observed U-Turns

Northbound: 9 Southbound: 15

Eastbound: 0 Westbound: 0

AADT Factor 1.00

Full Study

	ST. LAURENT BLVD									INDUSTRIAL AVE/INNES RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	188	680	345	**1213**	158	631	79	**868**	**2081**	50	178	139	**367**	608	530	136	**1274**	**1641**	**3722**
08:00 09:00	177	983	330	**1490**	116	744	142	**1002**	**2492**	67	177	118	**362**	611	741	241	**1593**	**1955**	**4447**
09:00 10:00	179	657	366	**1202**	144	625	123	**892**	**2094**	79	211	130	**420**	446	398	145	**989**	**1409**	**3503**
11:30 12:30	237	760	434	**1431**	172	721	110	**1003**	**2434**	91	337	226	**654**	403	328	135	**866**	**1520**	**3954**
12:30 13:30	171	711	429	**1311**	191	679	113	**983**	**2294**	118	343	222	**683**	408	310	108	**826**	**1509**	**3803**
15:00 16:00	112	711	554	**1377**	169	796	119	**1084**	**2461**	126	567	238	**931**	377	323	140	**840**	**1771**	**4232**
16:00 17:00	162	774	528	**1464**	138	794	115	**1047**	**2511**	121	584	313	**1018**	385	266	130	**781**	**1799**	**4310**
17:00 18:00	176	823	424	**1423**	122	855	105	**1082**	**2505**	127	421	289	**837**	396	249	124	**769**	**1606**	**4111**
Sub Total	1402	6099	3410	**10911**	1210	5845	906	**7961**	**18872**	779	2818	1675	**5272**	3634	3145	1159	**7938**	**13210**	**32082**
U Turns				**9**				**15**	**24**				**0**				**0**	**0**	**24**
Total	1402	6099	3410	**10920**	1210	5845	906	**7976**	**18896**	779	2818	1675	**5272**	3634	3145	1159	**7938**	**13210**	**32106**
EQ 12Hr	1949	8478	4740	**15179**	1682	8125	1259	**11087**	**26266**	1083	3917	2328	**7328**	5051	4372	1611	**11034**	**18362**	**44628**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	1949	8478	4740	**15179**	1682	8125	1259	**11087**	**26266**	1083	3917	2328	**7328**	5051	4372	1611	**11034**	**18362**	**44628**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	2553	11106	6209	**19884**	2203	10643	1650	**14523**	**34407**	1418	5131	3050	**9600**	6617	5727	2110	**14454**	**24054**	**58461**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 38336

Turning Movement Count - 15 Minute Summary Report

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019

Total Observed U-Turns

Northbound: 9 Southbound: 15

Eastbound: 0 Westbound: 0

		ST. LAURENT BLVD									INDUSTRIAL AVE/INNES RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	24	125	67	**216**	33	120	12	**165**	**381**	7	50	25	**82**	164	124	24	**312**	**394**	**775**
07:15	07:30	44	171	76	**291**	45	180	26	**251**	**542**	11	39	38	**88**	133	100	24	**257**	**345**	**887**
07:30	07:45	53	185	104	**342**	32	148	19	**199**	**541**	12	49	45	**106**	156	165	45	**366**	**472**	**1013**
07:45	08:00	67	199	98	**364**	48	183	22	**253**	**617**	20	40	31	**91**	155	141	43	**339**	**430**	**1047**
08:00	08:15	39	265	77	**381**	31	186	28	**245**	**626**	10	52	22	**84**	147	191	40	**378**	**462**	**1088**
08:15	08:30	41	238	77	**356**	26	161	42	**229**	**585**	20	38	37	**95**	161	169	61	**391**	**486**	**1071**
08:30	08:45	42	249	91	**382**	27	206	33	**266**	**648**	15	38	27	**80**	142	202	62	**406**	**486**	**1134**
08:45	09:00	55	231	85	**371**	32	191	39	**262**	**633**	22	49	32	**103**	161	179	78	**418**	**521**	**1154**
09:00	09:15	55	183	86	**324**	37	179	25	**245**	**569**	20	41	25	**86**	130	111	55	**296**	**382**	**951**
09:15	09:30	47	160	105	**312**	37	151	33	**221**	**533**	22	59	29	**110**	117	110	35	**262**	**372**	**905**
09:30	09:45	37	162	90	**289**	38	148	32	**218**	**507**	17	56	34	**107**	93	86	35	**214**	**321**	**828**
09:45	10:00	40	152	85	**277**	32	147	33	**212**	**489**	20	55	42	**117**	106	91	20	**217**	**334**	**823**
11:30	11:45	41	158	110	**309**	40	170	31	**241**	**550**	15	70	47	**132**	107	80	37	**224**	**356**	**906**
11:45	12:00	63	205	109	**380**	40	167	30	**237**	**617**	28	80	54	**162**	94	91	34	**219**	**381**	**998**
12:00	12:15	64	184	113	**361**	54	178	26	**258**	**619**	27	81	54	**162**	113	81	26	**220**	**382**	**1001**
12:15	12:30	69	213	102	**385**	38	206	23	**269**	**654**	21	106	71	**198**	89	76	38	**203**	**401**	**1055**
12:30	12:45	50	179	125	**354**	44	166	23	**233**	**587**	25	90	65	**180**	115	78	23	**216**	**396**	**983**
12:45	13:00	36	184	99	**320**	44	176	30	**250**	**570**	27	71	54	**152**	90	80	23	**193**	**345**	**915**
13:00	13:15	43	175	99	**317**	57	159	28	**244**	**561**	34	86	50	**170**	124	69	33	**226**	**396**	**957**
13:15	13:30	42	173	106	**321**	46	178	32	**256**	**577**	32	96	53	**181**	79	83	29	**191**	**372**	**949**
15:00	15:15	42	163	127	**332**	47	184	27	**258**	**590**	39	129	52	**220**	97	92	37	**226**	**446**	**1036**
15:15	15:30	24	207	144	**375**	35	185	33	**253**	**628**	34	158	69	**261**	105	80	35	**220**	**481**	**1109**
15:30	15:45	18	176	148	**342**	46	204	34	**284**	**626**	21	147	57	**225**	85	87	40	**212**	**437**	**1063**
15:45	16:00	28	165	135	**328**	41	223	25	**289**	**617**	32	133	60	**225**	90	64	28	**182**	**407**	**1024**
16:00	16:15	33	164	130	**327**	40	197	22	**259**	**586**	25	141	86	**252**	96	58	31	**185**	**437**	**1023**
16:15	16:30	48	202	148	**398**	31	196	33	**260**	**658**	32	149	67	**248**	94	79	29	**202**	**450**	**1108**
16:30	16:45	36	200	134	**370**	35	214	30	**279**	**649**	39	164	87	**290**	111	68	37	**216**	**506**	**1155**
16:45	17:00	45	208	116	**370**	32	187	30	**249**	**619**	25	130	73	**228**	84	61	33	**178**	**406**	**1025**
17:00	17:15	44	242	109	**395**	32	217	31	**281**	**676**	39	107	97	**243**	109	66	36	**211**	**454**	**1130**
17:15	17:30	46	223	105	**375**	36	245	26	**311**	**686**	29	108	64	**201**	103	73	28	**204**	**405**	**1091**
17:30	17:45	51	180	116	**348**	28	169	14	**214**	**562**	31	105	64	**200**	84	57	33	**174**	**374**	**936**
17:45	18:00	35	178	94	**308**	26	224	34	**285**	**593**	28	101	64	**193**	100	53	27	**180**	**373**	**966**
TOTAL:		1402	6099	3410	**10920**	1210	5845	906	**7976**	**18896**	779	2818	1675	**5272**	3634	3145	1159	**7938**	**13210**	**32106**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 38336

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Count Date: Wednesday, January 30, 2019 **Start Time:** 07:00

	ST. LAURENT BLVD			INDUSTRIAL AVE/INNES RD			
Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 08:00	0	0	**0**	0	0	**0**	**0**
08:00 09:00	0	0	**0**	0	0	**0**	**0**
09:00 10:00	0	0	**0**	0	0	**0**	**0**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	1	**1**	0	0	**0**	**1**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	1	**1**	0	0	**0**	**1**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 38336

Turning Movement Count - Heavy Vehicle Report

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019

		ST. LAURENT BLVD									INDUSTRIAL AVE/INNES RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	16	48	17	**81**	33	54	7	**94**	**175**	5	23	27	**55**	32	37	19	**88**	**143**	**318**
08:00	09:00	16	75	20	**111**	6	36	31	**73**	**184**	7	24	11	**42**	10	55	26	**91**	**133**	**317**
09:00	10:00	16	78	34	**128**	14	44	39	**97**	**225**	13	29	5	**47**	8	42	16	**66**	**113**	**338**
11:30	12:30	10	56	17	**83**	11	52	9	**72**	**155**	3	22	13	**38**	15	27	13	**55**	**93**	**248**
12:30	13:30	5	53	20	**78**	13	36	10	**59**	**137**	8	26	22	**56**	19	13	11	**43**	**99**	**236**
15:00	16:00	5	38	21	**64**	11	47	7	**65**	**129**	12	22	16	**50**	11	24	12	**47**	**97**	**226**
16:00	17:00	10	46	15	**71**	11	34	3	**48**	**119**	2	32	16	**50**	7	22	6	**35**	**85**	**204**
17:00	18:00	13	29	7	**49**	5	23	6	**34**	**83**	3	14	10	**27**	7	17	6	**30**	**57**	**140**
Sub Total		91	423	151	**665**	104	326	112	**542**	**1207**	53	192	120	**365**	109	237	109	**455**	**820**	**2027**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		91	423	151	**0**	104	326	112	**542**	**1207**	53	192	120	**365**	109	237	109	**455**	**820**	**2027**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order 38336

Turning Movement Count - Pedestrian Volume Report

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Count Date: Wednesday, January 30, 2019 **Start Time:** 07:00

Time Period		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	1	1	**2**	1	0	**1**	**3**
07:15	07:30	1	0	**1**	2	0	**2**	**3**
07:30	07:45	0	1	**1**	1	0	**1**	**2**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
07:00	08:00	2	2	**4**	4	0	**4**	**8**
08:00	08:15	1	0	**1**	0	0	**0**	**1**
08:15	08:30	2	2	**4**	3	1	**4**	**8**
08:30	08:45	3	0	**3**	3	2	**5**	**8**
08:45	09:00	0	0	**0**	1	1	**2**	**2**
08:00	09:00	6	2	**8**	7	4	**11**	**19**
09:00	09:15	2	0	**2**	0	2	**2**	**4**
09:15	09:30	2	0	**2**	0	0	**0**	**2**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
09:00	10:00	4	0	**4**	0	2	**2**	**6**
11:30	11:45	1	0	**1**	0	1	**1**	**2**
11:45	12:00	1	0	**1**	1	1	**2**	**3**
12:00	12:15	1	2	**3**	4	0	**4**	**7**
12:15	12:30	4	2	**6**	1	2	**3**	**9**
11:30	12:30	7	4	**11**	6	4	**10**	**21**
12:30	12:45	3	0	**3**	1	2	**3**	**6**
12:45	13:00	2	0	**2**	1	3	**4**	**6**
13:00	13:15	2	0	**2**	0	1	**1**	**3**
13:15	13:30	1	0	**1**	2	2	**4**	**5**
12:30	13:30	8	0	**8**	4	8	**12**	**20**
15:00	15:15	1	1	**2**	1	2	**3**	**5**
15:15	15:30	1	0	**1**	1	2	**3**	**4**
15:30	15:45	1	1	**2**	0	1	**1**	**3**
15:45	16:00	1	0	**1**	0	2	**2**	**3**
15:00	16:00	4	2	**6**	2	7	**9**	**15**
16:00	16:15	0	0	**0**	1	0	**1**	**1**
16:15	16:30	0	2	**2**	1	2	**3**	**5**
16:30	16:45	3	2	**5**	5	1	**6**	**11**
16:45	17:00	1	1	**2**	3	3	**6**	**8**
16:00	17:00	4	5	**9**	10	6	**16**	**25**
17:00	17:15	1	1	**2**	3	3	**6**	**8**
17:15	17:30	2	2	**4**	3	1	**4**	**8**
17:30	17:45	1	0	**1**	0	7	**7**	**8**
17:45	18:00	2	0	**2**	1	1	**2**	**4**
17:00	18:00	6	3	**9**	7	12	**19**	**28**
Total	.....	41	18	**59**	40	43	**83**	**142**

Comment:

Transportation Services - Traffic Services

Work Order 38336

Turning Movement Count - 15 Min U-Turn Total Report

INDUSTRIAL AVE/INNES RD @ ST. LAURENT BLVD

Survey Date: Wednesday, January 30, 2019

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	4	0	0	4
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	3	0	0	0	3
12:00	12:15	0	0	0	0	0
12:15	12:30	1	2	0	0	3
12:30	12:45	0	0	0	0	0
12:45	13:00	1	0	0	0	1
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	1	0	0	0	1
17:00	17:15	0	1	0	0	1
17:15	17:30	1	4	0	0	5
17:30	17:45	1	3	0	0	4
17:45	18:00	1	1	0	0	2
Total		9	15	0	0	24

Turning Movement Count

Summary Report Including Peak Hours, AADT and Expansion Factors

All Vehicles Except Bicycles

Belfast Road & Lagan Way — Ottawa, ON

Survey Date: Thursday, May 11, 2023 **Start Time:** 0700 **AADT Factor:** 0.9

Weather AM: Mostly Sunny 13° C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800

Weather PM: Cloudy 25° C **Surveyor(s):** T. Carmody

	Belfast Rd. Eastbound					Belfast Rd. Westbound						Lagan Way Northbound					Lagan Way Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	22	240	33	0	295	6	177	10	0	193	488	21	0	5	0	26	7	1	15	0	23	49	537
0800-0900	21	206	16	1	244	6	195	8	0	209	453	16	0	8	0	24	4	0	13	0	17	41	494
0900-1000	50	272	15	1	338	13	225	26	0	264	602	11	1	15	0	27	15	4	17	0	36	63	665
1130-1230	44	254	22	0	320	19	282	18	0	319	639	21	2	10	0	33	17	1	30	0	48	81	720
1230-1330	52	272	31	1	356	14	260	17	0	291	647	23	2	6	0	31	17	2	32	0	51	82	729
1500-1600	39	281	30	0	350	15	258	15	0	288	638	18	2	19	0	39	20	1	27	0	48	87	725
1600-1700	58	262	48	1	369	16	307	24	3	350	719	25	4	11	0	40	26	0	46	0	72	112	831
1700-1800	38	186	31	0	255	12	220	15	0	247	502	30	1	17	0	48	24	1	33	0	58	106	608
Totals	324	1973	226	4	2527	101	1924	133	3	2161	4688	165	12	91	0	268	130	10	213	0	353	621	5309

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor Applicable to the Day and Month of the Turning Movement Count

Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 ➡12 expansion factor of 1.39

Equ. 12 Hr	450	2742	314	6	3513	140	2674	185	4	3004	6516	229	17	126	0	373	181	14	296	0	491	863	7380

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 0.9

AADT 12-hr	405	2468	283	5	3161	126	2407	166	4	2703	5865	206	15	114	0	335	163	13	266	0	442	777	6642

24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 ➡24 expansion factor of 1.31

AADT 24 Hr	531	3233	370	7	4141	166	3153	218	5	3541	7683	270	20	149	0	439	213	16	349	0	578	1018	8700

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.91												Highest Hourly Vehicle Volume Between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0900-1000	50	272	15	1	338	13	225	26	0	264	602	11	1	15	0	27	15	4	17	0	36	63	665
OFF Peak Hour Factor ➡ 0.87												Highest Hourly Vehicle Volume Between 1130h & 1330h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1230-1330	52	272	31	1	356	14	260	17	0	291	647	23	2	6	0	31	17	2	32	0	51	82	729
PM Peak Hour Factor ➡ 0.90												Highest Hourly Vehicle Volume Between 1500h & 1800h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1545-1645	46	265	50	0	361	17	310	26	2	355	716	26	5	16	0	47	30	0	39	0	69	116	832

Comments:

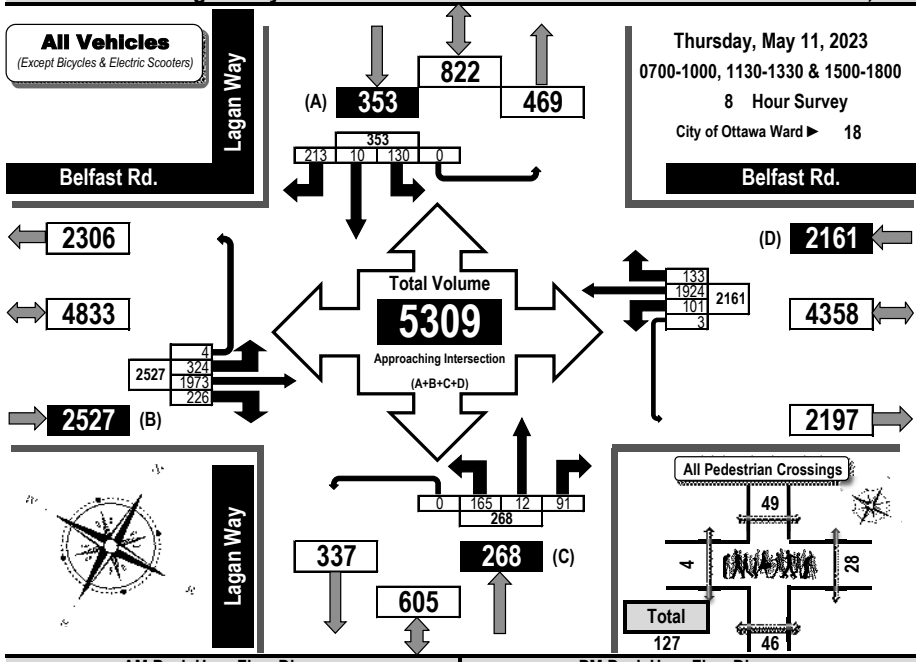
OC Transpo and Para Transpo buses, private buses and school buses comprise 9.07% of the heavy vehicle traffic.

Notes:

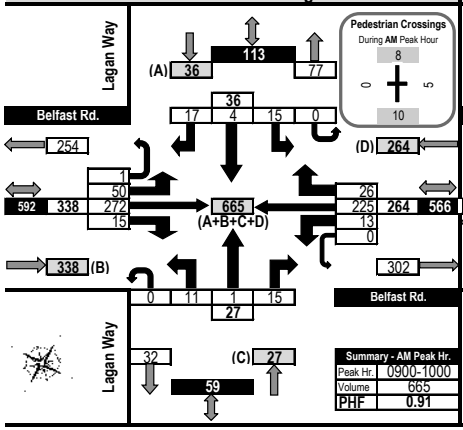
1. Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Turning Movement Count
Summary, AM and PM Peak Hour
Flow Diagrams
All Vehicles Except Bicycles

Belfast Road & Lagan Way — **Ottawa, ON**

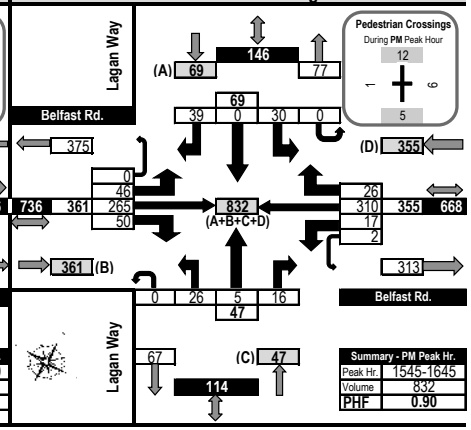


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0900-1000
Volume	665
PHF	0.91

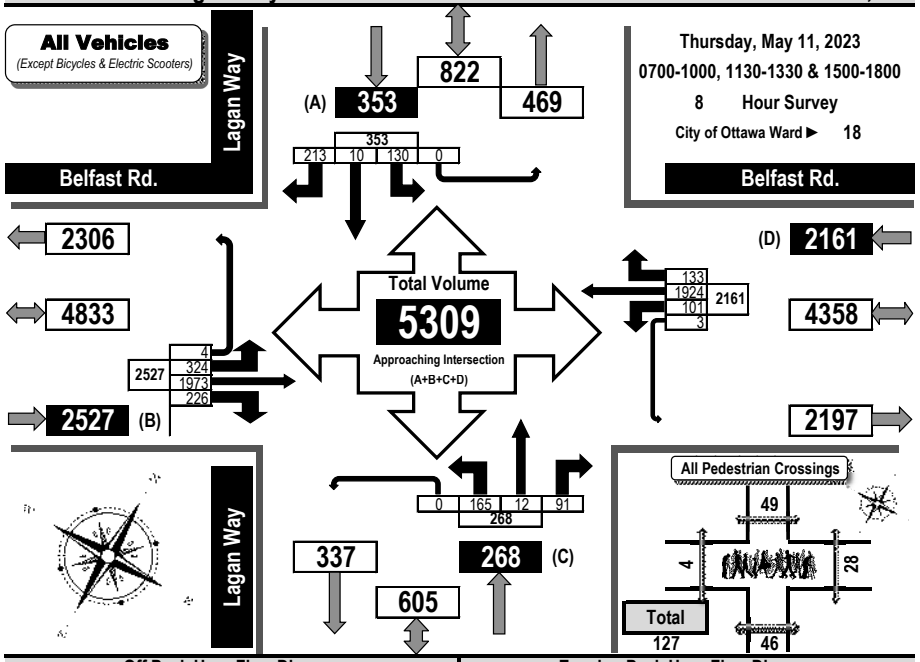
PM Peak Hour Flow Diagram



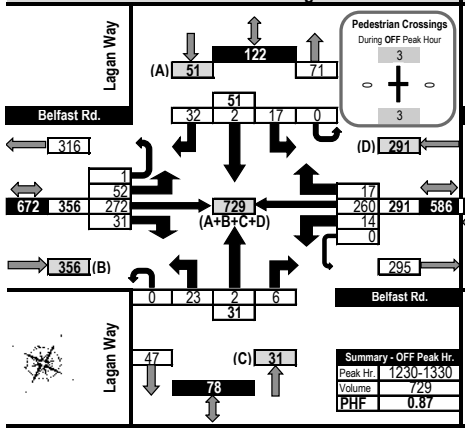
Summary - PM Peak Hr.	
Peak Hr.	1545-1645
Volume	832
PHF	0.90

Turning Movement Count
Summary, OFF and EVENING Peak Hour
Flow Diagrams
All Vehicles Except Bicycles

Belfast Road & Lagan Way — **Ottawa, ON**

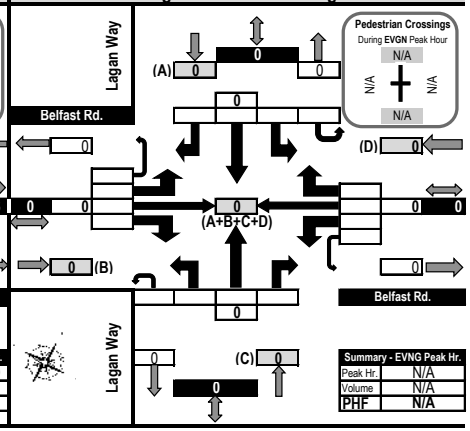


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1230-1330
Volume	729
PHF	0.87

Evening Peak Hour Flow Diagram



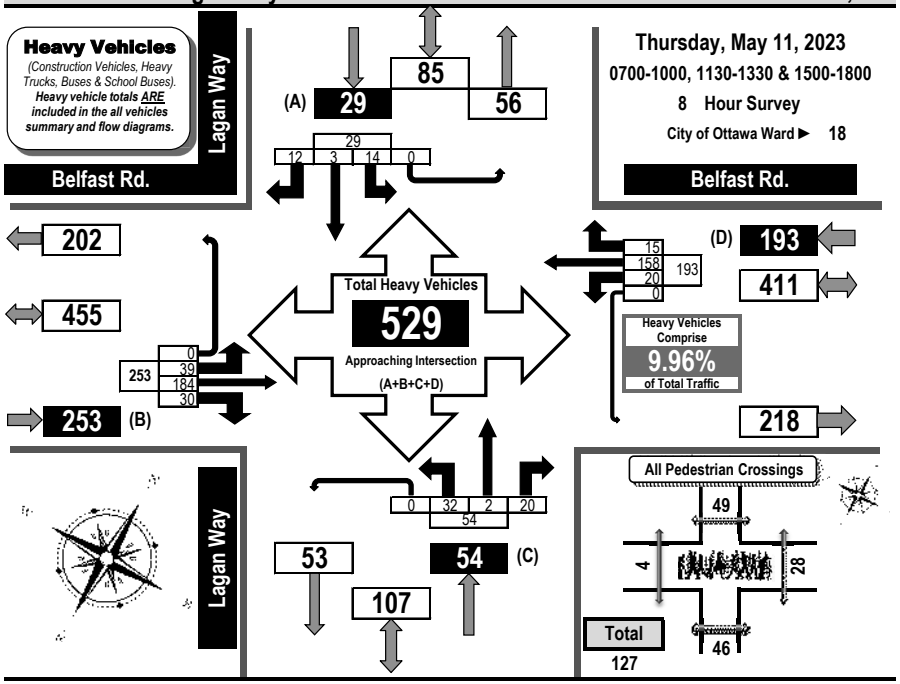
Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4-13)
Flow Diagram

Belfast Road & Lagan Way — **Ottawa, ON**

Heavy Vehicles
(Construction Vehicles, Heavy Trucks, Buses & School Buses).
Heavy vehicle totals ARE included in the all vehicles summary and flow diagrams.

Thursday, May 11, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 18



	Belfast Rd. Eastbound					Belfast Rd. Westbound					Lagan Way Northbound					Lagan Way Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	2	19	4	0	25	2	30	2	0	34	7	0	3	0	10	2	1	4	0	7	76
0800-0900	2	25	3	0	30	1	34	2	0	37	5	0	6	0	11	0	0	1	0	1	79
0900-1000	10	32	1	0	43	3	33	4	0	40	6	0	5	0	11	3	1	2	0	6	100
1130-1230	3	23	5	0	31	3	20	3	0	26	6	0	2	0	8	3	1	2	0	6	71
1230-1330	1	22	5	0	28	8	12	0	0	20	5	1	2	0	8	1	0	2	0	3	59
1500-1600	4	25	4	0	33	2	15	0	0	17	1	1	2	0	4	0	0	0	0	0	54
1600-1700	14	16	6	0	36	1	10	2	0	13	1	0	0	0	1	3	0	0	0	3	53
1700-1800	3	22	2	0	27	0	4	2	0	6	1	0	0	0	1	2	0	1	0	3	37
Totals	39	184	30	0	253	20	158	15	0	193	32	2	20	0	54	14	3	12	0	29	529

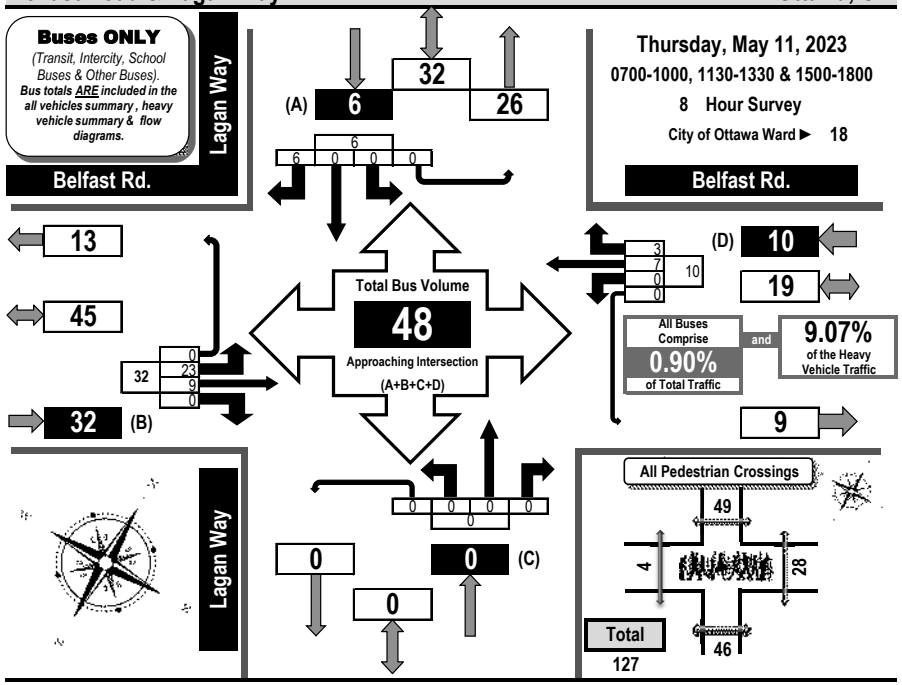
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 9.07% of the heavy vehicle traffic.

Turning Movement Count
All Buses Summary (FHWA Class 4 ONLY)
Flow Diagram

Belfast Road & Lagan Way — **Ottawa, ON**

Buses ONLY
(Transit, Intercity, School Buses & Other Buses).
Bus totals ARE included in the all vehicles summary , heavy vehicle summary & flow diagrams.

Thursday, May 11, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 18



	Belfast Rd. Eastbound					Belfast Rd. Westbound					Lagan Way Northbound					Lagan Way Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	5
0800-0900	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
0900-1000	8	2	0	0	10	0	2	2	0	4	0	0	0	0	0	0	0	0	0	0	14
1130-1230	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1230-1330	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	3
1500-1600	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1600-1700	13	1	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
1700-1800	2	4	0	0	6	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	7
Totals	23	9	0	0	32	0	7	3	0	10	0	0	0	0	0	0	0	6	0	6	48

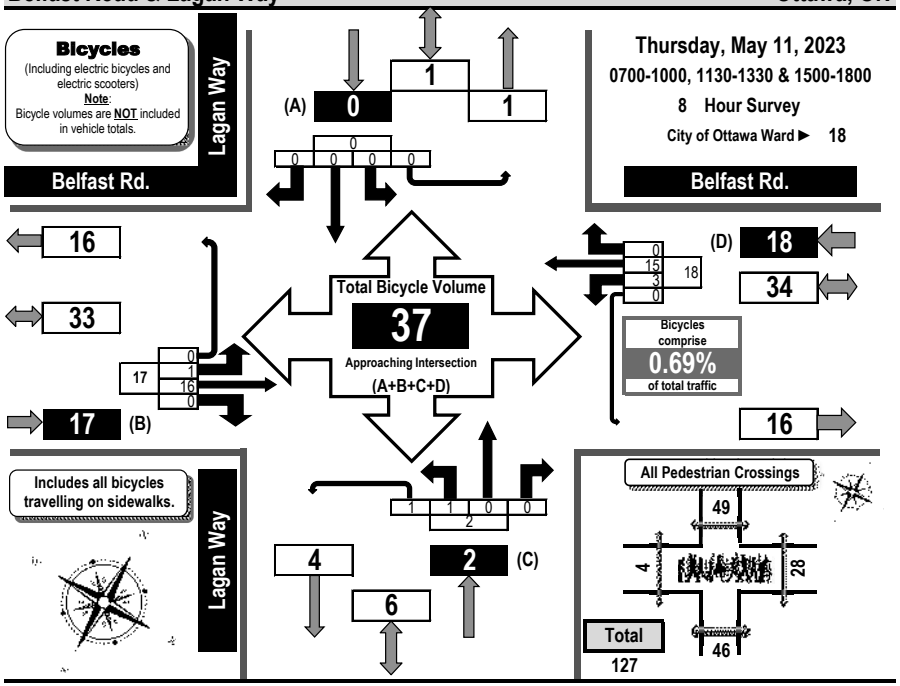
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 9.07% of the heavy vehicle traffic.

Turning Movement Count
Bicycle Summary
Flow Diagram

Belfast Road & Lagan Way — **Ottawa, ON**

Bicycles
(Including electric bicycles and electric scooters)
Note:
Bicycle volumes are **NOT** included in vehicle totals.

Thursday, May 11, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 18



	Belfast Rd. Eastbound					Belfast Rd. Westbound					Lagan Way Northbound					Lagan Way Southbound						
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	1	4	0	0	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	6
0800-0900	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
0900-1000	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
1130-1230	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1230-1330	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	6
1500-1600	0	1	0	0	1	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	5
1600-1700	0	2	0	0	2	2	3	0	0	5	1	0	0	0	1	0	0	0	0	0	8
1700-1800	0	0	0	0	0	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0	3
Totals	1	16	0	0	17	3	15	0	0	18	1	0	0	1	2	0	0	0	0	0	37

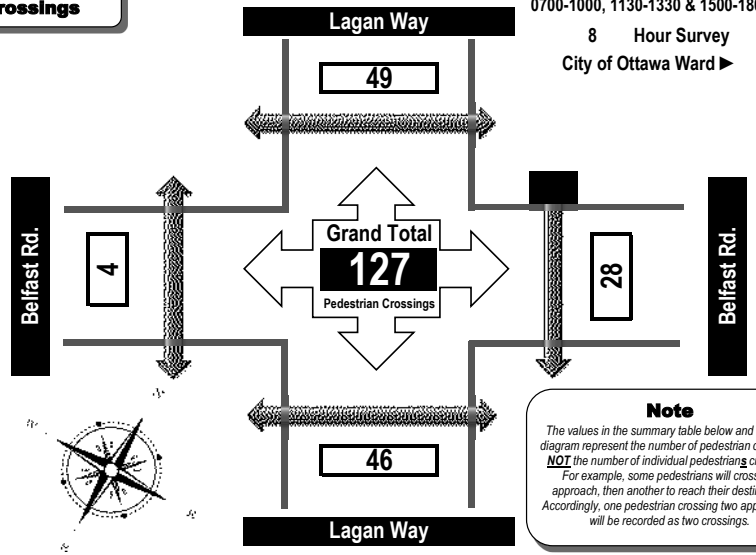
Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 9.07% of the heavy vehicle traffic.

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Belfast Road & Lagan Way — **Ottawa, ON**

Pedestrian Crossings

Thursday, May 11, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 18



Note
*The values in the summary table below and the flow diagram represent the number of pedestrian crossing**s** **NOT** the number of individual pedestrian**s** crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Belfast Rd.	East Side Crossing Belfast Rd.	Street Total	South Side Crossing Lagan Way	North Side Crossing Lagan Way	Street Total	Grand Total
0700-0800	1	5	6	5	6	11	17
0800-0900	0	5	5	11	1	12	17
0900-1000	0	5	5	10	8	18	23
1130-1230	0	0	0	2	9	11	11
1230-1330	0	0	0	3	3	6	6
1500-1600	1	1	2	4	6	10	12
1600-1700	1	9	10	6	10	16	26
1700-1800	1	3	4	5	6	11	15
Totals	4	28	32	46	49	95	127

Comments:
OC Transpo and Para Transpo buses, private buses and school buses comprise 9.07% of the heavy vehicle traffic.

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	15	21	12	20	65	1132	127	1083	62
Future Volume (vph)	15	21	12	20	65	1132	127	1083	62
Lane Group Flow (vph)	17	41	13	133	72	1300	141	1203	69
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	72.0	72.0	18.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	55.4%	55.4%	13.8%	69.2%	69.2%
Maximum Green (s)	33.5	33.5	33.5	33.5	65.8	65.8	13.3	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	4	4	3	3	2	2		7	7
Act Effct Green (s)	14.6	14.6	14.6	14.6	89.8	89.8	104.2	102.7	102.7
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.69	0.69	0.80	0.79	0.79
v/c Ratio	0.21	0.21	0.10	0.53	0.26	0.43	0.44	0.50	0.07
Control Delay	54.3	33.5	48.9	20.2	13.6	10.9	8.3	6.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	33.5	48.9	20.2	13.6	10.9	8.3	6.7	1.6
LOS	D	C	D	C	B	B	A	A	A
Approach Delay		39.6		22.8		11.0		6.6	
Approach LOS		D		C		B		A	
Queue Length 50th (m)	4.2	5.6	3.2	5.4	5.3	41.4	5.0	36.6	0.0
Queue Length 95th (m)	10.0	13.8	8.1	21.0	22.7	93.5	20.0	103.9	5.0
Internal Link Dist (m)		396.6		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	188	416	284	435	281	2989	373	2429	1019
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.10	0.05	0.31	0.26	0.43	0.38	0.50	0.07

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 10.0 — Intersection LOS: B
Intersection Capacity Utilization 66.3% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: St-Laurent & Tremblay

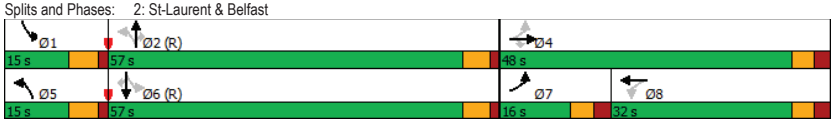
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	47	63	84	43	140	116	809	63	83	764	190
Future Volume (vph)	47	63	84	43	140	116	809	63	83	764	190
Lane Group Flow (vph)	52	70	93	48	260	129	899	70	92	849	211
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	16.0	48.0	48.0	32.0	32.0	15.0	57.0	57.0	15.0	57.0	57.0
Total Split (%)	13.3%	40.0%	40.0%	26.7%	26.7%	12.5%	47.5%	47.5%	12.5%	47.5%	47.5%
Maximum Green (s)	10.2	42.2	42.2	26.2	26.2	9.3	51.4	51.4	9.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		2	2	1	1		0	0		3	3
Act Effct Green (s)	35.6	35.6	35.6	23.4	23.4	67.8	59.1	59.1	66.6	58.5	58.5
Actuated g/C Ratio	0.30	0.30	0.30	0.20	0.20	0.56	0.49	0.49	0.56	0.49	0.49
v/c Ratio	0.26	0.14	0.21	0.23	0.87	0.42	0.57	0.09	0.33	0.56	0.31
Control Delay	30.4	28.6	6.6	42.3	69.7	16.5	25.4	0.2	15.5	25.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	28.6	6.6	42.3	69.7	16.5	25.4	0.2	15.5	25.5	4.1
LOS	C	C	A	D	E	B	C	A	B	C	A
Approach Delay		19.5			65.4		22.7			20.8	
Approach LOS		B			E		C			C	
Queue Length 50th (m)	8.3	11.2	0.0	9.4	52.8	13.9	85.1	0.0	9.7	81.1	0.0
Queue Length 95th (m)	17.1	21.5	11.1	20.3	#92.9	24.2	109.2	0.1	18.1	102.8	14.0
Internal Link Dist (m)		518.7			103.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	215	596	500	231	330	317	1571	760	289	1513	687
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.12	0.19	0.21	0.79	0.41	0.57	0.09	0.32	0.56	0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 26.4 Intersection LOS: C
Intersection Capacity Utilization 69.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



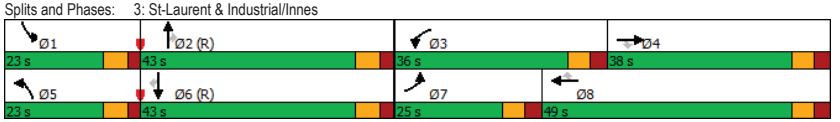
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	177	118	611	741	241	177	983	330	116	744	142
Future Volume (vph)	67	177	118	611	741	241	177	983	330	116	744	142
Lane Group Flow (vph)	74	197	131	679	823	268	197	1092	367	129	827	158
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	25.0	38.0	38.0	36.0	49.0	49.0	23.0	43.0	43.0	23.0	43.0	43.0
Total Split (%)	17.9%	27.1%	27.1%	25.7%	35.0%	35.0%	16.4%	30.7%	30.7%	16.4%	30.7%	30.7%
Maximum Green (s)	18.4	31.4	31.4	29.4	42.4	42.4	16.7	36.4	36.4	16.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		6	6		2	2		4	4		7	7
Act Effct Green (s)	8.9	22.0	22.0	29.4	45.1	45.1	14.0	51.4	51.4	11.1	48.5	48.5
Actuated g/C Ratio	0.06	0.16	0.16	0.21	0.32	0.32	0.10	0.37	0.37	0.08	0.35	0.35
v/c Ratio	0.39	0.42	0.36	1.01	0.81	0.44	0.65	0.95	0.51	0.52	0.74	0.29
Control Delay	68.6	54.5	4.4	90.6	50.6	6.3	70.9	60.4	9.8	69.1	46.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	54.5	4.4	90.6	50.6	6.3	70.9	60.4	9.8	69.1	46.6	5.0
LOS	E	D	A	F	D	A	E	E	A	E	D	A
Approach Delay		40.8			59.3			50.4			43.3	
Approach LOS		D			E			D			D	
Queue Length 50th (m)	10.3	26.1	0.0	~98.7	112.4	1.0	27.4	155.0	9.7	17.9	107.0	0.0
Queue Length 95th (m)	18.2	35.6	5.1	#138.6	128.7	20.5	39.8	#241.3	42.7	28.0	#163.6	12.3
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	391	665	444	675	1028	614	359	1149	713	372	1115	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.30	0.30	1.01	0.80	0.44	0.55	0.95	0.51	0.35	0.74	0.29

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 51.2 — Intersection LOS: D
Intersection Capacity Utilization 84.7% — ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	272	15	13	225	26	11	1	15	15	4	17
Future Vol, veh/h	51	272	15	13	225	26	11	1	15	15	4	17
Conflicting Peds, #/hr	8	0	10	10	0	8	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	20	12	7	23	15	15	55	2	33	20	25	12
Mvmt Flow	57	302	17	14	250	29	12	1	17	17	4	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	287	0	0	329	0	0	739	750	326	740	744	273
Stage 1	-	-	-	-	-	-	435	435	-	301	301	-
Stage 2	-	-	-	-	-	-	304	315	-	439	443	-
Critical Hdwy	4.3	-	-	4.33	-	-	7.65	6.52	6.53	7.3	6.75	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Follow-up Hdwy	2.38	-	-	2.407	-	-	3.995	4.018	3.597	3.68	4.225	3.408
Pot Cap-1 Maneuver	1179	-	-	1122	-	-	275	340	649	311	317	742
Stage 1	-	-	-	-	-	-	509	580	-	671	625	-
Stage 2	-	-	-	-	-	-	605	656	-	563	539	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1172	-	-	1113	-	-	248	311	641	282	290	737
Mov Cap-2 Maneuver	-	-	-	-	-	-	248	311	-	282	290	-
Stage 1	-	-	-	-	-	-	475	541	-	627	612	-
Stage 2	-	-	-	-	-	-	576	642	-	513	503	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	15.3	15
HCM LOS			C	C

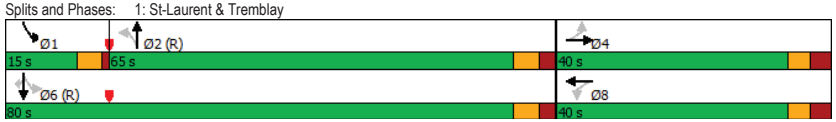
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	380	1172	-	-	1113	-	-	400
HCM Lane V/C Ratio	0.079	0.048	-	-	0.013	-	-	0.1
HCM Control Delay (s)	15.3	8.2	0	-	8.3	0	-	15
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	47	38	23	21	26	1305	51	954	38
Future Volume (vph)	47	38	23	21	26	1305	51	954	38
Lane Group Flow (vph)	52	105	26	223	29	1463	57	1060	42
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	65.0	65.0	15.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	54.2%	54.2%	12.5%	66.7%	66.7%
Maximum Green (s)	33.5	33.5	33.5	33.5	58.8	58.8	10.3	73.8	73.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	2	2	2	2	12	12		8	8
Act Effct Green (s)	16.6	16.6	16.6	16.6	81.4	81.4	92.2	90.7	90.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.68	0.68	0.77	0.76	0.76
v/c Ratio	0.83	0.40	0.16	0.62	0.09	0.45	0.22	0.44	0.04
Control Delay	118.0	23.8	43.4	18.6	14.5	12.2	6.9	7.1	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	118.0	23.8	43.4	18.6	14.5	12.2	6.9	7.1	2.3
LOS	F	C	D	B	B	B	A	A	A
Approach Delay		55.0		21.2		12.2		6.9	
Approach LOS		E		C		B		A	
Queue Length 50th (m)	12.4	9.4	5.6	9.8	1.5	37.0	2.3	35.8	0.0
Queue Length 95th (m)	23.5	21.7	11.9	29.0	m5.8	m94.0	9.5	84.7	4.1
Internal Link Dist (m)		390.4		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	129	469	335	544	312	3229	306	2412	987
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.22	0.08	0.41	0.09	0.45	0.19	0.44	0.04

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 13.1 — Intersection LOS: B
Intersection Capacity Utilization 79.6% — ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: St-Laurent & Tremblay



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	195	162	215	101	91	104	934	82	93	746	133
Future Volume (vph)	195	162	215	101	91	104	934	82	93	746	133
Lane Group Flow (vph)	217	180	239	112	267	116	1038	91	103	829	148
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	14.0	57.0	57.0	14.0	57.0	57.0
Total Split (%)	12.5%	40.8%	40.8%	28.3%	28.3%	11.7%	47.5%	47.5%	11.7%	47.5%	47.5%
Maximum Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		9	9	5	5		1	1		15	15
Act Effct Green (s)	36.2	36.2	36.2	21.2	21.2	66.6	58.2	58.2	66.5	58.2	58.2
Actuated g/C Ratio	0.30	0.30	0.30	0.18	0.18	0.56	0.48	0.48	0.55	0.48	0.48
v/c Ratio	1.07	0.38	0.41	0.61	0.83	0.36	0.65	0.14	0.44	0.52	0.19
Control Delay	117.7	34.2	7.2	58.6	56.2	15.0	27.0	1.7	21.5	19.2	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.7	34.2	7.2	58.6	56.2	15.0	27.0	1.7	21.5	19.2	2.3
LOS	F	C	A	E	E	B	C	A	C	B	A
Approach Delay		52.5			56.9		24.0			17.1	
Approach LOS		D			E		C			B	
Queue Length 50th (m)	~44.0	33.1	3.6	24.4	46.9	11.2	96.3	0.0	9.1	44.3	0.0
Queue Length 95th (m)	#85.0	48.8	20.5	41.0	73.0	22.4	130.7	3.9	25.8	52.8	5.9
Internal Link Dist (m)		518.7			103.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	203	572	658	244	408	329	1593	665	238	1591	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.31	0.36	0.46	0.65	0.35	0.65	0.14	0.43	0.52	0.19

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 30.9 Intersection LOS: C
Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	550	324	398	274	135	174	852	507	130	814	124
Future Volume (vph)	135	550	324	398	274	135	174	852	507	130	814	124
Lane Group Flow (vph)	150	611	360	442	304	150	193	947	563	144	904	138
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	19.0	38.0	38.0	41.0	60.0	60.0	28.0	43.0	43.0	28.0	43.0	43.0
Total Split (%)	12.7%	25.3%	25.3%	27.3%	40.0%	40.0%	18.7%	28.7%	28.7%	18.7%	28.7%	28.7%
Maximum Green (s)	12.4	31.4	31.4	34.4	53.4	53.4	21.7	36.4	36.4	21.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		5	5		6	6		9	9		12	12
Act Effct Green (s)	10.8	29.1	29.1	23.0	41.4	41.4	13.4	38.5	38.5	11.6	36.7	36.7
Actuated g/C Ratio	0.08	0.23	0.23	0.18	0.32	0.32	0.10	0.30	0.30	0.09	0.29	0.29
v/c Ratio	0.56	0.83	0.64	0.77	0.30	0.26	0.59	0.97	0.75	0.53	0.97	0.26
Control Delay	66.6	58.7	14.6	60.2	33.7	5.9	64.0	68.2	15.5	64.5	70.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	58.7	14.6	60.2	33.7	5.9	64.0	68.2	15.5	64.5	70.2	4.1
LOS	E	E	B	E	C	A	E	E	B	E	E	A
Approach Delay		45.6			42.1			50.3			61.8	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	19.3	77.7	11.3	56.4	30.3	0.0	24.8	127.8	20.8	18.5	122.4	0.0
Queue Length 95th (m)	32.9	#112.0	46.9	77.6	44.5	14.7	39.3	#197.5	76.5	31.1	#192.7	9.7
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	312	803	582	867	1335	695	531	974	752	516	928	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.76	0.62	0.51	0.23	0.22	0.36	0.97	0.75	0.28	0.97	0.26

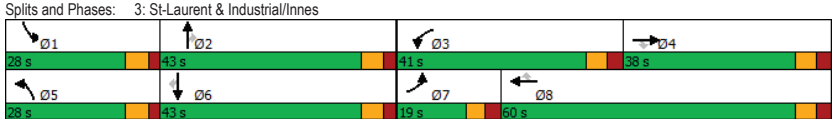
Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 128.5
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 50.5	Intersection LOS: D
Intersection Capacity Utilization 82.5%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	265	50	19	310	26	26	5	16	30	0	39
Future Vol, veh/h	46	265	50	19	310	26	26	5	16	30	0	39
Conflicting Peds, #/hr	12	0	5	5	0	12	1	0	6	6	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	30	6	12	5	3	8	4	2	2	10	2	2
Mvmt Flow	51	294	56	21	344	29	29	6	18	33	0	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	0	355	0	0	852	856	333	855	870	372
Stage 1	-	-	-	-	-	-	429	429	-	413	413	-
Stage 2	-	-	-	-	-	-	423	427	-	442	457	-
Critical Hdwy	4.4	-	-	4.15	-	-	7.14	6.52	6.22	7.2	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Follow-up Hdwy	2.47	-	-	2.245	-	-	3.536	4.018	3.318	3.59	4.018	3.318
Pot Cap-1 Maneuver	1036	-	-	1187	-	-	277	295	709	270	290	674
Stage 1	-	-	-	-	-	-	600	584	-	601	594	-
Stage 2	-	-	-	-	-	-	605	585	-	579	568	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1026	-	-	1182	-	-	241	267	703	239	262	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	267	-	239	262	-
Stage 1	-	-	-	-	-	-	560	545	-	558	575	-
Stage 2	-	-	-	-	-	-	552	566	-	522	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	18.7	17.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	315	1026	-	-	1182	-	-	375
HCM Lane V/C Ratio	0.166	0.05	-	-	0.018	-	-	0.204
HCM Control Delay (s)	18.7	8.7	0	-	8.1	0	-	17.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0.1	-	-	0.8

Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
1/2/2018	2018	13:33	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
1/4/2018	2018	12:22	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
1/6/2018	2018	10:20	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	06 - Ice	0	0	0	0
1/7/2018	2018	14:56	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
3/3/2018	2018	20:09	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
3/23/2018	2018	13:45	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
5/15/2018	2018	15:56	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
5/18/2018	2018	12:37	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
5/23/2018	2018	13:25	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
5/31/2018	2018	17:12	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
6/18/2018	2018	9:15	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
6/20/2018	2018	18:10	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
7/4/2018	2018	18:48	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/9/2018	2018	18:47	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/18/2018	2018	18:19	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
8/23/2018	2018	15:45	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
10/17/2018	2018	7:37	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
11/5/2018	2018	7:11	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	03 - Dawn	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
11/8/2018	2018	9:25	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
11/20/2018	2018	8:37	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
11/20/2018	2018	6:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	03 - Loose snow	0	0	0	0
12/12/2018	2018	9:32	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	02 - Wet	0	0	0	0
12/17/2018	2018	7:40	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
1/14/2019	2019	10:24	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/1/2019	2019	15:20	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
2/2/2019	2019	15:09	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	04 - Slush	0	0	0	0
3/10/2019	2019	19:29	BELFAST RD @ ST. LAURENT BLVD (0007658)	02 - Rain	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
3/15/2019	2019	14:03	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
3/19/2019	2019	12:04	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
5/27/2019	2019	14:14	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
8/30/2019	2019	14:22	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
9/21/2019	2019	17:25	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
9/25/2019	2019	15:24	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
10/3/2019	2019	11:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
10/5/2019	2019	23:15	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
10/16/2019	2019	7:50	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
12/18/2019	2019	18:22	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
12/20/2019	2019	11:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	06 - Ice	0	0	0	0
1/20/2020	2020	9:34	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	04 - Slush	0	0	0	0
1/23/2020	2020	11:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
2/8/2020	2020	15:15	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/27/2020	2020	8:05	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	03 - Loose snow	0	0	0	0
3/7/2020	2020	15:55	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
4/1/2020	2020	6:05	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
4/30/2020	2020	18:10	BELFAST RD @ ST. LAURENT BLVD (0007658)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
8/19/2020	2020	11:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
9/8/2020	2020	12:45	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
9/13/2020	2020	6:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
9/22/2020	2020	18:06	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
10/18/2020	2020	13:46	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
10/26/2020	2020	9:35	BELFAST RD @ ST. LAURENT BLVD (0007658)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	1
11/20/2020	2020	15:19	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
1/13/2021	2021	5:29	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
2/14/2021	2021	17:20	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2/24/2021	2021	17:00	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
5/27/2021	2021	11:38	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
6/12/2021	2021	12:15	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
6/15/2021	2021	15:54	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
7/22/2021	2021	19:02	BELFAST RD @ ST. LAURENT BLVD (0007658)	02 - Rain	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	02 - Wet	0	0	0	0
8/4/2021	2021	16:23	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
9/21/2021	2021	7:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
10/6/2021	2021	18:40	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	1
11/9/2021	2021	18:20	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
11/22/2021	2021	21:00	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
11/27/2021	2021	17:00	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
12/4/2021	2021	15:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	05 - Packed snow	0	0	0	0
12/6/2021	2021	6:03	BELFAST RD @ ST. LAURENT BLVD (0007658)	04 - Freezing Rain	07 - Dark	01 - Traffic signal	0	03 - P.D. only	02 - Angle	04 - Slush	0	0	0	0
12/7/2021	2021	9:34	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
12/15/2021	2021	19:14	BELFAST RD @ ST. LAURENT BLVD (0007658)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
12/17/2021	2021	22:15	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
1/18/2022	2022	16:06	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	04 - Slush	0	0	0	0
2/6/2022	2022	0:46	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/7/2022	2022	15:16	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
10/23/2022	2022	0:30	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
11/1/2022	2022	13:00	BELFAST RD @ ST. LAURENT BLVD (0007658)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	01 - Dry	0	0	0	0
9/21/2018	2018	14:47	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
1/18/2019	2019	11:53	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	01 - Approaching	02 - Wet	0	0	0	0
6/11/2019	2019	17:30	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
9/21/2019	2019	14:07	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	99 - Other	01 - Dry	0	0	0	0
12/20/2019	2019	13:35	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	07 - SMV other	04 - Slush	0	0	0	0
2/17/2021	2021	16:19	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	04 - Slush	0	0	0	0
4/29/2022	2022	17:52	BELFAST RD @ TRIOLE ST (0008405)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
12/3/2019	2019	8:00	BELFAST RD btwn ST. LAURENT BLVD & TRIOLE ST (__3ZA791)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
1/21/2021	2021	13:00	BELFAST RD btwn ST. LAURENT BLVD & TRIOLE ST (__3ZA791)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	03 - Loose snow	0	0	0	0
9/23/2021	2021	17:10	BELFAST RD btwn ST. LAURENT BLVD & TRIOLE ST (__3ZA791)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
3/14/2018	2018	15:01	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
4/20/2018	2018	15:07	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
5/24/2018	2018	12:03	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
11/3/2018	2018	18:58	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	02 - Rain	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
1/8/2019	2019	16:58	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
12/20/2019	2019	16:45	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2/21/2020	2020	9:55	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2/28/2020	2020	8:04	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
10/23/2020	2020	16:51	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2/24/2021	2021	17:00	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
9/10/2021	2021	21:13	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
10/30/2021	2021	13:20	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
12/10/2021	2021	12:49	ST. LAURENT BLVD btwn BELFAST RD & INDUSTRIAL AVE (__3ZA3R8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
3/7/2018	2018	10:54	TRIOLE ST btwn BELFAST RD & END (__3ZA79Y)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	1	0	0
8/23/2019	2019	20:10	TRIOLE ST btwn BELFAST RD & END (__3ZA79Y)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
8/21/2020	2020	8:30	TRIOLE ST btwn BELFAST RD & END (__3ZA79Y)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0

Appendix E

TDM Checklist

CGH TRANSPORTATION

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		1. TDM PROGRAM MANAGEMENT	
		1.1 Program coordinator	
BASIC	★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	☐
		1.2 Travel surveys	
BETTER		1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2. WALKING AND CYCLING	
		2.1 Information on walking/cycling routes & destinations	
BASIC		2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances	☑
		2.2 Bicycle skills training	
		Commuter travel	
BETTER	★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3 Valet bike parking	
		Visitor travel	
BETTER		2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC		3.1.1 Display relevant transit schedules and route maps at entrances	☑
BASIC		3.1.2 Provide online links to OC Transpo and STO information	☐
BETTER		3.1.3 Provide real-time arrival information display at entrances	☐
		3.2 Transit fare incentives	
		Commuter travel	
BETTER		3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER	★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	☐
		Visitor travel	
BETTER		3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3 Enhanced public transit service	
		Commuter travel	
BETTER		3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER		3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4 Private transit service	
		Commuter travel	
BETTER		3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER		3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		4.	**RIDESHARING**	
		4.1	**Ridematching service**	
			Commuter travel	
BASIC	★	4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2	**Carpool parking price incentives**	
			Commuter travel	
BETTER		4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3	**Vanpool service**	
			Commuter travel	
BETTER		4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5.	**CARSHARING & BIKESHARING**	
		5.1	**Bikeshare stations & memberships**	
BETTER		5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
			Commuter travel	
BETTER		5.1.2	Provide employees with bikeshare memberships for local business travel	☐
		5.2	**Carshare vehicles & memberships**	
			Commuter travel	
BETTER		5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER		5.2.2	Provide employees with carshare memberships for local business travel	☐
		6.	**PARKING**	
		6.1	**Priced parking**	
			Commuter travel	
BASIC	★	6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC		6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☐
			Visitor travel	
BETTER		6.1.3	Charge for short-term parking (hourly)	☐

TDM Measures Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7.	**TDM MARKETING & COMMUNICATIONS**	
		7.1	**Multimodal travel information**	
			Commuter travel	
BASIC	★	7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☑
			Visitor travel	
BETTER	★	7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☐
		7.2	**Personalized trip planning**	
			Commuter travel	
BETTER	★	7.2.1	Offer personalized trip planning to new/relocating employees	☐
		7.3	**Promotions**	
			Commuter travel	
BETTER		7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8.	**OTHER INCENTIVES & AMENITIES**	
		8.1	**Emergency ride home**	
			Commuter travel	
BETTER	★	8.1.1	Provide emergency ride home service to non-driving commuters	☐
		8.2	**Alternative work arrangements**	
			Commuter travel	
BASIC	★	8.2.1	Encourage flexible work hours	☐
BETTER		8.2.2	Encourage compressed workweeks	☐
BETTER	★	8.2.3	Encourage telework	☐
		8.3	**Local business travel options**	
			Commuter travel	
BASIC	★	8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4	**Commuter incentives**	
			Commuter travel	
BETTER		8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5	**On-site amenities**	
			Commuter travel	
BETTER		8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

		TDM measures: *Residential developments*	Check if proposed & add descriptions
	1.	**TDM PROGRAM MANAGEMENT**	
	1.1	**Program coordinator**	
BASIC ★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
	1.2	**Travel surveys**	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
	2.	**WALKING AND CYCLING**	
	2.1	**Information on walking/cycling routes & destinations**	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☑
	2.2	**Bicycle skills training**	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

TDM Measures Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

		TDM measures: *Residential developments*	Check if proposed & add descriptions
	3.	**TRANSIT**	
	3.1	**Transit information**	
BASIC	3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☑
BETTER	3.1.2	Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
	3.2	**Transit fare incentives**	
BASIC ★	3.2.1	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☑
BETTER	3.2.2	Offer at least one year of free monthly transit passes on residence purchase/move-in	☐
	3.3	**Enhanced public transit service**	
BETTER ★	3.3.1	Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
	3.4	**Private transit service**	
BETTER	3.4.1	Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
	4.	**CARSHARING & BIKESHARING**	
	4.1	**Bikeshare stations & memberships**	
BETTER	4.1.1	Contract with provider to install on-site bikeshare station *(multi-family)*	☐
BETTER	4.1.2	Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
	4.2	**Carshare vehicles & memberships**	
BETTER	4.2.1	Contract with provider to install on-site carshare vehicles and promote their use by residents	☐
BETTER	4.2.2	Provide residents with carshare memberships, either free or subsidized	☐
	5.	**PARKING**	
	5.1	**Priced parking**	
BASIC ★	5.1.1	Unbundle parking cost from purchase price *(condominium)*	☑
BASIC ★	5.1.2	Unbundle parking cost from monthly rent *(multi-family)*	☑

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☑
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☐
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☐
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☐
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.4	Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.5	Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☐
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☐
BASIC	1.2.8	Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☐
BASIC	1.3.2	Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☑
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☑
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☐
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

TDM-Supportive Development Design and Infrastructure Checklist:
Residential Developments (multi-family or condominium)

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☐
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.4	Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.5	Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☐
BASIC	1.2.8	Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☐
BASIC	1.3.2	Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☐

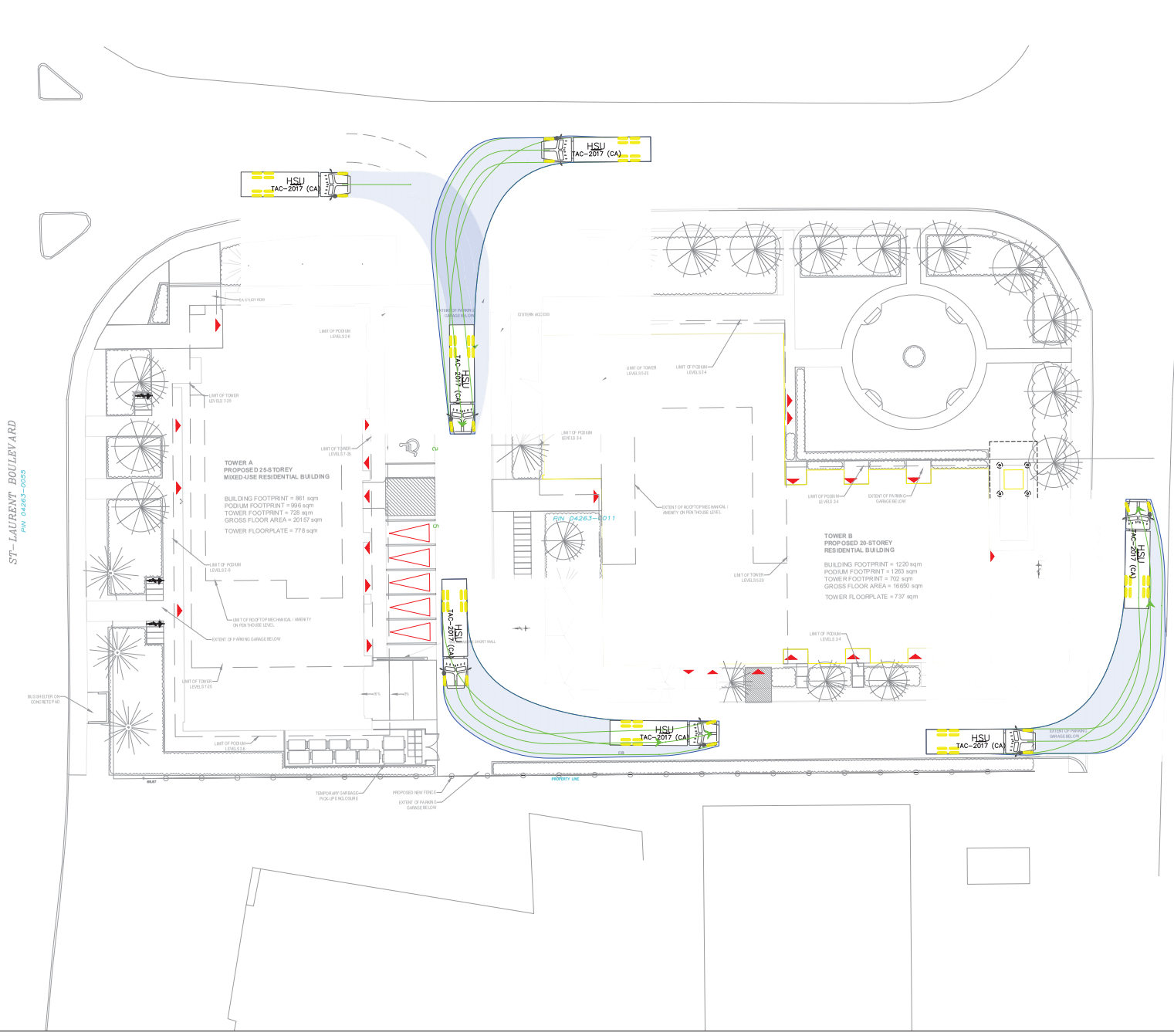
		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☑
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐
	2.3	**Bicycle repair station**	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☑
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☐

Appendix F

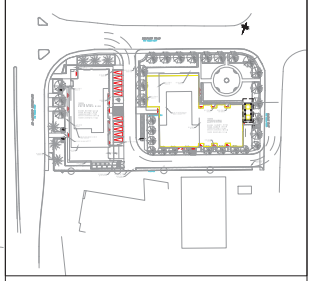
Turning Templates

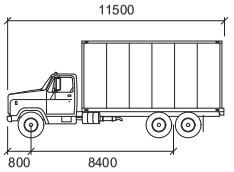
CGH TRANSPORTATION



Notes:

Key Map:





HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review	AN	2024-06-07

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: KTS

ARCHITECT:

SITE: 1531 St Laurent

TITLE: Turning Movement Analysis
HSU Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-06-07	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-053	001	01

Appendix G

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**2023-053**
Scenario	**Existing/Future**	**Date**	**2023-05-19**
Comments			

SEGMENTS			St-Laurent	Belfast	Lagan	Lagan
			Ex/Fut	Ex/Fut	Ex	Fut
Pedestrian	Sidewalk Width Boulevard Width	-	≥ 2 m < 0.5	≥ 2 m < 0.5	no sidewalk n/a	≥ 2 m < 0.5
	Avg Daily Curb Lane Traffic Volume		≤ 3000	> 3000	≤ 3000	≤ 3000
	Operating Speed On-Street Parking		> 50 to 60 km/h no	> 50 to 60 km/h no	> 30 to 50 km/h yes	> 30 to 50 km/h no
	Exposure to Traffic PLoS		**C**	**E**	**F**	**B**
	Effective Sidewalk Width					
	Pedestrian Volume					
	Crowding PLoS		-	-	-	-
	Level of Service		**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Number of Travel Lanes		4-5 lanes total	2-3 lanes total	≤ 2 (no centreline)	≤ 2 (no centreline)
	Operating Speed		≥ 60 km/h	≥ 60 km/h	≥ 50 to 60 km/h	≥ 50 to 60 km/h
	# of Lanes & Operating Speed LoS		**F**	**F**	**D**	**D**
	Bike Lane (+ Parking Lane) Width					
	Bike Lane Width LoS		-	-	-	-
	Bike Lane Blockages					
	Blockage LoS		-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h	≤ 40 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**A**	**A**
	Level of Service		**F**	**F**	**D**	**D**
Transit	Facility Type	**D**	Mixed Traffic			
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8			
	Level of Service		**D**	**-**	**-**	**-**
Truck	Truck Lane Width	**B**	> 3.7 m	> 3.7 m		
	Travel Lanes per Direction		> 1	1		
	Level of Service		**A**	**B**	**-**	**-**

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation**	**Project**	**2023-053**
Scenario	**Existing/Future**	**Date**	**2023-05-19**
Comments			

INTERSECTIONS		St-Laurent Boulevard at Tremblay Road				St-Laurent Boulevard at Belfast Rd				St-Laurent Blvd at Industrial Ave/Innes Rd			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	9	8	6	8	6	6	3	3	8	9	7	8
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Protected/ Permissive	Permissive	Protected/ Permissive	Permissive	Protected/ Permissive	Protected/ Permissive	Protected	Protected	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited	RTOR prohibited
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conventional with Receiving Lane	Smart Channel	Smart Channel	Smart Channel	Smart Channel
	Corner Radius	10-15m	5-10m	15-25m	10-15m	10-15m	10-15m	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**-29**	**-11**	**18**	**-12**	**27**	**27**	**75**	**72**	**3**	**-14**	**19**	**3**
	Ped. Exposure to Traffic LoS	**F**	**F**	**F**	**F**	**F**	**F**	**B**	**C**	**F**	**F**	**F**	**F**
	Cycle Length	120	120	120	120								
	Effective Walk Time	37	52	9	9								
	Average Pedestrian Delay	**29**	**19**	**51**	**51**								
	Pedestrian Delay LoS	**C**	**B**	**E**	**E**	-	-	-	-	-	-	-	-
	Level of Service	**F**	**F**	**F**	**F**	**F**	**F**	**B**	**C**	**F**	**F**	**F**	**F**
		F				**F**				**F**			
Approach From		**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic		Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	> 50 m	≤ 50 m			> 50 m	> 50 m		> 50 m	> 50 m	Not Applicable	Not Applicable	Not Applicable
	Right Turning Speed	≤ 25 km/h	>25 km/h			>25 km/h	>25 km/h		>25 km/h	≤ 25 km/h	Not Applicable	Not Applicable	Not Applicable
	Cyclist relative to RT motorists	**F**	**E**	**-**	**-**	**F**	**F**	**-**	**F**	**F**	**Not Applicable**	**Not Applicable**	**Not Applicable**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**-**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Separated**
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	2-stage, LT box	2-stage, LT box	2-stage, LT box
	Operating Speed	≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	**F**	**F**	**E**	**E**	**F**	**F**	**C**	**C**	**F**	**A**	**A**	**A**
	Level of Service	**F**	**F**	**E**	**E**	**F**	**F**	**-**	**F**	**F**	**A**	**A**	**A**
		F				**F**				**F**			
Transit	Average Signal Delay	≤ 20 sec	≤ 20 sec	> 40 sec	≤ 20 sec	≤ 30 sec	≤ 30 sec		> 40 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec
	Level of Service	**C**	**C**	**F**	**C**	**D**	**D**	**-**	**F**	**F**	**F**	**F**	**F**
		F				**F**				**F**			
Truck	Effective Corner Radius	> 15 m	10 - 15 m	10 - 15 m	> 15 m	> 15 m	> 15 m	10 - 15 m	10 - 15 m	> 15 m	> 15 m	> 15 m	> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	≥ 2	≥ 2	1	≥ 2	1	≥ 2	≥ 2	≥ 2	≥ 2	≥ 2	≥ 2
	Level of Service	**C**	**B**	**B**	**C**	**A**	**C**	**B**	**B**	**A**	**A**	**A**	**A**
		C				**C**				**A**			
Auto	Volume to Capacity Ratio	0.71 - 0.80				0.71 - 0.80				0.91 - 1.00			
	Level of Service	**C**				**C**				**E**			

Appendix H

TRANS Plots

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Coventry Road

2011 Model - Basecase

N/A

User Initials: KN
Plot Prepared: Aug 18, 2022
EMME Scenario: 21713

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

200 400 600 800

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Coventry Road

2031 Model - Basecase

N/A

User Initials: KN
Plot Prepared: Aug 18, 2022
EMME Scenario: 21715

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

200 400 600 800

The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

Appendix I

Background Development Volumes

CGH TRANSPORTATION

Trip Distribution

The projected distribution of site-generated traffic was derived based on existing travel patterns, the site's connections to/from the surrounding road network, and our local area knowledge. (e.g. the location and proximity of other area shopping, communities, recreational opportunities, etc.). For analysis purposes, the following approximate distribution of projected site-generated traffic was assumed:

70%	to/from the west via HWY 417 (via Tremblay);
10%	to/from the east via Tremblay Road;
10%	to/from the north via Belfast Road; and
+ 10%	to/from the south via Belfast Road.
100%	

Trip Assignment

Based on the above assumed distribution, projected 'new' site-generated traffic was assigned to the study area network and is depicted in the following **Figure 12** and **Figure 14** for phase 1 and phase 2, respectively. Similarly, projected 'pass-by' site-generated traffic, which represents existing traffic temporarily diverted to/from the subject site, is depicted in the following **Figure 13** and **Figure 15** for phase 1 and phase 2, respectively.

It should be noted that Avenue J is a private driveway owned by PIPSC (Professional Institute of the Public Service Canada) and there are currently no plans for this to be a connection to/from the subject development.

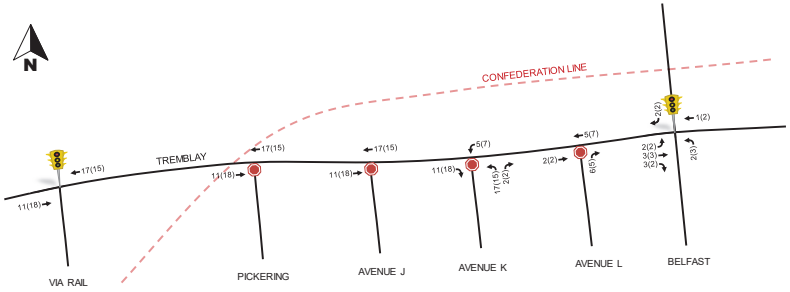


Figure 13: 'New' Projected Site-Generated Traffic - Phase 1

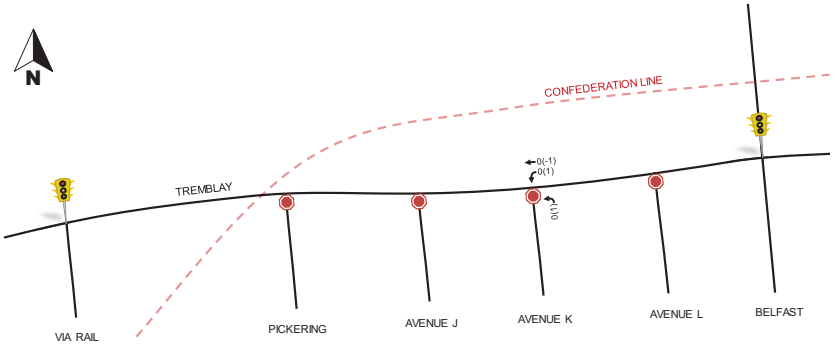


Figure 14: 'Pass-by' Projected Site-Generated Traffic - Phase 1

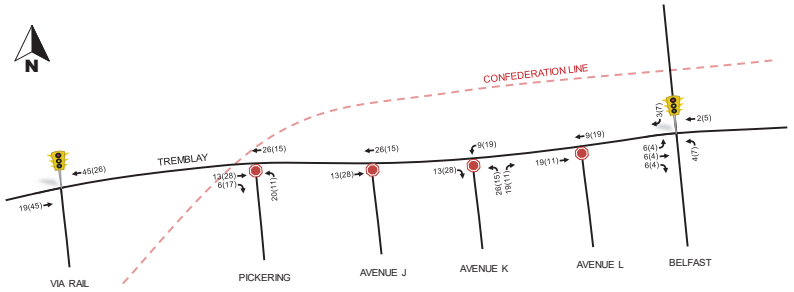


Figure 15: 'New' Projected Site-Generated Traffic - Phase 2

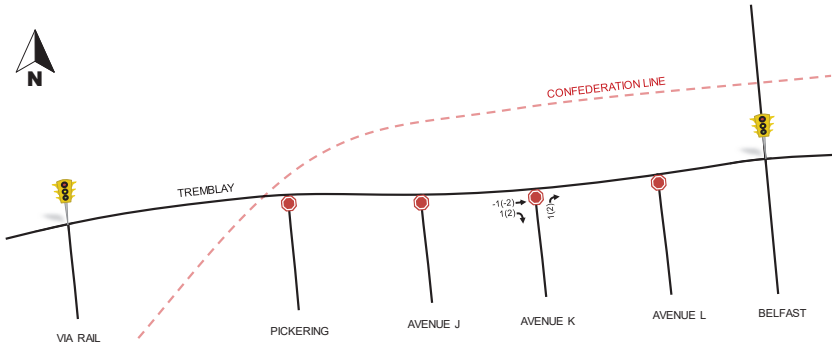


Figure 16: 'Pass-by' Projected Site-Generated Traffic - Phase 2

Given a 0% growth rate for general background traffic and given all area development is assumed to be fully built-out by the horizon year 2025, projected background traffic volumes for the horizon years 2030 and 2035 well be the same as the background traffic volumes for the 2025 horizon year. Therefore, the following **Figure 17** depicts projected background traffic volumes for the 2025 horizon year and beyond.

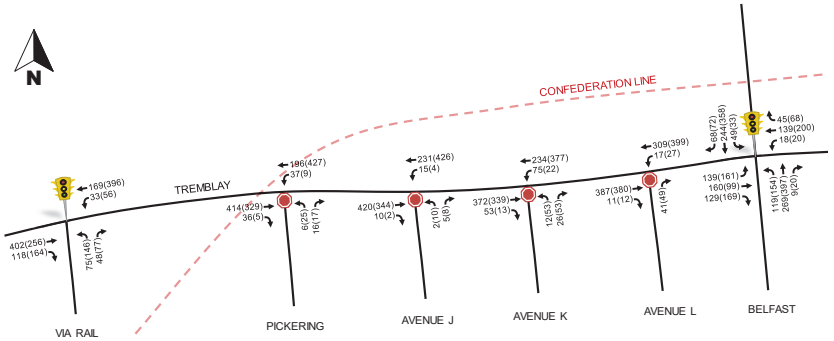


Figure 17: Background Traffic Volumes (2025, 2030, 2035)

3.3 Demand Rationalization

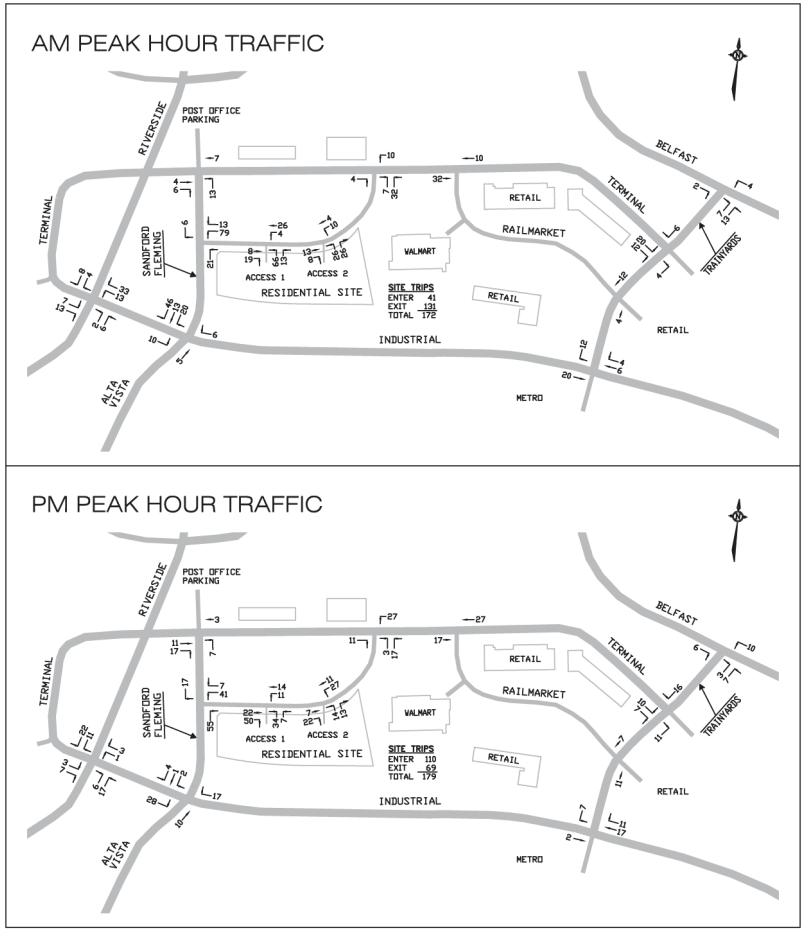
The following section summarizes the vehicular intersection capacity analysis of existing, future background and future total volume scenarios.

Using the intersection capacity analysis software Synchro (v9), study area intersections were assessed in terms of vehicle delay, 95th percentile queues, a volume-to-capacity ratio (v/c) and a corresponding Level of Service (LOS). It should be noted that the overall performance of a signalized intersection is calculated as a weighted v/c ratio and assigned a corresponding LOS, with critical movements assigned a LOS based on their respective v/c ratio. The overall performance of an unsignalized intersection is a LOS output from Synchro, which is based on an Intersection Capacity Utilization (ICU) method, and critical movements are assigned a LOS based on delay.

Existing and Background Conditions

The following **Table 8, Table 9** summarize existing and projected background conditions at study area intersections, in the absence of the proposed development. The objective of this analysis is to determine if network improvements are, or will be required to support background traffic. Detailed Synchro output data for existing and background conditions is provided as **Appendix E**.

FIGURE 4.3
PHASE 1 to 3 – PEAK AM AND PM HOUR SITE GENERATED TRIPS



NOT TO SCALE

proportional assignment to the study area roadways, Figure 18 and Figure 19 illustrate the new site-generated volumes and pass-by volumes, respectively.

Table 14: Trip Assignment

To/From	Via
North	5% Vanier Parkway (N) 5% Lola Street (N) 15% St. Laurent Boulevard (N)
South	5% Belfast Road (S) 5% Riverside Drive (S) 10% St. Laurent Boulevard (S)
East	15% to/from Highway 417/174 (E) 10% Ogilvie Road (E)
West	25% to/from Highway 417 (W) 5% Vanier Parkway (N)
Total	100%

Figure 18: New Site-Generated Auto Volumes

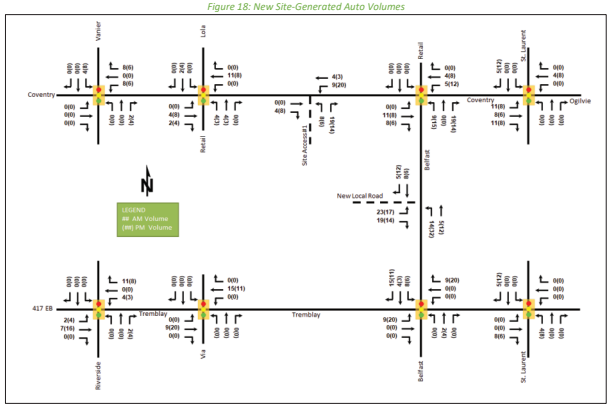


Figure 6: Net Assignment of Trips with Redevelopment

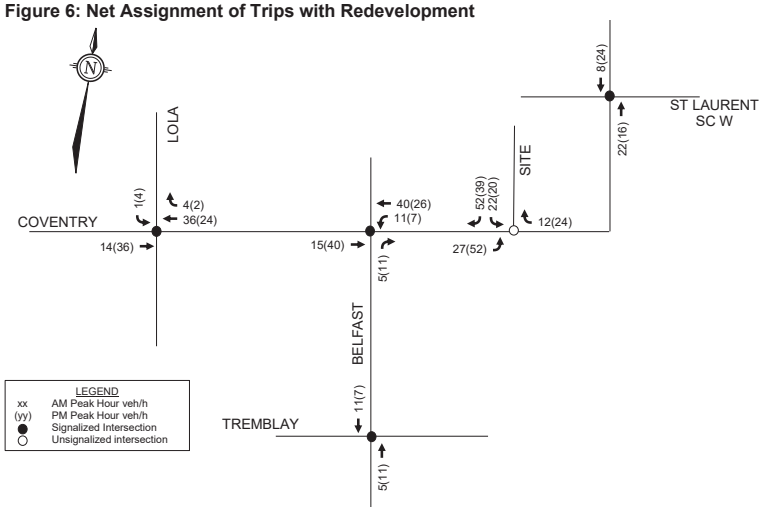
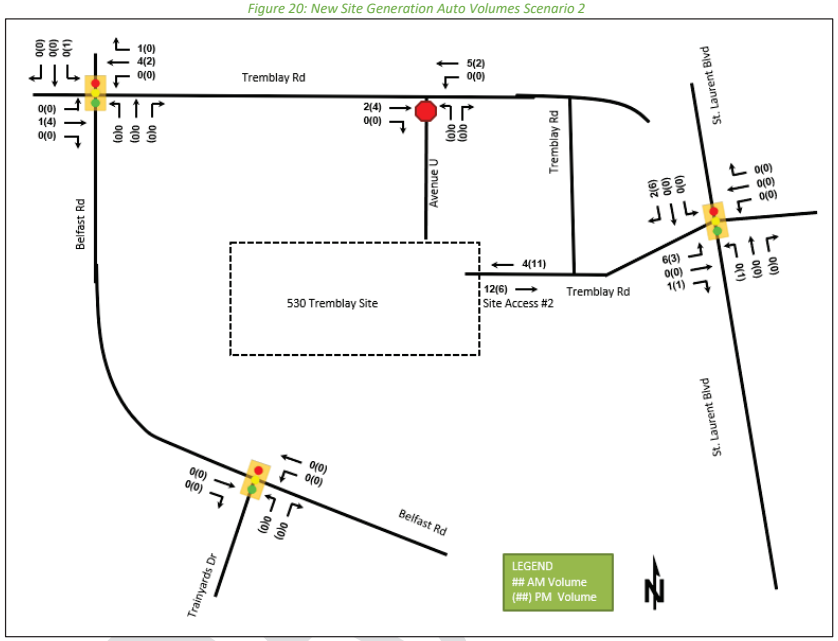
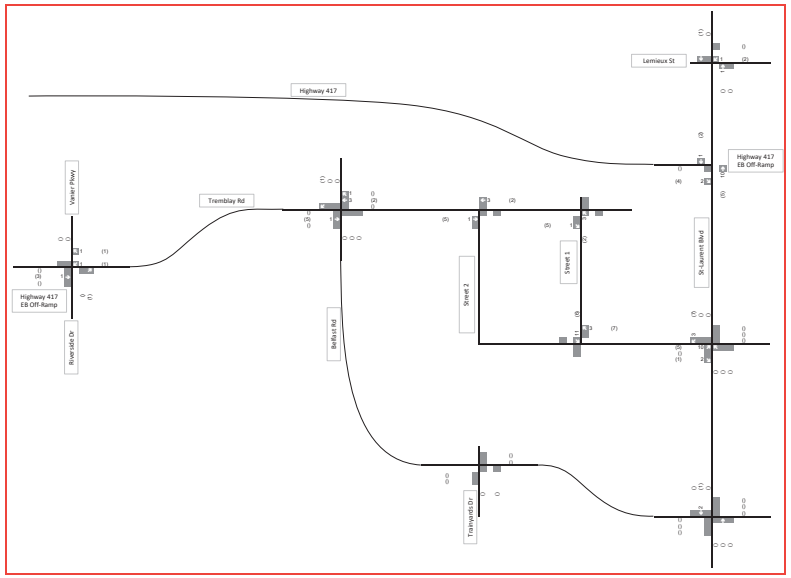


Figure 20: New Site Generation Auto Volumes Scenario 2

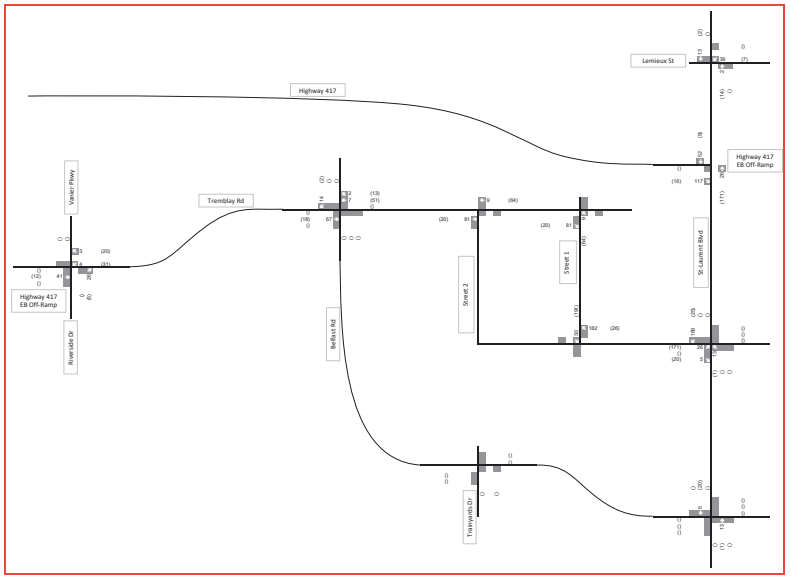




Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

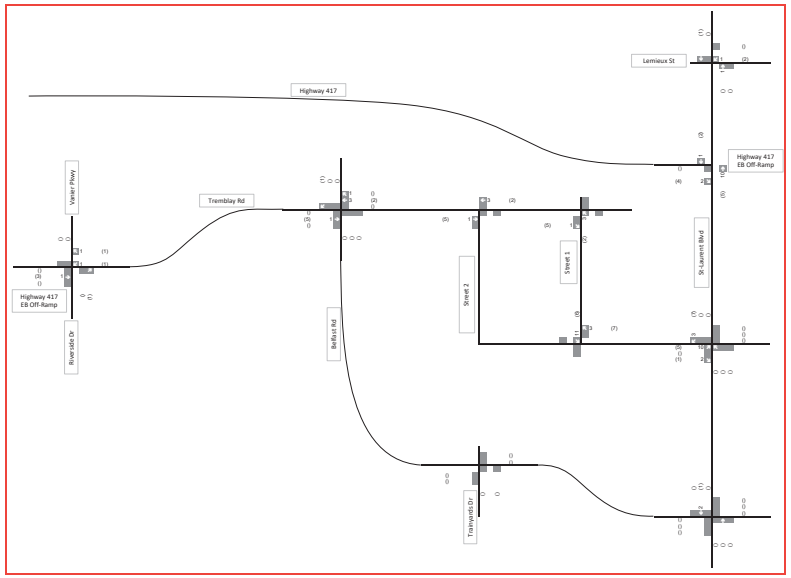
Figure 3-2
2025 Residential Trips Generated



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

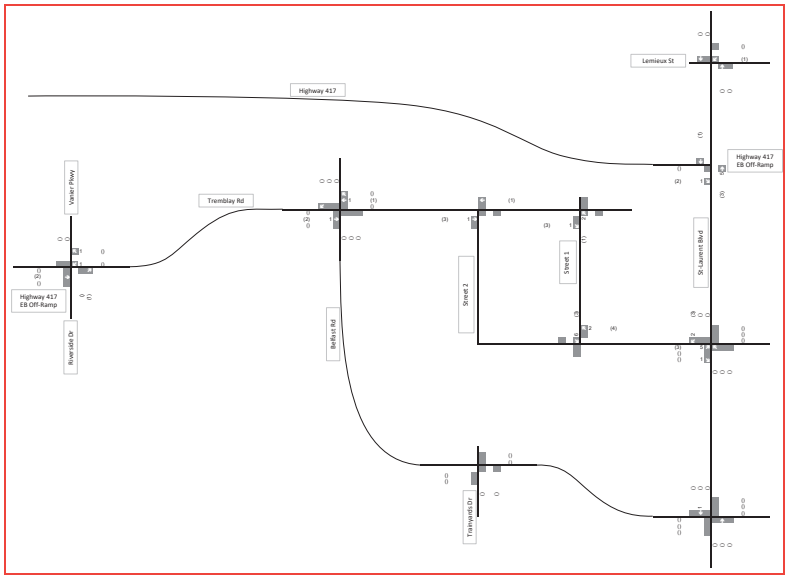
Figure 3-3
2025 Office Trips Generated



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 3-4
2029 Residential Trip Generation



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 3-5
2033 Residential Trips Generated

Figure 14: New Site Generation Auto Volumes

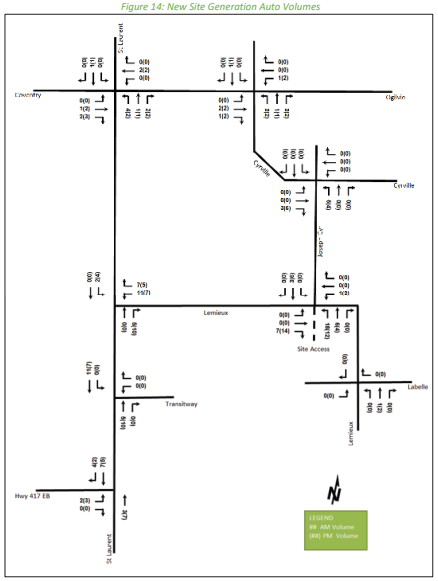
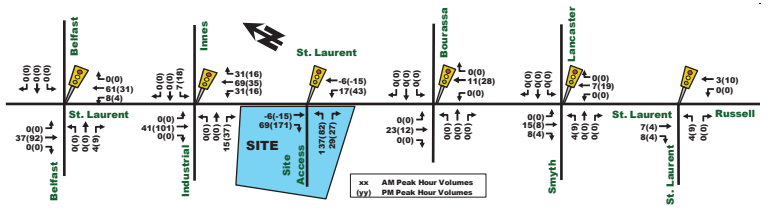


Figure 12: 'New' Site-Generated Traffic



3.2. Background Network Travel Demands

3.2.1. Transportation Network Plans

As mentioned in **Section 2.1.3** Planned Conditions, St. Laurent Boulevard is designated as a 'transit priority corridor with isolated measures' from Montreal Road to Elmvale Shopping Center within the 2031 Affordable Network. Though no design is currently available, there is the potential that segments of St. Laurent Boulevard that have not received transit retrofits yet could be upgraded to provide better transit service within the corridor (segments adjacent to the site were retrofitted around 2017). Cycling improvements are also anticipated as discussed in **Section 2.1.3**.

3.2.2. Background Growth

The emphasis in the City's recent Official Plan and Transportation Master Plan is to place priority on transit, encourage intensification around transit stations, encourage mixed-use developments and provide "complete streets" that better accommodate the active transportation needs of its residents and reduce the use of the private auto. Given the location of the site near frequent bus service within the St. Laurent transit priority corridor, close bus connectivity to the LRT Confederation Line and Elmvale Mall, the trips generated from this development as well as nearby developments will likely choose alternate modes of transportation over driving as transit infrastructure improves.

The following background traffic growth (summarized in **Table 12**) was calculated based on historical traffic count data (years 2001, 2009, 2014, 2016 and 2020) provided by the City of Ottawa at the Smyth/St. Laurent intersection near the site. Note that the year 2012 was omitted as counts were almost double any other year count and it was considered an anomaly year or miscount. Detailed background traffic growth analysis is included as **Appendix E**.

Table 12: Smyth/St. Laurent Historical Background Growth (2001-2020)

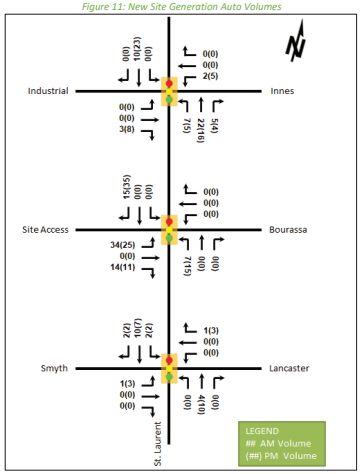
Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	-0.17%	-0.13%	1.66%	0.47%	0.17%
AM Peak	-0.24%	0.00%	1.77%	0.52%	0.23%
PM Peak	-0.48%	-0.42%	1.53%	0.33%	-0.06%

As shown in **Table 12**, the Smyth/St. Laurent intersection, has experienced between 0.25% to 0% overall annual growth in traffic within recent years. A conservative growth rate of 1% annually will be added to background growth to account for future potential growth to the south and surrounding areas.

3.2.3. Other Developments

The volumes from the other area development as mentioned in **Section 2.1.3** were layered onto the existing traffic volumes for the future analysis volumes. **Figure 13** and **Figure 14** outlines the site generated volumes for 1910 St. Laurent development and 355-374 Everest development respectively.

Figure 11: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. None of the proposed changes are considered to have any notable impact on the study area traffic volumes and travel patterns.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The study area roadways have generally achieved any predicted growth or are forecasted to contract in on the study area roadways. Table 16 summarizes the results of the model, and the projections are provided in Appendix E.

Appendix J

Synchro Intersection Worksheets – 2026 Future Background Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	55	21	12	20	82	1232	129	1141	240
Future Volume (vph)	55	21	12	20	82	1232	129	1141	240
Lane Group Flow (vph)	55	53	12	133	82	1270	129	1141	240
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	72.0	72.0	18.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	55.4%	55.4%	13.8%	69.2%	69.2%
Maximum Green (s)	33.5	33.5	33.5	33.5	65.8	65.8	13.3	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	4	4	3	3	2	2		7	7
Act Effct Green (s)	16.4	16.4	16.4	16.4	88.1	88.1	102.4	100.9	100.9
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.68	0.68	0.79	0.78	0.78
v/c Ratio	0.58	0.24	0.09	0.49	0.28	0.43	0.40	0.48	0.23
Control Delay	74.3	25.2	46.3	17.8	14.6	11.5	8.0	7.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.3	25.2	46.3	17.8	14.6	11.5	8.0	7.0	1.4
LOS	E	C	D	B	B	B	A	A	A
Approach Delay		50.2		20.2		11.7		6.2	
Approach LOS		D		C		B		A	
Queue Length 50th (m)	13.9	5.0	2.8	4.8	6.9	44.6	5.5	40.3	0.0
Queue Length 95th (m)	24.2	14.7	7.7	20.6	25.1	89.7	18.3	95.6	8.6
Internal Link Dist (m)		396.6		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	195	414	281	436	293	2934	375	2387	1041
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.13	0.04	0.31	0.28	0.43	0.34	0.48	0.23

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 10.7 Intersection LOS: B
Intersection Capacity Utilization 81.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: St-Laurent & Tremblay

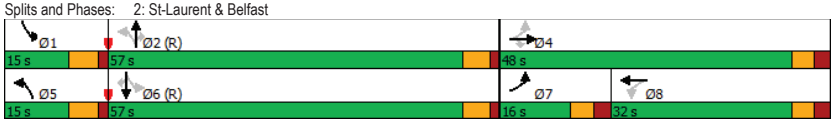
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	47	63	91	43	140	123	920	63	83	838	190
Future Volume (vph)	47	63	91	43	140	123	920	63	83	838	190
Lane Group Flow (vph)	47	63	91	43	234	123	920	63	83	838	190
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	16.0	48.0	48.0	32.0	32.0	15.0	57.0	57.0	15.0	57.0	57.0
Total Split (%)	13.3%	40.0%	40.0%	26.7%	26.7%	12.5%	47.5%	47.5%	12.5%	47.5%	47.5%
Maximum Green (s)	10.2	42.2	42.2	26.2	26.2	9.3	51.4	51.4	9.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		2	2	1	1		0	0		3	3
Act Effct Green (s)	33.9	33.9	33.9	21.9	21.9	70.5	63.3	63.3	68.4	60.5	60.5
Actuated g/C Ratio	0.28	0.28	0.28	0.18	0.18	0.59	0.53	0.53	0.57	0.50	0.50
v/c Ratio	0.23	0.13	0.22	0.22	0.84	0.38	0.55	0.08	0.29	0.54	0.27
Control Delay	30.4	29.0	6.7	42.7	66.1	15.2	23.6	0.2	14.4	24.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	29.0	6.7	42.7	66.1	15.2	23.6	0.2	14.4	24.0	4.1
LOS	C	C	A	D	E	B	C	A	B	C	A
Approach Delay		19.2			62.5		21.4			19.9	
Approach LOS		B			E		C			B	
Queue Length 50th (m)	7.8	10.5	0.0	8.6	47.3	12.3	82.6	0.0	8.1	75.0	0.0
Queue Length 95th (m)	15.9	19.9	10.9	18.7	#75.9	23.2	112.7	0.0	16.7	100.9	13.3
Internal Link Dist (m)		518.7			103.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	217	596	499	233	330	328	1683	805	299	1563	692
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.11	0.18	0.18	0.71	0.38	0.55	0.08	0.28	0.54	0.27

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 24.8 Intersection LOS: C
Intersection Capacity Utilization 70.3% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



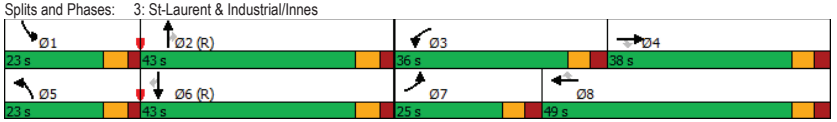
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	187	137	618	741	241	208	1104	356	116	824	145
Future Volume (vph)	71	187	137	618	741	241	208	1104	356	116	824	145
Lane Group Flow (vph)	71	187	137	618	741	241	208	1104	356	116	824	145
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	25.0	38.0	38.0	36.0	49.0	49.0	23.0	43.0	43.0	23.0	43.0	43.0
Total Split (%)	17.9%	27.1%	27.1%	25.7%	35.0%	35.0%	16.4%	30.7%	30.7%	16.4%	30.7%	30.7%
Maximum Green (s)	18.4	31.4	31.4	29.4	42.4	42.4	16.7	36.4	36.4	16.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		6	6		2	2		4	4		7	7
Act Effct Green (s)	8.7	19.3	19.3	28.8	42.0	42.0	14.4	55.2	55.2	10.5	51.3	51.3
Actuated g/C Ratio	0.06	0.14	0.14	0.21	0.30	0.30	0.10	0.39	0.39	0.08	0.37	0.37
v/c Ratio	0.38	0.46	0.40	0.93	0.78	0.42	0.67	0.89	0.48	0.49	0.70	0.26
Control Delay	68.5	57.4	5.5	76.4	51.2	6.2	71.2	50.8	9.4	69.0	43.3	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	57.4	5.5	76.4	51.2	6.2	71.2	50.8	9.4	69.0	43.3	3.5
LOS	E	E	A	E	D	A	E	D	A	E	D	A
Approach Delay		41.4			54.2			44.5			40.7	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	9.9	25.5	0.0	87.1	101.7	0.0	28.9	149.1	9.5	16.1	102.3	0.0
Queue Length 95th (m)	17.7	34.0	7.1	#120.0	113.0	17.8	41.7	#242.2	42.2	25.7	#162.7	8.8
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	391	665	444	675	993	587	359	1234	735	372	1180	558
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.31	0.92	0.75	0.41	0.58	0.89	0.48	0.31	0.70	0.26

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 46.6 Intersection LOS: D
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	272	15	13	225	26	11	1	15	15	4	17
Future Vol, veh/h	51	272	15	13	225	26	11	1	15	15	4	17
Conflicting Peds, #/hr	8	0	10	10	0	8	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	12	7	23	15	15	55	2	33	20	25	12
Mvmt Flow	51	272	15	13	225	26	11	1	15	15	4	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	297	0	0	667	677	295	667	671	246
Stage 1	-	-	-	-	-	-	392	392	-	272	272	-
Stage 2	-	-	-	-	-	-	275	285	-	395	399	-
Critical Hdwy	4.3	-	-	4.33	-	-	7.65	6.52	6.53	7.3	6.75	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Follow-up Hdwy	2.38	-	-	2.407	-	-	3.995	4.018	3.597	3.68	4.225	3.408
Pot Cap-1 Maneuver	1208	-	-	1154	-	-	309	375	677	349	350	769
Stage 1	-	-	-	-	-	-	539	606	-	696	645	-
Stage 2	-	-	-	-	-	-	629	676	-	596	564	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1145	-	-	283	347	669	321	323	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	347	-	321	323	-
Stage 1	-	-	-	-	-	-	508	570	-	656	633	-
Stage 2	-	-	-	-	-	-	603	663	-	550	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	14.1	13.9
HCM LOS			B	B

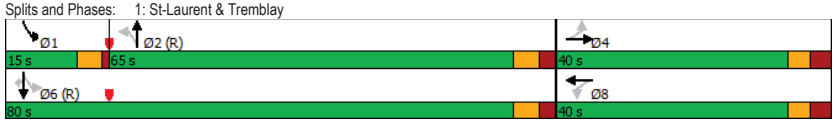
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	421	1200	-	-	1145	-	-	442
HCM Lane V/C Ratio	0.064	0.043	-	-	0.011	-	-	0.081
HCM Control Delay (s)	14.1	8.1	0	-	8.2	0	-	13.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	225	38	23	21	36	1368	58	1071	86
Future Volume (vph)	225	38	23	21	36	1368	58	1071	86
Lane Group Flow (vph)	225	123	23	204	36	1380	58	1071	86
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	65.0	65.0	15.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	54.2%	54.2%	12.5%	66.7%	66.7%
Maximum Green (s)	33.5	33.5	33.5	33.5	58.8	58.8	10.3	73.8	73.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	2	2	2	2	12	12		8	8
Act Effct Green (s)	33.5	33.5	33.5	33.5	64.1	64.1	75.3	73.8	73.8
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.53	0.53	0.63	0.62	0.62
v/c Ratio	1.01	0.26	0.07	0.37	0.16	0.54	0.26	0.55	0.10
Control Delay	106.5	13.7	32.7	8.8	19.3	18.0	11.5	14.7	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.5	13.7	32.7	8.8	19.3	18.0	11.5	14.7	2.2
LOS	F	B	C	A	B	B	B	B	A
Approach Delay		73.7		11.2		18.1		13.7	
Approach LOS		E		B		B		B	
Queue Length 50th (m)	~53.9	6.6	4.0	3.8	3.3	54.2	4.9	72.0	0.0
Queue Length 95th (m)	#104.1	21.5	10.6	22.2	m7.9	m88.2	10.0	89.3	6.0
Internal Link Dist (m)		390.4		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	223	481	329	547	226	2540	263	1962	828
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.26	0.07	0.37	0.16	0.54	0.22	0.55	0.10

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 22.0 Intersection LOS: C
Intersection Capacity Utilization 88.1% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: St-Laurent & Tremblay

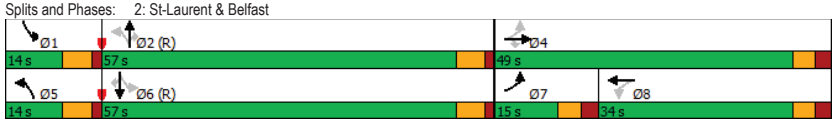


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	195	162	224	101	91	111	1007	82	93	887	133
Future Volume (vph)	195	162	224	101	91	111	1007	82	93	887	133
Lane Group Flow (vph)	195	162	224	101	240	111	1007	82	93	887	133
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	14.0	57.0	57.0	14.0	57.0	57.0
Total Split (%)	12.5%	40.8%	40.8%	28.3%	28.3%	11.7%	47.5%	47.5%	11.7%	47.5%	47.5%
Maximum Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		9	9	5	5		1	1		15	15
Act Effct Green (s)	34.6	34.6	34.6	19.6	19.6	68.4	60.2	60.2	68.0	60.0	60.0
Actuated g/C Ratio	0.29	0.29	0.29	0.16	0.16	0.57	0.50	0.50	0.57	0.50	0.50
v/c Ratio	0.95	0.35	0.40	0.59	0.79	0.36	0.61	0.12	0.38	0.54	0.17
Control Delay	86.6	34.7	7.3	58.9	53.0	14.4	24.9	1.1	17.2	18.3	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.6	34.7	7.3	58.9	53.0	14.4	24.9	1.1	17.2	18.3	2.8
LOS	F	C	A	E	D	B	C	A	B	B	A
Approach Delay		41.6			54.7		22.3			16.3	
Approach LOS		D			D		C			B	
Queue Length 50th (m)	37.2	30.2	3.2	22.3	40.6	10.1	87.8	0.0	8.1	46.8	0.0
Queue Length 95th (m)	#68.0	44.1	19.4	37.5	63.9	21.5	125.4	2.4	20.9	59.4	6.6
Internal Link Dist (m)		518.7			103.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	206	572	651	247	408	318	1647	683	254	1642	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.28	0.34	0.41	0.59	0.35	0.61	0.12	0.37	0.54	0.17

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 27.1 Intersection LOS: C
Intersection Capacity Utilization 80.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	560	363	415	274	135	199	931	522	130	951	131
Future Volume (vph)	137	560	363	415	274	135	199	931	522	130	951	131
Lane Group Flow (vph)	137	560	363	415	274	135	199	931	522	130	951	131
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	19.0	38.0	38.0	41.0	60.0	60.0	28.0	43.0	43.0	28.0	43.0	43.0
Total Split (%)	12.7%	25.3%	25.3%	27.3%	40.0%	40.0%	18.7%	28.7%	28.7%	18.7%	28.7%	28.7%
Maximum Green (s)	12.4	31.4	31.4	34.4	53.4	53.4	21.7	36.4	36.4	21.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		5	5		6	6		9	9		12	12
Act Effct Green (s)	10.5	26.8	26.8	21.7	38.0	38.0	13.5	39.4	39.4	10.9	36.8	36.8
Actuated g/C Ratio	0.08	0.21	0.21	0.17	0.30	0.30	0.11	0.31	0.31	0.09	0.29	0.29
v/c Ratio	0.51	0.80	0.66	0.75	0.28	0.25	0.59	0.91	0.67	0.49	1.00	0.24
Control Delay	64.0	57.0	14.9	58.8	34.0	6.3	62.2	56.0	10.1	63.1	73.1	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	57.0	14.9	58.8	34.0	6.3	62.2	56.0	10.1	63.1	73.1	3.4
LOS	E	E	B	E	C	A	E	E	B	E	E	A
Approach Delay		43.5			41.9			42.2			64.5	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	17.0	69.1	10.9	50.9	26.9	0.0	24.6	117.3	8.0	16.1	~127.4	0.0
Queue Length 95th (m)	30.3	99.1	46.4	73.0	40.5	14.2	39.9	#186.0	48.7	28.7	#204.8	7.5
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	321	826	593	893	1375	703	547	1023	777	532	955	541
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.68	0.61	0.46	0.20	0.19	0.36	0.91	0.67	0.24	1.00	0.24

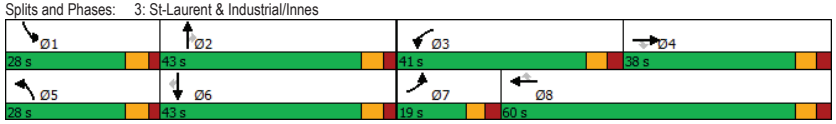
Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 125.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 48.1	Intersection LOS: D
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	265	50	19	310	26	26	5	16	30	0	39
Future Vol, veh/h	46	265	50	19	310	26	26	5	16	30	0	39
Conflicting Peds, #/hr	12	0	5	5	0	12	1	0	6	6	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	30	6	12	5	3	8	4	2	2	10	2	2
Mvmt Flow	46	265	50	19	310	26	26	5	16	30	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	320	0	0	769	773	301	772	785	336
Stage 1	-	-	-	-	-	-	387	387	-	373	373	-
Stage 2	-	-	-	-	-	-	382	386	-	399	412	-
Critical Hdwy	4.4	-	-	4.15	-	-	7.14	6.52	6.22	7.2	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Follow-up Hdwy	2.47	-	-	2.245	-	-	3.536	4.018	3.318	3.59	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1223	-	-	316	330	739	307	325	706
Stage 1	-	-	-	-	-	-	633	610	-	632	618	-
Stage 2	-	-	-	-	-	-	636	610	-	611	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1061	-	-	1218	-	-	281	303	733	277	298	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	281	303	-	277	298	-
Stage 1	-	-	-	-	-	-	597	575	-	593	601	-
Stage 2	-	-	-	-	-	-	589	593	-	558	560	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	16.5	15.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	359	1061	-	-	1218	-	-	420
HCM Lane V/C Ratio	0.131	0.043	-	-	0.016	-	-	0.164
HCM Control Delay (s)	16.5	8.5	0	-	8	0	-	15.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.6

Appendix K

Synchro Intersection Worksheets – 2031 Future Background Conditions

CGH TRANSPORTATION

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	60	21	12	20	82	1246	131	1141	244
Future Volume (vph)	60	21	12	20	82	1246	131	1141	244
Lane Group Flow (vph)	60	54	12	143	82	1284	131	1141	244
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	72.0	72.0	18.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	55.4%	55.4%	13.8%	69.2%	69.2%
Maximum Green (s)	33.5	33.5	33.5	33.5	65.8	65.8	13.3	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	4	4	3	3	2	2		7	7
Act Effct Green (s)	17.0	17.0	17.0	17.0	87.3	87.3	101.8	100.3	100.3
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.67	0.67	0.78	0.77	0.77
v/c Ratio	0.65	0.24	0.08	0.50	0.28	0.44	0.41	0.48	0.24
Control Delay	80.6	24.5	45.7	17.1	14.9	11.9	8.4	7.2	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.6	24.5	45.7	17.1	14.9	11.9	8.4	7.2	1.4
LOS	F	C	D	B	B	B	A	A	A
Approach Delay		54.0		19.3		12.1		6.4	
Approach LOS		D		B		B		A	
Queue Length 50th (m)	15.2	4.9	2.8	4.7	7.2	47.0	5.9	42.5	0.0
Queue Length 95th (m)	26.3	14.9	7.7	21.1	25.1	91.2	18.7	95.6	8.6
Internal Link Dist (m)		396.6		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	185	414	281	442	291	2910	369	2371	1037
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.13	0.04	0.32	0.28	0.44	0.36	0.48	0.24

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 11.2 — Intersection LOS: B
Intersection Capacity Utilization 82.2% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: St-Laurent & Tremblay

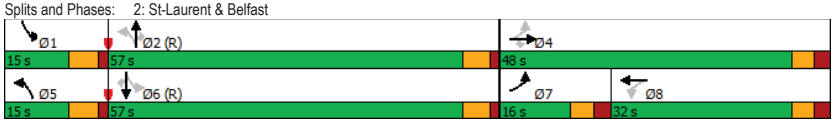
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	47	63	115	43	140	131	931	66	83	839	190
Future Volume (vph)	47	63	115	43	140	131	931	66	83	839	190
Lane Group Flow (vph)	47	63	115	43	234	131	931	66	83	839	190
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	16.0	48.0	48.0	32.0	32.0	15.0	57.0	57.0	15.0	57.0	57.0
Total Split (%)	13.3%	40.0%	40.0%	26.7%	26.7%	12.5%	47.5%	47.5%	12.5%	47.5%	47.5%
Maximum Green (s)	10.2	42.2	42.2	26.2	26.2	9.3	51.4	51.4	9.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		2	2	1	1		0	0		3	3
Act Effct Green (s)	33.9	33.9	33.9	21.9	21.9	70.6	63.3	63.3	68.2	60.3	60.3
Actuated g/C Ratio	0.28	0.28	0.28	0.18	0.18	0.59	0.53	0.53	0.57	0.50	0.50
v/c Ratio	0.23	0.13	0.26	0.22	0.84	0.41	0.55	0.08	0.30	0.54	0.27
Control Delay	30.4	29.0	6.4	42.7	66.1	15.6	23.8	0.2	14.5	24.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	29.0	6.4	42.7	66.1	15.6	23.8	0.2	14.5	24.1	4.1
LOS	C	C	A	D	E	B	C	A	B	C	A
Approach Delay		17.8			62.5		21.4			20.0	
Approach LOS		B			E		C			B	
Queue Length 50th (m)	7.8	10.5	0.0	8.6	47.3	13.2	84.0	0.0	8.1	75.5	0.0
Queue Length 95th (m)	15.9	19.9	12.3	18.7	#75.9	24.6	114.3	0.0	16.7	101.1	13.3
Internal Link Dist (m)		518.7			103.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	217	596	514	233	330	327	1683	805	296	1560	691
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.11	0.22	0.18	0.71	0.40	0.55	0.08	0.28	0.54	0.27

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 24.7 Intersection LOS: C
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



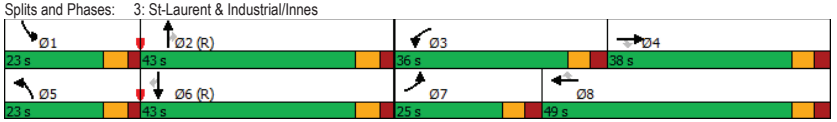
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	194	142	618	741	241	210	1128	356	116	849	146
Future Volume (vph)	73	194	142	618	741	241	210	1128	356	116	849	146
Lane Group Flow (vph)	73	194	142	618	741	241	210	1128	356	116	849	146
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	25.0	38.0	38.0	36.0	49.0	49.0	23.0	43.0	43.0	23.0	43.0	43.0
Total Split (%)	17.9%	27.1%	27.1%	25.7%	35.0%	35.0%	16.4%	30.7%	30.7%	16.4%	30.7%	30.7%
Maximum Green (s)	18.4	31.4	31.4	29.4	42.4	42.4	16.7	36.4	36.4	16.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		6	6		2	2		4	4		7	7
Act Effct Green (s)	8.8	19.4	19.4	28.8	42.0	42.0	14.5	55.1	55.1	10.5	51.1	51.1
Actuated g/C Ratio	0.06	0.14	0.14	0.21	0.30	0.30	0.10	0.39	0.39	0.08	0.36	0.36
v/c Ratio	0.39	0.47	0.41	0.93	0.78	0.42	0.68	0.92	0.49	0.49	0.72	0.26
Control Delay	68.5	57.7	6.0	76.4	51.2	6.2	71.4	53.0	9.9	69.0	44.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	57.7	6.0	76.4	51.2	6.2	71.4	53.0	9.9	69.0	44.2	3.6
LOS	E	E	A	E	D	A	E	D	A	E	D	A
Approach Delay		41.7			54.2			46.2			41.4	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	10.2	26.5	0.0	87.1	101.7	0.0	29.2	154.4	10.6	16.1	106.7	0.0
Queue Length 95th (m)	18.1	35.1	8.2	#120.0	113.1	17.8	42.2	#249.5	44.2	25.7	#170.6	9.0
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	391	665	444	675	993	587	359	1231	730	372	1176	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.29	0.32	0.92	0.75	0.41	0.58	0.92	0.49	0.31	0.72	0.26

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 47.4 Intersection LOS: D
Intersection Capacity Utilization 89.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	272	15	13	225	26	11	1	15	15	4	17
Future Vol, veh/h	51	272	15	13	225	26	11	1	15	15	4	17
Conflicting Peds, #/hr	8	0	10	10	0	8	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	12	7	23	15	15	55	2	33	20	25	12
Mvmt Flow	51	272	15	13	225	26	11	1	15	15	4	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	297	0	0	667	677	295	667	671	246
Stage 1	-	-	-	-	-	-	392	392	-	272	272	-
Stage 2	-	-	-	-	-	-	275	285	-	395	399	-
Critical Hdwy	4.3	-	-	4.33	-	-	7.65	6.52	6.53	7.3	6.75	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Follow-up Hdwy	2.38	-	-	2.407	-	-	3.995	4.018	3.597	3.68	4.225	3.408
Pot Cap-1 Maneuver	1208	-	-	1154	-	-	309	375	677	349	350	769
Stage 1	-	-	-	-	-	-	539	606	-	696	645	-
Stage 2	-	-	-	-	-	-	629	676	-	596	564	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1145	-	-	283	347	669	321	323	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	347	-	321	323	-
Stage 1	-	-	-	-	-	-	508	570	-	656	633	-
Stage 2	-	-	-	-	-	-	603	663	-	550	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	14.1	13.9
HCM LOS			B	B

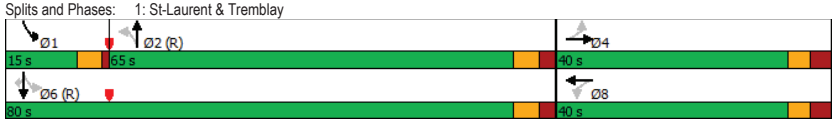
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	421	1200	-	-	1145	-	-	442
HCM Lane V/C Ratio	0.064	0.043	-	-	0.011	-	-	0.081
HCM Control Delay (s)	14.1	8.1	0	-	8.2	0	-	13.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	228	38	23	21	36	1368	63	1083	94
Future Volume (vph)	228	38	23	21	36	1368	63	1083	94
Lane Group Flow (vph)	228	123	23	206	36	1380	63	1083	94
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	65.0	65.0	15.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	54.2%	54.2%	12.5%	66.7%	66.7%
Maximum Green (s)	33.5	33.5	33.5	33.5	58.8	58.8	10.3	73.8	73.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	2	2	2	2	12	12		8	8
Act Effct Green (s)	33.5	33.5	33.5	33.5	63.9	63.9	75.3	73.8	73.8
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.53	0.53	0.63	0.62	0.62
v/c Ratio	1.03	0.26	0.07	0.38	0.16	0.54	0.28	0.55	0.11
Control Delay	112.2	13.7	32.7	9.0	19.5	18.1	11.8	14.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.2	13.7	32.7	9.0	19.5	18.1	11.8	14.8	2.2
LOS	F	B	C	A	B	B	B	B	A
Approach Delay		77.7		11.3		18.1		13.7	
Approach LOS		E		B		B		B	
Queue Length 50th (m)	~57.4	6.6	4.0	4.1	3.3	54.2	5.4	73.2	0.0
Queue Length 95th (m)	#106.4	21.5	10.6	22.7	m7.9	m88.3	10.8	90.8	6.2
Internal Link Dist (m)		390.4		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	221	481	329	547	222	2534	263	1962	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.26	0.07	0.38	0.16	0.54	0.24	0.55	0.11

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 22.4 Intersection LOS: C
Intersection Capacity Utilization 88.7% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: St-Laurent & Tremblay

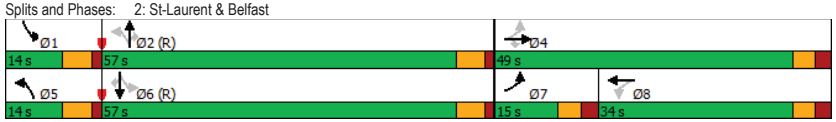


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	195	162	239	101	91	129	1007	87	93	897	133
Future Volume (vph)	195	162	239	101	91	129	1007	87	93	897	133
Lane Group Flow (vph)	195	162	239	101	240	129	1007	87	93	897	133
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	14.0	57.0	57.0	14.0	57.0	57.0
Total Split (%)	12.5%	40.8%	40.8%	28.3%	28.3%	11.7%	47.5%	47.5%	11.7%	47.5%	47.5%
Maximum Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		9	9	5	5		1	1		15	15
Act Effct Green (s)	34.6	34.6	34.6	19.6	19.6	68.8	60.2	60.2	67.6	59.6	59.6
Actuated g/C Ratio	0.29	0.29	0.29	0.16	0.16	0.57	0.50	0.50	0.56	0.50	0.50
v/c Ratio	0.95	0.35	0.43	0.59	0.79	0.41	0.61	0.13	0.38	0.55	0.17
Control Delay	86.6	34.7	8.6	58.9	53.0	15.3	24.9	1.4	17.1	18.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.6	34.7	8.6	58.9	53.0	15.3	24.9	1.4	17.1	18.6	2.9
LOS	F	C	A	E	D	B	C	A	B	B	A
Approach Delay		41.2			54.7		22.2			16.6	
Approach LOS		D			D		C			B	
Queue Length 50th (m)	37.2	30.2	6.0	22.3	40.6	11.9	87.8	0.0	8.1	47.3	0.0
Queue Length 95th (m)	#68.0	44.1	23.2	37.5	63.9	24.6	125.4	3.2	20.8	60.6	7.0
Internal Link Dist (m)		518.7			103.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	206	572	650	247	408	316	1647	683	253	1630	766
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.28	0.37	0.41	0.59	0.41	0.61	0.13	0.37	0.55	0.17

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 27.1 — Intersection LOS: C
Intersection Capacity Utilization 80.8% — ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	567	367	415	274	135	206	954	522	130	966	136
Future Volume (vph)	139	567	367	415	274	135	206	954	522	130	966	136
Lane Group Flow (vph)	139	567	367	415	274	135	206	954	522	130	966	136
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	19.0	38.0	38.0	41.0	60.0	60.0	28.0	43.0	43.0	28.0	43.0	43.0
Total Split (%)	12.7%	25.3%	25.3%	27.3%	40.0%	40.0%	18.7%	28.7%	28.7%	18.7%	28.7%	28.7%
Maximum Green (s)	12.4	31.4	31.4	34.4	53.4	53.4	21.7	36.4	36.4	21.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		5	5		6	6		9	9		12	12
Act Effct Green (s)	10.5	27.1	27.1	21.7	38.3	38.3	13.8	39.6	39.6	10.9	36.8	36.8
Actuated g/C Ratio	0.08	0.22	0.22	0.17	0.30	0.30	0.11	0.32	0.32	0.09	0.29	0.29
v/c Ratio	0.52	0.81	0.67	0.75	0.28	0.25	0.60	0.93	0.68	0.49	1.02	0.25
Control Delay	64.4	57.5	15.4	59.1	34.1	6.3	62.5	58.7	10.7	63.3	78.0	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	57.5	15.4	59.1	34.1	6.3	62.5	58.7	10.7	63.3	78.0	3.8
LOS	E	E	B	E	C	A	E	E	B	E	E	A
Approach Delay		44.0			42.2			44.3			68.3	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	17.3	70.4	11.8	51.3	27.1	0.0	25.6	122.2	9.9	16.2	~136.5	0.0
Queue Length 95th (m)	30.7	101.0	48.2	73.3	40.7	14.2	41.3	#193.0	52.7	28.6	#210.3	9.1
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	320	822	591	888	1368	700	544	1025	771	529	950	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.69	0.62	0.47	0.20	0.19	0.38	0.93	0.68	0.25	1.02	0.25

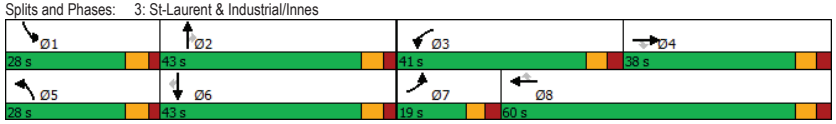
Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 125.7
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 50.0	Intersection LOS: D
Intersection Capacity Utilization 86.7%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	265	50	19	310	26	26	5	16	30	0	39
Future Vol, veh/h	46	265	50	19	310	26	26	5	16	30	0	39
Conflicting Peds, #/hr	12	0	5	5	0	12	1	0	6	6	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	30	6	12	5	3	8	4	2	2	10	2	2
Mvmt Flow	46	265	50	19	310	26	26	5	16	30	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	320	0	0	769	773	301	772	785	336
Stage 1	-	-	-	-	-	-	387	387	-	373	373	-
Stage 2	-	-	-	-	-	-	382	386	-	399	412	-
Critical Hdwy	4.4	-	-	4.15	-	-	7.14	6.52	6.22	7.2	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Follow-up Hdwy	2.47	-	-	2.245	-	-	3.536	4.018	3.318	3.59	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1223	-	-	316	330	739	307	325	706
Stage 1	-	-	-	-	-	-	633	610	-	632	618	-
Stage 2	-	-	-	-	-	-	636	610	-	611	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1061	-	-	1218	-	-	281	303	733	277	298	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	281	303	-	277	298	-
Stage 1	-	-	-	-	-	-	597	575	-	593	601	-
Stage 2	-	-	-	-	-	-	589	593	-	558	560	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	16.5	15.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	359	1061	-	-	1218	-	-	420
HCM Lane V/C Ratio	0.131	0.043	-	-	0.016	-	-	0.164
HCM Control Delay (s)	16.5	8.5	0	-	8	0	-	15.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.6

Appendix L

Synchro Intersection Worksheets – 2026 Future Total Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	55	21	12	20	84	1248	129	1148	240
Future Volume (vph)	55	21	12	20	84	1248	129	1148	240
Lane Group Flow (vph)	55	54	12	133	84	1286	129	1148	240
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	72.0	72.0	18.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	55.4%	55.4%	13.8%	69.2%	69.2%
Maximum Green (s)	33.5	33.5	33.5	33.5	65.8	65.8	13.3	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	9	9	3	3	7	7		12	12
Act Effct Green (s)	16.6	16.6	16.6	16.6	87.9	87.9	102.2	100.7	100.7
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.68	0.68	0.79	0.77	0.77
v/c Ratio	0.57	0.24	0.09	0.49	0.29	0.44	0.41	0.48	0.23
Control Delay	73.4	24.9	46.2	17.7	14.9	11.6	8.2	7.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	24.9	46.2	17.7	14.9	11.6	8.2	7.1	1.4
LOS	E	C	D	B	B	B	A	A	A
Approach Delay		49.3		20.0		11.8		6.3	
Approach LOS		D		C		B		A	
Queue Length 50th (m)	13.8	5.0	2.8	4.7	7.2	45.9	5.6	41.4	0.0
Queue Length 95th (m)	24.2	14.9	7.7	20.6	26.0	91.2	18.3	96.4	8.6
Internal Link Dist (m)		396.6		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	195	413	280	436	290	2926	369	2382	1029
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.13	0.04	0.31	0.29	0.44	0.35	0.48	0.23

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 10.8 — Intersection LOS: B
Intersection Capacity Utilization 84.4% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: St-Laurent & Tremblay

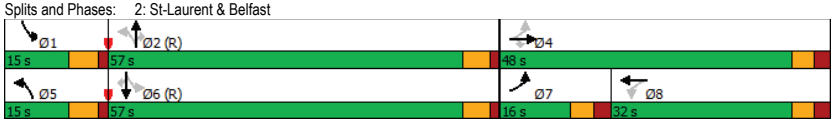
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	47	66	91	64	147	123	919	73	92	837	190
Future Volume (vph)	47	66	91	64	147	123	919	73	92	837	190
Lane Group Flow (vph)	47	66	91	64	260	123	919	73	92	837	190
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	16.0	48.0	48.0	32.0	32.0	15.0	57.0	57.0	15.0	57.0	57.0
Total Split (%)	13.3%	40.0%	40.0%	26.7%	26.7%	12.5%	47.5%	47.5%	12.5%	47.5%	47.5%
Maximum Green (s)	10.2	42.2	42.2	26.2	26.2	9.3	51.4	51.4	9.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		9	9	42	42		22	22		13	13
Act Effct Green (s)	35.5	35.5	35.5	23.4	23.4	67.8	59.2	59.2	66.9	58.8	58.8
Actuated g/C Ratio	0.30	0.30	0.30	0.20	0.20	0.56	0.49	0.49	0.56	0.49	0.49
v/c Ratio	0.24	0.13	0.22	0.33	0.88	0.40	0.58	0.10	0.34	0.55	0.28
Control Delay	30.0	28.5	6.7	45.3	69.5	16.0	25.6	0.4	15.7	25.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	28.5	6.7	45.3	69.5	16.0	25.6	0.4	15.7	25.1	4.2
LOS	C	C	A	D	E	B	C	A	B	C	A
Approach Delay		19.1			64.7		22.9			20.8	
Approach LOS		B			E		C			C	
Queue Length 50th (m)	7.5	10.6	0.0	12.7	51.9	13.1	87.3	0.0	9.6	79.0	0.0
Queue Length 95th (m)	15.9	20.5	10.9	25.8	#92.6	23.2	112.4	0.7	18.1	100.8	13.4
Internal Link Dist (m)		518.7			23.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	214	596	470	218	329	320	1575	732	282	1520	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.11	0.19	0.29	0.79	0.38	0.58	0.10	0.33	0.55	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 26.6 Intersection LOS: C
Intersection Capacity Utilization 76.3% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



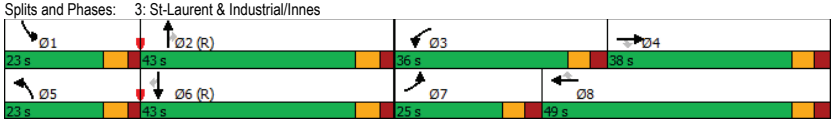
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	187	137	618	741	242	208	1112	356	118	842	145
Future Volume (vph)	71	187	137	618	741	242	208	1112	356	118	842	145
Lane Group Flow (vph)	71	187	137	618	741	242	208	1112	356	118	842	145
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	25.0	38.0	38.0	36.0	49.0	49.0	23.0	43.0	43.0	23.0	43.0	43.0
Total Split (%)	17.9%	27.1%	27.1%	25.7%	35.0%	35.0%	16.4%	30.7%	30.7%	16.4%	30.7%	30.7%
Maximum Green (s)	18.4	31.4	31.4	29.4	42.4	42.4	16.7	36.4	36.4	16.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		7	7		3	3		5	5		9	9
Act Effct Green (s)	8.7	19.3	19.3	28.8	42.0	42.0	14.4	55.1	55.1	10.6	51.3	51.3
Actuated g/C Ratio	0.06	0.14	0.14	0.21	0.30	0.30	0.10	0.39	0.39	0.08	0.37	0.37
v/c Ratio	0.38	0.46	0.40	0.93	0.78	0.42	0.67	0.90	0.49	0.50	0.71	0.26
Control Delay	68.5	57.4	5.5	76.4	51.2	6.2	71.2	51.6	9.6	69.0	43.8	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	57.4	5.5	76.4	51.2	6.2	71.2	51.6	9.6	69.0	43.8	3.5
LOS	E	E	A	E	D	A	E	D	A	E	D	A
Approach Delay		41.4			54.1			45.1			41.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	9.9	25.5	0.0	87.1	101.7	0.0	28.9	151.0	9.9	16.4	105.3	0.0
Queue Length 95th (m)	17.7	34.0	7.1	#120.0	113.0	18.0	41.7	#245.3	43.0	26.1	#168.4	8.8
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	391	665	444	675	993	587	359	1231	732	372	1180	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.31	0.92	0.75	0.41	0.58	0.90	0.49	0.32	0.71	0.26

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 89.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Lane Group	EBT	WBT
Lane Configurations		
Traffic Volume (vph)	209	324
Future Volume (vph)	209	324
Lane Group Flow (vph)	232	324
Sign Control	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	16.4%	ICU Level of Service A
Analysis Period (min)	15	

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	272	225	1	4
Future Volume (vph)	272	225	1	4
Lane Group Flow (vph)	338	264	74	36
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	51.8%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	272	15	13	225	26	58	1	15	15	4	17
Future Vol, veh/h	51	272	15	13	225	26	58	1	15	15	4	17
Conflicting Peds, #/hr	8	0	23	23	0	8	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	12	7	23	15	15	55	2	33	20	25	12
Mvmt Flow	51	272	15	13	225	26	58	1	15	15	4	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	310	0	0	680	690	308	667	684	246
Stage 1	-	-	-	-	-	-	405	405	-	272	272	-
Stage 2	-	-	-	-	-	-	275	285	-	395	412	-
Critical Hdwy	4.3	-	-	4.33	-	-	7.65	6.52	6.53	7.3	6.75	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Follow-up Hdwy	2.38	-	-	2.407	-	-	3.995	4.018	3.597	3.68	4.225	3.408
Pot Cap-1 Maneuver	1208	-	-	1141	-	-	303	368	665	349	344	769
Stage 1	-	-	-	-	-	-	529	598	-	696	645	-
Stage 2	-	-	-	-	-	-	629	676	-	596	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1121	-	-	274	336	651	320	314	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	274	336	-	320	314	-
Stage 1	-	-	-	-	-	-	493	557	-	656	632	-
Stage 2	-	-	-	-	-	-	603	662	-	549	518	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	20.2	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	1200	-	-	1121	-	-	440
HCM Lane V/C Ratio	0.238	0.043	-	-	0.012	-	-	0.082
HCM Control Delay (s)	20.2	8.1	0	-	8.2	0	-	13.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.3

Lane Group	EBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	47	27	32
Future Volume (vph)	47	27	32
Lane Group Flow (vph)	47	27	32
Sign Control	Stop	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	13.3%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	0	0	27	32	0
Future Vol, veh/h	47	0	0	27	32	0
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	0	0	27	32	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	59	32	-	0	-	0
Stage 1	32	-	-	-	-	-
Stage 2	27	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	948	1042	0	-	-	0
Stage 1	991	-	0	-	-	0
Stage 2	996	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	948	1042	-	-	-	-
Mov Cap-2 Maneuver	948	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

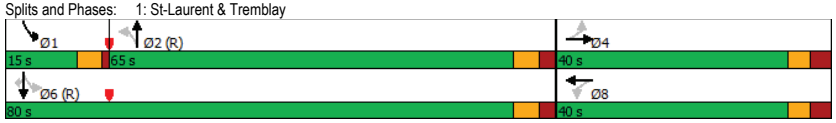
Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	948	-
HCM Lane V/C Ratio	-	0.05	-
HCM Control Delay (s)	-	9	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.2	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	225	38	23	21	38	1380	58	1087	86
Future Volume (vph)	225	38	23	21	38	1380	58	1087	86
Lane Group Flow (vph)	225	125	23	204	38	1392	58	1087	86
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	65.0	65.0	15.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	54.2%	54.2%	12.5%	66.7%	66.7%
Maximum Green (s)	33.5	33.5	33.5	33.5	58.8	58.8	10.3	73.8	73.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	6	6	2	2	16	16		12	12
Act Effct Green (s)	33.5	33.5	33.5	33.5	64.1	64.1	75.3	73.8	73.8
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.53	0.53	0.63	0.62	0.62
v/c Ratio	1.01	0.26	0.07	0.37	0.17	0.55	0.26	0.55	0.10
Control Delay	106.5	13.6	32.7	8.9	20.0	18.7	11.6	14.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.5	13.6	32.7	8.9	20.0	18.7	11.6	14.8	2.2
LOS	F	B	C	A	B	B	B	B	A
Approach Delay		73.3		11.3		18.7		13.8	
Approach LOS		E		B		B		B	
Queue Length 50th (m)	~53.9	6.6	4.0	4.0	3.4	55.1	4.9	73.6	0.0
Queue Length 95th (m)	#104.1	21.5	10.6	22.5	m8.0	m89.3	10.0	91.3	6.0
Internal Link Dist (m)		390.4		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	223	482	328	546	221	2539	260	1962	822
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.26	0.07	0.37	0.17	0.55	0.22	0.55	0.10

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 88.5% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: St-Laurent & Tremblay

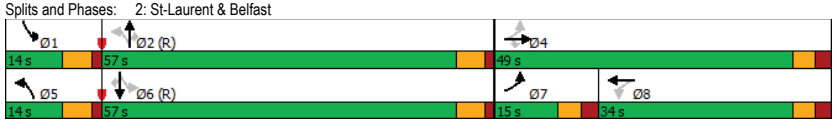


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	195	169	224	118	96	111	1005	105	113	886	133
Future Volume (vph)	195	169	224	118	96	111	1005	105	113	886	133
Lane Group Flow (vph)	195	169	224	118	261	111	1005	105	113	886	133
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	14.0	57.0	57.0	14.0	57.0	57.0
Total Split (%)	12.5%	40.8%	40.8%	28.3%	28.3%	11.7%	47.5%	47.5%	11.7%	47.5%	47.5%
Maximum Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		44	44	14	14		20	20		23	23
Act Effct Green (s)	35.9	35.9	35.9	20.9	20.9	66.6	58.3	58.3	67.3	58.7	58.7
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.17	0.56	0.49	0.49	0.56	0.49	0.49
v/c Ratio	0.96	0.36	0.41	0.68	0.82	0.37	0.63	0.16	0.46	0.55	0.18
Control Delay	89.1	34.0	7.5	64.8	55.3	15.1	26.3	2.5	23.4	19.0	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.1	34.0	7.5	64.8	55.3	15.1	26.3	2.5	23.4	19.0	2.9
LOS	F	C	A	E	E	B	C	A	C	B	A
Approach Delay		42.2			58.2		23.3			17.6	
Approach LOS		D			E		C			B	
Queue Length 50th (m)	36.4	31.0	3.5	26.2	44.9	10.6	91.7	0.0	10.1	46.9	0.0
Queue Length 95th (m)	#70.5	45.9	20.2	43.6	70.4	21.5	125.1	6.5	29.0	60.4	7.1
Internal Link Dist (m)		518.7			23.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	204	572	619	235	406	310	1596	644	249	1604	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.30	0.36	0.50	0.64	0.36	0.63	0.16	0.45	0.55	0.18

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 28.7 Intersection LOS: C
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	560	363	415	274	137	199	950	522	132	965	131
Future Volume (vph)	137	560	363	415	274	137	199	950	522	132	965	131
Lane Group Flow (vph)	137	560	363	415	274	137	199	950	522	132	965	131
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	19.0	38.0	38.0	41.0	60.0	60.0	28.0	43.0	43.0	28.0	43.0	43.0
Total Split (%)	12.7%	25.3%	25.3%	27.3%	40.0%	40.0%	18.7%	28.7%	28.7%	18.7%	28.7%	28.7%
Maximum Green (s)	12.4	31.4	31.4	34.4	53.4	53.4	21.7	36.4	36.4	21.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		6	6		7	7		10	10		14	14
Act Effct Green (s)	10.5	26.8	26.8	21.7	38.0	38.0	13.5	39.3	39.3	10.9	36.8	36.8
Actuated g/C Ratio	0.08	0.21	0.21	0.17	0.30	0.30	0.11	0.31	0.31	0.09	0.29	0.29
v/c Ratio	0.51	0.80	0.66	0.75	0.28	0.26	0.59	0.93	0.68	0.50	1.01	0.24
Control Delay	64.0	57.0	15.0	58.8	34.0	6.3	62.2	58.6	10.8	63.0	76.3	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	57.0	15.0	58.8	34.0	6.3	62.2	58.6	10.8	63.0	76.3	3.4
LOS	E	E	B	E	C	A	E	E	B	E	E	A
Approach Delay		43.5			41.8			44.1			67.1	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	17.0	69.1	10.9	50.9	26.9	0.0	24.6	120.9	9.6	16.3	~134.5	0.0
Queue Length 95th (m)	30.3	99.1	46.4	73.0	40.5	14.4	39.9	#192.2	52.3	28.8	#209.1	7.5
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	321	826	592	893	1375	703	547	1021	770	532	955	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.68	0.61	0.46	0.20	0.19	0.36	0.93	0.68	0.25	1.01	0.24

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 125.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

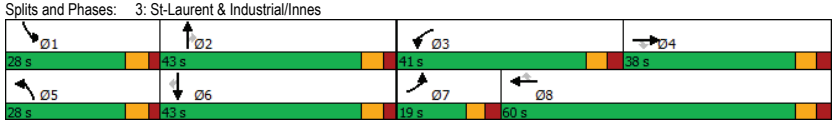
Maximum v/c Ratio: 1.01

Intersection Signal Delay: 49.5	Intersection LOS: D
Intersection Capacity Utilization 86.6%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Lane Group	EBT	WBT
Lane Configurations		
Traffic Volume (vph)	336	379
Future Volume (vph)	336	379
Lane Group Flow (vph)	387	380
Sign Control	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 25.3%		ICU Level of Service A
Analysis Period (min) 15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	265	310	5	0
Future Volume (vph)	265	310	5	0
Lane Group Flow (vph)	361	355	87	69
Sign Control	Free	Free	Stop	Stop

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	51.6%		ICU Level of Service A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	265	50	19	310	26	65	5	17	30	0	39
Future Vol, veh/h	46	265	50	19	310	26	65	5	17	30	0	39
Conflicting Peds, #/hr	12	0	14	14	0	12	1	0	6	6	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	30	6	12	5	3	8	4	2	2	10	2	2
Mvmt Flow	46	265	50	19	310	26	65	5	17	30	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	329	0	0	778	782	310	772	794	336
Stage 1	-	-	-	-	-	-	396	396	-	373	373	-
Stage 2	-	-	-	-	-	-	382	386	-	399	421	-
Critical Hdwy	4.4	-	-	4.15	-	-	7.14	6.52	6.22	7.2	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Follow-up Hdwy	2.47	-	-	2.245	-	-	3.536	4.018	3.318	3.59	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1214	-	-	311	326	730	307	321	706
Stage 1	-	-	-	-	-	-	625	604	-	632	618	-
Stage 2	-	-	-	-	-	-	636	610	-	611	589	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1061	-	-	1201	-	-	274	297	719	276	292	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	274	297	-	276	292	-
Stage 1	-	-	-	-	-	-	586	566	-	593	600	-
Stage 2	-	-	-	-	-	-	588	592	-	557	552	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	20.9	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	313	1061	-	-	1201	-	-	419
HCM Lane V/C Ratio	0.278	0.043	-	-	0.016	-	-	0.165
HCM Control Delay (s)	20.9	8.5	0	-	8	0	-	15.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0	-	-	0.6

Lane Group	EBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	40	47	69
Future Volume (vph)	40	47	69
Lane Group Flow (vph)	40	47	69
Sign Control	Stop	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	13.8%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	0	0	47	69	0
Future Vol, veh/h	40	0	0	47	69	0
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	0	0	47	69	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	116	69	-	0	-	0
Stage 1	69	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	880	994	0	-	-	0
Stage 1	954	-	0	-	-	0
Stage 2	975	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	880	994	-	-	-	-
Mov Cap-2 Maneuver	880	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	975	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	880	-
HCM Lane V/C Ratio	-	0.045	-
HCM Control Delay (s)	-	9.3	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Appendix M

Synchro Intersection Worksheets – 2031 Future Total Conditions

CGH TRANSPORTATION

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	60	21	12	20	84	1262	131	1148	244
Future Volume (vph)	60	21	12	20	84	1262	131	1148	244
Lane Group Flow (vph)	60	55	12	143	84	1300	131	1148	244
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	72.0	72.0	18.0	90.0	90.0
Total Split (%)	30.8%	30.8%	30.8%	30.8%	55.4%	55.4%	13.8%	69.2%	69.2%
Maximum Green (s)	33.5	33.5	33.5	33.5	65.8	65.8	13.3	83.8	83.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	9	9	3	3	7	7		12	12
Act Effct Green (s)	17.2	17.2	17.2	17.2	87.2	87.2	101.6	100.1	100.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.67	0.67	0.78	0.77	0.77
v/c Ratio	0.63	0.24	0.08	0.50	0.29	0.45	0.42	0.48	0.24
Control Delay	78.9	24.1	45.5	17.0	15.3	12.0	8.7	7.3	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.9	24.1	45.5	17.0	15.3	12.0	8.7	7.3	1.4
LOS	E	C	D	B	B	B	A	A	A
Approach Delay		52.7		19.2		12.2		6.5	
Approach LOS		D		B		B		A	
Queue Length 50th (m)	15.1	4.9	2.8	4.7	7.5	48.2	6.0	43.4	0.0
Queue Length 95th (m)	26.3	14.9	7.7	21.1	26.0	92.8	18.7	96.4	8.6
Internal Link Dist (m)		396.6		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	186	413	279	442	288	2902	363	2368	1035
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.13	0.04	0.32	0.29	0.45	0.36	0.48	0.24

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 53 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 11.3 — Intersection LOS: B
Intersection Capacity Utilization 84.4% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: St-Laurent & Tremblay

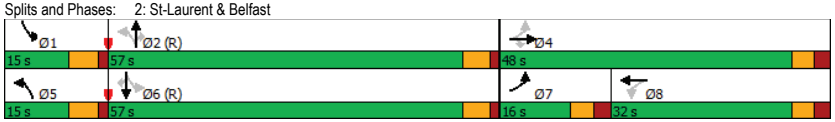
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	47	66	115	64	147	131	930	76	92	838	190
Future Volume (vph)	47	66	115	64	147	131	930	76	92	838	190
Lane Group Flow (vph)	47	66	115	64	260	131	930	76	92	838	190
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	16.0	48.0	48.0	32.0	32.0	15.0	57.0	57.0	15.0	57.0	57.0
Total Split (%)	13.3%	40.0%	40.0%	26.7%	26.7%	12.5%	47.5%	47.5%	12.5%	47.5%	47.5%
Maximum Green (s)	10.2	42.2	42.2	26.2	26.2	9.3	51.4	51.4	9.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		42	42	9	9		22	22		13	13
Act Effct Green (s)	35.4	35.4	35.4	23.5	23.5	68.0	59.3	59.3	66.9	58.8	58.8
Actuated g/C Ratio	0.30	0.30	0.30	0.20	0.20	0.57	0.49	0.49	0.56	0.49	0.49
v/c Ratio	0.24	0.13	0.27	0.33	0.87	0.42	0.59	0.10	0.35	0.55	0.28
Control Delay	30.0	28.5	6.5	45.2	69.1	16.4	25.6	0.6	15.8	25.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	28.5	6.5	45.2	69.1	16.4	25.6	0.6	15.8	25.1	4.2
LOS	C	C	A	D	E	B	C	A	B	C	A
Approach Delay		17.7			64.4		22.9			20.8	
Approach LOS		B			E		C			C	
Queue Length 50th (m)	7.5	10.7	0.0	12.7	51.9	13.9	88.3	0.0	9.5	78.8	0.0
Queue Length 95th (m)	15.9	20.5	12.3	25.8	#92.5	24.6	114.3	1.3	18.1	100.9	13.4
Internal Link Dist (m)		518.7			23.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	214	596	485	218	329	321	1577	732	279	1519	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.11	0.24	0.29	0.79	0.41	0.59	0.10	0.33	0.55	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 26.4 Intersection LOS: C
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



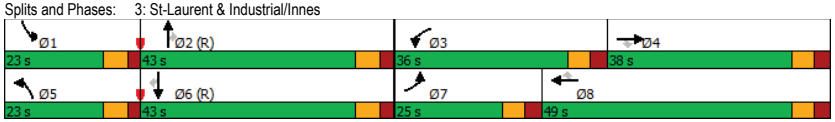
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	194	142	618	741	242	210	1136	356	118	867	146
Future Volume (vph)	73	194	142	618	741	242	210	1136	356	118	867	146
Lane Group Flow (vph)	73	194	142	618	741	242	210	1136	356	118	867	146
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	25.0	38.0	38.0	36.0	49.0	49.0	23.0	43.0	43.0	23.0	43.0	43.0
Total Split (%)	17.9%	27.1%	27.1%	25.7%	35.0%	35.0%	16.4%	30.7%	30.7%	16.4%	30.7%	30.7%
Maximum Green (s)	18.4	31.4	31.4	29.4	42.4	42.4	16.7	36.4	36.4	16.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		7	7		3	3		5	5		9	9
Act Effct Green (s)	8.8	19.4	19.4	28.8	42.0	42.0	14.5	55.0	55.0	10.6	51.1	51.1
Actuated g/C Ratio	0.06	0.14	0.14	0.21	0.30	0.30	0.10	0.39	0.39	0.08	0.36	0.36
v/c Ratio	0.39	0.47	0.41	0.93	0.78	0.42	0.68	0.92	0.49	0.50	0.74	0.26
Control Delay	68.5	57.7	6.0	76.4	51.2	6.2	71.4	54.1	10.1	69.0	44.7	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	57.7	6.0	76.4	51.2	6.2	71.4	54.1	10.1	69.0	44.7	3.6
LOS	E	E	A	E	D	A	E	D	B	E	D	A
Approach Delay		41.7			54.1			47.0			41.9	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	10.2	26.5	0.0	87.1	101.7	0.0	29.2	156.3	11.0	16.4	109.7	0.0
Queue Length 95th (m)	18.1	35.1	8.2	#120.0	113.1	18.0	42.2	#252.6	45.0	26.1	#176.3	9.0
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	391	665	444	675	993	587	359	1229	728	372	1176	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.29	0.32	0.92	0.75	0.41	0.58	0.92	0.49	0.32	0.74	0.26

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 47.7 Intersection LOS: D
Intersection Capacity Utilization 89.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Lane Group	EBT	WBT
Lane Configurations		
Traffic Volume (vph)	209	324
Future Volume (vph)	209	324
Lane Group Flow (vph)	232	324
Sign Control	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	16.4%	ICU Level of Service A
Analysis Period (min)	15	

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	272	225	1	4
Future Volume (vph)	272	225	1	4
Lane Group Flow (vph)	338	264	74	36
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	51.8%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	272	15	13	225	26	58	1	15	15	4	17
Future Vol, veh/h	51	272	15	13	225	26	58	1	15	15	4	17
Conflicting Peds, #/hr	8	0	23	23	0	8	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	20	12	7	23	15	15	55	2	33	20	25	12
Mvmt Flow	51	272	15	13	225	26	58	1	15	15	4	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	310	0	0	680	690	308	667	684	246
Stage 1	-	-	-	-	-	-	405	405	-	272	272	-
Stage 2	-	-	-	-	-	-	275	285	-	395	412	-
Critical Hdwy	4.3	-	-	4.33	-	-	7.65	6.52	6.53	7.3	6.75	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.65	5.52	-	6.3	5.75	-
Follow-up Hdwy	2.38	-	-	2.407	-	-	3.995	4.018	3.597	3.68	4.225	3.408
Pot Cap-1 Maneuver	1208	-	-	1141	-	-	303	368	665	349	344	769
Stage 1	-	-	-	-	-	-	529	598	-	696	645	-
Stage 2	-	-	-	-	-	-	629	676	-	596	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1121	-	-	274	336	651	320	314	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	274	336	-	320	314	-
Stage 1	-	-	-	-	-	-	493	557	-	656	632	-
Stage 2	-	-	-	-	-	-	603	662	-	549	518	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	20.2	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	1200	-	-	1121	-	-	440
HCM Lane V/C Ratio	0.238	0.043	-	-	0.012	-	-	0.082
HCM Control Delay (s)	20.2	8.1	0	-	8.2	0	-	13.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.3

Lane Group	EBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	47	27	32
Future Volume (vph)	47	27	32
Lane Group Flow (vph)	47	27	32
Sign Control	Stop	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	13.3%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	0	0	27	32	0
Future Vol, veh/h	47	0	0	27	32	0
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	0	0	27	32	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	59	32	-	0	-	0
Stage 1	32	-	-	-	-	-
Stage 2	27	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	948	1042	0	-	-	0
Stage 1	991	-	0	-	-	0
Stage 2	996	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	948	1042	-	-	-	-
Mov Cap-2 Maneuver	948	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

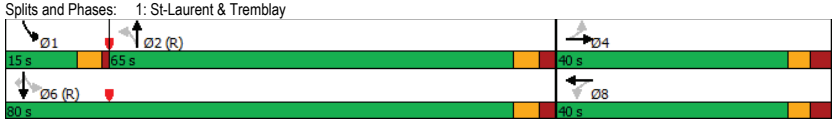
Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	948	-
HCM Lane V/C Ratio	-	0.05	-
HCM Control Delay (s)	-	9	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.2	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	228	38	23	21	38	1380	63	1099	94
Future Volume (vph)	228	38	23	21	38	1380	63	1099	94
Lane Group Flow (vph)	228	125	23	206	38	1392	63	1099	94
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases		4		8		2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	1	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	38.5	38.5	38.5	38.5	39.2	39.2	9.7	39.2	39.2
Total Split (s)	40.0	40.0	40.0	40.0	65.0	65.0	15.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	54.2%	54.2%	12.5%	66.7%	66.7%
Maximum Green (s)	33.5	33.5	33.5	33.5	58.8	58.8	10.3	73.8	73.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.2	3.2	3.2	3.2	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.2	6.2	4.7	6.2	6.2
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)	25.0	25.0	25.0	25.0	22.0	22.0		22.0	22.0
Pedestrian Calls (#/hr)	6	6	2	2	16	16		12	12
Act Effct Green (s)	33.5	33.5	33.5	33.5	63.9	63.9	75.3	73.8	73.8
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.53	0.53	0.63	0.62	0.62
v/c Ratio	1.03	0.26	0.07	0.38	0.18	0.55	0.28	0.56	0.11
Control Delay	112.2	13.6	32.7	9.1	20.2	18.7	11.9	15.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.2	13.6	32.7	9.1	20.2	18.7	11.9	15.0	2.2
LOS	F	B	C	A	C	B	B	B	A
Approach Delay		77.3		11.5		18.8		13.8	
Approach LOS		E		B		B		B	
Queue Length 50th (m)	~57.4	6.6	4.0	4.3	3.4	55.1	5.4	74.8	0.0
Queue Length 95th (m)	#106.4	21.5	10.6	23.0	m8.1	m89.3	10.8	92.8	6.2
Internal Link Dist (m)		390.4		0.1		682.5		144.8	
Turn Bay Length (m)	38.0		38.0		45.0		75.0		
Base Capacity (vph)	221	482	328	546	217	2534	260	1962	825
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.26	0.07	0.38	0.18	0.55	0.24	0.56	0.11

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 22.7 Intersection LOS: C
Intersection Capacity Utilization 89.2% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: St-Laurent & Tremblay

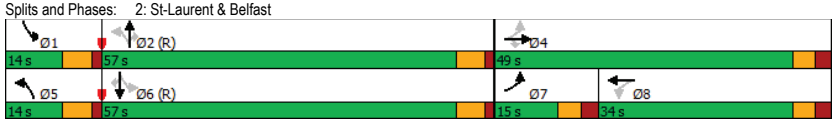


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	195	169	239	118	96	129	1005	110	113	896	133
Future Volume (vph)	195	169	239	118	96	129	1005	110	113	896	133
Lane Group Flow (vph)	195	169	239	118	261	129	1005	110	113	896	133
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	7	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.8	27.8	27.8	27.8	27.8	10.7	36.6	36.6	10.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	14.0	57.0	57.0	14.0	57.0	57.0
Total Split (%)	12.5%	40.8%	40.8%	28.3%	28.3%	11.7%	47.5%	47.5%	11.7%	47.5%	47.5%
Maximum Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	1.5	1.4	1.4	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	5.7	5.6	5.6	5.7	5.6	5.6
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0	7.0	7.0		25.0	25.0		25.0	25.0
Flash Dont Walk (s)		15.0	15.0	15.0	15.0		6.0	6.0		6.0	6.0
Pedestrian Calls (#/hr)		44	44	14	14		20	20		23	23
Act Effct Green (s)	35.9	35.9	35.9	20.9	20.9	67.0	58.3	58.3	66.8	58.2	58.2
Actuated g/C Ratio	0.30	0.30	0.30	0.17	0.17	0.56	0.49	0.49	0.56	0.48	0.48
v/c Ratio	0.96	0.36	0.44	0.68	0.82	0.42	0.63	0.17	0.47	0.56	0.18
Control Delay	89.1	34.0	8.9	64.8	55.3	16.1	26.3	3.0	23.3	19.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.1	34.0	8.9	64.8	55.3	16.1	26.3	3.0	23.3	19.4	3.1
LOS	F	C	A	E	E	B	C	A	C	B	A
Approach Delay		41.9			58.2		23.2			17.9	
Approach LOS		D			E		C			B	
Queue Length 50th (m)	36.4	31.0	6.4	26.2	44.9	12.4	91.7	0.0	10.1	47.4	0.0
Queue Length 95th (m)	#70.5	45.9	24.3	43.6	70.4	24.6	125.1	7.5	28.9	61.8	7.5
Internal Link Dist (m)		518.7			23.5		597.8			682.5	
Turn Bay Length (m)	75.0		200.0	65.0		75.0		55.0	75.0		85.0
Base Capacity (vph)	204	572	617	235	406	308	1596	644	248	1593	741
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.30	0.39	0.50	0.64	0.42	0.63	0.17	0.46	0.56	0.18

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 28.7 Intersection LOS: C
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: St-Laurent & Belfast



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	567	367	415	274	137	206	973	522	132	980	136
Future Volume (vph)	139	567	367	415	274	137	206	973	522	132	980	136
Lane Group Flow (vph)	139	567	367	415	274	137	206	973	522	132	980	136
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.6	38.6	38.6	11.6	38.6	38.6	11.3	37.6	37.6	11.3	37.6	37.6
Total Split (s)	19.0	38.0	38.0	41.0	60.0	60.0	28.0	43.0	43.0	28.0	43.0	43.0
Total Split (%)	12.7%	25.3%	25.3%	27.3%	40.0%	40.0%	18.7%	28.7%	28.7%	18.7%	28.7%	28.7%
Maximum Green (s)	12.4	31.4	31.4	34.4	53.4	53.4	21.7	36.4	36.4	21.7	36.4	36.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.1	2.4	2.4	2.1	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	6.6	6.3	6.6	6.6	6.3	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)		6	6		7	7		10	10		14	14
Act Effct Green (s)	10.5	27.1	27.1	21.7	38.3	38.3	13.8	39.6	39.6	11.0	36.8	36.8
Actuated g/C Ratio	0.08	0.22	0.22	0.17	0.30	0.30	0.11	0.32	0.32	0.09	0.29	0.29
v/c Ratio	0.52	0.81	0.67	0.75	0.28	0.26	0.60	0.95	0.68	0.50	1.03	0.25
Control Delay	64.4	57.5	15.4	59.1	34.1	6.3	62.5	61.8	11.5	63.4	81.6	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	57.5	15.4	59.1	34.1	6.3	62.5	61.8	11.5	63.4	81.6	3.8
LOS	E	E	B	E	C	A	E	E	B	E	F	A
Approach Delay		44.0			42.1			46.4			71.2	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	17.3	70.4	11.8	51.3	27.1	0.0	25.6	125.8	11.8	16.4	~140.3	0.0
Queue Length 95th (m)	30.7	101.0	48.2	73.3	40.7	14.4	41.3	#199.1	56.8	28.8	#214.6	9.1
Internal Link Dist (m)		745.6			700.4			316.7			597.8	
Turn Bay Length (m)	38.0		120.0	150.0		80.0	100.0		100.0	125.0		150.0
Base Capacity (vph)	320	822	591	888	1368	700	544	1023	763	529	950	538
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.69	0.62	0.47	0.20	0.20	0.38	0.95	0.68	0.25	1.03	0.25

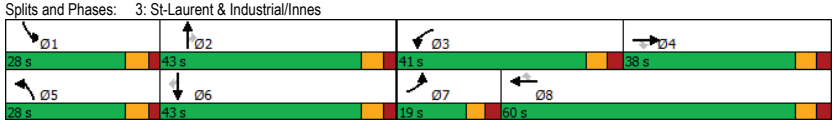
Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 125.7
Natural Cycle: 120
Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 51.5	Intersection LOS: D
Intersection Capacity Utilization 87.4%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: St-Laurent & Industrial/Innes



Lane Group	EBT	WBT
Lane Configurations		
Traffic Volume (vph)	336	379
Future Volume (vph)	336	379
Lane Group Flow (vph)	387	380
Sign Control	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 25.3%		ICU Level of Service A
Analysis Period (min) 15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	265	310	5	0
Future Volume (vph)	265	310	5	0
Lane Group Flow (vph)	361	355	87	69
Sign Control	Free	Free	Stop	Stop

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	265	50	19	310	26	65	5	17	30	0	39
Future Vol, veh/h	46	265	50	19	310	26	65	5	17	30	0	39
Conflicting Peds, #/hr	12	0	14	14	0	12	1	0	6	6	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	30	6	12	5	3	8	4	2	2	10	2	2
Mvmt Flow	46	265	50	19	310	26	65	5	17	30	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	329	0	0	778	782	310	772	794	336
Stage 1	-	-	-	-	-	-	396	396	-	373	373	-
Stage 2	-	-	-	-	-	-	382	386	-	399	421	-
Critical Hdwy	4.4	-	-	4.15	-	-	7.14	6.52	6.22	7.2	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.52	-	6.2	5.52	-
Follow-up Hdwy	2.47	-	-	2.245	-	-	3.536	4.018	3.318	3.59	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1214	-	-	311	326	730	307	321	706
Stage 1	-	-	-	-	-	-	625	604	-	632	618	-
Stage 2	-	-	-	-	-	-	636	610	-	611	589	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1061	-	-	1201	-	-	274	297	719	276	292	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	274	297	-	276	292	-
Stage 1	-	-	-	-	-	-	586	566	-	593	600	-
Stage 2	-	-	-	-	-	-	588	592	-	557	552	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	20.9	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	313	1061	-	-	1201	-	-	419
HCM Lane V/C Ratio	0.278	0.043	-	-	0.016	-	-	0.165
HCM Control Delay (s)	20.9	8.5	0	-	8	0	-	15.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0	-	-	0.6

Lane Group	EBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	40	47	69
Future Volume (vph)	40	47	69
Lane Group Flow (vph)	40	47	69
Sign Control	Stop	Free	Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	13.8%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	0	0	47	69	0
Future Vol, veh/h	40	0	0	47	69	0
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	0	0	47	69	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	116	69	-	0	-	0
Stage 1	69	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	880	994	0	-	-	0
Stage 1	954	-	0	-	-	0
Stage 2	975	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	880	994	-	-	-	-
Mov Cap-2 Maneuver	880	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	975	-	-	-	-	-

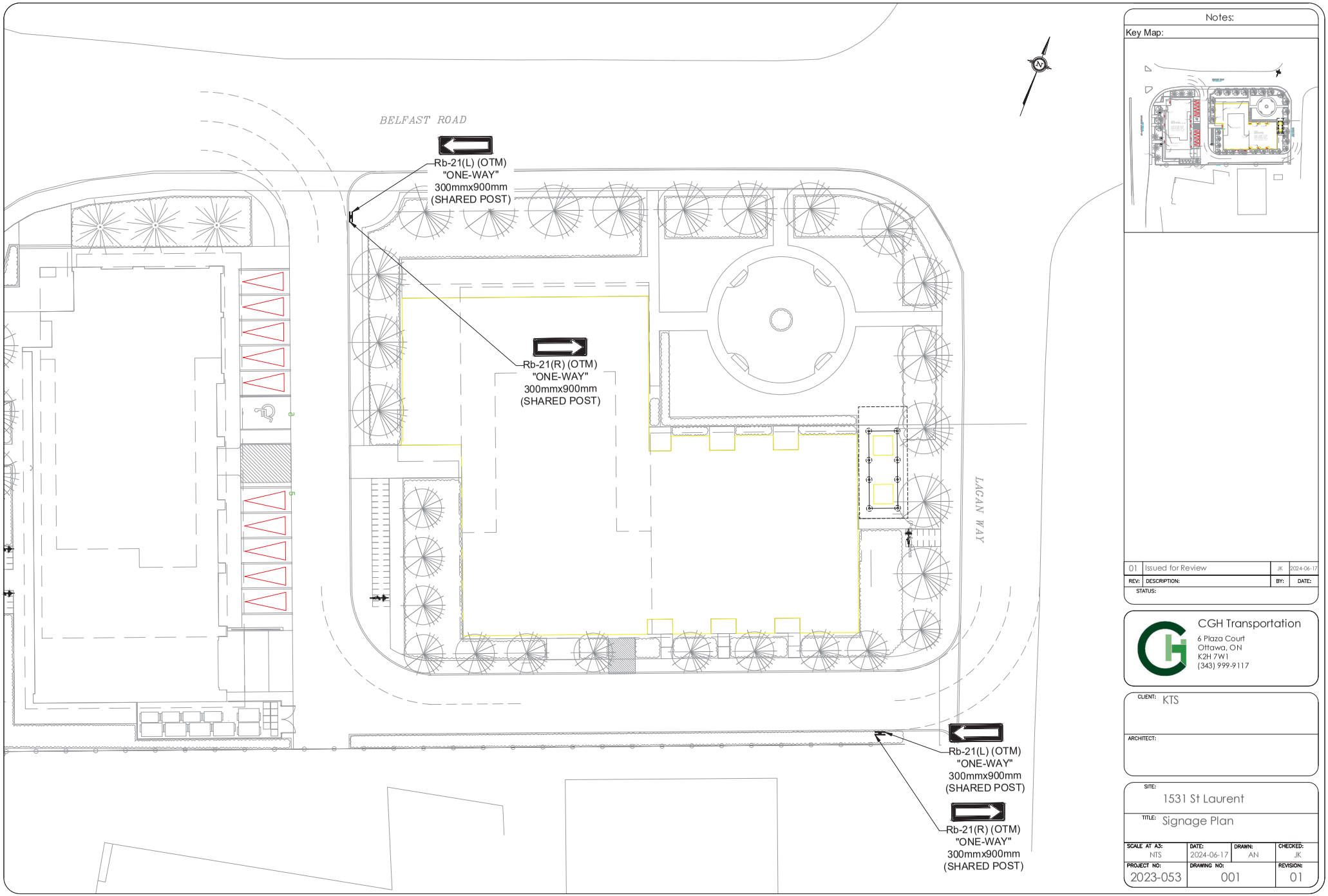
Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	880	-
HCM Lane V/C Ratio	-	0.045	-
HCM Control Delay (s)	-	9.3	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Appendix N

Signage Plan

CGH TRANSPORTATION



Notes:

Key Map:

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review	JK	2024-06-17

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: KTS

ARCHITECT:

SITE: 1531 St Laurent

TITLE: Signage Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2024-06-17	AN	JK

PROJECT NO:	DRAWING NO:	REVISION:
2023-053	001	01