CANADA LANDS COMPANY

530 TREMBLAY ROAD

DRAFT TRANSPORTATION IMPACT ASSESSMENT REPORT

OCTOBER 23, 2020

wsp

530 TREMBLAY ROAD

DRAFT TRANSPORTATION IMPACT ASSESSMENT REPORT

CANADA LANDS COMPANY

PROJECT NO.: OUR REF. NO. 19M-00609-00
DATE: OCTOBER 23, 2020

WSP
SUITE 300
2611 QUEENSVIEW DRIVE
OTTAWA, ON, CANADA K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
WSP.COM

TABLE OF CONTENTS

1 SCREENING 1

2 SCOPING 2

2.1 Screening Form 2

2.2 Description of Proposed Development 2

2.3 Existing Conditions 4

2.3.1 Roadways and Pedestrian / Cycling Facilities 4

2.3.2 Intersections 8

2.3.3 Driveways 12

2.3.4 Transit 13

2.3.5 Area Traffic Management Measures 15

2.3.6 Peak Hour Travel Demand 16

2.3.7 Boundary Street Crash History 18

2.4 Planned Conditions 19

2.4.1 Changes to Study Area Transportation Network 19

2.4.2 Other Area Developments 20

2.5 Study Area 20

2.6 Time Periods 21

2.7 Horizon Years 21

2.8 Exemptions Review 22

3 FORECASTING 23

3.1 Development generated Traffic 23

3.1.1 Trip Generation 23

3.1.2 Trip Distribution 25

3.1.3 Trip Assignment 26

3.2 Background Network Traffic 31

3.2.1 Changes to the Background Transportation Network 31

3.2.2 General Background Growth Rates 34

3.2.3 Other Area Developments 34

3.3 Demand Rationalization 39

3.3.1 Description of Capacity Issues(s) 39
3.3.2 Adjustment to Development Generated Travel Demands 39
3.3.3 Adjustments to Background Network Travel Demands 39

4 ANALYSIS 43

4.1 Development Design 43
4.1.1 Design for Sustainable Modes 43
4.1.2 Circulation and Access 43
4.1.3 New Streets Network 43

4.2 Parking 45

4.3 Boundary Streets 46
4.3.1 St. Laurent Boulevard 46
4.3.2 Tremblay Road 48

4.4 Access Intersections 51

4.5 Transportation Demand Management 51
4.5.1 Context for TDM 51
4.5.2 TDM Measures 51

4.6 Neighbourhood Traffic Management 52

4.7 Transit 53
4.7.1 Route Capacity 53
4.7.2 Transit Priority 56

4.8 Review of Network Concept 56

4.9 Intersection Design 57
4.9.1 Intersection Control 57
4.9.2 Intersection Design 58

4.10 Summary of Improvements Indicated and Modification Options 66

APPENDICES

A – SCREENING FORM
B - TRANS O-D SURVEY RESULTS
C – CRASH DATA (2014-2018)
D – BELFAST ROAD BIKEWAY DRAFT FUNCTIONAL DESIGN
E - GROWTH RATE CALCULATION
F – TDM-CHECKLIST
G – TRANS TRAFFIC AND TRANSIT (2031 AM)
H – WSP PEDESTRIAN OVERPASS FEASIBILITY REPORT
I – SIGNAL WARRANTS
J – SYNCHRO SHEETS
K – PEDESTRIAN AND CYCLING FACILITIES

TABLES

TABLE 1-1. TRANSPORTATION IMPACT ASSESSMENT (TIA) SCREENING OPTIONS 1
TABLE 2-1. STUDY AREA INTERSECTIONS 8
TABLE 2-2. PEAK HOUR TRAVEL DEMAND BY MODE 16
TABLE 2-3. CRASH HISTORY ON BOUNDARY STREETS BETWEEN JANUARY 2014 AND DECEMBER 2018 18
TABLE 2-4. EXEMPTIONS SUMMARY 22
TABLE 3-1. ESTIMATED TOTAL DEVELOPMENT-GENERATED PERSON-TRIPS 23
TABLE 3-2. EXISTING MODE SHARE 24
TABLE 3-3. FUTURE MODE SHARE TARGETS FOR THE DEVELOPMENT 24
TABLE 3-4. DEVELOPMENT PERSON TRIPS BY MODE 25
TABLE 3-5. IMPACT OF OCT 6, 2019 TRANSIT SERVICE CHANGE 31
TABLE 4-1. URBAN DESIGN GUIDELINES FOR GREENFIELD NEIGHBOURHOODS 44
TABLE 4-2. SEGMENT MMLOS (2025) 47
TABLE 4-3. SEGMENT MMLOS (2025) 48
TABLE 4-4. PEAK HOUR MODE SHARES COMPARED TO TRIP PURPOSE (2033) 51
TABLE 4-5. MAJOR COLLECTOR TRAFFIC VOLUME THRESHOLDS 52
TABLE 4-6. EXISTING TRANSIT PEAK HOUR BOARDINGS AND ALIGHTINGS (JAN 2019 BOOKING) 53
TABLE 4-7. 2023 AM PEAK HOUR: BOARDINGS AND ALIGHTINGS AT ST. LAURENT STATION (CONFEDERATION LINE) 54
TABLE 4-8. FORECASTED DEVELOPMENT GENERATED TRANSIT PERSON TRIPS 54
TABLE 4-9. 2011 AND 2031 TRANS MODEL TRANSIT PROJECTIONS ALONG

THE TRANSITWAY AT ST. LAURENT STATION: PEAK PERIOD (2.5 HOURS) 55
TABLE 4-10. INTERSECTION CONTROL SUMMARY (2033 TOTAL) 57
TABLE 4-11. MMLOS DESIGNATION / POLICY AREAS 58
TABLE 4-12. INTERSECTION MMLOS (EXISTING AND FUTURE TOTAL) 59
TABLE 4-13. CITY OF OTTAWA MMLOS GUIDELINES, V/C CRITERIA 60
TABLE 4-14. INTERSECTION CAPACITY SUMMARY FOR EXISTING CONDITIONS (2019) 62
TABLE 4-15. INTERSECTION CAPACITY SUMMARY FOR FUTURE BACKGROUND CONDITIONS (2025, 2029, 2033) 62
TABLE 4-16. INTERSECTION CAPACITY SUMMARY FOR FUTURE TOTAL CONDITIONS (2025, 2029, 2033) 64

FIGURES

FIGURE 2-1. AREA CONTEXT PLAN 2
FIGURE 2-2. DRAFT DEVELOPMENT CONCEPT PLAN 3
FIGURE 2-3. EXISTING PEDESTRIAN AND CYCLING FACILITIES 6
FIGURE 2-4. ULTIMATE CYCLING NETWORK 7
FIGURE 2-5. OC TRANSPO ROUTES 13
FIGURE 2-6. ST. LAURENT STATION LAYOUT 14
FIGURE 2-7. LOCATIONS WITHIN 5-MINUTES WALKING DISTANCE OF ST-LAURENT STATION (INCLUDING UNDERGROUND PEDESTRIAN WALKWAY) 15
FIGURE 2-8. EXISTING TRAFFIC VOLUMES (2019) 17
FIGURE 2-9. STUDY AREA 20

FIGURE 3-1. ACCESS TO HIGHWAY 417 EASTBOUND FROM 530 TREMBLAY ROAD 26
FIGURE 3-2 SITE TRAFFIC – RESIDENTIAL PHASE 1 – 2025 27
FIGURE 3-3 SITE TRAFFIC – FEDERAL OFFICE – 2025 28
FIGURE 3-4. SITE TRAFFIC – RESIDENTIAL PHASE 2 – 2029 29
FIGURE 3-5. SITE TRAFFIC – RESIDENTIAL PHASE 3 – 2033 30
FIGURE 3-6. WORK TRIP RAIL MODE SHARE BY DISTANCE TO OFFICE SITES FROM STATION 33
FIGURE 3-7. FUTURE BACKGROUND TRAFFIC – 2025 35
FIGURE 3-8. FUTURE BACKGROUND TRAFFIC – 2029 36
FIGURE 3-9. FUTURE BACKGROUND TRAFFIC - 2033 37
FIGURE 3-10. OTHER AREA DEVELOPMENT TRAFFIC 38
FIGURE 3-11. FUTURE TOTAL TRAFFIC – 2025 40
FIGURE 3-12. FUTURE TOTAL TRAFFIC – 2029 41
FIGURE 3-13. FUTURE TOTAL TRAFFIC – 2033 42
FIGURE 4-1. ST. LAURENT BOULEVARD (SOUTH OF TREMBLAY) – EXISTING CROSS-SECTION 46
FIGURE 4-2. CITY OF OTTAWA ARTERIAL ROAD CONCEPT 1 – CURRENT CROSS-SECTION STANDARD 47
FIGURE 4-3. TREMBLAY ROAD – EXISTING CROSS-SECTION 48
FIGURE 4-4. CITY OF OTTAWA COLLECTOR STREET CROSS-SECTION 26A 50
FIGURE 4-5. 2033 AM TRANSIT TRIPS 55
FIGURE 4-6. VEHICLE LOS TARGETS FOR STUDY INTERSECTIONS 61

1 SCREENING

This Transportation Impact Assessment has been prepared in support of the Draft Plan of Subdivision application for the federally owned 530 Tremblay Road site which will be developed in partnership between Canada Lands Company (CLC) and Public Services and Procurement Canada (PSPC). The Transportation Impact Assessment follows the City of Ottawa's Transportation Impact Assessment Guidelines (2017) which includes five steps:

1 Screening
2 Scoping
3 Forecasting
4 Analysis
5 Transportation Impact Assessment Submission

The Screening Step determines the need to continue with a Transportation Impact Assessment study. The development is assessed against three triggers: trip generation, location, and safety to identify the next step of the TIA study. If one of more of the triggers is satisfied, the Scoping Step must be completed. If none of the triggers are satisfied, the TIA is considered to be complete. If one or more triggers are satisfied, specific TIA components are required to be carried out depending on the combination of triggers (**Table 1-1**) that have been satisfied.

The proposed development at 530 Tremblay Road had **satisfied all three triggers** indicating that, as part of Steps Two through Five of the TIA process, the Design Review and Network Impact components should be addressed. For reference, the completed screening form is provided in **Appendix A**.

Table 1-1. Transportation Impact Assessment (TIA) Screening Options

	TIA TRIGGERS SATISFIED		
Next Step of TIA Process	**Trip Generation**	**Location**	**Safety**
Deemed Complete	No	No	No
Step Two: *Design Review Only*	No	Yes (one or both)	
Step Two: *Design Review and Network Impact*	**Yes**	**Yes** / No	**Yes** / No

DRAFT

2 SCOPING

2.1 SCREENING FORM

The completed screening form is provided in **Appendix A**.

2.2 DESCRIPTION OF PROPOSED DEVELOPMENT

This Transportation Impact Assessment has been prepared in support of the Draft Plan of Subdivision application for the federally owned 530 Tremblay Road site. The Government of Canada recently requested Canada Lands Company (CLC) to initiate collaborative projects in partnership with Public Services and Procurement Canada (PSPC) to address under-utilized federal assets. Together these organizations are undertaking a series of projects focusing on the redevelopment of federal campuses in the National Capital Region into sustainable mixed use live-work-play communities.

The 530 Tremblay Road site is an undeveloped property in Ottawa East and is located at the southwest corner of the St. Laurent Boulevard and Tremblay Road intersection. The property consists of approximately 26.38 acres of land which is currently zoned in the city of Ottawa as a Transit Oriented Development Zone (TD3 subzone) and as a Parks and Open Space Zone (O1 Zone). **Figure 2-1** illustrates the Study Area Context.

The draft development concept plan (**Figure 2-2**) includes approximately 500 high density residential apartment style-units which will be developed by Canada Lands Company (new municipal address of 470 Tremblay Road) over three phases: 200 units by 2025; 200 units by 2029; and a further 100 units by 2033. The additional lands will be owned by the federal government.

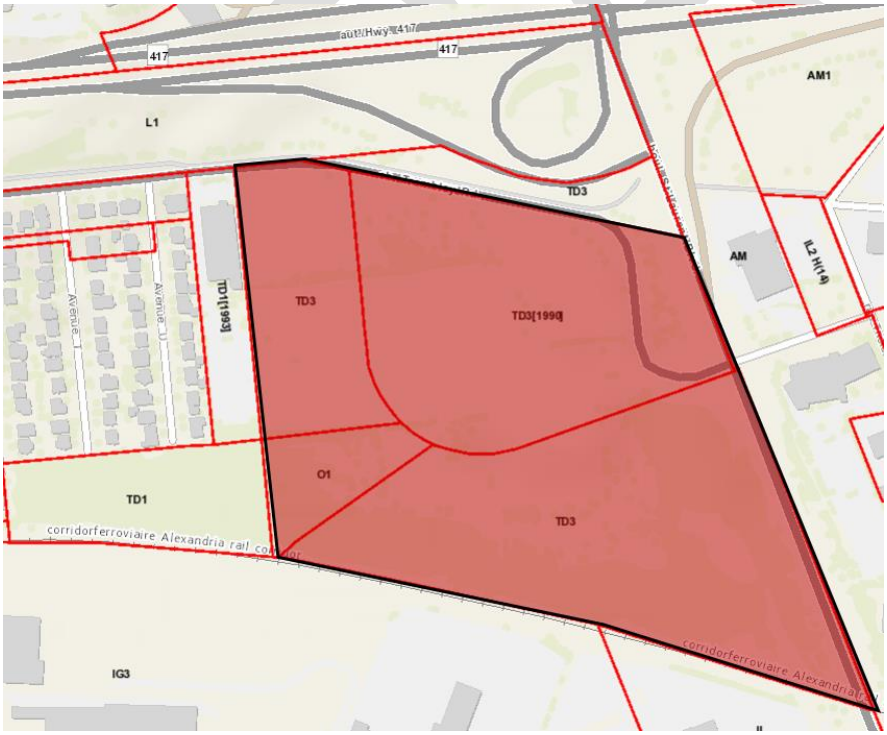
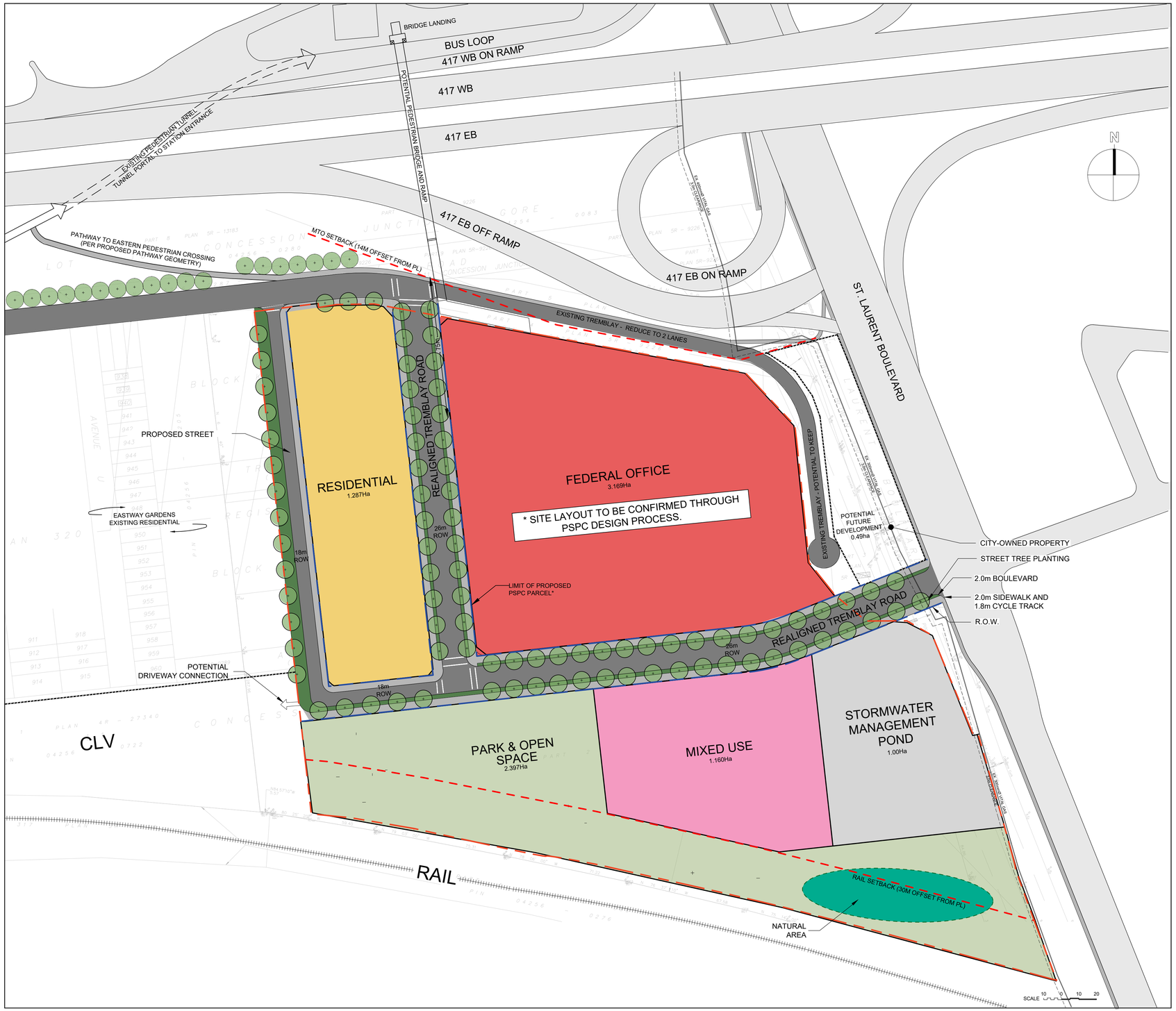


Figure 2-1. Area Context Plan



LEGEND:

- MIXED USED (MID-RISE TO HIGH-RISE RESIDENTIAL / RETAIL / HOTEL)
- RESIDENTIAL (LOW-RISE TO MID-RISE)
- FEDERAL OFFICE
- PARK AND OPEN SPACE
- STORMWATER MANAGEMENT POND
- PROPERTY LIMIT / BOUNDARY
- RIGHT-OF-WAY
- SETBACK

DEVELOPMENT CONCEPT PLAN

NOVEMBER 26, 2019

2.3 EXISTING CONDITIONS

2.3.1 ROADWAYS AND PEDESTRIAN / CYCLING FACILITIES

The seven existing roads that the Transportation Impact Assessment will consider are Tremblay Road, St. Laurent Boulevard, Riverside Drive, Lemieux Street, Belfast Road, Trainyards Drive, and Highway 417 EB Off Ramp. These roads are all under the jurisdiction of the City of Ottawa with the exception of the Highway 417 EB Off ramp which is maintained by the Ontario Ministry of Transportation (MTO). The road classification for City of Ottawa roadways are defined in City of Ottawa Official Plan, 2013, Volume 1, Section 7, Annex 1 Road Classification and Rights-of-Way.

Tremblay Road is classified as an urban major collector in the City of Ottawa's Official Plan (2013) with a 26m Right-of-Way (ROW) allocation from Riverside Drive to St. Laurent Boulevard and a posted speed limit of 50 km/h. The Tremblay Road ROW, east of Belfast Road, was amended to the Official Plan (Amendment #113, July 30, 2013) to add policy to various sections for Transit-Oriented Development Areas at future Light Rail Stations. The amendment included two notes related to the unequal widening along this corridor:

- Subject to unequal widening: 26m, measured from the existing south ROW limit.
- For the proposed roundabout located between Belfast and St. Laurent, more lands on either side of Tremblay, in addition to the 26m unequal widening may be required.

Tremblay Road has two lanes in each direction west of Pickering Place and a single lane in each direction east of Belfast Road.

St. Laurent Boulevard is an urban arterial that runs on a north-south alignment with a posted speed limit of 60 km/h. North of Tremblay Road it has three traffic lanes in each direction; south of Tremblay Road it provides two traffic lanes in each direction. The official plan reserves a 44.5m ROW for St Laurent Boulevard in the study area.

Riverside Drive is an urban arterial that runs on a north-south alignment with a posted speed limit of 60 km/h. North of Tremblay Road it has two traffic lanes in each direction; while south of Tremblay Road, it provides two southbound lanes and three northbound traffic lanes. The official plan reserves a 44.5m ROW in the study area.

Lemieux Street is an urban arterial that runs on an east-west alignment with a posted speed limit of 50 km/h. East of St. Laurent it has two traffic lanes in each direction. Lemieux Street also serves as the westbound off-ramp from Highway 417 to St. Laurent Boulevard. The official plan reserves a 30m ROW in the study area.

Belfast Road is an urban collector that runs on a north-south alignment with a posted speed limit of 50 km/h. North of Tremblay Road it is a major collector and south of Tremblay Road is classified as a collector. It has two traffic lanes in each direction.

Trainyards Drive is an urban collector that runs on a north-south alignment with a posted speed limit of 50 km/h. It has a single traffic lane in each direction.

Highway 417 EB Off Ramp provides access from the eastbound Highway 417 to St. Laurent Boulevard. It is contained within the MTO's Controlled Access Highway limits.

DRAFT

The existing pedestrian and cycling facilities in this area are shown in **Figure 2-3** and the City's Ultimate Cycling Network (including pathway links) is shown in **Figure 2-4**. The existing pedestrian and cycling facilities include:

Tremblay Road:

- Sidewalk on the north side from the VIA Rail intersection east to Pickering Place.
- Multi Use Path on the north side from Pickering Place east to 200m west of St. Laurent Boulevard
- Multi Use Path on the north side from Avenue S towards the tunnel under Highway 417 with access to the St-Laurent Mall / Bus Rapid Transit Station
- Sidewalk on the south side from the VIA Rail access east to St. Laurent Boulevard
- Designated as a Local Cycling Route within the City's Cycling Plan

St. Laurent Boulevard:

- Sidewalks on east and west sides of the roadway throughout the study area
- Designated as a Cycling Spine Route

Riverside Drive:

- Sidewalks on east and west sides of the roadway throughout the study area
- Designated as a Cycling Spine Route

Lemieux Street:

- Sidewalk on the north/east side throughout the study area
- Designed as a Local Cycling Route

Belfast Road:

- Separated multi-use path on the west side from Tremblay Road to Trainyards Drive
- Paved shoulder on the east side from Tremblay Road to 350m south of Belfast Road/Tremblay Road intersection
- Sidewalk on east side from Trainyards Drive to St. Laurent Boulevard
- Paved shoulder on the west side from Trainyards Drive to St. Laurent Boulevard
- Designated as a Major Cycling Pathway north of Trainyards Drive and as s Local Cycling Route south of Trainyards Drive

Trainyards Drive:

- Sidewalk on the west side throughout the study area
- Multi Use Path on the east side throughout the study area
- Northbound and southbound bike lanes present within the study area
- Designated a Major Cycling Pathway

A description of each type of facility is provided in the City of Ottawa's Cycling Plan (2013). An excerpt of this description is provided in **Appendix K**.

DRAFT

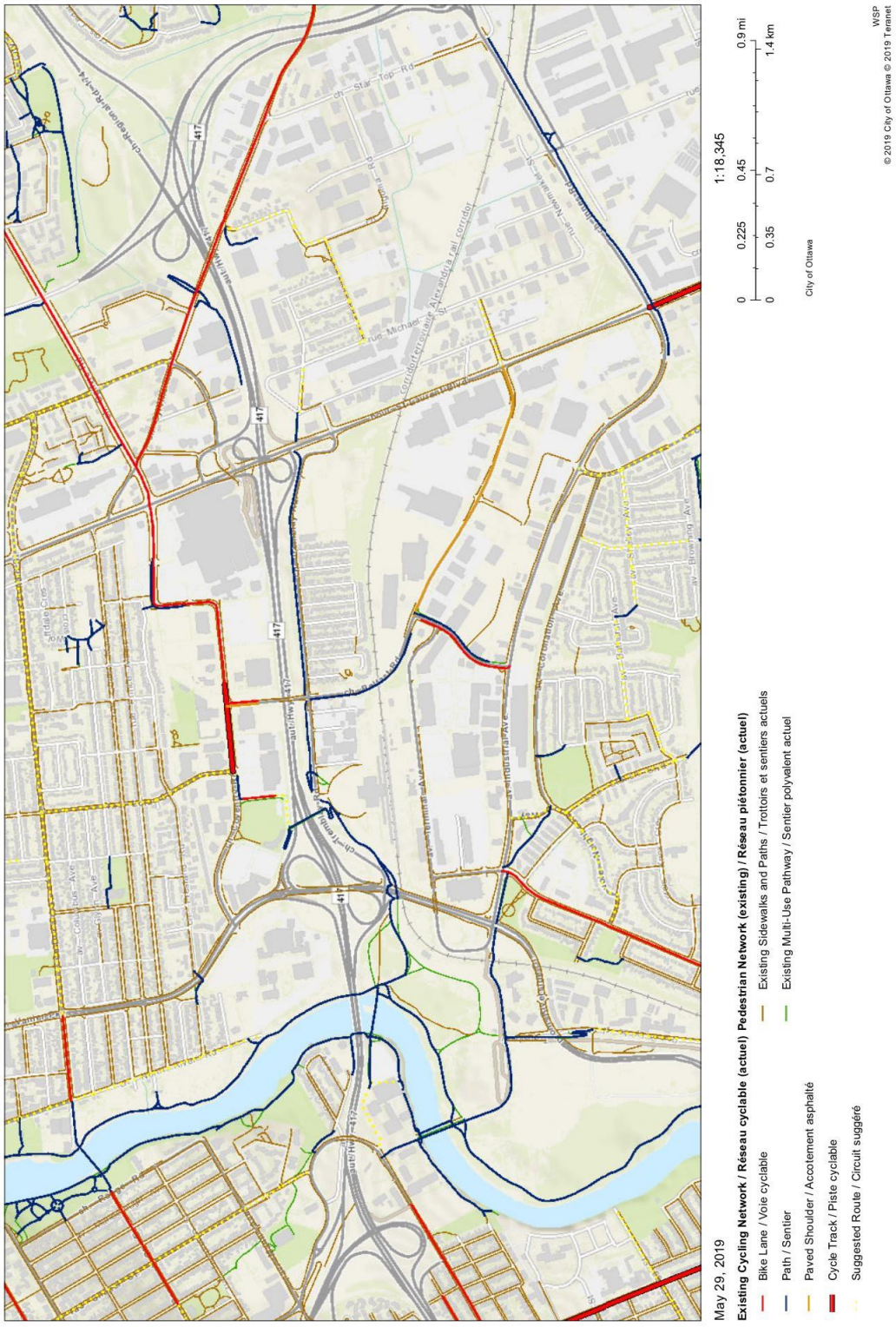


Figure 2-3. Existing Pedestrian and Cycling Facilities

The existing and proposed pathways connecting to the site in the Ultimate Cycling Network (**Figure 2-4**) include:

- East-west pathway link between Avenue P and St. Laurent Boulevard (*proposed*)
- North-south pathway link between Tremblay Road and the Avenue P/St. Laurent pathway link (*proposed*)
- Pedestrian tunnel under the Highway 417 connecting Tremblay Road and the St. Laurent Transit Station (*existing*)
- Major pathway over Highway 417 connecting the Site with the St. Laurent Mall / Transit Station (*proposed*)

Figure 2-4. Ultimate Cycling Network

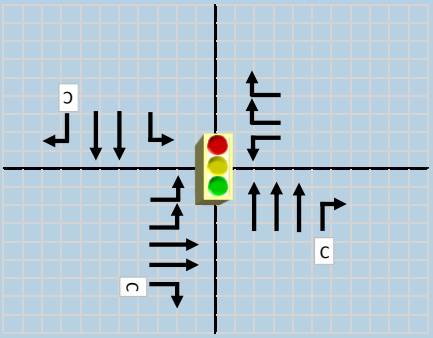
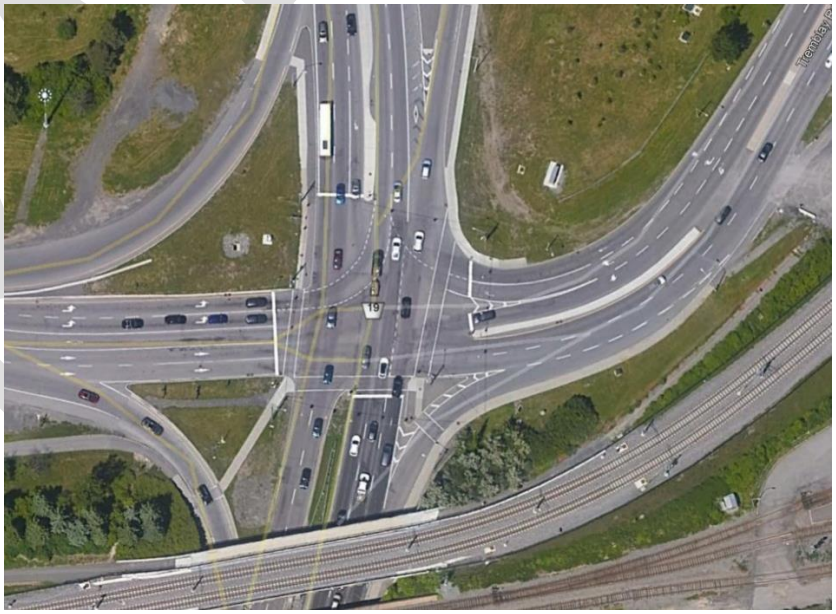
2.3.2 INTERSECTIONS

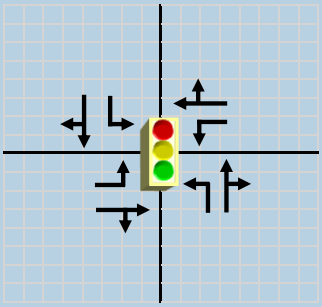
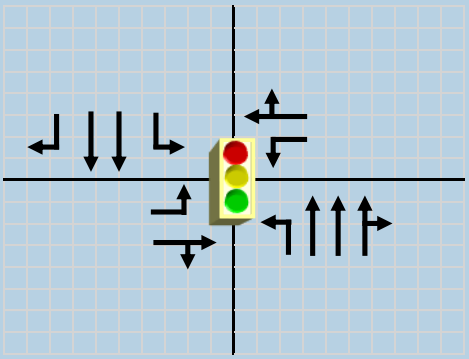
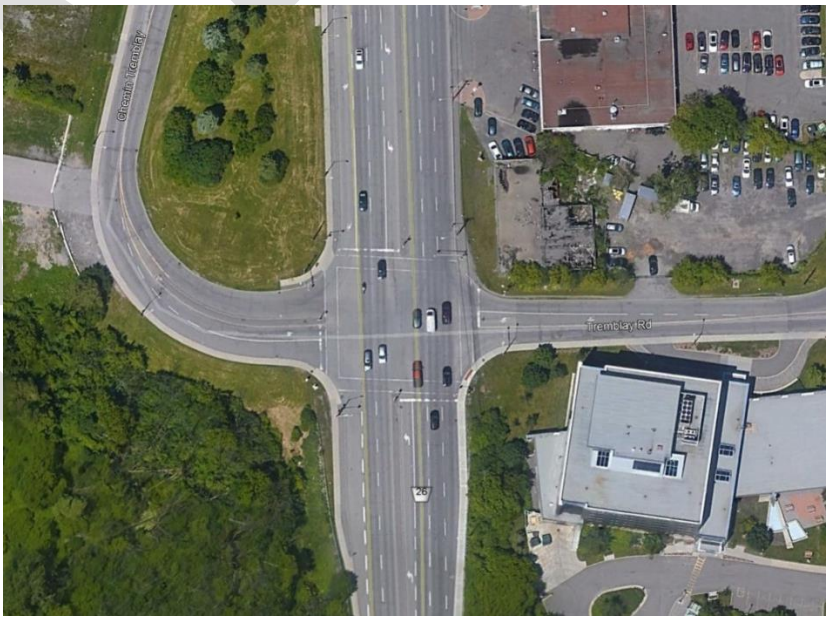
The Transportation Impact Assessment will consider seven intersections:

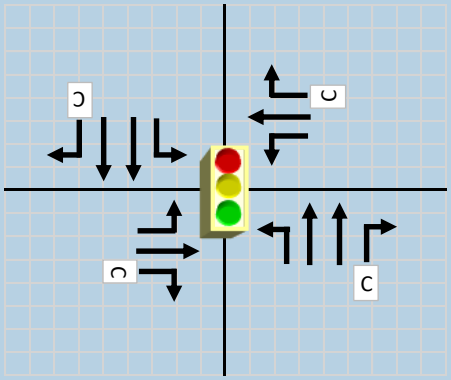
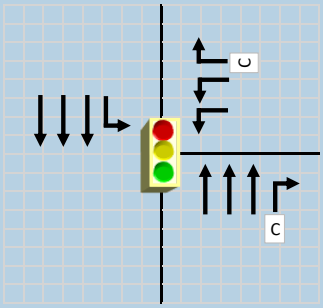
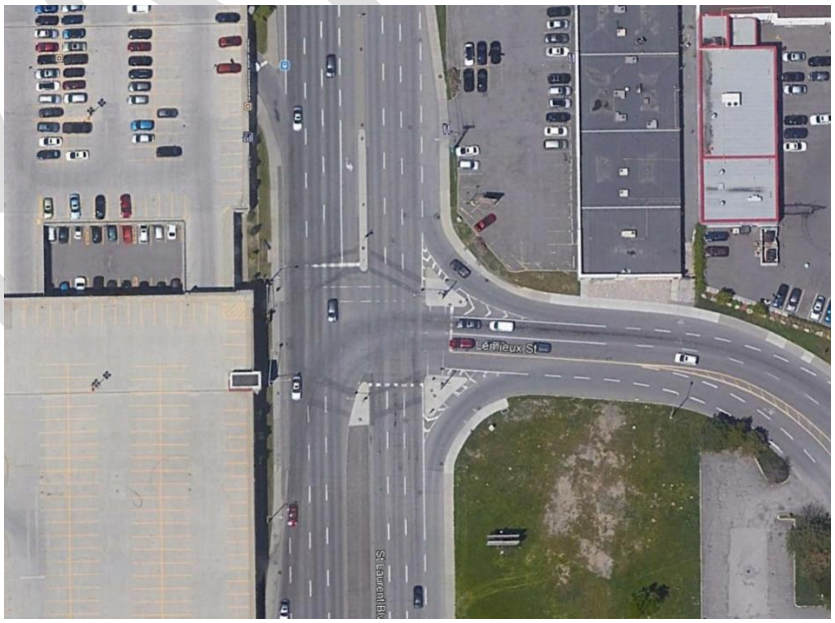
- Riverside Drive and Tremblay Road
- St. Laurent Boulevard and Lemieux Street
- St. Laurent Boulevard and Highway 417 EB Off Ramp
- St. Laurent Boulevard and Tremblay Road
- Tremblay Road and Belfast Road
- St. Laurent Boulevard and Belfast Road
- Belfast Road and Trainyards Drive

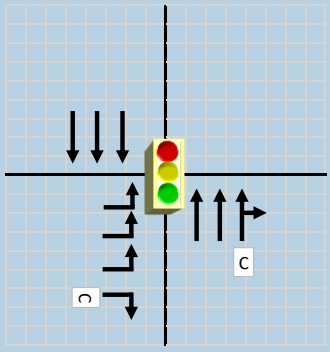
Descriptions for the intersections can be found below in **Table 2-1**.

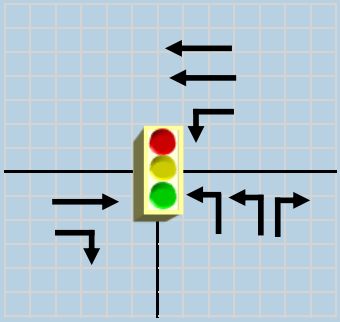
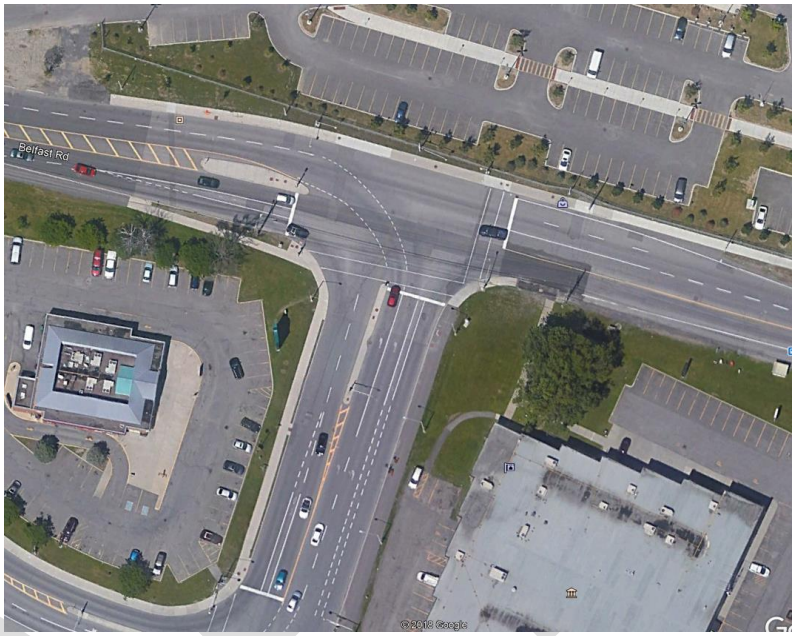
Table 2-1. Study Area Intersections

INTERSECTION DESCRIPTION	LANE ARRANGEMENT
Riverside Drive and Tremblay Road is a signalized intersection with turning restrictions: - No Westbound-Through - No Northbound-Left Pedestrians crossing facilities are provided on the east, west and south approaches. Lane Configurations  C- Channelized	

INTERSECTION DESCRIPTION	LANE ARRANGEMENT
Tremblay Road and Belfast Road is a signalized intersection with no turning restrictions. Pedestrians crossing facilities are provided on all approaches. <u>Lane Configurations</u> 	
Tremblay Road and St. Laurent Boulevard is a signalized intersection with no turning restrictions. Pedestrians crossing facilities are provided on all approaches. <u>Lane Configurations</u> 	

INTERSECTION DESCRIPTION	LANE ARRANGEMENT
St. Laurent Boulevard and Belfast Road is a signalized intersection with no turning restrictions. Pedestrians crossing facilities are provided on all approaches. <u>Lane Configurations</u>  **C - Channelized**	
St. Laurent Boulevard and Lemieux Street is a 3-legged signalized intersection with no turning restrictions. Pedestrians crossing facilities are provided on the north and east approaches. <u>Lane Configurations</u>  **C - Channelized**	

INTERSECTION DESCRIPTION	LANE ARRANGEMENT
St. Laurent Boulevard and HWY 417 EB Off Ramp is a 3-legged signalized with turning restrictions: - No Southbound-Right - No Northbound-Left Pedestrians crossing facilities are provided on the south and west approaches. The channelized northbound right turn lane provides bus-only access to the eastbound lanes of Highway 417. It was closed to general traffic as part of improvements to the transportation network in 2015. <u>Lane Configurations</u>  **C - Channelized**	

INTERSECTION DESCRIPTION	LANE ARRANGEMENT
Belfast Road and Trainyards Drive is a 3-legged signalized intersection with no turning restrictions. Pedestrians crossing facilities are provided on the south and east approaches. Lane Configurations 	

2.3.3 DRIVEWAYS

The existing driveways located along Tremblay Road within 200m of the Site's eastern limit include:

- Two office driveway accesses for the Coughlin building at 466 Tremblay Road
- Four residential driveways at 458, 450, 444, and 426 Tremblay Road

The existing driveways along St. Laurent Boulevard within 200m of the Site's western limit include:

- One commercial driveway for Bytek Automobiles at 1325 St. Laurent Boulevard

DRAFT

2.3.4 TRANSIT

OC Transpo provides four bus stops within 50 metres of 530 Tremblay Road:

- Eastbound Transit Stop 7128 on Tremblay Road west of St. Laurent Boulevard (Bus 18, 39), Adjacent to property
- Westbound Transit Stop 7129 on Tremblay Road west of St. Laurent Boulevard (Bus 18, 39), Opposite side of Tremblay Road just west of St. Laurent Boulevard
- Southbound Transit Stop 8538 on St. Laurent Blvd at Tremblay Rd (Bus 18, 39, 40)
- Northbound Transit Stop 1091 on St. Laurent Blvd at Tremblay Rd (Bus 18, 39, 40, 47)

The existing OC Transpo routes operating within close proximity of the proposed site area are shown in **Figure 2-5**.

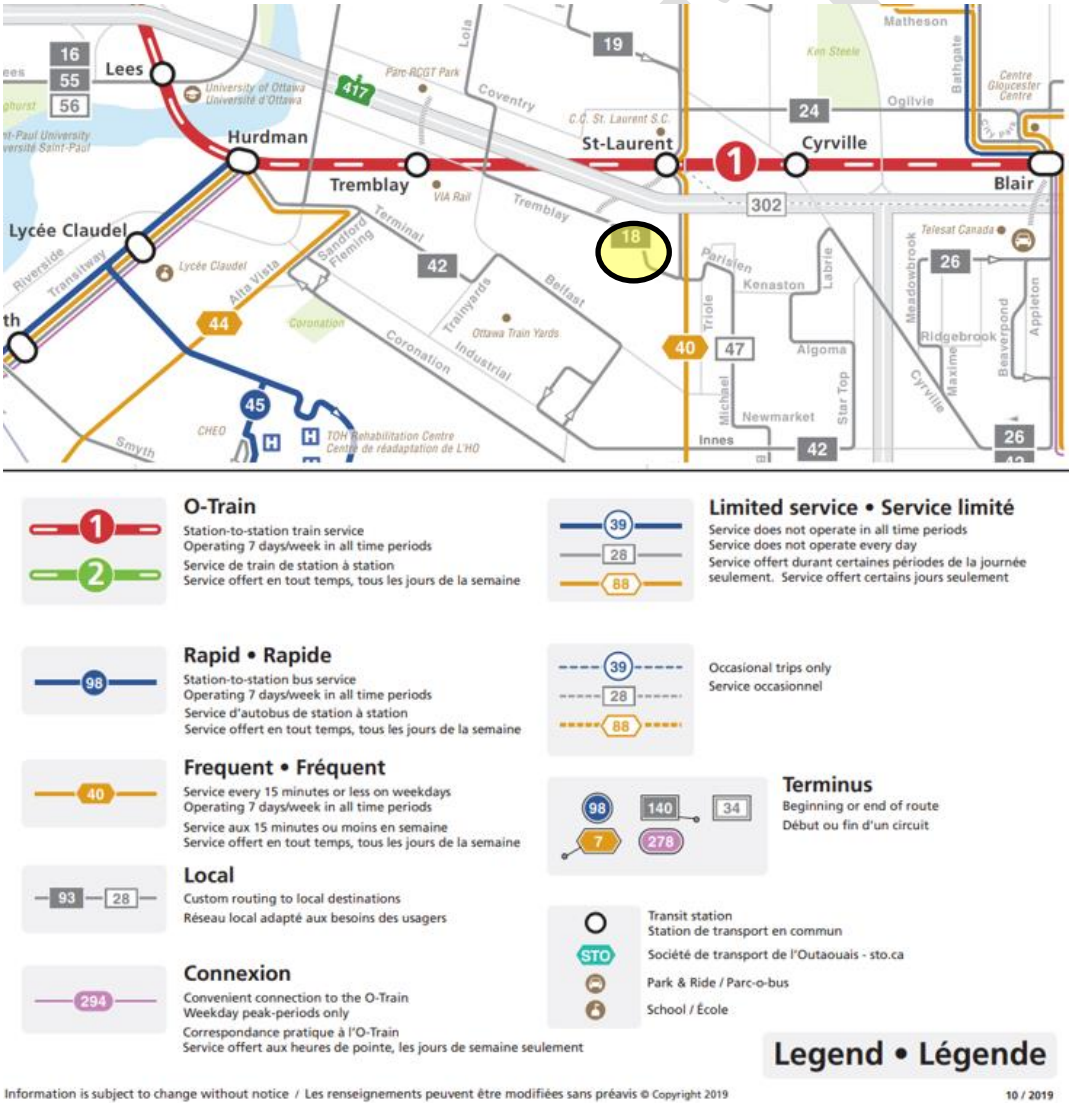


Figure 2-5. OC Transpo Routes

On October 6, 2019, the City of Ottawa's bus routes changed to provide connections from bus transit to the newly opened O-Train Line 1. The O-Train provides frequent and reliable service through downtown Ottawa and has a capacity of 600 passengers per train set.

The St-Laurent Station is located north of the development site on the opposite side of Highway 417 and has three levels to serve transit passengers (**Figure 2-6**). Level One is the Train Platform that provides access to the fare-paid zone where passengers can access the eastbound and westbound O-Train. Level Two is a Concourse that provides direct and sheltered access to the St-Laurent Centre. Level Three is the Street Level where connections to/from the bus transit operations occur.

Notably for the 530 Tremblay Site is the underground walkway that provides a safe pedestrian link between Tremblay Road at Avenue S and the Level One East platform outside the fare gate (**Figure 2-6** and **Figure 2-7**).

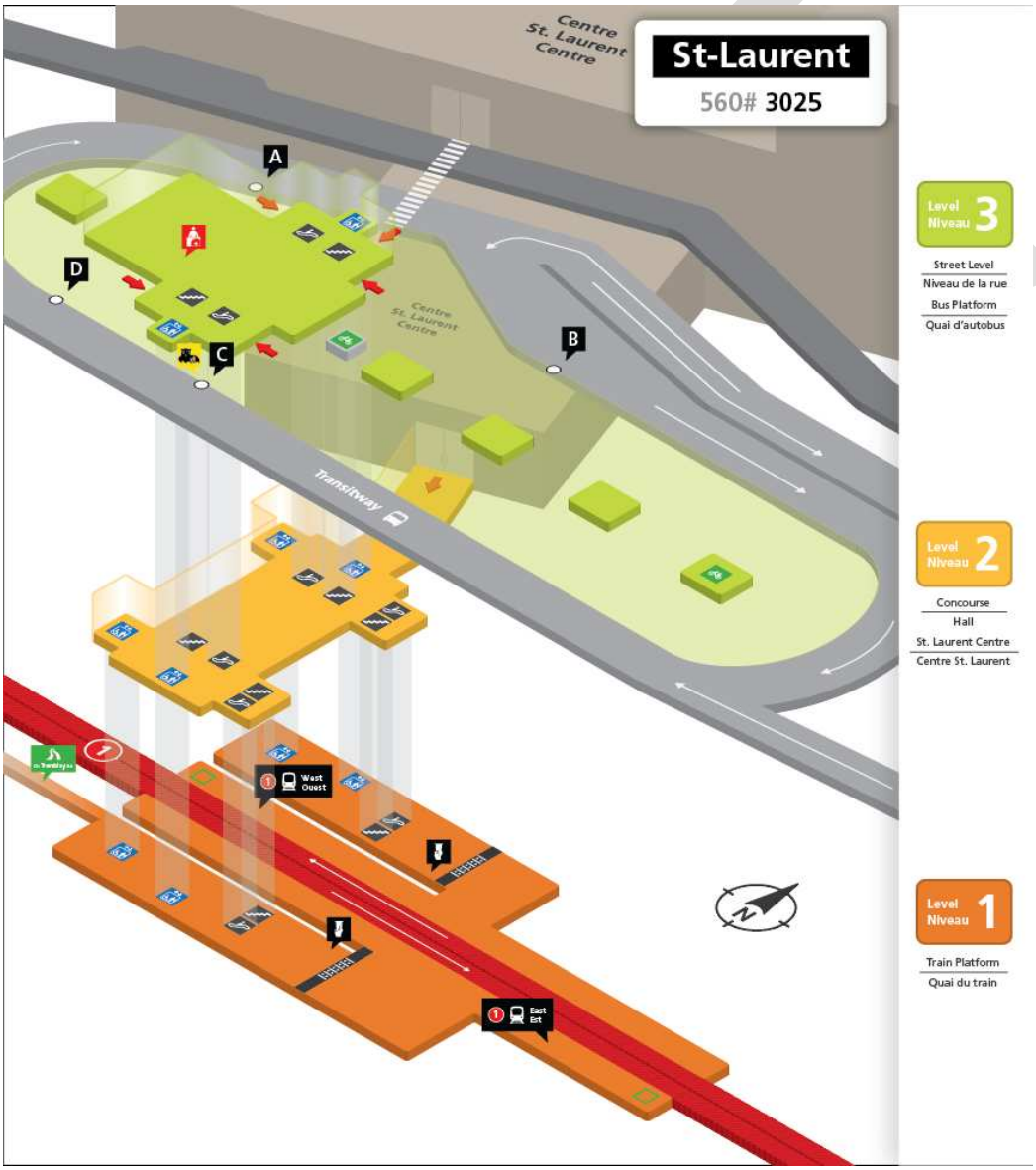


Figure 2-6. St. Laurent Station Layout

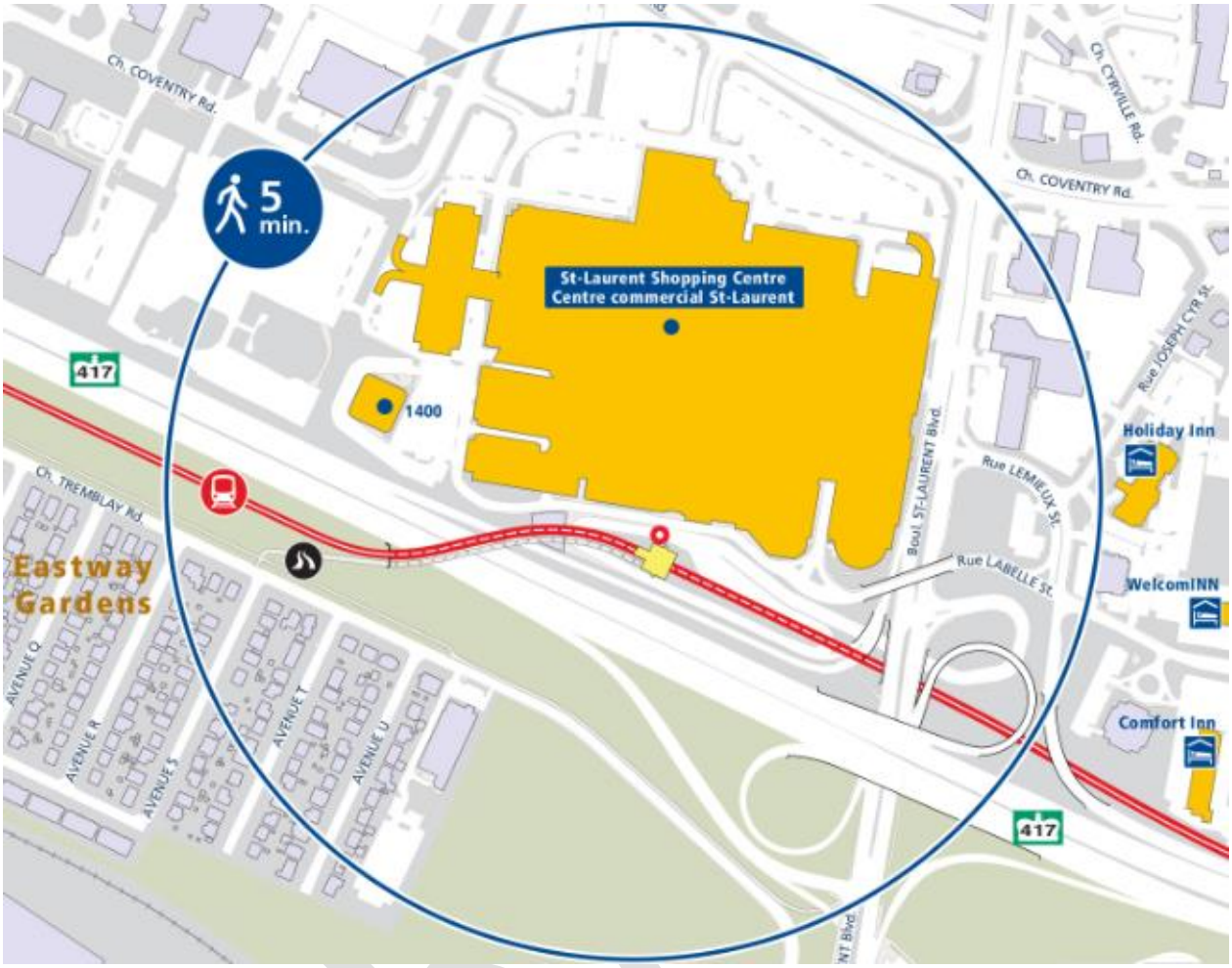


Figure 2-7. Locations within 5-Minutes Walking Distance of St-Laurent Station (including underground pedestrian walkway)

2.3.5 AREA TRAFFIC MANAGEMENT MEASURES

There are no existing area traffic management measures in the vicinity of the proposed vehicle site accesses on Tremblay Road.

2.3.6 PEAK HOUR TRAVEL DEMAND

The TRANS Committee was established to co-ordinate transportation planning efforts among various planning agencies located within the National Capital Region and as such it serves as a repository for traffic data and information. The proposed development is located in the Alta Vista TRANS District (140). The complete TRANS Origin-Destination (O-D) results (including a map of the district area) is provided in **Appendix B**. The most recent O-D survey was completed by TRANS in the Fall 2011. **Table 2-2** summarizes the TRANS trip data for this district.

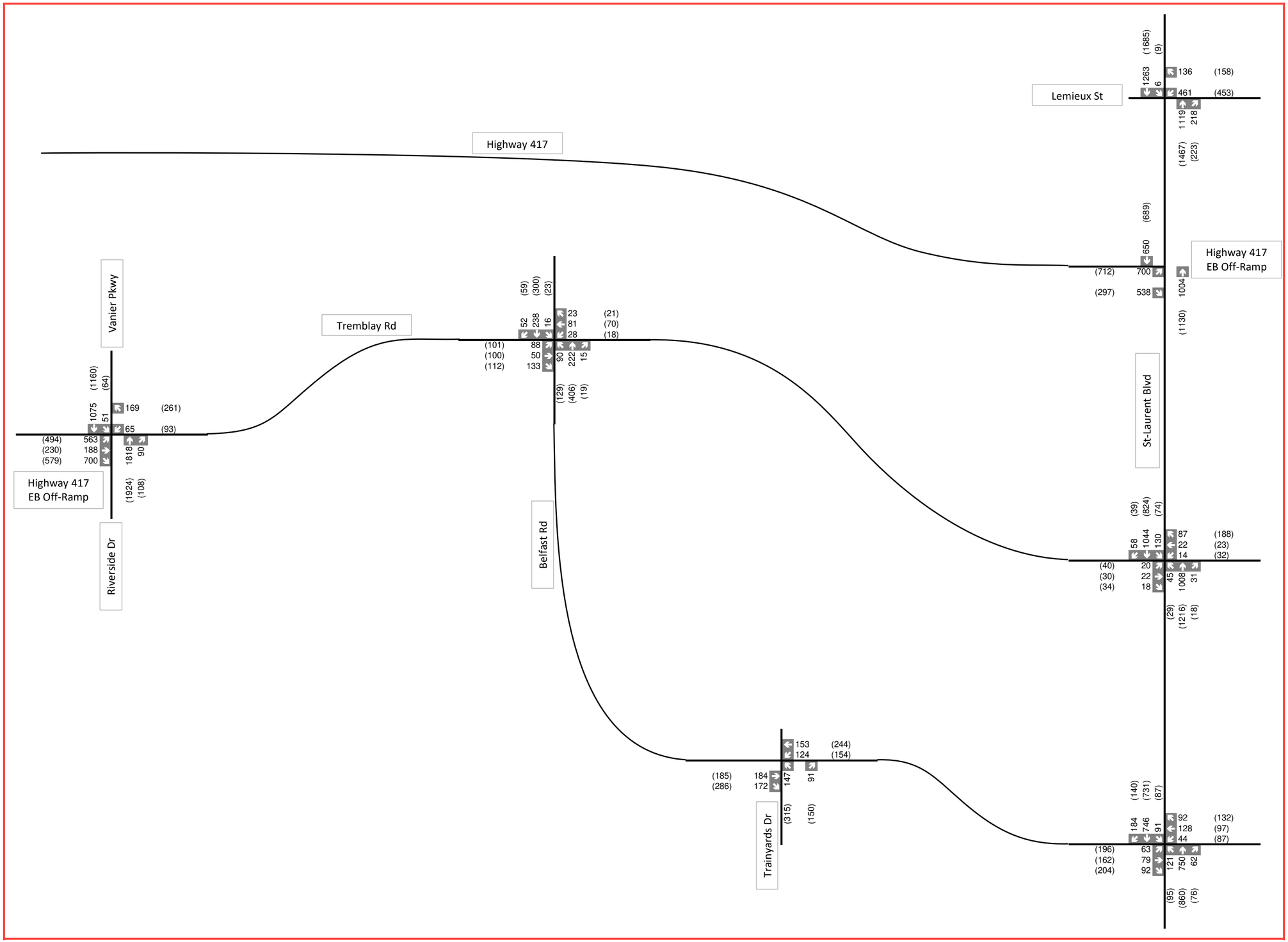
Table 2-2. Peak Hour Travel Demand by Mode

MODE	AM PEAK (6:30AM – 9:00AM)			PM PEAK (3:30PM – 6:00PM)		
	From District	To District	Within District	From District	To District	Within District
Auto Driver	50%	62%	39%	64%	57%	49%
Auto Passenger	12%	12%	15%	13%	15%	18%
Transit	30%	17%	10%	17%	23%	8%
Bicycle	3%	2%	2%	1%	2%	2%
Walk	1%	1%	20%	1%	1%	17%
Other	4%	7%	13%	4%	1%	6%
Total Vehicles	**24,920**	**43,090**	**16,220**	**44,590**	**27,900**	**19,670**

Source: TRANS 2011 O-D Survey, District 140 Alta Vista

The existing vehicle turning movement volumes (at major intersections) and dates of the counts are provided in **Figure 2-8** and were obtained from the City of Ottawa; including those at the following locations:

- Riverside Drive and Tremblay Road, January 30, 2019
- St. Laurent Boulevard and Lemieux Street, March 21, 2018
- St. Laurent Boulevard and Highway 417 EB Off Ramp, January 30, 2019
- St. Laurent Boulevard and Tremblay Road, January 30, 2019
- Tremblay Road and Belfast Road, November 08, 2016
- St. Laurent Boulevard and Belfast Road, February 06, 2018
- Trainyard Drive and Belfast Road, January 30, 2019



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 2-8
2019 Existing Traffic

2.3.7 BOUNDARY STREET CRASH HISTORY

The City of Ottawa provided the most recent five years of crash history for the sections of St. Laurent Boulevard and Tremblay Road adjacent to the site for review (January 2014 through December 2018). A summary of the crash history for the adjacent intersections and road segments is provided in the following table with the complete data set in **Appendix C**.

Table 2-3. Crash History on Boundary Streets between January 2014 and December 2018

LOCATION	SUMMARY	TRENDS
Intersection: St. Laurent Boulevard and Tremblay Road	Fifty-three crashes with no reported fatalities. Ten crashes involving personal injury. Six crashes initiated by an eastbound vehicle exiting Tremblay Road; the vehicle maneuvers and classification of crash vary. 24 crashes initiated by an northbound vehicle; only two turning left onto Tremblay Road (failed to yield and following too close). 21 crashes initiated by a southbound vehicle; three involved eastbound vehicles who were driving properly (i.e., the southbound vehicles disobeyed traffic control).	14 northbound rear-end crashes (seven in 2014).
Segment: St. Laurent Boulevard between Hwy 417 EB Off-Ramp and Belfast Road	Eleven crashes with no reported fatalities. Six southbound and five northbound.	No patterns with more than six crashes in five years
Segment: Tremblay Road between Avenue U and St. Laurent Boulevard	Two crashes with property damage only; both in 2014.	No patterns with more than six crashes in five years

DRAFT

2.4 PLANNED CONDITIONS

2.4.1 CHANGES TO STUDY AREA TRANSPORTATION NETWORK

Tremblay Road. Tremblay Road was identified in the City of Ottawa's Transportation Master Plan (2013) for widening to meet future capacity requirements as a Phase 3 (2026-2031) project in the Affordable Road Network. The planned widening from two lanes to four lanes would be between Pickering Place and St. Laurent Boulevard.

Transit-Oriented Development. The City of Ottawa Council established priority areas for the creation of transit-oriented development (TOD) plans to prepare for the anticipated land development pressure of the LRT. The TOD plans set the stage for future transit-supportive, or "intensified", land development and include six areas: Lees, Hurdman, Tremblay, St. Laurent, Cyrville, and Blair. The 530 Tremblay Road site is located within the St. Laurent TOD area and is specifically mentioned in the St. Laurent TOD Plan in relation to:

- **New Pedestrian Overpass**: Developed as part of the first phase of redevelopment of the 530 Tremblay Road site as a critical component towards achieving the modal split targets
- **Tremblay Road Sidewalk**: Tremblay Road through the 530 Tremblay site will be widened and realigned to create more active frontages along the street. Sidewalks must be located along both sides of Tremblay Road as part of its reconstruction.
- **On-Street Cycling Facilities**: Tremblay Road is shown to have a future dedicated cycling facility. The segregation of these facilities to be determined by detailed design and engineering.
- **Modal Split**: PSPC (formerly PWGC) anticipates a modal split of 45% to 55% in favour of transit, cycling, and walking for the first phase of development
- **Parking**: A parking management strategy for 530 Tremblay Road site is required.

Stage 2 LRT. Ottawa's Stage 2 Confederation Line Extension will expand the O-Train network as far east as Trim Road, and as far west as Moodie Drive and Algonquin College. Stage 2 will also extend the existing the O-Train Trillium Line to Riverside South adding new stations at Gladstone and Walkley along with a 4-km link to the Ottawa Macdonald-Cartier International Airport. Stage 2 will launch in staggered openings:

- Trillium Line South in 2022
- Confederation Line East in 2024
- Confederation Line West in 2025

Belfast Road Multi-Use Pathway (MUP). The City of Ottawa is proposing a MUP along the west and south side of Belfast Road. The proposed plan includes a MUP, a boulevard, a curb and stormwater infrastructure along the west side of Belfast between Coventry Rd and Tremblay Road. The changes do not include modifications to the intersections, the motor vehicle lanes along Belfast or modifications of the bridge over Highway 417. The intersection of Belfast Road and Trainyards Drive will also be upgraded to include a cycle crossride across the south side, connecting the existing pathways on Belfast and Trainyards. This project is expected to be constructed by 2022. The draft functional design is included in **Appendix D**.

New Pedestrian Sidewalk. The Ottawa Pedestrian Plan (2013) identifies new pedestrian sidewalks along the north side of Tremblay Road between Riverside Drive and the Transit Linkway which is to the east of

DRAFT

the study area. The Ottawa Pedestrian Plan (2013) does not identify connectivity or infrastructure improvements in the study area.

Changes to Bus Service. With the recent changes in bus service (**Section 2.3.4**) as part of the O-Train Line 1, the number of buses circulating through the Study Area has decreased. Adjustments to the existing traffic counts obtained from the City of Ottawa may be required to reflect the "new" current conditions.

2.4.2 OTHER AREA DEVELOPMENTS

Three developments are noted in the City of Ottawa's Development Application Search tool that could have an influence on the study area and thereby impact the Transportation Impact Assessment:

- 2098 Avenue P (PIN: 042560722) – 127 residential units.
- 200, 230 & 260 Steamline Street (D07-12-18-0004) for 1,845 residential units.
- 830 Belfast Road (D07-12-19-0071) for 3,530 m^2 retail area.

2.5 STUDY AREA

The study area for this Transportation Impact Assessment is shown in **Figure 2-9**.

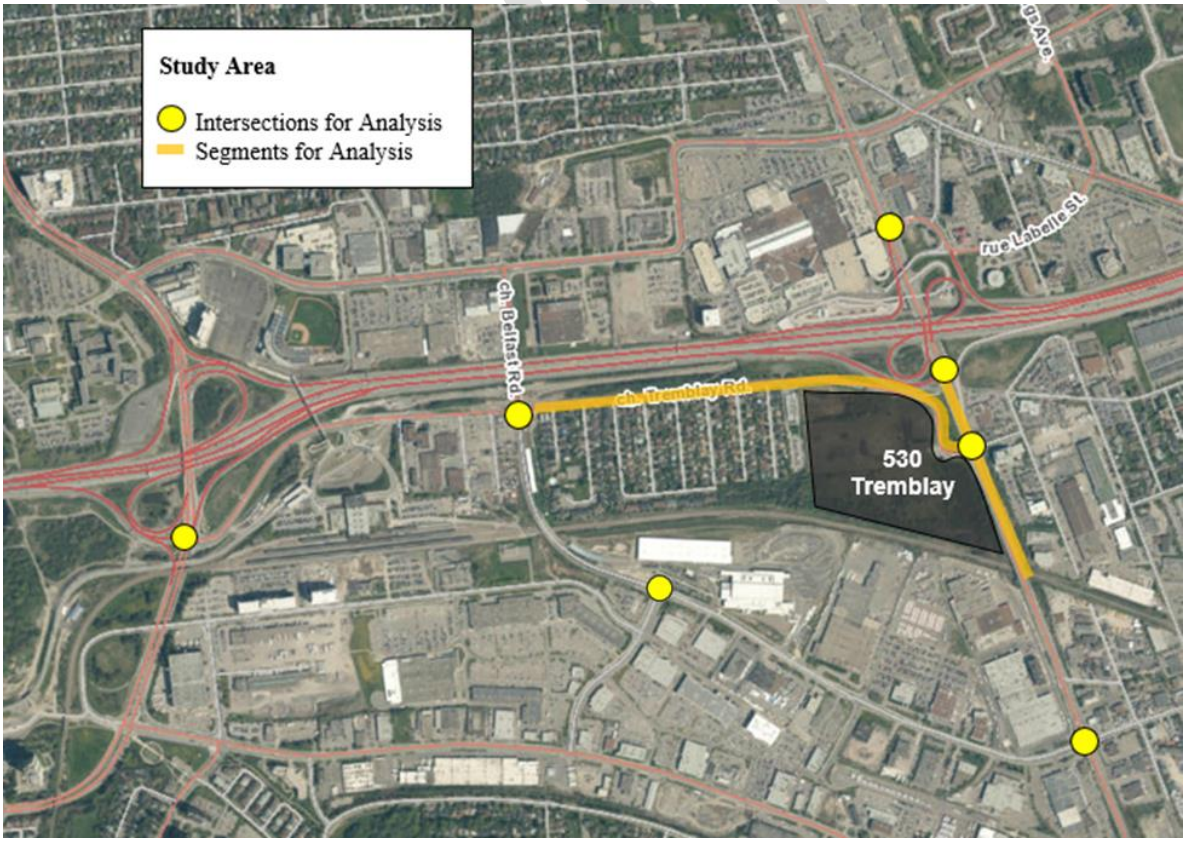


Figure 2-9. Study Area

2.6 TIME PERIODS

The time periods identified for the traffic analysis as part of the Transportation Impact Assessment are:

- AM Peak Hour: 8:15am – 9:15am
- PM Peak Hour: 4:30pm – 5:30pm

These are consistent with the AM and PM peak hour identified in the recent turning movement counts provided by the City of Ottawa at the intersection of St. Laurent Boulevard and Tremblay Road dated January 30, 2019.

2.7 HORIZON YEARS

The proposed residential development is expected to be completed in three phases. The target year for occupancy is 2029. The proposed horizon years that have been established are:

- 2025: Federal Office (150,000 sq./m) and Residential Phase One (200 high density units)
- 2029: Residential Phase Two (200 high density units)
- 2033: Residential Phase Three (100 high density units)

Consideration will be given to the future federal office development which is expected to be developed on the federal office lands. However, the federal site statistics have not been finalised and as such should be considered preliminary. For the purpose of this Transportation Impact Assessment, the planning horizon for the federal office lands is:

- 2025: Federal Office (150,000 sq./m)

It is therefore proposed that the 2033 planning horizon satisfy the build-out plus five years analysis horizon since it will capture the future impact of the federal office development which is the predominate generator for the proposed site.

DRAFT

2.8 EXEMPTIONS REVIEW

Based on the review of the development and network conditions, the following elements shown in **Table 2-4** qualify for an exemption from this Transportation Impact Assessment.

Table 2-4. Exemptions Summary

MODULE	ELEMENT	EXEMPTION
4.1 Development Design	4.1.2 Circulation and Access	**Exempted.** This element is only required for site plans.
	4.1.3 New Street Networks	**Not Exempted.** This element is required for plans of subdivision.
4.2 Parking	4.2.1 Parking Supply	**Exempted.** This element is only required for site plans.
	4.2.2 Spillover Parking	**Exempted**. This element is only required for site plans.
4.5 Transportation Demand Management	All elements	**Not Exempted**.
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	**Not Exempted.**
4.8 Network Concept	-	**Not Exempted.**

DRAFT

3 FORECASTING

3.1 DEVELOPMENT GENERATED TRAFFIC

3.1.1 TRIP GENERATION

Base Trip Generation Rate. The TRANS Trip Generation Study (August 2009) is the City of Ottawa's preferred source for residential trip generation rates. Table 6.3 in the TRANS Study provides residential trip generation rates for an High-Rise Apartments in an urban area.

- AM Base Rate: 0.24 vehicle trips per unit
- PM Base Rate: 0.27 vehicle trips per unit

Preliminary trip generation rates for the federal lands were obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual version 10 for the General Office Building land use (710).

- AM Base Rate: 1.22(X) + 40.93 person trips per 1,000 sq./ft GFA
- PM Base Rate: 1.25(X) + 45.35 person trips per 1,000 sq./ft GFA

Total Development-Generated Person-Trips. Table 3.13 in the TRANS Study identifies a 37% auto mode share during the AM peak hour and a 40% auto mode share during the PM peak hour. The total development-generated person-trips (**Table 3-1**) were estimated using the projected auto trips (base rate multiplied by total units) and the auto mode share.

Table 3-1. Estimated Total Development-Generated Person-Trips

PHASE	PEAK HOUR	UNITS	BASE AUTO RATE	PROJECTED AUTO TRIPS	AUTO MODE SHARE	TOTAL PERSON TRIPS
Phase One (2025)	AM	200	0.24	48	37%	130
	PM		0.27	54	40%	135
Phase Two (2029)	AM	200	0.24	48	37%	130
	PM		0.27	54	40%	135
Phase Three (2033)	AM	100	0.24	24	37%	65
	PM		0.27	27	40%	68

DRAFT

PHASE	PEAK HOUR	UNITS	BASE AUTO RATE	PROJECTED AUTO TRIPS	AUTO MODE SHARE	TOTAL PERSON TRIPS
Federal Lands (2025)	AM	1,615,000 sq./ft	-	-	-	2,010
	PM		-	-	-	2,065

Existing Mode Share. The existing peak hour travel demand was identified from the most recent TRANS Origin-Destination Survey (Fall 2011) and presented in the **Section 2.3.6** The existing mode share is based on those values and is shown in **Table 3-2**.

Table 3-2. Existing Mode Share

PEAK HOUR	AUTO DRIVER	AUTO PASSENGER	TRANSIT	BICYCLE	WALK	OTHER
AM	62%	12%	17%	2%	1%	7%
PM	64%	13%	17%	1%	1%	4%

Future Mode Share Targets. The mode share targets for this development were identified following a review of the Transit Oriented Development (TOD) Plans (2014) prepared by the City of Ottawa and are presented in **Table 3-3**.

Table 3-3. Future Mode Share Targets for the Development

TRAVEL MODE	MODE SHARE TARGET	RATIONALE
Transit	65%	Mode share targets set by the St. Laurent Transit Oriented Development Plan prepared by the City of Ottawa in 2014. The development site falls within the St. Laurent TOD area and has access to an underground pedestrian walkway connecting Tremblay Road to the St. Laurent Station.
Walking	10%	
Cycling	5%	
Auto Passenger	5%	
Auto Driver	15%	

DRAFT

Development Person Trips by Mode and Phase. The proposed development will be constructed in three phases. The development trips by mode are shown in **Table 3-4**.

Table 3-4. Development Person Trips by Mode

PHASE	PEAK HOUR	AUTO DRIVER	AUTO PASS.	TRANSIT	BICYCLE	WALK	TOTAL
One	AM	19	6	84	6	13	130
	PM	20	7	88	7	14	135
Two	AM	19	6	84	6	13	130
	PM	20	7	88	7	14	135
Three	AM	10	3	42	3	6	65
	PM	10	3	44	3	7	68
Federal Lands	AM	302	101	1,307	101	201	2,010
	PM	310	103	1,342	103	206	2,065

Trip Reduction Factors. This is a greenfield development, therefore there are no existing trips that would typically be replaced and therefore could be deducted from the future site generation.

A multi-use share factor was considered based on the National Cooperative Highway Research Program (NCHRP) Report for New Internal Trip Capture Methodology for Multi-Use Developments. The assessment indicated that there will be a maximum of 5 trips using both facilities. Given the low number of synergistic trips, the multi-use share factor was therefore not carried forward.

3.1.2 TRIP DISTRIBUTION

The most recent TRANS OD Survey results were reviewed to determine the existing travel patterns to/from the Alta Vista District. Based on this review, the trip distribution for the proposed development is presented as follows:

- 15% of vehicle trips are to/from the east
- 60% of vehicle trips are to/from the west
- 10% of vehicles trips are to/from the north
- 15% of vehicle trips are to/from the south

DRAFT

3.1.3 TRIP ASSIGNMENT

Trips were assigned to the adjacent transportation network and are based upon a good understanding of existing travel patterns as identified from a review of existing intersection turning movement counts. The peak hour vehicle trip assignment for the three phases of residential development and a preliminary assignment for the federal office component are shown in **Figure 3-2** to **Figure 3-5**.

It is noted that our trip assignment has been undertaken with the knowledge that there is no access to Highway 417 eastbound from the northbound lanes on St. Laurent Boulevard. The previous access ramp was converted to a bus-only ramp in 2015 when additional modifications as part of the Highway 417 improvements and to support the construction activities associated with Ottawa's LRT. The loss of the south to east highway ramp was not considered in previous transportation studies (example the City of Ottawa's 2014 Transit Oriented Development Plans) for the site since the improvements had occurred after the studies had had been completed. Under current conditions, there are three routes that are available to access the Highway 417 eastbound from the 530 Tremblay Road site (**Figure 3-1**). These routes have been considered in our trip assignment and include:

- Tremblay Road westbound to Belfast Road northbound to Coventry Road eastbound to St. Laurent Boulevard southbound (~2.8km to the Highway)
- St. Laurent Boulevard southbound to Innes Road eastbound (~3.2km to the Highway)
- St. Laurent Boulevard northbound to Ogilvie Road and eastbound to Blair Road (~3.9km to the Highway)

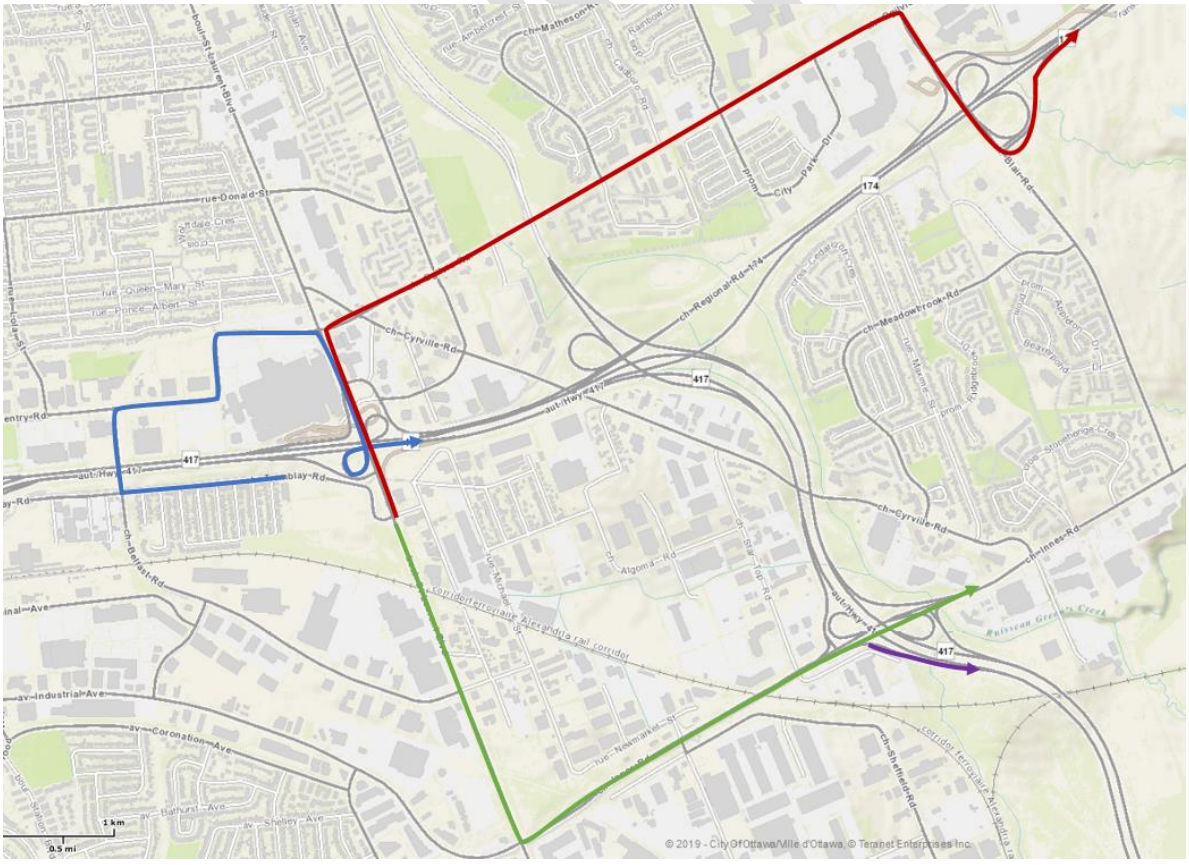
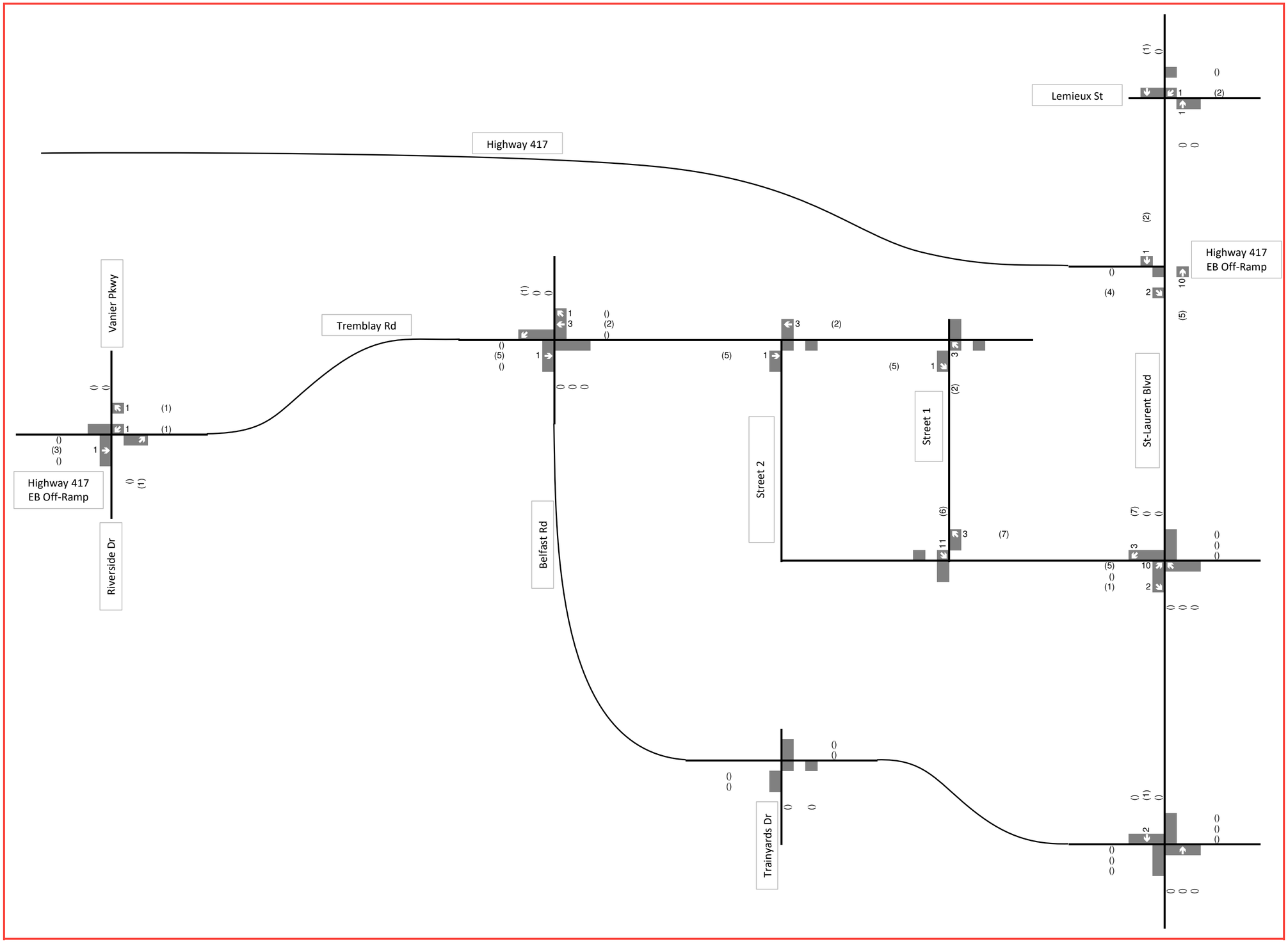


Figure 3-1. Access to Highway 417 Eastbound from 530 Tremblay Road

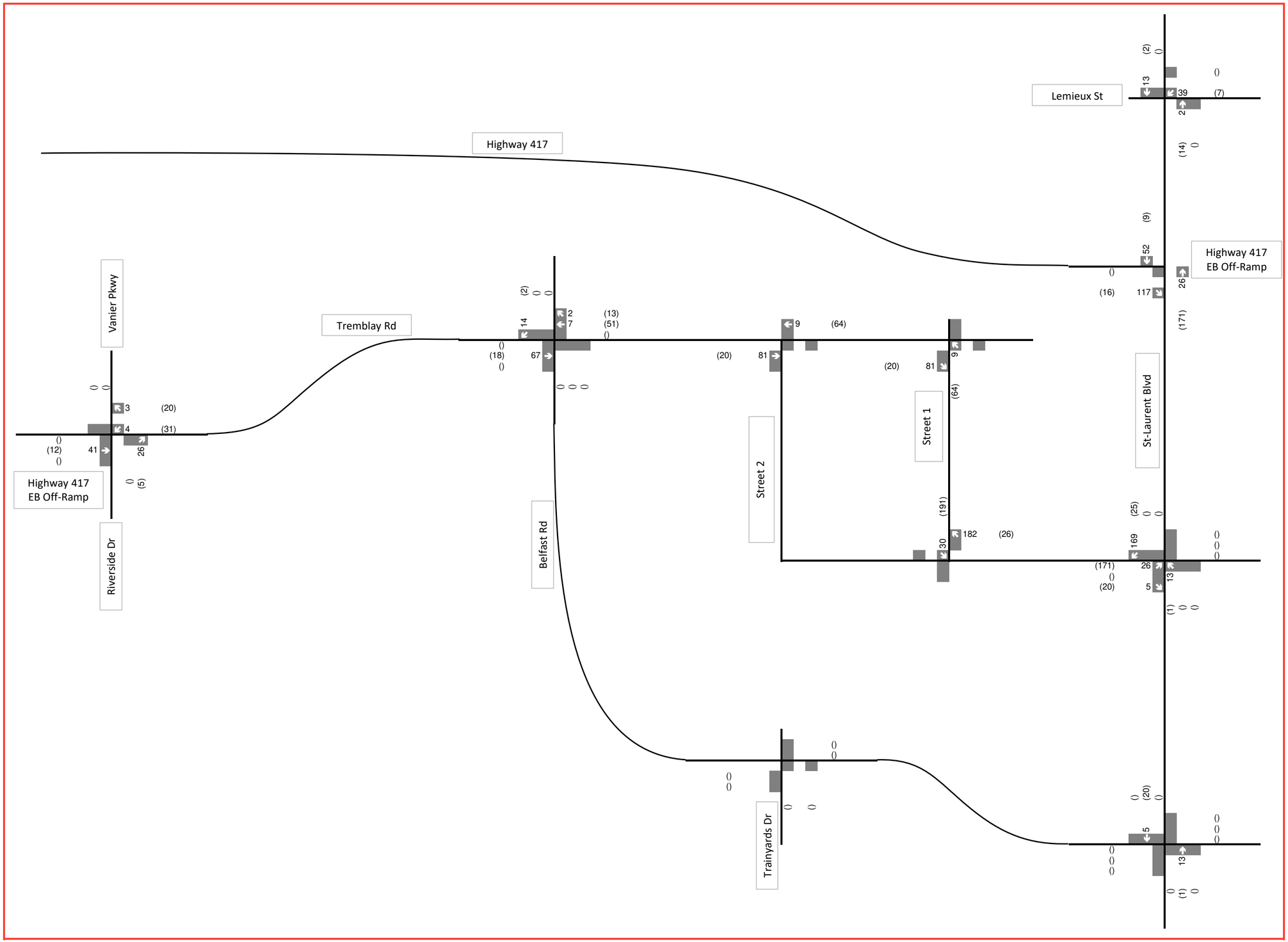


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-2
2025 Residential
Trips Generated

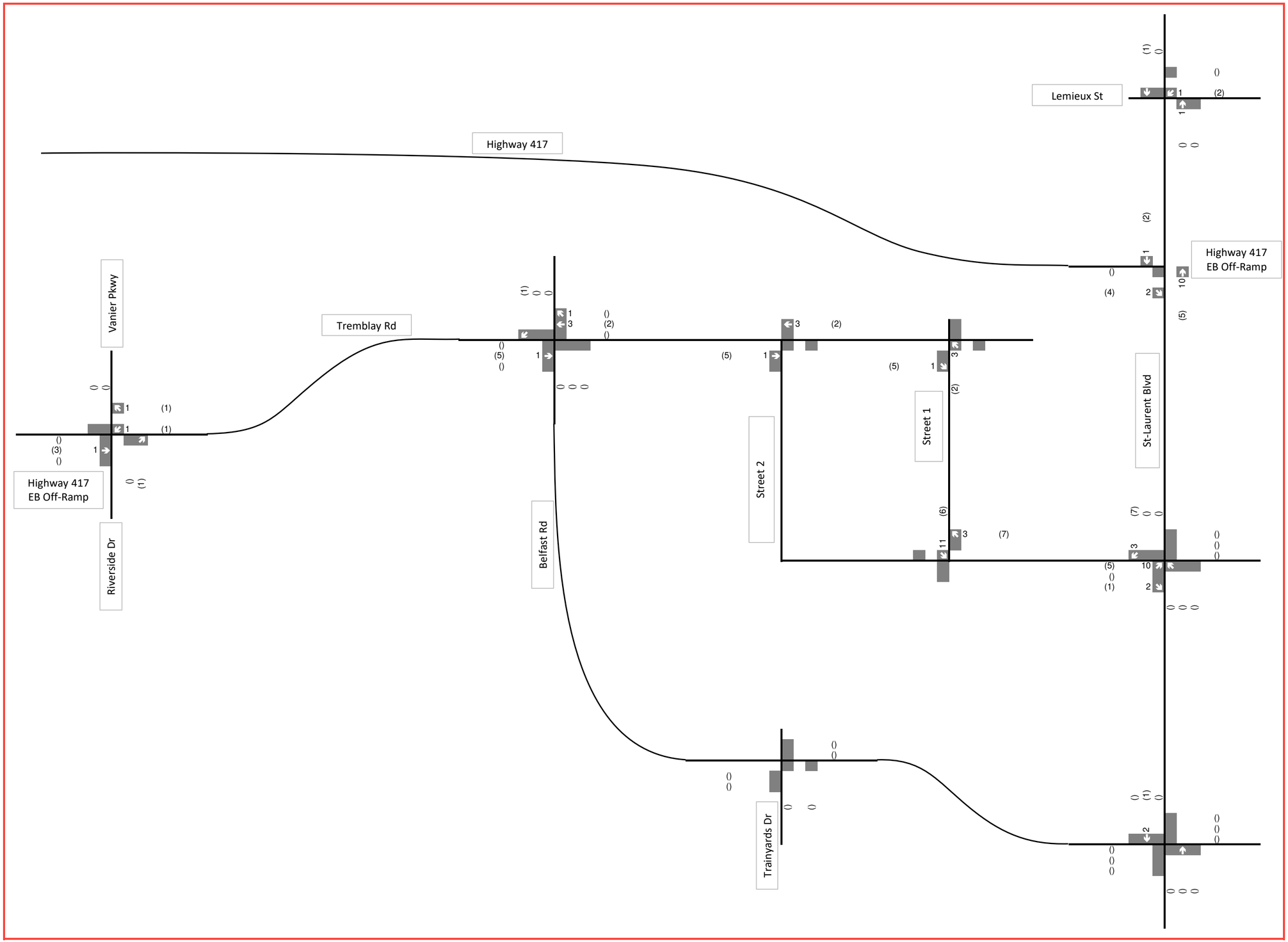


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-3
2025 Office Trips Generated

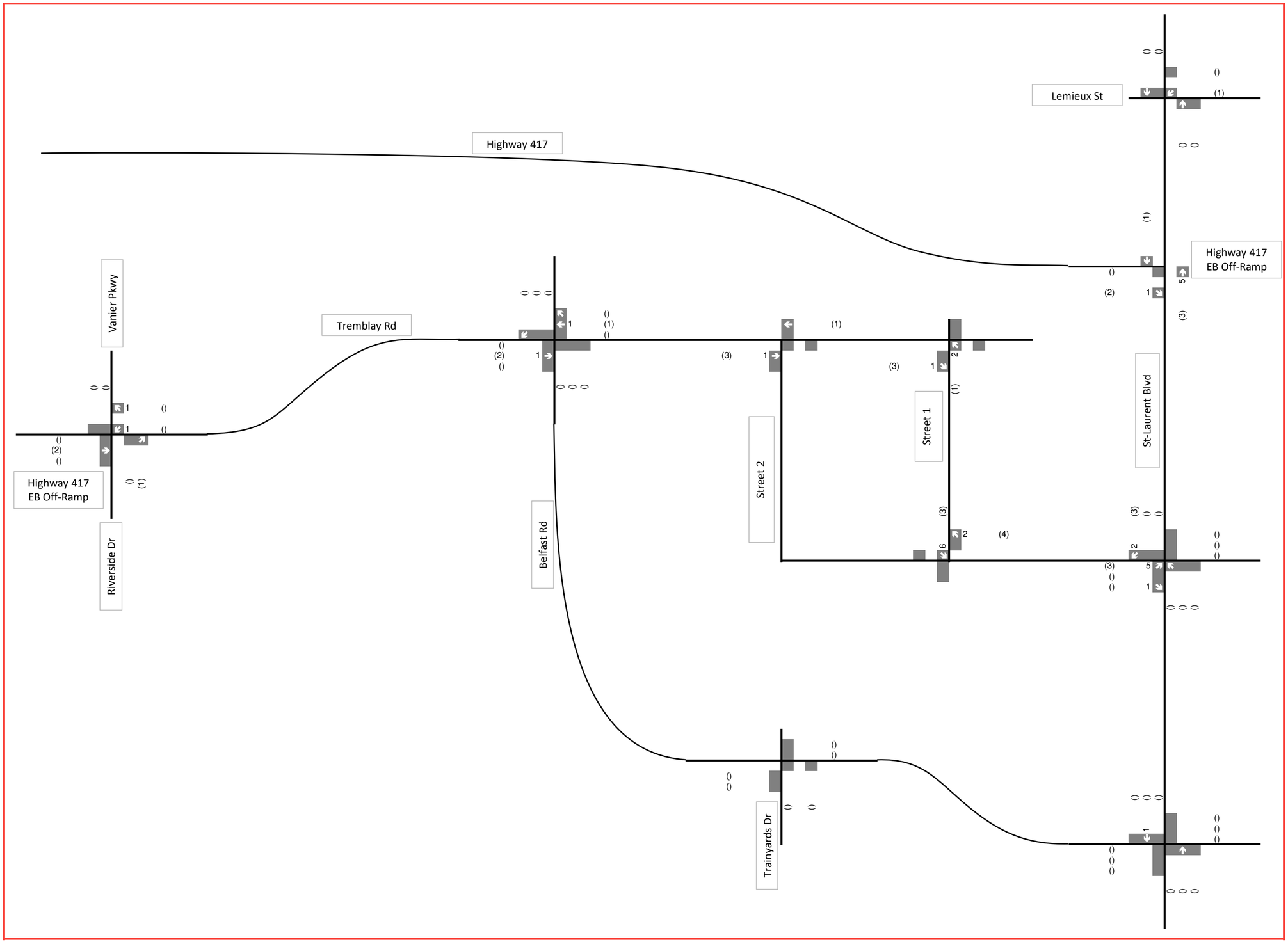


Legend

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

3.2 BACKGROUND NETWORK TRAFFIC

3.2.1 CHANGES TO THE BACKGROUND TRANSPORTATION NETWORK

3.2.1.1 CHANGES TO ROADWAY INFRASTRUCTURE

As part of this development, Tremblay Road will be realigned through the site. The City of Ottawa's Transportation Master Plan (TMP-2013) identifies a future road widening of Tremblay Road from two to four lanes between Pickering Place and St. Laurent Blvd as part of the City's Affordable Network. This widening will address the transportation needs identified by the St. Laurent Transit-Oriented Development Plan (2014) which accommodates new employment land at St. Laurent Blvd at Tremblay Rd.

It is anticipated that the construction for the realigned Tremblay Road will commence in Spring 2021 and will be complete with base of asphalt in Spring 2022 so that PSPC can start construction of the federal office block. The City of Ottawa indicated that the widening of Tremblay Road beyond the limits of the 530 Tremblay Site should not be anticipated in planning horizons earlier than 2031 due to a general backlog of planned City roadway projects.

3.2.1.2 CHANGES RESULTING FROM THE OCTOBER 6, 2019 OC TRANSPO SERVICE CHANGE

The traffic counts obtained from the City of Ottawa were all captured prior to the OC Transpo service changes that were put into effect on October 6, 2019. A review of the bus stop schedules at the St. Laurent / Tremblay bus stops #1091 and #8538 (**Table 3-5**) before and after the service change indicates that there are now 15 fewer northbound bus trips and 12 fewer southbound bus trips during the peak hours. To be conservative, no reduction in volumes was applied as a result of the bus route changes on October 6, 2019.

Table 3-5. Impact of Oct 6, 2019 Transit Service Change

STOP INFORMATION		PRIOR TO OCTOBER 6	FOLLOWING OCTOBER 6
#1091 St. Laurent / Tremblay Northbound	Routes	18, 40, 47, 61, 62, 95, 106, 222	18, 39, 40, 47
	Trips / Peak Hour	20	5
#8538 St. Laurent / Tremblay Southbound	Routes	18, 40, 61, 62, 94, 95, 106	18, 39, 40
	Trips / Peak Hour	16	4

DRAFT

The OC Transpo Belfast Yard is located south of the development site at 805 Belfast Road. A review of the turning movement counts was undertaken to identify the approximate number of buses traveling through the Study Area towards or away from the Belfast Yard. The City of Ottawa's current data collection program classifies buses with heavy vehicles, so an exact correlation between buses entering and exiting the Belfast Yard was not possible. However, the review suggests that no reduction in traffic is required during either of the study time periods to take into consideration the October 6, 2019 service change.

3.2.1.3 CHANGES TO PEDESTRIAN AND CYCLING FACILITIES

There are two known changes to the pedestrian and cycling facilities in the study area. They are described in **Section 2.4.1**, and include:

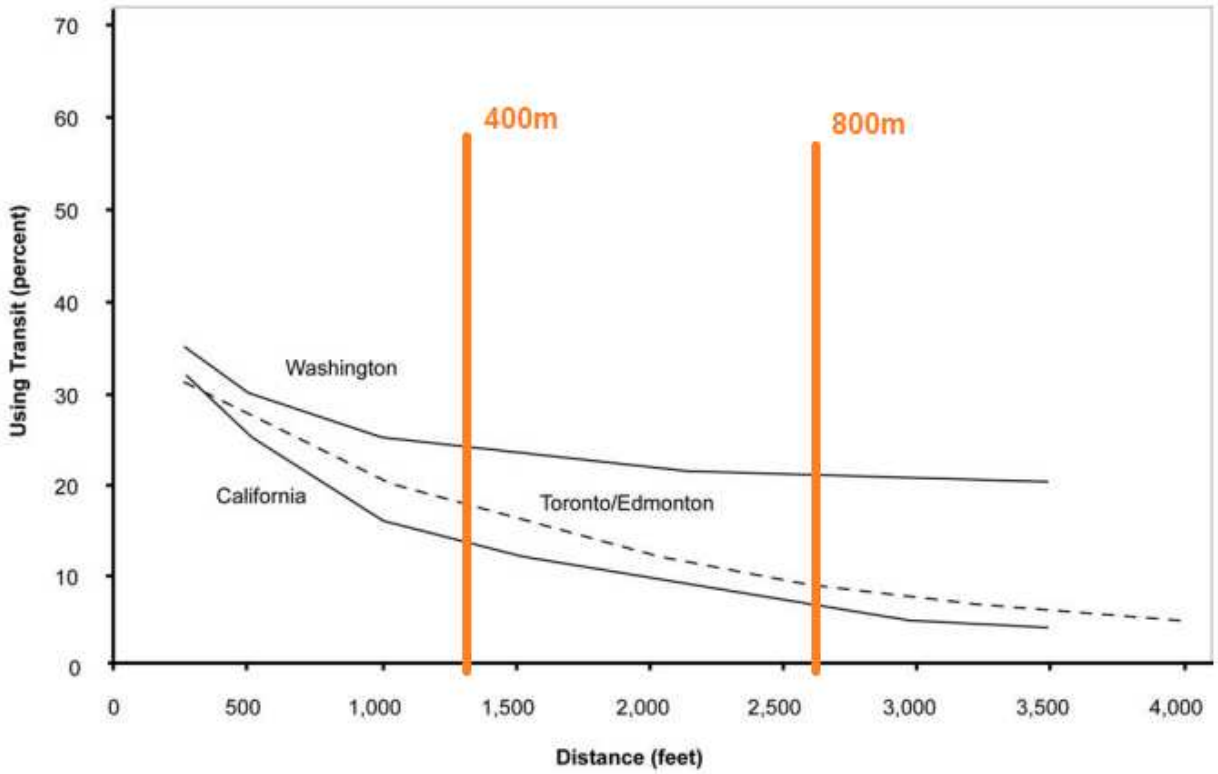
- A multi-use pathway (MUP) along the west and south side of Belfast Road between Coventry Rd and Tremblay Road. The intersection of Belfast Road and Trainyards Drive will also be upgraded to include a crossride for the south side, connecting the existing pathways on Belfast and Trainyards. This project is expected to be constructed by 2022. The draft functional design is included in **Appendix D**.
- New pedestrian sidewalks along the north side of Tremblay Road between Riverside Drive and the Transit Linkway

Additionally, the City of Ottawa's Cycling Plan (2013) notes that all TOD Plans include linkages that could not be accommodated within the affordability envelope, but which are included in the Ultimate Network Concept Map (**Figure 2-4**). The Cycling Plan further notes that "some of the identified linkages are expected to be provided as a condition on site redevelopment".

3.2.1.4 FUTURE PEDESTRIAN OVERPASS

The City of Ottawa's Transit-Oriented Development Plans stipulated that a pedestrian connection over Highway 417 that connects the 530 Tremblay site to the St. Laurent LRT Station be built as part of the Phase One Development of the federal office buildings. From a Transportation Planning perspective, an accessible, comfortable and covered pedestrian connection between the site and the LRT Station will encourage transit ridership. To achieve the aggressive modal split targets, the development should encourage the early adoption of transit ridership to reduce the reliance on vehicles and the demand for on-site parking.

Transit mode shares decline as distance from the transit station increases. When considering walking distances to transit, the TOD Plans notes that the "*acceptable walking distance to rapid transit ranged from 400 to 800 metres*" (5 to 10 minutes). However, 400 metres is generally considered a guideline for comfortable walking distance for the most destinations. A Traveler Response to Transportation System Changes Handbook (3rd edition) provides the following **Figure 3-6** illustrating the work trip rail mode share by distance to office sites from station.



Notes: The graphed 1989 Washington, DC, area shares are for all transit (rail and bus combined). California and Canadian mode shares are for rail transit only. See last row of Table 17-24 for Washington, DC, 2005 mode share gradients for Metrorail only and rail and bus combined.

Figure 3-6. Work trip rail mode share by distance to office sites from station

Figure Source: TRANSIT COOPERATIVE RESEARCH PROGRAM, Traveler Response to Transportation System Changes Handbook, Third Edition: Chapter 17, Transit-Oriented Development

The walking distance to the St. Laurent Station from the centre of the 530 Tremblay Road site using different paths is approximately:

- Existing pedestrian tunnel: 800m (10-minute walk)
- Sidewalks on St. Laurent Road: 780m (10-minute walk)
- Conceptual alignment for Pedestrian Bridge: 320m (<5-minute walk)

The residential lands considered by this Transportation Impact Assessment are expected to generate 88 peak hour transit trips by 2025, 176 peak hour transit trips by 2029, and 220 peak hour transit trips by 2033 (**Table 3-4**). It is anticipated that the federal lands will generated more transit trips than the residential lands.

3.2.2 GENERAL BACKGROUND GROWTH RATES

A 1.0% annual growth rate was selected along St. Laurent Blvd. and Riverside Drive/Vanier Parkway roadway to account for future development not currently within the development application process (**Section 3.2.3**). However, it is noted that the review of background growth rates had identified no growth within these corridors. These growth rate calculations are provided in **Appendix E**.

The projected future background (2025, 2029 and 2033) traffic volumes are shown in Figure **3-7** to **Figure 3-9**.

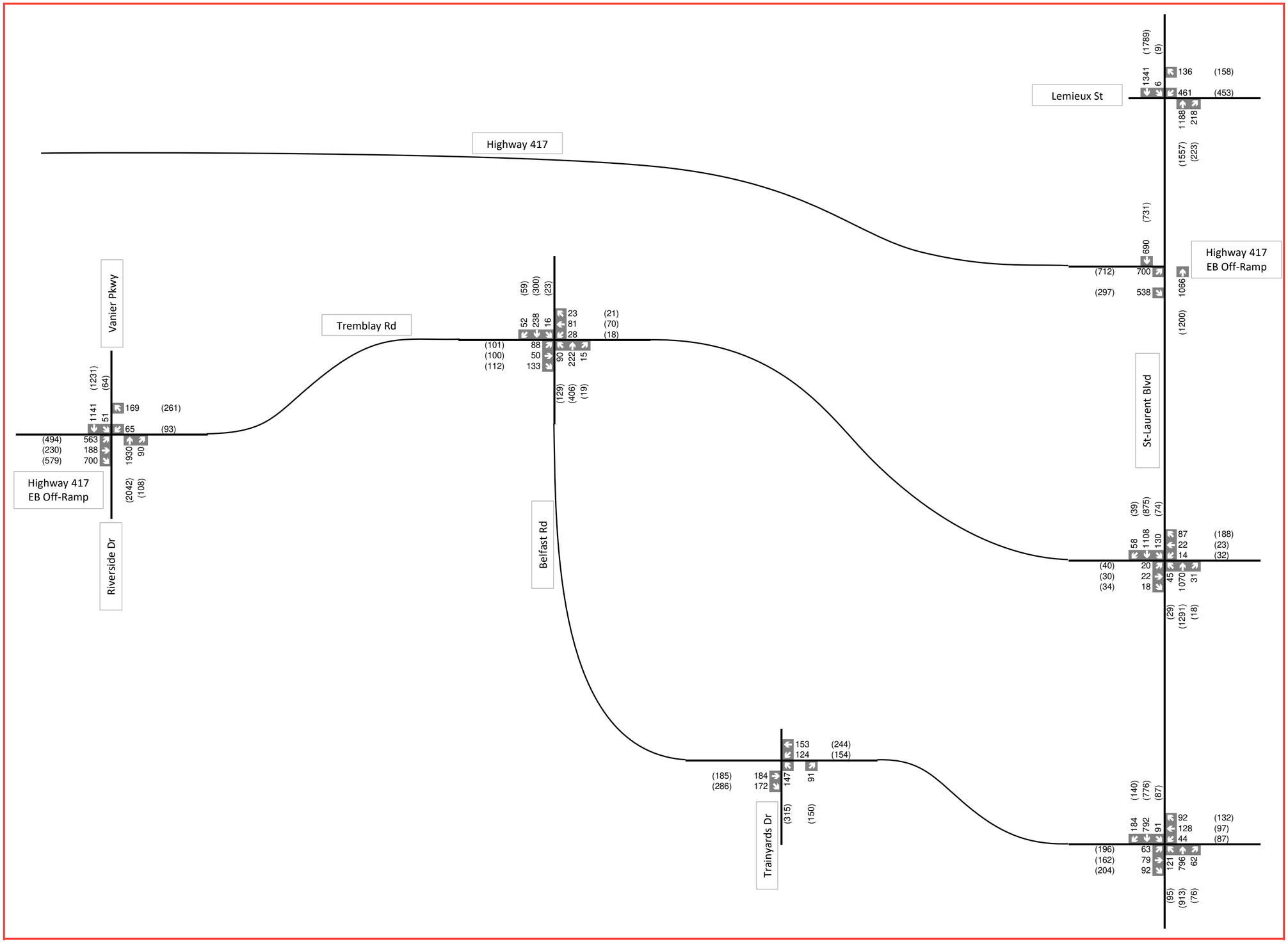
3.2.3 OTHER AREA DEVELOPMENTS

In **Section 2.4.2** three developments were identified that could impact the Transportation Impact Assessment:

- **2098 Avenue P (PIN: 042560722)** – 125 residential units.
- **200, 230 & 260 Steamline Street (D07-12-18-0004)** for 1,845 residential units.
- **830 Belfast Road (D07-12-19-0071)** for 3,530 m^2 retail area.

This TIA has assumed that the full impact of these developments is realized by the 2025 planning horizon. The estimated trips for the developments were taken from their respective Transportation Impact Assessment and is shown in **Figure 3-10**.

DRAFT

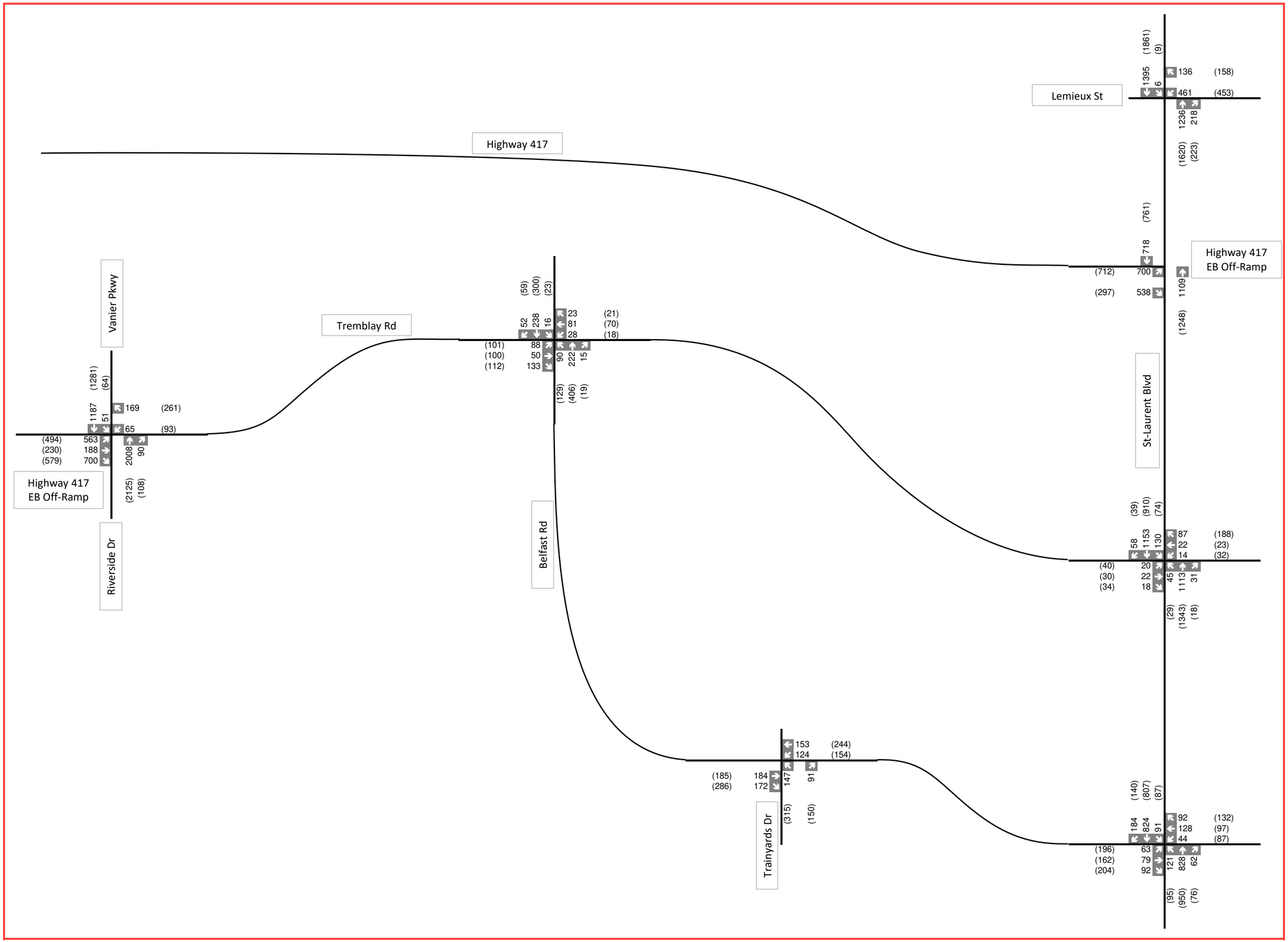


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-7
2025 Background Traffic

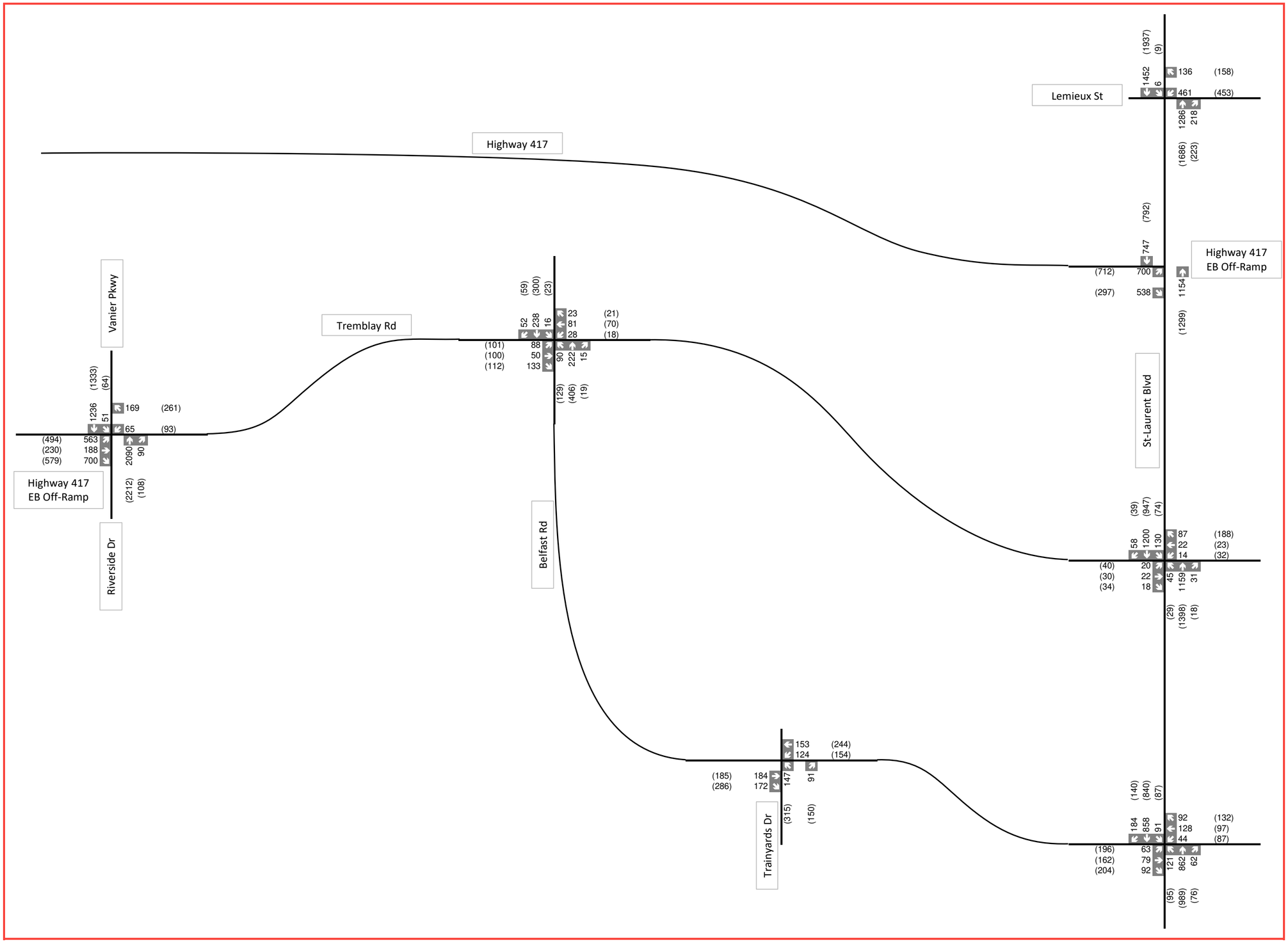


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-8
2029 Background Traffic

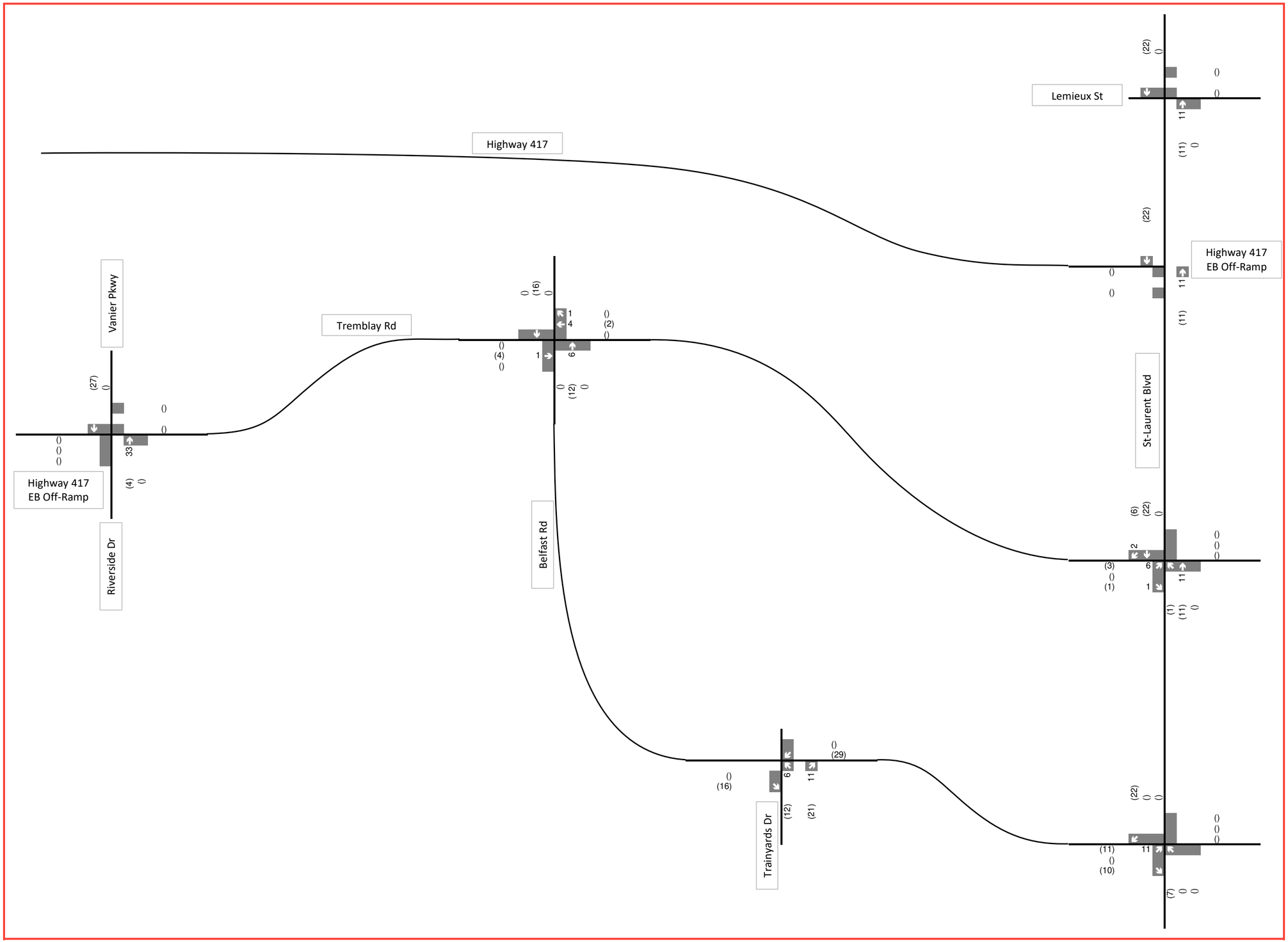


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-9
2033 Background Traffic



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-10
2025 Other Developments

3.3 DEMAND RATIONALIZATION

3.3.1 DESCRIPTION OF CAPACITY ISSUES(S)

Total traffic volumes for the 2025, 2029 and 2033 planning horizons were estimated by:

- Applying a 1% background growth rate to the existing traffic volumes along major arterials (**Section 3.2.2**)
- Adding trips generated by other area developments (**Section 3.2.3**)
- Adding trips generated by the proposed development (**Section 3.1.3**)

The estimated total traffic volumes are presented in **Figure 3-11** to **Figure 3-13**.

A cursory review of the results obtained from the application of Synchro (version 10) for the 2033 total traffic volumes suggest that the future auto demands will not add any new over-capacity movements within the study area.

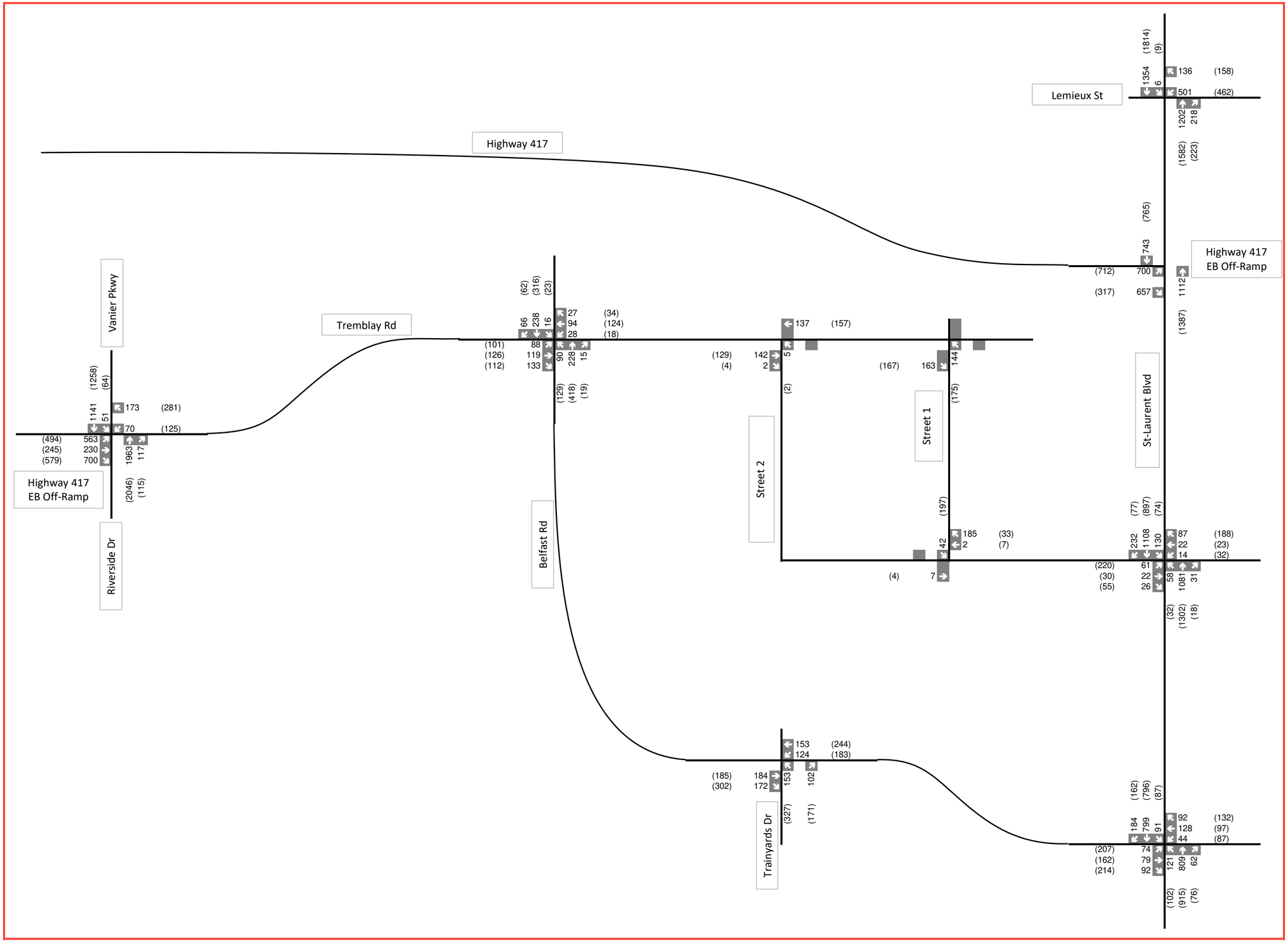
3.3.2 ADJUSTMENT TO DEVELOPMENT GENERATED TRAVEL DEMANDS

Adjustments to development generated demands have not been proposed since the trips generated by the development are not expected to adversely impact the adjacent transportation network.

3.3.3 ADJUSTMENTS TO BACKGROUND NETWORK TRAVEL DEMANDS

Adjustments to background network demands have not been proposed since the cursory traffic operations analysis indicates that the future transportation roadway network will offer an acceptable Level of Service. Furthermore, the calculated historical traffic growth rate (**Section 3.2.2**) indicated that there has been no historical growth in area traffic.

DRAFT

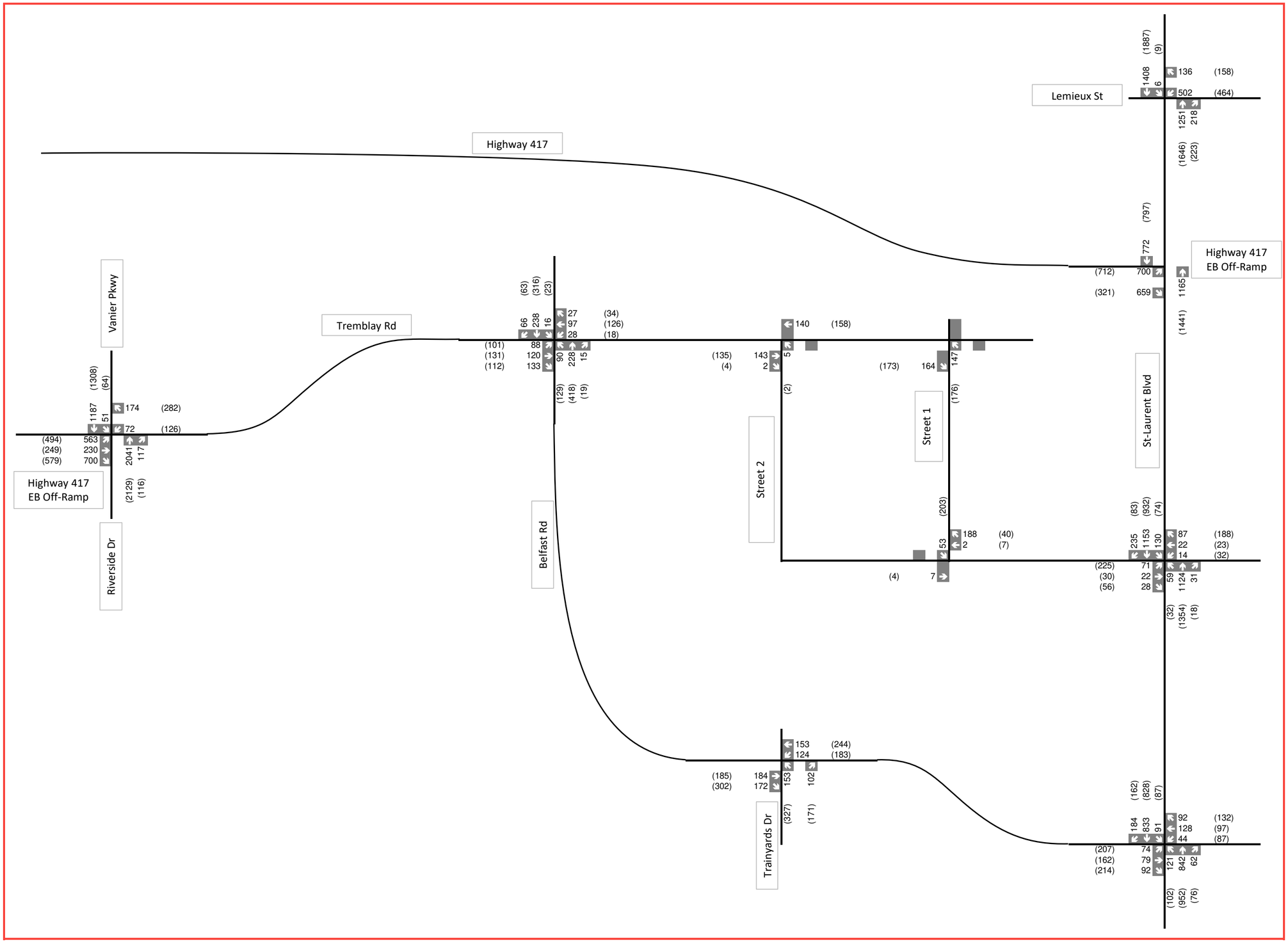


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-11
2025 Total Traffic

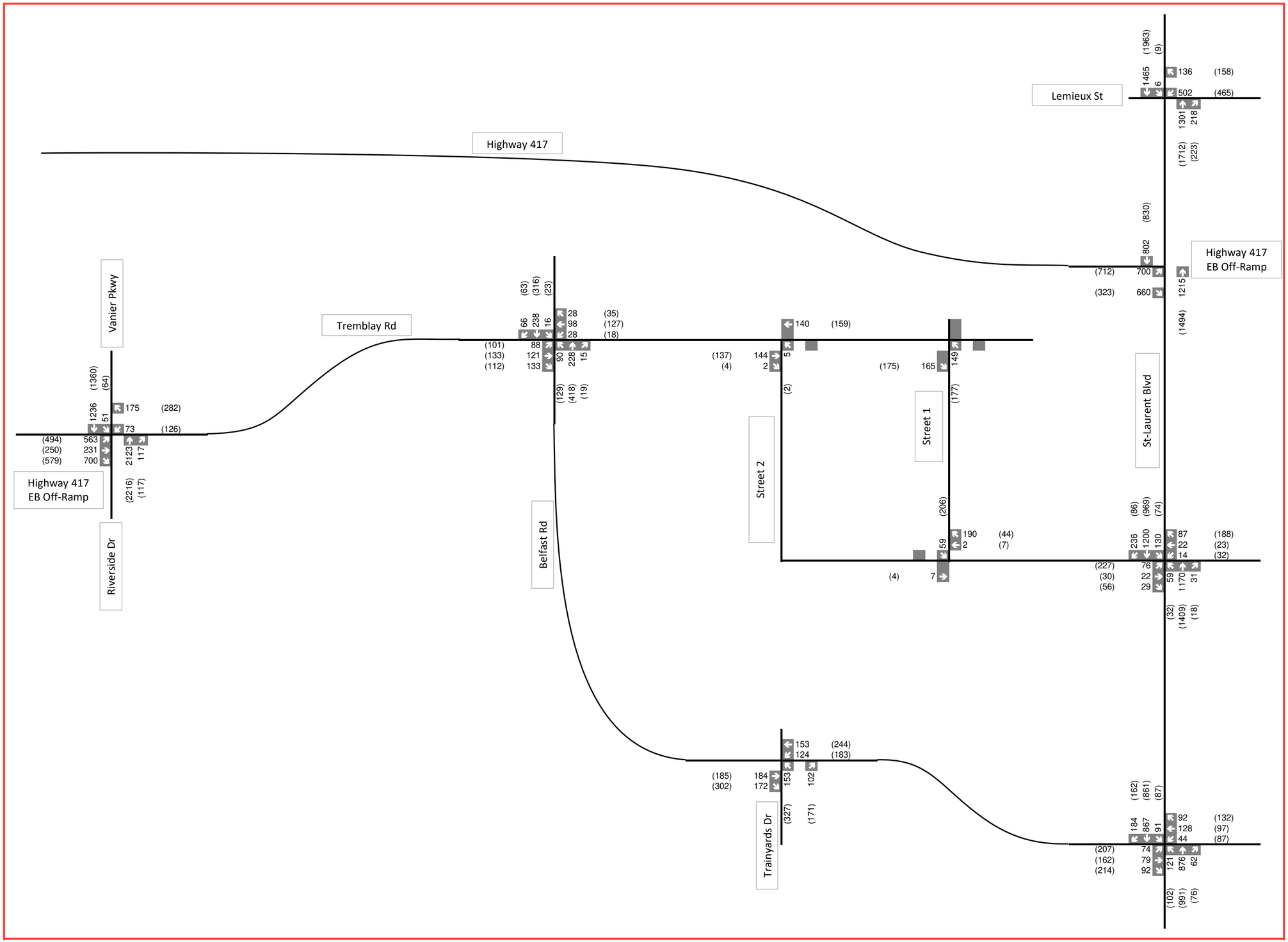


Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-12
2029 Total Traffic



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3-13
2033 Total Traffic

4 ANALYSIS

4.1 DEVELOPMENT DESIGN

4.1.1 DESIGN FOR SUSTAINABLE MODES

The TDM-supportive Development Design and Infrastructure Checklist includes two checklists, one for non-residential developments and one for residential developmentsThe completed checklists are attached as **Appendix F**.

Sustainable modes include cycling, walking, and transit. As indicated in the TDM checklist and shown on the site plan (**Figure 2-2**), the proposed site surrounding the federal lands accommodates these modes by implementing the City of Ottawa's preferred Collector Road cross-section that includes separated cycling and pedestrian facilities.

The other criteria in the non-residential TDM checklist will be determined as part of the Site Plan Control application for the federal lands. This includes walking and biking access routes from future buildings to transit stops and the realigned Tremblay Road infrastructure; details on cycling facilities and amenities; locations of potential ride-sharing pick-up / drop-off; and the parking arrangement for bicycles, vehicles, carshares, and bikeshares.

4.1.2 CIRCULATION AND ACCESS

This section was exempted in the Transportation Impact Assessment Scoping Report submitted on July 22, 2019 and approved by the City of Ottawa on August 2, 2019. The approved exemptions table is found in **Section 2.8**.

4.1.3 NEW STREETS NETWORK

The realigned Tremblay Road through the site will follow the City of Ottawa's *Designing Neighbourhood Collector Streets* guidelines which were approved by council in October 2019. The document took a broad view in the planning of collector roads and provides direction for collector streets in urban and rural settings. There is an emphasis on accommodating users of all ages and abilities in a safe and predictable manner. The document includes nine "pre-vetted" collector cross-sections and identifies the "preferred" cross section (26A) which is being proposed for the realigned Tremblay Road.

The new local road will follow the City of Ottawa's 18m ROW standard (ROW-16.5, March 2009).

The City of Ottawa's Urban Design Guides for Greenfield Neighbourhoods (2007) provide guidance for neighbourhood design during the subdivision review and zoning process. The TIA Guidelines suggest assessing the planned street network using the methods described in the Urban Design Guide. Guidelines relevant to the TIA process and notes on the planned development are shown in **Table 4-1** .

DRAFT

Table 4-1. Urban Design Guidelines for Greenfield Neighbourhoods

NO.	GUIDELINE DESCRIPTION	PLANNED STREET NETWORK
10	Create a walkable neighbourhood with pathways, trails and sidewalks that are accessible year-round and that connect destinations such as transit stops, commercial areas, schools, community facilities and parks.	The proposed public street network includes follows the City standard collector road cross-ection 26A.
11	Connect new streets to existing streets in adjacent developments and plan for future connections to land that has yet to be developed.	The development proposed a realignment of Tremblay Road through the site to provide access to a Major Collector to all proposed blocks. The construction of the realigned Tremblay Road will commence in 2021 and is anticipated to be completed in Spring 2022 in advance of the construction of the PSPC Federal block.
12	Layer collector streets to be direct and continuous through the neighbourhood so homes are within 400m of transit and other destinations along them.	The development proposed a realignment of Tremblay Road through the site to provide access to a Major Collector to all proposed blocks.
13	Layout local street patterns so that development blocks are easily walkable – between 150 and 250 m in length	The realignment of Tremblay Road includes a north-south section that is ~200m in length and an east-west section that is ~250m in length.
21	Select the most suitable zoning setback and road ROW width for the land use context and road function. Provide sufficient space for the various elements in the front yard, the boulevard, and the road including trees, sidewalks, utilities, cycling facilities, parking and travel lanes	The City of Ottawa preferred 26m wide ROW Collector road cross-section was selected for the realigned Tremblay Road; it includes bike lanes, sidewalks, an inner boulevard, parking lanes, and vehicle lanes.
25	Design roads at entrances to neighbourhoods to create a sense of arrival with such elements as enhanced landscape treatment in the boulevard and the median.	The south entrance to the neighbourhood is the existing signalized intersection of St. Laurent Boulevard and Tremblay Road. The north entrance could include

DRAFT

NO.	GUIDELINE DESCRIPTION	PLANNED STREET NETWORK
26	Construct sidewalks on both sides of the street that serve key destinations, such as transit stops, greenspaces, or to community facilities like schools. Select the correct road ROW standard to allow sufficient space for sidewalks and all streetscape elements.	The City of Ottawa preferred 26m wide ROW Collector road cross-section was selected for the realigned Tremblay Road; it includes bike lanes, sidewalks, an inner boulevard, parking lanes, and vehicle lanes.
28	Design crosswalks in areas with higher pedestrian and vehicular volumes to be visually different form the street surface. Ensure they are universally accessible.	A raised and protected intersection is proposed at the north and south bend of the realigned Tremblay Road / intersection with Street 2.
31	Create a cycling-supportive neighbourhood with bicycle routes that serve local destinations, and that are linked to the citywide network of bicycle routes. Routes include wide shared-use curb lanes, designated on-road bicycle lanes or multi-use pathways.	The proposed public street network includes bike lanes on both sides of the realigned Tremblay Road. A multi-use pathway is proposed to connect the park area with the Eastway Gardens community to the west.
32	Design pathways, trails and walkways that are connected to the road right-of-way so that they link to a sidewalk and cross at an intersection.	A multi-use pathway is proposed to connect the park area with the Eastway Gardens community to the west. The MUP will tie into the sidewalk / bike lanes on the south side of the realigned Tremblay Road.
33	Construct streets, sidewalks, crosswalks and access to buildings that are universally accessible to a wide range of residents and abilities. Refer to accessibility standards such as the CSA (B651-04) "Accessible design for the built environment".	City of Ottawa design standards are proposed for all streets, sidewalks, and crosswalks.

4.2 PARKING

This section was exempted in the Transportation Impact Assessment Scoping Report submitted on July 22, 2019 and approved by the City of Ottawa on August 2, 2019. The approved exemptions table is found in **Section 2.8**.

4.3 BOUNDARY STREETS

4.3.1 ST. LAURENT BOULEVARD

St. Laurent Boulevard is an arterial road with a protected right-of-way of 44.5m within the study area. The draft development concept plan (**Figure 2-2**) allows for more than 44.5m right-of-way along St. Laurent Road. This allowance would provide sufficient space for the City to implement any of the Arterial Road Cross-Sections developed as part of the *Building Better and Smarter Suburbs* initiative.

The existing cross-section (**Figure 4-1**) includes a paved area approximately 20.5m wide with sidewalks and two vehicle lanes in each direction separated by a centre median. At the approach to the intersection dedicated left and right turn lanes are provided. The existing St. Laurent Boulevard cross-section is not consistent with the City's approved Arterial Road Cross-Sections which all provide separate cycling facilities or a multi-use pathway.

In accordance with the TIA guidelines, WSP have developed a complete street concept for this section of St. Laurent Boulevard that considers both mobility and road safety. This complete street concept could be considered as part of a larger study which would consider the feasibility of an overall widening of St. Laurent Boulevard to provide additional active transportation connections serving the Alta Vista area.

Figure 4-1. St. Laurent Boulevard (south of Tremblay) – Existing Cross-Section

4.3.1.1 MOBILITY

The segment of St. Laurent Boulevard within the study area is identified as a Mixed Use Centre the City of Ottawa's Official Plan (2013), Schedule B (Urban Policy Plan). However, it is noted that roadway is located within 600m of a rapid transit station and the applicable MMLOS targets utilized are related to the policy area instead of the specific land use designation. The resulting MMLOS targets and segment scores for the two scenarios are indicated in **Table 4-2** for Pedestrian Level of Service (PLOS), Bicycle LOS (BLOS), Transit LOS (TLOS), Truck LOS (TkLOS), and Vehicle LOS (VLOS).

DRAFT

Table 4-2. Segment MMLOS (2025)

	PLOS	BLOS	TLOS	TKLOS	VLOS
Target	**A**	**C**	**D**	**D**	VLOS Not Reported for Segments
Status Quo	**F**	**F**	D	A	
Conceptual Complete Street	D	C	D	A	

The **Status Quo** option is based on the existing conditions remaining in place along St. Laurent Boulevard. The MMLOS was assessed as:

- 1.5m sidewalk with no boulevard adjacent to high speeds = PLOS 'F'
- Mixed traffic for bicycles with a speed limit ≥ 60km/h = BLOS 'F'
- Transit operating in mixed traffic with limited to no parking = TLOS 'D'
- Bi-directional traffic with travel lanes greater than 3.5m = TKLOS 'A'

The **Conceptual Complete Street** considers the City's Official Plan (which protects a 44.5m right-of-way) and the City's Transportation Master Plan (which indicates that this section of St. Laurent Boulevard was identified as a Transit Priority Corridor (Isolated Measures) in the 2031 Affordable Network. A complete street concept could be considered as part a larger roadway project. Such a project might consider a road design similar to Cross-Section 1 proposed in the City of Ottawa's Arterial Road Cross-Sections. This cross-section was the basis for our assessment of the Conceptual Complete Street option and the MMLOS targets in **Table 4-2**.

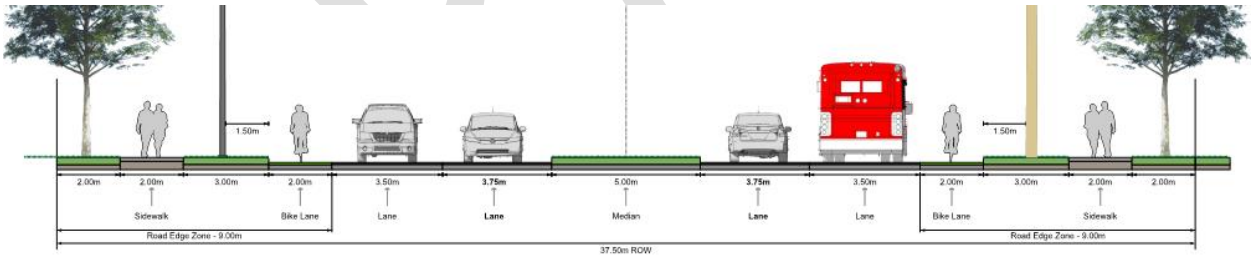


Figure 4-2. City of Ottawa Arterial Road Concept 1 – Current Cross-Section Standard

4.3.1.2 SAFETY

Historical crash records for the study area were obtained from the City of Ottawa for the 5-years between January 2014 through December 2018. The TIA Guidelines indicate that patterns with six or more crashes should be identified. In this timeframe there were eleven crashes along the roadway segments (excluding the intersections) on St. Laurent Boulevard between the Highway 417 EB Off-Ramp and Belfast Road. There were no patterns identified with six or more crashes; therefore, no crash reduction measures have been identified for this section of roadway.

4.3.2 TREMBLAY ROAD

Tremblay Road is a major collector road with a protected right-of-way of 26m within the study area. The draft development concept plan (**Figure 2-2**) allows for a 26m right-of-way through the Site. This allowance would provide sufficient space for the City to implement one of the cross-sections in the recently approved Designing Neighbourhood Collector Streets guide (2019).

The existing cross-section (**Figure 4-1**) includes a paved area approximately 13.5m wide with a sidewalk, a multi-use path and vehicle lanes. The existing Tremblay Road cross-section is not consistent with the City's approved Collector Street Cross-Sections which all provide separate cycling facilities or a multi-use pathway. In accordance with the TIA guidelines and considering the realignment of Tremblay Road through the Site, WSP have identified a preferred cross-section for this section of Tremblay Road that considers both mobility and road safety.

Figure 4-3. Tremblay Road – Existing Cross-Section

4.3.2.1 MOBILITY

The segment of Tremblay Road within the study area is identified as a Mixed Use Centre in the City of Ottawa's Official Plan (2013), Schedule B (Urban Policy Plan). However, it is noted that the roadway is located within 600m of a rapid transit station and the applicable MMLOS targets utilized are related to the policy area instead of the specific land use designation. The resulting MMLOS targets and segment scores for the two scenarios are indicated in the table below.

Table 4-3. Segment MMLOS (2025)

	PLOS	BLOS	TLOS	TKLOS	VLOS
Target	**A**	**B**	**D**	**D**	VLOS Not Reported for Segments
Status Quo	**F**	E	D	B	
Conceptual Complete Street	B	A	D	C	

The **Status Quo** option is based on the existing conditions remaining in place along St. Laurent Boulevard. The MMLOS was assessed as:

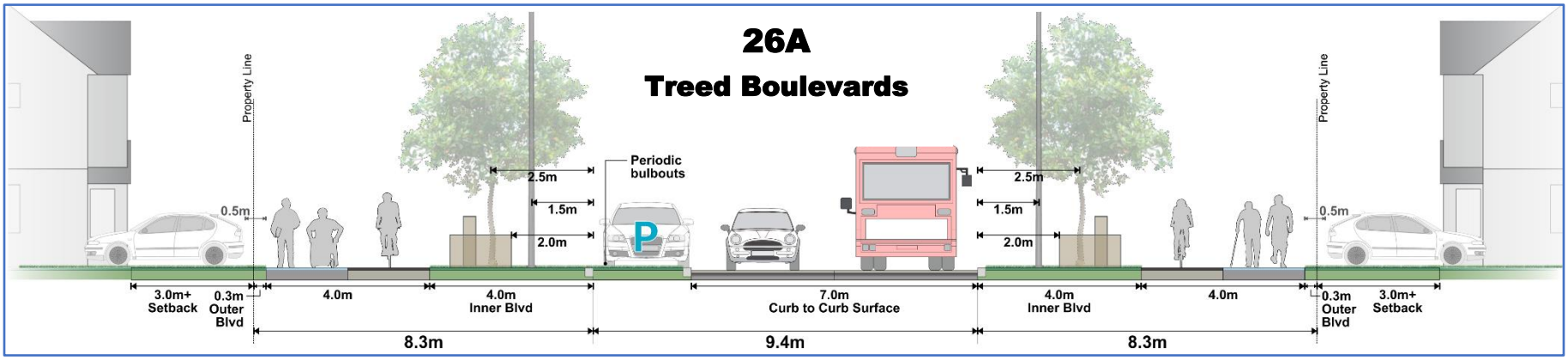
- No sidewalk on the east side between St. Laurent Boulevards and west 200m = PLOS 'F'
- Mixed traffic for bicycles with a speed limit ≥ 50km/h = BLOS 'E'
- Transit operating in mixed traffic with limited to no parking = TLOS 'D'
- Bi-directional traffic with travel lanes of 3.7m = TKLOS 'B'

The **Conceptual Complete Street** (**Figure 4-4**) considers the City's Official Plan (which protects a 44.5m right-of-way) and the City's Transportation Master Plan (which indicates that this section of Tremblay Road was identified for widening in the 2031 Affordable Network. This cross-section was the basis for WSP's assessment of the Conceptual Complete Street option and the MMLOS targets.

4.3.2.2 SAFETY

Historical crash records for the study area were obtained from the City of Ottawa for the five years between January 2014 through December 2018. The TIA Guidelines indicate that patterns with six or more crashes should be identified. In this timeframe there were two crashes along Tremblay Road between Avenue U and St. Laurent Boulevard. There were no patterns identified with six or more crashes; therefore, no crash reduction measures have been identified for this section of roadway.

DRAFT



Defining Features

- 33% of width (more with bulb-outs) is green, including large trees
- Tree-protected sidewalks and cycle tracks near the right-of-way edge
- Wide boulevards with space for large trees, bus stops, utilities, and snow storage on both sides
- Compatible for large trees in areas with sensitive marine clay soils

- Surface-mount hydroelectric transformers and grounding grid located within the right-of-way
- Sidewalks and cycle tracks narrow locally to provide 1.0m clearance from hydroelectric transformer

- Can support high frequency transit service
- Can be maintained to 'Class 3' City standard
- One-sided street parking alternating from side to side
- Private driveway parking provided outside the right-of-way

Applicability (all apply)

- Compatible with the widest range of land uses
- Can work for properties with direct driveway access
- The starting point for design in new communities and reconstructed corridors

Figure 4 Pre-Vetted Cross-Section 26A

4.4 ACCESS INTERSECTIONS

Accesses to each Block in the development will be proposed during their individual Site Planning. At this time, all intersections being analyzed will be part of the City's road network. They are fully assessed in accordance with the TIA Guidelines as part of **Section 4.9.2**.

4.5 TRANSPORTATION DEMAND MANAGEMENT

4.5.1 CONTEXT FOR TDM

Transportation Demand Management (TDM) describes a broad range of policies, programs and services designed to reduce the demand for vehicle use by influencing individual travel behaviour and providing expanded options. This development application proposes to sub-divide the land into various parcels. The residential component are the lands considered in this TIA. An estimate of the future federal land development is provided for comparison only. The estimated mode shares by trip purpose (residential vs. federal) for the 2033 planning horizon are provided in **Table 4-4**. The operational characteristics of the federal office development will be determined as part of the development of that parcel of land.

Table 4-4. Peak Hour Mode Shares Compared to Trip Purpose (2033)

PURPOSE	AUTO DRIVER	AUTO PASS.	TRANSIT	BICYCLE	WALK	TOTAL	% TRIPS
Residential /Commercial	50	17	220	17	35	338	14%
Federal Lands	310	103	1,342	103	206	2,065	86%

The number of vehicles generated by the residential component will be constrained by the available parking. If the residential component is unable to meet the transit mode share target (**Section 3.1**) then there is anticipated reserve capacity on Tremblay Road (**Section 4.6**) that could accommodate additional vehicles.

4.5.2 TDM MEASURES

The following measures could be implemented to increase the likelihood that the travel mode shares will meet the TOD mode share targets. These measures are considered feasible and effective for Residential Developments by the City of Ottawa's TDM Measures Checklist.

- Designate an TDM internal coordinator
- Display local area maps with walking / cycling access routes and key destinations at major entrances to multi-family / condominium residential developments
- Display relevant transit schedules and route maps at entrances

DRAFT

— Offer PRESTO cards preloaded with one monthly transit pass on residence purchase / move-in, to encourage residents to use transit (particularly the LRT)
— Unbundle marking cost from purchase price / monthly rent
— Provide a multimodal travel option information package to new residents

As part of the Site Plan Control Application, a detailed TDM program can be prepared that considers the actual site plan statistics and operational characteristics of each parcel of land being developed.

4.6 NEIGHBOURHOOD TRAFFIC MANAGEMENT

The development will increase traffic traveling adjacent to the residential neighbourhood (Eastway Gardens) located south of Tremblay Road and west of the development. Tremblay Road is classified as a major collector road in the City of Ottawa's Official Plan (2013). The traffic volume thresholds provided in the TIA Guidelines (2017) for the various classifications of roads are:

— Local Road: 1,000 vehicles per day or 120 vehicles per peak hour
— Collector Road: 2,500 vehicles per day or 300 vehicles per peak hour
— Major Collector Road: 5,000 vehicles per day or 600 vehicles per peak hour

Considering the future volumes presented in Section 3 (**Figure 3-11**, **Figure 3-12**, and **Figure 3-13**), the future volumes expected on Tremblay Road during the future planning horizons do not exceed the volume thresholds for the Major Collector Road classification; they are expected to exceed the Collector Road classification by 2025 which is driven by the development of the federal lands and not the residential development. The forecasted volumes compared to the volume thresholds are provided in **Table 4-5**.

Table 4-5. Major Collector Traffic Volume Thresholds

PLANNING HORIZON	TREMBLAY ROAD WEST OF AVENUE U		TREMBLAY ROAD EAST OF AVENUE U	
	DAILY THRESHOLD *5,000 VPD*	PEAK HOUR THRESHOLD *600 VPH*	DAILY THRESHOLD *5,000 VPD*	PEAK HOUR THRESHOLD *600 VPH*
2019 Existing	1,691	251	1,420	171
2025 Background	1,755	263	1,625	195
2025 Total	2,300	345	3,620	434
2029 Total	2,355	352	3,725	447
2033 Total	2,370	355	3,785	454

DRAFT

4.7 TRANSIT

4.7.1 ROUTE CAPACITY

OC Transpo provided ridership information from January 2019 within the Study Area. The transit data provided in **Table 4-6** includes the number of people boarding and alighting at three general locations: Tremblay Road through the Site; St. Laurent Boulevard adjacent to the Site; and at the St. Laurent Station.

Table 4-6. Existing Transit Peak Hour Boardings and Alightings (Jan 2019 Booking)

LOCATION	ACTION	AM PEAK HOUR	PM PEAK HOUR
Tremblay Road Through Site *Stops 7128, 7129*	Boarding	5	0
	Alighting	0	0
St. Laurent Boulevard Adjacent to Site *Stops 1091, 8538*	Boarding	9	15
	Alighting	37	6
St. Laurent Station *Stop 3025 (3C, 4A, 4B, 4C)*	Boarding	646	580
	Alighting	449	805

However, on October 6, 2019, the City of Ottawa's bus routes changed to provide connections from bus transit to the newly opened O-Train Line 1. An overview of the light rail transit (LRT) station improvements and the service change are described in **Section 2.3.4**. The expected impacts of the service change to the study intersections is summarized in **Section 3.2.1.2**.

OC Transpo provided ridership forecasts for 2023 at the St. Laurent Station which were prepared as part of the *Ottawa Stage 2 LRT Extension Final 2023 and 2031 Ridership Forecasts* Report (2017). These forecasts include the number of people boarding and alighting at the St. Laurent Station and are provided in **Table 4-7**.

DRAFT

Table 4-7. 2023 AM Peak Hour: Boardings and Alightings at St. Laurent Station (Confederation Line)

PLANNING HORIZON	ACTION	EASTBOUND	WESTBOUND	TOTAL
Future (2023)	Boarding	206	942	1,148
	Alighting	795	576	1,371

During the AM peak hour, the number of passengers boarding increases from 646 (2019) to 1,148 (2023); while the number of passengers alighting at St. Laurent Station increases from 449 (2019) to 1,371 (2023). This is an increase of 1,424 transit trips during the AM peak hour. The planning horizons for the demand forecasting (**Section 3.1**) were 2025, 2029, and 2033. At the final planning horizon, the residential development is anticipated to generate 210 new transit trips and that the federal lands could generate 1,517 new transit trips during the AM peak hour (**Table 4-8**).

Table 4-8. Forecasted Development Generated Transit Person Trips

PHASE	AM PEAK HOUR TRANSIT PERSON TRIPS	PM PEAK HOUR TRANSIT PERSON TRIPS
Residential One (2025)	84	88
Residential Two (2029)	84	88
Residential Three (2033)	42	44
Federal Lands (2025)	1,307	1,342
Total Peak Hour (2033)	1,517	1,522
Total Peak Period (2033)*	3,800	3,805
* To be conservative, a factor of 2.5 was applied to the peak hour to obtain the peak period transit trips		

The LRT has a capacity of 600 passengers per train set, with a planned peak capacity of 10,700 passengers per hour in each direction, with the potential to grow to over 18,000 passengers per hour in each direction by 2031, and ultimately 24,000 passengers per hour in each direction.

The City of Ottawa provided transit volume plots (**Appendix G**) from the TRANS Regional Model for the existing transit conditions (2011) and projects future transit conditions (2031). The future transit conditions shown in **Table 4-9** include a public office employment increase from 650 (in 2011) to 2,430 (in 2031) in the study area. The future projections indicate a directional distribution of 22% eastbound towards Orleans and 78% westbound towards Downtown during the AM peak period.

Table 4-9. 2011 and 2031 TRANS Model Transit Projections along the Transitway at St. Laurent Station: Peak Period (2.5 hours)

PLANNING HORIZON	ACTION	EASTBOUND	WESTBOUND	TOTAL
Existing (2011)	Arriving	3,744	13,344	17,088
	Departing	2,609	13,464	16,073
Future (2031)	Arriving	4,988	14,547	19,535
	Departing	3,382	14,990	18,372

The 2031 AM Peak Period Total Transit Volumes from the TRANS Model were obtained from the City of Ottawa. To be conservative, WSP have assumed that the TRANS Model 2031 transit conditions did not include the development at 530 Tremblay Road. A summary of the 2033 peak period transit volumes compared to the estimated peak hour development-generated transit trips (**Section 3**) is provided for comparison in **Figure 4-5**. Both the eastbound and westbound directions of travel have reserve capacity compared to the expected hourly capacity of 18,000 passengers in each direction by 2031.

To provide context, the residential development is expected to generate 210 transit trips compared to the 1,307 transit trips generated by the federal lands.

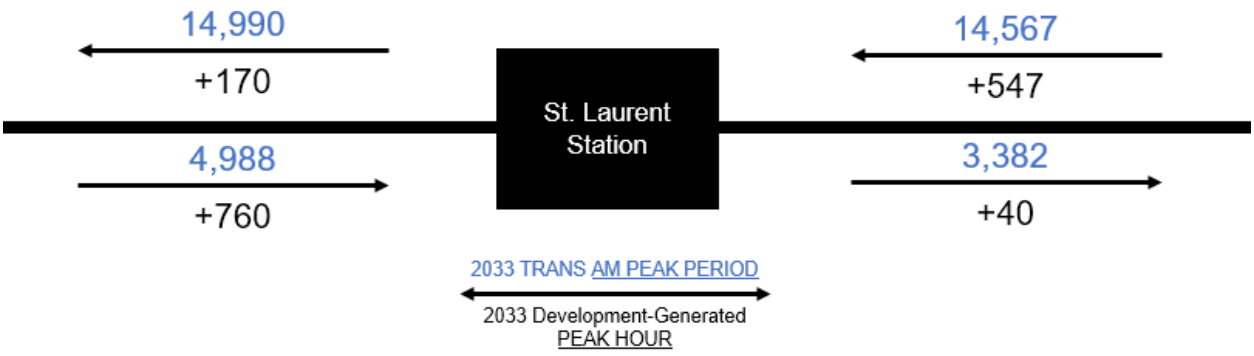


Figure 4-5. 2033 AM Transit Trips

4.7.2 TRANSIT PRIORITY

St. Laurent Boulevard was identified as a Transit Priority Corridor (Isolated Measures) in the City's Transportation Master Plan (2013) with a 44.5m protected right-of-way. A complete street concept that included isolated transit priority measures could be considered as part of a larger road widening project to improve the multi-modal level of service and meet the City of Ottawa's arterial road cross section standards (**Section 4.3.1**).

There is the opportunity to further explore the need for a pedestrian bridge between the federal lands and the St. Laurent Station (**Section 3.2.1.4**) as part of the future site planning for the federal lands. With the existing pedestrian underground walkway (**Figure 2-7**), there is not a need for a pedestrian bridge to accommodate the 210-potential peak hour transit trips generated by the residential development being subdivided.

WSP prepared a structural feasibility report concerning a future pedestrian overpass that is provided for information in **Appendix H**.

4.8 REVIEW OF NETWORK CONCEPT

The City of Ottawa Council established priority areas for the creation of transit-oriented development (TOD) plans to prepare for the anticipated land development pressure of the LRT. The TOD plans set the stage for future transit-supportive, or "intensified", land development and include six areas: Lees, Hurdman, Tremblay, St-Laurent, Cyrville, and Blair. The 530 Tremblay Road site is located within the St-Laurent TOD and is specifically mentioned in the St-Laurent TOD Plan.

The Tremblay Road ROW east of Belfast Road was amended to the Official Plan (Amendment #113, July 30, 2013) to add policy to various sections for TOD Areas at future Light Rail Stations. Furthermore, as part of the City's Transportation Master Plan (2013), Tremblay Road was designated as a Major Cycling Pathway and identified for widening to meet future capacity requirements as a Phase 3 (2026-2031) project in the Affordable Road Network. Additionally, the TRANS Regional Model includes an increased employment land use in this area as part of their 2031 auto and transit forecasts.

It appears that the potential mixed-use development at 530 Tremblay Road was considered in the development of the City's TMP (2013). This development should continue to be considered as part of the current TMP update being undertaken by the City.

DRAFT

4.9 INTERSECTION DESIGN

4.9.1 INTERSECTION CONTROL

The identification of appropriate intersection controls to serve future background and future total travel demands included a roundabout screening for unsignalized intersections, a traffic signal warrant assessment, and a cursory review of transit priority measures. For this assessment WSP reviewed the 2033 total traffic volumes which would provide the worst-case scenario in terms of area traffic demands. If warrants were met for this planning horizon, further analysis would be undertaken for earlier planning horizons / traffic scenarios to identify specific needs. However, assuming no warrant was met for the 2033 planning horizon no further assessment of scenarios would be required. A summary of the intersection control assessment is provided in **Table 4-10**.

The **roundabout screening** followed the siting considerations provided in the TAC Canadian Roundabout Design Guide. The roundabout screening was completed for the unsignalized intersections with consideration given to frequency and type of vehicle crashes, left turn volumes, frequency of U-turn movements, and minor road delay. Based on these criteria, none of the intersections warrant a roundabout in the future total traffic scenario.

The stop control and **traffic signal warrant** was carried out in accordance with the Ontario Traffic Manual Book 12 (2012) methodology for future projected traffic volumes (Justification 7). Based on 2033 total traffic volumes, signal warrants were not met for the unsignalized intersections analysed. The traffic signal warrant sheets are provided in **Appendix I**.

The cursory review of **transit priority measures** indicated that St. Laurent Boulevard could be a candidate for transit priority measures as part of a larger City focused study.

Table 4-10. Intersection Control Summary (2033 Total)

INTERSECTION	EXISTING CONTROL	ROUNDABOUT SCREENING	TAC SIGNAL WARRANT	ISOLATED TRANSIT PRIORITY	FUTURE CONTROL
Riverside / Tremblay	Traffic Signals	-	-	No	No Change
St. Laurent / Lemieux	Traffic Signals	-	-	Future Study	No Change
St. Laurent / Highway 417 EB Off	Traffic Signals	-	-	Future Study	No Change
St. Laurent / Tremblay	Traffic Signals	-	-	Future Study	No Change
Tremblay / Belfast	Traffic Signals	-	-	No	No Change
St. Laurent / Belfast	Traffic Signals	-	-	Future Study	No Change
Belfast / Trainyards	Traffic Signals	-	-	No	No Change
Tremblay / Street 1	N/A	No	No	No	Stop Control

DRAFT

INTERSECTION	EXISTING CONTROL	ROUNDABOUT SCREENING	TAC SIGNAL WARRANT	ISOLATED TRANSIT PRIORITY	FUTURE CONTROL
Tremblay / Street 2	N/A	No	No	No	Stop Control
New Tremblay / Street 1	N/A	No	No	No	Stop Control

4.9.2 INTERSECTION DESIGN

4.9.2.1 MULTI-MODAL LEVEL OF SERVICE ANALYSIS

A Multi-Modal Level of Service (MMLOS) analysis was carried out in accordance with the methodology outlined in the City of Ottawa's MMLOS Guidelines (2015). The Guidelines state that intersection LOS measures are to be evaluated for signalized intersections and not unsignalized intersections. We have prepared a MMLOS analysis for the existing conditions (2019) and future total (2033) time horizon to provide a comparison between the baseline and future condition.

The intersections were evaluated following the designation / policy areas defined in **Table 4-11**.

Table 4-11. MMLOS Designation / Policy Areas

INTERSECTION	DESIGNATION/POLICY AREA
St. Laurent Boulevard and Lemieux Street	Within 600m of a Rapid Transit Area
St. Laurent Boulevard and Highway 417 EB Off Ramp	Within 600m of a Rapid Transit Area
St. Laurent Boulevard and Tremblay Road	Within 600m of a Rapid Transit Area
Riverside Drive and Tremblay Road	Mixed Use Centre
Tremblay Road and Belfast Road	Mixed Used Centre
St. Laurent Boulevard and Belfast Road	Urban Employment Area
Belfast Road and Trainyards Drive	Urban Employment Area

The MMLOS results for the existing conditions and future total conditions (**Table 4-12**) indicate that the pedestrian, bicycle, transit, and truck modes do not meet their target LOS. There is no change in the forecasted MMLOS between time horizons. It is important to note that MMLOS results are governed by the worst movement at an intersection.

DRAFT

Table 4-12. Intersection MMLOS (Existing and Future Total)

	PLOS	BLOS	TLOS	TKLOS	VLOS
Intersection: Riverside Drive and Tremblay Road					
Target	**C**	**C**	**D**	**B**	**D**
Existing (2019)	**E**	**F**	**F**	**D**	**F**
Future Total (2033)	**E**	**F**	**F**	**D**	**F**
Intersection: St. Laurent Boulevard and Lemieux Street					
Target	**A**	**C**	**D**	**D**	**E**
Existing (2019)	**F**	**F**	**F**	A	B
Future Total (2033)	**F**	**F**	**F**	A	C
Intersection: St. Laurent Boulevard and Highway 417 EB Off Ramp					
Target	**A**	**C**	**D**	**D**	**E**
Existing (2019)	**E**	C	**F**	A	D
Future Total (2033)	**E**	C	**F**	A	D
Intersection: St. Laurent Boulevard and Tremblay Road					
Target	**A**	**C**	**D**	**D**	**E**
Existing (2019)	**F**	**F**	**F**	C	E
Future Total (2033)	To be determined through Detailed Design				
Intersection: Tremblay Road and Belfast Road					
Target	**C**	**B**	**D**	**D**	**D**
Existing (2019)	**D**	**E**	**F**	C	C

DRAFT

	PLOS	BLOS	TLOS	TKLOS	VLOS
Future Total (2033)	D	E	F	C	D
Intersection: St. Laurent Boulevard and Belfast Road					
Target	**C**	**C**	**D**	**B**	**D**
Existing (2019)	F	F	F	C	F
Future Total (2033)	F	F	F	C	F
Intersection: Belfast Road and Trainyards Drive					
Target	**C**	**C**	**D**	**B**	**D**
Existing (2019)	E	F	F	C	B
Future Total (2033)	D	F	F	C	B

4.9.2.2 DETAILED INTERSECTION PERFORMANCE ANALYSIS

METHODOLOGY

The existing and future conditions were analyzed based upon the weekday peak hour traffic volumes presented in **Section 3**. The City of Ottawa's MMLOS Guidelines assigns the vehicle level of service (VLOS) based on ranges of volume to capacity ratio, as indicated in **Table 4-13**.

Table 4-13. City of Ottawa MMLOS Guidelines, V/C Criteria

VLOS	VOLUME TO CAPACITY RATIO
A	0 – 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.80 – 0.90
E	0.91 – 1.00
F	> 1.00

The City's MMLOS Guidelines recommend targets for the Vehicle Level of Service (VLOS) based on their Official Plan Policy / Designation and Road Class. The VLOS targets for the study intersections are shown in **Figure 4-6**.

Figure 4-6. Vehicle LOS Targets for Study Intersections

The following sections present the results of the intersection capacity analysis. All intersections were analyzed using Synchro 9 following the analysis parameters in the TIA Guidelines. **Appendix J** contains the detailed Synchro analysis sheets.

EXISTING CONDITIONS

The existing (2019) intersection capacity analysis results are summarized in **Table 4-14**. Most intersections in our study area currently operate with an acceptable VLOS; with the exception of the Riverside / Tremblay intersection during both peak hours and the St. Laurent / Belfast intersection during the PM peak hour.

The intersection of Riverside / Tremblay has a v/c ratio greater than 1.00 for the northbound through (NBT) movement during both peak hours resulting in a LOS 'F'. NBT vehicles experience moderate delay at the intersection between 60 and 90 seconds compared to the average intersection delay of 45 seconds. All other movements at this intersection have a LOS 'D' or better.

The intersection of St. Laurent / Belfast has a v/c ratio greater than 1.00 for the eastbound left (EBL) movement during the PM peak hour resulting in a LOS 'F'. EBL vehicles experience moderate delay of 135 seconds compared to the average intersection delay of 32 seconds. All other movements at this intersection have a LOS 'D' or better.

Table 4-14. Intersection Capacity Summary for Existing Conditions (2019)

INTERSECTION (ALL SIGNALIZED)	AM PEAK HOUR			PM PEAK HOUR		
	Delay (s)	VLOS	Critical Movement	Delay (s)	VLOS	Critical Movement
Riverside / Tremblay	55	F	NBT = 1.11	45	F	NBT = 1.03
St. Laurent / Lemieux	16	B	-	16	B	-
St. Laurent / Hwy 417 EB Off Ramp	19	D	-	19	C	-
St. Laurent / Tremblay	7	A	-	13	E	-
Tremblay / Belfast	21	C	-	28	C	-
Belfast / Trainyards	10	A	-	14	B	-
St. Laurent / Belfast	24	D	-	32	F	EBL = 1.11

FUTURE BACKGROUND CONDITIONS

The future background (2025, 2029, 2033) intersection capacity analysis results are summarized in **Table 4-15**. For these future background scenarios, no adjustments were made to signal timing or intersection lane arrangements to improve VLOS. As a result, the intersections that had exceeded the VLOS thresholds under existing conditions continue to operate above the VLOS thresholds under future background conditions. Notably, the delay experienced by vehicles making a northbound through movement at Riverside and Tremblay is expected to increase by 25-30s during the peak hours between 2019 and 2033.

Table 4-15. Intersection Capacity Summary for Future Background Conditions (2025, 2029, 2033)

HORIZON	INTERSECTION (ALL SIGNALIZED)	AM PEAK HOUR			PM PEAK HOUR		
		Delay (s)	VLOS	Critical Movement	Delay (s)	VLOS	Critical Movement
2025	Riverside / Tremblay	66	F	NBT = 1.18	54	F	NBT = 1.09
	St. Laurent / Lemieux	16	B	-	17	B	-
	St. Laurent / Hwy 417 EB Off Ramp	19	D	-	19	C	-
	St. Laurent / Tremblay	7	A	-	13	E	-
	Tremblay / Belfast	21	C	-	28	C	-

DRAFT

	Belfast / Trainyards	10	A	-	14	B	-
	St. Laurent / Belfast	24	D	-	33	**F**	**EBL = 1.11**
2029	Riverside / Tremblay	75	**F**	**NBL = 1.22**	62	**F**	**NBT = 1.13**
	St. Laurent / Lemieux	16	B	-	17	B	-
	St. Laurent / Hwy 417 EB Off Ramp	19	D	-	19	C	-
	St. Laurent / Tremblay	7	A	-	14	E	-
	Tremblay / Belfast	21	C	-	28	C	-
	Belfast / Trainyards	10	A	-	14	B	-
	St. Laurent / Belfast	24	D	-	33	**F**	**EBL = 1.11**
2033	Riverside / Tremblay	84	**F**	**NBL = 1.27**	70	**F**	**NBT = 1.18**
	St. Laurent / Lemieux	17	B	-	18	B	-
	St. Laurent / Hwy 417 EB Off Ramp	19	D	-	19	C	-
	St. Laurent / Tremblay	7	A	-	14	E	-
	Tremblay / Belfast	21	C	-	28	C	-
	Belfast / Trainyards	10	A	-	14	B	-
	St. Laurent / Belfast	24	D	-	34	**F**	**EBL = 1.11**

FUTURE TOTAL CONDITIONS

The future total (2025, 2029, 2033) intersection capacity analysis results are summarized in **Table 4-16**. For these future background scenarios, some adjustments were made to signal timing to improve the VLOS.

Riverside / Tremblay:

- Maintained cycle length
- Increased northbound through split while maintaining LOS 'D' for eastbound traffic coming off the highway (AM only)

St. Laurent / Tremblay:

- Maintained cycle length
- Included protected eastbound and westbound left movements
- Included a double left turn lane with an increase storage length

As a result, the intersections that had exceeded the VLOS thresholds under existing conditions continue to operate above the VLOS thresholds under future background conditions. Notably, the delay experienced by vehicles making a northbound through movement at Riverside and Tremblay is expected to increase by 25-30s during the peak hours between 2019 and 2033.

DRAFT

Table 4-16. Intersection Capacity Summary for Future Total Conditions (2025, 2029, 2033)

HORIZON	INTERSECTION (* UNSIGNALIZED)	AM PEAK HOUR			PM PEAK HOUR		
		Delay (s)	VLOS	Critical Movement	Delay (s)	VLOS	Critical Movement
2025	Riverside / Tremblay	45	F	NBT = 1.04	54	F	NBT = 1.08 WBL = 1.00
	St. Laurent / Lemieux	17	C	-	17	B	-
	St. Laurent / Hwy 417 EB Off Ramp	28	D	-	23	C	-
	St. Laurent / Tremblay	17	B	-	27	C	-
	Tremblay / Belfast	22	C	-	28	D	-
	Belfast / Trainyards	10	A	-	14	B	-
	St. Laurent / Belfast	32	D	-	36	F	EBL = 1.17
	Tremblay / Street 2*	1	A	-	1	A	-
	Street 1 / Street 2*	8	A	-	9	A	-
2029	Riverside / Tremblay	50	F	NBL = 1.08	62	F	NBL = 1.12 WBL = 1.00
	St. Laurent / Lemieux	17	C	-	18	B	-
	St. Laurent / Hwy 417 EB Off Ramp	28	D	-	23	C	-
	St. Laurent / Tremblay	18	B	-	28	C	-
	Tremblay / Belfast	22	C	-	28	D	-
	Belfast / Trainyards	10	A	-	14	B	-
	St. Laurent / Belfast	32	D	-	36	F	EBL = 1.17
	Tremblay / Street 2*	1	A	-	1	A	-
	Street 1 / Street 2*	8	A	-	9	A	-
2033	Riverside / Tremblay	57	F	NBT = 1.12	69	F	NBL = 1.17 WBL = 1.01
	St. Laurent / Lemieux	18	C	-	18	B	-
	St. Laurent / Hwy 417 EB Off Ramp	29	D	-	24	C	-

DRAFT

HORIZON	INTERSECTION (* UNSIGNALIZED)	AM PEAK HOUR			PM PEAK HOUR		
		Delay (s)	VLOS	Critical Movement	Delay (s)	VLOS	Critical Movement
	St. Laurent / Tremblay	19	B	-	23	D	-
	Tremblay / Belfast	22	C	-	28	D	-
	Belfast / Trainyards	10	A	-	14	B	-
	St. Laurent / Belfast	33	D	-	36	**F**	**EBL – 1.17**
	Tremblay / Street 2*	1	A	-	1	A	-
	Street 1 / Street 2*	8	A	-	9	A	-

DRAFT

4.10 SUMMARY OF IMPROVEMENTS INDICATED AND MODIFICATION OPTIONS

A summary of transportation improvements proposed as part of this Transportation Impact Assessment carried out and the proposed modifications are presented as follows:

1. Development Design

a) Provision for sustainable modes has been provided as part of the draft development concept plan prepared for this Plan of Subdivision Application. The realigned Tremblay Road generally follows the City of Ottawa's preferred Collector Road cross-section for a 26m ROW and includes separated facilities for pedestrians, cyclists, and motor vehicles.

b) A pedestrian / cycling connection is provided between the planned pathway to the west (CLV development) and 530 Tremblay Road that satisfies the proposed pathway link shown in the Ultimate Cycling Network.

Reference: Section 4.1

2. Boundary Street Design

c) The St. Laurent Boulevard cross-section adjacent to the property is not currently consistent with the City's complete streets philosophy with a Pedestrian and Bicycle Level of Service 'F' resulting from the narrow sidewalks, lack of dedicated cycling facilities, and no separation between the high-speed vehicle lanes and the existing active transportation infrastructure. A future study focused on improvements to St. Laurent Boulevard could provide additional active transportation connections serving the Alta Vista area.

d) The realigned Tremblay Road follows the City's complete streets philosophy and implements the City's recently approved preferred Collector Road cross-section which includes separated facilities for pedestrians, cyclists, and vehicles.

Reference: Section 4.3

3. Transportation Demand Management

e) The basic TDM measures provided in the City of Ottawa's TDM Checklist for Residential elements is appropriate for the residential component.

f) The existing road network has available capacity should the mode share targets not be met.

Reference: Section 4.5

DRAFT

4. Neighbourhood Traffic Management

g) The designation of Major Collector Road for Tremblay Road continues to be appropriate in the 2033 planning horizon with future traffic volumes not exceeding the volume thresholds:

   a. Daily Threshold: 5,000vpd. Estimated Daily Volume: 3,785vpd

   b. Peak Hour Threshold: 600vph. Estimated Peak Hour Volume: 454vph

Reference: Section 4.6

5. Transit

h) The residential development will generate 220 transit trips during the peak hour. The federal development could generate 1,350 transit trips during the peak hour. Based on the transit outputs from the TRANS Model for 2031, it is anticipated that Ottawa's Light Rail Transit will have reserve capacity and can accommodate the increase in ridership generated by the development.

Reference: Section 4.7

6. Intersection Design

i) Riverside Drive and Tremblay Road: Modifications to the signal timing are suggested to accommodate the future total traffic conditions.

j) St. Laurent Boulevard and Lemieux Street: No modifications are proposed.

k) St. Laurent Boulevard and Highway 417 EB Off-Ramp: No modifications are proposed.

l) St. Laurent Boulevard and Tremblay Road: No modifications are proposed along St. Laurent Boulevard. The realigned Tremblay Road will include separated sidewalks and bike lanes which will tie into the existing intersection. The operational analysis indicates that two left-turn lanes will be required on the eastbound approach to accommodate the additional traffic generated by the federal office lands. Modifications to the signal timing are suggested to accommodate the additional lanes and traffic.

m) Tremblay Road and Belfast Road: No modifications are proposed.

n) St. Laurent Boulevard and Belfast Road: No modifications are proposed.

o) Belfast Road and Trainyards Drive: No modifications are proposed.

p) Tremblay Road and Street 1: One-way stop in the northbound direction with a pedestrian crossing.

q) Tremblay Road and Street 2: All-way stop with pedestrian crossings and cross-rides on all approaches.

DRAFT

r) New Tremblay Road and Street 1: All-way stop with pedestrian crossings and cross-rides on all approaches. Consider implementing a raised and protected intersection configuration at this location.

Reference: Section 4.9.2.2

7. Summary

Based on the results of this Transportation Impact Assessment, the proposed Plan of Subdivision for 500 residential units by Canada Lands Company located at 530 Tremblay Road:

a) Is appropriately designed for sustainable modes,

b) Is aligned with the City of Ottawa's broader city-building objectives, and

c) Can be accommodated without adverse impacts to planned transportation network and services associated with the future 2033 planning horizon.

DRAFT

APPENDIX

A SCREENING FORM

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	530 Tremblay Road
Description of Location	Southwest corner of Tremblay / St.Laurent intersection
Land Use Classification	
Development Size (units)	150,000 m^2 of federal office area, 500 condominium units
Development Size (m^2)	
Number of Accesses and Locations	Accesses off of Tremblay Road
Phase of Development	
Buildout Year	

If available, please attach a sketch of the development or site plan to this form.

2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2
Gas station or convenience market	75 m^2

** If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.

3. Location Triggers

	Yes	No
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?		X
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	X	

**DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.

4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		X
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)?	X	
Is the proposed driveway within auxiliary lanes of an intersection?		X
Does the proposed driveway make use of an existing median break that serves an existing site?		X
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		
Does the development include a drive-thru facility?		X

If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.

5. Summary

	Yes	No
Does the development satisfy the Trip Generation Trigger?	X	
Does the development satisfy the Location Trigger?	X	
Does the development satisfy the Safety Trigger?	X	

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

APPENDIX

B TRANS O-D SURVEY RESULTS

Alta Vista

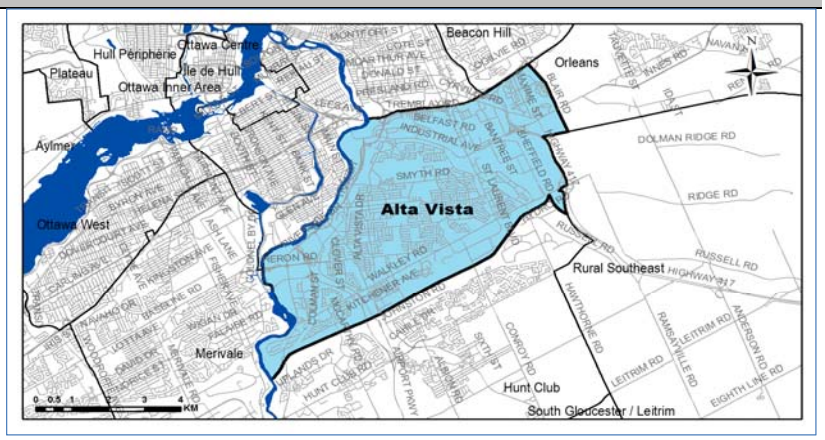
Demographic Characteristics

Population	74,770	Actively Travelled	59,190
Employed Population	32,910	Number of Vehicles	37,270
Households	32,590	Area (km^2)	38.5

Occupation Status (age 5+)	Male	Female	Total
Full Time Employed	15,840	12,940	28,780
Part Time Employed	1,660	2,470	4,130
Student	8,130	8,750	16,870
Retiree	6,200	8,840	15,030
Unemployed	1,200	950	2,150
Homemaker	50	2,150	2,200
Other	630	900	1,530
Total:	33,700	36,990	70,700

Traveller Characteristics	Male	Female	Total
Transit Pass Holders	7,620	9,140	16,760
Licensed Drivers	25,060	24,810	49,870
Telecommuters	140	60	200
Trips made by residents	92,440	98,770	191,210

Selected Indicators	
Daily Trips per Person (age 5+)	2.70
Vehicles per Person	0.50
Number of Persons per Household	2.29
Daily Trips per Household	5.87
Vehicles per Household	1.14
Workers per Household	1.01
Population Density (Pop/km2)	1940

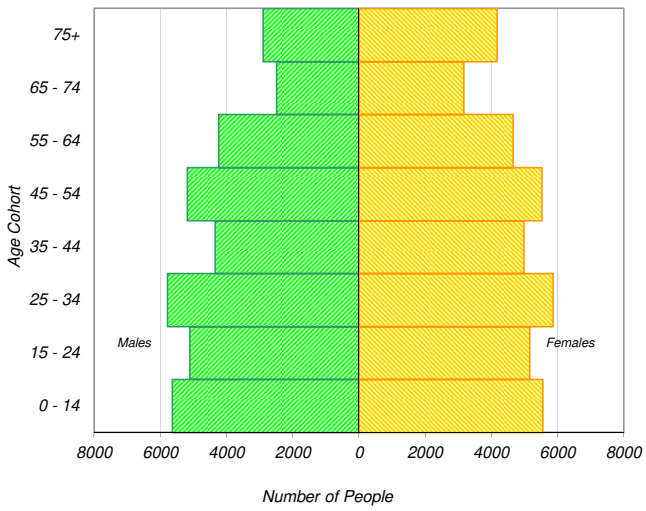


Household Size		
1 person	10,780	33%
2 persons	11,010	34%
3 persons	4,790	15%
4 persons	3,880	12%
5+ persons	2,130	7%
Total:	32,590	100%

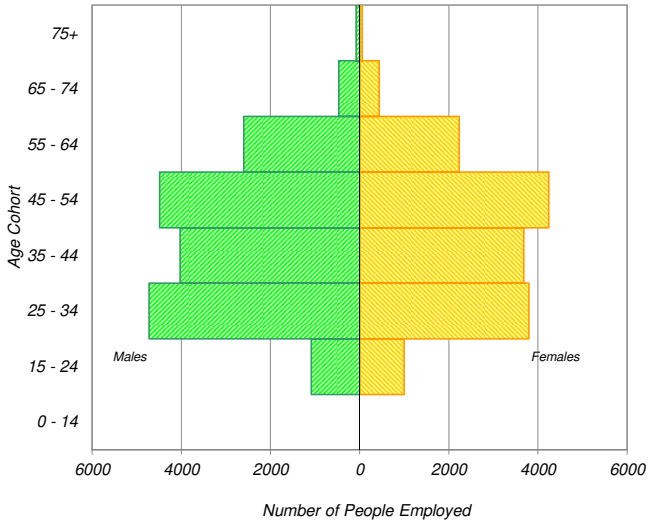
Households by Vehicle Availability		
0 vehicles	6,320	19%
1 vehicle	16,930	52%
2 vehicles	8,030	25%
3 vehicles	1,030	3%
4+ vehicles	290	1%
Total:	32,590	100%

Households by Dwelling Type		
Single-detached	12,320	38%
Semi-detached	1,790	5%
Townhouse	4,700	14%
Apartment/Condo	13,780	42%
Total:	32,590	100%

Population



Employed Population

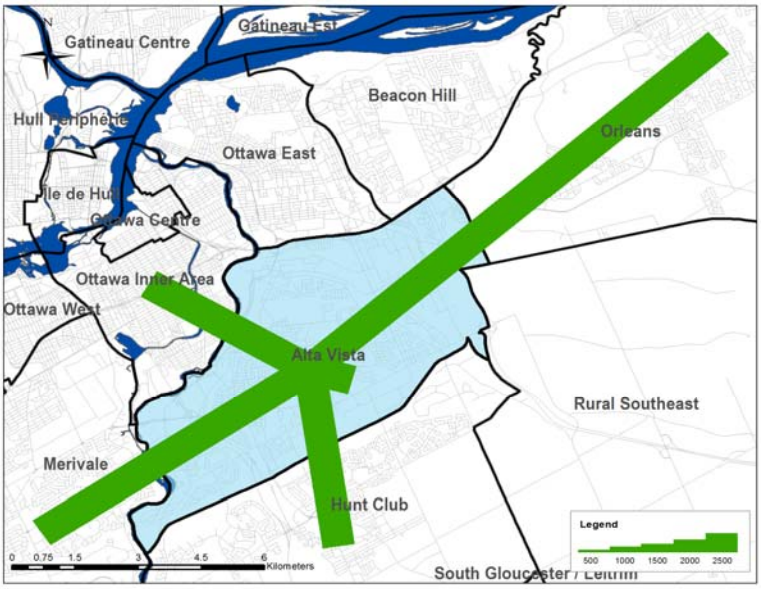


* In 2005 data was only collected for household members aged 11+ therefore these results cannot be compared to the 2011 data.

Travel Patterns

Top Five Origins of Trips to Alta Vista

AM Peak Period



Summary of Trips to and from Alta Vista

AM Peak Period (6:30 - 8:59)	Destinations of Trips From District	% Total	Origins of Trips To District	% Total
Districts				
Ottawa Centre	4,180	10%	680	1%
Ottawa Inner Area	4,970	12%	4,270	7%
Ottawa East	1,940	5%	2,370	4%
Beacon Hill	2,690	7%	1,850	3%
Alta Vista	16,220	39%	16,220	27%
Hunt Club	1,980	5%	7,990	13%
Merivale	3,010	7%	3,690	6%
Ottawa West	1,160	3%	1,550	3%
Bayshore / Cedarview	830	2%	2,330	4%
Orléans	1,050	3%	5,890	10%
Rural East	110	0%	430	1%
Rural Southeast	140	0%	1,550	3%
South Gloucester / Leitrim	160	0%	1,970	3%
South Nepean	460	1%	2,360	4%
Rural Southwest	160	0%	690	1%
Kanata / Stittsvile	660	2%	1,810	3%
Rural West	20	0%	180	0%
Île de Hull	710	2%	190	0%
Hull Périphérie	360	1%	420	1%
Plateau	0	0%	680	1%
Aylmer	40	0%	480	1%
Rural Northwest	40	0%	300	1%
Pointe Gatineau	20	0%	740	1%
Gatineau Est	220	1%	270	0%
Rural Northeast	10	0%	320	1%
Buckingham / Masson-Angers	10	0%	70	0%
Ontario Sub-Total:	39,740	97%	55,830	94%
Québec Sub-Total:	1,410	3%	3,470	6%
Total:	41,150	100%	59,300	100%

Trips by Trip Purpose

24 Hours	From District		To District		Within District	
Work or related	22,370	15%	46,540	31%	10,770	13%
School	8,550	6%	8,090	5%	6,440	8%
Shopping	16,500	11%	16,600	11%	14,550	17%
Leisure	11,940	8%	13,340	9%	7,720	9%
Medical	2,990	2%	7,860	5%	2,380	3%
Pick-up / drive passenger	9,390	6%	9,900	6%	6,990	8%
Return Home	75,570	50%	44,070	29%	33,060	39%
Other	4,870	3%	6,050	4%	3,240	4%
Total:	152,180	100%	152,450	100%	85,150	100%

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Work or related	13,920	56%	28,300	66%	5,390	33%
School	5,340	21%	7,330	17%	5,600	35%
Shopping	510	2%	530	1%	320	2%
Leisure	570	2%	990	2%	480	3%
Medical	500	2%	1,760	4%	460	3%
Pick-up / drive passenger	1,790	7%	2,490	6%	2,110	13%
Return Home	1,380	6%	730	2%	910	6%
Other	910	4%	940	2%	930	6%
Total:	24,920	100%	43,070	100%	16,200	100%

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Work or related	820	2%	1,340	5%	740	4%
School	550	1%	90	0%	70	0%
Shopping	3,920	9%	3,630	13%	2,830	14%
Leisure	2,550	6%	2,440	9%	1,580	8%
Medical	260	1%	670	2%	300	2%
Pick-up / drive passenger	3,310	7%	2,550	9%	2,390	12%
Return Home	31,900	72%	15,950	57%	11,310	58%
Other	1,270	3%	1,230	4%	440	2%
Total:	44,580	100%	27,900	100%	19,660	100%

Peak Period (%)	Total:	% of 24 Hours	Within District (%)
24 Hours	389,780		22%
AM Peak Period	84,190	22%	19%
PM Peak Period	92,140	24%	21%

Trips by Primary Travel Mode

24 Hours	From District		To District		Within District	
Auto Driver	92,240	61%	92,670	61%	43,390	51%
Auto Passenger	24,030	16%	24,040	16%	13,430	16%
Transit	27,890	18%	27,220	18%	6,520	8%
Bicycle	2,180	1%	2,110	1%	1,390	2%
Walk	1,440	1%	1,510	1%	15,170	18%
Other	4,420	3%	4,890	3%	5,260	6%
Total:	152,200	100%	152,440	100%	85,160	100%

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Auto Driver	12,430	50%	26,810	62%	6,330	39%
Auto Passenger	3,040	12%	5,100	12%	2,500	15%
Transit	7,540	30%	7,300	17%	1,700	10%
Bicycle	750	3%	750	2%	340	2%
Walk	280	1%	280	1%	3,210	20%
Other	880	4%	2,850	7%	2,140	13%
Total:	24,920	100%	43,090	100%	16,220	100%

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Auto Driver	28,570	64%	15,990	57%	9,640	49%
Auto Passenger	5,930	13%	4,230	15%	3,570	18%
Transit	7,460	17%	6,420	23%	1,500	8%
Bicycle	630	1%	610	2%	470	2%
Walk	340	1%	310	1%	3,280	17%
Other	1,660	4%	340	1%	1,210	6%
Total:	44,590	100%	27,900	100%	19,670	100%

Avg Vehicle Occupancy	From District	To District	Within District
24 Hours	1.26	1.26	1.31
AM Peak Period	1.24	1.19	1.39
PM Peak Period	1.21	1.26	1.37

Transit Modal Split	From District	To District	Within District
24 Hours	19%	19%	10%
AM Peak Period	33%	19%	16%
PM Peak Period	18%	24%	10%

APPENDIX

C CRASH DATA (2014-2018)

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2018

Location: AVENUE R @ TREMBLAY RD

Traffic Control: Stop sign **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-27, Wed,15:10	Clear	Turning movement	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle	
					West	Overtaking	Automobile, station wagon	Other motor vehicle	

Location: BELFAST RD @ ST. LAURENT BLVD

Traffic Control: Traffic signal **Total Collisions:** 111

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-15, Wed,13:50	Clear	Angle	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jan-24, Fri,09:11	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Truck - open	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2014-Feb-06, Thu,12:16	Clear	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	

2014-Feb-07, Fri,14:30	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Feb-12, Wed,10:20	Clear	Angle	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					South	Turning left	Truck and trailer	Other motor vehicle
2014-Mar-18, Tue,14:08	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Apr-01, Tue,18:50	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2014-May-12, Mon,15:33	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Jan-22, Thu,22:18	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Passenger van	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-May-13, Wed,09:53	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Delivery van	Other motor vehicle

2015-Jan-22, Thu,20:47	Clear	Rear end	P.D. only	Dry	South	Unknown	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-22, Thu,11:18	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-02, Thu,12:53	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Jul-22, Wed,16:16	Clear	Turning movement	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Apr-18, Sat,18:28	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Passenger van	Other motor vehicle
2015-Apr-29, Wed,16:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2015-Feb-11, Wed,15:15	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle

2015-Feb-20, Fri,16:00	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Passenger van	Other motor vehicle
2015-Mar-02, Mon,06:21	Clear	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-02, Mon,12:54	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-24, Tue,13:00	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-10, Fri,17:24	Clear	Rear end	Non-fatal injury	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-18, Wed,15:21	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Jan-19, Mon,23:24	Clear	Rear end	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2015-May-28, Thu,09:07	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Sep-12, Sat,08:38	Rain	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-24, Mon,12:24	Clear	Sideswipe	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jun-23, Tue,13:20	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Passenger van	Other motor vehicle
2015-Jul-02, Thu,18:27	Clear	Rear end	P.D. only	Dry	South	Turning right	Municipal transit bus	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-May-19, Tue,17:59	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle

					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-25, Sat,07:05	Clear	Other	P.D. only	Dry	West	Reversing	Truck and trailer	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle
2015-May-04, Mon,09:35	Clear	Rear end	Non-fatal injury	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-May-02, Sat,11:59	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Stopped	Tow truck	Other motor vehicle
2015-May-11, Mon,21:25	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Sep-22, Tue,09:40	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2014-Oct-14, Tue,12:16	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Mar-23, Wed,15:11	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle

					South	Going ahead	Police vehicle	Other motor vehicle
2016-Sep-29, Thu,17:29	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Oct-28, Fri,08:19	Rain	Rear end	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Aug-12, Fri,16:13	Rain	Rear end	P.D. only	Wet	East	Going ahead	Municipal transit bus	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle
2015-Oct-05, Mon,17:19	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Pick-up truck	Other motor vehicle
2016-Jan-28, Thu,12:39	Snow	Rear end	P.D. only	Slush	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jan-12, Tue,07:21	Snow	Sideswipe	P.D. only	Slush	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle

2016-Jan-20, Wed,13:55	Clear	Rear end	Non-fatal injury	Wet	North	Going ahead	Truck - closed	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2016-Jan-06, Wed,08:13	Clear	Other	P.D. only	Wet	East	Reversing	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jan-21, Thu,12:59	Clear	Rear end	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Dec-21, Mon,12:52	Rain	Angle	P.D. only	Wet	North	Turning left	Truck and trailer	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Nov-10, Tue,12:04	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Feb-19, Fri,21:13	Snow	Angle	P.D. only	Packed snow	East	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-04, Sun,14:18	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2016-Apr-19, Tue,06:48	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jul-28, Thu,15:35	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Sep-06, Tue,11:58	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Truck and trailer	Other motor vehicle
2016-Sep-22, Thu,10:18	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Truck - closed	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2016-Jun-09, Thu,06:42	Clear	Angle	P.D. only	Dry	West	Turning right	Truck - open	Other motor vehicle
					North	Going ahead	Delivery van	Other motor vehicle
2016-Nov-16, Wed,15:51	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Aug-15, Tue,17:10	Clear	Sideswipe	Non-fatal injury	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2017-Sep-14, Thu,15:19	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Sep-11, Mon,16:40	Clear	Angle	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Feb-16, Thu,17:22	Clear	Turning movement	P.D. only	Loose snow	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Jan-16, Mon,18:56	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-11, Wed,06:47	Clear	Rear end	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Passenger van	Other motor vehicle
2016-Dec-16, Fri,11:50	Clear	Rear end	Non-fatal injury	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Dec-29, Thu,15:16	Snow	Angle	P.D. only	Packed snow	North	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

2016-Nov-28, Mon,15:55	Clear	Turning movement	P.D. only	Dry	South	Turning left	Truck-other	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2016-Nov-21, Mon,06:34	Snow	SMV other	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Skidding/sliding
2016-Dec-08, Thu,18:19	Snow	Turning movement	Non-fatal injury	Loose snow	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Mar-15, Wed,14:38	Snow	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Mar-28, Tue,15:22	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Apr-09, Sun,18:27	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Apr-26, Wed,08:08	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning left	Municipal transit bus	Other motor vehicle

2017-Apr-24, Mon,13:45	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2017-May-03, Wed,15:26	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-May-02, Tue,15:08	Rain	Sideswipe	P.D. only	Wet	North	Unknown	Unknown	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-May-23, Tue,09:16	Clear	Rear end	P.D. only	Dry	West	Turning right	Passenger van	Other motor vehicle
					West	Turning right	Delivery van	Other motor vehicle
2017-May-26, Fri,10:00	Clear	Turning movement	P.D. only	Wet	North	Turning left	Delivery van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-May-05, Fri,18:31	Rain	Rear end	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Overtaking	Automobile, station wagon	Other motor vehicle

2017-May-19, Fri,10:20	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Pole (utility, power)
2017-Jul-05, Wed,15:50	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jun-20, Tue,05:59	Rain	Turning movement	Non-fatal injury	Wet	South	Going ahead	Delivery van	Other motor vehicle
					North	Turning left	Passenger van	Other motor vehicle
2017-Nov-30, Thu,09:37	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jul-15, Sat,03:40	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-18, Mon,13:36	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2018-Jan-04, Thu,12:22	Clear	Turning movement	P.D. only	Wet	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Nov-21, Tue,07:00	Clear	SMV other	Non-fatal injury	Dry	East	Turning right	Pick-up truck	Pedestrian	1
2018-Jan-02, Tue,13:33	Snow	Rear end	P.D. only	Loose snow	West	Going ahead	Tow truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-23, Sat,18:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-24, Sun,17:47	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-09, Sat,15:58	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-07, Sun,14:56	Snow	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-06, Sat,10:20	Clear	SMV other	P.D. only	Ice	South	Going ahead	Truck - open	Curb	
2017-Dec-29, Fri,12:58	Clear	Angle	P.D. only	Loose snow	East	Turning right	Passenger van	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

2018-Mar-23, Fri,13:45	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Mar-03, Sat,20:09	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-May-23, Wed,13:25	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-May-18, Fri,12:37	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Jul-04, Wed,18:48	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2018-Jun-20, Wed,18:10	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2018-May-31, Thu,17:12	Clear	SMV other	P.D. only	Dry	North	Going ahead	Passenger van	Curb
2018-May-15, Tue,15:56	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Municipal transit bus	Other motor vehicle

					North	Going ahead	Pick-up truck	Other motor vehicle
2018-Nov-05, Mon,07:11	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-20, Tue,08:37	Snow	Rear end	P.D. only	Loose snow	North	Turning left	Delivery van	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2018-Dec-12, Wed,09:32	Clear	Angle	P.D. only	Wet	North	Going ahead	Truck - dump	Other motor vehicle
					East	Slowing or stopping	School bus	Other motor vehicle
2018-Jun-18, Mon,09:15	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Dec-17, Mon,07:40	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2018-Oct-17, Wed,07:37	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2018-Aug-23, Thu,15:45	Clear	Rear end	Non-fatal injury	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2018-Jul-09, Mon,18:47	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2018-Nov-08, Thu,09:25	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-20, Tue,06:30	Snow	Turning movement	P.D. only	Loose snow	South	Turning left	Passenger van	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2018-Jul-18, Wed,18:19	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

Location: BELFAST RD @ TREMBLAY RD

Traffic Control: Traffic signal **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jul-07, Thu,11:58	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Construction equipment	Other motor vehicle	

2017-Aug-24, Thu,17:56	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Nov-24, Thu,08:28	Rain	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Oct-18, Wed,16:51	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2017-Jul-21, Fri,17:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-31, Sun,10:33	Clear	Turning movement	P.D. only	Wet	South	Turning left	Construction equipment	Other motor vehicle
					South	Overtaking	Pick-up truck	Other motor vehicle
2018-Jun-27, Wed,20:53	Other	Rear end	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2018-Nov-16, Fri,15:14	Snow	Angle	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle

Location: HWY 417 ST.LAURE IC115R25 @ ST. LAURENT BLVD

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Mar-09, Mon,13:16	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	
2018-Aug-14, Tue,10:30	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	

Location: HWY 417 ST.LAURE IC115R51 @ ST. LAURENT BLVD

Traffic Control: Traffic signal

Total Collisions: 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-13, Mon,22:01	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jan-17, Fri,11:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jan-27, Mon,08:58	Clear	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

2014-Mar-04, Tue,17:00	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Mar-17, Mon,13:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-May-29, Thu,12:50	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Making "U" turn	Automobile, station wagon	Other motor vehicle
2014-May-28, Wed,17:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jul-06, Sun,00:10	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Slowing or stopping	Passenger van	Other motor vehicle
2014-Aug-19, Tue,13:57	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Stopped	Delivery van	Other motor vehicle
2014-Oct-30, Thu,08:15	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Truck and trailer	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle

2014-Oct-01, Wed,17:19	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2014-Jan-16, Thu,09:45	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Sep-18, Thu,22:41	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2014-Nov-07, Fri,11:01	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Apr-18, Sat,13:03	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jun-08, Mon,23:16	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Jun-05, Fri,17:23	Clear	Rear end	P.D. only	Wet	East	Turning right	Delivery van	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle

2015-Aug-20, Thu,17:18	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Sep-04, Thu,09:24	Clear	Rear end	P.D. only	Dry	East	Going ahead	Police vehicle	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-26, Sun,18:43	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2015-Jul-31, Fri,15:33	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Oct-30, Fri,23:58	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Unknown	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2016-Feb-15, Mon,16:47	Snow	Rear end	P.D. only	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-27, Sun,14:20	Clear	Rear end	Non-fatal injury	Wet	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2015-Oct-21, Wed,17:35	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Truck and trailer	Other motor vehicle
2016-Jun-05, Sun,15:23	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Jan-28, Sat,15:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-26, Tue,12:00	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Passenger van	Other motor vehicle
2017-Dec-11, Mon,08:09	Clear	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2018-Apr-03, Tue,07:20	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Feb-14, Tue,21:10	Snow	Angle	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Skidding/sliding
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle

2017-Oct-30, Mon,07:43	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Nov-10, Fri,11:15	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Apr-26, Wed,09:35	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-11, Mon,06:54	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Nov-27, Tue,08:20	Snow	Rear end	P.D. only	Slush	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Sep-14, Fri,07:17	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Unknown	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Jul-26, Thu,07:07	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2018-Jul-24, Tue,07:28	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Sep-29, Sat,22:28	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Dec-29, Sat,12:20	Clear	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Dec-02, Sun,12:45	Rain	Sideswipe	P.D. only	Wet	North	Unknown	Unknown	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: SHORE ST @ ST. LAURENT BLVD

Traffic Control: Stop sign **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Feb-02, Mon,11:05	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Police vehicle	Other motor vehicle	
2016-May-27, Fri,16:50	Clear	Angle	Non-fatal injury	Dry	North	Turning right	Passenger van	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: ST. LAURENT BLVD @ TREMBLAY RD

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-03, Fri,12:41	Clear	Rear end	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jan-24, Fri,10:49	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Mar-31, Mon,12:30	Clear	Other	P.D. only	Dry	East	Reversing	Truck - closed	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2014-Apr-25, Fri,18:20	Clear	Rear end	Non-fatal injury	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Passenger van	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jun-10, Tue,12:51	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle	
					South	Turning left	Pick-up truck	Other motor vehicle	
2014-Jun-17, Tue,14:10	Clear	Turning movement	P.D. only	Dry	South	Making "U" turn	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Truck - dump	Other motor vehicle	

2014-Jun-12, Thu,14:46	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Skidding/sliding
					North	Going ahead	Pick-up truck	Other motor vehicle
2014-Jun-22, Sun,13:15	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jun-20, Fri,14:15	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2014-Aug-08, Fri,10:45	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2014-Nov-11, Tue,15:41	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2014-Dec-16, Tue,11:15	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Delivery van	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2014-Sep-18, Thu,09:15	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Truck and trailer	Other motor vehicle

2014-Dec-20, Sat,17:06	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-11, Thu,06:28	Clear	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Sep-14, Sun,00:52	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Oct-15, Thu,08:38	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Delivery van	Other motor vehicle
2015-Jul-21, Tue,16:35	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-24, Tue,09:12	Clear	Angle	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-25, Tue,17:49	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle

2015-Aug-23, Sun,12:35	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-03, Tue,16:12	Snow	Rear end	Non-fatal injury	Packed snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-24, Fri,11:32	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Unknown	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-May-16, Mon,06:44	Clear	Rear end	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					North	Making "U" turn	Automobile, station wagon	Other motor vehicle
2016-Aug-05, Fri,10:21	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Feb-09, Tue,12:05	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Oct-26, Mon,11:47	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2015-Oct-14, Wed,15:20	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Feb-05, Fri,19:46	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Passenger van	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Feb-04, Thu,17:00	Clear	Rear end	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-06, Wed,06:35	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Truck and trailer	Other motor vehicle
2016-Jul-07, Thu,18:52	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Oct-13, Thu,08:00	Rain	Sideswipe	P.D. only	Wet	North	Going ahead	Ambulance	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-Nov-15, Tue,17:10	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2017-Oct-05, Thu,14:16	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Feb-13, Mon,15:47	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle
2017-Jan-07, Sat,21:16	Clear	Rear end	P.D. only	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Dec-28, Wed,10:25	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Delivery van	Other motor vehicle
2017-Feb-03, Fri,09:57	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Delivery van	Other motor vehicle
2016-Dec-05, Mon,14:30	Snow	Angle	P.D. only	Slush	West	Turning right	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jun-07, Wed,08:34	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Truck - closed	Other motor vehicle

2017-Dec-05, Tue,20:45	Rain	Sideswipe	P.D. only	Wet	North	Going ahead	Delivery van	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-31, Sun,20:58	Clear	Rear end	P.D. only	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
2018-Jan-08, Mon,11:11	Snow	Rear end	P.D. only	Packed snow	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Truck - closed	Other motor vehicle
2018-Mar-24, Sat,10:59	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2018-Apr-30, Mon,12:30	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Apr-25, Wed,11:10	Rain	Angle	P.D. only	Wet	East	Turning right	Pick-up truck	Other motor vehicle
					South	Going ahead	Municipal transit bus	Other motor vehicle
2018-May-17, Thu,03:24	Clear	Turning movement	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle
					South	Going ahead	Municipal transit bus	Other motor vehicle

2018-Sep-30, Sun,14:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-27, Fri,05:49	Clear	SMV unattended vehicle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Unattended vehicle	
2018-Nov-04, Sun,03:05	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Municipal transit bus	Other motor vehicle	
2018-Jul-09, Mon,15:50	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Pedestrian	1
2018-Aug-04, Sat,14:31	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: ST. LAURENT BLVD btwn HWY417 IC115 RAMP25 & TREMBLAY RD

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-29, Tue,13:18	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Jun-22, Wed,06:23	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

2017-Apr-12, Wed,13:06	Clear	Rear end	P.D. only	Dry	North	Going ahead	Truck - closed	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-11, Thu,17:14	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: ST. LAURENT BLVD btwn HWY417 IC115 RAMP51 & HWY417 IC115 RAMP25

Traffic Control: No control **Total Collisions:** 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-May-16, Fri,14:55	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Pick-up truck	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Mar-09, Mon,12:30	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-31, Thu,15:00	Snow	Sideswipe	P.D. only	Ice	South	Going ahead	Automobile, station wagon	Skidding/sliding	
					South	Going ahead	Pick-up truck	Skidding/sliding	
2016-Nov-16, Wed,08:54	Rain	Rear end	Non-fatal injury	Wet	North	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-17, Fri,07:19	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2017-Oct-06, Fri,20:57	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Pick-up truck	Other motor vehicle	
2018-Jan-12, Fri,21:46	Snow	Rear end	P.D. only	Packed snow	South	Merging	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: ST. LAURENT BLVD btwn SHORE ST & BELFAST RD

Traffic Control: No control

Total Collisions: 23

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-19, Wed,16:11	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Delivery van	Other motor vehicle	
2014-Mar-03, Mon,12:22	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	
2014-Jan-20, Mon,16:20	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

2014-Jul-17, Thu,12:57	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Aug-02, Sat,11:28	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2014-Aug-14, Thu,18:28	Rain	Rear end	Non-fatal injury	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Sep-19, Fri,16:53	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2015-Mar-11, Wed,07:26	Clear	SMV unattended vehicle	P.D. only	Wet	Unknown	Unknown	Unknown	Unattended vehicle
2015-Mar-14, Sat,19:26	Snow	SMV other	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Ran off road
2015-Jun-09, Tue,12:50	Rain	Rear end	P.D. only	Wet	North	Going ahead	Unknown	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2016-Sep-19, Mon,08:40	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Truck and trailer	Other motor vehicle
					South	Stopped	Municipal transit bus	Other motor vehicle
2015-Dec-10, Thu,15:52	Clear	Rear end	P.D. only	Dry	North	Stopped	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2017-Feb-08, Wed,11:31	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2017-May-25, Thu,21:46	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jul-05, Wed,16:15	Clear	Rear end	Non-fatal injury	Dry	South	Unknown	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Jun-23, Fri,15:32	Clear	Rear end	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2017-Nov-11, Sat,17:36	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2017-Nov-11, Sat,11:52	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Mar-26, Mon,13:02	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2018-Feb-07, Wed,17:16	Snow	Other	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Skidding/sliding
					South	Stopped	Municipal transit bus	Other motor vehicle
2018-Jun-18, Mon,15:29	Clear	Rear end	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2018-Dec-16, Sun,15:22	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2018-Sep-17, Mon,18:00	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

Location: ST. LAURENT BLVD btwn TREMBLAY RD & SHORE ST

Traffic Control: No control

Total Collisions: 15

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Aug-13, Wed,12:56	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-14, Wed,15:50	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Passenger van	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jan-17, Sat,17:20	Clear	Rear end	Non-fatal injury	Ice	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Mar-09, Mon,12:51	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2015-Mar-09, Mon,07:04	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-May-29, Fri,15:25	Clear	Other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Curb	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

2015-Jun-05, Fri,06:09	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Municipal transit bus	Other motor vehicle	
2015-Mar-26, Thu,01:31	Rain	SMV other	Non-fatal injury	Wet	South	Going ahead	Municipal transit bus	Pedestrian	1
2015-Jun-05, Fri,06:28	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2016-Mar-18, Fri,15:57	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Sep-04, Fri,13:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Mar-02, Wed,11:59	Snow	Rear end	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Skidding/sliding	
					South	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2017-Jan-07, Sat,23:06	Clear	SMV other	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other	
2018-Jan-15, Mon,07:26	Clear	Other	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Curb	

					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-23, Fri,08:15	Clear	Rear end	Non-fatal injury	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

Location: TREMBLAY RD btwn AVENUE O & AVENUE P

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-06, Thu,08:30	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	
2015-Feb-06, Fri,09:26	Clear	SMV unattended vehicle	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Unattended vehicle	

Location: TREMBLAY RD btwn AVENUE U & ST. LAURENT BLVD

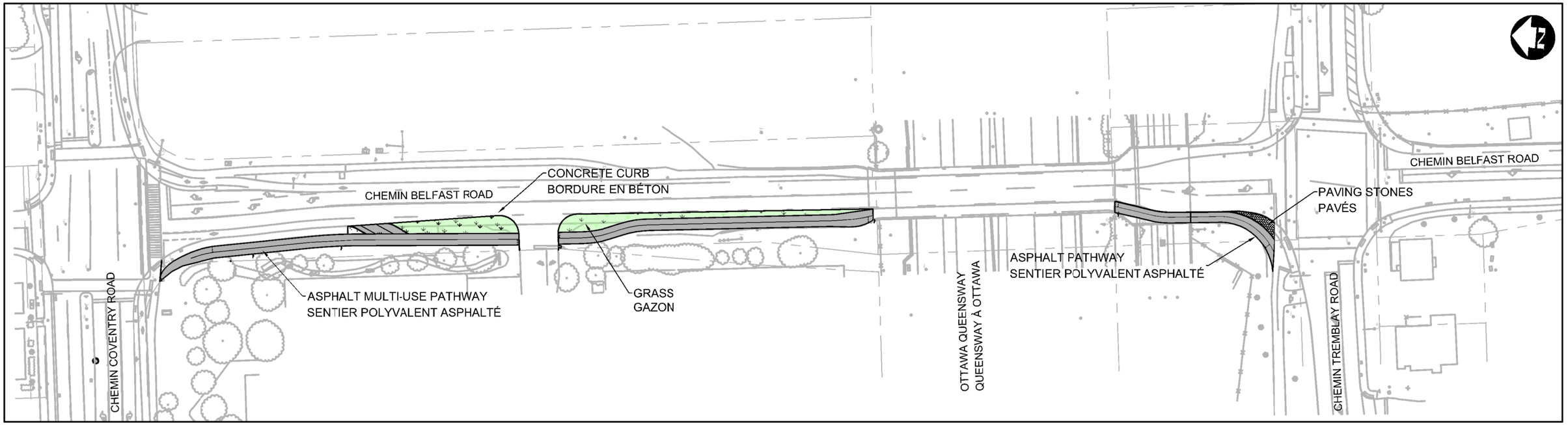
Traffic Control: No control

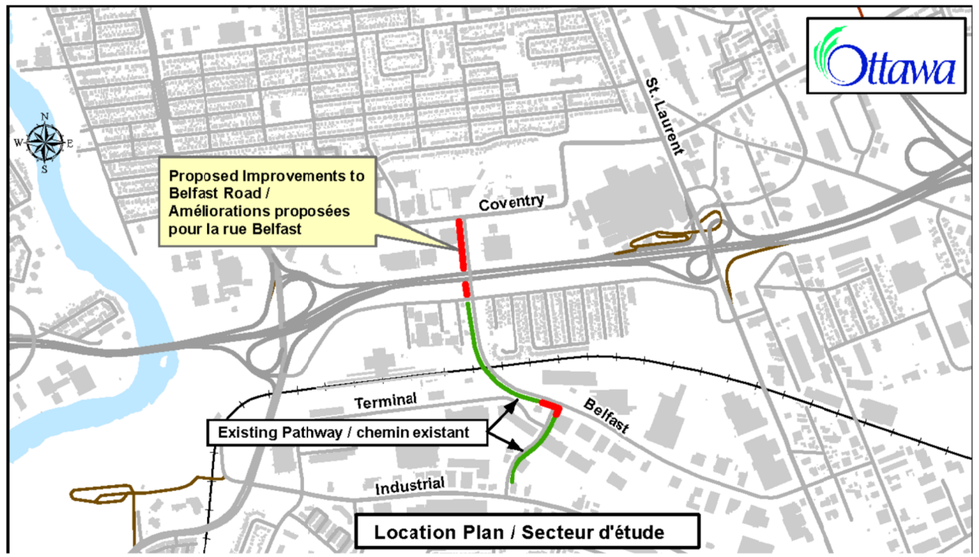
Total Collisions: 2

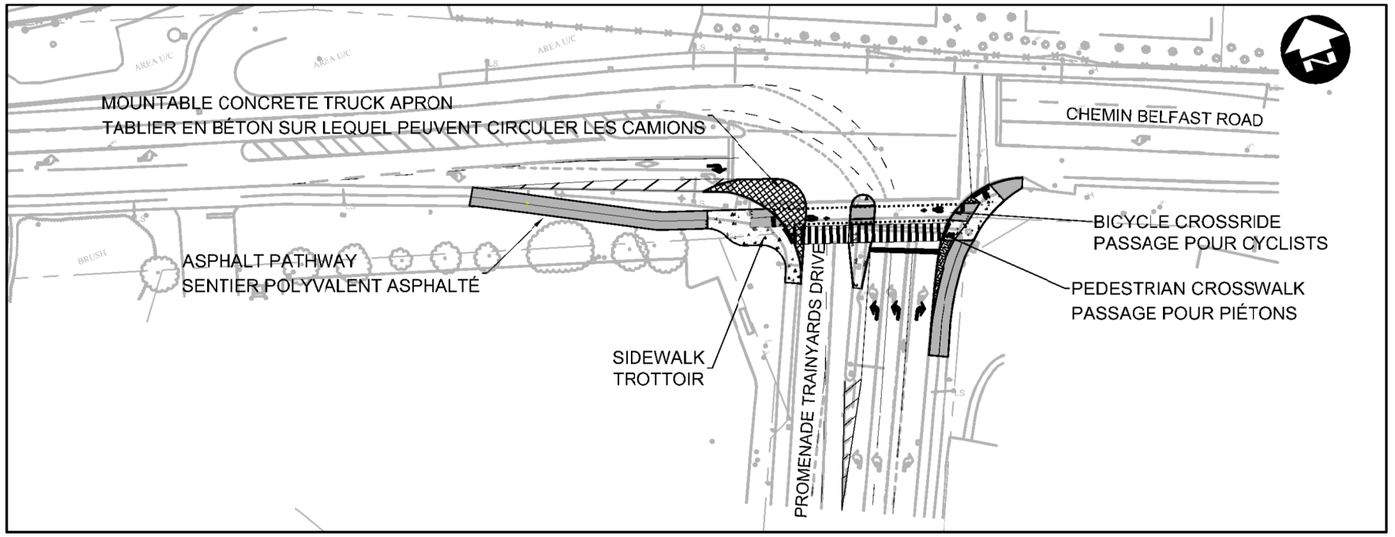
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jul-16, Wed,10:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2014-Aug-07, Thu,14:07	Clear	Angle	P.D. only	Dry	North	Reversing	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	

APPENDIX

D BELFAST BIKEWAY FUNCTIONAL DESIGN







LEGEND

- PROPERTY LINE / LIMITE DE PROPRIÉTÉ
- SIDEWALK / TROTTOIR
- MIXED USE PATHWAY / SENTIER POLYVALENT
- TACTILE WALKING SURFACE INDICATOR / INDICATEUR TACTILE DE SURFACE DE MARCHE
- GRASS / GAZON

SCALE 1:1000

0m 10m 20m

DILLON CONSULTING

CITY OF OTTAWA
BELFAST ROAD BIKEWAY FUNCTIONAL DESIGN STUDY

VILLE d'OTTAWA
VOIE CYCLABLE DU CHEMIN BELFAST ÉTUDE DE CONCEPTION FONCTIONNELLE

DATE: AUGUST 2018 - AOÛT 2018

APPENDIX

E GROWTH RATE CALCULATIONS

Year	Volume		Growth		Average Annual growth	
	Highway 417	St.Laurent	Highway 417	St.Laurent	Highway 417	St.Laurent
2010	8672	18,806	-	-	1%	-2%
2013	9828	17,335	4%	-3%		
2019	8100	15,223	-3%	-2%		

Year	Volume		Annual Growth		Average Annual growth	
	Highway 417	Riverside	Highway 417	Riverside	Highway 417	Riverside
2005	12,086	23,394	-	-	0%	-1%
2009	14,088	26,831	4%	3%		
2010	12,409	25,001	-12%	-7%		
2011	13,731	25,338	11%	1%		
2015	9,188	27,191	-10%	2%		
2019	12,918	23,369	9%	-4%		

Year	Volume		Annual Growth		Average Annual growth	
	St.Laurent	Tremblay	St.Laurent	Tremblay	St.Laurent	Tremblay
2010	20,355	2,030	-	-	-1%	0%
2019	17,877	2,033	-1%	0%		

APPENDIX

F TDM CHECKLIST

470 Tremblay Road

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	☐ To be determined at Site Plan
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☐ To be determined at Site Plan
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☐ To be determined at Site Plan
	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)*	☑ St-Laurent LRT station within 600m walking using existing tunnel
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)*	☐ To be determined at Site Plan

		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)*	☑ Multi-Use Paths provided on each side of realigned Tremblay Road. Intersections include marked crosswalks.
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)*	☑ Multi-Use Paths provided on each side of realigned Tremblay Road. Grade transitions gradual.
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)*	☑ MUP link provided Eastway Gardens pathway
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☐ To be determined at Site Plan
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☐ To be determined at Site Plan
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	☑ Multi-Use Paths provided on each side of realigned Tremblay Road.
	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	☐ To be determined at Site Plan
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)	☐ To be determined at Site Plan

	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)*	☐ To be determined at Site Plan
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)*	☐ To be determined at Site Plan
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)*	☐ To be determined at Site Plan
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	☐ To be determined at Site Plan
	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)*	☐ To be determined at Site Plan
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐ To be determined at Site Plan
	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)	☐ To be determined at Site Plan
	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	☐ To be determined at Site Plan
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐ To be determined at Site Plan

	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	☐ To be determined at Site Plan
	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)*	☐ To be determined at Site Plan
	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	☐ To be determined at Site Plan
	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	☐ To be determined at Site Plan
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	☐ To be determined at Site Plan
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)*	☐ To be determined at Site Plan
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)*	☐ To be determined at Site Plan
	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)	☐ To be determined at Site Plan

APPENDIX

G TRANS TRANSIT AND TRAFFIC

TRANS Regional Model

Version 2.11 - Assigned June 12, 2019

AM Peak Hour Total Traffic Volume

Tremblay

2031 Model - Tremblay

N/A

User Initials: TIMW
Plot Prepared: August 13, 2019
EMME Scenario: 22031

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

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.

TRANS Regional Model

Version 2.11 - Assigned June 12, 2019

AM Peak Period Total Transit Volume

Tremblay

2031 Model - Tremblay

N/A

User Initials: TIMW
Plot Prepared: August 13, 2019
EMME Scenario: 22031

TRANS

Legend

AM Peak Period Total Transit Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100150200250

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.

TRANS Regional Model

Version 2.13 - Assigned May 07, 2019

AM Peak Hour Total Traffic Volume

Tremblay

2011 Model - Tremblay

N/A

User Initials: TIMW
Plot Prepared: August 13, 2019
EMME Scenario: 21411

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

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.

TRANS Regional Model

Version 2.13 - Assigned May 07, 2019

AM Peak Period Total Transit Volume

Tremblay

2011 Model - Tremblay

N/A

User Initials: TIMW
Plot Prepared: August 13, 2019
EMME Scenario: 21411

TRANS

Legend

AM Peak Period Total Transit Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100150200250

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.

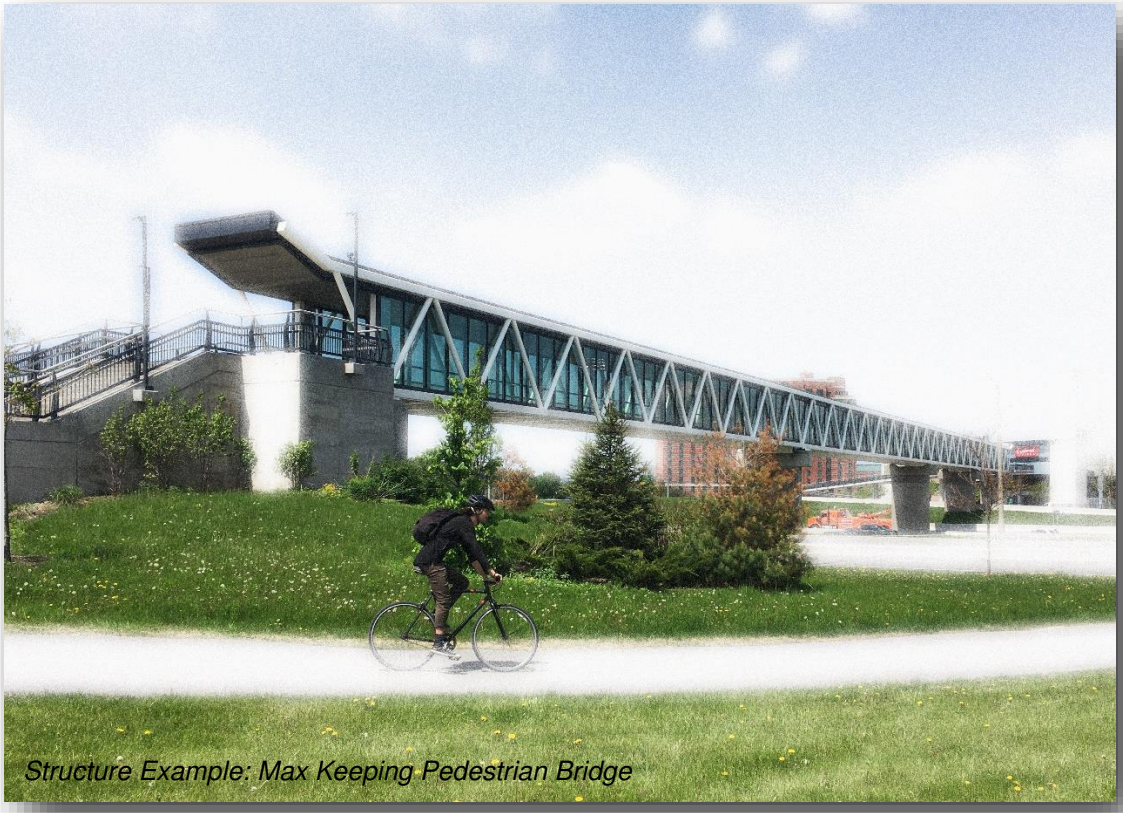
APPENDIX

H WSP PEDESTRIAN OVERPASS FEASIBILITY REPORT

CANADA LANDS COMPANY

PEDESTRIAN BRIDGE CONCEPT DESIGN AND FEASIBILITY REVIEW

REPORT FOR THE DEVELOPMENT AT 530 TREMBLAY ROAD



Structure Example: Max Keeping Pedestrian Bridge

PEDESTRIAN BRIDGE CONCEPT DESIGN AND FEASIBILITY REVIEW

REPORT FOR DEVELOPMENT AT 530 TREMBLAY ROAD

CANADA LANDS COMPANY

FINAL

PROJECT NO.: 19M-00609-00
CLIENT REF:
DATE: SEPTEMBER 17, 2019

WSP
SUITE 300
2611 QUEENSVIEW DRIVE
OTTAWA, ON, CANADA K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
WSP.COM

WSP prepared this report solely for the use of the intended recipient, Canada Lands Company, in accordance with the professional services agreement. The intended recipient is solely responsible for the disclosure of any information contained in this report. The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report. This limitations statement is considered an integral part of this report.

The original of this digital file will be conserved by WSP for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP, its integrity cannot be assured. As such, WSP does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

TABLE OF CONTENTS

1 INTRODUCTION 1

2 STAKEHOLDERS 1

3 MEETINGS WITH STAKEHOLDERS 2

4 AVAILABLE EXISTING DOCUMENTS 2

5 STUDY AREA AND EXISTING CONDITIONS 2

6 LAND/PROPERTY OWNERSHIP 4

7 UTILITIES 4

8 ST. LAURENT STATION 6

9 TUNNEL CROSSING 7

10 REVIEW OF BRIDGE ALIGNMENT ALTERNATIVES 7

11 FOUNDATIONS 8

11.1 Subsurface Conditions 8

11.2 Preliminary Foundation Alternatives 9

11.2.1 Shallow Spread Footings Founded on Bedrock 9

11.2.2 Drilled Micropiles 10

11.2.3 Rock Socketed Cast-in-Place Concrete Caissons 10

11.3 Excavation and Roadway Protection 10

11.4 Vibration Monitoring 10

11.5 Piers 10

12 PEDESTRIAN BRIDGE STRUCTURE 11

12.1 Superstructure 11

12.2 Structure Clearance and Minimum Dimensions 12

12.3 Design Load Requirements 12

12.4 Aesthetics 13
12.5 Transport and Erection of Truss 13

13 BRIDGE LANDINGS 14
13.1 North Landing - St. Laurent Station 14
13.2 South Landing - Tremblay Road 15

14 TRAFFIC MANAGEMENT AND CONSTRUCTION STAGING 15
14.1 Construction Staging/Site Access 15
14.1.1 North Landing Staging 15
14.1.2 Pier Staging 16
14.1.3 South Landing Staging 17

15 ENVIRONMENTAL CONSIDERATIONS FOR MTO ROW 17

16 MISCELLANEOUS 18
16.1 Applicable Design Standards 18
16.2 Materials and Durability 19
16.2.1 Concrete 19
16.2.2 Reinforcing Steel 19
16.2.3 Structural Steel 19
16.3 Roadway Barriers 20
16.4 Drainage 20
16.5 Pedestrian Structure Illumination 20
16.6 Highway 417 Illumination 20
16.7 Signing 21
16.8 Highway Sight Lines 21
16.9 Heat Tracing 21

17 CONCEPT DESIGN DRAWINGS 22

18 WORKING DAY ESTIMATE..... 22

19 COSTS ESTIMATE 22

20 FURTHER REQUIRED DOCUMENTATION. 23

21 DISCUSSION 23

FIGURES

FIGURE 1: STUDY AREA (GEO OTTAWA) 3
FIGURE 2: PROPERTY/LAND USE MAPPING (GEO OTTAWA) 4
FIGURE 3: UTILITY MAPPING (GEO OTTAWA) 5
FIGURE 4: UTILITIES WITHIN VICINITY OF CONSTRUCTION AREA AT TREMBLAY ROAD 5
FIGURE 5: ST. LAURENT STATION (BRT PLATFORM) 6
FIGURE 6: ST. LAURENT LRT STATION RENDERING (SOURCE WWW.LIGNECONFEDERATIONLINE.CA) ..7
FIGURE 7: PRELIMINARY REVIEWED ALIGNMENTS (GEO OTTAWA) 8
FIGURE 8: APPROXIMATE PIER LOCATIONS 11
FIGURE 9: MAX KEEPING PEDESTRIAN STRUCTURE EXAMPLE.....12
FIGURE 10: PROPOSED NORTH LANDING FOOTING LOCATION 14
FIGURE 11: EXAMPLE OF RAMP AND STAIRS (SHOWN AT THE MAX KEEPING PEDESTRIAN BRIDGE) 15
FIGURE 12: ST. LAURENT STATION PROPOSED CONSTRUCTION AREA.....16
FIGURE 13: ASSUMED PRELIMINARY CONSTRUCTION AREAS ON MTO ROW 17
FIGURE 14: VERTICAL SIGHT LINE AT ST. LAURENT EASTBOUND OFF-RAMP 21

APPENDICES

A TRIP GENERATION

B MEETING MINUTES

C MATRIX

D CONCEPT DRAWINGS

E SELECT EXISTING DRAWINGS

F WORKING DAY ESTIMATE

G COST ESTIMATE

1 INTRODUCTION

WSP Canada Group Limited ("WSP") was retained by Canada Lands Company CLC Limited ("CLC") in May 2019 to develop a concept design and feasibility review for a new pedestrian bridge crossing from the proposed development, located at 530 Tremblay to the St. Laurent Station, directly across Highway 417 from the site.

Based on the Terms of Reference for the project at 530 Tremblay Road, the site is targeting a modal split in favour of transit, cycling, and walking. In part to encourage and promote this vision, an overhead pedestrian bridge over Highway 417 to link the 530 Tremblay Road complex to the new St. Laurent Light Rail Transit (LRT) station is desired.

The first phase of Ottawa's LRT project runs east-west from Tunney's Pasture in the west to Blair Road in the east and is expected to open for revenue service in 2019. The existing St-Laurent bus rapid transit (BRT) station (located across the Highway 417 from 530 Tremblay Road) is being reconstructed to accommodate the LRT Confederation Line.

The City of Ottawa Council established priority areas for the creation of transit-oriented development (TOD) plans to prepare for the anticipated land development pressure of the LRT. The TOD plans set the stage for future transit-supportive, or "intensified", land development and include six areas: Lees, Hurdman, Tremblay, St-Laurent, Cyrville, and Blair. The 530 Tremblay Road site is located within the St-Laurent TOD and is specifically mentioned in the St-Laurent TOD Plan in relation to a new Pedestrian Overpass. The TOD Plan indicates that the pedestrian overpass will be developed as part of the first phase of redevelopment of the 530 Tremblay Road site as a critical component towards achieving the modal split targets. The TOD Plans notes that the creation of a high-quality pedestrian environment will develop and strengthen the "culture of walking" in Ottawa.

The initial timeline for the bridge is intended such that the bridge construction will be completed as part of the Phase 1 development plan, which will coincide with the completion of the federal office complex construction in the year 2025. A preliminary trip generation exercise was completed for the proposed land uses and are provided in Appendix A.

As part of the scope of the concept design work, a plan will be presented including a review of the crossing alternatives and opportunities for the location of the proposed pedestrian bridge crossing Highway 417 to link the site with the St. Laurent Shopping center and LRT station. This report also intends to build from the other previous feasibility studies.

2 STAKEHOLDERS

The stakeholders identified during the report preparation include the following:

- Canada Lands Company (CLC),
- Public Services and Procurement Canada (PSPC)
- National Capital Commission (NCC)
- City of Ottawa (City)
- Ontario Ministry of Transportation (MTO)
- OC Transpo
- Utilities Services (Bell, Rogers, Hydro Ottawa, Enbridge etc.)

The main proponents for this project are identified as CLC and PSPC.

3 MEETINGS WITH STAKEHOLDERS

As part of the concept design and feasibility process, WSP has engaged with the stakeholders, included above in Section 2, to provide input into the development of the concept and design and feasibility review of the pedestrian bridge. The meeting minutes are included in Appendix B.

4 AVAILABLE EXISTING DOCUMENTS

The following documentation was made available during the feasibility study:

- "Pedestrian Link Between 530 Tremblay Road and St-Laurent BRT/LRT Station", CIMA+, May 9th 2014.
- "Urban Design Guidelines- Tremblay Road Complex, Ottawa (Final Report)", Plania, March 2014.
- "Transit-Oriented Development (TOD) Plans – Lees, Hurdman, Tremblay, St. Laurent, Cyrville and Blair", January 2014
- "Federal Lane Use Approval Guiding Principles and the Overall Approach for the Development of the Property Located at 430 Tremblay Road Ottawa as a Mixed-used Federal Employment Site", NCC, February 2012.
- MTO Base mapping and design surface from the Highway 417 Widening at St. Laurent Blvd completed under Phase 1 OLRT Project.
- "Geotech Overview Pedestrian Link – Tremblay Road to St. Laurent Boulevard" Golder Associates, November 2013.
- Various as-built drawings from the St. Laurent Station construction and rehabilitation

5 STUDY AREA AND EXISTING CONDITIONS

The study area at the development property, 530 Trembley Road, is located near the intersection of Trembley Road and St. Laurent Boulevard. As part of the development strategy, the Tremblay Road alignment will likely be modified in accordance with the new site requirements. This memo does not include details for the site development beyond the scope of the pedestrian crossing. Figure 1 below shows the approximate limits discussed.

Figure 1: Study Area (Geo Ottawa)

St. Laurent Blvd. is directly east of 530 Tremblay and carries approximately 4 to 6 lanes of traffic. Currently, a narrow sidewalk exists on St. Laurent Blvd and pedestrians must cross the Highway 417 Eastbound off-ramp, Eastbound on-ramp (from the Southbound direction at St. Laurent), and Westbound on-ramp (from the Southbound direction at St. Laurent). Currently the on-ramp lanes do not provide crosswalk lights to control the pedestrian crossing and the current ministry policies do not allow for crossings at these locations.

An existing pedestrian tunnel with an entrance to the St. Laurent station is located on the south side of Highway 417 and west of the development site. The pedestrian access includes a grade separated ramp down to the tunnel entrance, near the elevation of the track station platform at the St. Laurent Station. Currently this grade separated ramp extends west, away from the development site.

The St. Laurent station is located on the north side of Highway 417 directly between St. Laurent Blvd. and the St. Laurent Shopping center. Within the structure, the station is accessed by a multi level platform located directly below the surface station building. This tunnel provides access to both the LRT and to the St. Laurent Shopping Center.

Highway 417 is located directly north of 530 Tremblay. In its current configuration there are (2) eastbound off-ramp lanes, (4) eastbound lanes, (3) westbound lanes, (1) westbound on-ramp lane (from St. Laurent Blvd. northbound), and (1) westbound on-ramp lane (from St. Laurent Blvd. southbound). The Ontario Ministry of Transportation has previously widened this section of highway and they have confirmed there are no current plans for further widening at this time.

To provide direct access and connection from 530 Trembley to the transit station directly north of the site, a pedestrian overpass has been included in the site development scope and would cross Highway 417 and land at the St. Laurent station. This would provide a safe direct route to encourage ridership between the study area and the LRT/BRT station.

6 LAND/PROPERTY OWNERSHIP

The land/property ownership within the vicinity of the study area was determined based on Geo-Ottawa base mapping tools and referenced to the previous reports reviewed. The following figure shows assumed current land ownership within the extends of the vicinity of the study area for the crossing. The pedestrian structure will be proposed to extend from the City of Ottawa Right of Way (ROW) on Tremblay Rd, through the MTO Highway 417 ROW and end at the St. Laurent Station property.

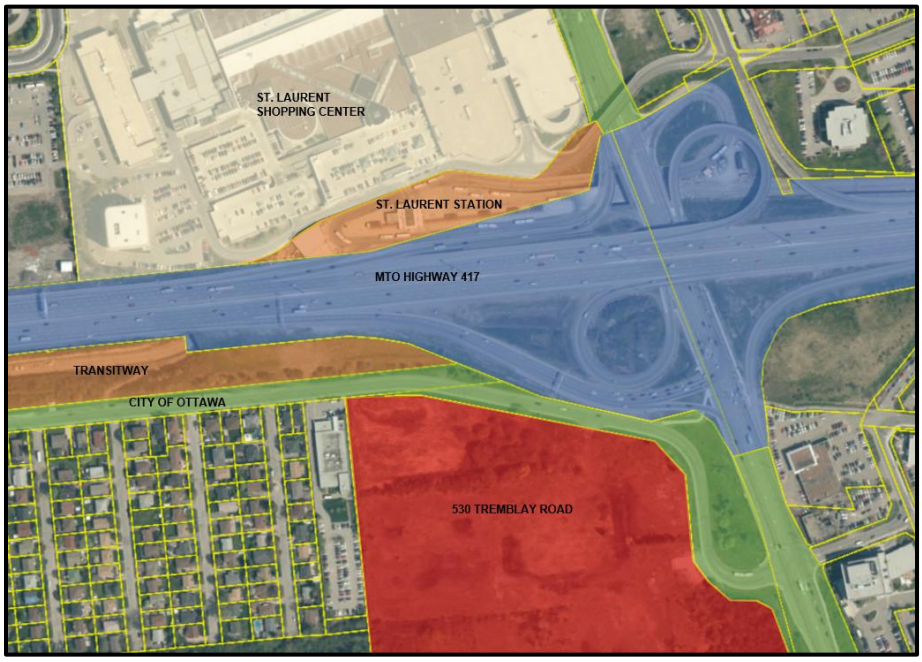


Figure 2: Property/Land Use Mapping (Geo Ottawa)

7 UTILITIES

A preliminary review of the existing utilities at the site indicate a number of utility corridors including watermains, storm drains, and sanitary sewers. The Geo Ottawa mapping has identified the approximate locations and is included as Figure 3.

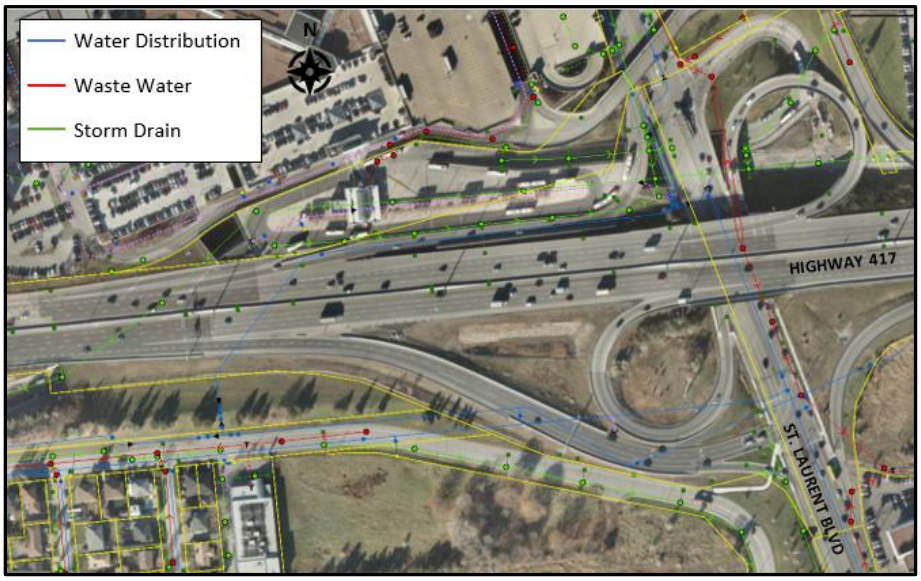


Figure 3: Utility Mapping (Geo Ottawa)

Due to the large number of underground utilities located on both sides of the highway in the study area, it is observed there are limited available locations for foundations where utility relocation is not required.

WSP has also confirmed with Enbridge that a large gas main runs parallel to the north side of Tremblay Road (Figure 4). Located beside the gas line is a large diameter water main.

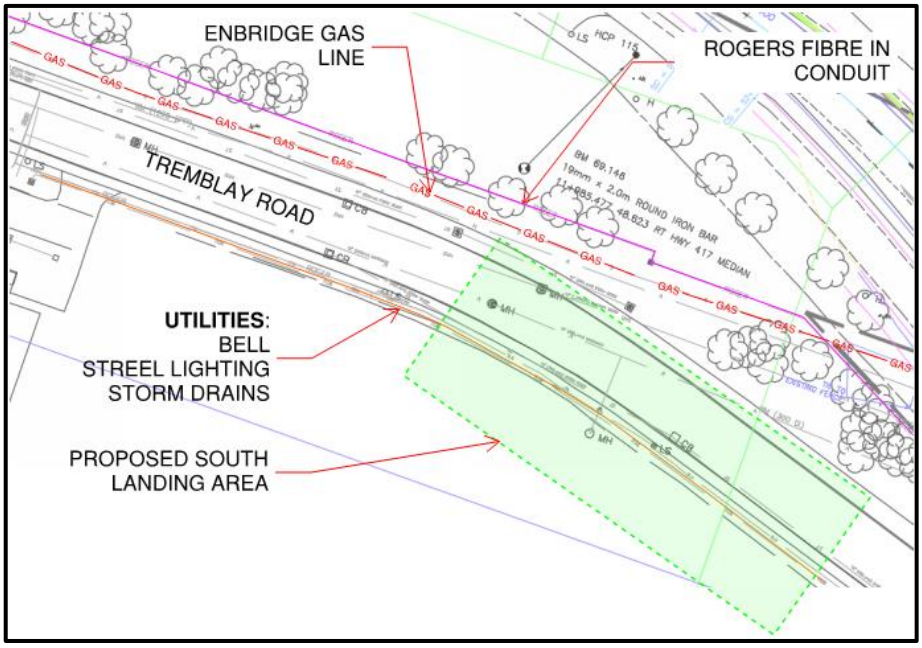


Figure 4: Utilities within vicinity of construction area at Tremblay Road

It was also confirmed Rogers and Bell are within the vicinity of Tremblay road. Rogers has also confirmed that a fibre conduit runs parallel to the gas main (Figure 4). City Street lighting also exists underground to the south side of Tremblay Road Based on the proposed location of the south landing ramp, utility conflicts may be present along Tremblay Road including the Bell, street lighting lines, catch basins and storm drains which may required relocation to install the foundations.

No overhead utilities were observed within the MTO ROW; however, a utility box was identified between the Highway and Eastbound Off-ramp. This has been confirmed to be part of the MTO ATMS system for Highway 417. In addition to the exposed utility boxes, conduits run adjacent to the eastbound lanes, beyond the paved shoulder. There are also likely embedded or buried ducts along the centerline of the highway for the overhead lighting and various catch basins and storm sewer drains throughout the highway which could require relocation for any conflicts with foundation work.

Based on previous drawings provided to WSP, the St. Laurent Station also appears to have a number of embedded ducts into the platform concrete and may require relocated depending on the impact of the final location of the structure.

The water and gas main are significant in size and relocation will be not likely be feasible or economical. Rogers fibre cables are also not typically relocated without significant cost.

Due to the proximity to the water and gas mains, construction work within the vicinity of the gas and water lines will likely require ground vibration monitoring during foundation installation to protect them from damage. These locations should also be reviewed such that construction, no overloading of the ground above the utilities occurs. These requirements should be investigated by the geotechnical engineer as part of the site-specific foundation investigation work.

During preliminary and detailed design, further utility investigation is recommended. Daylighting of specific utilities may also be required to ensure no conflict exists. In addition to Ontario One for locations, the MTO will typically provide locates on their ROW.

8 ST. LAURENT STATION

The BRT portion of the station is located at the ground surface, which is directly on top of the tunnel structure. The tunnel and BRT station were constructed around 1984 as part of the City's BRT expansion project (Figure 5).

Figure 5: St. Laurent Station (BRT Platform)

The existing BRT tunnel has recently been converted to LRT rail use as part of the new Confederation Line work. The existing tunnel structure is a cast-in-place concrete rigid frame structure which extends below Highway 417 and the St. Laurent station.

The tunnel includes two platform levels below the surface. The first sub level provides access both station platforms sides and access the St. Laurent shopping mall, and the second sub level provides access the station platforms (Figure 6).

Figure 6: St. Laurent LRT Station Rendering (source www.ligneconfederationline.ca)

A site visit of the station was organized by OC Transpo and provided an overview of the station modifications and modified use of space. Generally, the station tunnel structure has remained untouched with the exception of structural modifications for two new elevators which now exist on the west side of the main building at the station surface. The main tunnel wall structure is cover by a façade and not visible.

9 TUNNEL CROSSING

The previous feasibility study for the pedestrian bridge crossing from 2014 reviewed a number of tunnelling options to cross Highway 417. The two main methods reviewed for the tunnelling operations included a drilled or bored option and a cut-and-cover option. The drilled or bored option was not considered feasible based on high geotechnical risks, costs, and significant challenges to construct. The cut-and-cover method was considered feasible; however, the MTO held a policy at the time that "neither cut-and-cover nor any method that would potentially undermine the highway foundation structure would be accepted" thus also ruling this out as an option.

Based on a brief review of these alternatives, no change in existing conditions or policies have occurred to warrant these alternatives to be reconsidered at this time.

As part of the more recent planning discussion for the site, a modified entrance or ramp upward to the east from the existing tunnel entrance could be considered to reduce the travel time to the station from 530 Tremblay to the St. Laurent Station. Further review was not included in the scope of this report.

10 REVIEW OF BRIDGE ALIGNMENT ALTERNATIVES

Five assumed alignment locations were investigated based on the practical span length, proximity to the station, constructability of the bridge landings and other considerations. Figure 7 below illustrates the

approximate alignment locations discussed. The yellow circles highlight the vicinity of the approximate bridge landing locations and the red circles highlight likely conflicts or risks on the alignment path.

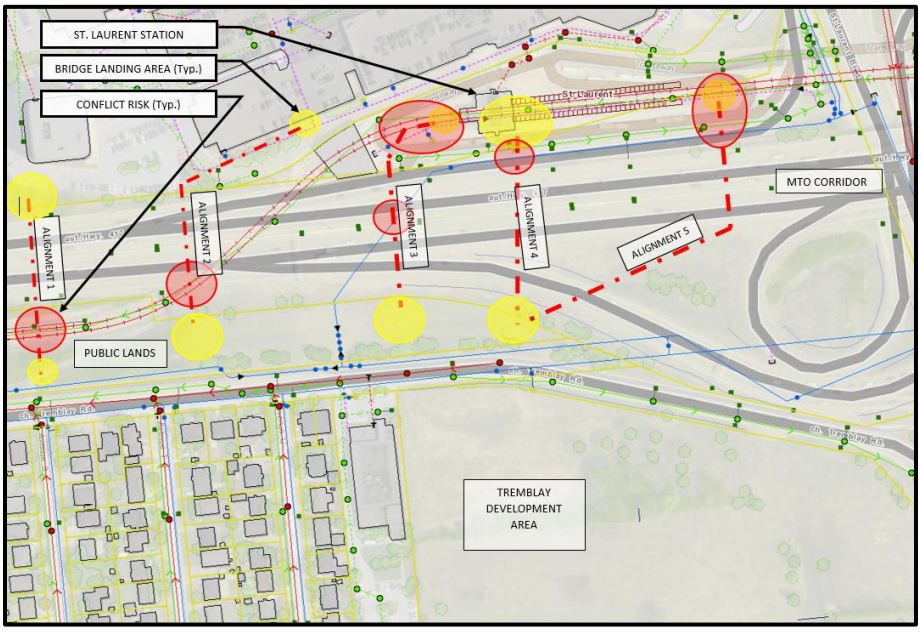


Figure 7: Preliminary Reviewed Alignments (Geo Ottawa)

The five alignment alternatives were assessed based on functional, aesthetic vision and constructability criteria to determine the preferred alignment. The assessment matrix has been included in the attached Appendix C. Alignment 4 was the preferred location with the most direct travel path across from the site, shortest structure length, and most promising landing location for the transit station. This alignment also correlated with the previous study indicating a similar alignment. As such, this alignment was carried forward for further refinement.

11 FOUNDATIONS

11.1 SUBSURFACE CONDITIONS

A site-specific foundation report was not included in the scope for this phase of the project and therefore relies on previously developed recommendations for the site.

The report "Geotechnical Overview Pedestrian Link Tremblay Road to St. Laurent Boulevard Transitway Station, Ottawa, Ontario", by Golders Associates dated November 2013, was provided for the initial recommendations for the structure foundations. This report was generated as part of the previous feasibility study for the pedestrian crossing and provided an overview of the subsurface conditions and geotechnical issues related to the proposed pedestrian connection.

The information used is intended to provide a basis for further geotechnical investigation work as part of the preliminary and detailed design phases. A summary of the main content from the report is as follows:

— A desktop review was completed using the published Geological Survey of Canada (GSG) mapping and other reports for projects within the vicinity of the site.

- The area is known to consist of pyritic shale/Billings formation rock and could require special procedures as this type of rock typically expands when exposed to oxygen.
- At the north side of Highway 417, the strata consist of 1 to 2 meters of fill with deposits of silty clay, sandy silt, silty sand, and fine to medium sand underlain by glacial till overtop of the shale bedrock. The depth to bedrock varies from 2 to 6 meters below the surface. The rock quality is considered to be faintly weathered with several horizontal, weathered and fractured seams.
- At the south side of Highway 417, the surface topsoil and fill ranged between 0.75 to 1.2 meters thick with glacial till below ranging from 1 to 3 meters thick. Shale bedrock was located between 2 and 4 meters below surface.
- The area is reported to have a varying water table which could be present all the way up to the ground surface. The water table is also reported to fluctuate seasonally with higher levels during wet periods during the year.
- Combustible gases are known to be present in the shale bedrock of the Billings formation and should be further assessed as part of the field investigation work as to potential hazards which may exist during excavation and foundation work.
- The exposed shale is susceptible to degradation upon exposure due to its reactivity and protection or sealing of the exposed rock or rock cuts will likely be required immediately after exposure.
- The rock is relatively permeable and subdrains will be required to drain around the shallow foundations.

11.2 PRELIMINARY FOUNDATION ALTERNATIVES

Based on previous assumptions and recommendations made, the following three foundation types were considered feasible for the site.

- Shallow spread footings founded on bedrock;
- Drilled micropiles;
- Rock-socketed cast-in-place concrete caissons.

Shallow foundations founded on the fill and glacial till were not considered feasible due to the high-water levels on site which were considered to make the glacial till susceptible to ground disturbance.

Driven piles were also not considered feasible due to the shallow fill depths and socketing requirements which limits cost efficiency.

Any foundation work near the footings of the St. Laurent Station will need special consideration to avoid interfering or damaging the existing structure and existing drainage.

11.2.1 SHALLOW SPREAD FOOTINGS FOUNDED ON BEDROCK

Shallow foundations were considered feasible when founded directly on or within the bedrock.

Where foundations could not be located with a cover depth more than 1.5 m, an insulation detail may be required to provide adequate frost protection.

For open cut excavation, consideration would be required for dewatering where high-water levels are observed.

Shallow foundations could be advantageous for use where the overburden depth above bedrock is found to be shallow and ground water to be low.

11.2.2 DRILLED MICROPILES

Micropiles typically consist of a steel bar encased by concrete and steel liner. The design of the system is typically carried out by the supplier with many of the parameters design by the supplier and Contractor. The micropile will likely require socketing into bedrock using the shear friction of the socket to support the loads.

This technique has the advantage of reducing ground vibration compared to other pile systems when rotary drilling techniques are used.

11.2.3 ROCK SOCKETED CAST-IN-PLACE CONCRETE CAISSONS

The concrete caissons would consist of a cylindrical excavated shaft with a steel liner which would be socketed into the bedrock. Reinforcing steel would be installed within the caisson and then filled with concrete. The rock socket would provide the side wall friction.

It was recommended from the preliminary investigation that the top 2 meters of bedrock be neglected in the socket depth requirements due to weathering. Further review should be conducted during the site-specific investigation.

With the high groundwater at the site, tremie placement methods may be required for the concrete placement.

Due to the bedrock properties once the excavation of the bedrock socket is completed, the reinforcement cage and concrete for the shaft should be placed within 8 hours of exposing the bedrock.

11.3 EXCAVATION AND ROADWAY PROTECTION

Excavation works must be carried out in accordance with the guidelines outlined in the Occupational Health and Safety Act (OHSA) of Ontario. Further geotechnical investigation should determine soil types for safe side slopes. Where the excavation work may not provide sufficient space to slope the excavations, shoring systems may be required to maintain the side walls. The required space between the protection system and barrier wall must also be considered based on the current Ministry of Labour guidelines.

11.4 VIBRATION MONITORING

Vibration monitoring is used to monitor and record the peak particle velocities at adjacent structures or services to control and limit vibration induced damage. Due to the proximity of the major utility services including the water mains, gas main and the existing station structure, vibration monitoring will likely be required. Requirements for this work should be determined during the preliminary and design phase.

11.5 PIERS

The piers would be constructed of concrete and should follow similar context sensitive design as the existing piers within the corridor. The pier construction may vary between concrete columns to a rectangular wall section, top with a concrete pier cap. The pier caps will support the bridge bearings.

Based on discussions with the MTO, a center median pier could be utilized as one possible span configuration to cross the highway however, was strongly not preferred and thus would required appropriate

justification for consideration. The MTO sited concern due to the significant impact to traffic during construction.

Currently proposed, a bridge span length of approximately 48 meters would allow for piers to be located outside of the main Highway lanes, located in the medians between ramps. It is anticipated these locations would provide the least impact to traffic during construction as no main highway lanes would be impacted. Figure 8 shows the approximate location of the piers assuming the structure fully spanning Highway 417.

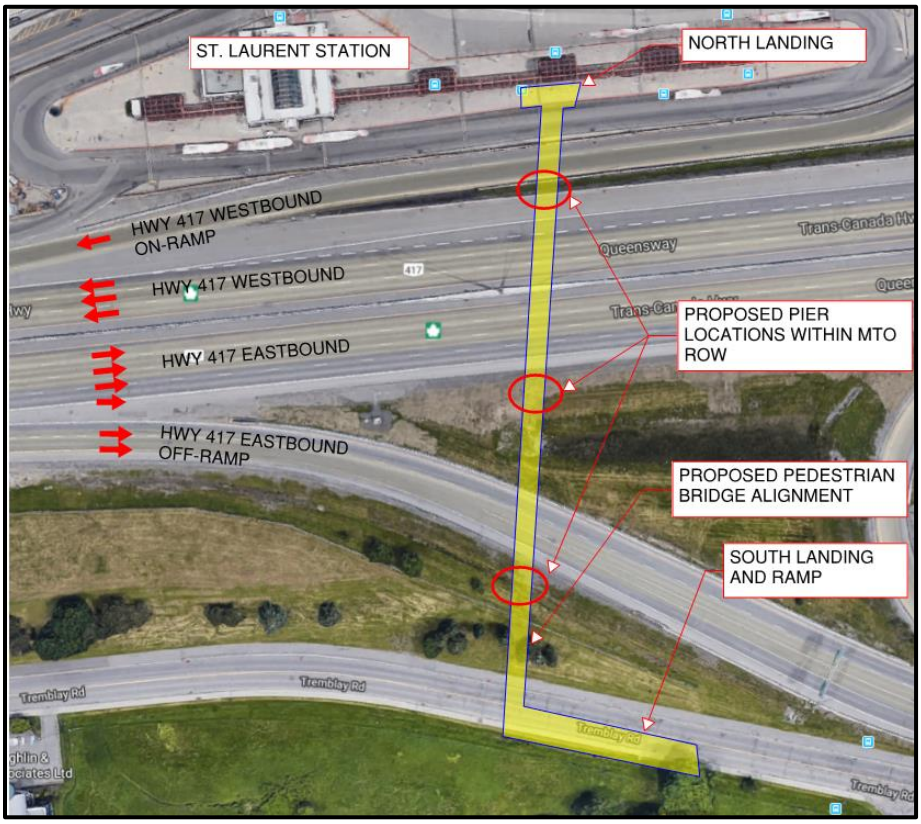


Figure 8: Approximate Pier locations

12 PEDESTRIAN BRIDGE STRUCTURE

12.1 SUPERSTRUCTURE

Based on the assumed structure locations, the bridge will consist of four span lengths, rounded to approximately 20 m; 48 m; 48 m; and 40 m. Consideration for truss discontinuity for the shorter span lengths may be required to reduce uplift forces.

To achieve the span lengths, it is assumed that the structure will consist of a steel truss, similar to the other nearby pedestrian structures such as the Max Keeping Pedestrian Bridge (Figure 9), Kanata Pedestrian Bridge and the upcoming Harmer Pedestrian Bridge. The structure would consist of HSS or rolled wide flange members in the chord, diagonal and vertical members, which provide the advantage of a light structure with a long span capability. As is typically the case with light structures, the determination of the

natural frequency of the proposed structure will be important to avoid resonance issues associated with significant pedestrian crowd movements.

It is anticipated that the deck will be constructed of partial depth precast planks to provide a temporary work platform after placement of the superstructure on the piers. This removes the requirements to have formwork below the structure and allows for the remainder of the concrete deck to be placed continuous along the entire structure length. A topping slab of concrete would be placed over the partial depth slabs to make the deck composite.

Bridge joints should be located at each bridge end to allow for expansion and contraction.

Figure 9: Max Keeping Pedestrian Structure Example

12.2 STRUCTURE CLEARANCE AND MINIMUM DIMENSIONS

A minimum vertical profile of 5.3 m clearance over Highway 417 and the ramps will be maintained as stipulated in the TAC Geometric Design Guide for Canadian Roads manual. In consultation with the MTO, an additional 100 mm of clearance height is required for a total height of 5.4 m to allow for future asphalt paving through the corridor. The same minimum vertical profile will be assumed for Tremblay Road and the St. Laurent Station platform.

The average clear width within the structure is assumed to be 3.6 m which conforms to the MTO Bikeways Design Manual requiring a 3 m minimum width with a 0.3 m buffer at each side for bridges and tunnels. The internal opening height is based on the truss depth and is assumed to be approximately 3 m, which exceeds the minimum height required of 2.5 m for bicycles.

12.3 DESIGN LOAD REQUIREMENTS

The structure shall be designed according to the limit States Design Approach in accordance with the current Canadian Highway Bridge Design Code CAN/CSA S6 (CHBDC) code.

Serviceability limit state for pedestrian bridges will be according to the CHBDC and MTO Structural Manual.

The structure is assumed to fall within the design for Seismic Importance Category – Other and shall be design in accordance to Section 4 of the CHBDC.

12.4 AESTHETICS

The aesthetics of the structure are intended to convey a context sensitive design which blends with the existing corridor. The MTO has provided a manual "Aesthetic Guidelines for Bridges" which provides further guidance as to the principals of context sensitive design to be utilized during the design process. A structure of this type and character would be considered "Level 1" which would be have a high classification for aesthetic importance. It is anticipated that a similar style and character will be used as was used for the existing pedestrian structures including the Kanata Pedestrian Bridge and the Max Keeping Pedestrian Bridges. The structures are both steel warren truss structures and are fully enclosed by a roof and glazing. Both structures incorporate different architectural features including colour scheme, glazing trim, cladding finish and terminations which is specific to the structure. The general design should consider the MTO Aesthetics Guideline in their final appearance. Consideration should also be made to include an Architect in the design phase to provide further aesthetic guidance and vision for the structure and direct surrounding.

The finish to the steel is recommended according to the CISC Guide for Specifying Architecturally Exposed Structural steel. Based on the categories provided, this structure would suit the AESS 2 category which is recommended for structures intended to be viewed at a distance of greater than 6 m. It is also considered for structures where the expressed structure forms an important, integral part of the architectural design intent.

It has been recommended by MTO at previously design pedestrian structures that the architectural glazing system, used to enclose the pedestrian structures, be required to be placed inside of the steel truss. This both aids in the installation and replacement of the glazing by completing this work from the inside of the structure, thus mitigating the requirements for highway closures.

12.5 TRANSPORT AND ERECTION OF TRUSS

Based on WSP's previous experience, the truss span length of 48 m may present a challenge to transport to site in a single element and thus require splice locations to field assemble smaller segments together. As there is limited available space on the highway on the bridge alignment, temporary supports are not considered feasible to aid in the assembly of the truss. Therefore, the truss would likely require assembly at a nearby location and then move the completed truss the remainder of the way for erection. MTO Special Provision No. 109F16 may be referred to for guidance for transportation dimension and weight limits for provincial roads.

A lifting plan would need to be developed for the crane pads and traffic management for the closures.

In consultation with the MTO, full highway night closures could be considered for the erection work. Rolling 15-minute highway closures could also be considered as feasible during construction.

13 BRIDGE LANDINGS

As this structure is designated as a public bridge, it is intended to remain open to the public at all times. As such, the landing at the south will remain on City of Ottawa property (Figure 8). The north landing will terminate at the St. Laurent Station, outside of a fare-paid zone.

Due to the clearance height requirement of the bridge across the highway, the ends will terminate on a landing above the existing grade. The landing should be dimensioned according to the current design guidelines to safely accommodate the travel from the structure.

13.1 NORTH LANDING - ST. LAURENT STATION

No existing structural drawings for the station were available for this assignment and thus the capacity of the existing tunnel structure could not be determined to review a landing directly on the existing tunnel structure. With the completion of the LRT line within the tunnel, strengthening of the structure could also pose significant challenge due to significant construction constrains during LRT operation.

Therefore, the structure is proposed to land beyond the tunnel walls at the foundation corner where the tunnel width changes beyond the internal station platform area. It is intended that one to two bus parking stalls would be removed to accommodate the new landing structure (Figure 10). It is anticipated that an approximate 5 m width would remain for bus traffic around the structure. An existing approach slab is also located within the proposed north landing area which will require modification to allow for the footing and support of the remaining existing slab.

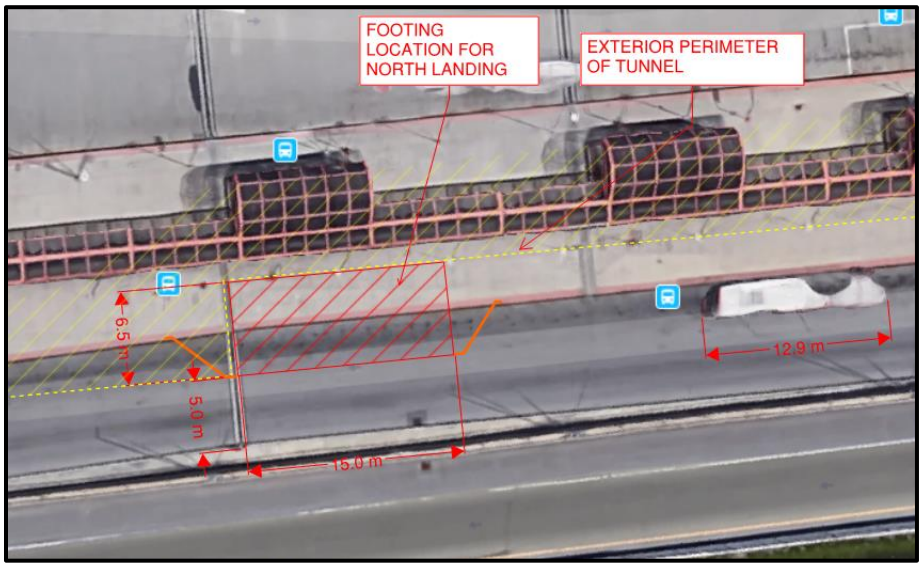


Figure 10: Proposed North Landing Footing Location

A staircase or escalator is recommended for the north landing where a ramp is not feasible due to a small available footprint at the site. Due to the use of stairs, for accessibility, an elevator is also required to be installed. Based consultation with the City of Ottawa and OC Transpo, standard policy requires a minimum of two elevators to ensure there is redundancy where one elevator is down for service or repair. Stairs design should consider the Ottawa Accessibility Design Standards.

OC Transpo also may require the landing and stairs to have heat tracing installed where a heated enclosure is not used to ensure safety and reduce winter maintenance demand. Snow removal operations should also

be considered for clearances around the station landing. Should a full enclosure be constructed, OC Transpo has recommended a means of passive ventilation be considered for station comfort during the summer heat.

13.2 SOUTH LANDING - TREMBLAY ROAD

Based on the available space at the south landing, a ramp is preferred. Stairs may also be used in conjunction to a ramp to shorten the travel distance from the landing (Figure 11). Ramps are typically preferred over staircases, escalators and elevators due to their ease of maintenance, low operating cost and relative safety. Ramp grades should be set according to the Ottawa Accessibility Design Standards which call for a running slope no more than 1:20 (5%) and a cross slope of no more than 1:50 (2%).

Figure 11: Example of Ramp and Stairs (shown at the Max Keeping Pedestrian Bridge)

14 TRAFFIC MANAGEMENT AND CONSTRUCTION STAGING

14.1 CONSTRUCTION STAGING/SITE ACCESS

Proposed construction staging, and site access will require review and approval by the MTO for all construction activities on the highway ROW.

14.1.1 NORTH LANDING STAGING

During construction, a minimum width should be maintained to allow buses to pass around the construction area (Figure 12) or the station may be staged to avoid the construction portion of the loop. Similar closures of segments of the station platform have been carried out during paving operations and rehabilitation work.

Construction access to the site would be limited when the station is running a normal schedule during construction. Current bus schedules indicate the station operates until 1:30 am and starts operations again at 5:30 am with a 4-hour window for construction operations on the platform with no bus usage. This timing window may be mitigated where the section of the loop being affected is removed from service during construction and full access is provided to the Contractor with separation from OC Transpo operations.

Further discussion with OC Transpo would be required to determine the available construction timing for the station once the LRT is in operation or modifying the bus loop during construction.

Figure 12: St. Laurent Station Proposed Construction Area

14.1.2 PIER STAGING

The preferred pier locations at the outer medians of the highway are anticipated to have minimal impact to the main highway lanes during construction. The assumed construction areas and staging are shown in Figure 13 below.

The staging for the North Pier will likely require the westbound on-ramp to be closed for the duration of the pier construction. It is not anticipated that lane reduction will be required to complete the pier work on the main westbound lanes. Proper notification signage and barriers would be required at the entrance to the on-ramp at St. Laurent Blvd to indicate the closure. A traffic study will also likely be required by the MTO to determine the impact of the closure.

The Center Pier construction area is also located within the median between the main eastbound lanes and St. Laurent off-ramp. Access would likely be achieved from the off-ramp lanes and may require closure of a ramp lane to permit access. Due to the proximity to traffic, temporary barriers are anticipated to be required.

The South Pier area would likely be best accessed from Tremblay Road due to a reduced traffic impact. Due to the proximity of the water and gas main, consultation with the responsible authorities and utilities would be required to determine the protection requirements needed to cross over these lines to access the pier location. Access from the off-ramp could also be considered where it is determined that it is not cost effective or feasible to access the site from Tremblay Road.

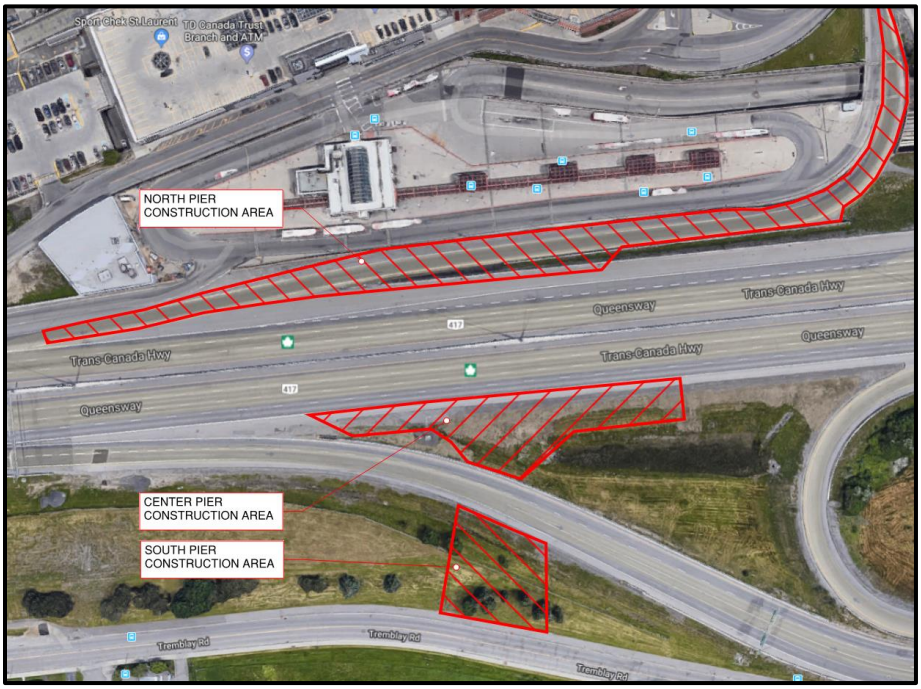


Figure 13: Assumed preliminary construction areas on MTO ROW

14.1.3 SOUTH LANDING STAGING

Tremblay Road closures should be addressed as part of the overall site work. Based on current planning, the existing Tremblay Road will be realigned around the landing area. Coordination with the site servicing work should be account for the final work and provide access to the work area during construction.

15 ENVIRONMENTAL CONSIDERATIONS FOR MTO ROW

MTO's Corridor Management and Environmental Requirements Guide (July 2010) states that "if a development proposal involves a change to a provincial highway…an environmental assessment (EA) study must be completed" before a development permit can be issued by MTO Corridor Management staff. The EA study must be done in accordance with the MTO Class Environmental Assessment for Provincial Transportation Facilities (MTO Class EA, 2000).

An encroachment permit will be required for the new pedestrian bridge; it is therefore assumed that MTO Class EA requirements would need to be fulfilled in advance of issuance of this permit. As part of preliminary design, early engagement of MTO to confirm Class EA requirements is recommended. Based on a meeting with the MTO, it was indicated the MTO will require a review of the preliminary structure drawings, highway design criterial, traffic management plans and project specifications. The MTO also reserved the right to review and ensure the specifications meet MTO standards for work on or over their ROW.

Based on the concept design for the pedestrian bridge, it is anticipated that the project would be classified either as a Group B (major improvement to existing provincial transportation facilities) or a Group C (minor improvement to existing provincial transportation facilities) undertaking. New pedestrian bridges over an existing highway are not explicitly identified in the Classification of Projects and Activities (Chapter 2) of the MTO Class EA document; therefore, classification of the project must be confirmed with MTO.

The following environmental specialty studies and tasks may be required to fulfill MTO Class EA requirements:

- Environmental speciality studies:
  - Archaeological assessment (or confirmation that all works will occur within previously disturbed areas or areas cleared for archaeological potential);
  - Terrestrial ecology existing conditions documentation and impact assessment; and,
  - Contaminant investigations.
- Consultation with stakeholders and the public who may be impacted by the new pedestrian bridge and associated construction (e.g., highway ramp or lane closures, detours).
- Documentation of the MTO Class EA process (deliverables dependent on classification of project).

As part of the Planning Act approvals being sought for 530 Tremblay Road, a number of the required environmental specialty studies and consultation activities may have already been completed in a way that will satisfy (in whole or in part) the requirements of the MTO Class EA process and the MTO Environmental Reference for Highway Design.

Through the MTO Class EA process, environmental mitigation measures will be identified to be applied during construction to address: erosion and sediment control, spill prevention and control, management of excess materials, dust control, noise control, and mitigation of impacts to traffic, transit service and pedestrians.

16 MISCELLANEOUS

16.1 APPLICABLE DESIGN STANDARDS

The following criteria, design standards, codes, specifications are assumed to be utilized as a minimum basis of the structure design. This list is not exhaustive of all documents required to complete the design.

- CAN/CSA S6 Canadian Highway Bridge Design Code (CHBDC);
- CAN/CSA S16 Design of Steel Structures;
- CAN/CSA A23.1 Concrete Materials and Methods of Construction;
- CAN/CSA A23.3 Design of Concrete Structures;
- CAN/CSA G40.20/G40.21 General Requirements for Rolled or Welded Structural Quality Steel;
- MTO Structural Manual;
- MTO Bikeways Design Manual
- MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads;
- MTO Aesthetic Guidelines for Bridges;
- TAC Geometric Design Guide for Canadian Roads;
- TAC Guide for the Design of Roadway Lighting; and

- City of Ottawa Accessibility Design Standards.
- Ontario Provincial Standards
- Ottawa Standard Tender Documents
- CISC Guide for Specifying Architecturally Exposed Structural steel

16.2 MATERIALS AND DURABILITY

It is assumed that the bridge structure will be required to meet the CHBDC minimum design life of 75 years for a new bridge. Where unspecified, the minimum durability shall be according to the CHBDC.

16.2.1 CONCRETE

The concrete mix design requirements should follow the most stringent standards between the MTO and City of Ottawa. Based on WSP's recent experience, the City of Ottawa currently has the most stringent concrete requirements and therefore, it is reasonable to assume that the City of Ottawa Standards will likely be the selected standard to followed. The City of Ottawa Standards for concrete generally follow the CAN/CSA A23.1 code with additional chloride permeability requirements for the mix design.

The underlying shale bedrock has also been reported to be rich in sulphate and as such, the caisson concrete may require a sulfate resistant mix design. This requirement should be confirmed during the site-specific geotechnical investigation.

16.2.2 REINFORCING STEEL

Non-premium reinforcing steel is assumed to be black steel grade 400W.

Premium reinforcing steel should be used as required for durability and as designated in the MTO Structural Manual. This reinforcement type will typically be used on the concrete within the splash and spray areas. Premium reinforcing is typically considered to be stainless steel and would be assumed to be the primary premium reinforcement used.

Galvanized steel or GFRP may also be considered as premium reinforcement which could have specific applications applicable for the structure or landings.

16.2.3 STRUCTURAL STEEL

The truss members are assumed to be fabricated according to CAN/CSA G40.20/G40.21 Grade 350WT or Grade 350W steel meeting Charpy V-notch temperature and energy requirements according to the CHBDC. Grade 350AT steel may also be considered however is not normally used where a coating is required for aesthetic reasons.

350W or 350WT steel shall require coating. A durable coating should be specified, with typical accepted coating systems consisting of a zinc primer, epoxy mid coat and urethane top coat. Other techniques such as metalizing could be considered however are not normally cost effective for the relatively small member sections. Coatings should be confirmed in detailed design based on project requirements for finish and aesthetics.

16.3 ROADWAY BARRIERS

New roadway barriers, primarily on the MTO ROW, will be required where new pier locations are located within the clear zone of the highway. This highway criteria should be confirmed as part of the detailed design phase of the work to determine the extent of protection required.

Based on the north pier location, a concrete barrier exists and therefore will not require additional protection.

It is assumed that a new barrier may be required at the center pier at the edge of the highway.

The south pier may require the existing channel guardrail be extended up the ramp and past the pier.

The south landing at Tremblay may require bollards to be installed within the vicinity of the ramp at grade to ensure errant vehicles cannot enter the ramp lane.

16.4 DRAINAGE

The truss structure is intended to be enclosed and therefore internal drains would be required for general washing and maintenance only. The structure is recommended to have a 0.5% longitudinal grade for drainage as required by the CHBDC.

The roof system of the bridge would require a drainage system to collect and direct the water down from the roof. It is anticipated this system would include parapet walls at the edges and a sloping deck surface to direct the rainwater to drain inlets. The drain inlets are assumed to be internally piped down the length of the bridge to vertical drain pipes at the piers. The drain piping could be hidden within the truss in the internal soffit for aesthetics. The drainpipes at piers may require connection to a storm drain where overland drainage is not practical.

Parapets along the roof also provide the benefit of minimize the opportunity for falling snow on vehicles below in the winter season.

The approach and landing ramps should be designed to provide a minimum cross fall of 2% to ensure drainage from the travel path. Where continuous curbs or parapets are installed, drains should be located at the low end of the cross fall to direct water down from the structure. The deck drainage requirements should be analysed during detailed design.

16.5 PEDESTRIAN STRUCTURE ILLUMINATION

Based on 24hr service on the structure, adequate lighting of the site and structure will be required for the safety and security of the users. It is anticipated the structure will require internal lighting and illumination at the landings. Illumination design for the structure should incorporate the requirements of the City of Ottawa Accessibility Design Standards including all relevant City of Ottawa Lighting Policies.

16.6 HIGHWAY 417 ILLUMINATION

The structure is in proximity to the overhead lighting on the Highway 417 median, therefor a shadow will be cast on the highway below. The requirement for additional embedded lighting to be installed at the new structure to address this shadow should be reviewed as a part of the detailed design.

16.7 SIGNING

Based on discussion with the MTO, no signage will be permitted to be attached to the pedestrian bridge structure.

Work signage will be provided, in accordance with the MTO Manual of Uniform Traffic Control Devices – Temporary Conditions during the construction periods.

16.8 HIGHWAY SIGHT LINES

A review of the highway sight lines within the vicinity of the structure indicated that no significant sight line obstructions are present due to the proposed structure.

A review was carried out for the overhead sign located near the end of the St. Laurent Off-ramp from the eastbound lane. The superstructure was confirmed to be above the vertical vehicle sight lines (Figure 14) and the south pier also allowed the minimum 195 m recommended decision site distance based on the MTO Design Supplement for TAC Geometric Design Guides for Canadian Roads.

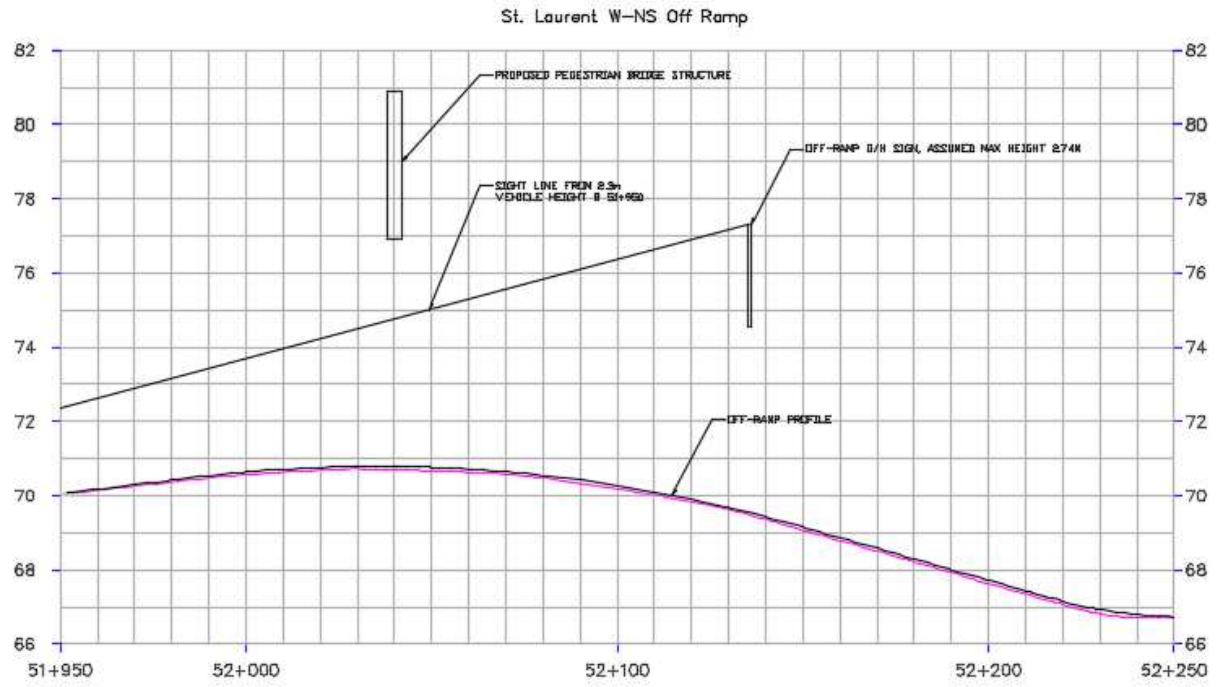


Figure 14: Vertical Sight Line at St. Laurent Eastbound Off-Ramp

16.9 HEAT TRACING

As discussed during a consultation meeting with OC Transpo, heat tracing may be required for outdoor elements such as stairs, high travel locations beyond the bridge and drain pipes within the bridge structure to avoid ice build up and to provide a safe walking surface from slips and falls. Heat tracing typically includes embedded heating wires within the concrete elements or coiled around metallic drain pipes to keep

the surface from freezing during cold temperatures. The requirement and locations should be confirmed during detailed design phase.

17 CONCEPT DESIGN DRAWINGS

As part of this assignment, detailed concept design drawings have been developed base on the input from this report and best judgement. The drawings outline the preferred location for the structure and indicate the assumed design cross section, profile and plan for the proposed structure. It is intended that the concept design is used as guidance to inform the detailed design process only. The concept design drawings are found in Appendix D.

Relevant existing drawings provided to WSP by the City of Ottawa and OC Transpo have been included in Appendix E.

18 WORKING DAY ESTIMATE

The project is assumed at this time to be delivered as a design build assignment and therefore depending on the Design Builder's capabilities and relationships, the construction schedule will vary. Based on predicted work in the City of Ottawa, it is conservatively assumed that a single foundation crew and two general construction crews will be operating at any one time.

The following working day estimate schedule assumes a reasonable construction timetable based on WSP's experience with similar previous structures. Construction access is assumed to be according to normal working hours and generally unrestricted access.

The working day estimate assumes approximately 300 days to complete the work to be completed over two construction seasons with a winter shutdown between seasons. The start date has been chosen to be April 2022 to show the timeline required for completion before 2025. The working day estimate can be found in Appendix F.

19 COSTS ESTIMATE

The construction costs have been developed based on WSP's experience and historic pricing of similar structures and construction activities. Costs may vary year to year based on fluctuating market, material and labour costs. All costs provided are in 2019 dollars and exclude tax.

It is assumed the costs will include pricing for the bridge work, landings, piers, highway access and protection. Reconstruction of Tremblay Road including utility and storm drain relocation and other requirements beyond the direct structure work is not assumed to be included in the costs.

The Class D estimate for the structure is $20,030,400, exclusive of tax. The cost estimate can be found in Appendix G.

20 FURTHER REQUIRED DOCUMENTATION

The following documentation was not available for this phase of the concept design and is recommended to be included as part of next phase of design:

- Updated survey data for proposed bridge including the MTO ROW and property within proximity of the bridge;
- Site specific geotechnical investigation report including with new boreholes taken at proposed foundation locations including ground water monitoring and testing for sulfate presence in the bedrock;
- Traffic studies to determine impact from construction activities and staging.
- St. Laurent Station structural drawings (East Transitway Queensway North to Michael Street, Stage 1 - Contract 84-609);
- St. Laurent Station LRT station drawings;
- Utility circulation/clearances for MTO ROW, daylighting and field locates to determine accurate location;

21 DISCUSSION

This report provides a high-level review of relevant select issues and requirements for the pedestrian bridge design and construction based on available information at the time of the report. It is anticipated that further requirements will be identified as the preliminary and detailed design progresses. Further discussion and requirement outcomes with stakeholders should also be anticipated.

It should also be noted that standards and design codes may change in the future and thus may change the assumptions presented in this document.

Current accessibility standards for the City of Ottawa have been included in the concept design provided. These standards should also be reviewed and confirmed at the time of detailed design.

SIGNATURES

PREPARED BY:

David Enns, P.Eng.
Project Engineering

REVIEWED BY:

Maurice Mansfield, P.Eng.
Manager – Bridge Engineering - Ottawa

APPENDIX

A TRIP GENERATION

MEMO

TO: Mary Jarvis, Director, Real Estate, National Capital Region, Canada Lands Company

FROM: Sarah McDonald, Project Manager, Transportation Planning

SUBJECT: **530 Tremblay Road – Preliminary Trip Generation Estimates**

DATE: **July 17, 2019**

A preliminary trip generation exercise was completed to identify the preliminary transportation needs of the proposed development. The results indicate that 85% of all trips to and from 530 Tremblay Road will likely be generated by the office component of the development. The estimated trips by target mode shares are presented in **Table 1** with the caveat that the trip generation will be further refined in the Transportation Impact Assessment that will be prepared as part of the Draft Plan of Subdivision application.

The **General Office** person-trips were estimated using the ITE Trip Generation Manual v.10 for the General Office Building (ITE Land Use 710) for 150,000 sq/m of office space. This size of development is larger than the ITE General Office Building data plot and a detailed trip generation exercise is required to validate the estimate.

The **Mid-Rise Residential** person-trips were estimated using the TRANS Trip Generation Manual (2009) for 500 dwelling units. This approach is recommended in the City of Ottawa's Transportation Impact Assessment Guidelines (2017).

The assumed **mode share targets** are consistent with the City of Ottawa's Transit-Oriented Development Plans (Jan 29, 2014). These sustainable mode share targets are specifically for the business peak periods in all TOD areas.

Table 1. Person-Trips - Preliminary Trip Generation and Mode Share

MODE SHARE	MODE SHARE TARGET	AM PEAK HOUR			PM PEAK HOUR		
		General Office	Mid-Rise Residential	Total AM	General Office	Mid-Rise Residential	Total PM
Auto Driver	15%	300	49	350	310	53	362
Auto Passenger	5%	100	16	117	103	18	121
Transit	65%	1,305	211	1,518	1,342	228	1,570
Pedestrian	10%	200	33	234	207	35	242
Cycling	5%	100	16	117	103	18	121
Total Person-Trips	100%	2,010	325	2,335	2,065	350	2,415

Suite 300
2611 Queensview Drive
Ottawa, ON, Canada K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
wsp.com

APPENDIX

B MEETING MINUTES

Meeting Minutes

Project: 530 Tremblay Road – Canada Lands Company
Meeting Subject: To discuss the development of 530 Tremblay Road with PSPC, CLC, and their consultant WSP
Meeting Date: Tuesday, May 28, 2019
Meeting Time: 2:00 – 3:30 pm
Meeting Location: 110 Laurier Ave. W. - Room 4103E

Attendees		
Name	**Organization**	**Email**
Mary Jarvis	CLC	mjarvis@clc.ca
Haleigh Cox	CLC	hcox@clc.ca
Pascal Mongeau	PSPC	Pascal.Mongeau@tpsgc-pwgsc.gc.ca
Carolyn J Walsh	PSPC	Carolyn.J.Walsh@tpsgc-pwgsc.gc.ca
Susan Cook	PSPC	Susan.Cook@tpsgc-pwgsc.gc.ca
Zachary Riley	PSPC	Zachary.Riley@tpsgc-pwgsc.gc.ca
Sean Moore	City of Ottawa	Sean.Moore@ottawa.ca
Cody Oram	City of Ottawa	Cody.Oram@ottawa.ca
Dhaneshwar Neermul	City of Ottawa	Dhaneshwar.Neermul@ottawa.ca
Jeannette Krabicka	City of Ottawa	Jeannette.Krabicka@ottawa.ca
Christopher Moise	City of Ottawa	christopher.moise@ottawa.ca
Mike Giampa	City of Ottawa	Mike.Giampa@ottawa.ca
Dennis Gratton	City of Ottawa	Dennis.Gratton@ottawa.ca
Nadia De Santi	WSP	Nadia.De-Santi@wsp.com
Allison Good	WSP	Allison.Good@wsp.com
David Enns	WSP	David.Enns@wsp.com
Sarah McDonald	WSP	Sarah.McDonald2@wsp.com
Martin Ennis	WSP	Martin.Ennis@wsp.com
Kasper Koblauch	WSP	Kasper.Koblauch@wsp.com
Vince Colizza	Vincent P. Colizza Architects	vcolizza@colizzaarchitects.com

Suite 300
2611 Queensview Drive
Ottawa, ON, Canada K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
wsp.com

ITEM

1.0 INTRODUCTIONS

2.0 PROJECT OVERVIEW

- Site and project overview
- Project approvals timeline

Notes

- Mary provided an overview of the site, project history, and the CLC/PSPC partnership
- Pascal noted that 90 Elgin is the model for this project (lease and lease back)
- Nadia provided a high-level overview of the planning context

3.0 CITY-OWNED LANDS

- What are the City's plans for the City-owned lands to the northeast of the site?

Notes

- Martin identified the 12-inch high-pressure gas line along the east side of the site
  - Legal surveyors will pull information and map exact location
- Dhaneshwar noted that the property forms part of the City's right-of-way
  - The presence of the gas line will affect the land value
  - The City has no plans for the lands
- Nadia noted that Tremblay Road is planned to be re-aligned as envisioned in the past Urban Strategies/Plania plans that are also shown in the City's Secondary Plan and TOD Plans for the area
- With respect to the land disposal process, Dhaneshwar explained that a road closing application would be required and the City would likely dispose of this land to PSPC as the logical abutting land owners
  - Dhaneshwar explained that the process would take approximately three (3) months with a 20-day internal circulation period, in order to close the road
  - It was noted that the road closure and planning processes can run concurrently. The road closing application could be a condition of draft plan of subdivision as a conveyance.
  - Dhaneshwar noted that the City does not have a process specifically for land-swaps, so it would be the same as declaring the land as surplus. It would go through an Agreement of Purchase and Sale.

4.0 TRANSPORTATION

- Transportation Impact Assessment scoping
- Tremblay Road realignment

Notes

- Mike confirmed that the 5-step Transportation Impact Assessment process would apply
  - Nothing additional would be required based on what he knows
- Sean noted to flag the pedestrian connection in the Transportation Impact Assessment
- Mike pointed out that phasing should be considered in the scoping
- Sarah confirmed the 65% modal share requirement in the TOD Plan
- Nadia noted the zoning requirement is to build 40,000 square metres of office space before any residential development
- Sarah shared preliminary traffic analysis information
  - Based on this analysis, it was noted that vehicle traffic on Tremblay Road could increase from 220 vehicles in the peak hour to 520 vehicles after the first phase of development
- Mike confirmed that a 2-week turn around is required for the Transportation Impact Assessment scoping
  - Forecasting typically requires seven (7) business days
  - Strategy typically requires ten (10) business days
- Mike confirmed that new collector road guidelines are under development
- Mike noted that the right-of-way should be 26 metres east of Belfast. A 26 m r-o-w can accommodate cycling tracks, which the City is asking for on new plans of subdivision

Action

- Mike (City) to confirm the required right-of-way width

5.0 PEDESTRIAN BRIDGE

- Memorandum of Understanding between PSPC and the City of Ottawa (2011) and confirmation of City's intention to own and maintain the pedestrian bridge
- Bridge connection to St. Laurent LRT Station

Notes

- Sean has reached out to the City's legal department respecting the MOU
  - Sean advised that an MOU is not a legally binding document
- Sean will raise with Steve Willis as a first step in confirming the City's position on owning and maintaining the bridge
- It was agreed that a separate meeting will be required with OC Transpo, as OC Transpo staff were not present at the meeting
- David shared his preliminary analysis on five (5) potential alignments for the pedestrian bridge
  - Trying to avoided a median pier but it will be a challenge and this will need to be discussed with MTO
  - David needs to review the St. Laurent LRT station design drawings
  - There are many utility constraints to be considered
- Dennis noted that pedestrian bridge alignments 3 and 4 are preferred
- Dennis noted that we may want to look at feasibility of peers or columns south of the transitway
- Dennis noted that there is no plan to decommission the bus loop
- It was noted that the St. Laurent Shopping Centre owner was previously considering direct access to the pedestrian bridge but their plans have changed
- It was noted that project proponents typically pay for OC Transpo's revenue losses associated with projects
- Dennis noted that 'as-built' utility drawings come in six (6) months after project completion
- David noted that a connection to the LRT station may require elevators where a ramp is not feasible
  - Dennis noted that accessible ramps could be accommodated on south side of highway
  - Access requirements would be under the jurisdiction of OC Transpo
- Dennis advised that the St. Laurent station – deck to tunnel may not have the capability of supporting a pedestrian bridge structure. OC Transpo may have an issue with strengthening work within the tunnel with the operating LRT line
- David mentioned that WSP would be looking at the feasibility of a pier or a column system within the station
- Morguard also looked at having the pedestrian overpass into the mall but their plans have changed so the pedestrian connection into the mall is not an option
- Dennis mentioned that disruptions to the LRT operations will have to be considered when the bridge is built. Normally Council will ask proponents to pay the fares that would be lost due to operations.
- Pascal noted that it would be preferable to have a link to a building on the south side
  - Two entrance/exits are desired – one which is open 24/7 and another providing access to a building, closed at night

Actions

- Dennis (City) to provide St. Laurent LRT station design and utility drawings
- OC Transpo to advise on accessibility requirements for elevators
- City Real Estate to comment on the south side landing

6.0 PARKLAND

- Required parkland quantum, shape, and features within the context of the Eastway Gardens community including existing Cecil Morrison Park

Notes

- The City confirmed that regardless of the park that exists (Cecil Morrison Park), a parkland dedication ratio of 1 hectare per 300 units (to a maximum of 10% block size) should be used, however, if the development is mixed-use, the percentage of residential and non-residential would need to be considered
  - E.g. if 20% of the development were residential, the 1 hectare per 300 unit calculation would apply to 20% of the land area. The dedication rate for non-residential development would apply to 80% of the land
- The City confirmed that the parkland is preferred in one (1) block
- Minimum 2 street frontages or 50% of the block should have street access
- The TOD shows a street frontage on the east side of the adjacent Insurance building site-maybe have another street frontage

- CLV may have a road connecting to the north-south
- The City confirmed that the parkland dedication calculation is applied to the land area (gross development area) including any roads, parking lots, and pedestrian networks

7.0 BUILDING HEIGHTS

- Tremblay, St. Laurent and Cyrville Secondary Plan shows a maximum of 30 storeys; TOD Zoning permits a maximum of 90 metres
- Confirmation of applicable maximum building heights

Notes

- Sean confirmed that a building height over 90 metres would require a Minor Variance or Zoning By-law Amendment

8.0 DENSITY

- Target of 250 people and jobs per gross hectare (OP) vs. minimum 350 units per net hectare and/or minimum 1.5 floor space index (Tremblay, St Laurent and Cyrville Secondary Plan)
- Confirmation of density requirements

Notes

- Sean noted that the Zoning By-law is the implementing tool
- Nadia noted that WSP needs to do a density check as part of their due diligence and as part of their Planning Rationale for the Draft Plan of Subdivision application submission to the City
- Sean offered to review the density check before a formal submission is made
- Sean will get a departmental position on the density requirements that are applicable
- Block 1A would need to meet the FSI requirements for non-residential

Action

- WSP to send density check to Sean in advance of formal draft plan of application submission

9.0 PARKING REQUIREMENTS

- Confirmation of applicable accessible parking requirements
- The City has updated its requirements pertaining to parking for persons with disabilities, however the Traffic and Parking By-law has not been updated

Notes

- Sean confirmed that AODA standards must be used, regardless of what is in the City's By-law

10.0 CONFIRMATION OF CIVIC ADDRESSING RESOLUTION

Notes

- It was agreed that the site address should remain 530 Tremblay Road
- Sean sent a request to City staff in charge of addressing and will continue to follow up

Action

- Sean to connect with Planner for CLV lands (Tracey Scaramozzino) to discuss address change

11.0 ACPDR/UDRP CHARTER URBAN DESIGN REVIEW PANEL (UDRP)

- Confirmation of this approach
- Confirmation of process and submission requirements

Notes

- City staff to discuss the proposed approach
- Nadia advised that the request has been made to NCC to receive a draft Project Charter
- Sean noted that the UDRP dates have been revised as a result of the CIP conference. UDRP meeting is now scheduled for July 12, 2019, submission requirements due June 28, 2019

Action

- City to confirm interest in entering into a Project Charter for this project (Note: Since the meeting, Sean has confirmed the City's interest)
- Nadia (WSP) to send a draft Project Charter. (Note: Since the meeting, Christopher Meek (NCC) emailed a draft Project Charter to the City for review)

12.0 ADDITIONAL REQUESTED INFORMATION

- Previously completed noise and vibration studies and as Acoustic Assessment Reports assessing the potential noise and vibration impact from LRT Maintenance Facility and OC Transpo Depot on existing residential dwellings located along the north side of the rail corridor.
- Detailed design drawings for St. Laurent station

Notes

- Dennis noted that the City does not have the requested existing noise and vibration studies from the OC Transpo facility on Belfast. There is an existing noise mitigation feature.
- A warning clause would be required for future residential buyers
- A noise and vibration study will be required as part of the draft Plan of Subdivision submission

13.0 OTHER

Notes

- It was agreed that the end of June / first week of July should be targeted for the public information meeting

Action

- Sean to set up a meeting with OC Transpo staff, Sean, and Nadia in the next two (2) weeks (Note: Since the meeting, this has been arranged for June 14, 2019)

These minutes are considered to be accurate recording of all items discussed. Written notice of discrepancies, errors or omission must be given within seven (7) days, otherwise the minutes will be accepted as written.

Meeting Minutes

Project: 530 Tremblay Road – Canada Lands Company
Meeting Subject: To discuss the proposed 417 pedestrian/cycling bridge between 530 Tremblay Road and St. Laurent station, over Hwy 417
Meeting Date: Friday June 14, 2019
Meeting Time: 10:00 – 11:00 am
Meeting Location: 110 Laurier Ave. W. - Room 4103E

Attendees		
Name	**Organization**	**Email**
Mary Jarvis	CLC	mjarvis@clc.ca
Haleigh Cox	CLC	hcox@clc.ca
Pascal Mongeau	PSPC	Pascal.Mongeau@tpsgc-pwgsc.gc.ca
Zachary Riley	PSPC	Zachary.Riley@tpsgc-pwgsc.gc.ca
Sean Moore	City of Ottawa	Sean.Moore@ottawa.ca
Claire O'Donnell (Dial-in)	City of Ottawa	Claire.ODonnell@ottawa.ca
Derek Washnuk	City of Ottawa	Derek.Washnuk@ottawa.ca
Cody Oram	City of Ottawa	Cody.Oram@ottawa.ca
Patrick Duval	City of Ottawa	Patrick.Duval@ottawa.ca
Nadia De Santi	WSP	Nadia.De-Santi@wsp.com
Allison Good	WSP	Allison.Good@wsp.com
David Enns	WSP	David.Enns@wsp.com
Sarah McDonald	WSP	Sarah.McDonald2@wsp.com
Kasper Koblauch	WSP	Kasper.Koblauch@wsp.com

ITEM

1.0 INTRODUCTIONS

2.0 PROJECT OVERVIEW

- Site and project overview
- Pedestrian bridge connection between 530 Tremblay Road and LRT/BRT station
- Lines of communication

Suite 300
2611 Queensview Drive
Ottawa, ON, Canada K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
wsp.com

Notes

- Nadia introduced the project and site
- Nadia noted that the addressing issue should be resolved within a week (CLV lands currently shown as 530 Tremblay Road) *Since the meeting, this issue has been resolved.
- Mary, Pascal, Carolyn, Haleigh, Zachary, and Nadia should be included on all project-related communications
- Any communications from the City should go through Sean Moore

3.0 EXISTING STATION ACCESS AND OPERATION

- Confirm future use of pedestrian tunnel
- Confirm future fair-paid zone area

Notes

- The existing pedestrian tunnel will remain open and maintained in perpetuity
  - Improvements have recently been made to the tunnel including the installation of public art
- Tunnel users can by-pass the fare-paid zone to access St. Laurent mall
- St. Laurent Station's fare-paid zone begins at the platform (bottom) level
- The station's upper level is not intended to be become a fare-paid zone

Actions

- Derek and Sean to confirm land ownership in and around the transit station

4.0 PEDESTRIAN BRIDGE STRUCTURE

- Proposed pedestrian bridge landing location options, fair-paid zone area
- Site visit, access to LRT construction area
- Where a ramp is not feasible, what accessibility standards are required by OC Transpo, (elevators, stairs, escalators)
- Construction restrictions (timing, access)

Notes

- Claire confirmed that two (2) elevators and one (1) set of stairs are required at a minimum where the bridge connects to the station
- Patrick noted that no station construction is planned within the next five (5) years however short-term plans are in place to rehabilitate/update non-public areas including employee washrooms and sales office
- Patrick noted that if the stairs are not covered, they would need to be heat traced
- Patrick noted that the Max Keeping Bridge can get very hot in the summer and windows which open seasonally could be considered
- Pascal noted the bridge is intended to be operational when the first employees move to the site in 2025
- Allison noted that NCC/MTO Context Sensitive Design guidelines will likely need to be considered
- It was noted that a landing solution on the south side of Highway 417 similar to the Max Keeping bridge is being considered
- Discussion was held about potential design solutions that have been considered in addition to the pedestrian bridge
  - It was noted that the narrowness of the existing St. Laurent Boulevard bridge presents challenges from an active transportation perspective
  - It was noted that a shorter walking distance to the station will facilitate higher transit uptake
- David noted that the pedestrian bridge presents some challenges in addition to what was considered in the CIMA report, now that LRT has been built
- Claire noted that, with respect to winter maintenance on the south side of the bridge, it may be valuable to bring public works into the conversation early, unless PSPC will take responsibility for winter maintenance
- Claire advised that maintenance of the bridge/ramp in the winter must be confirmed – City or PSPC.
- Patrick noted that there is very limited space on-site for snow storage
- Derek noted that OC Transpo may provide additional comments on design considerations
- Pedestrian bridge agreement will be tied to the site plan agreement for the office tower

Action

- Claire to confirm requirement for an escalator

- Derek to confirm if any construction is planned for St. Laurent Station
- David to provide Claire with a list of individuals who require site access
- Derek to confirm requirements for emergency phones
- City and PSPC to confirm responsibility for winter maintenance of bridge and ramp

5.0 FUTURE TRANSIT PLANS

- Planned changes to bus routes as a result a result of LRT
- Future use of bus terminal after LRT begins operation, future use of bus platform

Notes

- Derek confirmed that local bus usage will continue on the upper deck of St. Laurent Station
- No opportunity exists to remove asphalt at St. Laurent Station given that the volume of bus usage
    - The eastern portion of the station area is less used
- The areas directly east and west of the head house building are heavily used by pedestrians
- Derek noted that bus route numbers 61 and 62 will be discontinued along Tremblay Road post LRT, however bus route number 18 will continue
- Derek noted that all bus routes currently serving the site by way of St. Laurent Boulevard will continue post LRT
- Sarah provided a high-level summary of preliminary transportation analysis
    - If a 55% transit mode-share is achieved, an estimated 1200 vehicles will travel along Tremblay Road during the PM peak hour
    - Sarah noted that the TOD Plan for St. Laurent targets a 65% transit mode share
    - Sarah noted that the independent variable (150,000sq/m office space) for the preliminary trip generation estimates is “beyond the data plot” in the ITE Trip Generation Manual v10 (General Office)

Action

- Derek to provide information on bus routes that will service the site post LRT
- Sarah to reach out to Jennifer Armstrong to confirm if the 530 Tremblay Road development was considered in TRANS modelling for Stage 1 and Stage 2 LRT

6.0 EXISTING TRANSIT OPERATIONS CONCERNS

- Route capacity issues in the area

Notes

- No Route capacity issues identified

7.0 REQUESTED INFORMATION

- Available existing station structural drawings (PDF’s, Scans, DWG files)
    - Original drawings for St. Laurent Station
    - New drawings for LRT station
- Other contract drawings (e.g. structural or mechanical/hvac)

Notes

- Patrick confirmed that original station and mechanical drawings are available but new station drawing are not available at this time

Action

- Patrick to provide all available original station and mechanical drawings. *Since the meeting, these have been provided.

8.0 OTHER ITEMS

Notes

- Sean noted that, based on his conversation with Steve Willis, the City intends to honour the 2011 MOU

- Sean noted that a more formal agreement respecting City bride ownership and maintenance will be wrapped into the site plan process for the Federal office buildings

Meeting Minutes

Project: 530 Tremblay Road – Canada Lands Company
Meeting Subject: To discuss the proposed alignment of the pedestrian overpass and preliminary thoughts on a proposed design
Meeting Date: Thursday, July 18, 2019
Meeting Time: 10:00 – 11:00 am
Meeting Location: MTO's office, 347 Preston Street, 4th floor, Tower 3

Attendees		
Name	**Organization**	**Email**
Mary Jarvis	CLC	mjarvis@clc.ca
Haleigh Cox	CLC	hcox@clc.ca
Pascal Mongeau	PSPC	Pascal.Mongeau@tpsgc-pwgsc.gc.ca
Carolyn J Walsh	PSPC	Carolyn.J.Walsh@tpsgc-pwgsc.gc.ca
Zachary Riley	PSPC	Zachary.Riley@tpsgc-pwgsc.gc.ca
Louis Tay	MTO	Louis.Tay@ontario.ca
Jerry Wang (via conference call)	MTO	Jerry.Wang@ontario.ca
Frank Vanderlaan	MTO	Frank.Vanderlaan@ontario.ca
Nadia De Santi	WSP	Nadia.De-Santi@wsp.com
Michael Hanifi	WSP	Michael.Hanifi@wsp.com
David Enns	WSP	David.Enns@wsp.com
Adriano DiRienzo	WSP	Adriano.DiRienzo@wsp.com
Sarah McDonald	WSP	Sarah.McDonald2@wsp.com

ITEM

1.0	**INTRODUCTIONS**

- Stephen Kapusta (MTO) was unavailable for the meeting.

2.0	**PROPOSED PEDESTRIAN OVERPASS ALIGNMENT**

Notes

- David presented proposed pedestrian overpass alignment and context.

Future Widening and Expansion for the Highway

- David asked if, for future widening or expansion of the highway, will the site's section be expanded to accommodate further lanes?
- Frank indicated the MTO widened the highway recently and there are no plans for further widenings of the highway in the foreseeable future.

Suite 300
2611 Queensview Drive
Ottawa, ON, Canada K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
wsp.com

Median Pier Feasibility

- David asked about the median pier as a viable option on that corridor of the Highway as a possible alternative to piers on either side of the highway.
- Frank said it is MTO's preference to not have a median pier for the structure, as this work will negatively impact traffic during construction. Frank indicated MTO would prefer the present pier locations which avoid the median pier as shown in WSP's plans.
- Carolyn asked if the bridge can be constructed without the median pier.
- David confirmed it is feasible to do so however wanted to confirm if there is still a possibility to utilize it or if it was ruled out altogether.
- Frank indicated the designers would need to make a strong case for the pier to be further considered.

Utilities Through Corridor/Existing Base Mapping

- David discussed the known utilities through the corridor and requested if further information could be provided for the observed utilities which do not show up on accessible base mapping.
- Louis indicated that the MTO are the only ones who can provide locates on the ROW as Ontario One does not perform locates on their property. Louis would reach out to Louis Vachon (MTO) to confirm if the observed utility boxes are ATMS.
- David asked if the MTO had issues with WSP using the base mapping information WSP currently has for the previous 417 widening project to produce cross section for their report and drawing.
- Frank confirmed WSP can use its in-house information.

Bridge Clearance: 5.3 metres

- David asked to confirm the bridge clearance according to the Transportation Association of Canada (TAC) requirements (5.3 m is the required minimum). it was also asked to confirm if there are any further paving or resurfacing plans that would require them to increase it above the 5.3 metres
- Frank advised that the minimum height would be it according to Code.
- Frank said he is satisfied with the 5.3 metres. He said to allow 100 millimetres for future highway paving.
- Jerry explained the recommended clearance, it is based on structure type and therefore lighter, less stiff structures required additional clearance height. He indicated that the sign supports are typically required to be 5.5 m. He also stated that the deflection of the structure would need to be accounted for in the clearance.
- Adriano indicated that the pedestrian structures are significantly stiffer than a tri-chord sign and indicated from his experience that normally any additional required height would accommodate future paving only.
- Based on further group discussion, it was indicated that an additional 100 mm of clearance would be an appropriate tolerance at this time to account for future paving.
- David also indicated once a cross section was cut, it will be clearer as to how much clearance is actually provided.

Sight lines

- David said the bridge in it's shown configuration will span over the entire highway. He said, at this time, WSP doesn't see major issues with piers being at the edges for site distance and indicated that further review would be required during detailed design.
- David asked if they had any current known issues with sight lines within the study area in the corridor.
- Louis indicated they did not have any known issues but asked about a possible the sign on the eastbound off-ramp being obstructed by the proposed bridge. WSP would review this further.
- Mary asked if the off-ramp sign could be installed on the bridge.
- Frank said the MTO prefers to not put signs on the bridge structures.
- Louis asked about the indicated center pier location that is adjacent to the edge of the eastbound shoulder. He indicated there appears to be room to move it further south. He asked if WSP have looked at opportunities?
- David said currently, WSP has laid out the structure to keep the spans relatively equal as unequal spans can cause vibration frequency issues with light structures. furthermore, in the preliminary design this would be looked into further to widen out to try to reduce the need for the traffic barrier.
- Adriano said the Coventry Bridge pushed the limits of a transport truss. There were limits and a fair number of structural repairs. He indicated that further increasing the span will require an intermediate splice. He said WSP could move the center pier location it, but it may require more field assembly.
- Frank asked if the highway people have looked at this plan shown.
- David indicated that the configuration shown is high level for the structure itself and the barriers shown are conceptual in nature.
- Louis explained that if you move the center pier and still requires road side protection, you don't gain much from it.

- Jerry asked if the bridge will be a skewed or perpendicular to the highway.
- David indicated that as proposed the structure will have a slight skew to it.
- Jerry asked about the possibility to have a less skewed bridge to reduce the span length.
- David said WSP has reviewed the site and is trying to line the structure between the platform and the site, but given the complexity (i.e. utilities), the current concept is the least problematic alignment in the corridor, as there is not a lot of “play” at the site itself to provide a straighter alignment.

Highway closure methods

- David said he anticipates work to primarily be completed off the main highway, but there will be some ramp closures to construct the piers. Some short term lane closures may be required on the highway during the superstructure erection process.
- Frank said overnight full highway closures have been utilized in recent projects and this would be an reasonable method provided detour are in place.
- Frank said a 15-minute closure during night time to get the work done is also be allowed as an option.
- Frank said usually when you close a ramp, you go through an EA process subject to public consultation. He asked if that has been considered.
- Nadia said the EA work will be included as part of the further work and intended when PSPC has the RFP for the federal office and the bridge.
- Carolyn said PSPC would consider the understanding of the EA process.
- Pascal asked if the public consultation can be rolled into the same process.
- Frank said yes.
- David asked if MTO wants to see a Traffic Management Plan.
- Louis said yes.

Reviews and Approval Process

- Frank said MTO’s structural department would like to review the design of the bridge and everything that goes into it.
- Louis said in addition to reviewing the design, MTO would be interested in reviewing project specifications.
- Frank said this sounds like it will be going as a design building, so there will be project outcomes and specifications. They would be interested in seeing this.
- Frank said design build for these type of projects is new for MTO, but it is up to the proponent to develop the design and project specs.
- Carolyn asked if there is a list of the criteria to be addressed
- Frank said all deliverables conform to MTO requirements. He said the deliverables are built on a project-by-project basis (e.g. Traffic Management Plan).
- Louis said the design build contractors should be aware of all MTO requirements. The City of Ottawa also has specs.
- Louis said there will be other things like a requirement to apply for an encroachment permit to undertake work in the highway corridor, for example. The requirements should be known in advance.
- Adriano asked if they require provincial specs, etc.
- Frank said, yes, as they adhere to the highway.
- Louis said there can be some back and forth of what they would like to see.
- Nadia asked, if it was best to come back to MTO again after the current scope is finished for review?
- Carolyn added the question if it is worthwhile to come back as a group to understand at a high level what MTO requirements would be for the next phase.
- Frank said yes, there would still be an orientation process.
- Pascal said it would be a good idea to present MTO with the documents from this feasibility/conceptual design phase for review for acceptability and then they can provide the further requirements from this meeting to a design builder.
- Jerry indicated that for the MTO 30% design review, structurally would be structure type, location, etc. would be established. It was also indicated that due to the fact the structure is not the MTO's, bridge office would likely not need to review the submission.
- It was indicated that Louis said Jerry would likely be one of the reviewers for the submission.
- Jerry said the MTO review takes approximately 4 weeks for the review. That is what is normally put in the consultant RFP. If you have a tight schedule, they may be able to do it quicker – around 2 weeks.
- Pascal asked if we can assume a similar type of review timelines for the future stages (i.e. 60%, 90% for structural design).
- Jerry said if bridge office needs to review, it normally takes longer. Jerry said the 30% is the most important but he doesn’t anticipate that taking a long time.

Actions

- WSP to look into potential sight line obstruction of eastbound off-ramp sign.

3.0 OTHER/FINAL COMMENTS

- Louis said he doesn't have any additional comments. He said any work done by a third party along the highway corridor requires a permit. As part of the issuance of that permit, MTO will review the traffic control, lane closures, set ups for construction, etc. He said those things are spelled out.
- Jerry asked about the pier. From a structural perspective, they would prefer to have the piers on the outside. MTO doesn't want it too close to live traffic.
- Jerry also said if you put the piers outside of the 417 Highway, the steel structure will be long. When determining the clearance, consider the deflection off the steel structure.
- Carolyn asked if there are easement documents and rights-of-way that accompany all this work. Is there someone in MTO's real estate group who deals with this?
- Louis said this is his mandate. They allow infrastructure through an encroachment permit. They are considering putting together a legal agreement with the City of Ottawa. They may put an agreement for all pedestrian bridges together (Max Keeping Bridge, this one, etc.)
- Frank said the encroachment permit would allow for construction to commence.
- Frank said it is understood the City will be responsible to the pedestrian bridge but the onus is on MTO to create a legal agreement.

Action

- Louis to provide David with MTO contact regarding utility locates not shown on current base mapping plan.

APPENDIX

C MATRIX

Bridge Alignment Assessment Matrix

Alignment	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Aesthetic Vision					
Aesthetic • Vision • Integration with station • Integration with adjacent features	• No integration with station or development property	• Poor integration with station or development property	• Good integration with station and development property	• Will directly connect with transit station and development site • Should blend into the vicinity of the structure with the highway grade similar on both sides of the highway.	• Good integration with station and development property • Due to high grade at St. Laurent Overpass, Structure will stand out over area. • Long structure along highway with loss of development sight lines
Function					
Accessibility • Ramp grades • Steps • Elevators	• North End: 5% ramp • South end: 5% ramp	• North End: 5% ramp • South end: 5% ramp	• North End: To the station platform with staircase and elevator access • South end: 5% ramp	• North end: To the station building with staircase and elevator access • South end: 5% ramp	• North end: To station platform requiring stairs elevator access • South end: 5% ramp
Connectivity • Links to development • Links to transit hub • Connectivity of community	• Poor connection to the development and transit station • Requires new path network on north end to connect to station • Likely requires one or more road crossings at north end on path • Requires upgrade to sidewalks near station due to substandard width	• Poor connection to the development and transit station • Likely requires one or more road/parking lot crossings at north end • Requires upgrade to sidewalks near station due to substandard width • Equal or slightly longer in travel length than the LRT pedestrian tunnel beside rail tracks	• Good connection, Somewhat direct from the development area to the transit station • Can be connected to path network on Trembley Rd	• Excellent connection, most direct link between the transit station and development • Can be connected to path network on Trembley Rd.	• Good connection, somewhat direct from the development area to the transit station • Can be connected to path network on Trembley Rd.
Impact • To station • Highway • Private property	• Loss of property (private) • Construction of path/widening sidewalks (Private) • Loss of vegetation (private/public)	• Loss of property (private) • Construction of path/widening sidewalks (Private) • Loss of vegetation (private/public)	• Requires modification to St. Laurent station platform • Loss of station platform space • Loss of vegetation (public)	• Requires minor modification to St. Laurent station platform, loss of space • Loss of vegetation (public)	• Requires modification to St. Laurent station platform • Loss of platform space • Loss of vegetation (public) • Impact to Highway due to pier construction

Bridge Alignment Assessment Matrix

	• Impact to Highway due to pier construction	• Impact to Highway due to pier construction	• Impact to Highway due to pier construction	• Impact to Highway due to pier construction	
Safety • Security on bridge • Impacts to Hwy 417	• Poor vision by public with secluded terminations. • Short corridor length • No stairs required • Limit loss of Hwy 417 sight lines	• fair vision by public with ends terminating in less traveled areas • Long corridor with no egress • No stairs required • Limit loss of Hwy 417 sight lines	• Good vision by public • Short corridor length • Reasonable staircase height • Limit loss of Hwy 417 sight lines	• Good vision by public • Shortest corridor length • Reasonable staircase height • Limit loss of Hwy 417 sight lines	• Good vision by public • Long corridor with no egress • High number of stairs to ascend/descend • Possible poor sight lines for westbound Hwy 417 traffic at crest of St. Laurent overpass.
Constructability					
Structure length	100 – 110 m	140 – 150 m	110 - 120 m	110 - 150 m	220 – 230 m
Max Span	• 50 m (clear highway)	• 60 m (clear highway) • 30 m (median pier)	• 67 m (clear highway) • 35 m (median pier)	• 48 m (clear highway)	• 48 m (clear highway)
Utility Challenges	• Watermain located near south end • Gas main along Tremblay rd.	• No major challenges identified • Electricity ducts in the highway median • Gas main along Tremblay rd.	• Watermain located near highway median • storm water near north end • Electricity ducts in the highway median • Possible utility relocations on station platform	• Watermain/storm sewer located near north edge of Highway ROW • Gas main along Tremblay rd. • Possible utility relocations on station platform	• Watermain/storm sewer located near north edge of Highway ROW • Gas main along Tremblay rd. • Possible utility relocations on station platform
Foundation Challenges		• Possible requirement for pier over transit tunnel	• Likely requirement for pier over transit tunnel	• Likely foundations at or on corner of existing station	• Possible requirement for pier over transit tunnel
Constructability Issues	• Construction access a challenge near LRT lines • Highway median likely not geometrically designed for pier • Limited impact to Highway 417	• Possible foundation requirement/conflict with tunnel • Change in structure direction • Construction on private development • Limited impact to Highway 417	• Change in structure direction • Possible foundation requirement/conflict with tunnel • Work around OC Transpo Schedules • Limited impact to Highway 417 • Highway On-ramp closure	• May require modification to station platform to land structure foundation. • Work around OC Transpo Schedules • Limited impact to Highway 417 • Highway On-ramp closure	• Change in structure direction • Possible foundation requirement/conflict with tunnel • Work around OC Transpo Schedules • Limited impact to Highway 417 • Highway On-ramp closure
Property	• Public lands	• Public lands	• Public lands	• Public lands	• Public lands

Bridge Alignment Assessment Matrix

• Impacted stakeholders	• MTO • Private Land (St. Laurent Mall)	• MTO • Private Land (St. Laurent Mall)	• MTO • City of Ottawa/OC Transpo	• MTO • City of Ottawa/OC Transpo	• MTO • City of Ottawa/OC Transpo

APPENDIX

D CONCEPT DRAWINGS

Page Setup: --
Drawing Frame: 790mm x 534mm City of Ottawa 2008 (Rev.0)
Plot Date: September 27, 2019 3:58:30 PM
Last Saved: September 27, 2019 3:57:26 PM
Consultant's Information: M:\19M-00609-00 Tremblay\300 Structures\Feasibility Study\Drawings\Modified\341103B-006-GA-4 DJE.dwg

NORTH FOR CONSTRUCTION

LIST OF ABBREVIATIONS

W.P.	DENOTES WORKING POINT
EBL	DENOTES EASTBOUND LANES
WBL	DENOTES WESTBOUND LANES
SCL	DENOTES SPEED CHANGE LANE
T/FTG	DENOTES TOP OF FOOTING
T/O	DENOTES TOP OF
ABUT.	DENOTES ABUTMENT
BRGS	DENOTES BEARINGS
EXP	DENOTES EXPANSION BEARING
FIX	DENOTES FIXED BEARING

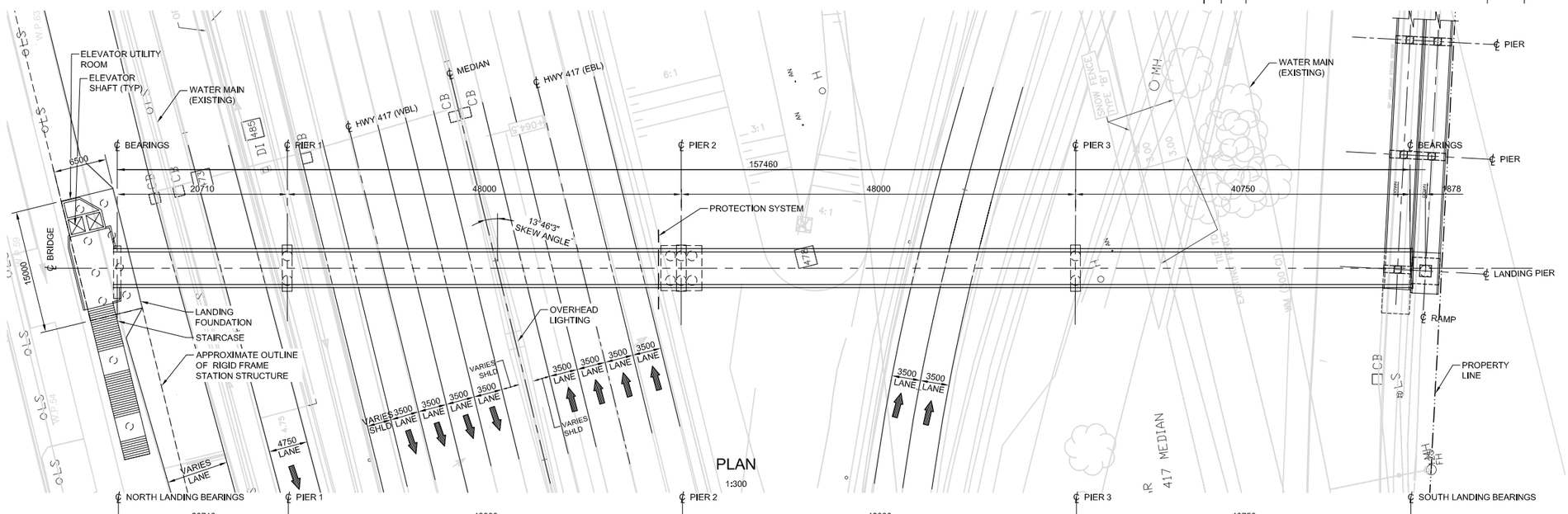
NOTE:
The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS	No.	Description	By	Date (dd/mm/yy)

TREMBLAY PEDESTRAIN BRIDGE AND MULTI-USE PATHWAY

PRELIMINARY GENERAL ARRANGEMENT

Contract No.	Drawing No. 001
Sheet No. 1	
Asset No.	
Asset Group	
Des: DJE	Chk'd:
Dwn: TD	Chk'd:
Utility Circulation No.:	
Construction Inspector:	
Code: CHBDC S6-14	
Load: CL-625-ONT	



CONCEPT DESIGN DRAWING
SEPT.27, 2019
NOT FOR CONSTRUCTION

GENERAL NOTES

ELEVATIONS AND CHAINAGES ARE SHOWN IN METRES, DIMENSIONS ARE SHOWN IN MILLIMETRES.

DIMENSIONS AND DETAILS PROVIDED ARE CONCEPTUAL IN NATURE.

FOUNDATIONS ARE CONCEPTUAL AND SHALL BE REVIEWED BASED ON SITE-SPECIFIC GEOTECHNICAL INFORMATION.

BEDROCK ELEVATIONS SHOWN ARE FOR ILLUSTRATIVE PURPOSE AND SHALL BE DETERMINED BASED ON SITE-SPECIFIC GEOTECHNICAL INFORMATION.

DESIGN CODE

CAN/CSA-S6-06 CANADIAN HIGHWAY BRIDGE DESIGN CODE (CHBDC) WITH MAINTENANCE VEHICLE LIVE LOAD AND PEDESTRIAN LIVE LOAD.

MAINTENANCE VEHICLE	80 kN
PEDESTRIAN LIVE LOAD	4.0 kPa (MAX.)

SEISMIC IMPORTANCE CATEGORY - OTHER (I = 1.0)

CLASS OF CONCRETE

CLASS OF CONCRETE SHALL BE IN ACCORDANCE WITH CSA A23.1 AS FOLLOWS:

COMPONENT	28 DAY COMPRESSIVE STRENGTH	EXPOSURE CLASS
FOOTINGS AND CAISSONS	30 MPa	S-3
REMAINDER	35 MPa	C-1

CLEAR COVER TO REINFORCING STEEL

FOOTINGS AND CAISSONS	100 ± 25 mm
REMAINDER	70 ± 20 mm

REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 400W, UNLESS OTHERWISE SPECIFIED.

BAR MARKS WITH THE PREFIX 'G' DENOTE GALVANIZED STEEL BARS.

BARS MARKS WITH PREFIX 'S' DENOTES STAINLESS STEEL.

UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES FOR BLACK REINFORCING STEEL BARS SHALL BE CLASS B.

BAR HOOKS SHALL HAVE STANDARD BOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH CAN/CSA S6-14 CLAUSE 8.14.1.

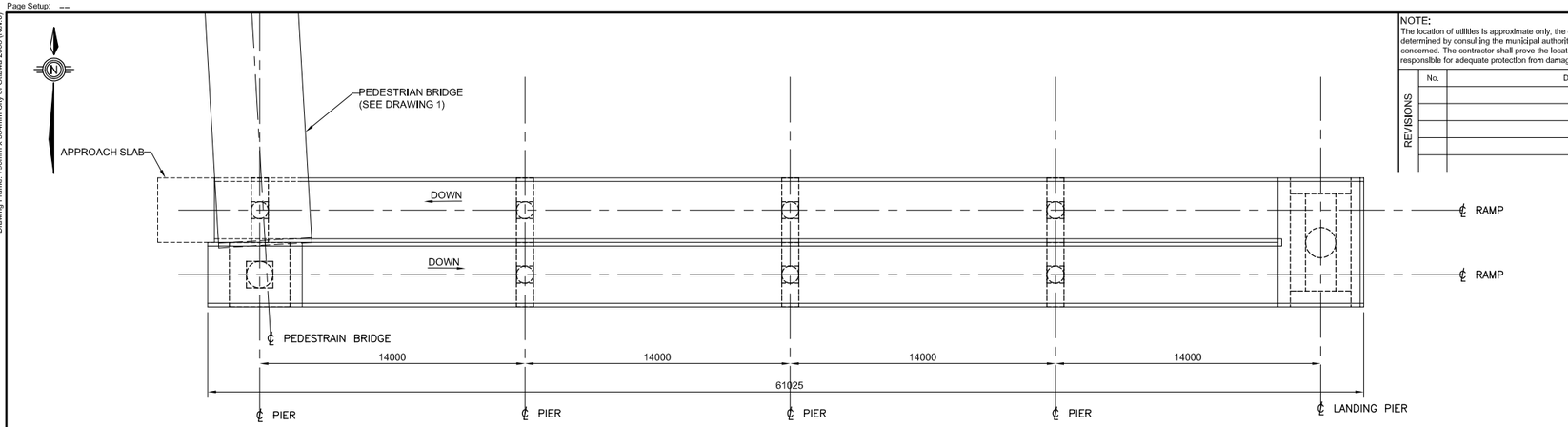
STRUCTURAL STEEL NOTES

ALL STRUCTURAL STEEL SHALL CONFORM TO CSA STANDARD CAN/CSA-G40.20-04/G40.21-04 (REAFFIRMED 2009) GRADE 350WT UNLESS NOTED OTHERWISE. THE CHARPY IMPACT ENERGY REQUIREMENTS SHALL BE 27 JOULES AND THE TEST TEMPERATURE SHALL BE -30^{0}C. HOLLOW STRUCTURAL SECTIONS SHALL BE CLASS H, ROLLED SECTIONS SHALL CONFORM TO CSA STANDARDS CAN/CSA-G40.20/G40.21.

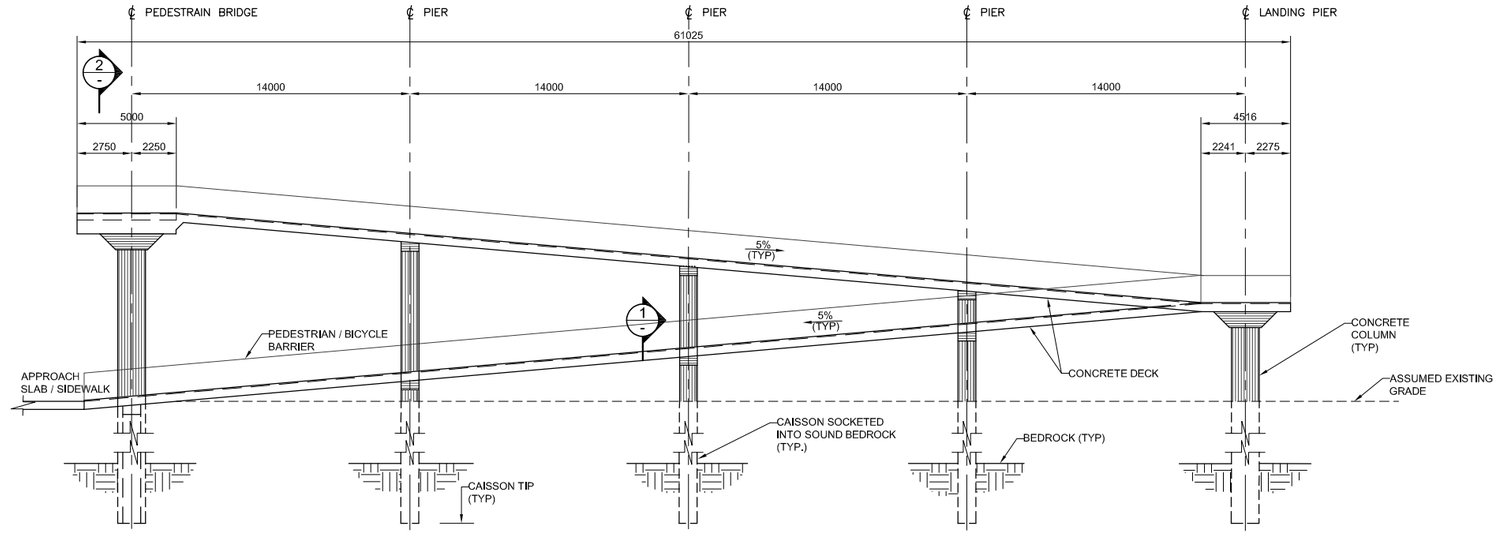
ALL STRUCTURAL STEEL SURFACES SHALL BE COATED WITH LOW VOC EPOXY-ZINC/EPOXY/POLYURETHANE COATING SYSTEM.

ALL STRUCTURAL STEEL (INCLUDING WELDS) IS CLASSIFIED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL AND SHALL MEET THE CRITERIA OF 'CATEGORY 2 AESS'.

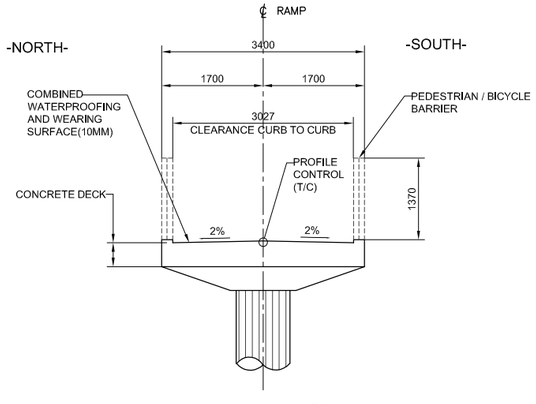
Page Setup: --
Drawing Frame: 790mm x 534mm City of Ottawa 2008 (Rev.0)
Plot Date: September 27, 2019 3:54:48 PM
Last Saved: September 27, 2019 3:54:41 PM
Consultant's Information: M:\19M-00609-00 Tremblay\300 Structures\Feasibility Study\Drawings\Xref\Profiles From DG Modified TD.dwg



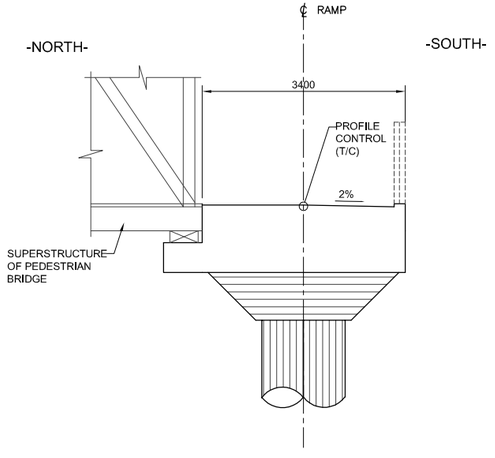
PLAN
1:150



ELEVATION
1:150



SECTION 1
1:50



SECTION 2
1:50

NOTE:
The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

wsp

REVISIONS	No.	Description	By	Date (dd/mm/yy)

TREMBLAY PEDESTRAIN BRIDGE AND MULTI-USE PATHWAY

PROPOSED SOUTH LANDING AND RAMP

Contract No.	Drawing No. 002
Sheet No.	2
Asset No.	
Asset Group	
Des: DJE	Chk'd:
Dwn: TD	Chk'd:
Utility Circulation No.:	
Construction Inspector:	
Code: CHBDC S6-14	
Load: CL-625-ONT	

NOTES

THIS DRAWINGS SHALL BE READ IN CONJUNCTION WITH DRAWING 01.

CONCEPT DESIGN DRAWING
SEPT.27, 2019
NOT FOR CONSTRUCTION

APPENDIX

E SELECT EXISTING DRAWINGS

M-372-3

NO.	REVISION	BY	DATE
1	BARRIER WALL ADDED TRAFFIC ISLAND REMOVED QUANTITIES REVISED.	AM.	85-02-14
2	QUANTITIES REVISED	AM	85-03-21

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-41

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

SHEET OF
CONTRACT NO. 84-610

GENERAL LAYOUT I

Des: R.S. Chkd: R.S.
Dwn: J.P. Chkd: R.S.
Date: OCT. 1984

L.G. MORLEY, Director, Design & Constr.
R.J. SINGLETON P.ENG., Chief Transit Des. & Const. Engineer
Scale: Horiz. Vert.

McCORMICK RANKIN
CONSULTING ENGINEERS

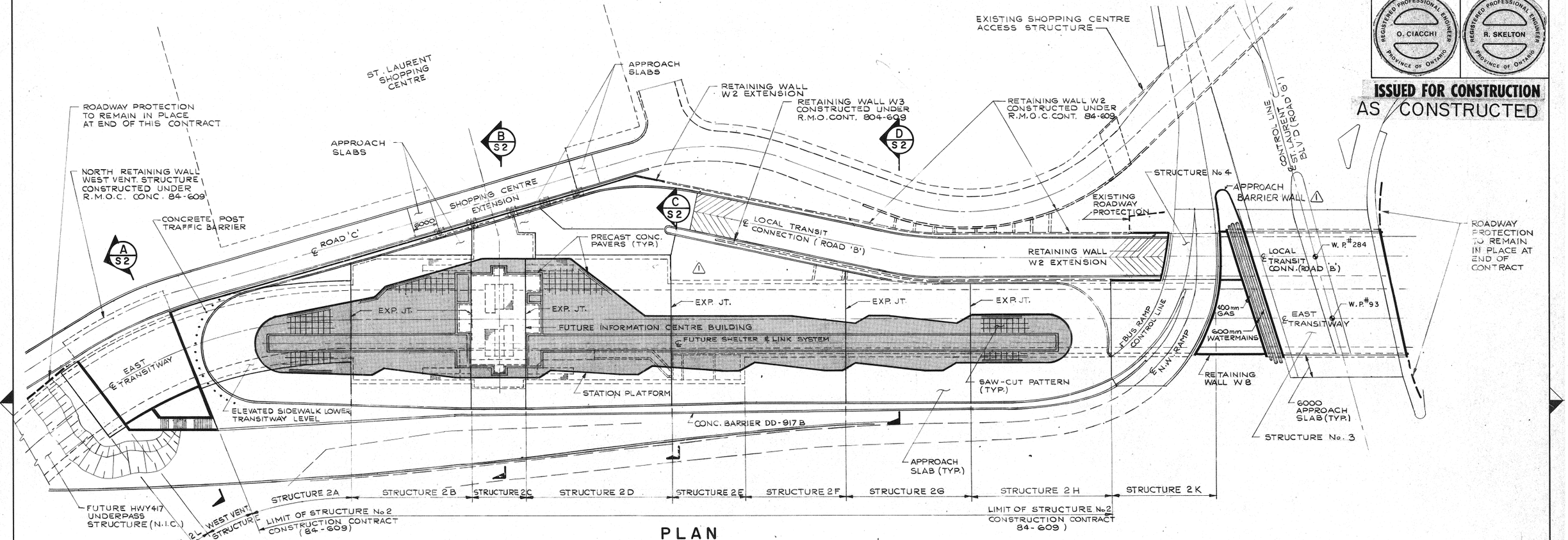
SL-3-S1

REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

ISSUED FOR CONSTRUCTION
AS CONSTRUCTED

T-1374-41



PLAN
1 : 500

CONCRETE QUANTITIES FOR LUMP SUMP TENDER ITEMS ⚠

STRUCTURES 2A TO 2H

⚠2 Concrete in Elevated Sidewalks	24 m³
Concrete in Approach Slabs	922 m³
Concrete in Upper Platform, Medians & Curbs	918 m³
Concrete in Upper Platform Adjacent to 2C	17 m³
Concrete in Parapet Walls	29 m³
Concrete in Utilidor	60 m³
Concrete in Lower Platform	125 m³
Concrete in Electrical Rooms	109 m³

STRUCTURE 2K

Concrete in Structure	1001 m³
Concrete in Approach Slabs	50 m³
Concrete in Upper Platform, Medians & Curbs	57 m³
Concrete in Parapet Walls	7 m³

STRUCTURE 2L

⚠1 Concrete in Elevated Sidewalk	3 m³
Concrete in Structure	170 m³
Concrete in Parapet Walls	12 m³

WEST VENTILATION STRUCTURE

Concrete in Structure	556 m³
⚠1 Concrete in Elevated Sidewalk	12 m³
Concrete in Parapet Wall	17 m³

STRUCTURE 3

Concrete in Piers	46 m³
Concrete in Structure	1612 m³
Concrete in Sidewalks, Curbs & Median	96 m³
Concrete in Barrier Wall	74 m³
Concrete in Parapet Wall	16 m³
Concrete in Approach Slabs	86 m³

STRUCTURE 4

Concrete in North Abutment	83 m³
Concrete in Deck	130 m³
Concrete in Sidewalks, Curbs & Median	6 m³
Concrete in Approach Slabs	19 m³
Concrete in Parapet Wall	6 m³

RETAINING WALL W2

Concrete in Retaining Walls	132 m³
Concrete in Parapet Walls	4 m³

RETAINING WALL W 8

Concrete in Retaining Wall	86 m³
Concrete in Parapet Wall	3 m³

APPROACH BARRIER WALL

CONCRETE IN BARRIER WALL	7 m³

GENERAL NOTES

1. Specifications
   All work shall be carried out in accordance with MTC Form 900 and the Special Provisions.
2. Construction Staging
   For details of construction staging see Dwgs. SL-3-R20, R21, S50, S51 and S52.
3. Alignment, Utilities, Grading, Detours
   For details of road alignments, grading, utilities, etc. see appropriate road contract drawings.
4. Excavation and Backfill
   For excavation and backfill details see Dwg. SL-3-R22.
5. Class of Concrete
   All concrete shall be 30 MPa class, unless otherwise noted.
6. Reinforcing Steel
   All reinforcing steel shall be supplied in accordance with CSA G30.12M, Grade 400 unless otherwise specified. Bars marked with the suffix 'C' shall be coated bars. Weldable reinforcing bars shall conform to CSA standard G30.16M, Grade 400.
7. Clear Cover to Reinforcing Steel
   Except where otherwise noted, clear cover to reinforcing steel shall be in accordance with the following:

All Footings		100 ± 25
Rigid Frames 2L, 2K, 3		
Deck,	top	70 ± 20
	bottom	50 ± 10
Walls,	outside face	80 ± 20
	inside face	70 ± 20
Pier		80 ± 20
Barrier Wall		80 ± 20
Structure 4		
Abutment,	outside face	80 ± 20
	inside face	70 ± 20
Deck,	top	70 ± 20
	bottom	50 ± 20
Retaining Walls,	outside face	80 ± 20
	inside face	70 ± 20
Parapet Walls		70 ± 10
West Vent Structure		
Roof & Floor Slabs,	top	50 ± 10
	bottom	50 ± 10
Exterior Walls,	outside face	80 ± 20
	inside face	50 ± 10
300 mm Walls,	both faces	50 ± 10
Structure 2E Electrical Rooms		
200 mm Walls & Floor Slabs		50 ± 10
300 mm Walls		70 ± 20
Utilidor		70 ± 20
Barrier Walls		70 ± 10
Elevated Sidewalk		
Slab,	top	80 ± 10
	bottom	50 ± 10
Walls,	outside face	80 ± 10
	inside face	50 ± 10
Platforms, Medians, Curbs		80 ± 10
Approach slabs,	top	70 ± 20
	bottom	100 ± 20

8. Design Loading
   All structures are designed in accordance with the Ontario Highway Bridge Design Code, 1983. Design Loading - O.H.B.D.C., 1983.
9. Reinforcing Steel
   All reinforcing steel detailed shall be read in conjunction with contractor's approved bar schedules.

M-372-3

NO.	REVISION	BY	DATE
1	ELEVATED SIDEWALK	L.W.	1/5/85

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-42

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

SHEET OF
CONTRACT NO. 84-610

GENERAL LAYOUT II

Des: R.S. Chkd: R.S.
Dwn: J.P. Chkd: R.S.
Date: OCT. 1984

L.G. MORLEY, Director Design & Constr.
R.J. SINGLETON, P.ENG., Chief Transit Des. & Const. Engineer
Scale: Horiz. AS SHOWN Vert.

McCORMICK RANKIN
CONSULTING ENGINEERS

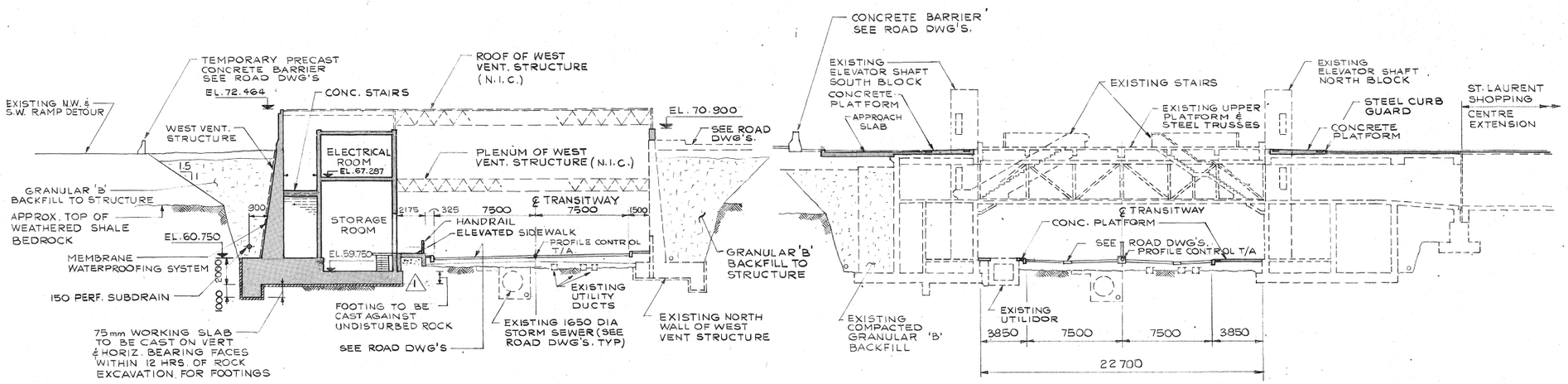
SL-3-S2

REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

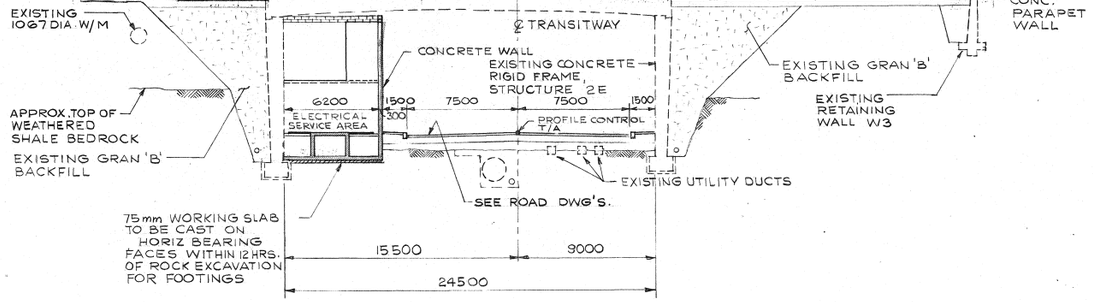
ISSUED FOR CONSTRUCTION

AS CONSTRUCTED

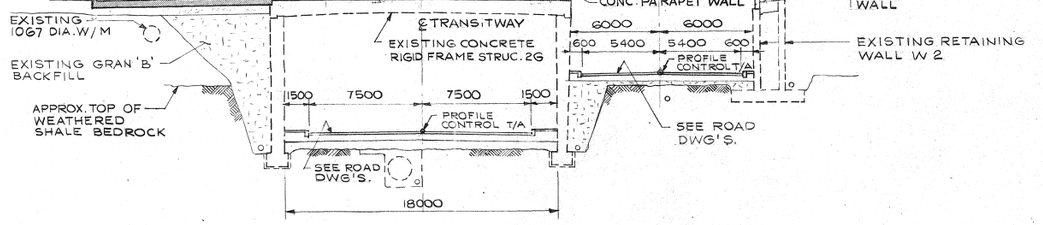


SECTION A (S1) 1:200

SECTION B (S1) 1:200



SECTION C (S1) 1:200



SECTION D (S1) 1:200

T-1374-42

M-372-3

NO.	REVISION	BY	DATE

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-43
SHEET OF 128
CONTRACT NO. 84-610

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

WORKING POINTS

Des: Chkd:
Dwn: W.C.D. Chkd: R.S.
Date: OCT., 1984
Scale: Horiz. Vert. 1

L.G. MORLEY
Director Design & Constr.

R.J. SINGLETON P.ENG.
Chief Transit Dev. & Const. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

SL-2-S3

REGISTERED PROFESSIONAL ENGINEER
R. SKELTON
PROVINCE OF ONTARIO

ISSUED FOR CONSTRUCTION

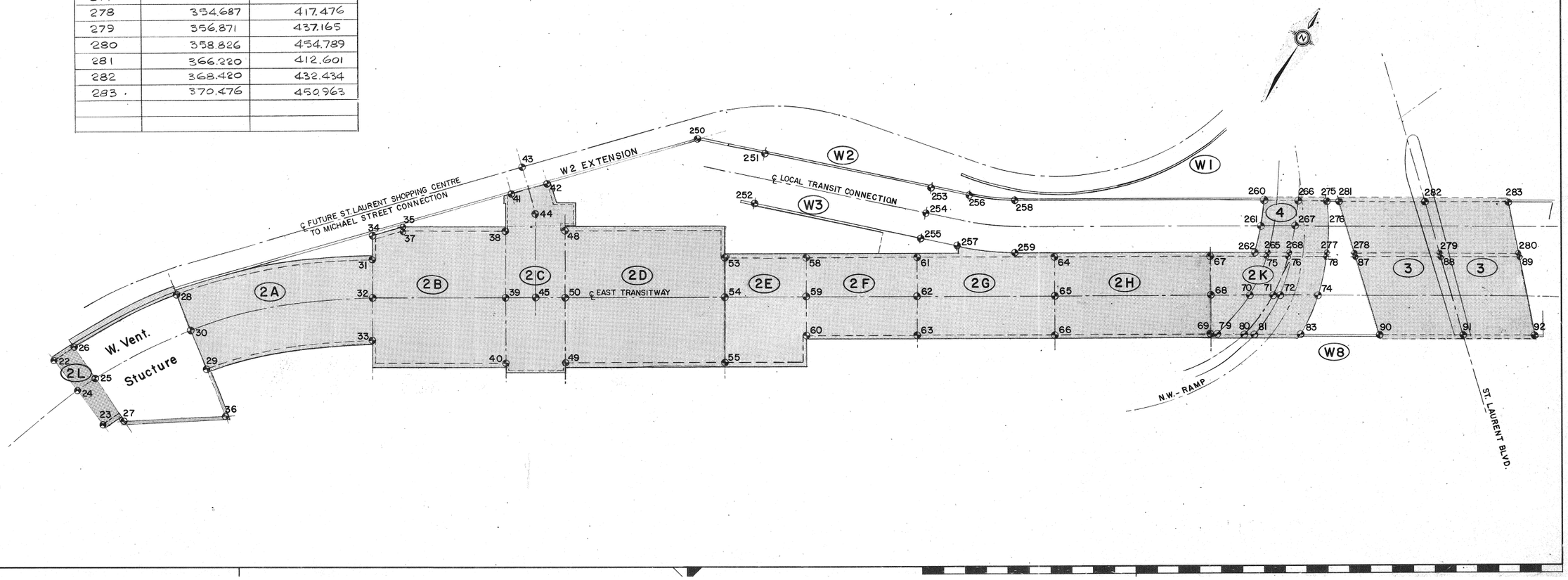
AS CONSTRUCTED

T-1374-43

WORKING POINT	CO-ORDINATES	
	NORTHING	EASTING
70	5,031,342.023	372 394.020
71	342.661	399.772
72	342.821	401.213
74	343.846	410.452
75	351.410	397.008
76	351.981	402.152
78	352.983	411.189
79	332.128	386.445
80	332.982	394.142
81	333.266	396.709
83	334.437	407.264
87	353.726	417.882
88	355.909	437.560
89	357.856	455.108
90	336.427	425.195
91	338.586	444.656
92	340.382	460.847
250	364.373	260.587
260	364.475	396.867
261	358.421	396.011
262	352.311	396.060
266	365.147	402.930
267	359.101	402.843
268	353.002	402.290
275	365.938	410.067
276	359.995	410.910
277	353.991	411.203
278	354.687	417.476
279	356.871	437.165
280	358.826	454.789
281	366.220	412.601
282	368.420	432.434
283	370.476	450.963

WORKING POINT	CO-ORDINATES	
	NORTHING	EASTING
22	5,031,296.510	372, 117.777
23	282.521	130.634
24	289.884	123.867
25	293.204	127.619
26	300.061	121.790
27	283.861	135.560
28	315.207	144.403
29	298.315	153.100
30	307.205	148.522
31	328.361	189.712
32	319.416	190.704
33	309.477	191.807
34	334.275	189.056
35	336.659	194.889
36	287.858	158.484
37	335.558	195.170
38	338.156	218.593
39	322.751	220.302
40	307,346	222.011
41	346.929	218.846
42	350.619	227.876
43	353.501	221.429
44	344.380	225.157
45	323.546	227.468
48	339.746	232.925
49	5,031,308.935	372, 236.343

WORKING POINT	CO-ORDINATES	
	NORTHING	EASTING
50	5,031,324.341	372,234.634
53	337.232	269.208
54	328.287	270.201
55	312.881	271.910
58	339.390	288.659
59	330.445	289.651
60	321.500	290.644
61	342.250	314.441
62	333.305	315.433
63	324.360	316.426
64	345.813	346.554
65	336.868	347.546
66	327.922	348.539
67	349.808	382.571
68	340.863	383.563
69	331.918	384.556
251	362.829	276.051
252	350.889	274.859
253	358.854	315.864
254	352.884	315.267
255	346.913	314.671
256	357.982	324.602
257	346.042	323.409
258	358.062	339.064
259	346.135	340.387



M 372-4

NO	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER P. TURNER PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER M.F. POETZ PROVINCE OF ONTARIO

ISSUED FOR CONSTRUCTION
AS CONSTRUCTED

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

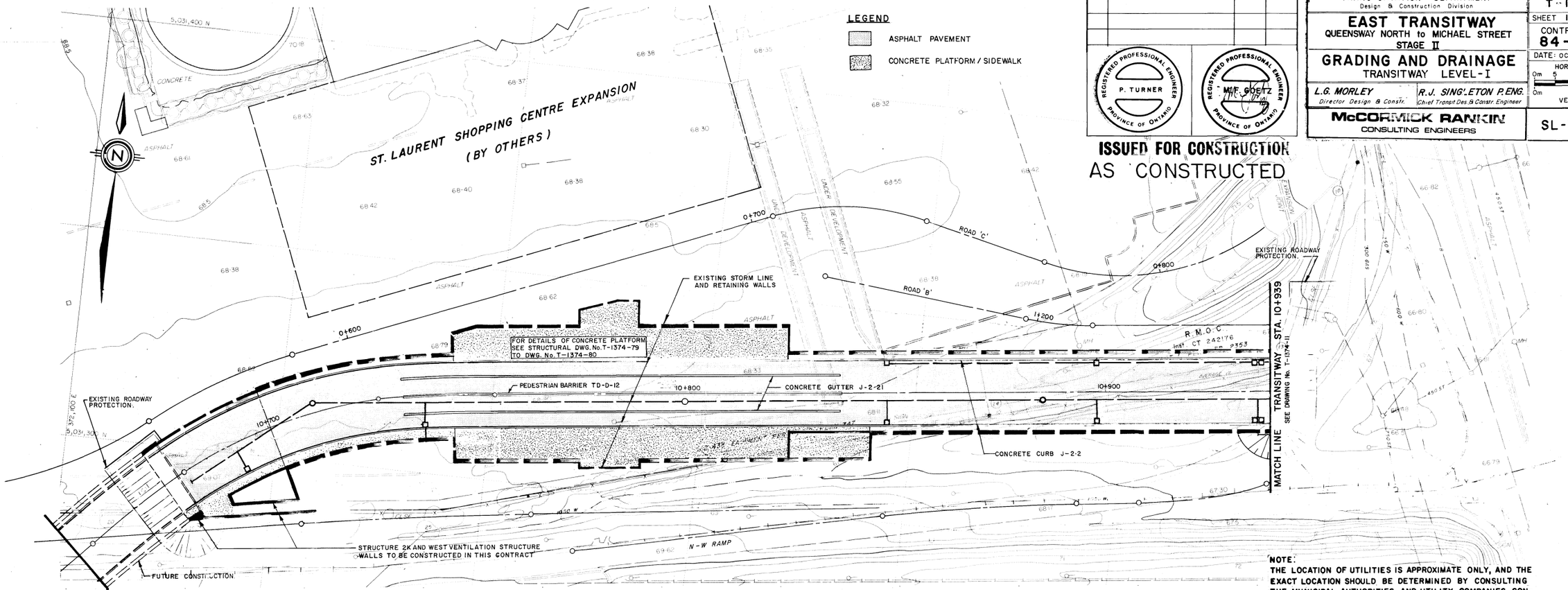
EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

GRADING AND DRAINAGE
TRANSITWAY LEVEL-I

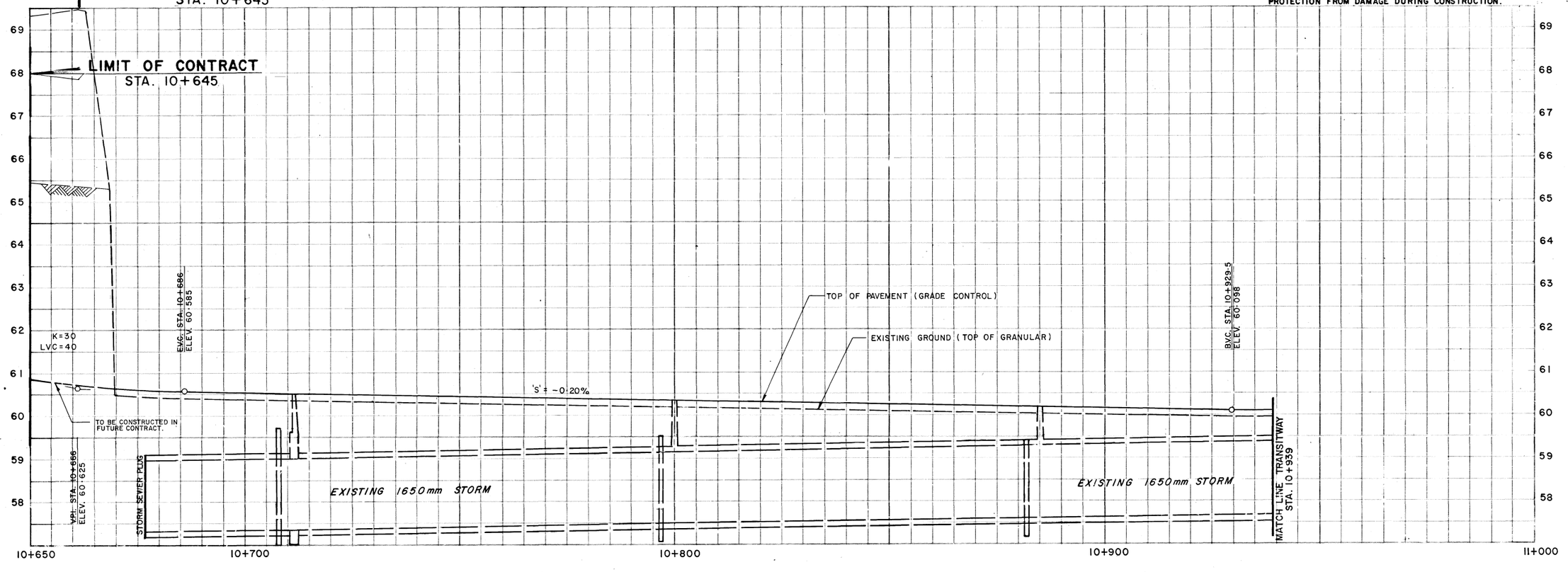
L.G. MORLEY, Director Design & Constr.
R.J. SINGLETON P.ENG., Chief Transit Des. & Constr. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

DWG. NO. T-1374-10
SHEET 10 OF 147
CONTRACT NO. 84-610
DATE: OCTOBER, 1984
HORIZONTAL 0m 5 10 20
VERTICAL 0m 2
SL-3-R10



EAST TRANSITWAY - TRANSITWAY LEVEL



NOTE:
THE LOCATION OF UTILITIES IS APPROXIMATE ONLY, AND THE EXACT LOCATION SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION FROM DAMAGE DURING CONSTRUCTION.

K+E HERCULENE®
TYPE-A DWG FRAME 790mm X 574 mm

M-372-3

NO.	REVISION	BY	DATE

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

STRUCTURE 2
EXP. JOINTS & APP. SLAB LAYOUT II

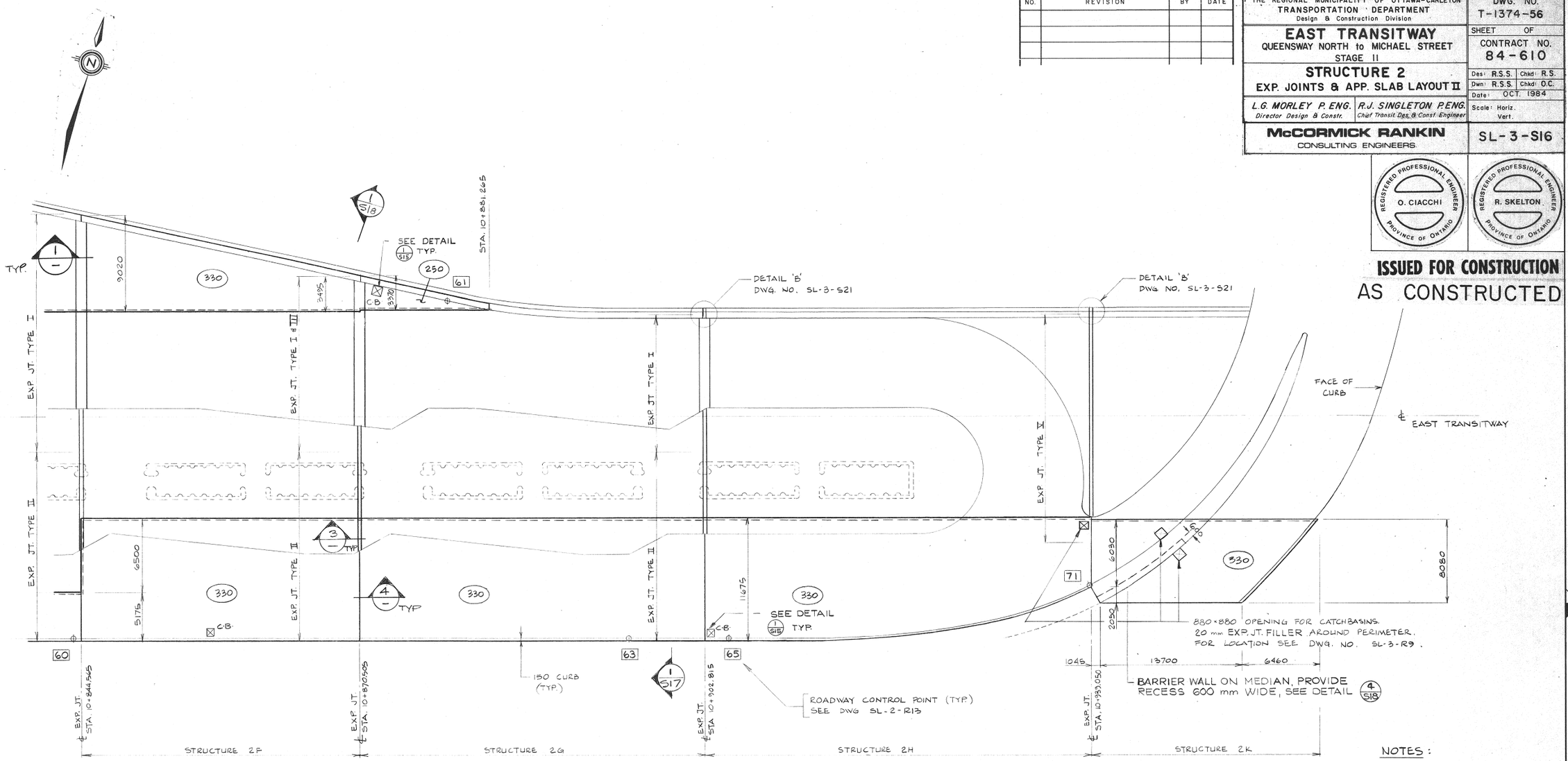
L.G. MORLEY P. ENG. — Director Design & Constr.
R.J. SINGLETON P.ENG. — Chief Transit Des & Const. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

DWG. NO. T-1374-56
SHEET OF
CONTRACT NO. 84-610
Des: R.S.S. Chkd: R.S.
Dwn: R.S.S. Chkd: O.C.
Date: OCT. 1984
Scale: Horiz. Vert.
SL-3-S16

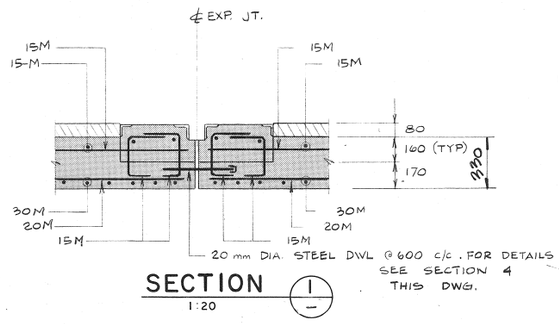
REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO
REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

ISSUED FOR CONSTRUCTION
AS CONSTRUCTED

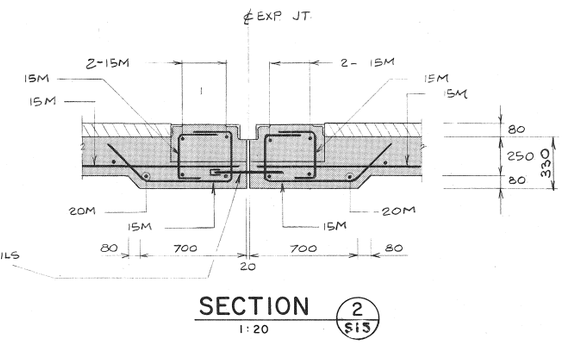


PLAN
1:200

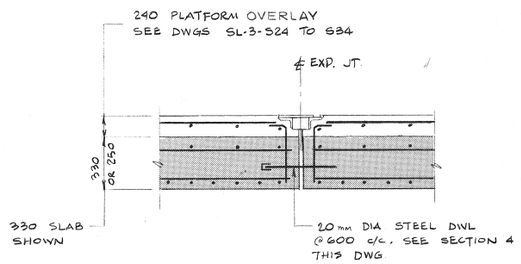
NOTES :
FOR NOTES SEE DWG SL-3-S15



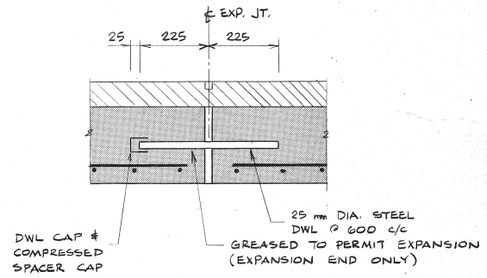
SECTION 1/—
1:20



SECTION 2/S15
1:20



SECTION 3/—
1:20



SECTION 4/—
1:10

M-372-3

NO.	REVISION	BY	DATE
1	ISLAND DELETED.	A.M.	85.02.14
2	ADD. SECT. G & REINFG	L.W.	2/15/85
3	REINFORCING	L.W.	27/5/85
4	REINFORCING STRUCT. 2B	L.W	4.06.85
5	CATCHBASINS ADDED	J.P.	3.07.85

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-57

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

SHEET OF
CONTRACT NO. 84-610

STRUCTURE 2
APPROACH SLAB REINFORCING I

Des: R.S.S. Chkd: R.S.
Dwn: A.B.M. Chkd: R.S.S.
Date: OCT. 1984
Scale: Horiz. Vert.

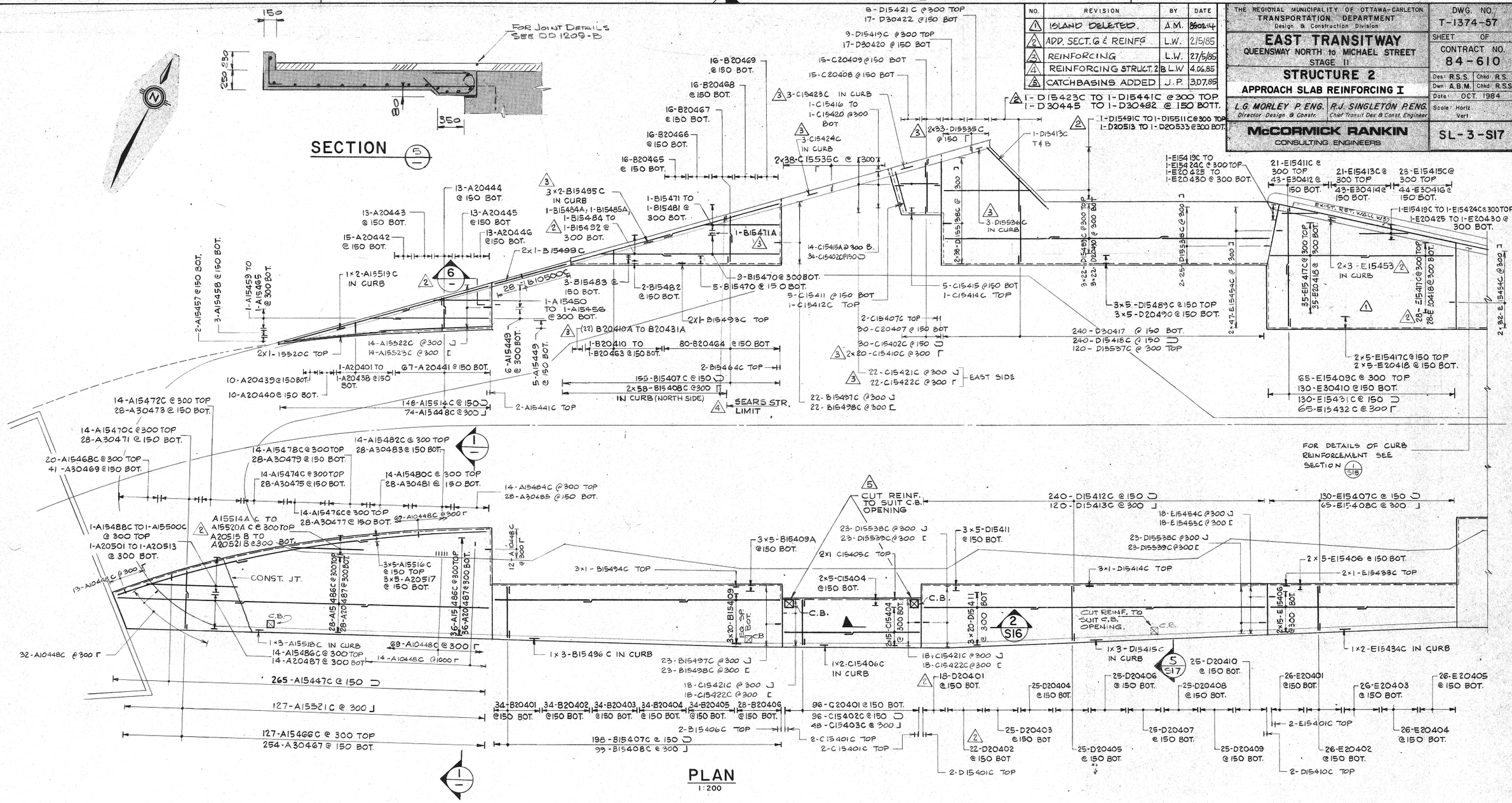
L.G. MORLEY P.ENG. Director Design & Constr.
R.J. SINGLETON P.ENG. Chief Transit Des & Const. Engineer

McCORMICK RANKIN CONSULTING ENGINEERS

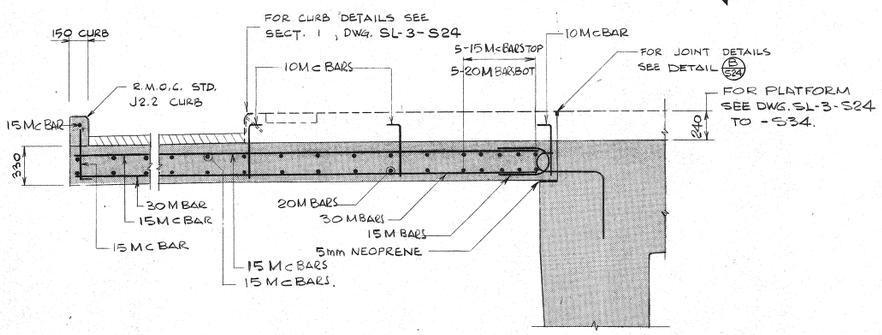
SL-3-S17

F-1374-57

SECTION (5/—)

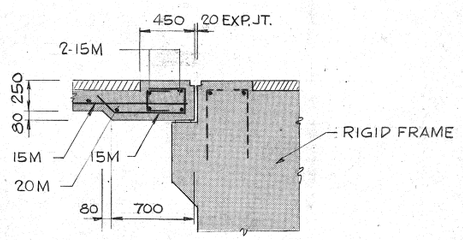


PLAN
1:200



SECTION (1/—)
1:25

330 mm THICK SLAB SHOWN
FOR 250 mm THICK SLAB SEE (1/S18)



SECTION (6/—)

NOTE:
FOR NOTES SEE DWG. SL-3-S15

AS CONSTRUCTED
ISSUED FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO
REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

K+E HERCULENE DRAFTING FILM

TYPE = B DWG. FRAME = 790 mm x 574 mm

M-372-3

NO.	REVISION	BY	DATE
1	REINFORCING	L.W.	2/5/85
2	DIMENSION CHANGED	WRP	18/10/85

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

STRUCTURE 2
APPROACH SLAB REINFORCING II

L.G. MORLEY, Director Design & Constr. | R.J. SINGLETON, P.ENG., Chief Transit Des. & Const. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

DWG. NO. T-1374-58
SHEET OF
CONTRACT NO. 84-610
Des: R.S.S. | Chkd: R.S.
Dwn: A.B.M. | Chkd: R.S.S.
Date: OCT. 1984
Scale: Horiz. Vert.
SL-3-S18

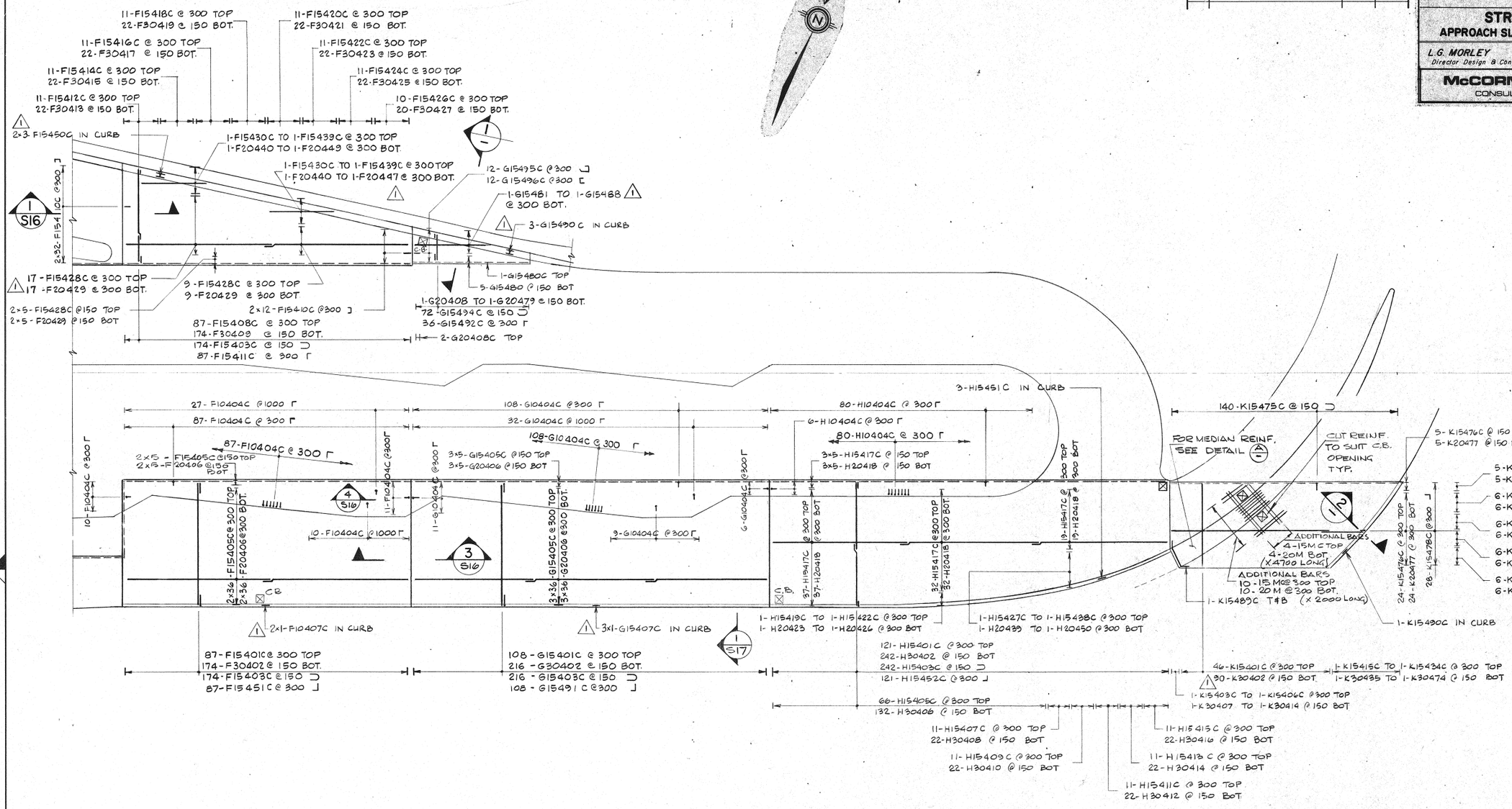
REGISTERED PROFESSIONAL ENGINEER — O. CIACCHI — PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER — R. SKELTON — PROVINCE OF ONTARIO

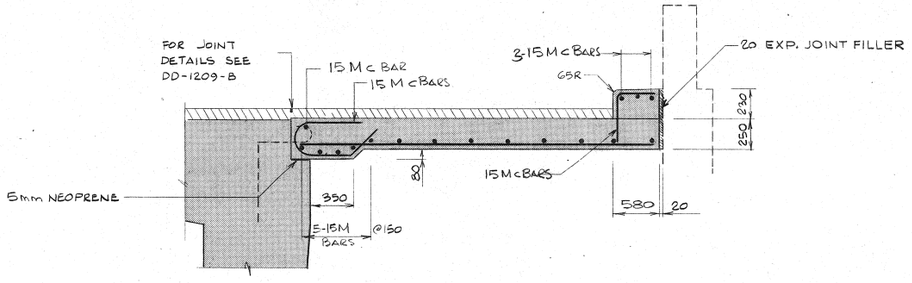
ISSUED FOR CONSTRUCTION

AS CONSTRUCTED

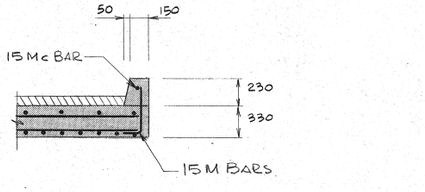
T-1374-58



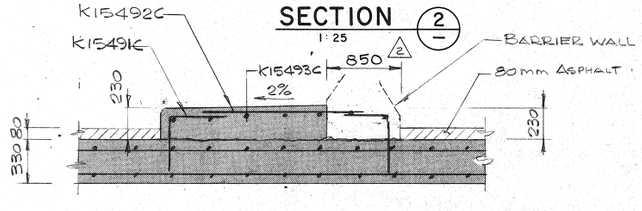
PLAN
1:200



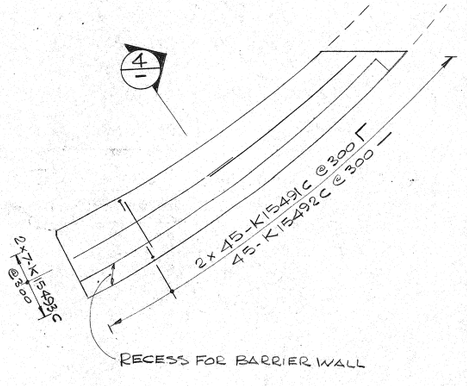
SECTION 1
1:25



SECTION 2
1:25



SECTION 4
1:25



DETAIL A
1:100

M-372-3

NO.	REVISION	BY	DATE
1	REINFORCING	L.W.	2/5/85
2	BUS FLAG POLE.	A.M.	85/07/17

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-68

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

SHEET OF

CONTRACT NO. 84-610

STRUCTURE 2D
UPPER PLATFORM DETAILS

Des: O.C. Chkd: R.S.S.
Dwn: L.W. Chkd: O.C.
Date: OCT. 1984
Scale: AS SHOWN

L.G. MORLEY, Director Design & Constr.
R.J. SINGLETON P.ENG., Chief Transit Des. & Const. Engineer

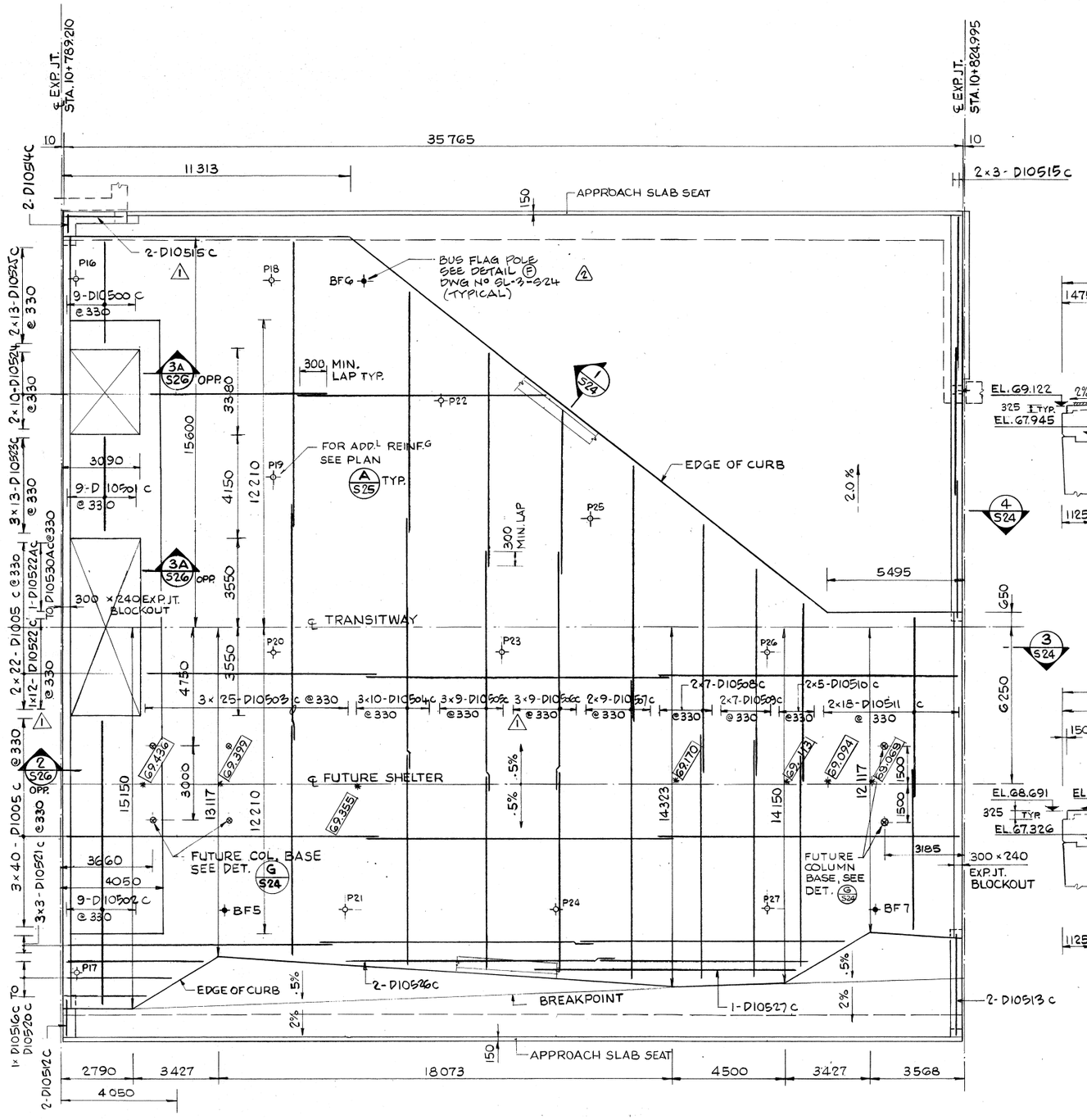
McCORMICK RANKIN
CONSULTING ENGINEERS

SL-3-S28

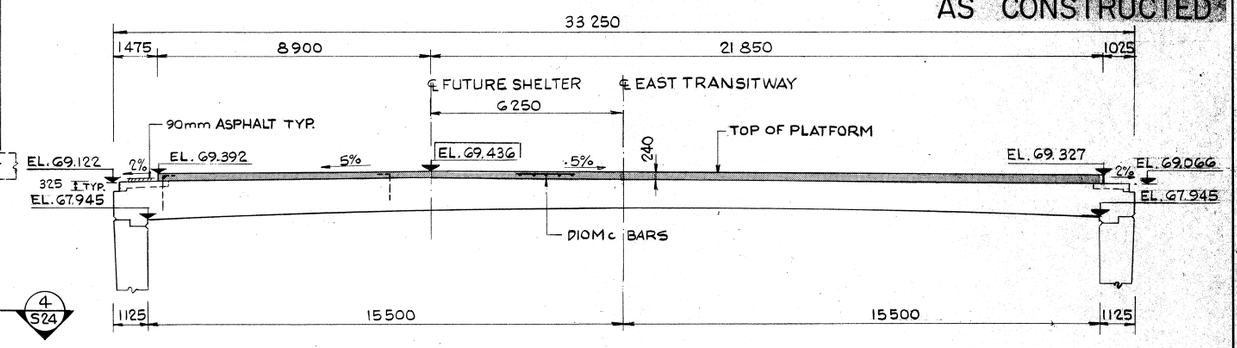
REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

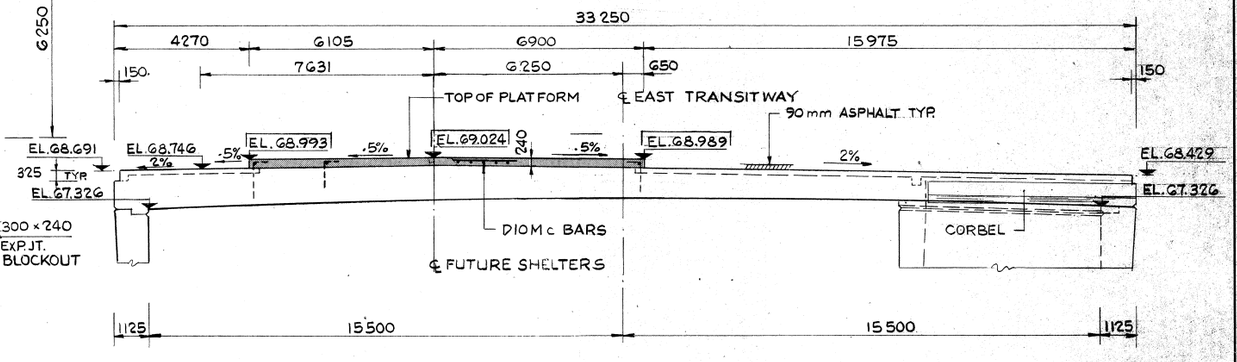
ISSUED FOR CONSTRUCTION
AS CONSTRUCTED



PLAN
1:100



SECTION AT STA. 10+789.210
1:100



SECTION AT STA. 10+824.995
1:100

NOTES:
1. FOR NOTES & LEGEND SEE DWG. SL-3-S24 & S25

M-372-3

NO.	REVISION	BY	DATE

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG NO. T-1374-69

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

STRUCTURE 2E
UPPER PLATFORM DETAILS

SHEET OF
CONTRACT NO. 84-610

Des: O.C.	Chkd: R.S.S.
Dwn: L.W.	Chkd: O.C.
Date: OCT. 1984	
Scale: Horiz. AS SHOWN Vert.	

L.G. MORLEY, Director Design & Constr.
R.J. SINGLETON P.ENG., Chief Transit Des. & Const. Engineer

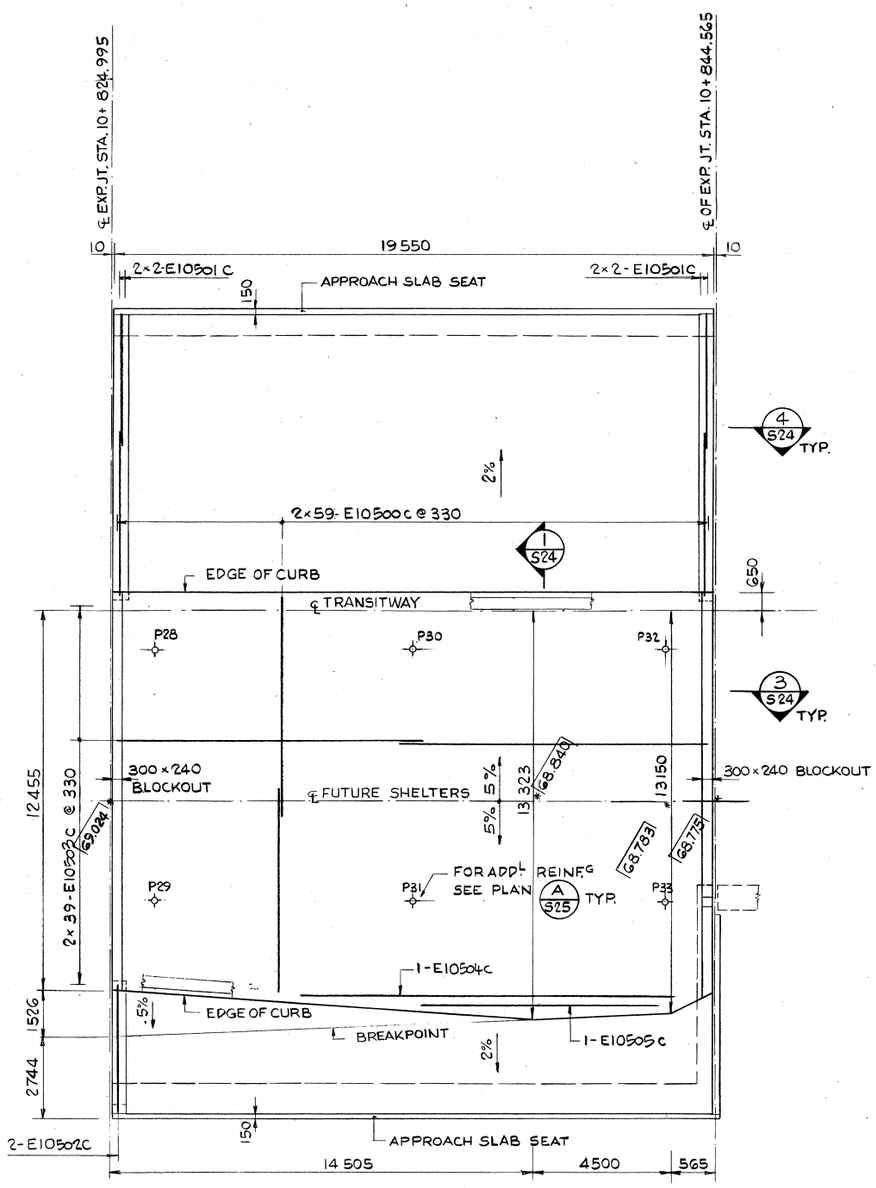
McCORMICK RANKIN
CONSULTING ENGINEERS

SL-3-S29

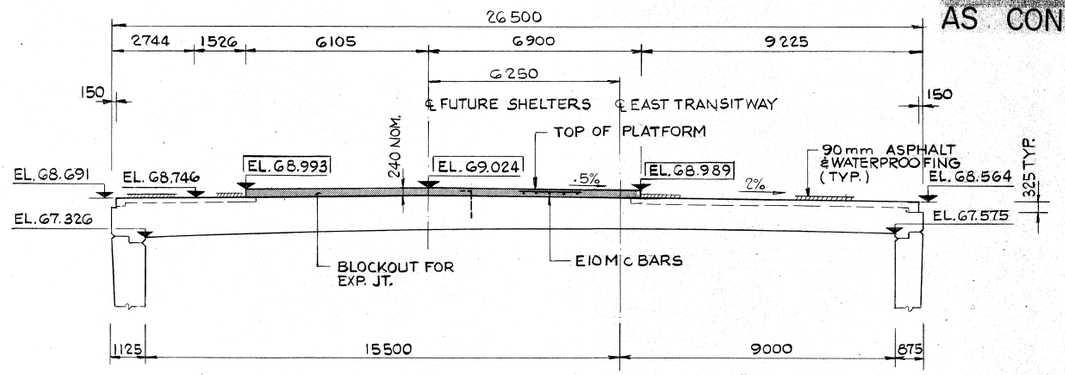
REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

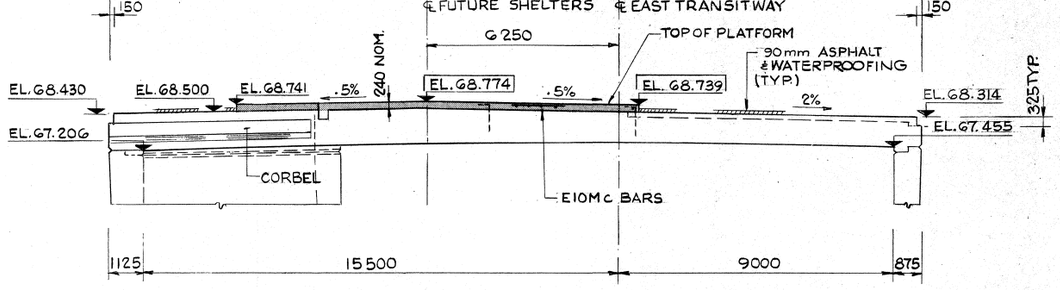
ISSUED FOR CONSTRUCTION
AS CONSTRUCTED



PLAN
1:100



SECTION AT STA. 10 + 824.995
1:100



SECTION AT STA. 10 + 844.565
1:100

NOTE :
1. FOR NOTES & LEGEND SEE DWG. SL 3-S24 & 25

M-372-3

NO.	REVISION	BY	DATE
1	ADD BAR MARKS	L.W.	2/5/85
2	BUS FLAG POLE.	A.M.	85/07/17

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-70

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

SHEET OF

CONTRACT N 84-610

STRUCTURE 2F
UPPER PLATFORM DETAILS

Des: O.C. Chkd: R.
Dwn: L.W. Chkd: O
Date: OCT. 1984

L.G. MORLEY
Director Design & Constr.

R.J. SINGLETON P.ENG.
Chief Transit Des. & Const. Engineer

Scale: Horiz. AS SHO
Vert.

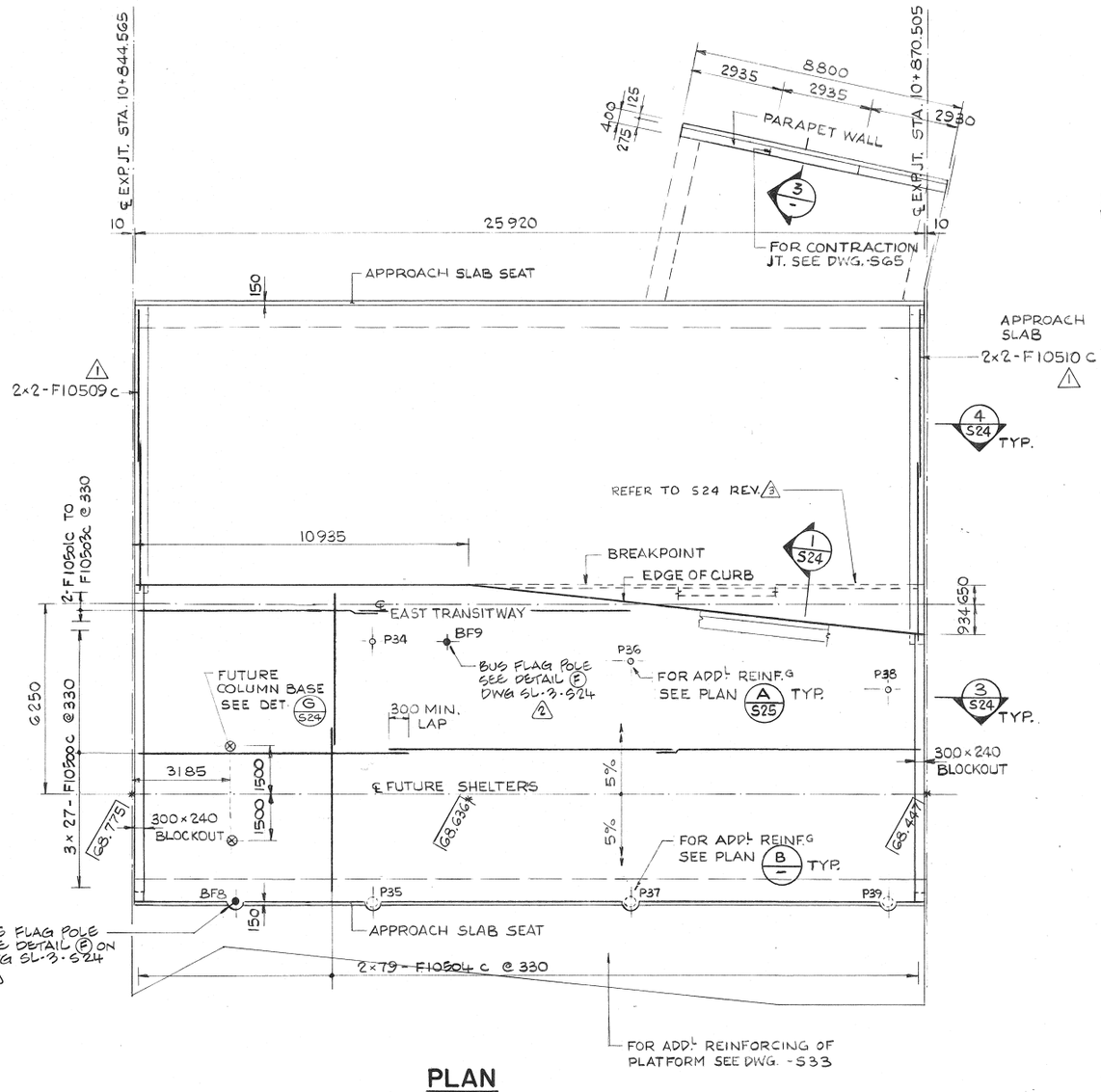
McCORMICK RANKIN
CONSULTING ENGINEERS

SL-3-S3

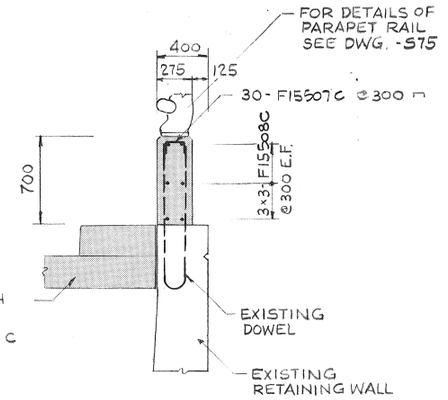
REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL R. SKELTON PROVINCE OF ONTA

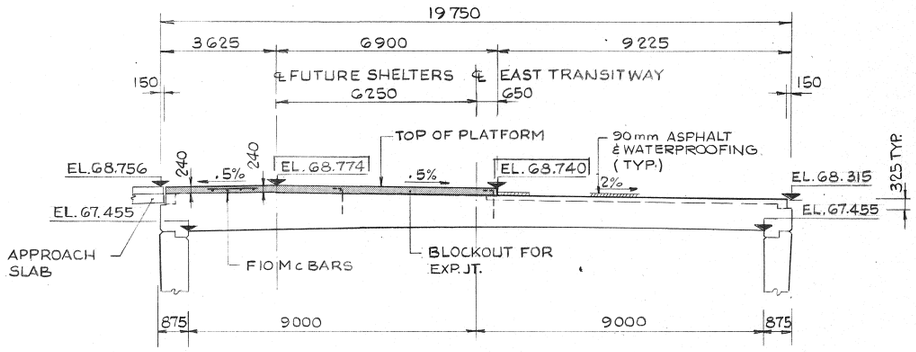
ISSUED FOR CONSTRUCTIO
AS CONSTRUCTE



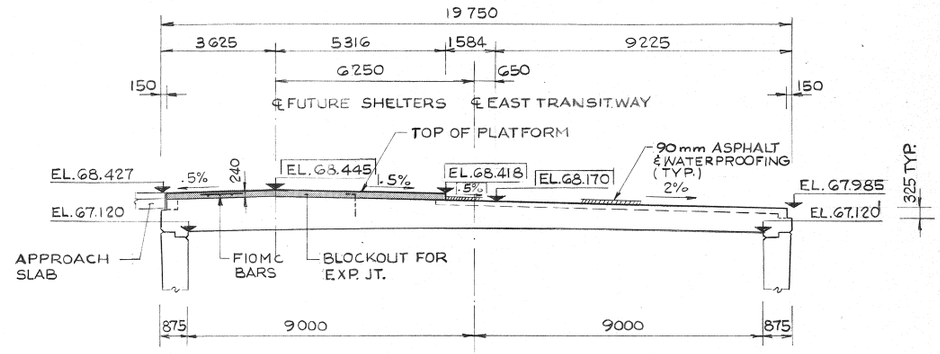
PLAN
1:100



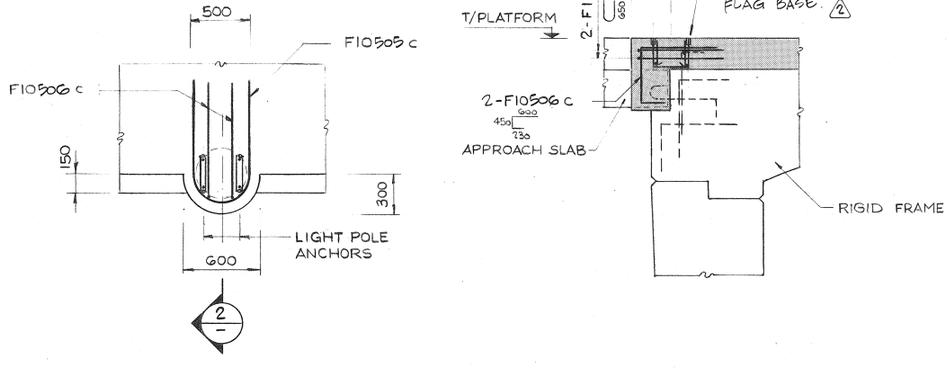
SECTION 3/— 1:25



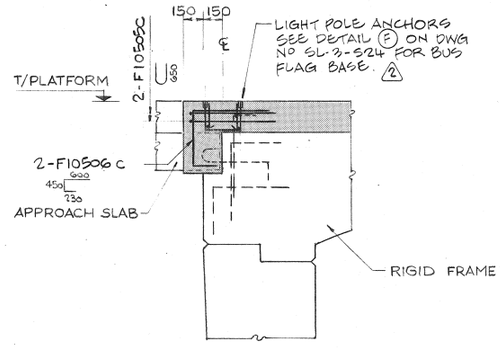
SECTION AT STA. 10+844.565
1:100



SECTION AT STA. 10+870.505
1:100



PLAN B/— 1:25



SECTION 2/— 1:25

NOTES:
1. FOR NOTES & LEGEND SEE DWG. SL-3-S24.

M-372-3

NO.	REVISION	BY	DATE
1	BAR Q.T.Y.	L.W.	2/5/85

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

STRUCTURE 2
UPPER PLATFORM ON APP. SLABS

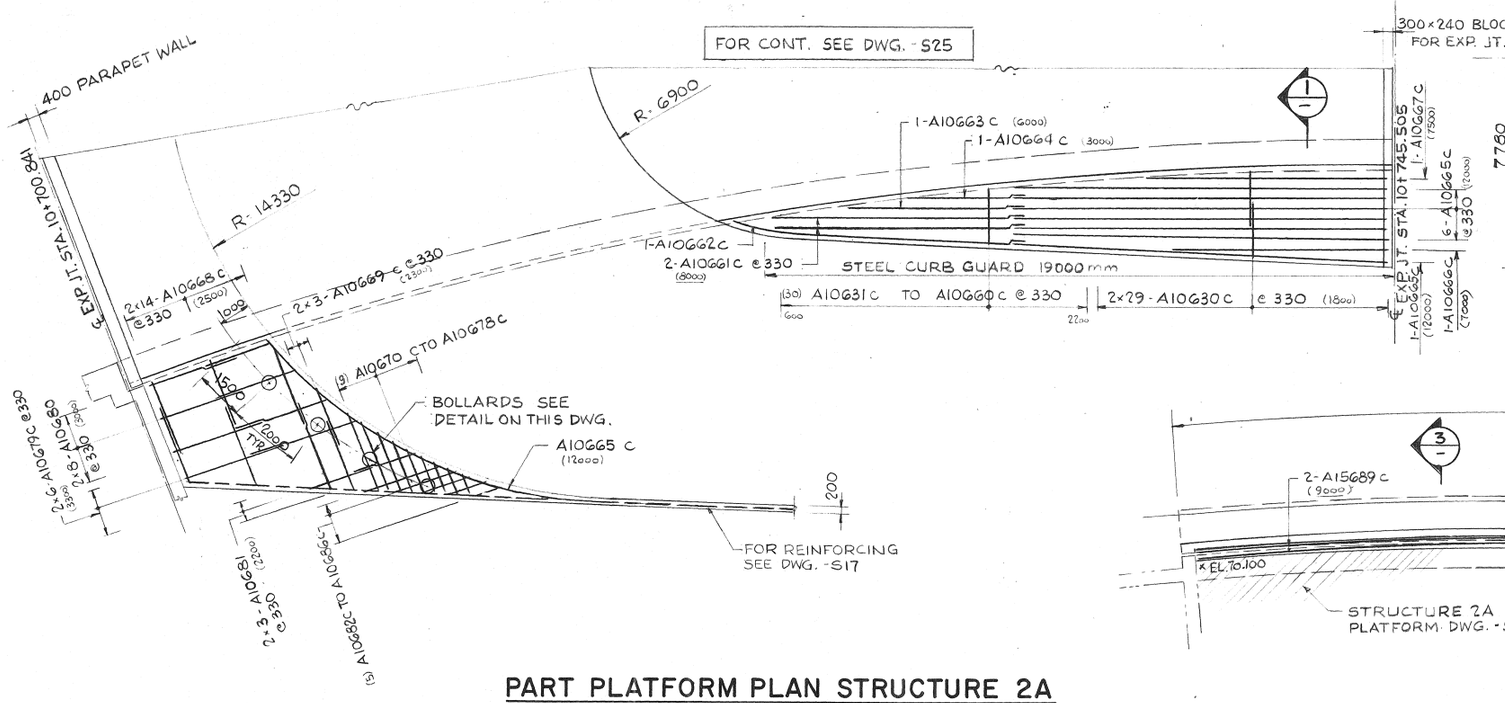
L.G. MORLEY, Director Design & Constr. | R.J. SINGLETON P.ENG., Chief Transit Des. & Const. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

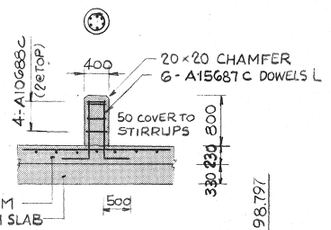
DWG. NO. T-1374-73
SHEET OF
CONTRACT NO. 84-610
Des: O.C. Chkd: R.S.
Dwn: L.W. Chkd: O.C.
Date: OCT. 1984
Scale: Horiz. AS SHOWN Vert.
SL-3-S33

REGISTERED PROFESSIONAL ENGINEER O. CIACCHI PROVINCE OF ONTARIO
REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

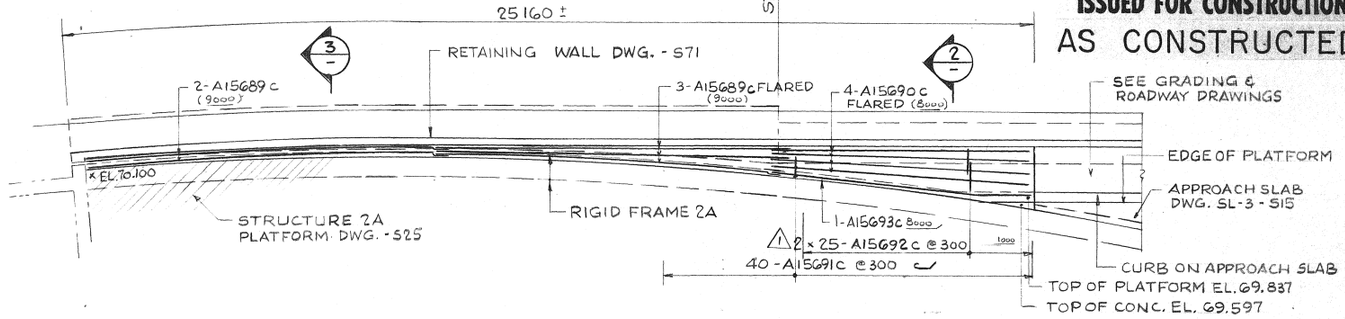
ISSUED FOR CONSTRUCTION
AS CONSTRUCTED



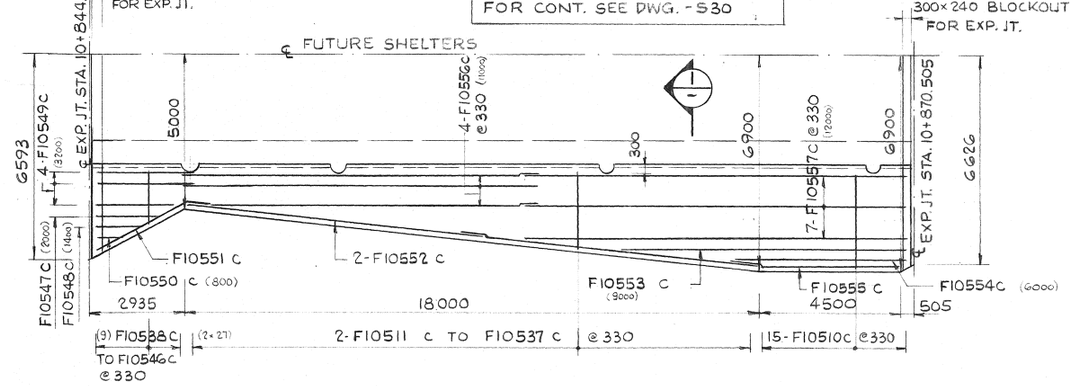
PART PLATFORM PLAN STRUCTURE 2A
1:100 (SOUTH)



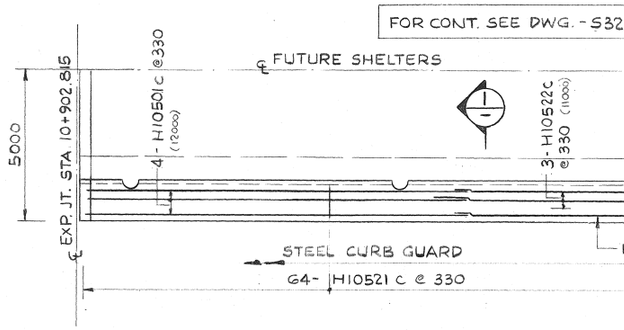
TYP. BOLLARD
1:50



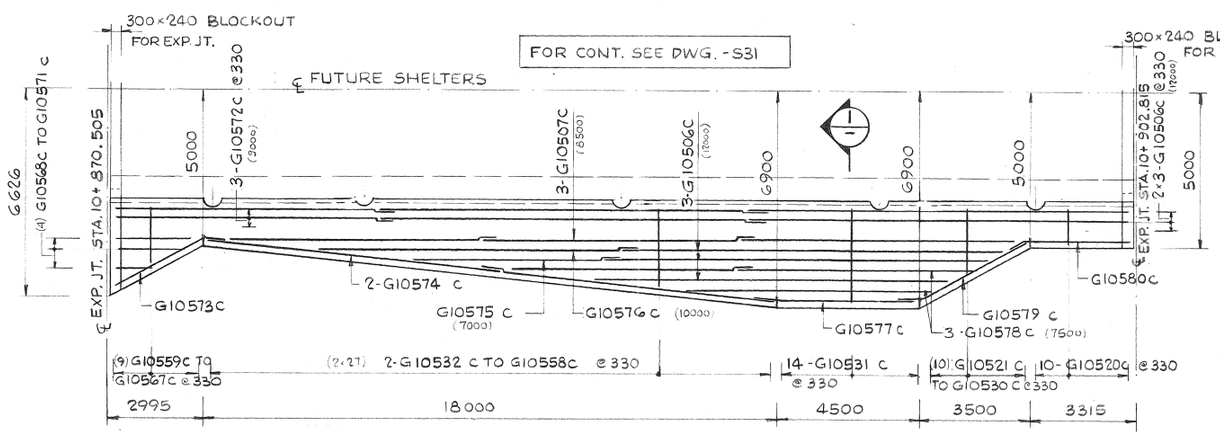
PART PLATFORM PLAN STRUCTURE 2A
1:100 (NORTH)



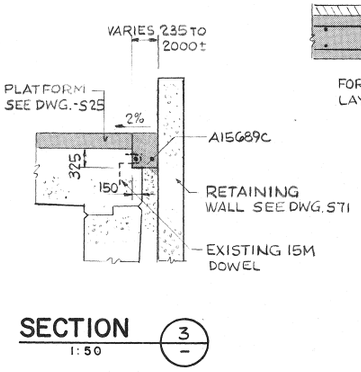
PART PLATFORM PLAN STRUCTURE 2F
1:100



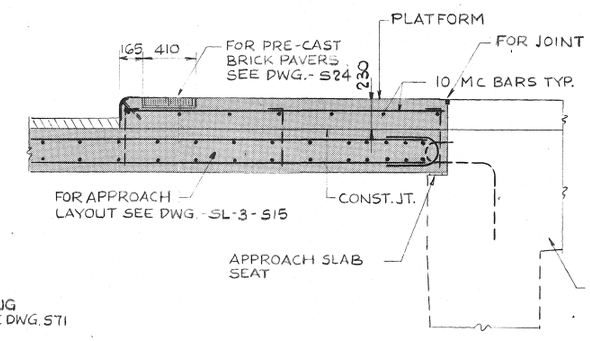
PART PLATFORM PLAN STRUCTURE 2H
1:100



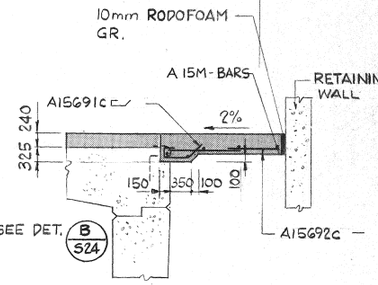
PART PLATFORM PLAN STRUCTURE 2G
1:100



SECTION 3
1:50



SECTION 1
1:25



SECTION 2
1:50

NOTES:
FOR NOTES SEE DWG. - SL-3-S24 & S25

TYPE - B DWG. FRAME : 790mm x 574

M-372-3

NO.	REVISION	BY	DATE
1	SLAB THICKENED.	A.M.	85-02-14

AS CONSTRUCTED

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

STRUCTURE 2
LOWER PLATFORM LEVEL LAYOUT

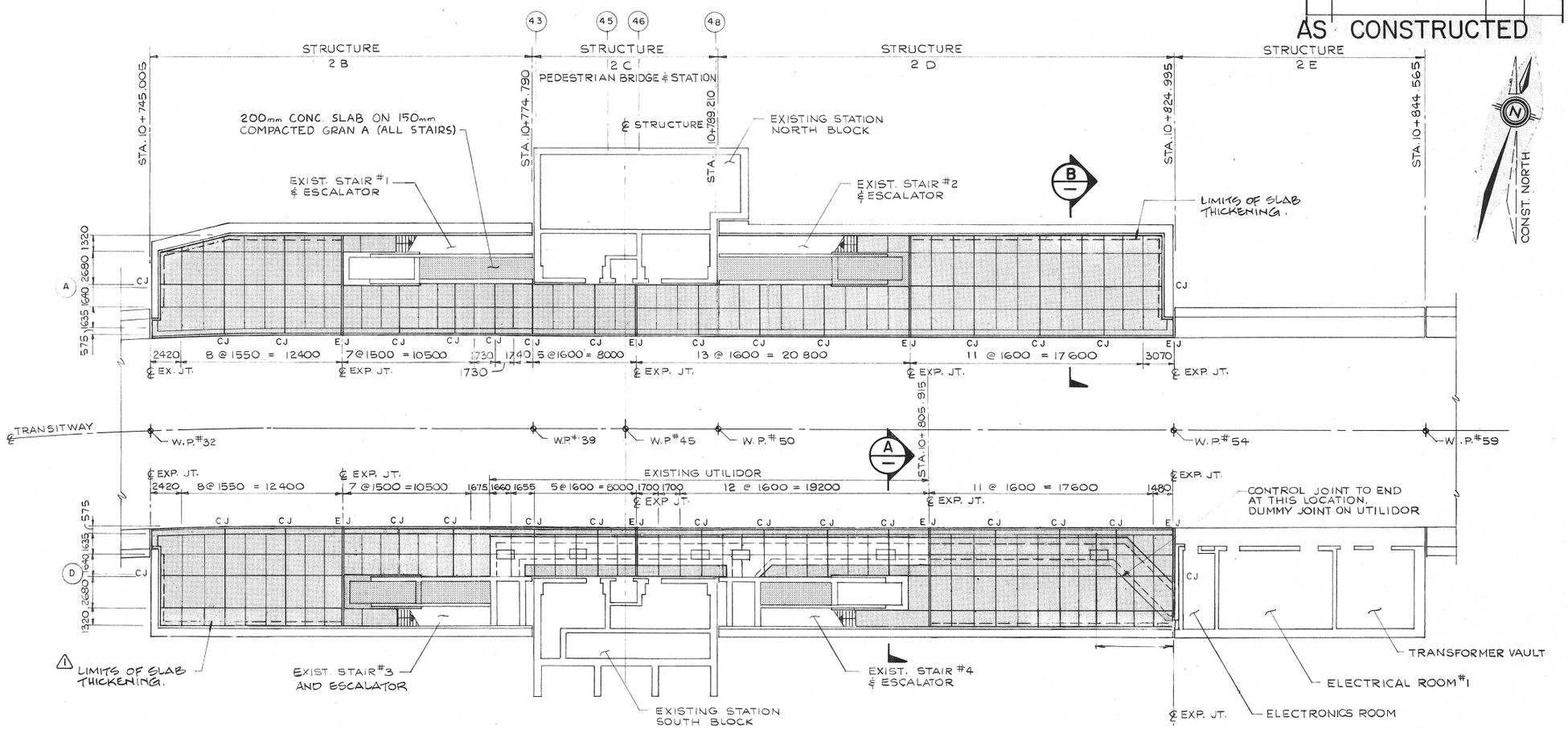
L.G. MORLEY, Director Design & Constr. | R.J. SINGLETON P.ENG., Chief Transit Des. & Const. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

DWG. NO. T-1374-79
SHEET OF
CONTRACT NO 84-610
Des: A.S.W. Chkd: O.
Dwn: J.P. Chkd: A.
Date: OCT. 1984
Scale: Horiz. Vert. AS SHOWN
SL-3-S3

REGISTERED PROFESSIONAL ENGINEER A.S. WING PROVINCE OF ONTARIO
REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

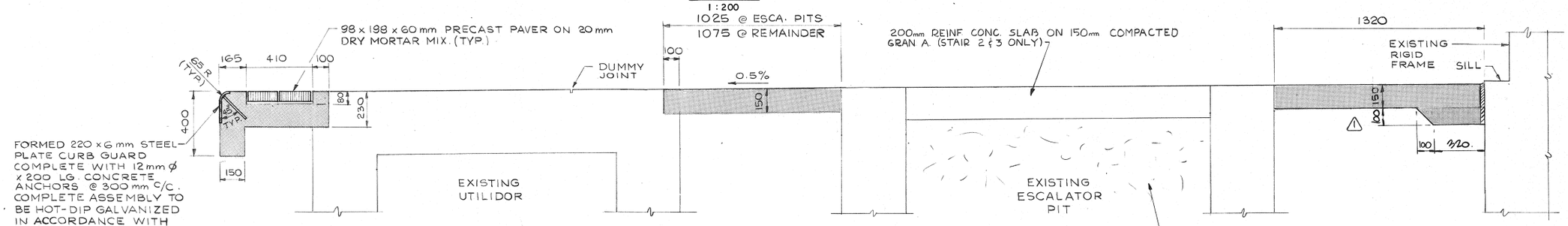
ISSUED FOR CONSTRUCTION



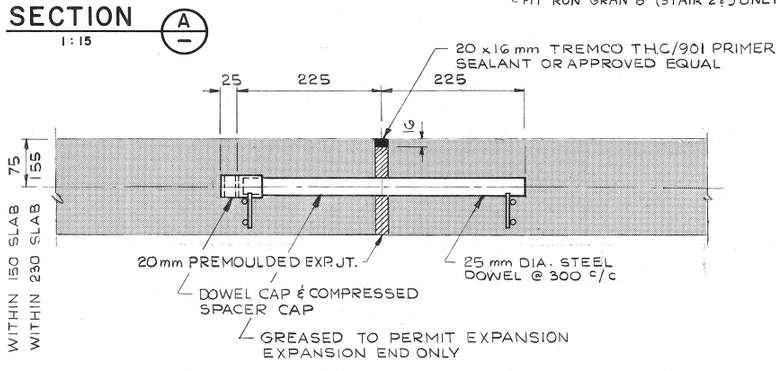
PLAN
1:200

NOTES:

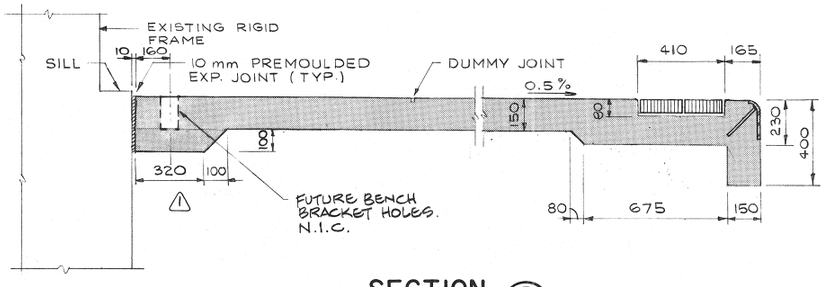
1. FORMED STEEL PLATE CURB GUARD SHALL BE SUPPLIED IN ACCORDANCE WITH C.S.A. G40.21M GRAD 300 W.
2. STEEL CURB GUARD SHALL BE FABRICATED TO SUIT PLATFORM GEOMETRY AND SHALL BE DISCONTINUOUS AT ALL EXPANSION AND CONTRACTION JOINTS.
3. THE CONTRACTOR SHALL SUBMIT 6 COPIES OF SHOP DRAWINGS SHOWING FULL DETAILS OF STEEL CURB GUARD INCLUDING LENGTHS OF EAC SECTION TO THE ENGINEER FOR APPROVAL PRIO TO FABRICATION.
4. ALL CONCRETE TO HAVE A BROOM FINISH UNLESS OTHERWISE DIRECTED.
5. EJ & CJ DENOTES EXPANSION JOINT & CONTROL JOINT RESPECTIVELLY.
6. FOR DETAILS OF REINFORCING SEE DWG. No. S4



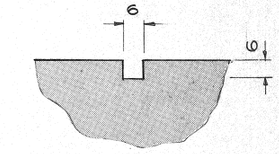
SECTION A
1:15



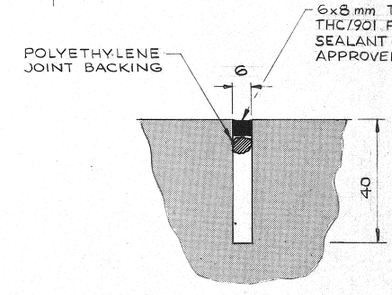
TYPICAL EXPANSION JOINT DETAIL
1:5



SECTION B
1:15



TYPICAL DUMMY JOINT DETAIL
FULL SCALE



TYPICAL CONTROL JOINT DETAIL
FULL SCALE

M-372-3

NO.	REVISION	BY	DATE
1	SLAB THICKENED	A.M.	85-02-14
2	ELEVATED SIDEWALK REMOVED.	A.M.	85-02-27

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

DWG. NO. T-1374-80

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

STRUCTURE 2
LOWER PLATFORM LEVEL-REINF.

SHEET OF

CONTRACT NO 84-610

Des: A.S.W. Chkd: R.
Dwn: J.P. Chkd: R.
Date: OCT. 1984
Scale: Horiz. Vert. AS SHO

L.G. MORLEY
Director Design & Constr.

R.J. SINGLETON P.ENG.
Chief Transit Des & Const. Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

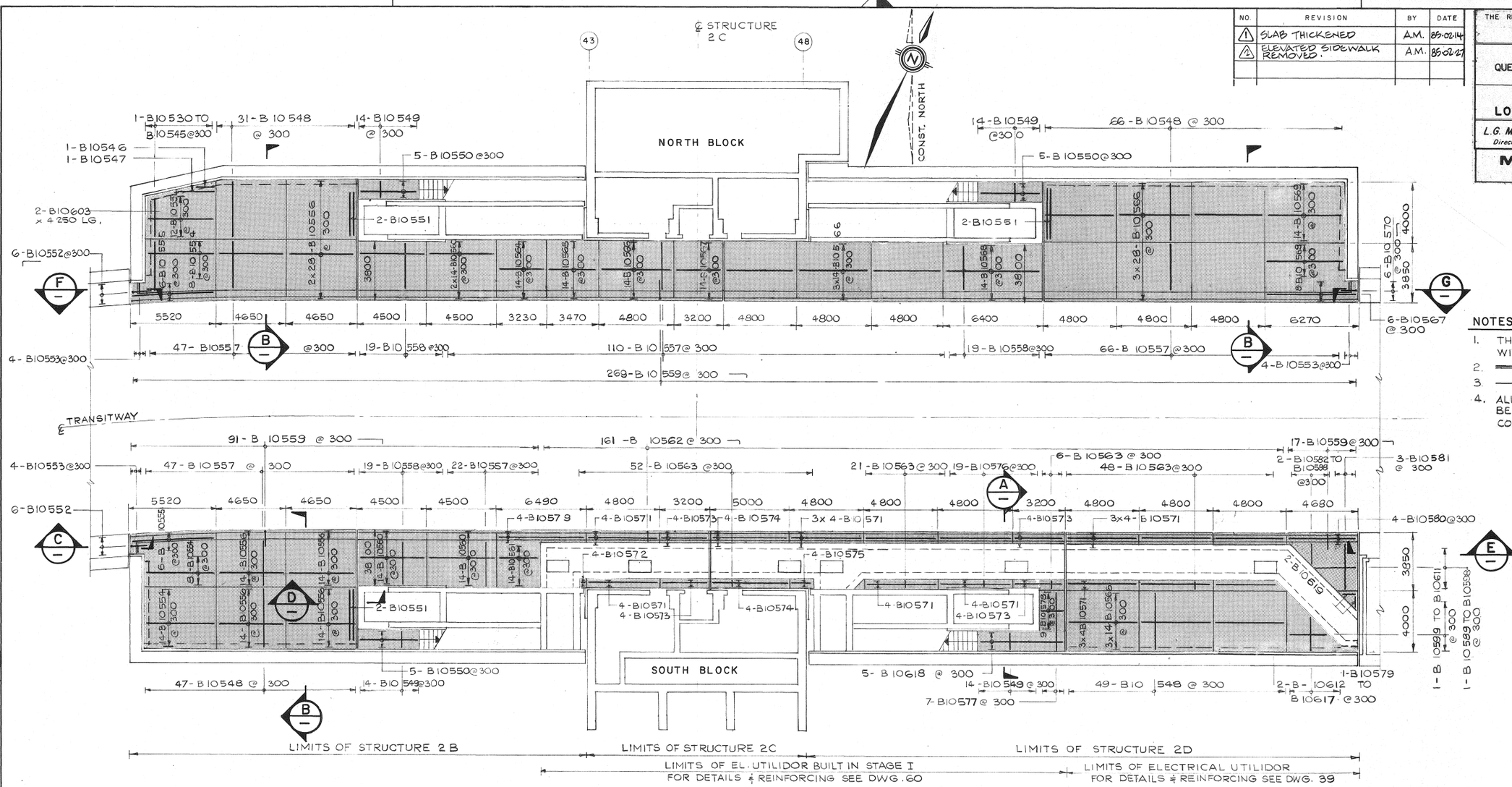
SL-3-S4

REGISTERED PROFESSIONAL ENGINEER A.S. WING PROVINCE OF ONTARIO

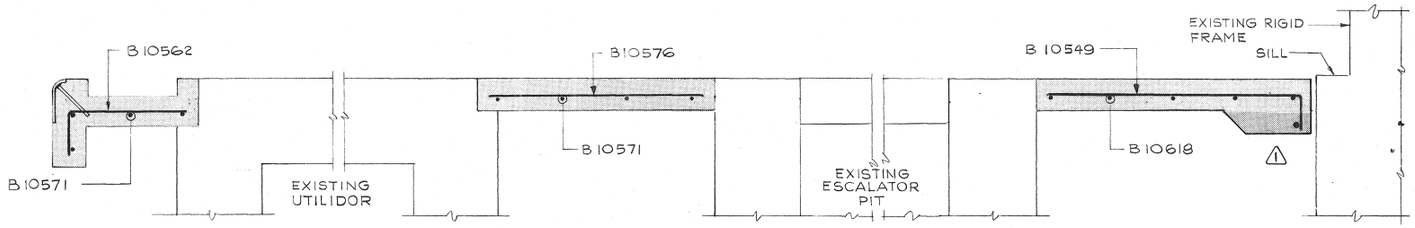
REGISTERED PROFESSIONAL ENGINEER R. SKELTON PROVINCE OF ONTARIO

ISSUED FOR CONSTRUCTION
AS CONSTRUCTED

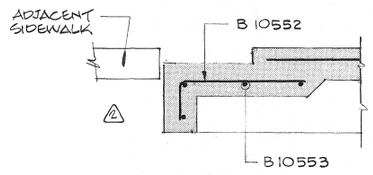
NOTES :
1. THIS DWG. TO BE READ IN CONJUNCTION WITH DWG. No 39
2. ═══ DENOTES EXP. JOINT
3. —— DENOTES CONTROL JOINT
4. ALL CONCRETE PLATFORM SLABS TO BE FOUNDED ON A MINIMUM OF 100mm COMPACTED GRANULAR "A".



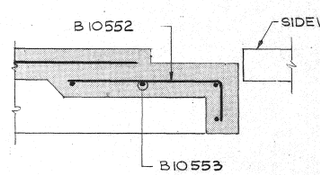
PLAN
1:150



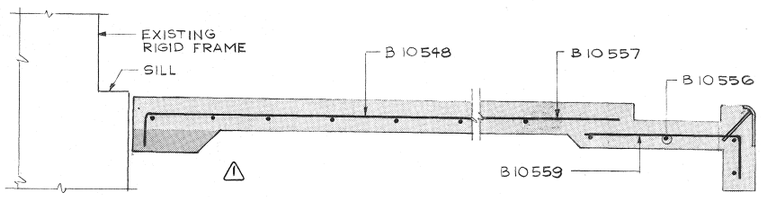
SECTION A
1:15



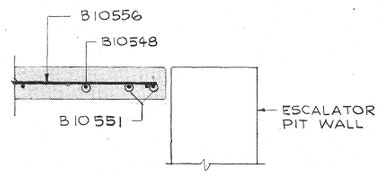
SECTION C
1:15



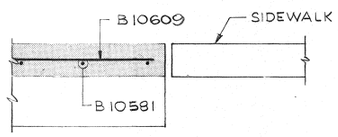
SECTION F
1:15



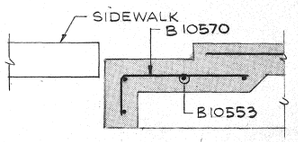
SECTION B
1:15



SECTION D
1:15



SECTION E
1:15



SECTION G
1:15

M-372-3

NO.	REVISION	BY	DATE

AS CONSTRUCTED

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE II

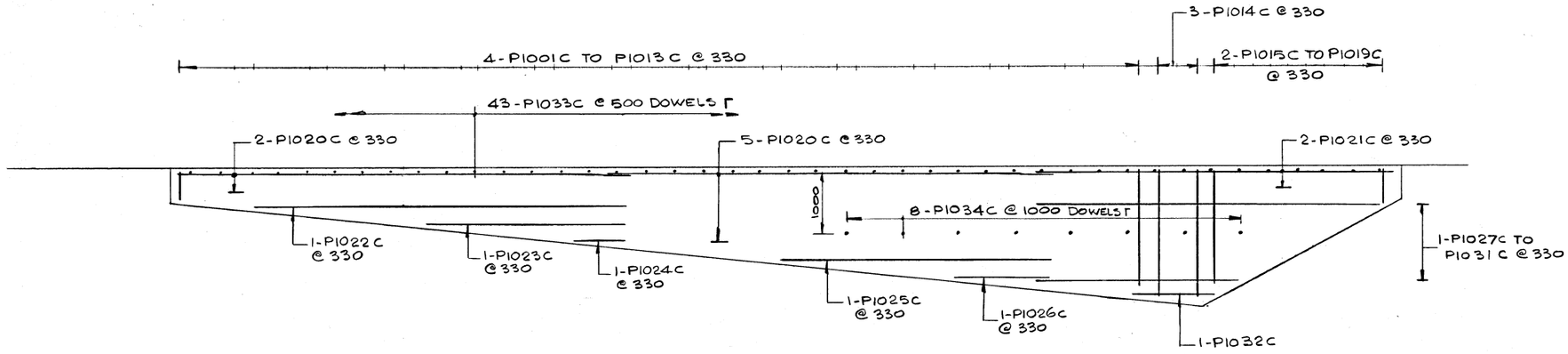
PLATFORM MODIFICATION
REINFORCING

L.G. MORLEY P. ENG.
Director Design & Constr.
Chief Structural Engineer

McCORMICK RANKIN
CONSULTING ENGINEERS

DWG. NO. T-1374-150
SHEET OF
CONTRACT NO. 84-610-B
Des: D.W. Chkd: R.S.
Dwn: W.C.D. Chkd: R.S.
Date: JUNE, 1986
Scale: Horiz Vert AS SHOWN
SL-3-S79

REGISTERED PROFESSIONAL ENGINEER
R. SKELTON
PROVINCE OF ONTARIO



TYPICAL PLATFORM MODIFICATION REINFORCING (2 REQ'D)

1:50

MARK	No BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	
P1001C	8	10	490	STR								
P1002C	8		630									
P1003C	8		765									
P1004C	8		900									
P1005C	8		1035									
P1006C	8		1170									
P1007C	8		1305									
P1008C	8		1440									
P1009C	8		1575									
P1010C	8		1710									
P1011C	8		1845									
P1012C	8		1980									
P1013C	8		2115									
P1014C	6		2250									
P1015C	4		2050									
P1016C	4		1700									
P1017C	4		1350									
P1018C	4		1000									
P1019C	4		650									
P1020C	14		7900									
P1021C	4		6400									
P1022C	2		6700									
P1023C	2		3900									
P1024C	2		1000									
P1025C	2		7800									
P1026C	2		6400									
P1027C	2		6200									
P1028C	2		5500									
P1029C	2		4900									
P1030C	2		4250									
P1031C	2		3600									
P1032C	2		1600	STR								
P1033C	86		750	17		450	300	-				
P1034C	16	10	600	17		450	150	-				
P2535C	32	25	750	17		450	300	-				DOWELS AT LIGHT POLES

TYPE - B DWG. FRAME 790 mm x 574 mm

M-372-3

NO.	REVISION	BY	DATE

AS CONSTRUCTED

THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
TRANSPORTATION DEPARTMENT
Design & Construction Division

EAST TRANSITWAY
QUEENSWAY NORTH to MICHAEL STREET
STAGE

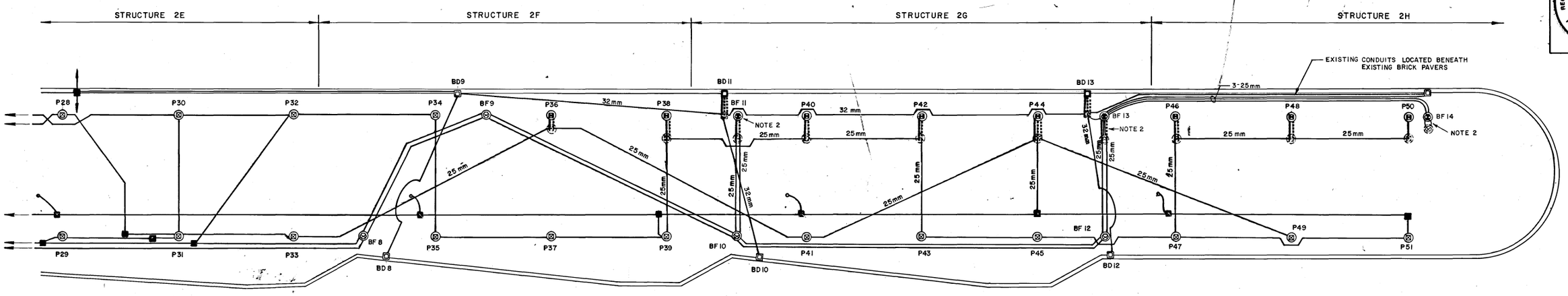
ELECTRICAL
PLATFORM MODIFICATION DETAILS

L.G. MORLEY, Director Design & Constr. | R.J. SINGLETON P.ENG., Chief Transit Des. & Const. Engineer

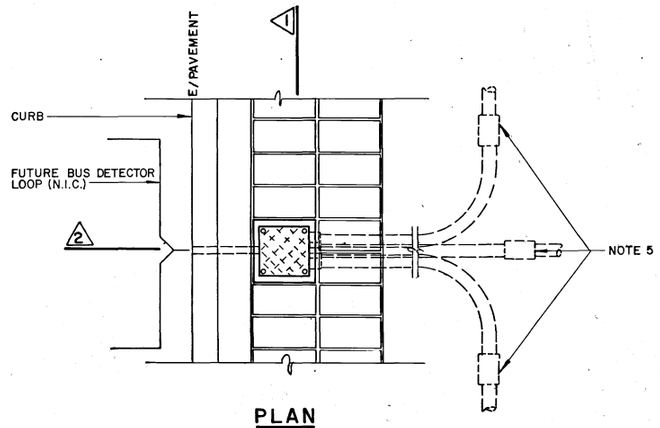
McCORMICK RANKIN
CONSULTING ENGINEERS

DWG. NO. T-1374-151
SHEET OF
CONTRACT NO. 84-610-B
Des: D.P.M. | Chkd: G.E.S.
Dwn: L.R. | Chkd: D.P.M.
Date: JULY 1986
Scale: Horiz. AS SHOWN, Vert.
SL-3-E29

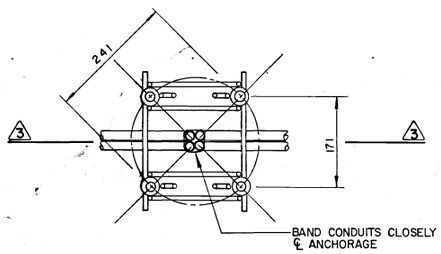
REGISTERED PROFESSIONAL ENGINEER G.E. SMALLWOOD PROVINCE OF ONTARIO



PLAN - STRUCTURES 2E-2H
1:150



PLAN

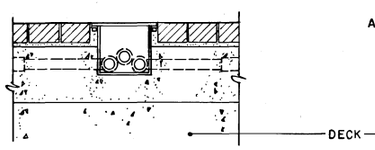


PLAN

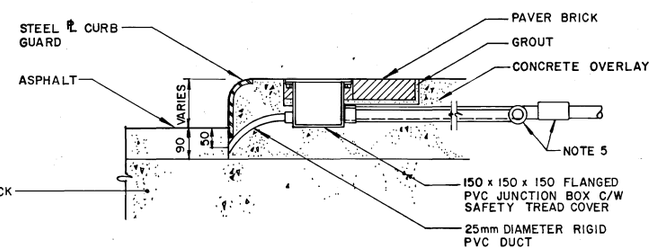
LEGEND

- ANCHORAGE AND CONDUIT TERMINATION FOR RELOCATED 4.5m PLATFORM LIGHTING POLE.
- CONDUIT TERMINATION FOR 2.5m BUS FLAG POLE
- 150 x 150 x 150 mm PVC JUNCTION BOX, FLANGED WITH SAFETY TREAD AND CONCRETE ANCHORS.
- NEW CONDUITS
- EXISTING CONDUITS, SIZE AS INDICATED
- EXISTING LIGHTING POLE, ANCHORAGE AND CONDUIT TERMINATION.
- EXISTING LIGHTING POLE, ANCHORAGE AND CONDUIT TERMINATION TO BE REMOVED.
- EXISTING BUS DETECTOR BOX TO REMAIN
- EXISTING BUS DETECTOR BOX TO BE REMOVED.
- EXISTING PVC JUNCTION BOX.

NOTES:
1. FOR RELOCATION DETAILS SEE STRUCTURAL DRAWING Nº SL-3-S77.
2. BUS FLAG POLE BASE AND ANCHORAGE UNDER SEPARATE CONTRACT (3 TOTAL).
3. EXISTING CONDUIT LOCATIONS SHOWN ARE SCHEMATIC ONLY. ANY DAMAGE TO EXISTING CONDUITS WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
4. LOCATION OF RELOCATED POLES TO BE VERIFIED BY ENGINEER PRIOR TO INSTALLATION.
5. CONNECT TO EXISTING CONDUIT WITH COUPLING AS REQUIRED.

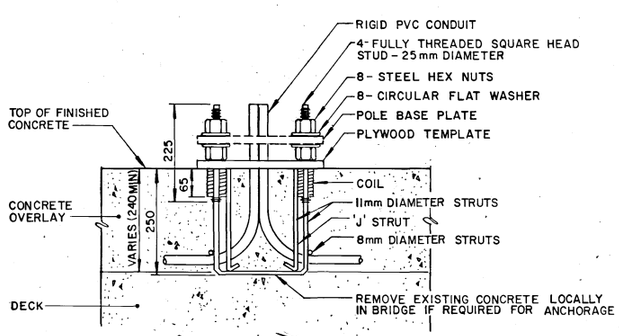


1 SECTION



2 SECTION

BUS DETECTOR JUNCTION BOX
N.T.S.



3 SECTION

POLE BASE ANCHORAGE ASSEMBLIES IN OVERLAY
N.T.S.

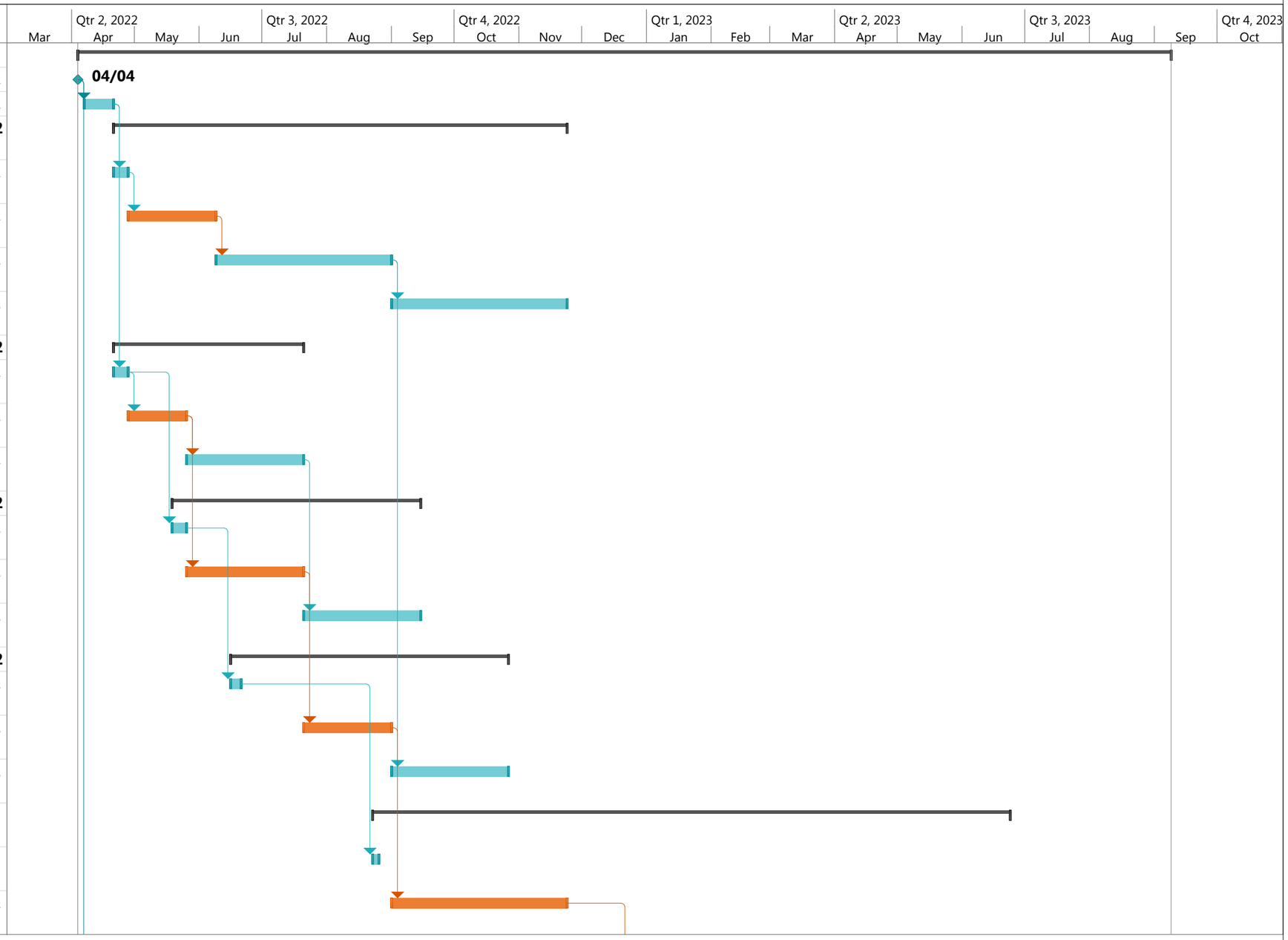
APPENDIX

F WORKING DAY ESTIMATE

WSP CANADA GROUP LIMITED

TREMBLAY RD. PEDESTRIAN BRIDGE PRELIMINARY WORKING DAY ESTIMATE

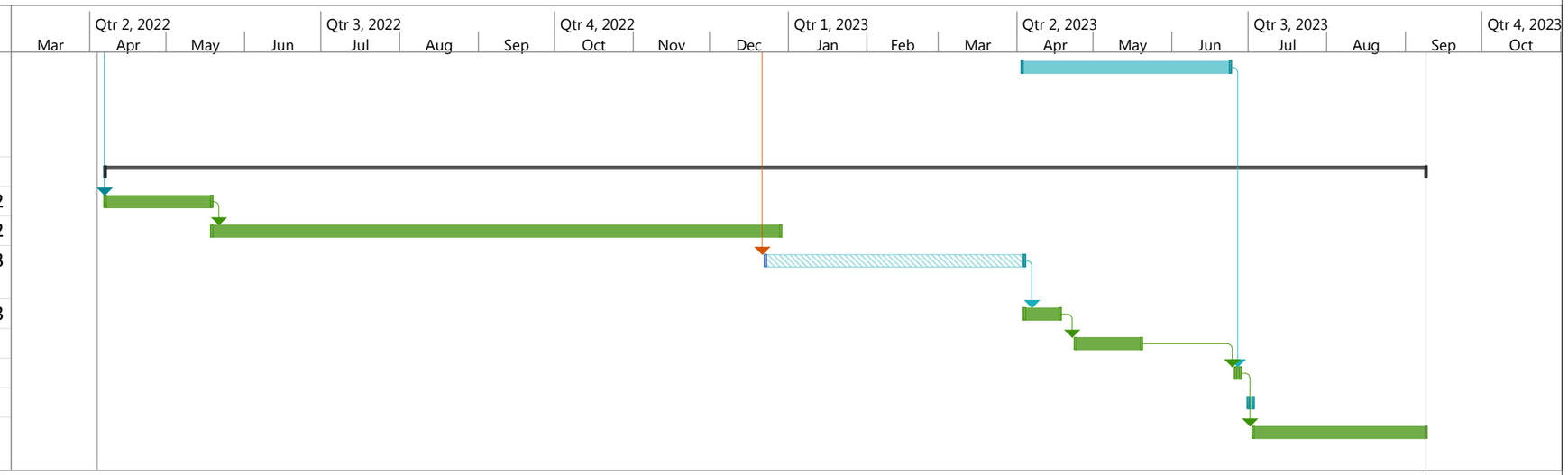
ID	Task Name	Duration	Start	Finish
1	**Pier Construction**	**375 days**	**Mon 04/04/22**	**Fri 08/09/23**
2	Construction Start	0 days	Mon 04/04/22	Mon 04/04/22
3	Site Mobilization	10 days	Thu 07/04/22	Wed 20/04/22
4	**St. Laurent Landing**	**155 days**	**Thu 21/04/22**	**Wed 23/11/22**
5	Installation of traffic control	5 days	Thu 21/04/22	Wed 27/04/22
6	Installation of Foundation	30 days	Thu 28/04/22	Wed 08/06/22
7	Landing Construction	60 days	Thu 09/06/22	Wed 31/08/22
8	Elevators and enclosure	60 days	Thu 01/09/22	Wed 23/11/22
9	**North Pier**	**65 days**	**Thu 21/04/22**	**Wed 20/07/22**
10	Installation of traffic control	5 days	Thu 21/04/22	Wed 27/04/22
11	Installation of Foundation	20 days	Thu 28/04/22	Wed 25/05/22
12	Pier Construction	40 days	Thu 26/05/22	Wed 20/07/22
13	**Center Pier**	**85 days**	**Thu 19/05/22**	**Wed 14/09/22**
14	Installation of traffic control	5 days	Thu 19/05/22	Wed 25/05/22
15	Installation of Foundation	40 days	Thu 26/05/22	Wed 20/07/22
16	Pier Construction	40 days	Thu 21/07/22	Wed 14/09/22
17	**South Pier**	**95 days**	**Thu 16/06/22**	**Wed 26/10/22**
18	Installation of traffic control	3 days	Thu 16/06/22	Mon 20/06/22
19	Installation of Foundation	30 days	Thu 21/07/22	Wed 31/08/22
20	Pier Construction	40 days	Thu 01/09/22	Wed 26/10/22
21	**Tremblay Rd. Landing**	**219 days**	**Tue 23/08/22**	**Fri 23/06/23**
22	Installation of traffic control	3 days	Tue 23/08/22	Thu 25/08/22
23	Installation of Foundations	60 days	Thu 01/09/22	Wed 23/11/22



Project: Working Day Estimate
Date: Wed 07/08/19

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone

ID	Task Name	Duration	Start	Finish
24	Landing and Ramp Construction (after break)	60 days	Mon 03/04/23	Fri 23/06/23
25	**Steel Truss**	**372 days**	**Thu 07/04/22**	**Fri 08/09/23**
26	Shop drawings	30 days	Thu 07/04/22	Wed 18/05/22
27	Fabrication	160 days	Thu 19/05/22	Wed 28/12/22
28	Winter Shutdown	72 days	Fri 23/12/22	Mon 03/04/23
29	transporation	10 days	Tue 04/04/23	Mon 17/04/23
30	Site Assembly	20 days	Mon 24/04/23	Fri 19/05/23
31	Site Erection	2 days	Mon 26/06/23	Tue 27/06/23
32	Site Erection	2 days	Sat 01/07/23	Sun 02/07/23
33	Structure Finishes	50 days	Mon 03/07/23	Fri 08/09/23



Project: Working Day Estimate
Date: Wed 07/08/19

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

APPENDIX

G COST ESTIMATE

Tremblay Pedestrian Bridge Class D Estimate

Item	Item Description	Total
	General	
1	Mobilization	$ 750,000.00
2	Traffic Control Plan	$ 200,000.00
3	Erosion and Sediment Control	$ 50,000.00
4	Traffic Staging	$ 300,000.00
		$ 1,300,000.00
	Roadways	
5	Reroute of storm drains	$ 30,000.00
6	Earth Excavation	$ 10,000.00
7	Granular A	$ 20,000.00
8	Temporary Road Access	$ 50,000.00
9	Temporary Concrete Barrier	$ 50,000.00
10	Energy Attenuator	$ 20,000.00
11	Concrete Barrier Wall	$ 40,000.00
12	Embedded Lighting	$ 100,000.00
		$ 320,000.00
	Structural	
13	Protection Systems	$ 30,000.00
14	Detwatering Structure Excavation	$ 30,000.00
15	Supply equipment for Installing Caisson Piles	$ 300,000.00
16	Caisson Piles (North Landing)	$ 600,000.00
17	Socketing Caisson Piles into Rock (North Landing)	$ 220,000.00
18	Caisson Piles (Piers)	$ 480,000.00
19	Socketing Caisson Piles into Rock (Piers)	$ 140,000.00
20	Caisson Piles (South Ramp)	$ 430,000.00
21	Socketing Caisson Piles into Rock (South Ramp)	$ 120,000.00
22	Concrete in Footings	$ 250,000.00
23	Concrete in Substructure	$ 360,000.00
24	Concrete in Deck (Approaches)	$ 470,000.00
25	Precast stay-in-place forms (Bridge)	$ 350,000.00
26	Concrete in Deck (Bridge)	$ 160,000.00
27	Reinforcing Steel Bar	$ 500,000.00
28	Fabrication of Structural Steel	$ 1,130,000.00
29	Delivery of Structural Steel	$ 150,000.00
30	Erection of Structural Steel	$ 300,000.00
31	Coating New Structural Steel	$ 300,000.00
33	Deck Joint Assemblies, installation	$ 100,000.00
34	Bearings	$ 100,000.00
35	Access to Work Area, Work Platform and Scaffolding	$ 250,000.00
36	Vibration Monitoring	$ 50,000.00
		$ 6,820,000.00

Tremblay Pedestrian Bridge Class D Estimate

Architectural			
37	Continuous Roof and membrane	$	350,000.00
38	Curtain wall and Glazing	$	700,000.00
39	Stainless Steel Handrail (Interior)	$	150,000.00
40	Stainless Steel handrail (exterior)	$	600,000.00
41	Metal Fascial Panels	$	300,000.00
42	Membrane Roofing and Parapet Assemblies	$	200,000.00
43	Metal Flashing and Trim	$	150,000.00
44	Station Elevators	$	1,000,000.00
45	Structural Finishes	$	500,000.00
46	North Landing Canopy	$	100,000.00
47	North Landing Elevator Building	$	120,000.00
48	North Landing Stairs	$	100,000.00
49	Resinous Floor Treatment	$	300,000.00
		$	4,570,000.00

Electrical			
50	Electrical/Lighting Supply	$	750,000.00
51	Snow Melting and de-icing system	$	150,000.00
		$	900,000.00

Subtotal	$	13,910,000.00
Engineering and Contract Administration (20%)	$	2,782,000.00
Contingency (Class D Estimate)	$	3,338,400.00
Total	$	20,030,400.00

This opinion of probable costs is presented on the basis of experience, qualifications, and best judgement. It has been prepared in accordance with acceptable principles and practices. Sudden market changes, non competitive and unforeseen labour and material availability are beyond the control of WSP and as such cannot warrant or guarantee costs will not vary from the opinion provided.

APPENDIX

I SIGNAL WARRANTS

SCENARIO	Future Total	YEAR	2033
MAJOR ROAD	Tremblay Road	MINOR ROAD	Street1
FLOW TYPE	Restricted	ROAD TYPE	1 Lane
NEW ROAD / INT.	Yes	"T" INT.	Yes

	MINIMUM REQUIREMENT			COMPLIANCE	
JUSTIFICATION 7	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705	149	21%	1%
1B - Minor Road	120	270	2	1%	
2A - Major Road	480	720	147	20%	2%
2B - Crossing Major Road	50	75	2	2%	

SCENARIO	Future Total	YEAR	2033
MAJOR ROAD	Tremblay Road	MINOR ROAD	Street2
FLOW TYPE	Restricted	ROAD TYPE	1 Lane
NEW ROAD / INT.	Yes	"T" INT.	Yes

	MINIMUM REQUIREMENT			COMPLIANCE	
JUSTIFICATION 7	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705	149	21%	1%
1B - Minor Road	120	270	2	1%	
2A - Major Road	480	720	147	20%	2%
2B - Crossing Major Road	50	75	2	2%	

SCENARIO	Future Total	YEAR	2033
MAJOR ROAD	Street 1	MINOR ROAD	Street2
FLOW TYPE	Restricted	ROAD TYPE	1 Lane
NEW ROAD / INT.	Yes	"T" INT.	No

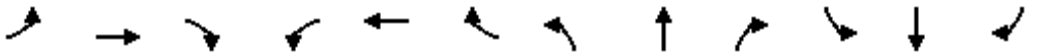
	MINIMUM REQUIREMENT			COMPLIANCE	
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705	130	18%	2%
1B - Minor Road	120	180	3	2%	
2A - Major Road	480	720	127	18%	0%
2B - Crossing Major Road	50	75		0%	

SCENARIO		YEAR	
MAJOR ROAD		MINOR ROAD	
FLOW TYPE	Restricted	ROAD TYPE	1 Lane
NEW ROAD / INT.	Yes	"T" INT.	Yes

	MINIMUM REQUIREMENT			COMPLIANCE	
JUSTIFICATION	FLOW	ADJ. FLOW	AHV	%	OVERALL %
1A - All Approaches	470	705		0%	0%
1B - Minor Road	120	270		0%	
2A - Major Road	480	720		0%	0%
2B - Crossing Major Road	50	75		0%	

APPENDIX

J SYNCHRO RESULTS



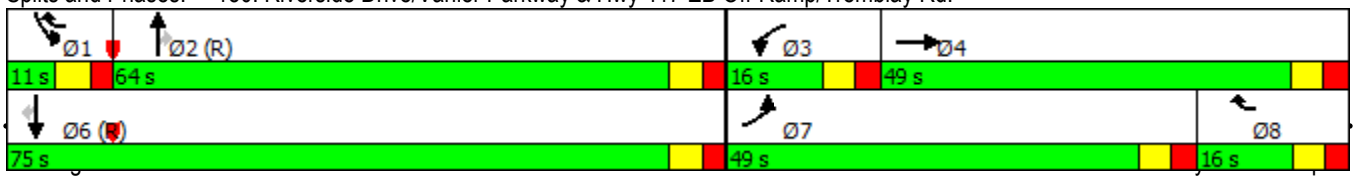
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	188	700	65	0	169	0	1818	90	51	1075	0
Future Volume (vph)	563	188	700	65	0	169	0	1818	90	51	1075	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			415						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	209	778	72	0	188	0	2020	100	57	1194	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	209	778	72	0	188	0	2020	100	57	1194	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	49.0	49.0		16.0				64.0	64.0	11.0	75.0	75.0
Total Split (%)	35.0%	35.0%		11.4%				45.7%	45.7%	7.9%	53.6%	53.6%
Maximum Green (s)	43.0	42.7		10.0				57.9	57.9	5.1	68.9	68.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	32.7	33.0	140.0	9.4		26.4		62.9	62.9	10.4	79.2	
Actuated g/C Ratio	0.23	0.24	1.00	0.07		0.19		0.45	0.45	0.07	0.57	
v/c Ratio	0.83	0.27	0.57	0.67		0.39		1.11	0.14	0.46	0.64	
Control Delay	60.8	43.7	1.7	92.4		52.5		93.9	0.4	74.1	23.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	60.8	43.7	1.7	92.4		52.5		93.9	0.4	74.1	23.4	
LOS	E	D	A	F		D		F	A	E	C	
Approach Delay		30.1			63.5			89.5			25.7	
Approach LOS		C			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 54.7		Intersection LOS: D	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	16.0
Total Split (%)	11%
Maximum Green (s)	10.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

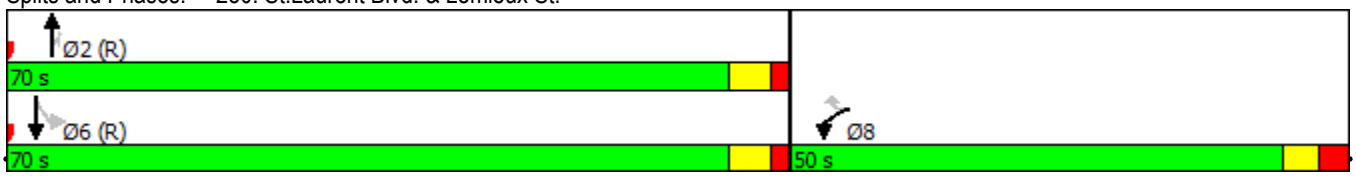
Intersection Summary

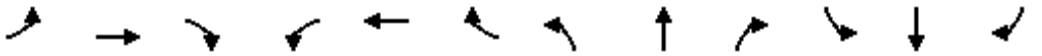
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	461	136	1119	218	6	1263
Future Volume (vph)	461	136	1119	218	6	1263
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.191	
Satd. Flow (perm)	2719	1420	4593	1461	344	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		48		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	512	151	1243	242	7	1403
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	151	1243	242	7	1403
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	32.2	28.5	79.9	79.9	79.9	79.9
Actuated g/C Ratio	0.27	0.24	0.67	0.67	0.67	0.67
v/c Ratio	0.70	0.40	0.41	0.23	0.03	0.45
Control Delay	44.6	28.1	10.2	1.7	9.3	10.8
Queue Delay	0.0	0.0	0.9	0.6	0.0	0.0
Total Delay	44.6	28.1	11.1	2.3	9.3	10.8
LOS	D	C	B	A	A	B
Approach Delay	40.9		9.7			10.8
Approach LOS	D		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.





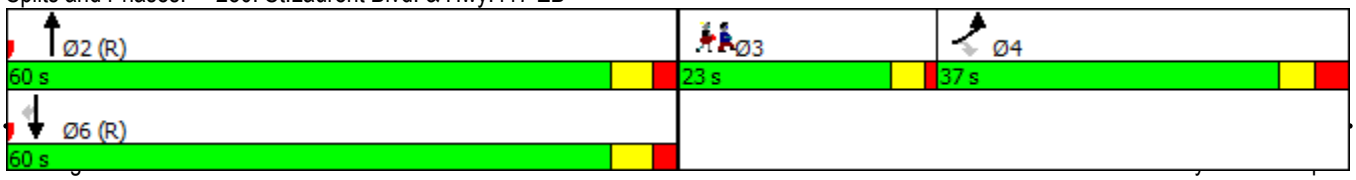
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	538	0	0	0	0	1004	0	0	650	176
Future Volume (vph)	700	0	538	0	0	0	0	1004	0	0	650	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			380									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	598	0	0	0	0	1116	0	0	722	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	598	0	0	0	0	1116	0	0	722	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	41.2		41.2					66.2			66.2	66.2
Actuated g/C Ratio	0.34		0.34					0.55			0.55	0.55
v/c Ratio	0.74		0.81					0.46			0.29	0.26
Control Delay	38.8		21.2					8.2			15.5	3.2
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	38.8		21.2					8.2			15.5	3.2
LOS	D		C					A			B	A
Approach Delay		31.2						8.2			12.9	
Approach LOS		C						A			B	

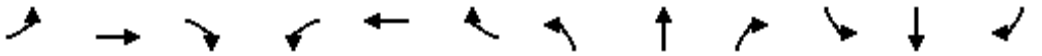
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



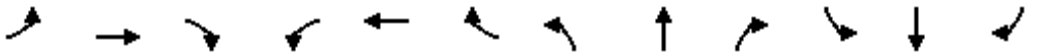
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	22	18	14	22	87	45	1008	31	130	1044	58
Future Volume (vph)	20	22	18	14	22	87	45	1008	31	130	1044	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.932			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1576	0	1402	1402	0	1629	4337	0	1629	3081	1319
Flt Permitted	0.575			0.728			0.244			0.210		
Satd. Flow (perm)	763	1576	0	1066	1402	0	418	4337	0	359	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			97			5				64
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	22	24	20	16	24	97	50	1120	34	144	1160	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	44	0	16	121	0	50	1154	0	144	1160	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	9.5	9.5		9.5	9.5		85.3	85.3		99.3	97.9	97.9
Actuated g/C Ratio	0.08	0.08		0.08	0.08		0.71	0.71		0.83	0.82	0.82
v/c Ratio	0.37	0.31		0.19	0.60		0.17	0.37		0.38	0.46	0.06
Control Delay	68.2	37.8		55.2	28.2		4.4	4.1		5.7	3.5	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	68.2	37.8		55.2	28.2		4.4	4.1		5.7	3.5	0.3
LOS	E	D		E	C		A	A		A	A	A
Approach Delay		47.9			31.4			4.1			3.6	
Approach LOS		D			C			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 6.3 Intersection LOS: A
Intersection Capacity Utilization 62.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

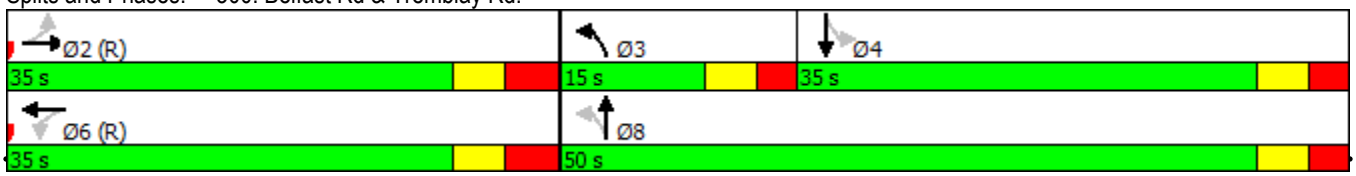


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Future Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.97		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.891			0.966			0.990			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1458	0	1729	1615	0	1586	1726	0	1616	1688	0
Flt Permitted	0.682			0.630			0.272			0.596		
Satd. Flow (perm)	1211	1458	0	1139	1615	0	450	1726	0	1009	1688	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			18			6			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	56	148	31	90	26	100	247	17	18	264	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	204	0	31	116	0	100	264	0	18	322	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		15.0	50.0		35.0	35.0	
Total Split (%)	41.2%	41.2%		41.2%	41.2%		17.6%	58.8%		41.2%	41.2%	
Maximum Green (s)	28.2	28.2		28.2	28.2		9.1	44.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.6	39.6		39.6	39.6		32.7	32.7		21.0	21.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.38	0.38		0.25	0.25	
v/c Ratio	0.17	0.27		0.06	0.15		0.35	0.40		0.07	0.75	
Control Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
LOS	B	A		B	B		B	B		C	D	
Approach Delay		10.8			15.6			15.2			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

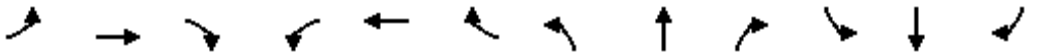


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	147	91
Future Volume (vph)	184	172	124	153	147	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				101
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	163	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	163	101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.1	48.1	62.5	61.8	9.5	24.0
Actuated g/C Ratio	0.57	0.57	0.74	0.73	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.43	0.20
Control Delay	5.6	1.6	4.0	4.0	38.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.6	4.0	4.0	38.5	5.6
LOS	A	A	A	A	D	A
Approach Delay	3.7			4.0	25.9	
Approach LOS	A			A	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 310: Trainyards Drive & Belfast Rd

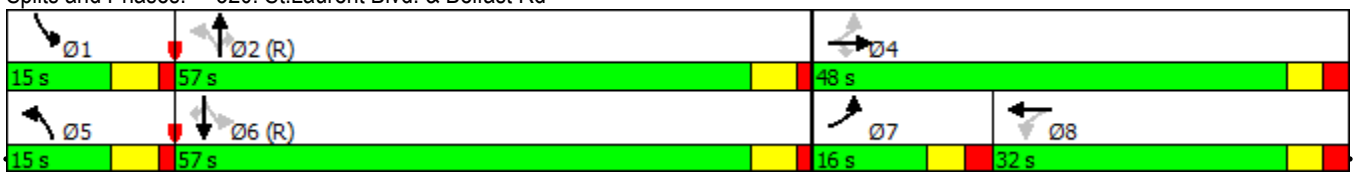


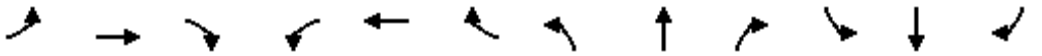
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	79	92	44	128	92	121	750	62	91	746	184
Future Volume (vph)	63	79	92	44	128	92	121	750	62	91	746	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.276			0.700			0.254			0.258		
Satd. Flow (perm)	404	1685	1247	1024	1434	0	420	3202	1384	430	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		28				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	70	88	102	49	142	102	134	833	69	101	829	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	88	102	49	244	0	134	833	69	101	829	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.9	34.9	34.9	22.3	22.3		68.4	59.6	59.6	67.5	59.1	59.1
Actuated g/C Ratio	0.29	0.29	0.29	0.19	0.19		0.57	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.36	0.18	0.24	0.26	0.85		0.41	0.52	0.09	0.31	0.53	0.29
Control Delay	33.8	29.9	6.5	43.7	66.6		16.0	24.1	0.2	9.8	17.8	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	33.8	29.9	6.5	43.7	66.6		16.0	24.1	0.2	9.8	17.8	4.2
LOS	C	C	A	D	E		B	C	A	A	B	A
Approach Delay		21.7			62.8			21.4			14.7	
Approach LOS		C			E			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd





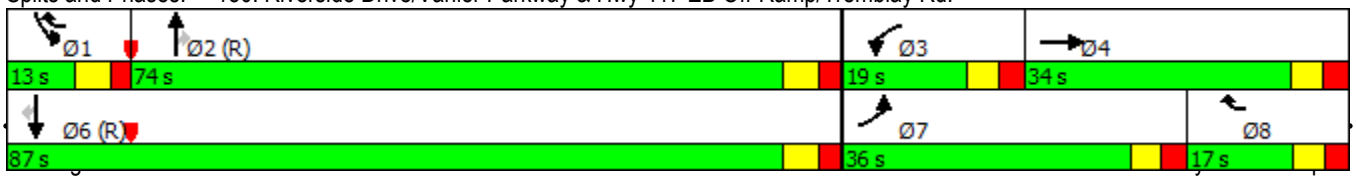
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	230	579	93	0	261	0	1924	108	64	1160	0
Future Volume (vph)	494	230	579	93	0	261	0	1924	108	64	1160	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1627	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			283						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	256	643	103	0	290	0	2138	120	71	1289	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	256	643	103	0	290	0	2138	120	71	1289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	36.0	34.0		19.0				74.0	74.0	13.0	87.0	87.0
Total Split (%)	25.7%	24.3%		13.6%				52.9%	52.9%	9.3%	62.1%	62.1%
Maximum Green (s)	30.0	27.7		13.0				67.9	67.9	7.1	80.9	80.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	28.3	27.0	140.0	12.0		24.8		69.9	68.9	7.8	82.6	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.49	0.06	0.59	
v/c Ratio	0.88	0.41	0.48	0.74		0.61		1.03	0.15	0.76	0.66	
Control Delay	70.9	51.7	1.2	91.4		59.7		61.4	1.2	108.2	21.5	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	70.9	51.7	1.2	91.4		59.7		61.4	1.2	108.2	21.5	
LOS	E	D	A	F		E		E	A	F	C	
Approach Delay		36.5			68.0			58.2			26.1	
Approach LOS		D			E			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 45.1		Intersection LOS: D	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

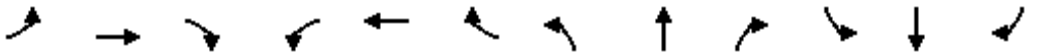
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	158	1467	223	9	1685
Future Volume (vph)	453	158	1467	223	9	1685
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.119	
Satd. Flow (perm)	2848	1348	4725	1455	214	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		34		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	503	176	1630	248	10	1872
Shared Lane Traffic (%)						
Lane Group Flow (vph)	503	176	1630	248	10	1872
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.3	25.6	82.8	82.8	82.8	82.8
Actuated g/C Ratio	0.24	0.21	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.56	0.50	0.23	0.07	0.57
Control Delay	46.3	40.1	9.9	1.5	8.9	11.0
Queue Delay	0.0	0.0	1.8	0.6	0.0	0.3
Total Delay	46.3	40.1	11.7	2.1	8.9	11.3
LOS	D	D	B	A	A	B
Approach Delay	44.7		10.4			11.2
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.0		Intersection LOS: B	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



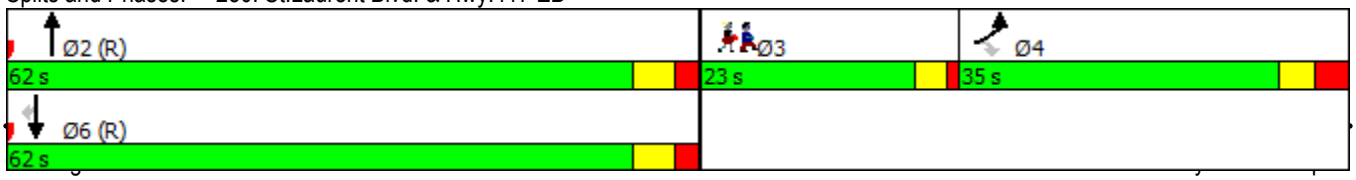
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	297	0	0	0	0	1130	0	0	689	421
Future Volume (vph)	712	0	297	0	0	0	0	1130	0	0	689	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			330									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	330	0	0	0	0	1256	0	0	766	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	330	0	0	0	0	1256	0	0	766	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	40.8		40.8					66.6			66.6	66.6
Actuated g/C Ratio	0.34		0.34					0.56			0.56	0.56
v/c Ratio	0.74		0.47					0.48			0.30	0.49
Control Delay	40.2		5.4					18.1			14.6	3.1
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	40.2		5.4					18.1			14.6	3.1
LOS	D		A					B			B	A
Approach Delay		30.0						18.1			10.3	
Approach LOS		C						B			B	

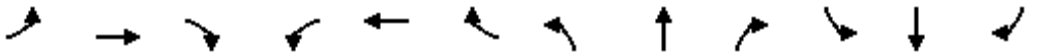
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



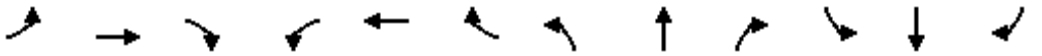
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	30	34	32	23	188	29	1216	18	74	824	39
Future Volume (vph)	40	30	34	32	23	188	29	1216	18	74	824	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98		1.00	1.00		1.00		0.97
Frt		0.920			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1567	0	1644	1489	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.305			0.711			0.312			0.159		
Satd. Flow (perm)	445	1567	0	1228	1489	0	523	4671	0	267	3167	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			184			2				43
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	44	33	38	36	26	209	32	1351	20	82	916	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	71	0	36	235	0	32	1371	0	82	916	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	13.1	13.1		13.1	13.1		84.4	84.4		95.7	94.3	94.3
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.80	0.79	0.79
v/c Ratio	0.92	0.35		0.27	0.72		0.09	0.42		0.28	0.37	0.04
Control Delay	158.2	29.3		51.6	25.7		13.4	12.0		5.9	2.7	0.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	158.2	29.3		51.6	25.7		13.4	12.0		5.9	2.7	0.4
LOS	F	C		D	C		B	B		A	A	A
Approach Delay		78.6			29.1			12.0			2.9	
Approach LOS		E			C			B			A	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 71.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

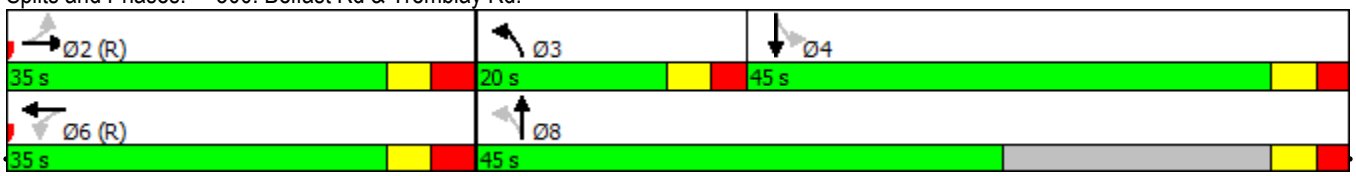


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Future Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.921			0.966			0.993			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1513	0	1631	1646	0	1631	1687	0	1729	1725	0
Flt Permitted	0.692			0.585			0.214			0.493		
Satd. Flow (perm)	1186	1513	0	993	1646	0	367	1687	0	892	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			15			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	111	124	20	78	23	143	451	21	26	333	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	235	0	20	101	0	143	472	0	26	399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	42.1	42.1		42.1	42.1		45.2	45.2		28.4	28.4	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.45	0.45		0.28	0.28	
v/c Ratio	0.22	0.35		0.05	0.14		0.47	0.62		0.10	0.80	
Control Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
LOS	C	B		C	B		B	C		C	D	
Approach Delay		20.3			19.4			22.5			42.8	
Approach LOS		C			B			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

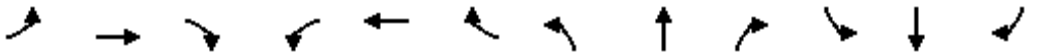


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	286	154	244	315	150
Future Volume (vph)	185	286	154	244	315	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.550		0.950	
Satd. Flow (perm)	1820	1547	1001	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		318				167
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	318	171	271	350	167
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	318	171	271	350	167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	42.6	42.6	57.9	57.2	14.1	29.5
Actuated g/C Ratio	0.50	0.50	0.68	0.67	0.17	0.35
v/c Ratio	0.23	0.34	0.23	0.22	0.63	0.26
Control Delay	14.0	3.0	6.1	6.4	37.9	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	3.0	6.1	6.4	37.9	3.9
LOS	B	A	A	A	D	A
Approach Delay	7.3			6.3	26.9	
Approach LOS	A			A	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 13.8		Intersection LOS: B	
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 310: Trainyards Drive & Belfast Rd

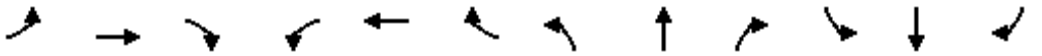


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	162	204	87	97	132	95	860	76	87	731	140
Future Volume (vph)	196	162	204	87	97	132	95	860	76	87	731	140
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.265			0.208		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	430	3325	1348	335	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			224		53				130			156
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	218	180	227	97	108	147	106	956	84	97	812	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	180	227	97	255	0	106	956	84	97	812	156
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.2	58.8	58.8	66.8	58.6	58.6
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	1.11	0.37	0.39	0.53	0.80		0.33	0.59	0.12	0.36	0.50	0.21
Control Delay	133.1	34.2	5.8	54.2	56.0		14.4	24.9	1.2	18.4	22.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	133.1	34.2	5.8	54.2	56.0		14.4	24.9	1.2	18.4	22.7	5.4
LOS	F	C	A	D	E		B	C	A	B	C	A
Approach Delay		58.3			55.5			22.2			19.8	
Approach LOS		E			E			C			B	

Intersection Summary			
Area Type:	Other		
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: 1.11			
Intersection Signal Delay: 32.2		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



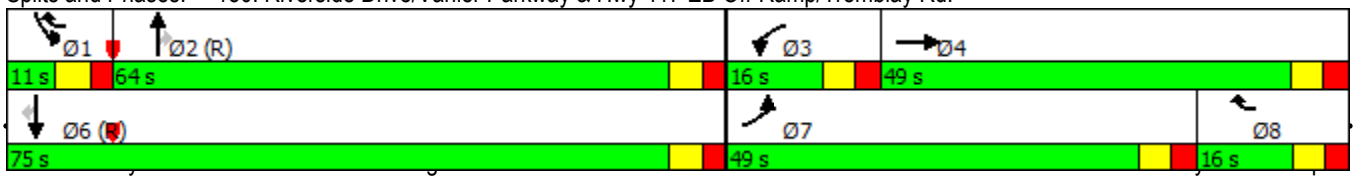
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	188	700	65	0	169	0	1929	90	51	1141	0
Future Volume (vph)	563	188	700	65	0	169	0	1929	90	51	1141	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			411						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	209	778	72	0	188	0	2143	100	57	1268	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	209	778	72	0	188	0	2143	100	57	1268	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	49.0	49.0		16.0				64.0	64.0	11.0	75.0	75.0
Total Split (%)	35.0%	35.0%		11.4%				45.7%	45.7%	7.9%	53.6%	53.6%
Maximum Green (s)	43.0	42.7		10.0				57.9	57.9	5.1	68.9	68.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	32.7	33.0	140.0	9.4		26.4		62.9	62.9	10.4	79.2	
Actuated g/C Ratio	0.23	0.24	1.00	0.07		0.19		0.45	0.45	0.07	0.57	
v/c Ratio	0.83	0.27	0.57	0.67		0.39		1.18	0.14	0.46	0.67	
Control Delay	60.8	43.7	1.7	92.4		52.5		120.6	0.4	74.1	24.5	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	60.8	43.7	1.7	92.4		52.5		120.6	0.4	74.1	24.5	
LOS	E	D	A	F		D		F	A	E	C	
Approach Delay		30.1			63.5			115.3			26.6	
Approach LOS		C			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 66.0		Intersection LOS: E	
Intersection Capacity Utilization 77.5%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	16.0
Total Split (%)	11%
Maximum Green (s)	10.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

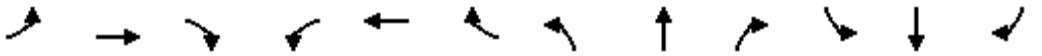
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	461	136	1187	218	6	1340
Future Volume (vph)	461	136	1187	218	6	1340
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.174	
Satd. Flow (perm)	2719	1420	4593	1461	313	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		39		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	512	151	1319	242	7	1489
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	151	1319	242	7	1489
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	32.2	28.5	79.9	79.9	79.9	79.9
Actuated g/C Ratio	0.27	0.24	0.67	0.67	0.67	0.67
v/c Ratio	0.70	0.41	0.43	0.23	0.03	0.48
Control Delay	44.6	30.6	10.5	1.7	9.3	11.1
Queue Delay	0.0	0.0	1.0	0.6	0.0	0.0
Total Delay	44.6	30.6	11.5	2.3	9.3	11.1
LOS	D	C	B	A	A	B
Approach Delay	41.5		10.1			11.1
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 55.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



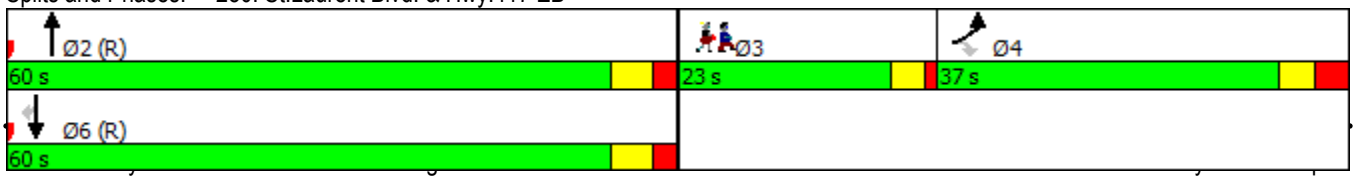
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	538	0	0	0	0	1065	0	0	689	176
Future Volume (vph)	700	0	538	0	0	0	0	1065	0	0	689	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			368									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	598	0	0	0	0	1183	0	0	766	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	598	0	0	0	0	1183	0	0	766	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	41.6		41.6					65.8			65.8	65.8
Actuated g/C Ratio	0.35		0.35					0.55			0.55	0.55
v/c Ratio	0.73		0.81					0.49			0.31	0.26
Control Delay	38.2		22.0					8.5			16.0	3.3
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	38.2		22.0					8.5			16.0	3.3
LOS	D		C					A			B	A
Approach Delay		31.2						8.5			13.4	
Approach LOS		C						A			B	

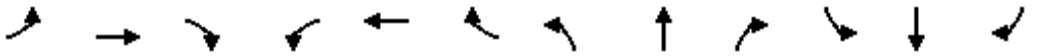
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

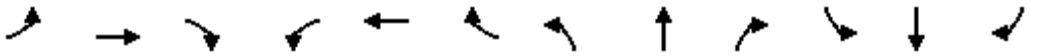


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	22	18	14	22	87	45	1070	31	130	1108	58
Future Volume (vph)	20	22	18	14	22	87	45	1070	31	130	1108	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.932			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1576	0	1402	1402	0	1629	4337	0	1629	3081	1319
Flt Permitted	0.575			0.728			0.228			0.193		
Satd. Flow (perm)	763	1576	0	1066	1402	0	390	4337	0	330	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			97			5				64
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	22	24	20	16	24	97	50	1189	34	144	1231	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	44	0	16	121	0	50	1223	0	144	1231	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	9.5	9.5		9.5	9.5		85.3	85.3		99.3	97.9	97.9
Actuated g/C Ratio	0.08	0.08		0.08	0.08		0.71	0.71		0.83	0.82	0.82
v/c Ratio	0.37	0.31		0.19	0.60		0.18	0.40		0.40	0.49	0.06
Control Delay	68.2	37.8		55.2	28.2		4.6	4.1		6.7	3.7	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	68.2	37.8		55.2	28.2		4.6	4.1		6.7	3.7	0.3
LOS	E	D		E	C		A	A		A	A	A
Approach Delay		47.9			31.4			4.1			3.9	
Approach LOS		D			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

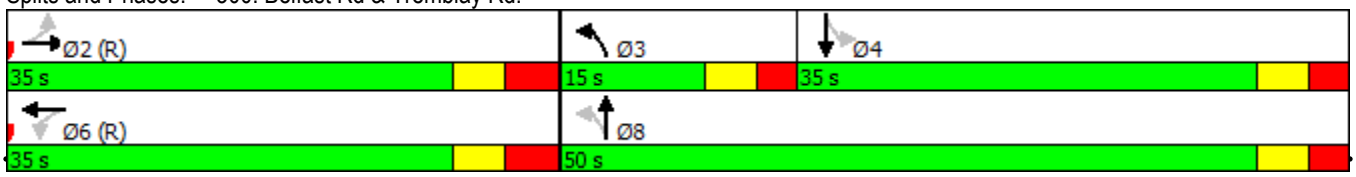


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Future Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.97		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.891			0.966			0.990			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1458	0	1729	1615	0	1586	1726	0	1616	1688	0
Flt Permitted	0.682			0.630			0.272			0.596		
Satd. Flow (perm)	1211	1458	0	1139	1615	0	450	1726	0	1009	1688	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			18			6			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	56	148	31	90	26	100	247	17	18	264	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	204	0	31	116	0	100	264	0	18	322	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		15.0	50.0		35.0	35.0	
Total Split (%)	41.2%	41.2%		41.2%	41.2%		17.6%	58.8%		41.2%	41.2%	
Maximum Green (s)	28.2	28.2		28.2	28.2		9.1	44.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.6	39.6		39.6	39.6		32.7	32.7		21.0	21.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.38	0.38		0.25	0.25	
v/c Ratio	0.17	0.27		0.06	0.15		0.35	0.40		0.07	0.75	
Control Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
LOS	B	A		B	B		B	B		C	D	
Approach Delay		10.8			15.6			15.2			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

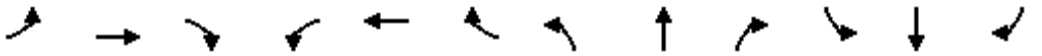


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	147	91
Future Volume (vph)	184	172	124	153	147	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				101
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	163	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	163	101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.1	48.1	62.5	61.8	9.5	24.0
Actuated g/C Ratio	0.57	0.57	0.74	0.73	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.43	0.20
Control Delay	5.6	1.6	4.0	4.0	38.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.6	4.0	4.0	38.5	5.6
LOS	A	A	A	A	D	A
Approach Delay	3.7			4.0	25.9	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 39.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

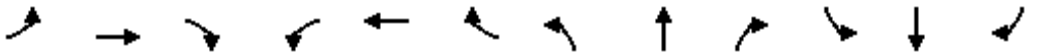


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	79	92	44	128	92	121	796	62	91	791	184
Future Volume (vph)	63	79	92	44	128	92	121	796	62	91	791	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.276			0.700			0.232			0.236		
Satd. Flow (perm)	404	1685	1247	1024	1434	0	383	3202	1384	394	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		28				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	70	88	102	49	142	102	134	884	69	101	879	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	88	102	49	244	0	134	884	69	101	879	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.9	34.9	34.9	22.3	22.3		68.4	59.6	59.6	67.5	59.1	59.1
Actuated g/C Ratio	0.29	0.29	0.29	0.19	0.19		0.57	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.36	0.18	0.24	0.26	0.85		0.44	0.56	0.09	0.33	0.56	0.29
Control Delay	33.8	29.9	6.5	43.7	66.6		16.6	24.8	0.2	10.0	18.0	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	33.8	29.9	6.5	43.7	66.6		16.6	24.8	0.2	10.0	18.0	4.1
LOS	C	C	A	D	E		B	C	A	A	B	A
Approach Delay		21.7			62.8			22.2			14.9	
Approach LOS		C			E			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



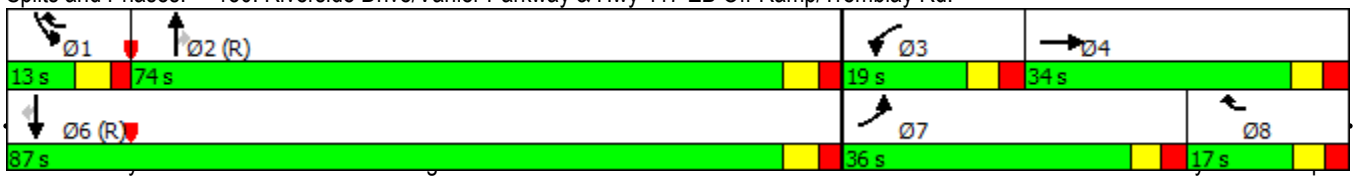
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	230	579	93	0	261	0	2042	108	64	1231	0
Future Volume (vph)	494	230	579	93	0	261	0	2042	108	64	1231	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1627	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			277						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	256	643	103	0	290	0	2269	120	71	1368	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	256	643	103	0	290	0	2269	120	71	1368	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	36.0	34.0		19.0				74.0	74.0	13.0	87.0	87.0
Total Split (%)	25.7%	24.3%		13.6%				52.9%	52.9%	9.3%	62.1%	62.1%
Maximum Green (s)	30.0	27.7		13.0				67.9	67.9	7.1	80.9	80.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	28.3	27.0	140.0	12.0		24.8		69.9	68.9	7.8	82.6	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.49	0.06	0.59	
v/c Ratio	0.88	0.41	0.48	0.74		0.61		1.09	0.15	0.76	0.70	
Control Delay	70.9	51.7	1.2	91.4		59.7		82.6	1.2	108.2	22.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	70.9	51.7	1.2	91.4		59.7		82.6	1.2	108.2	22.7	
LOS	E	D	A	F		E		F	A	F	C	
Approach Delay		36.5			68.0			78.5			26.9	
Approach LOS		D			E			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 54.0		Intersection LOS: D	
Intersection Capacity Utilization 80.3%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

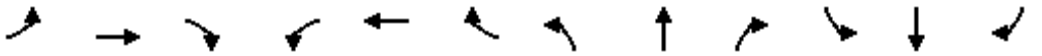
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	158	1557	223	9	1788
Future Volume (vph)	453	158	1557	223	9	1788
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.104	
Satd. Flow (perm)	2848	1348	4725	1455	187	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		27		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	503	176	1730	248	10	1987
Shared Lane Traffic (%)						
Lane Group Flow (vph)	503	176	1730	248	10	1987
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.3	25.6	82.8	82.8	82.8	82.8
Actuated g/C Ratio	0.24	0.21	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.57	0.53	0.23	0.08	0.61
Control Delay	46.3	42.3	10.3	1.5	9.3	11.5
Queue Delay	0.0	0.0	2.3	0.6	0.0	0.4
Total Delay	46.3	42.3	12.7	2.1	9.3	11.9
LOS	D	D	B	A	A	B
Approach Delay	45.2		11.3			11.9
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



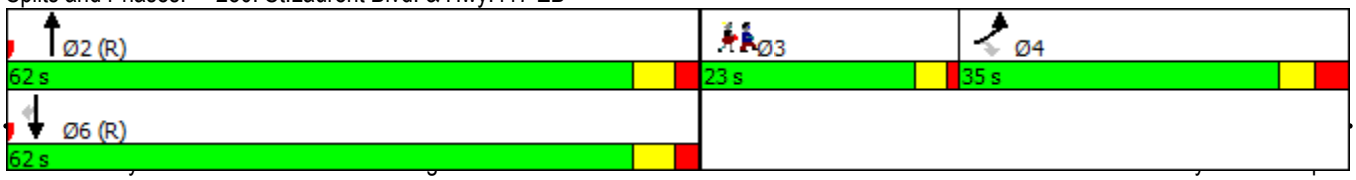
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	297	0	0	0	0	1199	0	0	731	421
Future Volume (vph)	712	0	297	0	0	0	0	1199	0	0	731	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			330									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	330	0	0	0	0	1332	0	0	812	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	330	0	0	0	0	1332	0	0	812	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	40.8		40.8					66.6			66.6	66.6
Actuated g/C Ratio	0.34		0.34					0.56			0.56	0.56
v/c Ratio	0.74		0.47					0.51			0.32	0.49
Control Delay	40.2		5.4					18.2			14.8	3.1
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	40.2		5.4					18.2			14.8	3.1
LOS	D		A					B			B	A
Approach Delay		30.0						18.2			10.5	
Approach LOS		C						B			B	

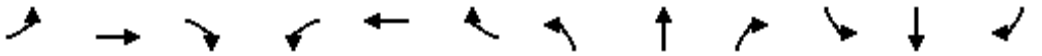
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

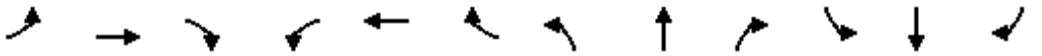


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	30	34	32	23	188	29	1290	18	74	874	39
Future Volume (vph)	40	30	34	32	23	188	29	1290	18	74	874	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98		1.00	1.00		1.00		0.97
Frt		0.920			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1567	0	1644	1489	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.305			0.711			0.295			0.144		
Satd. Flow (perm)	445	1567	0	1228	1489	0	495	4671	0	242	3167	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			179			2				43
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	44	33	38	36	26	209	32	1433	20	82	971	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	71	0	36	235	0	32	1453	0	82	971	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	13.1	13.1		13.1	13.1		84.4	84.4		95.7	94.3	94.3
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.80	0.79	0.79
v/c Ratio	0.92	0.35		0.27	0.73		0.09	0.44		0.30	0.39	0.04
Control Delay	158.2	29.3		51.6	27.3		13.9	12.8		7.1	2.8	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	158.2	29.3		51.6	27.3		13.9	12.8		7.1	2.9	0.3
LOS	F	C		D	C		B	B		A	A	A
Approach Delay		78.6			30.5			12.8			3.1	
Approach LOS		E			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

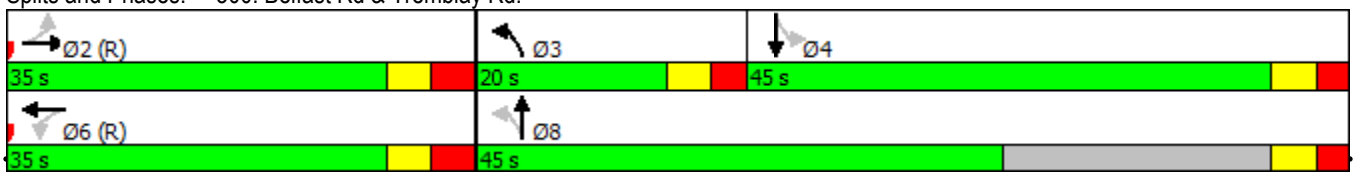


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Future Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.921			0.966			0.993			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1513	0	1631	1646	0	1631	1687	0	1729	1725	0
Flt Permitted	0.692			0.585			0.214			0.493		
Satd. Flow (perm)	1186	1513	0	993	1646	0	367	1687	0	892	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			15			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	111	124	20	78	23	143	451	21	26	333	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	235	0	20	101	0	143	472	0	26	399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	42.1	42.1		42.1	42.1		45.2	45.2		28.4	28.4	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.45	0.45		0.28	0.28	
v/c Ratio	0.22	0.35		0.05	0.14		0.47	0.62		0.10	0.80	
Control Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
LOS	C	B		C	B		B	C		C	D	
Approach Delay		20.3			19.4			22.5			42.8	
Approach LOS		C			B			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

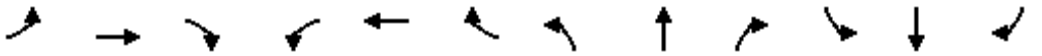


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	286	154	244	315	150
Future Volume (vph)	185	286	154	244	315	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.550		0.950	
Satd. Flow (perm)	1820	1547	1001	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		318				167
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	318	171	271	350	167
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	318	171	271	350	167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	42.6	42.6	57.9	57.2	14.1	29.5
Actuated g/C Ratio	0.50	0.50	0.68	0.67	0.17	0.35
v/c Ratio	0.23	0.34	0.23	0.22	0.63	0.26
Control Delay	14.0	3.0	6.1	6.4	37.9	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	3.0	6.1	6.4	37.9	3.9
LOS	B	A	A	A	D	A
Approach Delay	7.3			6.3	26.9	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

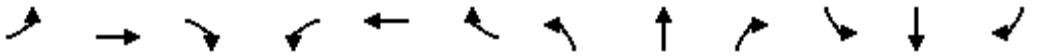


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	162	204	87	97	132	95	912	76	87	775	140
Future Volume (vph)	196	162	204	87	97	132	95	912	76	87	775	140
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.244			0.187		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	396	3325	1348	301	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213		53				130			156
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	218	180	227	97	108	147	106	1013	84	97	861	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	180	227	97	255	0	106	1013	84	97	861	156
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.2	58.8	58.8	66.8	58.6	58.6
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	1.11	0.37	0.39	0.53	0.80		0.35	0.62	0.12	0.38	0.53	0.21
Control Delay	133.1	34.2	6.7	54.2	56.0		14.8	25.8	1.2	20.6	24.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	133.1	34.2	6.7	54.2	56.0		14.8	25.8	1.2	20.6	24.5	6.4
LOS	F	C	A	D	E		B	C	A	C	C	A
Approach Delay		58.7			55.5			23.1			21.6	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
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: 1.11			
Intersection Signal Delay: 32.8		Intersection LOS: C	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



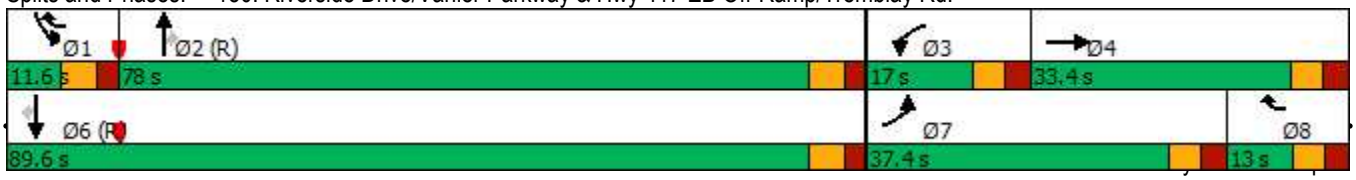
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	229	700	70	0	173	0	1962	116	51	1141	0
Future Volume (vph)	563	229	700	70	0	173	0	1962	116	51	1141	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			285						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	254	778	78	0	192	0	2180	129	57	1268	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	254	778	78	0	192	0	2180	129	57	1268	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	37.4	33.4		17.0				78.0	78.0	11.6	89.6	89.6
Total Split (%)	26.7%	23.9%		12.1%				55.7%	55.7%	8.3%	64.0%	64.0%
Maximum Green (s)	31.4	27.1		11.0				71.9	71.9	5.7	83.5	83.5
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	30.0	26.6	140.0	10.2		19.3		72.6	72.6	6.3	84.9	
Actuated g/C Ratio	0.21	0.19	1.00	0.07		0.14		0.52	0.52	0.04	0.61	
v/c Ratio	0.90	0.41	0.57	0.68		0.54		1.04	0.16	0.75	0.63	
Control Delay	71.1	51.9	1.7	90.7		62.5		63.1	1.4	114.0	19.6	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	71.1	51.9	1.7	90.7		62.5		63.1	1.4	114.0	19.6	
LOS	E	D	A	F		E		E	A	F	B	
Approach Delay		35.6			70.7			59.6			23.6	
Approach LOS		D			E			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 44.4		Intersection LOS: D	
Intersection Capacity Utilization 78.4%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	13.0
Total Split (%)	9%
Maximum Green (s)	7.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Protected Phases	7	4		3	1 8	2		1	6	8
Permitted Phases			Free				2			
Minimum Initial (s)	5.0	7.0		5.0		7.0	7.0	5.0	7.0	5.0
Minimum Split (s)	13.0	32.3		13.0		40.1	40.1	10.9	40.1	13.0
Total Split (s)	37.4	33.4		17.0		78.0	78.0	11.6	89.6	13.0
Total Split (%)	26.7%	23.9%		12.1%		55.7%	55.7%	8.3%	64.0%	9%
Maximum Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
Yellow Time (s)	3.3	3.3		3.3		3.7	3.7	3.7	3.7	3.3
All-Red Time (s)	2.7	3.0		2.7		2.4	2.4	2.2	2.4	2.7
Lead/Lag	Lead	Lag		Lead		Lag	Lag	Lead		Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None		C-Max	C-Max	None	C-Max	None
Walk Time (s)		7.0				7.0	7.0		7.0	
Flash Dont Walk (s)		19.0				27.0	27.0		27.0	
Pedestrian Calls (#/hr)		0				0	0		0	
90th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
90th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
70th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
70th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
50th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
50th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
30th %ile Green (s)	30.0	26.4		10.3		71.9	71.9	7.1	84.9	7.0
30th %ile Term Code	Gap	Hold		Gap		Coord	Coord	Max	Coord	Max
10th %ile Green (s)	26.0	25.2		7.5		75.5	75.5	7.5	88.9	7.0
10th %ile Term Code	Gap	Hold		Gap		Coord	Coord	Gap	Coord	Max

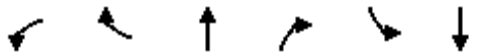
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	501	136	1201	218	6	1353
Future Volume (vph)	501	136	1201	218	6	1353
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.168	
Satd. Flow (perm)	2719	1420	4593	1461	302	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		38		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	557	151	1334	242	7	1503
Shared Lane Traffic (%)						
Lane Group Flow (vph)	557	151	1334	242	7	1503
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	34.3	30.6	77.8	77.8	77.8	77.8
Actuated g/C Ratio	0.29	0.26	0.65	0.65	0.65	0.65
v/c Ratio	0.72	0.39	0.45	0.23	0.04	0.50
Control Delay	43.6	29.0	11.7	1.9	10.3	12.4
Queue Delay	0.0	0.0	1.1	0.6	0.0	0.0
Total Delay	43.6	29.0	12.8	2.5	10.3	12.4
LOS	D	C	B	A	B	B
Approach Delay	40.5		11.2			12.3
Approach LOS	D		B			B

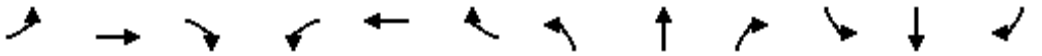
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 17.1		Intersection LOS: B	
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	38.2	38.2	70.2	70.2	70.2	70.2
90th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
70th %ile Green (s)	34.1	34.1	74.3	74.3	74.3	74.3
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	30.4	30.4	78.0	78.0	78.0	78.0
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
30th %ile Green (s)	27.3	27.3	81.1	81.1	81.1	81.1
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
10th %ile Green (s)	22.9	22.9	85.5	85.5	85.5	85.5
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



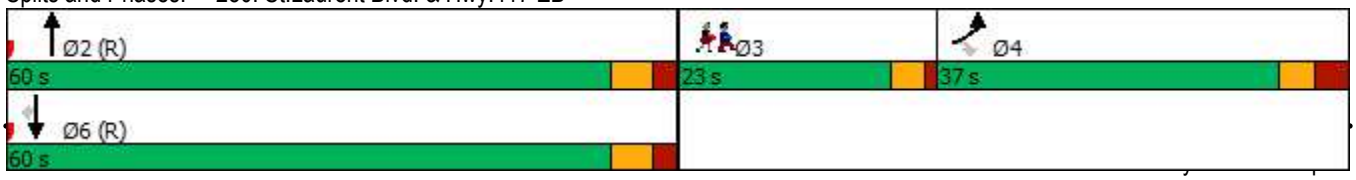
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	656	0	0	0	0	1111	0	0	742	176
Future Volume (vph)	700	0	656	0	0	0	0	1111	0	0	742	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			354									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	729	0	0	0	0	1234	0	0	824	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	729	0	0	0	0	1234	0	0	824	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	53.5		53.5					53.9			53.9	53.9
Actuated g/C Ratio	0.45		0.45					0.45			0.45	0.45
v/c Ratio	0.57		0.87					0.63			0.41	0.30
Control Delay	26.7		28.0					35.0			23.0	4.0
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	26.7		28.0					35.0			23.0	4.0
LOS	C		C					D			C	A
Approach Delay		27.3						35.0			19.4	
Approach LOS		C						D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB

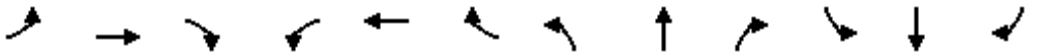


Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBR	NBT	SBT	SBR	Ø3
Protected Phases	4		2	6		3
Permitted Phases	4	4			6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	34.5	34.5	40.1	40.1	40.1	11.0
Total Split (s)	37.0	37.0	60.0	60.0	60.0	23.0
Total Split (%)	30.8%	30.8%	50.0%	50.0%	50.0%	19%
Maximum Green (s)	30.5	30.5	53.9	53.9	53.9	19.0
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.0
All-Red Time (s)	3.2	3.2	2.4	2.4	2.4	1.0
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Walk Time (s)	7.0	7.0	25.0	25.0	25.0	
Flash Dont Walk (s)	21.0	21.0	9.0	9.0	9.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
90th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
90th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
70th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
70th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
50th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
50th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
30th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
30th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
10th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
10th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	22	25	14	22	87	58	1081	31	130	1108	231
Future Volume (vph)	61	22	25	14	22	87	58	1081	31	130	1108	231
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	70.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.919			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2457	1551	0	1402	1402	0	1629	4337	0	1629	3081	1319
Flt Permitted	0.950			0.950			0.228			0.171		
Satd. Flow (perm)	2446	1551	0	1391	1402	0	390	4337	0	293	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			97			4				257
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		281.9			108.9			94.4			180.4	
Travel Time (s)		16.9			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	68	24	28	16	24	97	64	1201	34	144	1231	257
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	52	0	16	121	0	64	1235	0	144	1231	257
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

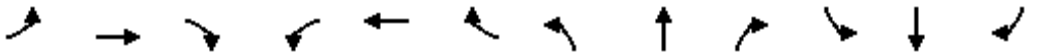
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	7.0		10.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	33.5		14.0	33.5		35.2	35.2		11.7	35.1	35.1
Total Split (s)	14.0	33.5		14.0	33.5		56.5	56.5		16.0	72.5	72.5
Total Split (%)	11.7%	27.9%		11.7%	27.9%		47.1%	47.1%		13.3%	60.4%	60.4%
Maximum Green (s)	10.0	27.0		10.0	27.0		50.3	50.3		11.3	66.4	66.4
Yellow Time (s)	3.5	3.3		3.5	3.3		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	0.5	3.2		0.5	3.2		2.5	2.5		1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		4.0	6.5		6.2	6.2		4.7	6.1	6.1
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0		12.0	12.0			12.0	12.0
Flash Dont Walk (s)		20.0			20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)		0			0		0	0			0	0
Act Effct Green (s)	10.0	14.9		10.0	9.3		72.9	72.9		88.3	86.9	86.9
Actuated g/C Ratio	0.08	0.12		0.08	0.08		0.61	0.61		0.74	0.72	0.72
v/c Ratio	0.33	0.24		0.14	0.61		0.27	0.47		0.45	0.55	0.26
Control Delay	56.7	29.8		54.1	28.6		20.8	15.7		13.4	16.3	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.7	0.0
Total Delay	56.7	29.8		54.1	28.6		20.8	15.7		13.4	17.0	6.2
LOS	E	C		D	C		C	B		B	B	A
Approach Delay		45.0			31.5			15.9			15.0	
Approach LOS		D			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Protected Phases	7	4	3	8		2	1	6	
Permitted Phases					2		6		6
Minimum Initial (s)	10.0	7.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	33.5	14.0	33.5	35.2	35.2	11.7	35.1	35.1
Total Split (s)	14.0	33.5	14.0	33.5	56.5	56.5	16.0	72.5	72.5
Total Split (%)	11.7%	27.9%	11.7%	27.9%	47.1%	47.1%	13.3%	60.4%	60.4%
Maximum Green (s)	10.0	27.0	10.0	27.0	50.3	50.3	11.3	66.4	66.4
Yellow Time (s)	3.5	3.3	3.5	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	0.5	3.2	0.5	3.2	2.5	2.5	1.0	2.4	2.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0		7.0	12.0	12.0		12.0	12.0
Flash Dont Walk (s)		20.0		20.0	17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0
90th %ile Green (s)	10.0	14.6	10.0	14.6	61.4	61.4	12.6	78.8	78.8
90th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
70th %ile Green (s)	10.0	10.5	10.0	10.5	68.2	68.2	9.9	82.9	82.9
70th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	10.0	21.6	0.0	7.6	72.4	72.4	8.6	85.8	85.8
50th %ile Term Code	Max	Hold	Skip	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	10.0	21.0	0.0	7.0	73.8	73.8	7.8	86.4	86.4
30th %ile Term Code	Max	Hold	Skip	Min	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	7.0	0.0	7.0	88.6	88.6	7.0	100.4	100.4
10th %ile Term Code	Skip	Hold	Skip	Min	Coord	Coord	Min	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

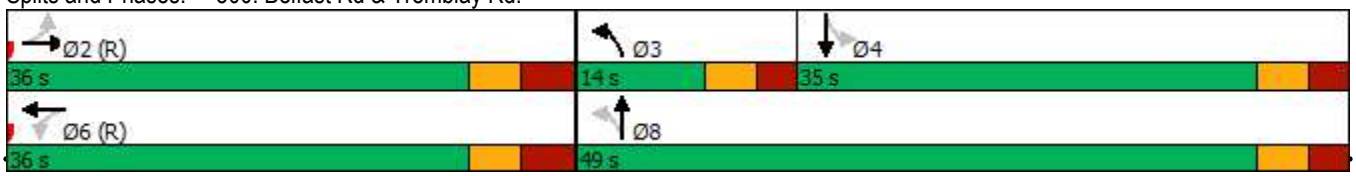


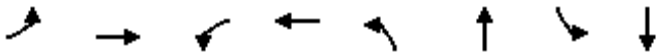
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	119	133	28	94	26	90	228	15	16	238	65
Future Volume (vph)	88	119	133	28	94	26	90	228	15	16	238	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.921			0.967			0.991			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1504	0	1729	1617	0	1586	1728	0	1616	1677	0
Flt Permitted	0.672			0.561			0.261			0.593		
Satd. Flow (perm)	1194	1504	0	1015	1617	0	432	1728	0	1004	1677	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		72			18			6			18	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			558.7			589.1			159.1	
Travel Time (s)		23.4			33.5			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	132	148	31	104	29	100	253	17	18	264	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	280	0	31	133	0	100	270	0	18	336	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	36.0	36.0		36.0	36.0		14.0	49.0		35.0	35.0	
Total Split (%)	42.4%	42.4%		42.4%	42.4%		16.5%	57.6%		41.2%	41.2%	
Maximum Green (s)	29.2	29.2		29.2	29.2		8.1	43.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.6	39.6		39.6	39.6		32.7	32.7		21.5	21.5	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.38	0.38		0.25	0.25	
v/c Ratio	0.18	0.38		0.07	0.17		0.37	0.40		0.07	0.77	
Control Delay	18.1	15.1		17.5	15.3		15.4	16.1		21.8	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	15.1		17.5	15.3		15.4	16.1		21.8	39.1	
LOS	B	B		B	B		B	B		C	D	
Approach Delay		15.9			15.7			15.9			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.8	29.8	29.8	29.8	12.9	19.9	19.9	19.9
Total Split (s)	36.0	36.0	36.0	36.0	14.0	49.0	35.0	35.0
Total Split (%)	42.4%	42.4%	42.4%	42.4%	16.5%	57.6%	41.2%	41.2%
Maximum Green (s)	29.2	29.2	29.2	29.2	8.1	43.1	29.1	29.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
Lead/Lag					Lead		Lag	Lag
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0	0	0		0	0	0
90th %ile Green (s)	29.2	29.2	29.2	29.2	8.1	43.1	29.1	29.1
90th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Max	Max
70th %ile Green (s)	33.6	33.6	33.6	33.6	8.1	38.7	24.7	24.7
70th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Gap	Gap
50th %ile Green (s)	36.7	36.7	36.7	36.7	8.1	35.6	21.6	21.6
50th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Gap	Gap
30th %ile Green (s)	40.1	40.1	40.1	40.1	7.9	32.2	18.4	18.4
30th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
10th %ile Green (s)	58.5	58.5	58.5	58.5	0.0	13.8	13.8	13.8
10th %ile Term Code	Coord	Coord	Coord	Coord	Skip	Hold	Gap	Gap

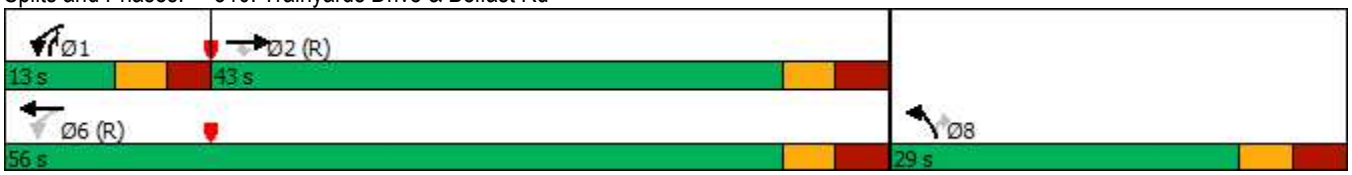
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	153	102
Future Volume (vph)	184	172	124	153	153	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				113
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	170	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	170	113
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.0	48.0	62.3	61.6	9.7	24.1
Actuated g/C Ratio	0.56	0.56	0.73	0.72	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.45	0.22
Control Delay	4.8	1.4	4.1	4.1	38.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	1.4	4.1	4.1	38.5	5.4
LOS	A	A	A	A	D	A
Approach Delay	3.1			4.1	25.3	
Approach LOS	A			A	C	

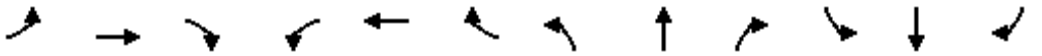
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 9.8		Intersection LOS: A	
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 310: Trainyards Drive & Belfast Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
90th %ile Green (s)	43.3	43.3	9.5	58.9	12.4	9.5
90th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
70th %ile Green (s)	46.2	46.2	8.2	60.5	10.8	8.2
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	48.2	48.2	7.4	61.7	9.6	7.4
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	50.0	50.0	6.7	62.8	8.5	6.7
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	52.2	52.2	6.0	64.3	7.0	6.0
10th %ile Term Code	Coord	Coord	Min	Coord	Min	Min

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	79	92	44	128	92	121	809	62	91	798	184
Future Volume (vph)	74	79	92	44	128	92	121	809	62	91	798	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.289			0.700			0.228			0.231		
Satd. Flow (perm)	423	1685	1247	1024	1434	0	377	3202	1384	385	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		29				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	82	88	102	49	142	102	134	899	69	101	887	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	88	102	49	244	0	134	899	69	101	887	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	13.8	50.6	50.6	36.8	36.8		17.0	52.4	52.4	17.0	52.4	52.4
Total Split (%)	11.5%	42.2%	42.2%	30.7%	30.7%		14.2%	43.7%	43.7%	14.2%	43.7%	43.7%
Maximum Green (s)	8.0	44.8	44.8	31.0	31.0		11.3	46.8	46.8	11.3	46.8	46.8
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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.2	34.2	34.2	23.2	23.2		69.3	59.7	59.7	67.8	59.0	59.0
Actuated g/C Ratio	0.28	0.28	0.28	0.19	0.19		0.58	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.45	0.18	0.24	0.25	0.81		0.43	0.56	0.09	0.33	0.56	0.29
Control Delay	37.0	30.0	6.3	41.6	60.7		16.3	25.3	0.2	26.2	41.4	18.1
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	37.0	30.0	6.3	41.6	60.7		16.3	25.3	0.2	26.2	41.4	18.1
LOS	D	C	A	D	E		B	C	A	C	D	B
Approach Delay		23.2			57.5			22.6			36.1	
Approach LOS		C			E			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 31.9		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd

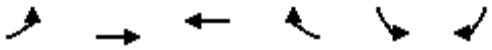
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8	12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	13.8	50.6	50.6	36.8	36.8	17.0	52.4	52.4	17.0	52.4	52.4
Total Split (%)	11.5%	42.2%	42.2%	30.7%	30.7%	14.2%	43.7%	43.7%	14.2%	43.7%	43.7%
Maximum Green (s)	8.0	44.8	44.8	31.0	31.0	11.3	46.8	46.8	11.3	46.8	46.8
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
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)		0	0	0	0		0	0		0	0
90th %ile Green (s)	8.0	44.8	44.8	31.0	31.0	11.3	46.8	46.8	11.3	46.8	46.8
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.0	41.1	41.1	27.3	27.3	11.7	51.7	51.7	10.1	50.1	50.1
70th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	8.0	37.4	37.4	23.6	23.6	10.0	56.7	56.7	8.8	55.5	55.5
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	8.0	33.6	33.6	19.8	19.8	8.5	61.7	61.7	7.6	60.8	60.8
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	14.3	14.3	14.3	14.3	7.0	81.6	81.6	7.0	81.6	81.6
10th %ile Term Code	Skip	Hold	Hold	Gap	Gap	Min	Coord	Coord	Min	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	142	2	0	137	5	0
Future Volume (Veh/h)	142	2	0	137	5	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	158	2	0	152	6	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			160		311	159
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			160		311	159
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1419		681	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	160	152	6
Volume Left	0	0	6
Volume Right	2	0	0
cSH	1700	1419	681
Volume to Capacity	0.09	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	10.3
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.3
Approach LOS			B

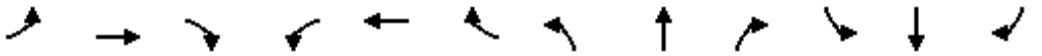
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	7	2	185	41	0
Future Volume (vph)	0	7	2	185	41	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	2	206	46	0

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	8	208	46
Volume Left (vph)	0	0	46
Volume Right (vph)	0	206	0
Hadj (s)	0.03	-0.56	0.23
Departure Headway (s)	4.2	3.5	4.5
Degree Utilization, x	0.01	0.20	0.06
Capacity (veh/h)	831	1024	752
Control Delay (s)	7.3	7.3	7.8
Approach Delay (s)	7.3	7.3	7.8
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		



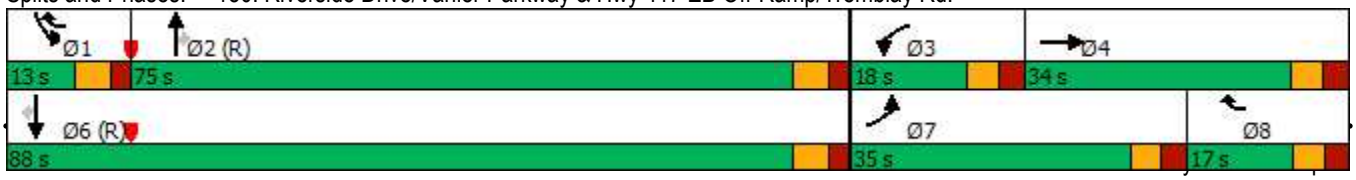
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	245	579	125	0	281	0	2046	114	64	1258	0
Future Volume (vph)	494	245	579	125	0	281	0	2046	114	64	1258	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1628	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			260						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	272	643	139	0	312	0	2273	127	71	1398	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	272	643	139	0	312	0	2273	127	71	1398	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	35.0	34.0		18.0				75.0	75.0	13.0	88.0	88.0
Total Split (%)	25.0%	24.3%		12.9%				53.6%	53.6%	9.3%	62.9%	62.9%
Maximum Green (s)	29.0	27.7		12.0				68.9	68.9	7.1	81.9	81.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	27.8	26.5	140.0	12.0		24.5		70.7	69.7	7.5	83.1	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.50	0.05	0.59	
v/c Ratio	0.90	0.45	0.48	1.00		0.67		1.08	0.16	0.78	0.71	
Control Delay	73.3	52.6	1.2	139.2		61.9		78.6	1.5	113.0	22.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	73.3	52.6	1.2	139.2		61.9		78.6	1.5	113.0	22.7	
LOS	E	D	A	F		E		E	A	F	C	
Approach Delay		37.8			85.7			74.6			27.1	
Approach LOS		D			F			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 54.1		Intersection LOS: D	
Intersection Capacity Utilization 81.1%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Protected Phases	7	4		3	1 8	2		1	6	8
Permitted Phases			Free				2			
Minimum Initial (s)	5.0	7.0		5.0		7.0	7.0	5.0	7.0	5.0
Minimum Split (s)	13.0	32.3		13.0		40.1	40.1	10.9	40.1	13.0
Total Split (s)	35.0	34.0		18.0		75.0	75.0	13.0	88.0	17.0
Total Split (%)	25.0%	24.3%		12.9%		53.6%	53.6%	9.3%	62.9%	12%
Maximum Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
Yellow Time (s)	3.3	3.3		3.3		3.7	3.7	3.7	3.7	3.3
All-Red Time (s)	2.7	3.0		2.7		2.4	2.4	2.2	2.4	2.7
Lead/Lag	Lead	Lag		Lead		Lag	Lag	Lead		Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None		C-Max	C-Max	None	C-Max	None
Walk Time (s)		7.0				7.0	7.0		7.0	
Flash Dont Walk (s)		19.0				27.0	27.0		27.0	
Pedestrian Calls (#/hr)		0				0	0		0	
90th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
90th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
70th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
70th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
50th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
50th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
30th %ile Green (s)	27.9	26.6		12.0		68.9	68.9	8.2	83.0	11.0
30th %ile Term Code	Gap	Hold		Max		Coord	Coord	Max	Coord	Max
10th %ile Green (s)	24.0	22.7		12.0		72.8	72.8	8.2	86.9	11.0
10th %ile Term Code	Gap	Hold		Max		Coord	Coord	Gap	Coord	Max

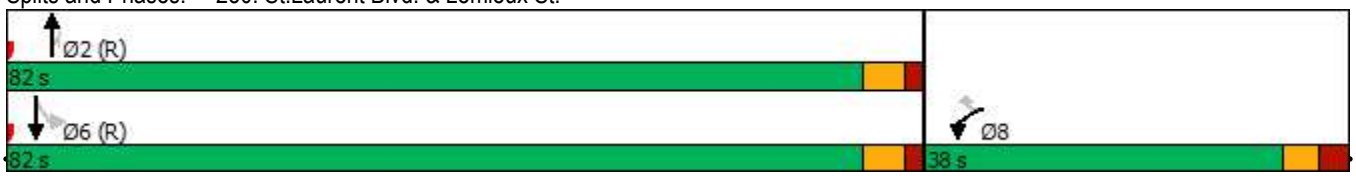
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

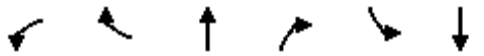
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	461	158	1582	223	9	1813
Future Volume (vph)	461	158	1582	223	9	1813
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.100	
Satd. Flow (perm)	2848	1348	4725	1455	180	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	512	176	1758	248	10	2014
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	176	1758	248	10	2014
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.6	25.9	82.5	82.5	82.5	82.5
Actuated g/C Ratio	0.25	0.22	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.57	0.54	0.23	0.08	0.62
Control Delay	46.3	42.6	10.6	1.5	9.6	11.8
Queue Delay	0.0	0.0	2.6	0.6	0.0	0.4
Total Delay	46.3	42.6	13.2	2.2	9.6	12.2
LOS	D	D	B	A	A	B
Approach Delay	45.4		11.8			12.2
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

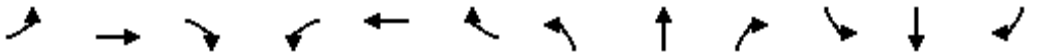
Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
90th %ile Term Code	Max	Max	Coord	Coord	Coord	Coord
70th %ile Green (s)	28.5	28.5	79.9	79.9	79.9	79.9
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	26.0	26.0	82.4	82.4	82.4	82.4
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
30th %ile Green (s)	23.4	23.4	85.0	85.0	85.0	85.0
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
10th %ile Green (s)	19.6	19.6	88.8	88.8	88.8	88.8
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



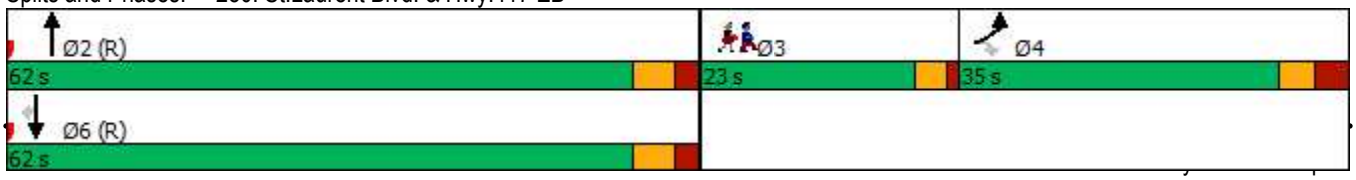
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	316	0	0	0	0	1387	0	0	765	421
Future Volume (vph)	712	0	316	0	0	0	0	1387	0	0	765	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			346									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	351	0	0	0	0	1541	0	0	850	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	351	0	0	0	0	1541	0	0	850	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	41.0		41.0					66.4			66.4	66.4
Actuated g/C Ratio	0.34		0.34					0.55			0.55	0.55
v/c Ratio	0.74		0.49					0.60			0.33	0.49
Control Delay	39.9		5.7					22.0			15.2	3.1
Queue Delay	0.0		0.0					0.6			0.0	0.0
Total Delay	39.9		5.7					22.6			15.2	3.1
LOS	D		A					C			B	A
Approach Delay		29.4						22.6			10.9	
Approach LOS		C						C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB

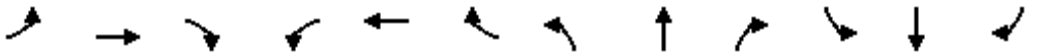


Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBR	NBT	SBT	SBR	Ø3
Protected Phases	4		2	6		3
Permitted Phases	4	4			6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	34.5	34.5	40.1	40.1	40.1	11.0
Total Split (s)	35.0	35.0	62.0	62.0	62.0	23.0
Total Split (%)	29.2%	29.2%	51.7%	51.7%	51.7%	19%
Maximum Green (s)	28.5	28.5	55.9	55.9	55.9	19.0
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.0
All-Red Time (s)	3.2	3.2	2.4	2.4	2.4	1.0
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Walk Time (s)	7.0	7.0	25.0	25.0	25.0	
Flash Dont Walk (s)	21.0	21.0	9.0	9.0	9.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
90th %ile Green (s)	42.2	42.2	65.2	65.2	65.2	0.0
90th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
70th %ile Green (s)	40.5	40.5	66.9	66.9	66.9	0.0
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
50th %ile Green (s)	39.9	39.9	67.5	67.5	67.5	0.0
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
30th %ile Green (s)	39.8	39.8	67.6	67.6	67.6	0.0
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
10th %ile Green (s)	42.6	42.6	64.8	64.8	64.8	0.0
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	30	55	32	23	188	31	1301	18	74	896	76
Future Volume (vph)	219	30	55	32	23	188	31	1301	18	74	896	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	70.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98		1.00	1.00				0.97
Frt		0.903			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2697	1542	0	1644	1489	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.950			0.950			0.283			0.111		
Satd. Flow (perm)	2687	1542	0	1640	1489	0	475	4671	0	187	3167	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		61			153			2				105
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		288.3			108.9			94.4			180.4	
Travel Time (s)		17.3			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	243	33	61	36	26	209	34	1446	20	82	996	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	243	94	0	36	235	0	34	1466	0	82	996	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

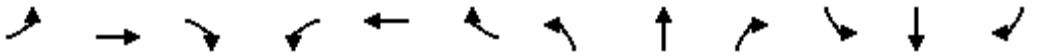
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	7.0		10.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	33.5		14.0	33.5		35.2	35.2		11.7	35.1	35.1
Total Split (s)	19.0	38.6		14.0	33.6		54.4	54.4		13.0	67.4	67.4
Total Split (%)	15.8%	32.2%		11.7%	28.0%		45.3%	45.3%		10.8%	56.2%	56.2%
Maximum Green (s)	15.0	32.1		10.0	27.1		48.2	48.2		8.3	61.3	61.3
Yellow Time (s)	3.5	3.3		3.5	3.3		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	0.5	3.2		0.5	3.2		2.5	2.5		1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		4.0	6.5		6.2	6.2		4.7	6.1	6.1
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0		12.0	12.0			12.0	12.0
Flash Dont Walk (s)		20.0			20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)		0			0		0	0			0	0
Act Effct Green (s)	14.1	23.2		10.0	13.5		65.0	65.0		77.2	75.8	75.8
Actuated g/C Ratio	0.12	0.19		0.08	0.11		0.54	0.54		0.64	0.63	0.63
v/c Ratio	0.77	0.27		0.26	0.78		0.13	0.58		0.38	0.50	0.10
Control Delay	67.6	19.2		56.8	35.8		14.9	19.0		26.8	27.3	8.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.3	0.0
Total Delay	67.6	19.2		56.8	35.8		14.9	19.0		26.8	27.6	8.1
LOS	E	B		E	D		B	B		C	C	A
Approach Delay		54.1			38.6			18.9			26.1	
Approach LOS		D			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 26.7		Intersection LOS: C	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Protected Phases	7	4	3	8		2	1	6	
Permitted Phases					2		6		6
Minimum Initial (s)	10.0	7.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	33.5	14.0	33.5	35.2	35.2	11.7	35.1	35.1
Total Split (s)	19.0	38.6	14.0	33.6	54.4	54.4	13.0	67.4	67.4
Total Split (%)	15.8%	32.2%	11.7%	28.0%	45.3%	45.3%	10.8%	56.2%	56.2%
Maximum Green (s)	15.0	32.1	10.0	27.1	48.2	48.2	8.3	61.3	61.3
Yellow Time (s)	3.5	3.3	3.5	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	0.5	3.2	0.5	3.2	2.5	2.5	1.0	2.4	2.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0		7.0	12.0	12.0		12.0	12.0
Flash Dont Walk (s)		20.0		20.0	17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0
90th %ile Green (s)	15.0	27.2	10.0	22.2	50.0	50.0	11.4	66.2	66.2
90th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
70th %ile Green (s)	15.0	21.6	10.0	16.6	58.2	58.2	8.8	71.8	71.8
70th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	15.0	17.7	10.0	12.7	63.1	63.1	7.8	75.7	75.7
50th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	14.2	27.0	0.0	8.8	68.6	68.6	7.0	80.4	80.4
30th %ile Term Code	Gap	Hold	Skip	Gap	Coord	Coord	Min	Coord	Coord
10th %ile Green (s)	11.4	22.4	0.0	7.0	84.9	84.9	0.0	85.0	85.0
10th %ile Term Code	Gap	Hold	Skip	Min	Coord	Coord	Skip	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

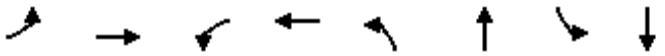


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	126	112	18	124	34	129	418	19	23	316	62
Future Volume (vph)	101	126	112	18	124	34	129	418	19	23	316	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.930			0.968			0.994			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1528	0	1631	1649	0	1631	1689	0	1729	1725	0
Flt Permitted	0.646			0.548			0.205			0.487		
Satd. Flow (perm)	1107	1528	0	931	1649	0	352	1689	0	881	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			14			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			586.6			589.1			159.1	
Travel Time (s)		23.4			35.2			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	140	124	20	138	38	143	464	21	26	351	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	264	0	20	176	0	143	485	0	26	420	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	41.1	41.1		41.1	41.1		46.2	46.2		29.6	29.6	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.46	0.46		0.30	0.30	
v/c Ratio	0.25	0.40		0.05	0.26		0.48	0.62		0.10	0.81	
Control Delay	24.5	21.8		22.9	21.7		19.6	22.8		23.4	43.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.5	21.8		22.9	21.7		19.6	22.8		23.4	43.7	
LOS	C	C		C	C		B	C		C	D	
Approach Delay		22.6			21.8			22.1			42.5	
Approach LOS		C			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.8	29.8	29.8	29.8	12.9	19.9	19.9	19.9
Total Split (s)	35.0	35.0	35.0	35.0	20.0	45.0	45.0	45.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	20.0%	45.0%	45.0%	45.0%
Maximum Green (s)	28.2	28.2	28.2	28.2	14.1	39.1	39.1	39.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
Lead/Lag					Lead		Lag	Lag
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0	0	0		0	0	0
90th %ile Green (s)	30.1	30.1	30.1	30.1	12.9	57.2	38.4	38.4
90th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
70th %ile Green (s)	35.4	35.4	35.4	35.4	12.1	51.9	33.9	33.9
70th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
50th %ile Green (s)	40.6	40.6	40.6	40.6	11.2	46.7	29.6	29.6
50th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
30th %ile Green (s)	45.7	45.7	45.7	45.7	9.9	41.6	25.8	25.8
30th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
10th %ile Green (s)	53.5	53.5	53.5	53.5	7.7	33.8	20.2	20.2
10th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	302	183	244	327	171
Future Volume (vph)	185	302	183	244	327	171
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.549		0.950	
Satd. Flow (perm)	1820	1547	999	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		336				190
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	336	203	271	363	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	336	203	271	363	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

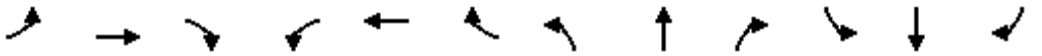
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	41.8	41.8	57.6	56.9	14.4	30.3
Actuated g/C Ratio	0.49	0.49	0.68	0.67	0.17	0.36
v/c Ratio	0.23	0.36	0.27	0.22	0.64	0.28
Control Delay	14.4	3.0	6.5	6.5	37.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	3.0	6.5	6.5	37.8	3.7
LOS	B	A	A	A	D	A
Approach Delay	7.4			6.5	26.1	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
90th %ile Green (s)	36.2	36.2	10.6	52.9	18.4	10.6
90th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
70th %ile Green (s)	38.7	38.7	10.4	55.2	16.1	10.4
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	41.7	41.7	9.1	56.9	14.4	9.1
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	44.4	44.4	8.0	58.5	12.8	8.0
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	48.0	48.0	6.7	60.8	10.5	6.7
10th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	162	214	87	97	132	101	914	76	87	796	162
Future Volume (vph)	207	162	214	87	97	132	101	914	76	87	796	162
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.233			0.186		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	378	3325	1348	299	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			209		53				130			180
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	230	180	238	97	108	147	112	1016	84	97	884	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	180	238	97	255	0	112	1016	84	97	884	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.3	58.8	58.8	66.7	58.5	58.5
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	1.17	0.37	0.42	0.53	0.80		0.38	0.62	0.12	0.39	0.55	0.24
Control Delay	153.3	34.2	7.9	54.2	56.0		15.4	25.8	1.2	10.6	20.4	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.3	34.2	7.9	54.2	56.0		15.4	25.8	1.2	10.6	20.4	6.4
LOS	F	C	A	D	E		B	C	A	B	C	A
Approach Delay		66.8			55.5			23.1			17.4	
Approach LOS		E			E			C			B	

Intersection Summary			
Area Type:	Other		
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: 1.17			
Intersection Signal Delay: 32.9		Intersection LOS: C	
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd

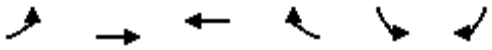
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8	12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	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
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)		0	0	0	0		0	0		0	0
90th %ile Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	9.2	39.7	39.7	24.7	24.7	10.6	53.2	53.2	10.0	52.6	52.6
70th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	9.2	36.2	36.2	21.2	21.2	9.2	58.0	58.0	8.7	57.5	57.5
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	9.2	32.6	32.6	17.6	17.6	7.9	62.8	62.8	7.5	62.4	62.4
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	9.2	27.4	27.4	12.4	12.4	7.0	68.5	68.5	7.0	68.5	68.5
10th %ile Term Code	Max	Hold	Hold	Gap	Gap	Min	Coord	Coord	Min	Coord	Coord

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	129	4	0	156	2	0
Future Volume (Veh/h)	129	4	0	156	2	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	143	4	0	173	2	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			147		318	145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			147		318	145
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1435		675	902

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	147	173	2
Volume Left	0	0	2
Volume Right	4	0	0
cSH	1700	1435	675
Volume to Capacity	0.09	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	10.3
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.3
Approach LOS			B

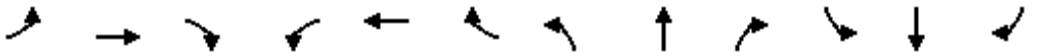
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	4	7	33	196	0
Future Volume (vph)	0	4	7	33	196	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	4	8	37	218	0

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	4	45	218
Volume Left (vph)	0	0	218
Volume Right (vph)	0	37	0
Hadj (s)	0.03	-0.46	0.23
Departure Headway (s)	4.5	3.9	4.2
Degree Utilization, x	0.00	0.05	0.26
Capacity (veh/h)	759	862	833
Control Delay (s)	7.5	7.2	8.7
Approach Delay (s)	7.5	7.2	8.7
Approach LOS	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		



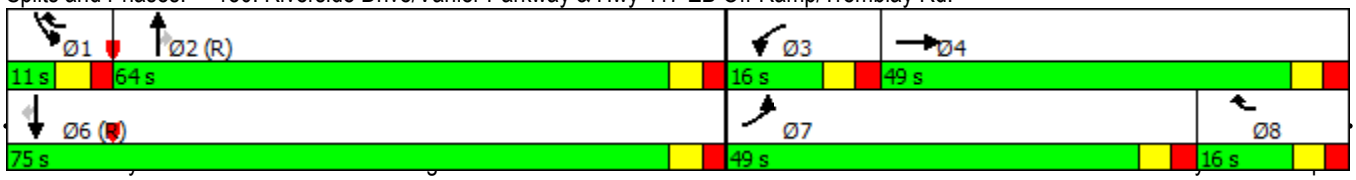
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	188	700	65	0	169	0	2008	90	51	1187	0
Future Volume (vph)	563	188	700	65	0	169	0	2008	90	51	1187	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			408						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	209	778	72	0	188	0	2231	100	57	1319	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	209	778	72	0	188	0	2231	100	57	1319	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	49.0	49.0		16.0				64.0	64.0	11.0	75.0	75.0
Total Split (%)	35.0%	35.0%		11.4%				45.7%	45.7%	7.9%	53.6%	53.6%
Maximum Green (s)	43.0	42.7		10.0				57.9	57.9	5.1	68.9	68.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	32.7	33.0	140.0	9.4		26.4		62.9	62.9	10.4	79.2	
Actuated g/C Ratio	0.23	0.24	1.00	0.07		0.19		0.45	0.45	0.07	0.57	
v/c Ratio	0.83	0.27	0.57	0.67		0.39		1.22	0.14	0.46	0.70	
Control Delay	60.8	43.7	1.7	92.4		52.5		140.6	0.4	74.1	25.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	60.8	43.7	1.7	92.4		52.5		140.6	0.4	74.1	25.4	
LOS	E	D	A	F		D		F	A	E	C	
Approach Delay		30.1			63.5			134.6			27.4	
Approach LOS		C			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 74.6		Intersection LOS: E	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	16.0
Total Split (%)	11%
Maximum Green (s)	10.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

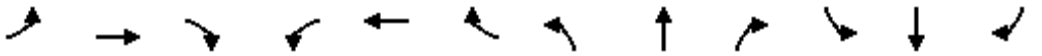
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	461	136	1236	218	6	1395
Future Volume (vph)	461	136	1236	218	6	1395
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.162	
Satd. Flow (perm)	2719	1420	4593	1461	291	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		34		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	512	151	1373	242	7	1550
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	151	1373	242	7	1550
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	32.2	28.5	79.9	79.9	79.9	79.9
Actuated g/C Ratio	0.27	0.24	0.67	0.67	0.67	0.67
v/c Ratio	0.70	0.42	0.45	0.23	0.04	0.50
Control Delay	44.6	32.1	10.7	1.7	9.5	11.4
Queue Delay	0.0	0.0	1.1	0.6	0.0	0.0
Total Delay	44.6	32.1	11.8	2.3	9.5	11.4
LOS	D	C	B	A	A	B
Approach Delay	41.8		10.4			11.4
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



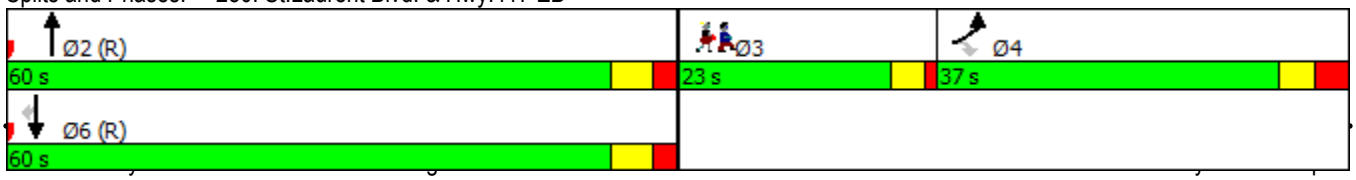
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	538	0	0	0	0	1109	0	0	718	176
Future Volume (vph)	700	0	538	0	0	0	0	1109	0	0	718	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			360									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	598	0	0	0	0	1232	0	0	798	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	598	0	0	0	0	1232	0	0	798	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	41.9		41.9					65.5			65.5	65.5
Actuated g/C Ratio	0.35		0.35					0.55			0.55	0.55
v/c Ratio	0.73		0.81					0.51			0.32	0.26
Control Delay	37.8		22.6					8.6			16.4	3.4
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	37.8		22.6					8.6			16.4	3.4
LOS	D		C					A			B	A
Approach Delay		31.2						8.6			13.8	
Approach LOS		C						A			B	

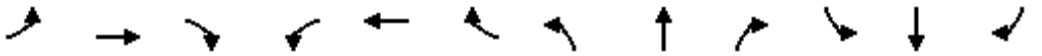
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

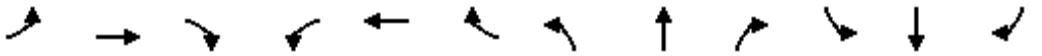


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	22	18	14	22	87	45	1113	31	130	1153	58
Future Volume (vph)	20	22	18	14	22	87	45	1113	31	130	1153	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.932			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1576	0	1402	1402	0	1629	4337	0	1629	3081	1319
Flt Permitted	0.575			0.728			0.216			0.182		
Satd. Flow (perm)	763	1576	0	1066	1402	0	370	4337	0	311	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			97			5				64
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	22	24	20	16	24	97	50	1237	34	144	1281	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	44	0	16	121	0	50	1271	0	144	1281	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	9.5	9.5		9.5	9.5		85.1	85.1		99.3	97.9	97.9
Actuated g/C Ratio	0.08	0.08		0.08	0.08		0.71	0.71		0.83	0.82	0.82
v/c Ratio	0.37	0.31		0.19	0.60		0.19	0.41		0.42	0.51	0.06
Control Delay	68.2	37.8		55.2	28.2		4.7	4.2		7.9	3.9	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	68.2	37.8		55.2	28.2		4.7	4.2		7.9	3.9	0.3
LOS	E	D		E	C		A	A		A	A	A
Approach Delay		47.9			31.4			4.2			4.1	
Approach LOS		D			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

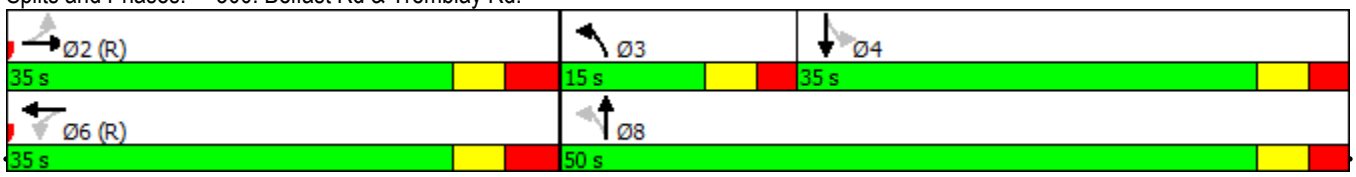


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Future Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.97		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.891			0.966			0.990			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1458	0	1729	1615	0	1586	1726	0	1616	1688	0
Flt Permitted	0.682			0.630			0.272			0.596		
Satd. Flow (perm)	1211	1458	0	1139	1615	0	450	1726	0	1009	1688	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			18			6			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	56	148	31	90	26	100	247	17	18	264	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	204	0	31	116	0	100	264	0	18	322	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		15.0	50.0		35.0	35.0	
Total Split (%)	41.2%	41.2%		41.2%	41.2%		17.6%	58.8%		41.2%	41.2%	
Maximum Green (s)	28.2	28.2		28.2	28.2		9.1	44.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.6	39.6		39.6	39.6		32.7	32.7		21.0	21.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.38	0.38		0.25	0.25	
v/c Ratio	0.17	0.27		0.06	0.15		0.35	0.40		0.07	0.75	
Control Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
LOS	B	A		B	B		B	B		C	D	
Approach Delay		10.8			15.6			15.2			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

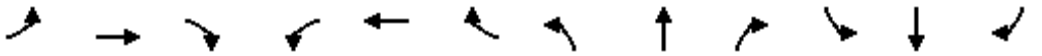


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	147	91
Future Volume (vph)	184	172	124	153	147	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				101
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	163	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	163	101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.1	48.1	62.5	61.8	9.5	24.0
Actuated g/C Ratio	0.57	0.57	0.74	0.73	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.43	0.20
Control Delay	5.6	1.6	4.0	4.0	38.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.6	4.0	4.0	38.5	5.6
LOS	A	A	A	A	D	A
Approach Delay	3.7			4.0	25.9	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 39.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

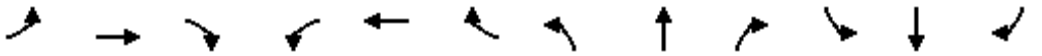


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	79	92	44	128	92	121	828	62	91	824	184
Future Volume (vph)	63	79	92	44	128	92	121	828	62	91	824	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.276			0.700			0.218			0.221		
Satd. Flow (perm)	404	1685	1247	1024	1434	0	360	3202	1384	369	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		28				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	70	88	102	49	142	102	134	920	69	101	916	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	88	102	49	244	0	134	920	69	101	916	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.9	34.9	34.9	22.3	22.3		68.4	59.6	59.6	67.5	59.1	59.1
Actuated g/C Ratio	0.29	0.29	0.29	0.19	0.19		0.57	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.36	0.18	0.24	0.26	0.85		0.46	0.58	0.09	0.35	0.58	0.29
Control Delay	33.8	29.9	6.5	43.7	66.6		17.1	25.3	0.2	10.1	18.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	29.9	6.5	43.7	66.6		17.1	25.3	0.2	10.1	18.1	4.0
LOS	C	C	A	D	E		B	C	A	B	B	A
Approach Delay		21.7			62.8			22.7			15.1	
Approach LOS		C			E			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



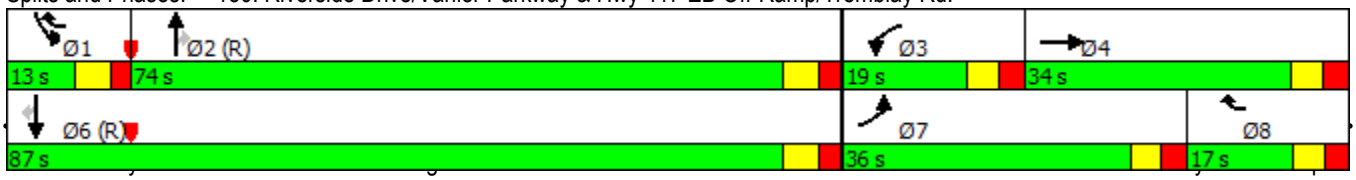
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	230	579	93	0	261	0	2125	108	64	1281	0
Future Volume (vph)	494	230	579	93	0	261	0	2125	108	64	1281	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1627	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			273						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	256	643	103	0	290	0	2361	120	71	1423	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	256	643	103	0	290	0	2361	120	71	1423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	36.0	34.0		19.0				74.0	74.0	13.0	87.0	87.0
Total Split (%)	25.7%	24.3%		13.6%				52.9%	52.9%	9.3%	62.1%	62.1%
Maximum Green (s)	30.0	27.7		13.0				67.9	67.9	7.1	80.9	80.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	28.3	27.0	140.0	12.0		24.8		69.9	68.9	7.8	82.6	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.49	0.06	0.59	
v/c Ratio	0.88	0.41	0.48	0.74		0.61		1.13	0.15	0.76	0.73	
Control Delay	70.9	51.7	1.2	91.4		59.7		99.8	1.2	108.2	23.6	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	70.9	51.7	1.2	91.4		59.7		99.8	1.2	108.2	23.6	
LOS	E	D	A	F		E		F	A	F	C	
Approach Delay		36.5			68.0			95.1			27.7	
Approach LOS		D			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 61.4		Intersection LOS: E	
Intersection Capacity Utilization 82.0%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

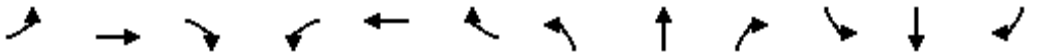
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	158	1620	223	9	1861
Future Volume (vph)	453	158	1620	223	9	1861
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.095	
Satd. Flow (perm)	2848	1348	4725	1455	171	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		23		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	503	176	1800	248	10	2068
Shared Lane Traffic (%)						
Lane Group Flow (vph)	503	176	1800	248	10	2068
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.3	25.6	82.8	82.8	82.8	82.8
Actuated g/C Ratio	0.24	0.21	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.58	0.55	0.23	0.09	0.63
Control Delay	46.3	43.6	10.6	1.5	9.8	12.0
Queue Delay	0.0	0.0	2.9	0.6	0.0	0.4
Total Delay	46.3	43.6	13.5	2.1	9.8	12.4
LOS	D	D	B	A	A	B
Approach Delay	45.6		12.2			12.4
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



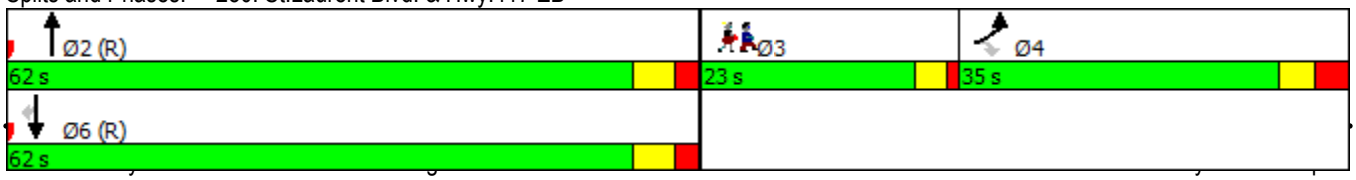
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	297	0	0	0	0	1248	0	0	761	421
Future Volume (vph)	712	0	297	0	0	0	0	1248	0	0	761	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			330									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	330	0	0	0	0	1387	0	0	846	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	330	0	0	0	0	1387	0	0	846	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	40.8		40.8					66.6			66.6	66.6
Actuated g/C Ratio	0.34		0.34					0.56			0.56	0.56
v/c Ratio	0.74		0.47					0.53			0.33	0.49
Control Delay	40.2		5.4					18.3			15.0	3.1
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	40.2		5.4					18.3			15.0	3.1
LOS	D		A					B			B	A
Approach Delay		30.0						18.3			10.7	
Approach LOS		C						B			B	

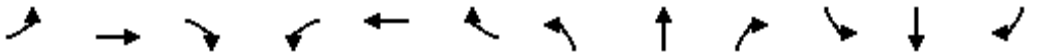
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

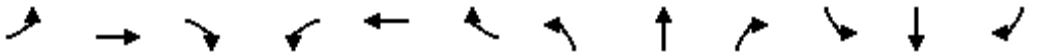


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	30	34	32	23	188	29	1343	18	74	910	39
Future Volume (vph)	40	30	34	32	23	188	29	1343	18	74	910	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98		1.00	1.00		1.00		0.97
Frt		0.920			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1567	0	1644	1489	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.305			0.711			0.283			0.133		
Satd. Flow (perm)	445	1567	0	1228	1489	0	475	4671	0	223	3167	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			176			2				43
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	44	33	38	36	26	209	32	1492	20	82	1011	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	71	0	36	235	0	32	1512	0	82	1011	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	13.1	13.1		13.1	13.1		84.4	84.4		95.7	94.3	94.3
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.80	0.79	0.79
v/c Ratio	0.92	0.35		0.27	0.74		0.10	0.46		0.31	0.41	0.04
Control Delay	158.1	29.3		51.6	28.3		14.2	13.3		8.4	2.9	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	158.1	29.3		51.6	28.3		14.2	13.3		8.4	3.0	0.3
LOS	F	C		D	C		B	B		A	A	A
Approach Delay		78.6			31.4			13.4			3.3	
Approach LOS		E			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

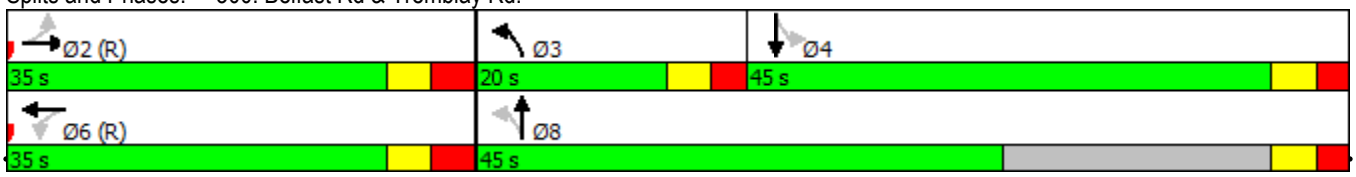


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Future Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.921			0.966			0.993			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1513	0	1631	1646	0	1631	1687	0	1729	1725	0
Flt Permitted	0.692			0.585			0.214			0.493		
Satd. Flow (perm)	1186	1513	0	993	1646	0	367	1687	0	892	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			15			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	111	124	20	78	23	143	451	21	26	333	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	235	0	20	101	0	143	472	0	26	399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	42.1	42.1		42.1	42.1		45.2	45.2		28.4	28.4	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.45	0.45		0.28	0.28	
v/c Ratio	0.22	0.35		0.05	0.14		0.47	0.62		0.10	0.80	
Control Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
LOS	C	B		C	B		B	C		C	D	
Approach Delay		20.3			19.4			22.5			42.8	
Approach LOS		C			B			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

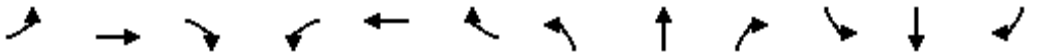


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	286	154	244	315	150
Future Volume (vph)	185	286	154	244	315	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.550		0.950	
Satd. Flow (perm)	1820	1547	1001	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		318				167
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	318	171	271	350	167
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	318	171	271	350	167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	42.6	42.6	57.9	57.2	14.1	29.5
Actuated g/C Ratio	0.50	0.50	0.68	0.67	0.17	0.35
v/c Ratio	0.23	0.34	0.23	0.22	0.63	0.26
Control Delay	14.0	3.0	6.1	6.4	37.9	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	3.0	6.1	6.4	37.9	3.9
LOS	B	A	A	A	D	A
Approach Delay	7.3			6.3	26.9	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

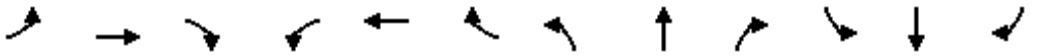


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	162	204	87	97	132	95	949	76	87	807	140
Future Volume (vph)	196	162	204	87	97	132	95	949	76	87	807	140
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.229			0.172		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	371	3325	1348	277	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		53				130			156
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	218	180	227	97	108	147	106	1054	84	97	897	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	180	227	97	255	0	106	1054	84	97	897	156
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.2	58.8	58.8	66.8	58.6	58.6
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	1.11	0.37	0.40	0.53	0.80		0.37	0.65	0.12	0.40	0.55	0.21
Control Delay	133.1	34.2	7.2	54.2	56.0		15.2	26.4	1.2	22.2	26.1	7.1
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	133.1	34.2	7.2	54.2	56.0		15.2	26.4	1.2	22.2	26.1	7.1
LOS	F	C	A	D	E		B	C	A	C	C	A
Approach Delay		58.9			55.5			23.8			23.2	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
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: 1.11			
Intersection Signal Delay: 33.4		Intersection LOS: C	
Intersection Capacity Utilization 78.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



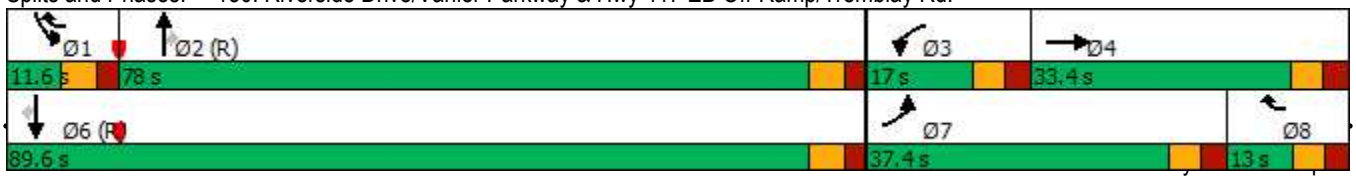
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	230	700	71	0	174	0	2041	117	51	1187	0
Future Volume (vph)	563	230	700	71	0	174	0	2041	117	51	1187	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			279						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	256	778	79	0	193	0	2268	130	57	1319	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	256	778	79	0	193	0	2268	130	57	1319	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	37.4	33.4		17.0				78.0	78.0	11.6	89.6	89.6
Total Split (%)	26.7%	23.9%		12.1%				55.7%	55.7%	8.3%	64.0%	64.0%
Maximum Green (s)	31.4	27.1		11.0				71.9	71.9	5.7	83.5	83.5
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	30.0	26.6	140.0	10.2		19.3		72.6	72.6	6.3	84.9	
Actuated g/C Ratio	0.21	0.19	1.00	0.07		0.14		0.52	0.52	0.04	0.61	
v/c Ratio	0.90	0.41	0.57	0.68		0.54		1.08	0.16	0.75	0.65	
Control Delay	71.1	52.0	1.7	91.4		62.6		77.4	1.4	114.0	20.2	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	71.1	52.0	1.7	91.4		62.6		77.4	1.4	114.0	20.2	
LOS	E	D	A	F		E		E	A	F	C	
Approach Delay		35.6			71.0			73.3			24.1	
Approach LOS		D			E			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 50.4		Intersection LOS: D	
Intersection Capacity Utilization 80.0%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	13.0
Total Split (%)	9%
Maximum Green (s)	7.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Protected Phases	7	4		3	1 8	2		1	6	8
Permitted Phases			Free				2			
Minimum Initial (s)	5.0	7.0		5.0		7.0	7.0	5.0	7.0	5.0
Minimum Split (s)	13.0	32.3		13.0		40.1	40.1	10.9	40.1	13.0
Total Split (s)	37.4	33.4		17.0		78.0	78.0	11.6	89.6	13.0
Total Split (%)	26.7%	23.9%		12.1%		55.7%	55.7%	8.3%	64.0%	9%
Maximum Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
Yellow Time (s)	3.3	3.3		3.3		3.7	3.7	3.7	3.7	3.3
All-Red Time (s)	2.7	3.0		2.7		2.4	2.4	2.2	2.4	2.7
Lead/Lag	Lead	Lag		Lead		Lag	Lag	Lead		Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None		C-Max	C-Max	None	C-Max	None
Walk Time (s)		7.0				7.0	7.0		7.0	
Flash Dont Walk (s)		19.0				27.0	27.0		27.0	
Pedestrian Calls (#/hr)		0				0	0		0	
90th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
90th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
70th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
70th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
50th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
50th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
30th %ile Green (s)	30.0	26.3		10.4		71.9	71.9	7.1	84.9	7.0
30th %ile Term Code	Gap	Hold		Gap		Coord	Coord	Max	Coord	Max
10th %ile Green (s)	26.0	25.2		7.5		75.5	75.5	7.5	88.9	7.0
10th %ile Term Code	Gap	Hold		Gap		Coord	Coord	Gap	Coord	Max

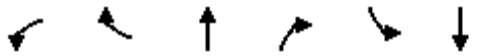
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	501	136	1250	218	6	1408
Future Volume (vph)	501	136	1250	218	6	1408
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.156	
Satd. Flow (perm)	2719	1420	4593	1461	281	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		33		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	557	151	1389	242	7	1564
Shared Lane Traffic (%)						
Lane Group Flow (vph)	557	151	1389	242	7	1564
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	34.3	30.6	77.8	77.8	77.8	77.8
Actuated g/C Ratio	0.29	0.26	0.65	0.65	0.65	0.65
v/c Ratio	0.72	0.39	0.47	0.23	0.04	0.52
Control Delay	43.6	30.4	11.9	1.9	10.5	12.7
Queue Delay	0.0	0.0	1.3	0.6	0.0	0.0
Total Delay	43.6	30.4	13.2	2.5	10.5	12.7
LOS	D	C	B	A	B	B
Approach Delay	40.8		11.6			12.6
Approach LOS	D		B			B

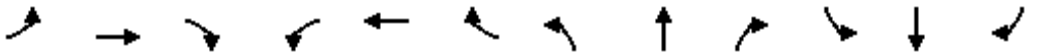
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	38.2	38.2	70.2	70.2	70.2	70.2
90th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
70th %ile Green (s)	34.1	34.1	74.3	74.3	74.3	74.3
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	30.4	30.4	78.0	78.0	78.0	78.0
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
30th %ile Green (s)	27.3	27.3	81.1	81.1	81.1	81.1
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
10th %ile Green (s)	22.9	22.9	85.5	85.5	85.5	85.5
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



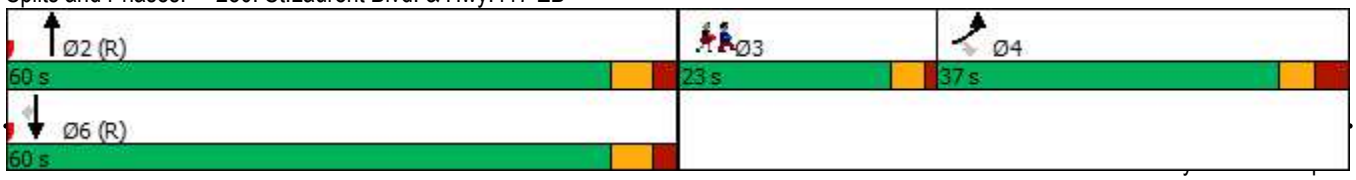
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	658	0	0	0	0	1164	0	0	771	176
Future Volume (vph)	700	0	658	0	0	0	0	1164	0	0	771	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			347									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	731	0	0	0	0	1293	0	0	857	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	731	0	0	0	0	1293	0	0	857	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	53.5		53.5					53.9			53.9	53.9
Actuated g/C Ratio	0.45		0.45					0.45			0.45	0.45
v/c Ratio	0.57		0.88					0.66			0.42	0.30
Control Delay	26.7		29.1					35.2			23.3	4.0
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	26.7		29.1					35.2			23.3	4.0
LOS	C		C					D			C	A
Approach Delay		27.8						35.2			19.7	
Approach LOS		C						D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB

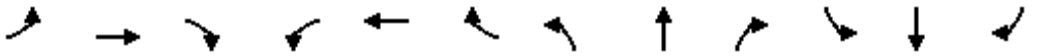


Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBR	NBT	SBT	SBR	Ø3
Protected Phases	4		2	6		3
Permitted Phases	4	4			6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	34.5	34.5	40.1	40.1	40.1	11.0
Total Split (s)	37.0	37.0	60.0	60.0	60.0	23.0
Total Split (%)	30.8%	30.8%	50.0%	50.0%	50.0%	19%
Maximum Green (s)	30.5	30.5	53.9	53.9	53.9	19.0
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.0
All-Red Time (s)	3.2	3.2	2.4	2.4	2.4	1.0
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Walk Time (s)	7.0	7.0	25.0	25.0	25.0	
Flash Dont Walk (s)	21.0	21.0	9.0	9.0	9.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
90th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
90th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
70th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
70th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
50th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
50th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
30th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
30th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
10th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
10th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	22	27	14	22	87	58	1124	31	130	1153	234
Future Volume (vph)	70	22	27	14	22	87	58	1124	31	130	1153	234
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	70.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.917			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2457	1546	0	1402	1402	0	1629	4337	0	1629	3081	1319
Flt Permitted	0.950			0.950			0.213			0.161		
Satd. Flow (perm)	2446	1546	0	1391	1402	0	365	4337	0	276	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			97			4				260
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		281.9			108.9			94.4			180.4	
Travel Time (s)		16.9			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	78	24	30	16	24	97	64	1249	34	144	1281	260
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	54	0	16	121	0	64	1283	0	144	1281	260
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

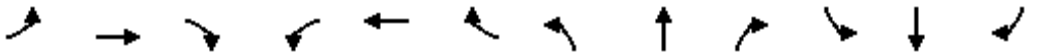
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	7.0		10.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	33.5		14.0	33.5		35.2	35.2		11.7	35.1	35.1
Total Split (s)	14.0	33.5		14.0	33.5		57.5	57.5		15.0	72.5	72.5
Total Split (%)	11.7%	27.9%		11.7%	27.9%		47.9%	47.9%		12.5%	60.4%	60.4%
Maximum Green (s)	10.0	27.0		10.0	27.0		51.3	51.3		10.3	66.4	66.4
Yellow Time (s)	3.5	3.3		3.5	3.3		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	0.5	3.2		0.5	3.2		2.5	2.5		1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		4.0	6.5		6.2	6.2		4.7	6.1	6.1
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0		12.0	12.0			12.0	12.0
Flash Dont Walk (s)		20.0			20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)		0			0		0	0			0	0
Act Effct Green (s)	10.0	14.9		10.0	9.3		72.8	72.8		88.3	86.9	86.9
Actuated g/C Ratio	0.08	0.12		0.08	0.08		0.61	0.61		0.74	0.72	0.72
v/c Ratio	0.38	0.25		0.14	0.61		0.29	0.49		0.47	0.57	0.26
Control Delay	57.9	29.1		54.1	28.6		21.5	15.9		14.0	17.2	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.8	0.0
Total Delay	57.9	29.1		54.1	28.6		21.5	15.9		14.0	18.0	6.4
LOS	E	C		D	C		C	B		B	B	A
Approach Delay		46.1			31.5			16.1			15.9	
Approach LOS		D			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Protected Phases	7	4	3	8		2	1	6	
Permitted Phases					2		6		6
Minimum Initial (s)	10.0	7.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	33.5	14.0	33.5	35.2	35.2	11.7	35.1	35.1
Total Split (s)	14.0	33.5	14.0	33.5	57.5	57.5	15.0	72.5	72.5
Total Split (%)	11.7%	27.9%	11.7%	27.9%	47.9%	47.9%	12.5%	60.4%	60.4%
Maximum Green (s)	10.0	27.0	10.0	27.0	51.3	51.3	10.3	66.4	66.4
Yellow Time (s)	3.5	3.3	3.5	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	0.5	3.2	0.5	3.2	2.5	2.5	1.0	2.4	2.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0		7.0	12.0	12.0		12.0	12.0
Flash Dont Walk (s)		20.0		20.0	17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0
90th %ile Green (s)	10.0	14.6	10.0	14.6	60.9	60.9	13.1	78.8	78.8
90th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
70th %ile Green (s)	10.0	10.5	10.0	10.5	68.2	68.2	9.9	82.9	82.9
70th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	10.0	21.6	0.0	7.6	72.4	72.4	8.6	85.8	85.8
50th %ile Term Code	Max	Hold	Skip	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	10.0	21.0	0.0	7.0	73.8	73.8	7.8	86.4	86.4
30th %ile Term Code	Max	Hold	Skip	Min	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	7.0	0.0	7.0	88.6	88.6	7.0	100.4	100.4
10th %ile Term Code	Skip	Hold	Skip	Min	Coord	Coord	Min	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

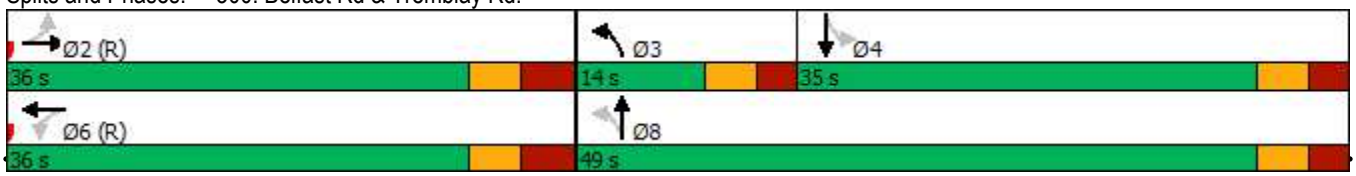


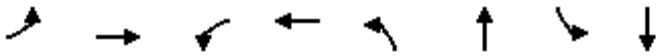
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	120	133	28	97	27	90	228	15	16	238	66
Future Volume (vph)	88	120	133	28	97	27	90	228	15	16	238	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.921			0.967			0.991			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1504	0	1729	1617	0	1586	1728	0	1616	1676	0
Flt Permitted	0.669			0.559			0.262			0.593		
Satd. Flow (perm)	1188	1504	0	1012	1617	0	434	1728	0	1004	1676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		72			18			6			18	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			558.7			589.1			159.1	
Travel Time (s)		23.4			33.5			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	133	148	31	108	30	100	253	17	18	264	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	281	0	31	138	0	100	270	0	18	337	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	36.0	36.0		36.0	36.0		14.0	49.0		35.0	35.0	
Total Split (%)	42.4%	42.4%		42.4%	42.4%		16.5%	57.6%		41.2%	41.2%	
Maximum Green (s)	29.2	29.2		29.2	29.2		8.1	43.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.5	39.5		39.5	39.5		32.8	32.8		21.6	21.6	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.39	0.39		0.25	0.25	
v/c Ratio	0.18	0.38		0.07	0.18		0.37	0.40		0.07	0.77	
Control Delay	18.2	15.2		17.5	15.4		15.4	16.0		21.8	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.2	15.2		17.5	15.4		15.4	16.0		21.8	39.1	
LOS	B	B		B	B		B	B		C	D	
Approach Delay		16.0			15.8			15.8			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.8	29.8	29.8	29.8	12.9	19.9	19.9	19.9
Total Split (s)	36.0	36.0	36.0	36.0	14.0	49.0	35.0	35.0
Total Split (%)	42.4%	42.4%	42.4%	42.4%	16.5%	57.6%	41.2%	41.2%
Maximum Green (s)	29.2	29.2	29.2	29.2	8.1	43.1	29.1	29.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
Lead/Lag					Lead		Lag	Lag
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0	0	0		0	0	0
90th %ile Green (s)	29.2	29.2	29.2	29.2	8.1	43.1	29.1	29.1
90th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Max	Max
70th %ile Green (s)	33.5	33.5	33.5	33.5	8.1	38.8	24.8	24.8
70th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Gap	Gap
50th %ile Green (s)	36.6	36.6	36.6	36.6	8.1	35.7	21.7	21.7
50th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Gap	Gap
30th %ile Green (s)	40.0	40.0	40.0	40.0	7.9	32.3	18.5	18.5
30th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
10th %ile Green (s)	58.4	58.4	58.4	58.4	0.0	13.9	13.9	13.9
10th %ile Term Code	Coord	Coord	Coord	Coord	Skip	Hold	Gap	Gap

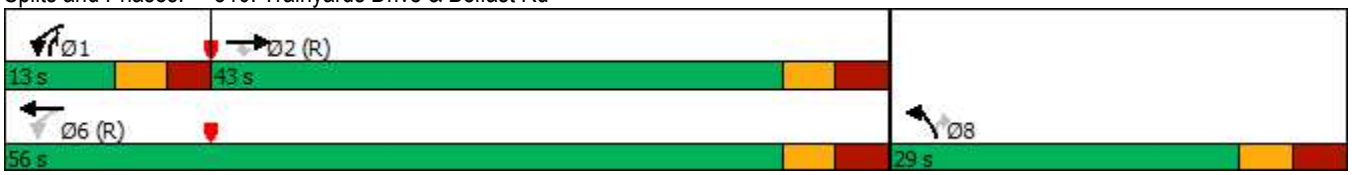
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	153	102
Future Volume (vph)	184	172	124	153	153	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				113
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	170	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	170	113
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.0	48.0	62.3	61.6	9.7	24.1
Actuated g/C Ratio	0.56	0.56	0.73	0.72	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.45	0.22
Control Delay	4.7	1.4	4.1	4.1	38.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	1.4	4.1	4.1	38.5	5.4
LOS	A	A	A	A	D	A
Approach Delay	3.1			4.1	25.3	
Approach LOS	A			A	C	

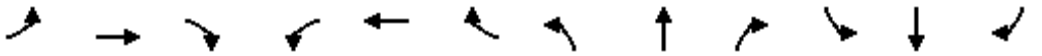
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 9.8		Intersection LOS: A	
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 310: Trainyards Drive & Belfast Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
90th %ile Green (s)	43.3	43.3	9.5	58.9	12.4	9.5
90th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
70th %ile Green (s)	46.2	46.2	8.2	60.5	10.8	8.2
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	48.2	48.2	7.4	61.7	9.6	7.4
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	50.0	50.0	6.7	62.8	8.5	6.7
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	52.2	52.2	6.0	64.3	7.0	6.0
10th %ile Term Code	Coord	Coord	Min	Coord	Min	Min

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	79	92	44	128	92	121	842	62	91	832	184
Future Volume (vph)	74	79	92	44	128	92	121	842	62	91	832	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.289			0.700			0.213			0.216		
Satd. Flow (perm)	423	1685	1247	1024	1434	0	352	3202	1384	360	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		29				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	82	88	102	49	142	102	134	936	69	101	924	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	88	102	49	244	0	134	936	69	101	924	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	13.8	50.6	50.6	36.8	36.8		17.0	52.4	52.4	17.0	52.4	52.4
Total Split (%)	11.5%	42.2%	42.2%	30.7%	30.7%		14.2%	43.7%	43.7%	14.2%	43.7%	43.7%
Maximum Green (s)	8.0	44.8	44.8	31.0	31.0		11.3	46.8	46.8	11.3	46.8	46.8
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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.2	34.2	34.2	23.2	23.2		69.3	59.7	59.7	67.8	59.0	59.0
Actuated g/C Ratio	0.28	0.28	0.28	0.19	0.19		0.58	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.45	0.18	0.24	0.25	0.81		0.44	0.59	0.09	0.34	0.59	0.29
Control Delay	37.0	30.0	6.3	41.6	60.7		16.8	25.8	0.2	26.6	42.8	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	30.0	6.3	41.6	60.7		16.8	25.8	0.2	26.6	42.8	18.6
LOS	D	C	A	D	E		B	C	A	C	D	B
Approach Delay		23.2			57.5			23.2			37.4	
Approach LOS		C			E			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 32.6		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd

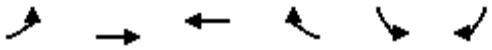
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8	12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	13.8	50.6	50.6	36.8	36.8	17.0	52.4	52.4	17.0	52.4	52.4
Total Split (%)	11.5%	42.2%	42.2%	30.7%	30.7%	14.2%	43.7%	43.7%	14.2%	43.7%	43.7%
Maximum Green (s)	8.0	44.8	44.8	31.0	31.0	11.3	46.8	46.8	11.3	46.8	46.8
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
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)		0	0	0	0		0	0		0	0
90th %ile Green (s)	8.0	44.8	44.8	31.0	31.0	11.3	46.8	46.8	11.3	46.8	46.8
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.0	41.1	41.1	27.3	27.3	11.7	51.7	51.7	10.1	50.1	50.1
70th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	8.0	37.4	37.4	23.6	23.6	10.0	56.7	56.7	8.8	55.5	55.5
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	8.0	33.6	33.6	19.8	19.8	8.5	61.7	61.7	7.6	60.8	60.8
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	14.3	14.3	14.3	14.3	7.0	81.6	81.6	7.0	81.6	81.6
10th %ile Term Code	Skip	Hold	Hold	Gap	Gap	Min	Coord	Coord	Min	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	143	2	0	140	5	0
Future Volume (Veh/h)	143	2	0	140	5	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	159	2	0	156	6	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			161		316	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			161		316	160
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1418		677	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	161	156	6
Volume Left	0	0	6
Volume Right	2	0	0
cSH	1700	1418	677
Volume to Capacity	0.09	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

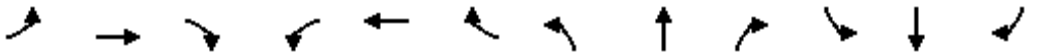
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	7	2	188	53	0
Future Volume (vph)	0	7	2	188	53	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	2	209	59	0

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	8	211	59
Volume Left (vph)	0	0	59
Volume Right (vph)	0	209	0
Hadj (s)	0.03	-0.56	0.23
Departure Headway (s)	4.3	3.5	4.5
Degree Utilization, x	0.01	0.20	0.07
Capacity (veh/h)	821	1012	751
Control Delay (s)	7.3	7.4	7.9
Approach Delay (s)	7.3	7.4	7.9
Approach LOS	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A	
Analysis Period (min)	15			



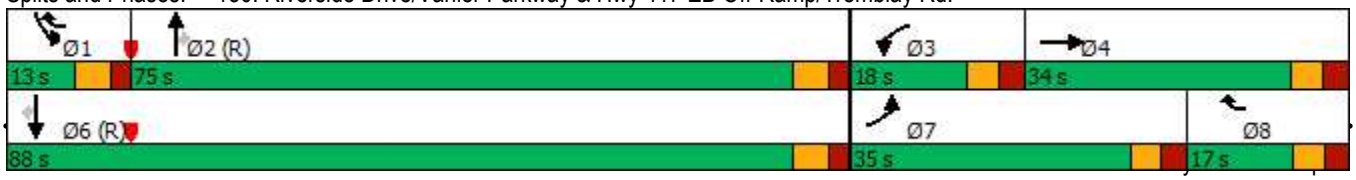
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	248	579	125	0	281	0	2129	116	64	1308	0
Future Volume (vph)	494	248	579	125	0	281	0	2129	116	64	1308	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1628	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			256						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	276	643	139	0	312	0	2366	129	71	1453	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	276	643	139	0	312	0	2366	129	71	1453	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	35.0	34.0		18.0				75.0	75.0	13.0	88.0	88.0
Total Split (%)	25.0%	24.3%		12.9%				53.6%	53.6%	9.3%	62.9%	62.9%
Maximum Green (s)	29.0	27.7		12.0				68.9	68.9	7.1	81.9	81.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	27.8	26.5	140.0	12.0		24.5		70.7	69.7	7.5	83.1	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.50	0.05	0.59	
v/c Ratio	0.90	0.45	0.48	1.00		0.67		1.12	0.16	0.78	0.74	
Control Delay	73.3	52.7	1.2	139.2		61.9		95.7	1.5	113.0	23.6	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	73.3	52.7	1.2	139.2		61.9		95.7	1.5	113.0	23.6	
LOS	E	D	A	F		E		F	A	F	C	
Approach Delay		37.9			85.7			90.8			27.8	
Approach LOS		D			F			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 61.2		Intersection LOS: E	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Protected Phases	7	4		3	1 8	2		1	6	8
Permitted Phases			Free				2			
Minimum Initial (s)	5.0	7.0		5.0		7.0	7.0	5.0	7.0	5.0
Minimum Split (s)	13.0	32.3		13.0		40.1	40.1	10.9	40.1	13.0
Total Split (s)	35.0	34.0		18.0		75.0	75.0	13.0	88.0	17.0
Total Split (%)	25.0%	24.3%		12.9%		53.6%	53.6%	9.3%	62.9%	12%
Maximum Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
Yellow Time (s)	3.3	3.3		3.3		3.7	3.7	3.7	3.7	3.3
All-Red Time (s)	2.7	3.0		2.7		2.4	2.4	2.2	2.4	2.7
Lead/Lag	Lead	Lag		Lead		Lag	Lag	Lead		Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None		C-Max	C-Max	None	C-Max	None
Walk Time (s)		7.0				7.0	7.0		7.0	
Flash Dont Walk (s)		19.0				27.0	27.0		27.0	
Pedestrian Calls (#/hr)		0				0	0		0	
90th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
90th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
70th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
70th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
50th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
50th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
30th %ile Green (s)	27.9	26.6		12.0		68.9	68.9	8.2	83.0	11.0
30th %ile Term Code	Gap	Hold		Max		Coord	Coord	Max	Coord	Max
10th %ile Green (s)	24.0	22.7		12.0		72.8	72.8	8.2	86.9	11.0
10th %ile Term Code	Gap	Hold		Max		Coord	Coord	Gap	Coord	Max

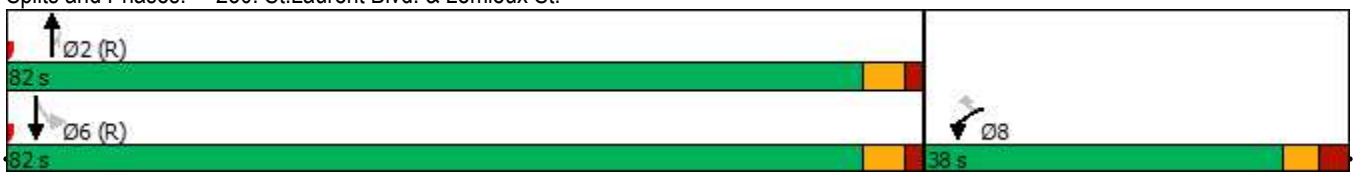
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

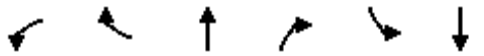
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	463	158	1645	223	9	1886
Future Volume (vph)	463	158	1645	223	9	1886
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.091	
Satd. Flow (perm)	2848	1348	4725	1455	164	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	514	176	1828	248	10	2096
Shared Lane Traffic (%)						
Lane Group Flow (vph)	514	176	1828	248	10	2096
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.6	25.9	82.5	82.5	82.5	82.5
Actuated g/C Ratio	0.25	0.22	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.57	0.56	0.23	0.09	0.65
Control Delay	46.4	43.5	10.9	1.5	10.0	12.3
Queue Delay	0.0	0.0	3.4	0.6	0.0	0.4
Total Delay	46.4	43.5	14.3	2.2	10.0	12.7
LOS	D	D	B	A	A	B
Approach Delay	45.6		12.8			12.7
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

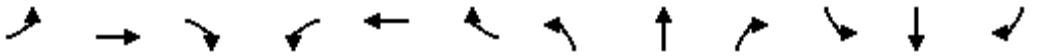
Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
90th %ile Term Code	Max	Max	Coord	Coord	Coord	Coord
70th %ile Green (s)	28.5	28.5	79.9	79.9	79.9	79.9
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	26.0	26.0	82.4	82.4	82.4	82.4
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
30th %ile Green (s)	23.5	23.5	84.9	84.9	84.9	84.9
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
10th %ile Green (s)	19.7	19.7	88.7	88.7	88.7	88.7
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



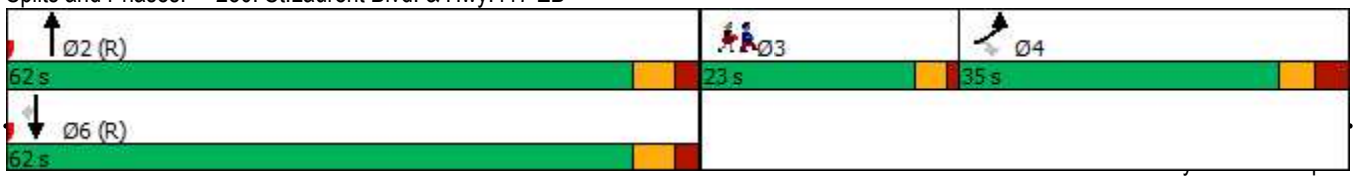
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	321	0	0	0	0	1441	0	0	797	421
Future Volume (vph)	712	0	321	0	0	0	0	1441	0	0	797	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			339									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	357	0	0	0	0	1601	0	0	886	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	357	0	0	0	0	1601	0	0	886	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	41.0		41.0					66.4			66.4	66.4
Actuated g/C Ratio	0.34		0.34					0.55			0.55	0.55
v/c Ratio	0.74		0.50					0.62			0.35	0.49
Control Delay	39.9		6.4					21.5			15.3	3.1
Queue Delay	0.0		0.0					0.7			0.0	0.0
Total Delay	39.9		6.4					22.2			15.3	3.1
LOS	D		A					C			B	A
Approach Delay		29.5						22.2			11.1	
Approach LOS		C						C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB

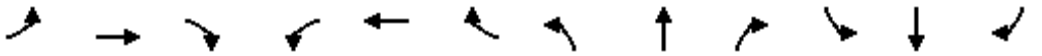


Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBR	NBT	SBT	SBR	Ø3
Protected Phases	4		2	6		3
Permitted Phases	4	4			6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	34.5	34.5	40.1	40.1	40.1	11.0
Total Split (s)	35.0	35.0	62.0	62.0	62.0	23.0
Total Split (%)	29.2%	29.2%	51.7%	51.7%	51.7%	19%
Maximum Green (s)	28.5	28.5	55.9	55.9	55.9	19.0
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.0
All-Red Time (s)	3.2	3.2	2.4	2.4	2.4	1.0
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Walk Time (s)	7.0	7.0	25.0	25.0	25.0	
Flash Dont Walk (s)	21.0	21.0	9.0	9.0	9.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
90th %ile Green (s)	42.2	42.2	65.2	65.2	65.2	0.0
90th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
70th %ile Green (s)	40.5	40.5	66.9	66.9	66.9	0.0
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
50th %ile Green (s)	39.9	39.9	67.5	67.5	67.5	0.0
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
30th %ile Green (s)	39.8	39.8	67.6	67.6	67.6	0.0
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
10th %ile Green (s)	42.6	42.6	64.8	64.8	64.8	0.0
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	30	55	32	23	188	32	1354	18	74	932	83
Future Volume (vph)	224	30	55	32	23	188	32	1354	18	74	932	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	70.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98		1.00	1.00				0.97
Frt		0.903			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2697	1542	0	1644	1489	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.950			0.950			0.264			0.098		
Satd. Flow (perm)	2687	1542	0	1640	1489	0	443	4671	0	165	3167	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		61			138			2				105
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		288.3			108.9			94.4			180.4	
Travel Time (s)		17.3			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	249	33	61	36	26	209	36	1504	20	82	1036	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	249	94	0	36	235	0	36	1524	0	82	1036	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

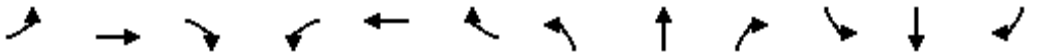
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	7.0		10.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	33.5		14.0	33.5		35.2	35.2		11.7	35.1	35.1
Total Split (s)	20.0	39.6		14.0	33.6		54.4	54.4		12.0	66.4	66.4
Total Split (%)	16.7%	33.0%		11.7%	28.0%		45.3%	45.3%		10.0%	55.3%	55.3%
Maximum Green (s)	16.0	33.1		10.0	27.1		48.2	48.2		7.3	60.3	60.3
Yellow Time (s)	3.5	3.3		3.5	3.3		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	0.5	3.2		0.5	3.2		2.5	2.5		1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		4.0	6.5		6.2	6.2		4.7	6.1	6.1
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0		12.0	12.0			12.0	12.0
Flash Dont Walk (s)		20.0			20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)		0			0		0	0			0	0
Act Effct Green (s)	14.8	24.8		10.0	14.4		63.4	63.4		75.6	74.2	74.2
Actuated g/C Ratio	0.12	0.21		0.08	0.12		0.53	0.53		0.63	0.62	0.62
v/c Ratio	0.75	0.26		0.26	0.78		0.15	0.62		0.40	0.53	0.11
Control Delay	65.4	18.2		56.8	38.7		16.5	20.6		29.7	29.5	9.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.3	0.0
Total Delay	65.4	18.2		56.8	38.7		16.5	20.6		29.7	29.8	9.4
LOS	E	B		E	D		B	C		C	C	A
Approach Delay		52.5			41.1			20.5			28.3	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 28.2		Intersection LOS: C	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Protected Phases	7	4	3	8		2	1	6	
Permitted Phases					2		6		6
Minimum Initial (s)	10.0	7.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	33.5	14.0	33.5	35.2	35.2	11.7	35.1	35.1
Total Split (s)	20.0	39.6	14.0	33.6	54.4	54.4	12.0	66.4	66.4
Total Split (%)	16.7%	33.0%	11.7%	28.0%	45.3%	45.3%	10.0%	55.3%	55.3%
Maximum Green (s)	16.0	33.1	10.0	27.1	48.2	48.2	7.3	60.3	60.3
Yellow Time (s)	3.5	3.3	3.5	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	0.5	3.2	0.5	3.2	2.5	2.5	1.0	2.4	2.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0		7.0	12.0	12.0		12.0	12.0
Flash Dont Walk (s)		20.0		20.0	17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0
90th %ile Green (s)	16.0	29.3	10.0	23.3	48.2	48.2	11.1	64.1	64.1
90th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	16.0	23.8	10.0	17.8	55.8	55.8	9.0	69.6	69.6
70th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	16.0	19.9	10.0	13.9	60.8	60.8	7.9	73.5	73.5
50th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	14.3	28.4	0.0	10.1	67.2	67.2	7.0	79.0	79.0
30th %ile Term Code	Gap	Hold	Skip	Gap	Coord	Coord	Min	Coord	Coord
10th %ile Green (s)	11.5	22.5	0.0	7.0	84.8	84.8	0.0	84.9	84.9
10th %ile Term Code	Gap	Hold	Skip	Min	Coord	Coord	Skip	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

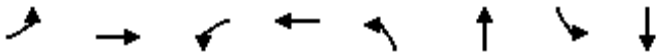


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	131	112	18	125	34	129	418	19	23	316	62
Future Volume (vph)	101	131	112	18	125	34	129	418	19	23	316	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.931			0.968			0.994			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1529	0	1631	1649	0	1631	1689	0	1729	1725	0
Flt Permitted	0.646			0.541			0.205			0.487		
Satd. Flow (perm)	1107	1529	0	919	1649	0	352	1689	0	881	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			14			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			586.6			589.1			159.1	
Travel Time (s)		23.4			35.2			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	146	124	20	139	38	143	464	21	26	351	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	270	0	20	177	0	143	485	0	26	420	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	41.1	41.1		41.1	41.1		46.2	46.2		29.6	29.6	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.46	0.46		0.30	0.30	
v/c Ratio	0.25	0.41		0.05	0.26		0.48	0.62		0.10	0.81	
Control Delay	24.5	22.1		22.9	21.7		19.6	22.8		23.4	43.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.5	22.1		22.9	21.7		19.6	22.8		23.4	43.7	
LOS	C	C		C	C		B	C		C	D	
Approach Delay		22.8			21.8			22.1			42.5	
Approach LOS		C			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.8	29.8	29.8	29.8	12.9	19.9	19.9	19.9
Total Split (s)	35.0	35.0	35.0	35.0	20.0	45.0	45.0	45.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	20.0%	45.0%	45.0%	45.0%
Maximum Green (s)	28.2	28.2	28.2	28.2	14.1	39.1	39.1	39.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
Lead/Lag					Lead		Lag	Lag
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0	0	0		0	0	0
90th %ile Green (s)	30.1	30.1	30.1	30.1	12.9	57.2	38.4	38.4
90th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
70th %ile Green (s)	35.4	35.4	35.4	35.4	12.1	51.9	33.9	33.9
70th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
50th %ile Green (s)	40.6	40.6	40.6	40.6	11.2	46.7	29.6	29.6
50th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
30th %ile Green (s)	45.7	45.7	45.7	45.7	9.9	41.6	25.8	25.8
30th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
10th %ile Green (s)	53.5	53.5	53.5	53.5	7.7	33.8	20.2	20.2
10th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	302	183	244	327	171
Future Volume (vph)	185	302	183	244	327	171
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.549		0.950	
Satd. Flow (perm)	1820	1547	999	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		336				190
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	336	203	271	363	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	336	203	271	363	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

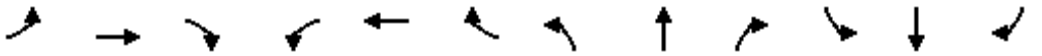
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	41.8	41.8	57.6	56.9	14.4	30.3
Actuated g/C Ratio	0.49	0.49	0.68	0.67	0.17	0.36
v/c Ratio	0.23	0.36	0.27	0.22	0.64	0.28
Control Delay	14.4	3.0	6.5	6.5	37.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	3.0	6.5	6.5	37.8	3.7
LOS	B	A	A	A	D	A
Approach Delay	7.4			6.5	26.1	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
90th %ile Green (s)	36.2	36.2	10.6	52.9	18.4	10.6
90th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
70th %ile Green (s)	38.7	38.7	10.4	55.2	16.1	10.4
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	41.7	41.7	9.1	56.9	14.4	9.1
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	44.4	44.4	8.0	58.5	12.8	8.0
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	48.0	48.0	6.7	60.8	10.5	6.7
10th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	162	214	87	97	132	101	952	76	87	828	162
Future Volume (vph)	207	162	214	87	97	132	101	952	76	87	828	162
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.219			0.171		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	355	3325	1348	275	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			203		53				130			180
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	230	180	238	97	108	147	112	1058	84	97	920	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	180	238	97	255	0	112	1058	84	97	920	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.3	58.8	58.8	66.7	58.5	58.5
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	1.17	0.37	0.42	0.53	0.80		0.39	0.65	0.12	0.41	0.57	0.24
Control Delay	153.3	34.2	8.4	54.2	56.0		15.8	26.5	1.2	11.3	19.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.3	34.2	8.4	54.2	56.0		15.8	26.5	1.2	11.3	19.4	5.4
LOS	F	C	A	D	E		B	C	A	B	B	A
Approach Delay		67.0			55.5			23.8			16.7	
Approach LOS		E			E			C			B	

Intersection Summary			
Area Type:	Other		
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: 1.17			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd

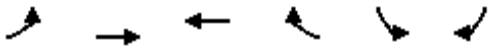
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8	12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	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
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)		0	0	0	0		0	0		0	0
90th %ile Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	9.2	39.7	39.7	24.7	24.7	10.6	53.2	53.2	10.0	52.6	52.6
70th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	9.2	36.2	36.2	21.2	21.2	9.2	58.0	58.0	8.7	57.5	57.5
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	9.2	32.6	32.6	17.6	17.6	7.9	62.8	62.8	7.5	62.4	62.4
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	9.2	27.4	27.4	12.4	12.4	7.0	68.5	68.5	7.0	68.5	68.5
10th %ile Term Code	Max	Hold	Hold	Gap	Gap	Min	Coord	Coord	Min	Coord	Coord

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	134	4	0	158	2	0
Future Volume (Veh/h)	134	4	0	158	2	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	149	4	0	176	2	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			153		327	151
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			153		327	151
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1428		667	895

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	153	176	2
Volume Left	0	0	2
Volume Right	4	0	0
cSH	1700	1428	667
Volume to Capacity	0.09	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

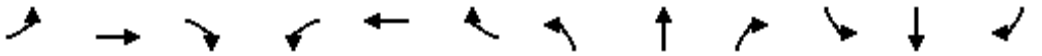
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	4	7	40	202	0
Future Volume (vph)	0	4	7	40	202	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	4	8	44	224	0

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	4	52	224
Volume Left (vph)	0	0	224
Volume Right (vph)	0	44	0
Hadj (s)	0.03	-0.47	0.23
Departure Headway (s)	4.5	3.9	4.3
Degree Utilization, x	0.01	0.06	0.26
Capacity (veh/h)	754	861	830
Control Delay (s)	7.5	7.2	8.8
Approach Delay (s)	7.5	7.2	8.8
Approach LOS	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		



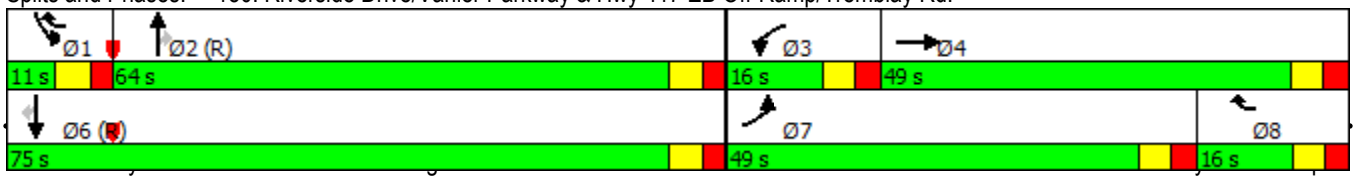
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	188	700	65	0	169	0	2089	90	51	1235	0
Future Volume (vph)	563	188	700	65	0	169	0	2089	90	51	1235	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			406						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	209	778	72	0	188	0	2321	100	57	1372	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	209	778	72	0	188	0	2321	100	57	1372	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	49.0	49.0		16.0				64.0	64.0	11.0	75.0	75.0
Total Split (%)	35.0%	35.0%		11.4%				45.7%	45.7%	7.9%	53.6%	53.6%
Maximum Green (s)	43.0	42.7		10.0				57.9	57.9	5.1	68.9	68.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	32.7	33.0	140.0	9.4		26.4		62.9	62.9	10.4	79.2	
Actuated g/C Ratio	0.23	0.24	1.00	0.07		0.19		0.45	0.45	0.07	0.57	
v/c Ratio	0.83	0.27	0.57	0.67		0.39		1.27	0.14	0.46	0.73	
Control Delay	60.8	43.7	1.7	92.4		52.5		161.3	0.4	74.1	26.3	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	60.8	43.7	1.7	92.4		52.5		161.3	0.4	74.1	26.3	
LOS	E	D	A	F		D		F	A	E	C	
Approach Delay		30.1			63.5			154.7			28.2	
Approach LOS		C			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 83.9		Intersection LOS: F	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	16.0
Total Split (%)	11%
Maximum Green (s)	10.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

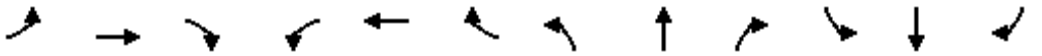
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	461	136	1286	218	6	1451
Future Volume (vph)	461	136	1286	218	6	1451
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.151	
Satd. Flow (perm)	2719	1420	4593	1461	272	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		29		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	512	151	1429	242	7	1612
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	151	1429	242	7	1612
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	32.2	28.5	79.9	79.9	79.9	79.9
Actuated g/C Ratio	0.27	0.24	0.67	0.67	0.67	0.67
v/c Ratio	0.70	0.42	0.47	0.23	0.04	0.52
Control Delay	44.6	33.6	10.9	1.7	9.7	11.6
Queue Delay	0.0	0.0	1.3	0.6	0.0	0.0
Total Delay	44.6	33.6	12.2	2.3	9.7	11.6
LOS	D	C	B	A	A	B
Approach Delay	42.1		10.8			11.6
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	538	0	0	0	0	1154	0	0	747	176
Future Volume (vph)	700	0	538	0	0	0	0	1154	0	0	747	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			353									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	598	0	0	0	0	1282	0	0	830	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	598	0	0	0	0	1282	0	0	830	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

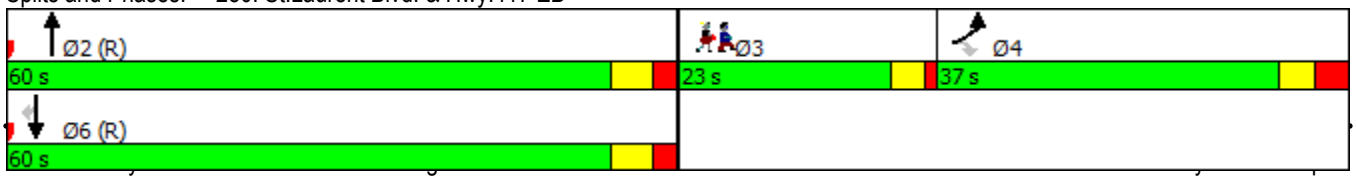
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	42.2		42.2					65.2			65.2	65.2
Actuated g/C Ratio	0.35		0.35					0.54			0.54	0.54
v/c Ratio	0.72		0.82					0.54			0.34	0.26
Control Delay	37.4		23.1					8.6			16.7	3.4
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	37.4		23.1					8.6			16.7	3.4
LOS	D		C					A			B	A
Approach Delay		31.2						8.6			14.2	
Approach LOS		C						A			B	

Intersection Summary

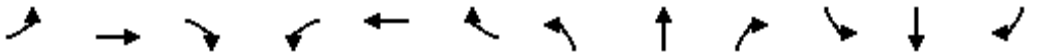
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

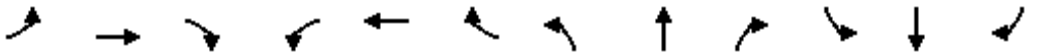


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	22	18	14	22	87	45	1158	31	130	1200	58
Future Volume (vph)	20	22	18	14	22	87	45	1158	31	130	1200	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.932			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1576	0	1402	1402	0	1629	4336	0	1629	3081	1319
Flt Permitted	0.575			0.728			0.205			0.171		
Satd. Flow (perm)	763	1576	0	1066	1402	0	351	4336	0	293	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			97			4				64
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	22	24	20	16	24	97	50	1287	34	144	1333	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	44	0	16	121	0	50	1321	0	144	1333	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	9.5	9.5		9.5	9.5		85.0	85.0		99.3	97.9	97.9
Actuated g/C Ratio	0.08	0.08		0.08	0.08		0.71	0.71		0.83	0.82	0.82
v/c Ratio	0.37	0.31		0.19	0.60		0.20	0.43		0.43	0.53	0.06
Control Delay	68.2	37.8		55.2	28.2		5.0	4.3		9.1	4.1	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	68.2	37.8		55.2	28.2		5.0	4.3		9.1	4.1	0.3
LOS	E	D		E	C		A	A		A	A	A
Approach Delay		47.9			31.4			4.4			4.4	
Approach LOS		D			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

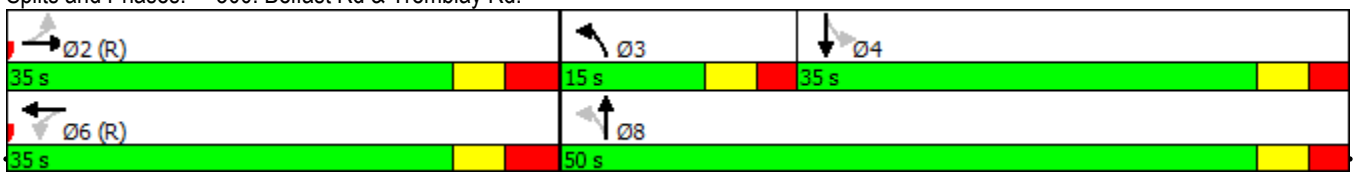


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Future Volume (vph)	88	50	133	28	81	23	90	222	15	16	238	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.97		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.891			0.966			0.990			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1458	0	1729	1615	0	1586	1726	0	1616	1688	0
Flt Permitted	0.682			0.630			0.272			0.596		
Satd. Flow (perm)	1211	1458	0	1139	1615	0	450	1726	0	1009	1688	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			18			6			14	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	56	148	31	90	26	100	247	17	18	264	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	204	0	31	116	0	100	264	0	18	322	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		15.0	50.0		35.0	35.0	
Total Split (%)	41.2%	41.2%		41.2%	41.2%		17.6%	58.8%		41.2%	41.2%	
Maximum Green (s)	28.2	28.2		28.2	28.2		9.1	44.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.6	39.6		39.6	39.6		32.7	32.7		21.0	21.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.38	0.38		0.25	0.25	
v/c Ratio	0.17	0.27		0.06	0.15		0.35	0.40		0.07	0.75	
Control Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.3	7.2		17.5	15.1		14.7	15.5		22.2	39.1	
LOS	B	A		B	B		B	B		C	D	
Approach Delay		10.8			15.6			15.2			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

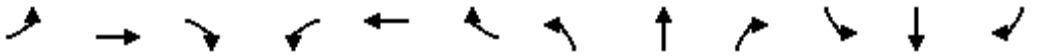


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	147	91
Future Volume (vph)	184	172	124	153	147	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				101
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	163	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	163	101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.1	48.1	62.5	61.8	9.5	24.0
Actuated g/C Ratio	0.57	0.57	0.74	0.73	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.43	0.20
Control Delay	5.6	1.6	4.0	4.0	38.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.6	4.0	4.0	38.5	5.6
LOS	A	A	A	A	D	A
Approach Delay	3.7			4.0	25.9	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 39.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

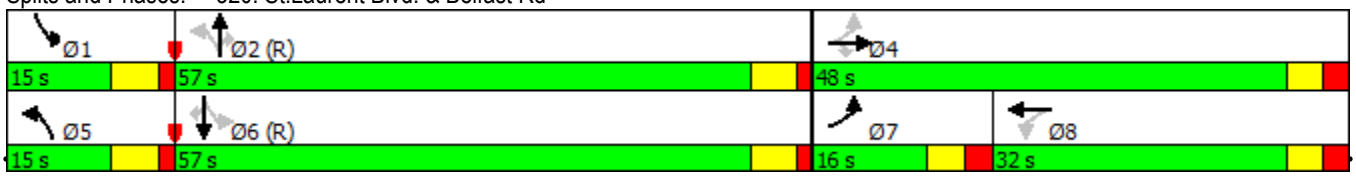


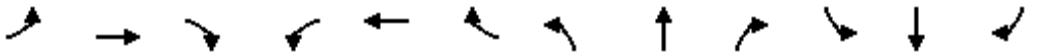
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	79	92	44	128	92	121	862	62	91	857	184
Future Volume (vph)	63	79	92	44	128	92	121	862	62	91	857	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.276			0.700			0.204			0.207		
Satd. Flow (perm)	404	1685	1247	1024	1434	0	337	3202	1384	345	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		28				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	70	88	102	49	142	102	134	958	69	101	952	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	88	102	49	244	0	134	958	69	101	952	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.9	34.9	34.9	22.3	22.3		68.4	59.6	59.6	67.5	59.1	59.1
Actuated g/C Ratio	0.29	0.29	0.29	0.19	0.19		0.57	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.36	0.18	0.24	0.26	0.85		0.47	0.60	0.09	0.36	0.60	0.29
Control Delay	33.8	29.9	6.5	43.7	66.6		17.7	25.8	0.2	10.3	18.2	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
Total Delay	33.8	29.9	6.5	43.7	66.6		17.7	25.8	0.2	10.3	18.2	3.8
LOS	C	C	A	D	E		B	C	A	B	B	A
Approach Delay		21.7			62.8			23.4			15.3	
Approach LOS		C			E			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd





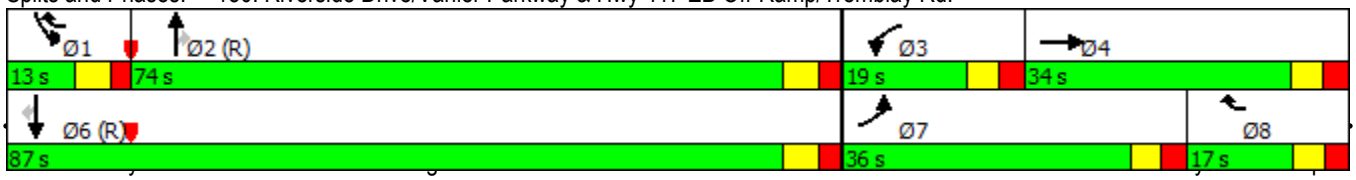
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	230	579	93	0	261	0	2211	108	64	1333	0
Future Volume (vph)	494	230	579	93	0	261	0	2211	108	64	1333	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1627	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			269						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	256	643	103	0	290	0	2457	120	71	1481	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	256	643	103	0	290	0	2457	120	71	1481	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	36.0	34.0		19.0				74.0	74.0	13.0	87.0	87.0
Total Split (%)	25.7%	24.3%		13.6%				52.9%	52.9%	9.3%	62.1%	62.1%
Maximum Green (s)	30.0	27.7		13.0				67.9	67.9	7.1	80.9	80.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	28.3	27.0	140.0	12.0		24.8		69.9	68.9	7.8	82.6	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.49	0.06	0.59	
v/c Ratio	0.88	0.41	0.48	0.74		0.61		1.18	0.15	0.76	0.75	
Control Delay	70.9	51.7	1.2	91.4		59.7		118.7	1.2	108.2	24.7	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	70.9	51.7	1.2	91.4		59.7		118.7	1.2	108.2	24.7	
LOS	E	D	A	F		E		F	A	F	C	
Approach Delay		36.5			68.0			113.3			28.5	
Approach LOS		D			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 69.6		Intersection LOS: E	
Intersection Capacity Utilization 83.8%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

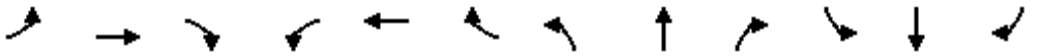
Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	158	1686	223	9	1936
Future Volume (vph)	453	158	1686	223	9	1936
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.086	
Satd. Flow (perm)	2848	1348	4725	1455	155	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		20		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	503	176	1873	248	10	2151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	503	176	1873	248	10	2151
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.3	25.6	82.8	82.8	82.8	82.8
Actuated g/C Ratio	0.24	0.21	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.58	0.57	0.23	0.09	0.66
Control Delay	46.3	44.6	11.0	1.5	10.2	12.4
Queue Delay	0.0	0.0	3.8	0.6	0.0	0.5
Total Delay	46.3	44.6	14.8	2.1	10.2	12.9
LOS	D	D	B	A	B	B
Approach Delay	45.8		13.3			12.9
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.



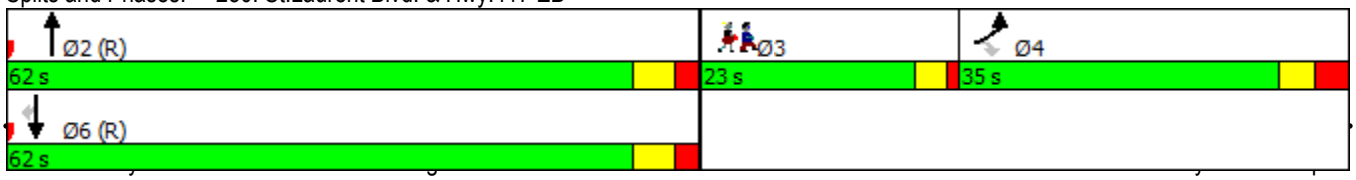
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	297	0	0	0	0	1298	0	0	791	421
Future Volume (vph)	712	0	297	0	0	0	0	1298	0	0	791	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			330									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	330	0	0	0	0	1442	0	0	879	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	330	0	0	0	0	1442	0	0	879	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	40.8		40.8					66.6			66.6	66.6
Actuated g/C Ratio	0.34		0.34					0.56			0.56	0.56
v/c Ratio	0.74		0.47					0.56			0.34	0.49
Control Delay	40.2		5.4					18.4			15.1	3.1
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	40.2		5.4					18.4			15.1	3.1
LOS	D		A					B			B	A
Approach Delay		30.0						18.4			11.0	
Approach LOS		C						B			B	

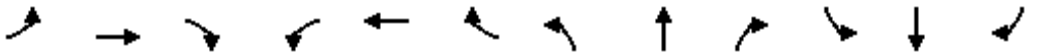
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB



Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

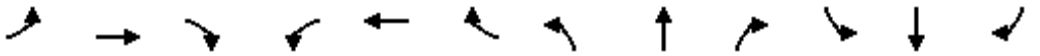


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	30	34	32	23	188	29	1397	18	74	947	39
Future Volume (vph)	40	30	34	32	23	188	29	1397	18	74	947	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	40.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.98		1.00	1.00		1.00		0.97
Frt		0.920			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1390	1567	0	1644	1489	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.303			0.711			0.272			0.123		
Satd. Flow (perm)	442	1567	0	1228	1489	0	456	4671	0	207	3167	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			174			2				43
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		189.8			108.9			94.4			180.4	
Travel Time (s)		11.4			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	44	33	38	36	26	209	32	1552	20	82	1052	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	71	0	36	235	0	32	1572	0	82	1052	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	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)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	33.5	33.5		33.5	33.5		35.2	35.2		11.7	35.1	35.1
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	73.9	73.9
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	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.2	6.2		4.7	6.1	6.1
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		12.0	12.0			12.0	12.0
Flash Dont Walk (s)	20.0	20.0		20.0	20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)	13.2	13.2		13.2	13.2		84.2	84.2		95.6	94.2	94.2
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.80	0.78	0.78
v/c Ratio	0.92	0.34		0.27	0.74		0.10	0.48		0.33	0.42	0.04
Control Delay	160.6	29.2		51.5	28.8		14.8	14.0		10.3	3.1	0.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	160.6	29.2		51.5	28.8		14.8	14.0		10.3	3.1	0.3
LOS	F	C		D	C		B	B		B	A	A
Approach Delay		79.5			31.8			14.1			3.5	
Approach LOS		E			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

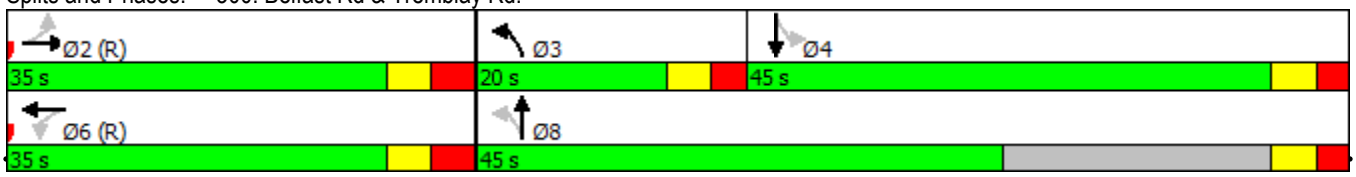


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Future Volume (vph)	101	100	112	18	70	21	129	406	19	23	300	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.921			0.966			0.993			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1513	0	1631	1646	0	1631	1687	0	1729	1725	0
Flt Permitted	0.692			0.585			0.214			0.493		
Satd. Flow (perm)	1186	1513	0	993	1646	0	367	1687	0	892	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			15			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			940.1			589.1			159.1	
Travel Time (s)		23.4			56.4			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	111	124	20	78	23	143	451	21	26	333	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	235	0	20	101	0	143	472	0	26	399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	42.1	42.1		42.1	42.1		45.2	45.2		28.4	28.4	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.45	0.45		0.28	0.28	
v/c Ratio	0.22	0.35		0.05	0.14		0.47	0.62		0.10	0.80	
Control Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.3	18.9		22.2	18.9		19.9	23.3		24.3	44.0	
LOS	C	B		C	B		B	C		C	D	
Approach Delay		20.3			19.4			22.5			42.8	
Approach LOS		C			B			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.

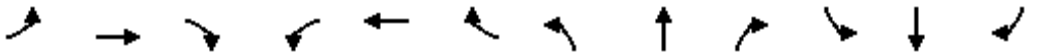


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	286	154	244	315	150
Future Volume (vph)	185	286	154	244	315	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.550		0.950	
Satd. Flow (perm)	1820	1547	1001	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		318				167
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	318	171	271	350	167
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	318	171	271	350	167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	42.6	42.6	57.9	57.2	14.1	29.5
Actuated g/C Ratio	0.50	0.50	0.68	0.67	0.17	0.35
v/c Ratio	0.23	0.34	0.23	0.22	0.63	0.26
Control Delay	14.0	3.0	6.1	6.4	37.9	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	3.0	6.1	6.4	37.9	3.9
LOS	B	A	A	A	D	A
Approach Delay	7.3			6.3	26.9	
Approach LOS	A			A	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd

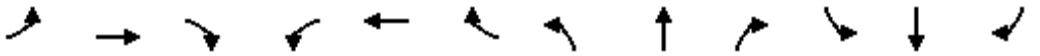


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	162	204	87	97	132	95	988	76	87	840	140
Future Volume (vph)	196	162	204	87	97	132	95	988	76	87	840	140
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.214			0.157		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	347	3325	1348	253	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200		53				130			156
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	218	180	227	97	108	147	106	1098	84	97	933	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	180	227	97	255	0	106	1098	84	97	933	156
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.2	58.8	58.8	66.8	58.6	58.6
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	1.11	0.37	0.40	0.53	0.80		0.38	0.67	0.12	0.42	0.57	0.21
Control Delay	133.1	34.2	7.8	54.2	56.0		15.6	27.2	1.2	24.3	27.6	7.7
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	133.1	34.2	7.8	54.2	56.0		15.6	27.2	1.2	24.3	27.6	7.7
LOS	F	C	A	D	E		B	C	A	C	C	A
Approach Delay		59.1			55.5			24.5			24.7	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
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: 1.11			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



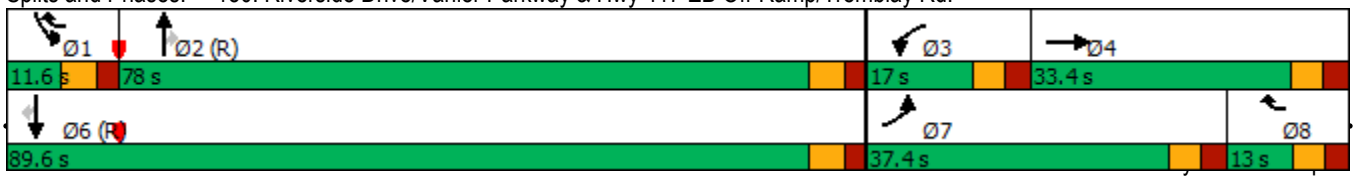
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	563	230	700	72	0	174	0	2122	117	51	1235	0
Future Volume (vph)	563	230	700	72	0	174	0	2122	117	51	1235	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3225	3293	1381	1601	0	2593	0	4057	1446	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3225	3293	1364	1597	0	2593	0	4057	1425	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			274						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		145.5			378.4			767.2			87.7	
Travel Time (s)		10.9			22.7			46.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	12%	8%	0%	5%	0%	9%	7%	2%	4%	0%
Adj. Flow (vph)	626	256	778	80	0	193	0	2358	130	57	1372	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	626	256	778	80	0	193	0	2358	130	57	1372	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	37.4	33.4		17.0				78.0	78.0	11.6	89.6	89.6
Total Split (%)	26.7%	23.9%		12.1%				55.7%	55.7%	8.3%	64.0%	64.0%
Maximum Green (s)	31.4	27.1		11.0				71.9	71.9	5.7	83.5	83.5
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				6.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	30.0	26.5	140.0	10.2		19.3		72.6	72.6	6.3	84.9	
Actuated g/C Ratio	0.21	0.19	1.00	0.07		0.14		0.52	0.52	0.04	0.61	
v/c Ratio	0.90	0.41	0.57	0.69		0.54		1.12	0.16	0.75	0.68	
Control Delay	71.1	52.0	1.7	91.8		62.6		93.9	1.4	114.0	20.9	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	71.1	52.0	1.7	91.8		62.6		93.9	1.4	114.0	20.9	
LOS	E	D	A	F		E		F	A	F	C	
Approach Delay		35.6			71.1			89.1			24.6	
Approach LOS		D			E			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 57.3		Intersection LOS: E	
Intersection Capacity Utilization 81.7%		ICU Level of Service D	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	13.0
Total Split (%)	9%
Maximum Green (s)	7.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Protected Phases	7	4		3	1 8	2		1	6	8
Permitted Phases			Free				2			
Minimum Initial (s)	5.0	7.0		5.0		7.0	7.0	5.0	7.0	5.0
Minimum Split (s)	13.0	32.3		13.0		40.1	40.1	10.9	40.1	13.0
Total Split (s)	37.4	33.4		17.0		78.0	78.0	11.6	89.6	13.0
Total Split (%)	26.7%	23.9%		12.1%		55.7%	55.7%	8.3%	64.0%	9%
Maximum Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
Yellow Time (s)	3.3	3.3		3.3		3.7	3.7	3.7	3.7	3.3
All-Red Time (s)	2.7	3.0		2.7		2.4	2.4	2.2	2.4	2.7
Lead/Lag	Lead	Lag		Lead		Lag	Lag	Lead		Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None		C-Max	C-Max	None	C-Max	None
Walk Time (s)		7.0				7.0	7.0		7.0	
Flash Dont Walk (s)		19.0				27.0	27.0		27.0	
Pedestrian Calls (#/hr)		0				0	0		0	
90th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
90th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
70th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
70th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
50th %ile Green (s)	31.4	27.1		11.0		71.9	71.9	5.7	83.5	7.0
50th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
30th %ile Green (s)	30.0	26.2		10.5		71.9	71.9	7.1	84.9	7.0
30th %ile Term Code	Gap	Hold		Gap		Coord	Coord	Max	Coord	Max
10th %ile Green (s)	26.0	25.1		7.6		75.5	75.5	7.5	88.9	7.0
10th %ile Term Code	Gap	Hold		Gap		Coord	Coord	Gap	Coord	Max

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 116 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	502	136	1301	218	6	1465
Future Volume (vph)	502	136	1301	218	6	1465
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor		0.96		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2719	1485	4593	1500	1710	4636
Flt Permitted	0.950				0.145	
Satd. Flow (perm)	2719	1420	4593	1461	261	4636
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		28		242		
Link Speed (k/h)	50		50			60
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			12.4
Confl. Peds. (#/hr)		27		3	3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	22%	3%	7%	2%	0%	6%
Adj. Flow (vph)	558	151	1446	242	7	1628
Shared Lane Traffic (%)						
Lane Group Flow (vph)	558	151	1446	242	7	1628
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

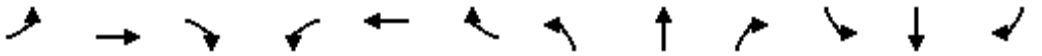
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	34.3	30.6	77.8	77.8	77.8	77.8
Actuated g/C Ratio	0.29	0.26	0.65	0.65	0.65	0.65
v/c Ratio	0.72	0.40	0.49	0.23	0.04	0.54
Control Delay	43.6	31.8	12.2	1.9	10.7	13.0
Queue Delay	0.0	0.0	1.5	0.6	0.0	0.0
Total Delay	43.6	31.8	13.7	2.5	10.7	13.0
LOS	D	C	B	A	B	B
Approach Delay	41.1		12.1			13.0
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	50.0	50.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%	58.3%	58.3%	58.3%	58.3%
Maximum Green (s)	43.9	43.9	64.5	64.5	64.5	64.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	38.2	38.2	70.2	70.2	70.2	70.2
90th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
70th %ile Green (s)	34.1	34.1	74.3	74.3	74.3	74.3
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	30.4	30.4	78.0	78.0	78.0	78.0
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
30th %ile Green (s)	27.4	27.4	81.0	81.0	81.0	81.0
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
10th %ile Green (s)	22.9	22.9	85.5	85.5	85.5	85.5
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



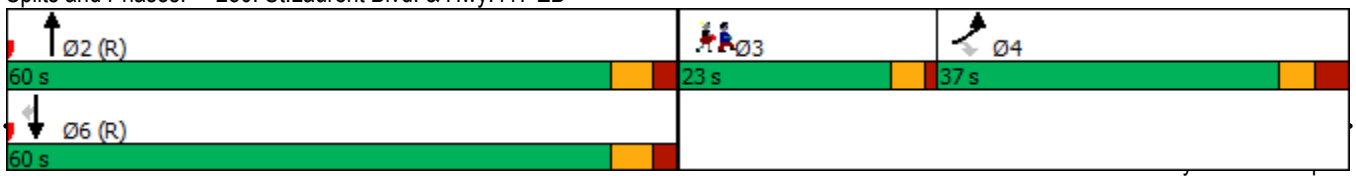
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	700	0	659	0	0	0	0	1214	0	0	801	176
Future Volume (vph)	700	0	659	0	0	0	0	1214	0	0	801	176
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.99									0.98
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3072	0	1455	0	0	0	0	4388	0	0	4508	1244
Flt Permitted	0.950											
Satd. Flow (perm)	3072	0	1434	0	0	0	0	4388	0	0	4508	1215
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			341									196
Link Speed (k/h)		50			48			50			60	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			15.0	
Confl. Peds. (#/hr)			1	1			2					2
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	0%	11%	0%	0%	0%	0%	12%	0%	0%	9%	23%
Adj. Flow (vph)	778	0	732	0	0	0	0	1349	0	0	890	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	778	0	732	0	0	0	0	1349	0	0	890	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	37.0		37.0					60.0			60.0	60.0
Total Split (%)	30.8%		30.8%					50.0%			50.0%	50.0%
Maximum Green (s)	30.5		30.5					53.9			53.9	53.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	53.5		53.5					53.9			53.9	53.9
Actuated g/C Ratio	0.45		0.45					0.45			0.45	0.45
v/c Ratio	0.57		0.88					0.68			0.44	0.30
Control Delay	26.7		29.8					35.4			23.5	4.0
Queue Delay	0.0		0.7					0.0			0.0	0.0
Total Delay	26.7		30.5					35.4			23.5	4.0
LOS	C		C					D			C	A
Approach Delay		28.5						35.4			20.0	
Approach LOS		C						D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB

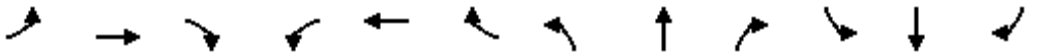


Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBR	NBT	SBT	SBR	Ø3
Protected Phases	4		2	6		3
Permitted Phases	4	4			6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	34.5	34.5	40.1	40.1	40.1	11.0
Total Split (s)	37.0	37.0	60.0	60.0	60.0	23.0
Total Split (%)	30.8%	30.8%	50.0%	50.0%	50.0%	19%
Maximum Green (s)	30.5	30.5	53.9	53.9	53.9	19.0
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.0
All-Red Time (s)	3.2	3.2	2.4	2.4	2.4	1.0
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Walk Time (s)	7.0	7.0	25.0	25.0	25.0	
Flash Dont Walk (s)	21.0	21.0	9.0	9.0	9.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
90th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
90th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
70th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
70th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
50th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
50th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
30th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
30th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip
10th %ile Green (s)	53.5	53.5	53.9	53.9	53.9	0.0
10th %ile Term Code	Max	Max	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	22	28	14	22	87	58	1169	31	130	1200	236
Future Volume (vph)	75	22	28	14	22	87	58	1169	31	130	1200	236
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	70.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00		0.97
Frt		0.915			0.880			0.996				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2457	1543	0	1402	1402	0	1629	4336	0	1629	3081	1319
Flt Permitted	0.950			0.950			0.199			0.149		
Satd. Flow (perm)	2446	1543	0	1391	1402	0	341	4336	0	255	3081	1282
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			97			4				262
Link Speed (k/h)		60			50			50			60	
Link Distance (m)		281.9			108.9			94.4			180.4	
Travel Time (s)		16.9			7.8			6.8			10.8	
Confl. Peds. (#/hr)	4		6	6		4	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	35%	5%	6%	22%	5%	13%	5%	13%	4%	5%	11%	16%
Adj. Flow (vph)	83	24	31	16	24	97	64	1299	34	144	1333	262
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	55	0	16	121	0	64	1333	0	144	1333	262
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

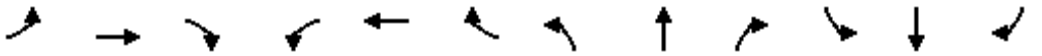
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	7.0		10.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	33.5		14.0	33.5		35.2	35.2		11.7	35.1	35.1
Total Split (s)	14.0	33.5		14.0	33.5		58.5	58.5		14.0	72.5	72.5
Total Split (%)	11.7%	27.9%		11.7%	27.9%		48.8%	48.8%		11.7%	60.4%	60.4%
Maximum Green (s)	10.0	27.0		10.0	27.0		52.3	52.3		9.3	66.4	66.4
Yellow Time (s)	3.5	3.3		3.5	3.3		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	0.5	3.2		0.5	3.2		2.5	2.5		1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		4.0	6.5		6.2	6.2		4.7	6.1	6.1
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0		12.0	12.0			12.0	12.0
Flash Dont Walk (s)		20.0			20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)		0			0		0	0			0	0
Act Effct Green (s)	10.0	14.9		10.0	9.3		72.5	72.5		88.3	86.9	86.9
Actuated g/C Ratio	0.08	0.12		0.08	0.08		0.60	0.60		0.74	0.72	0.72
v/c Ratio	0.41	0.25		0.14	0.61		0.31	0.51		0.48	0.60	0.26
Control Delay	58.6	28.6		54.1	28.6		22.5	16.1		14.7	18.1	6.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.0	0.0
Total Delay	58.6	28.6		54.1	28.6		22.5	16.1		14.7	19.2	6.6
LOS	E	C		D	C		C	B		B	B	A
Approach Delay		46.7			31.5			16.4			16.9	
Approach LOS		D			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Protected Phases	7	4	3	8		2	1	6	
Permitted Phases					2		6		6
Minimum Initial (s)	10.0	7.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	33.5	14.0	33.5	35.2	35.2	11.7	35.1	35.1
Total Split (s)	14.0	33.5	14.0	33.5	58.5	58.5	14.0	72.5	72.5
Total Split (%)	11.7%	27.9%	11.7%	27.9%	48.8%	48.8%	11.7%	60.4%	60.4%
Maximum Green (s)	10.0	27.0	10.0	27.0	52.3	52.3	9.3	66.4	66.4
Yellow Time (s)	3.5	3.3	3.5	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	0.5	3.2	0.5	3.2	2.5	2.5	1.0	2.4	2.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0		7.0	12.0	12.0		12.0	12.0
Flash Dont Walk (s)		20.0		20.0	17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0
90th %ile Green (s)	10.0	14.6	10.0	14.6	60.3	60.3	13.7	78.8	78.8
90th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
70th %ile Green (s)	10.0	10.5	10.0	10.5	67.7	67.7	10.4	82.9	82.9
70th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	10.0	21.6	0.0	7.6	72.2	72.2	8.8	85.8	85.8
50th %ile Term Code	Max	Hold	Skip	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	10.0	21.0	0.0	7.0	73.7	73.7	7.9	86.4	86.4
30th %ile Term Code	Max	Hold	Skip	Min	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	7.0	0.0	7.0	88.6	88.6	7.0	100.4	100.4
10th %ile Term Code	Skip	Hold	Skip	Min	Coord	Coord	Min	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

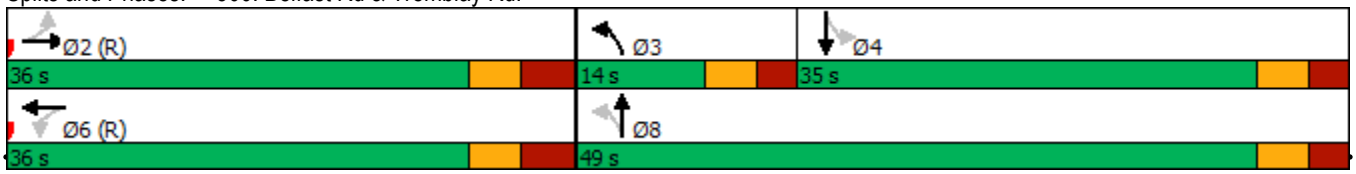


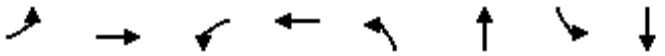
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	121	133	28	98	27	90	228	15	16	238	66
Future Volume (vph)	88	121	133	28	98	27	90	228	15	16	238	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.921			0.968			0.991			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1504	0	1729	1619	0	1586	1728	0	1616	1676	0
Flt Permitted	0.668			0.558			0.262			0.593		
Satd. Flow (perm)	1186	1504	0	1010	1619	0	434	1728	0	1004	1676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		71			18			6			18	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			558.7			589.1			159.1	
Travel Time (s)		23.4			33.5			42.4			11.5	
Confl. Peds. (#/hr)	3		5	5		3	8		2	2		8
Confl. Bikes (#/hr)			6			4			1			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	12%	7%	0%	9%	5%	9%	4%	7%	7%	4%	4%
Adj. Flow (vph)	98	134	148	31	109	30	100	253	17	18	264	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	282	0	31	139	0	100	270	0	18	337	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	36.0	36.0		36.0	36.0		14.0	49.0		35.0	35.0	
Total Split (%)	42.4%	42.4%		42.4%	42.4%		16.5%	57.6%		41.2%	41.2%	
Maximum Green (s)	29.2	29.2		29.2	29.2		8.1	43.1		29.1	29.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.5	39.5		39.5	39.5		32.8	32.8		21.6	21.6	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.39	0.39		0.25	0.25	
v/c Ratio	0.18	0.38		0.07	0.18		0.37	0.40		0.07	0.77	
Control Delay	18.2	15.3		17.5	15.4		15.4	16.0		21.8	39.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.2	15.3		17.5	15.4		15.4	16.0		21.8	39.1	
LOS	B	B		B	B		B	B		C	D	
Approach Delay		16.0			15.8			15.8			38.2	
Approach LOS		B			B			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.8	29.8	29.8	29.8	12.9	19.9	19.9	19.9
Total Split (s)	36.0	36.0	36.0	36.0	14.0	49.0	35.0	35.0
Total Split (%)	42.4%	42.4%	42.4%	42.4%	16.5%	57.6%	41.2%	41.2%
Maximum Green (s)	29.2	29.2	29.2	29.2	8.1	43.1	29.1	29.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
Lead/Lag					Lead		Lag	Lag
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0	0	0		0	0	0
90th %ile Green (s)	29.2	29.2	29.2	29.2	8.1	43.1	29.1	29.1
90th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Max	Max
70th %ile Green (s)	33.5	33.5	33.5	33.5	8.1	38.8	24.8	24.8
70th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Gap	Gap
50th %ile Green (s)	36.6	36.6	36.6	36.6	8.1	35.7	21.7	21.7
50th %ile Term Code	Coord	Coord	Coord	Coord	Max	Hold	Gap	Gap
30th %ile Green (s)	40.0	40.0	40.0	40.0	7.9	32.3	18.5	18.5
30th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
10th %ile Green (s)	58.4	58.4	58.4	58.4	0.0	13.9	13.9	13.9
10th %ile Term Code	Coord	Coord	Coord	Coord	Skip	Hold	Gap	Gap

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	172	124	153	153	102
Future Volume (vph)	184	172	124	153	153	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.559		0.950	
Satd. Flow (perm)	1820	1547	1017	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191				113
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	204	191	138	170	170	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	191	138	170	170	113
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

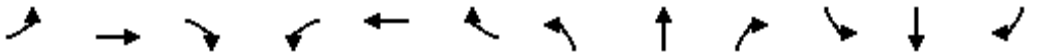
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	48.0	48.0	62.3	61.6	9.7	24.1
Actuated g/C Ratio	0.56	0.56	0.73	0.72	0.11	0.28
v/c Ratio	0.20	0.20	0.17	0.13	0.45	0.22
Control Delay	4.7	1.4	4.1	4.1	38.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	1.4	4.1	4.1	38.5	5.4
LOS	A	A	A	A	D	A
Approach Delay	3.1			4.1	25.3	
Approach LOS	A			A	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 9.8		Intersection LOS: A	
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 310: Trainyards Drive & Belfast Rd

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
90th %ile Green (s)	43.3	43.3	9.5	58.9	12.4	9.5
90th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
70th %ile Green (s)	46.2	46.2	8.2	60.5	10.8	8.2
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	48.2	48.2	7.4	61.7	9.6	7.4
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	50.0	50.0	6.7	62.8	8.5	6.7
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	52.2	52.2	6.0	64.3	7.0	6.0
10th %ile Term Code	Coord	Coord	Min	Coord	Min	Min

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 24.6 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

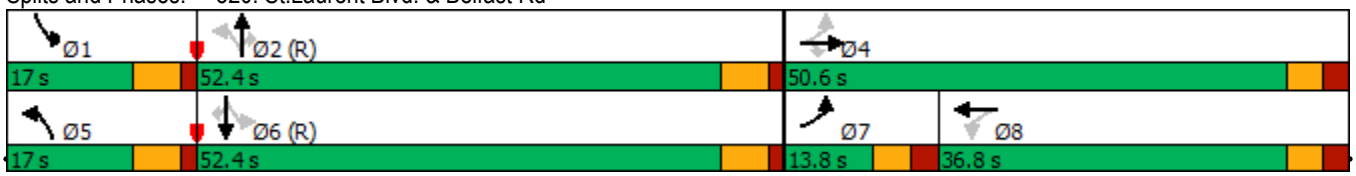


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	79	92	44	128	92	121	875	62	91	867	184
Future Volume (vph)	74	79	92	44	128	92	121	875	62	91	867	184
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1394	1685	1279	1406	1434	0	1572	3202	1419	1586	3202	1248
Flt Permitted	0.289			0.700			0.198			0.202		
Satd. Flow (perm)	423	1685	1247	1024	1434	0	327	3202	1384	337	3202	1227
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		29				130			204
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			22.4			45.9	
Confl. Peds. (#/hr)	4		8	8		4	4		2	2		4
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	24%	8%	21%	23%	13%	25%	10%	8%	9%	9%	8%	24%
Adj. Flow (vph)	82	88	102	49	142	102	134	972	69	101	963	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	88	102	49	244	0	134	972	69	101	963	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	13.8	50.6	50.6	36.8	36.8		17.0	52.4	52.4	17.0	52.4	52.4
Total Split (%)	11.5%	42.2%	42.2%	30.7%	30.7%		14.2%	43.7%	43.7%	14.2%	43.7%	43.7%
Maximum Green (s)	8.0	44.8	44.8	31.0	31.0		11.3	46.8	46.8	11.3	46.8	46.8
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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	34.2	34.2	34.2	23.2	23.2		69.3	59.7	59.7	67.8	59.0	59.0
Actuated g/C Ratio	0.28	0.28	0.28	0.19	0.19		0.58	0.50	0.50	0.56	0.49	0.49
v/c Ratio	0.45	0.18	0.24	0.25	0.81		0.46	0.61	0.09	0.36	0.61	0.29
Control Delay	37.0	30.0	6.3	41.6	60.7		17.4	26.4	0.2	27.0	44.3	18.9
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	37.0	30.0	6.3	41.6	60.7		17.4	26.4	0.2	27.0	44.3	18.9
LOS	D	C	A	D	E		B	C	A	C	D	B
Approach Delay		23.2			57.5			23.8			38.8	
Approach LOS		C			E			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 33.4		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd



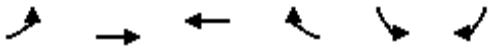
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8	12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	13.8	50.6	50.6	36.8	36.8	17.0	52.4	52.4	17.0	52.4	52.4
Total Split (%)	11.5%	42.2%	42.2%	30.7%	30.7%	14.2%	43.7%	43.7%	14.2%	43.7%	43.7%
Maximum Green (s)	8.0	44.8	44.8	31.0	31.0	11.3	46.8	46.8	11.3	46.8	46.8
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
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)		0	0	0	0		0	0		0	0
90th %ile Green (s)	8.0	44.8	44.8	31.0	31.0	11.3	46.8	46.8	11.3	46.8	46.8
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.0	41.1	41.1	27.3	27.3	11.7	51.7	51.7	10.1	50.1	50.1
70th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	8.0	37.4	37.4	23.6	23.6	10.0	56.7	56.7	8.8	55.5	55.5
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	8.0	33.6	33.6	19.8	19.8	8.5	61.7	61.7	7.6	60.8	60.8
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	14.3	14.3	14.3	14.3	7.0	81.6	81.6	7.0	81.6	81.6
10th %ile Term Code	Skip	Hold	Hold	Gap	Gap	Min	Coord	Coord	Min	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	144	2	0	140	5	0
Future Volume (Veh/h)	144	2	0	140	5	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	160	2	0	156	6	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			162		317	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			162		317	161
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1417		676	884

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	162	156	6
Volume Left	0	0	6
Volume Right	2	0	0
cSH	1700	1417	676
Volume to Capacity	0.10	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

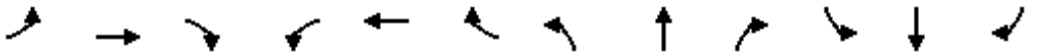
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	7	2	189	59	0
Future Volume (vph)	0	7	2	189	59	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	2	210	66	0

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	8	212	66
Volume Left (vph)	0	0	66
Volume Right (vph)	0	210	0
Hadj (s)	0.03	-0.56	0.23
Departure Headway (s)	4.3	3.5	4.5
Degree Utilization, x	0.01	0.21	0.08
Capacity (veh/h)	816	1005	750
Control Delay (s)	7.3	7.4	8.0
Approach Delay (s)	7.3	7.4	8.0
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
Level of Service	A		
Intersection Capacity Utilization	22.6%	ICU Level of Service	A
Analysis Period (min)	15		



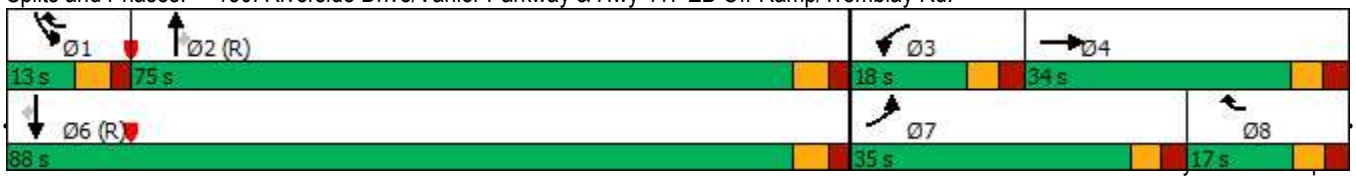
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	494	250	579	126	0	282	0	2215	117	64	1360	0
Future Volume (vph)	494	250	579	126	0	282	0	2215	117	64	1360	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		75.0	0.0		60.0	0.0		30.0	55.0		0.0
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	0.88	1.00	*0.81	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	3077	3232	1369	1631	0	2669	0	4172	1432	1695	3325	1820
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	3077	3232	1352	1628	0	2669	0	4172	1412	1695	3325	1820
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			252						165			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		139.2			378.4			299.9			87.7	
Travel Time (s)		10.4			22.7			18.0			5.3	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	7%	13%	6%	0%	2%	0%	6%	8%	2%	4%	0%
Adj. Flow (vph)	549	278	643	140	0	313	0	2461	130	71	1511	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	549	278	643	140	0	313	0	2461	130	71	1511	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1		1		2	1	1	2	1
Detector Template	Left	Thru	Right	Left		Right		Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1		6.1		30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1		6.1		1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA	Free	Prot		pt+ov		NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3		1 8		2		1	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3		1 8		2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0				7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	13.0	32.3		13.0				40.1	40.1	10.9	40.1	40.1
Total Split (s)	35.0	34.0		18.0				75.0	75.0	13.0	88.0	88.0
Total Split (%)	25.0%	24.3%		12.9%				53.6%	53.6%	9.3%	62.9%	62.9%
Maximum Green (s)	29.0	27.7		12.0				68.9	68.9	7.1	81.9	81.9
Yellow Time (s)	3.3	3.3		3.3				3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.7	3.0		2.7				2.4	2.4	2.2	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0				-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.3		6.0				5.1	6.1	5.9	6.1	6.1
Lead/Lag	Lead	Lag		Lead				Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0				3.0	3.0	3.0	3.0	3.0
Recall Mode	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
Flash Dont Walk (s)		19.0						27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0						0	0		0	0
Act Effct Green (s)	27.8	26.5	140.0	12.0		24.5		70.7	69.7	7.5	83.1	
Actuated g/C Ratio	0.20	0.19	1.00	0.09		0.18		0.50	0.50	0.05	0.59	
v/c Ratio	0.90	0.45	0.48	1.01		0.67		1.17	0.17	0.78	0.77	
Control Delay	73.3	52.7	1.2	140.6		62.0		114.1	1.6	113.0	24.8	
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay	73.3	52.7	1.2	140.6		62.0		114.1	1.6	113.0	24.8	
LOS	E	D	A	F		E		F	A	F	C	
Approach Delay		37.9			86.3			108.4			28.7	
Approach LOS		D			F			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 69.1		Intersection LOS: E	
Intersection Capacity Utilization 84.6%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 150: Riverside Drive/Vanier Parkway & Hwy 417 EB Off-Ramp/Tremblay Rd.



Lane Group	Ø8
Detector 2 Extend (s)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	13.0
Total Split (s)	17.0
Total Split (%)	12%
Maximum Green (s)	11.0
Yellow Time (s)	3.3
All-Red Time (s)	2.7
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Protected Phases	7	4		3	1 8	2		1	6	8
Permitted Phases			Free				2			
Minimum Initial (s)	5.0	7.0		5.0		7.0	7.0	5.0	7.0	5.0
Minimum Split (s)	13.0	32.3		13.0		40.1	40.1	10.9	40.1	13.0
Total Split (s)	35.0	34.0		18.0		75.0	75.0	13.0	88.0	17.0
Total Split (%)	25.0%	24.3%		12.9%		53.6%	53.6%	9.3%	62.9%	12%
Maximum Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
Yellow Time (s)	3.3	3.3		3.3		3.7	3.7	3.7	3.7	3.3
All-Red Time (s)	2.7	3.0		2.7		2.4	2.4	2.2	2.4	2.7
Lead/Lag	Lead	Lag		Lead		Lag	Lag	Lead		Lag
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None		None		C-Max	C-Max	None	C-Max	None
Walk Time (s)		7.0				7.0	7.0		7.0	
Flash Dont Walk (s)		19.0				27.0	27.0		27.0	
Pedestrian Calls (#/hr)		0				0	0		0	
90th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
90th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
70th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
70th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
50th %ile Green (s)	29.0	27.7		12.0		68.9	68.9	7.1	81.9	11.0
50th %ile Term Code	Max	Hold		Max		Coord	Coord	Max	Coord	Max
30th %ile Green (s)	27.9	26.6		12.0		68.9	68.9	8.2	83.0	11.0
30th %ile Term Code	Gap	Hold		Max		Coord	Coord	Max	Coord	Max
10th %ile Green (s)	24.0	22.7		12.0		72.8	72.8	8.2	86.9	11.0
10th %ile Term Code	Gap	Hold		Max		Coord	Coord	Gap	Coord	Max

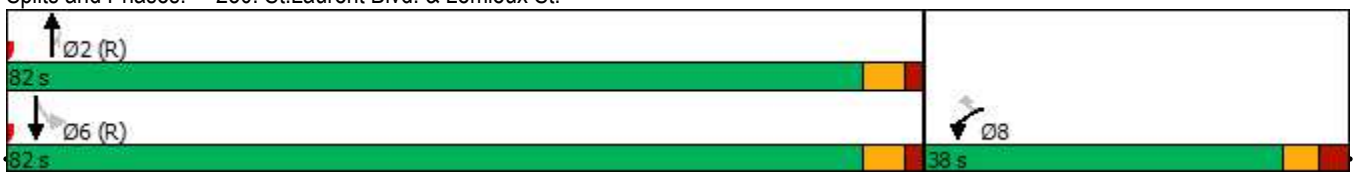
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 130 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

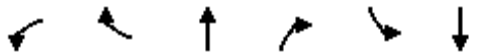
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	464	158	1711	223	9	1962
Future Volume (vph)	464	158	1711	223	9	1962
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	0.0	50.0		60.0	0.0	
Storage Lanes	2	1		1	1	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor	0.96	0.92		0.97	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	2962	1471	4725	1500	1710	4725
Flt Permitted	0.950				0.082	
Satd. Flow (perm)	2848	1348	4725	1455	148	4725
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		18		248		
Link Speed (k/h)	50		50			50
Link Distance (m)	197.5		110.6			206.1
Travel Time (s)	14.2		8.0			14.8
Confl. Peds. (#/hr)	32	61		5	5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	4%	4%	2%	0%	4%
Adj. Flow (vph)	516	176	1901	248	10	2180
Shared Lane Traffic (%)						
Lane Group Flow (vph)	516	176	1901	248	10	2180
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		7.3			7.3
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	2.0	2.0	10.0	2.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0	2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	-3.7	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	2.4	6.1	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	29.7	26.0	82.4	82.4	82.4	82.4
Actuated g/C Ratio	0.25	0.22	0.69	0.69	0.69	0.69
v/c Ratio	0.70	0.58	0.59	0.23	0.10	0.67
Control Delay	46.3	44.7	11.3	1.5	10.6	12.8
Queue Delay	0.0	0.0	4.5	0.6	0.0	0.5
Total Delay	46.3	44.7	15.8	2.2	10.6	13.4
LOS	D	D	B	A	B	B
Approach Delay	45.9		14.3			13.4
Approach LOS	D		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

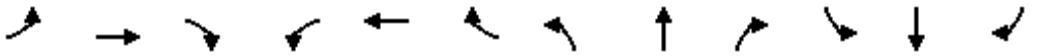
Splits and Phases: 250: St.Laurent Blvd. & Lemieux St.





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.1	36.1	38.2	38.2	44.2	44.2
Total Split (s)	38.0	38.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	1.8	1.8	1.8	1.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	21.0	21.0	21.0	21.0
Flash Dont Walk (s)	23.0	23.0	9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	31.9	31.9	76.5	76.5	76.5	76.5
90th %ile Term Code	Max	Max	Coord	Coord	Coord	Coord
70th %ile Green (s)	28.6	28.6	79.8	79.8	79.8	79.8
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	26.1	26.1	82.3	82.3	82.3	82.3
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
30th %ile Green (s)	23.6	23.6	84.8	84.8	84.8	84.8
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord
10th %ile Green (s)	19.8	19.8	88.6	88.6	88.6	88.6
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



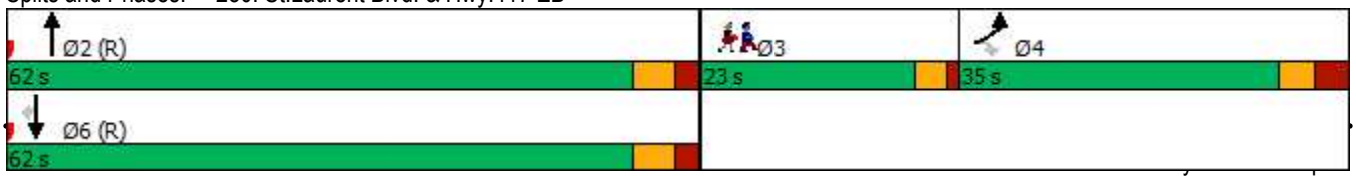
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	712	0	323	0	0	0	0	1494	0	0	829	421
Future Volume (vph)	712	0	323	0	0	0	0	1494	0	0	829	421
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.7	3.6	3.7	3.7	3.7	3.6	3.6	3.7	3.7	3.6	3.6
Storage Length (m)	0.0		225.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	7.5			25.0			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850									0.850
Flt Protected	0.950											
Satd. Flow (prot)	3130	0	1455	0	0	0	0	4680	0	0	4593	1391
Flt Permitted	0.950											
Satd. Flow (perm)	3130	0	1423	0	0	0	0	4680	0	0	4593	1344
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			333									468
Link Speed (k/h)		50			48			50			50	
Link Distance (m)		336.7			256.1			180.4			250.5	
Travel Time (s)		24.2			19.2			13.0			18.0	
Confl. Peds. (#/hr)			8	8			8					8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	5%	0%	0%	7%	10%
Adj. Flow (vph)	791	0	359	0	0	0	0	1660	0	0	921	468
Shared Lane Traffic (%)												
Lane Group Flow (vph)	791	0	359	0	0	0	0	1660	0	0	921	468
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			1.6			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.06	1.00	1.06	1.06	1.06	1.07	1.07	1.06	1.06	1.07	1.07
Turning Speed (k/h)	24		15	24		14	25		14	24		15
Number of Detectors	1		1					2			2	1
Detector Template	Left		Right					Thru			Thru	Right
Leading Detector (m)	6.1		2.0					10.0			10.0	2.0
Trailing Detector (m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Position(m)	0.0		0.0					0.0			0.0	0.0
Detector 1 Size(m)	6.1		2.0					0.6			0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex					Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0					0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0					0.0			0.0	0.0
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (m)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							2			6	
Permitted Phases	4		4									6
Detector Phase	4		4					2			6	6
Switch Phase												
Minimum Initial (s)	7.0		7.0					7.0			7.0	7.0
Minimum Split (s)	34.5		34.5					40.1			40.1	40.1
Total Split (s)	35.0		35.0					62.0			62.0	62.0
Total Split (%)	29.2%		29.2%					51.7%			51.7%	51.7%
Maximum Green (s)	28.5		28.5					55.9			55.9	55.9
Yellow Time (s)	3.3		3.3					3.7			3.7	3.7
All-Red Time (s)	3.2		3.2					2.4			2.4	2.4
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					6.1			6.1	6.1
Lead/Lag	Lag		Lag									
Lead-Lag Optimize?	Yes		Yes									
Vehicle Extension (s)	3.0		3.0					3.0			3.0	3.0
Recall Mode	None		None					C-Max			C-Max	C-Max
Walk Time (s)	7.0		7.0					25.0			25.0	25.0
Flash Dont Walk (s)	21.0		21.0					9.0			9.0	9.0
Pedestrian Calls (#/hr)	0		0					0			0	0
Act Effct Green (s)	41.0		41.0					66.4			66.4	66.4
Actuated g/C Ratio	0.34		0.34					0.55			0.55	0.55
v/c Ratio	0.74		0.51					0.64			0.36	0.49
Control Delay	39.9		6.9					20.0			15.5	3.1
Queue Delay	0.0		0.0					0.6			0.0	0.0
Total Delay	39.9		6.9					20.6			15.5	3.1
LOS	D		A					C			B	A
Approach Delay		29.6						20.6			11.3	
Approach LOS		C						C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 280: St.Laurent Blvd. & Hwy.417 EB

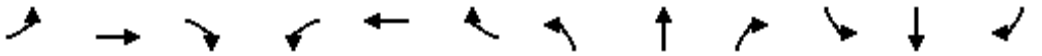


Lane Group	Ø3
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	11.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	19.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Lane Group	EBL	EBR	NBT	SBT	SBR	Ø3
Protected Phases	4		2	6		3
Permitted Phases	4	4			6	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	34.5	34.5	40.1	40.1	40.1	11.0
Total Split (s)	35.0	35.0	62.0	62.0	62.0	23.0
Total Split (%)	29.2%	29.2%	51.7%	51.7%	51.7%	19%
Maximum Green (s)	28.5	28.5	55.9	55.9	55.9	19.0
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.0
All-Red Time (s)	3.2	3.2	2.4	2.4	2.4	1.0
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Max	C-Max	C-Max	None
Walk Time (s)	7.0	7.0	25.0	25.0	25.0	
Flash Dont Walk (s)	21.0	21.0	9.0	9.0	9.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
90th %ile Green (s)	42.2	42.2	65.2	65.2	65.2	0.0
90th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
70th %ile Green (s)	40.5	40.5	66.9	66.9	66.9	0.0
70th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
50th %ile Green (s)	39.9	39.9	67.5	67.5	67.5	0.0
50th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
30th %ile Green (s)	39.8	39.8	67.6	67.6	67.6	0.0
30th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip
10th %ile Green (s)	42.6	42.6	64.8	64.8	64.8	0.0
10th %ile Term Code	Gap	Gap	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated

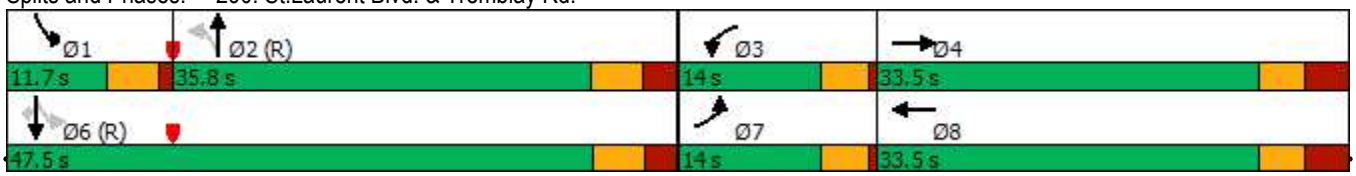


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	30	56	32	23	188	32	1408	18	74	969	86
Future Volume (vph)	227	30	56	32	23	188	32	1408	18	74	969	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Storage Length (m)	70.0		0.0	60.0		0.0	100.0		60.0	100.0		0.0
Storage Lanes	2		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	1.00				0.97
Frt		0.902			0.867			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2697	1541	0	1644	1490	0	1598	4671	0	1598	3167	1319
Flt Permitted	0.950			0.950			0.261			0.081		
Satd. Flow (perm)	2689	1541	0	1641	1490	0	438	4671	0	136	3167	1280
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62			174			2				96
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		288.3			108.9			94.4			180.4	
Travel Time (s)		17.3			7.8			6.8			13.0	
Confl. Peds. (#/hr)	4		2	2		4	6		9	9		6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	23%	7%	3%	4%	5%	3%	7%	5%	0%	7%	8%	16%
Adj. Flow (vph)	252	33	62	36	26	209	36	1564	20	82	1077	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	95	0	36	235	0	36	1584	0	82	1077	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	24		15	25		14	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5		2.0	30.5		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		2.0	1.8		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			9.4			9.4	
Detector 2 Size(m)		1.8			1.8			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases							2			6		6
Detector Phase	7	4		3	8		2	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	7.0		10.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	33.5		14.0	33.5		35.2	35.2		11.7	35.1	35.1
Total Split (s)	14.0	33.5		14.0	33.5		35.8	35.8		11.7	47.5	47.5
Total Split (%)	14.7%	35.3%		14.7%	35.3%		37.7%	37.7%		12.3%	50.0%	50.0%
Maximum Green (s)	10.0	27.0		10.0	27.0		29.6	29.6		7.0	41.4	41.4
Yellow Time (s)	3.5	3.3		3.5	3.3		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	0.5	3.2		0.5	3.2		2.5	2.5		1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5		4.0	6.5		6.2	6.2		4.7	6.1	6.1
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	C-Max
Walk Time (s)		7.0			7.0		12.0	12.0			12.0	12.0
Flash Dont Walk (s)		20.0			20.0		17.0	17.0			17.0	17.0
Pedestrian Calls (#/hr)		0			0		0	0			0	0
Act Effct Green (s)	10.0	16.7		10.0	11.1		46.9	46.9		58.7	57.3	57.3
Actuated g/C Ratio	0.11	0.18		0.11	0.12		0.49	0.49		0.62	0.60	0.60
v/c Ratio	0.89	0.30		0.21	0.72		0.17	0.69		0.40	0.56	0.12
Control Delay	75.0	17.8		42.2	24.4		20.2	22.5		15.6	13.6	2.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	75.0	17.8		42.2	24.4		20.2	22.5		15.6	13.6	2.7
LOS	E	B		D	C		C	C		B	B	A
Approach Delay		59.3			26.8			22.4			12.9	
Approach LOS		E			C			C			B	

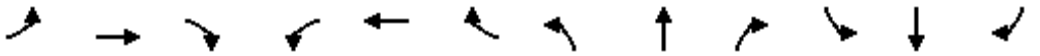
Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 76.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 290: St.Laurent Blvd. & Tremblay Rd.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Protected Phases	7	4	3	8		2	1	6	
Permitted Phases					2		6		6
Minimum Initial (s)	10.0	7.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	33.5	14.0	33.5	35.2	35.2	11.7	35.1	35.1
Total Split (s)	14.0	33.5	14.0	33.5	35.8	35.8	11.7	47.5	47.5
Total Split (%)	14.7%	35.3%	14.7%	35.3%	37.7%	37.7%	12.3%	50.0%	50.0%
Maximum Green (s)	10.0	27.0	10.0	27.0	29.6	29.6	7.0	41.4	41.4
Yellow Time (s)	3.5	3.3	3.5	3.3	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	0.5	3.2	0.5	3.2	2.5	2.5	1.0	2.4	2.4
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0		7.0	12.0	12.0		12.0	12.0
Flash Dont Walk (s)		20.0		20.0	17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		0		0	0	0		0	0
90th %ile Green (s)	10.0	18.4	10.0	18.4	35.1	35.1	10.1	50.0	50.0
90th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
70th %ile Green (s)	10.0	13.3	10.0	13.3	42.0	42.0	8.3	55.1	55.1
70th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	10.0	9.8	10.0	9.8	46.5	46.5	7.3	58.6	58.6
50th %ile Term Code	Max	Hold	Max	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	10.0	21.0	0.0	7.0	49.6	49.6	7.0	61.4	61.4
30th %ile Term Code	Max	Hold	Skip	Min	Coord	Coord	Min	Coord	Coord
10th %ile Green (s)	10.0	21.0	0.0	7.0	61.3	61.3	0.0	61.4	61.4
10th %ile Term Code	Max	Hold	Skip	Min	Coord	Coord	Skip	Coord	Coord

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

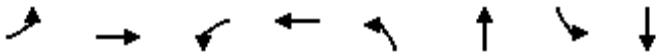


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	133	112	18	126	34	129	418	19	23	316	62
Future Volume (vph)	101	133	112	18	126	34	129	418	19	23	316	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	85.0		0.0	90.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99	0.99			1.00		0.99	0.99	
Frt		0.932			0.968			0.994			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1631	1531	0	1631	1649	0	1631	1689	0	1729	1725	0
Flt Permitted	0.645			0.539			0.205			0.487		
Satd. Flow (perm)	1106	1531	0	916	1649	0	352	1689	0	881	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			14			4			12	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		389.9			586.6			589.1			159.1	
Travel Time (s)		23.4			35.2			42.4			11.5	
Confl. Peds. (#/hr)	1		8	8		1	8		3	3		8
Confl. Bikes (#/hr)			3			2			3			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	11%	6%	6%	8%	0%	6%	7%	6%	0%	2%	2%
Adj. Flow (vph)	112	148	124	20	140	38	143	464	21	26	351	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	272	0	20	178	0	143	485	0	26	420	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.8	29.8		29.8	29.8		12.9	19.9		19.9	19.9	
Total Split (s)	35.0	35.0		35.0	35.0		20.0	45.0		45.0	45.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		20.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	28.2	28.2		28.2	28.2		14.1	39.1		39.1	39.1	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.5	3.5		3.5	3.5		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.9	5.9		5.9	5.9	
Lead/Lag							Lead			Lag	Lag	
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	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0			7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	41.1	41.1		41.1	41.1		46.2	46.2		29.6	29.6	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.46	0.46		0.30	0.30	
v/c Ratio	0.25	0.42		0.05	0.26		0.48	0.62		0.10	0.81	
Control Delay	24.5	22.3		22.9	21.8		19.6	22.8		23.4	43.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.5	22.3		22.9	21.8		19.6	22.8		23.4	43.7	
LOS	C	C		C	C		B	C		C	D	
Approach Delay		22.9			21.9			22.1			42.5	
Approach LOS		C			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 300: Belfast Rd & Tremblay Rd.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		2		6	3	8		4
Permitted Phases	2		6		8		4	
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.8	29.8	29.8	29.8	12.9	19.9	19.9	19.9
Total Split (s)	35.0	35.0	35.0	35.0	20.0	45.0	45.0	45.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	20.0%	45.0%	45.0%	45.0%
Maximum Green (s)	28.2	28.2	28.2	28.2	14.1	39.1	39.1	39.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
Lead/Lag					Lead		Lag	Lag
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0		7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0	0	0		0	0	0
90th %ile Green (s)	30.1	30.1	30.1	30.1	12.9	57.2	38.4	38.4
90th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
70th %ile Green (s)	35.4	35.4	35.4	35.4	12.1	51.9	33.9	33.9
70th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
50th %ile Green (s)	40.6	40.6	40.6	40.6	11.2	46.7	29.6	29.6
50th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
30th %ile Green (s)	45.7	45.7	45.7	45.7	9.9	41.6	25.8	25.8
30th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap
10th %ile Green (s)	53.5	53.5	53.5	53.5	7.7	33.8	20.2	20.2
10th %ile Term Code	Coord	Coord	Coord	Coord	Gap	Hold	Gap	Gap

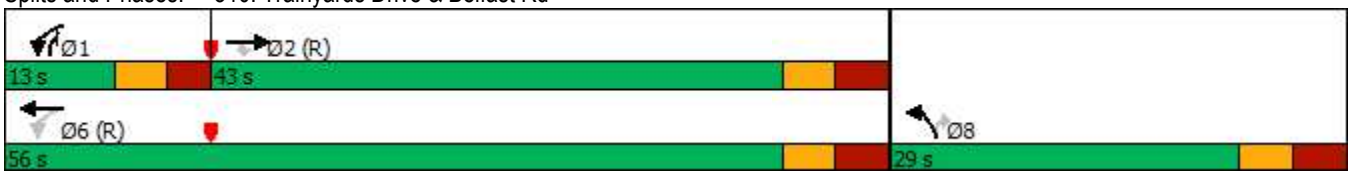
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	185	302	183	244	327	171
Future Volume (vph)	185	302	183	244	327	171
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		55.0	100.0		0.0	0.0
Storage Lanes		1	1		2	1
Taper Length (m)			25.0		25.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1820	1547	1729	1820	3354	1547
Flt Permitted			0.549		0.950	
Satd. Flow (perm)	1820	1547	999	1820	3354	1547
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		336				190
Link Speed (k/h)	50			50	50	
Link Distance (m)	589.1			603.6	106.6	
Travel Time (s)	42.4			43.5	7.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	206	336	203	271	363	190
Shared Lane Traffic (%)						
Lane Group Flow (vph)	206	336	203	271	363	190
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases		2	6			8
Detector Phase	2	2	1	6	8	1
Switch Phase						
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.1	6.8	6.9	6.1
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	41.8	41.8	57.6	56.9	14.4	30.3
Actuated g/C Ratio	0.49	0.49	0.68	0.67	0.17	0.36
v/c Ratio	0.23	0.36	0.27	0.22	0.64	0.28
Control Delay	14.4	3.0	6.5	6.5	37.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	3.0	6.5	6.5	37.8	3.7
LOS	B	A	A	A	D	A
Approach Delay	7.4			6.5	26.1	
Approach LOS	A			A	C	

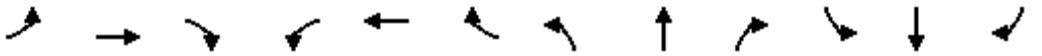
Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 310: Trainyards Drive & Belfast Rd



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	6.0
Minimum Split (s)	38.8	38.8	12.1	38.8	28.9	12.1
Total Split (s)	43.0	43.0	13.0	56.0	29.0	13.0
Total Split (%)	50.6%	50.6%	15.3%	65.9%	34.1%	15.3%
Maximum Green (s)	36.2	36.2	6.9	49.2	22.1	6.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.5	3.5	2.8	3.5	3.6	2.8
Lead/Lag	Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0	
90th %ile Green (s)	36.2	36.2	10.6	52.9	18.4	10.6
90th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max
70th %ile Green (s)	38.7	38.7	10.4	55.2	16.1	10.4
70th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
50th %ile Green (s)	41.7	41.7	9.1	56.9	14.4	9.1
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
30th %ile Green (s)	44.4	44.4	8.0	58.5	12.8	8.0
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap
10th %ile Green (s)	48.0	48.0	6.7	60.8	10.5	6.7
10th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 60 (71%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	162	214	87	97	132	101	991	76	87	861	162
Future Volume (vph)	207	162	214	87	97	132	101	991	76	87	861	162
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		220.0	80.0		0.0	80.0		70.0	80.0		90.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.97	0.99	0.99		1.00		0.98	1.00		0.98
Frt			0.850		0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1503	1655	1473	1586	1575	0	1544	3325	1381	1530	3325	1406
Flt Permitted	0.231			0.644			0.205			0.157		
Satd. Flow (perm)	365	1655	1430	1060	1575	0	333	3325	1348	253	3325	1378
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			197		53				130			180
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		475.4			229.6			311.5			637.9	
Travel Time (s)		34.2			16.5			18.7			38.3	
Confl. Peds. (#/hr)	2		11	11		2	7		2	2		7
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	15%	10%	5%	9%	7%	3%	12%	4%	12%	13%	4%	10%
Adj. Flow (vph)	230	180	238	97	108	147	112	1101	84	97	957	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	230	180	238	97	255	0	112	1101	84	97	957	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	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)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8		12.7	36.6	36.6	12.7	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)		0	0	0	0			0	0		0	0
Act Effct Green (s)	35.8	35.8	35.8	20.8	20.8		67.3	58.8	58.8	66.7	58.5	58.5
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	1.17	0.37	0.42	0.53	0.80		0.41	0.68	0.12	0.43	0.59	0.24
Control Delay	153.3	34.2	8.9	54.2	56.0		16.2	27.2	1.2	17.5	25.2	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
Total Delay	153.3	34.2	8.9	54.2	56.0		16.2	27.2	1.2	17.5	25.2	3.8
LOS	F	C	A	D	E		B	C	A	B	C	A
Approach Delay		67.2			55.5			24.6			21.5	
Approach LOS		E			E			C			C	

Intersection Summary			
Area Type:	Other		
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: 1.17			
Intersection Signal Delay: 34.4		Intersection LOS: C	
Intersection Capacity Utilization 80.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 320: St.Laurent Blvd. & Belfast Rd

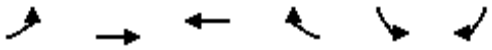
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.8	27.8	27.8	27.8	27.8	12.7	36.6	36.6	12.7	36.6	36.6
Total Split (s)	15.0	49.0	49.0	34.0	34.0	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
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
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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)		0	0	0	0		0	0		0	0
90th %ile Green (s)	9.2	43.2	43.2	28.2	28.2	8.3	51.4	51.4	8.3	51.4	51.4
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	9.2	39.7	39.7	24.7	24.7	10.6	53.2	53.2	10.0	52.6	52.6
70th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	9.2	36.2	36.2	21.2	21.2	9.2	58.0	58.0	8.7	57.5	57.5
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	9.2	32.6	32.6	17.6	17.6	7.9	62.8	62.8	7.5	62.4	62.4
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	9.2	27.4	27.4	12.4	12.4	7.0	68.5	68.5	7.0	68.5	68.5
10th %ile Term Code	Max	Hold	Hold	Gap	Gap	Min	Coord	Coord	Min	Coord	Coord

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	137	4	0	159	2	0
Future Volume (Veh/h)	137	4	0	159	2	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	152	4	0	177	2	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			156		331	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		331	154
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1424		664	892

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	156	177	2
Volume Left	0	0	2
Volume Right	4	0	0
cSH	1700	1424	664
Volume to Capacity	0.09	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	4	7	43	205	0
Future Volume (vph)	0	4	7	43	205	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	4	8	48	228	0

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	4	56	228
Volume Left (vph)	0	0	228
Volume Right (vph)	0	48	0
Hadj (s)	0.03	-0.48	0.23
Departure Headway (s)	4.5	4.0	4.3
Degree Utilization, x	0.01	0.06	0.27
Capacity (veh/h)	751	860	828
Control Delay (s)	7.5	7.2	8.8
Approach Delay (s)	7.5	7.2	8.8
Approach LOS	A	A	A

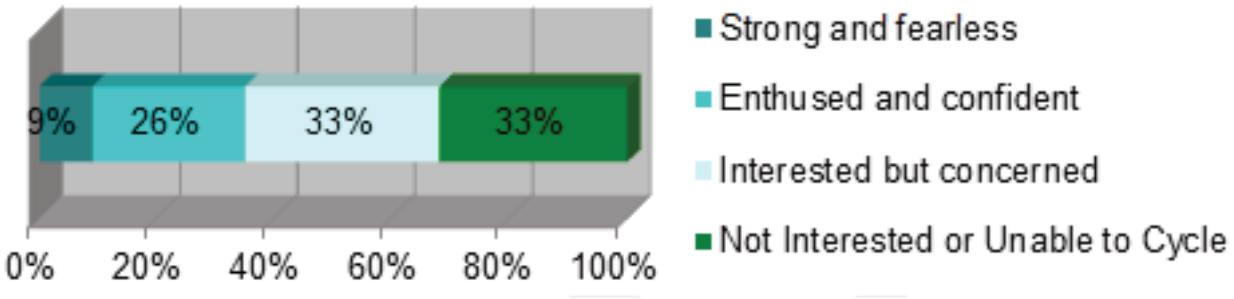
Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX

K PEDESTRIAN AND CYCLING FACILITIES

The groupings range from those people who will choose to cycle on roads regardless of road conditions (9%) to those who have no interest in choosing to travel by bike or are unable to do so (33%). The majority of residents (59%) are interested in cycling but prefer bike lanes and separated cycling facilities for safety purposes.

Exhibit 4.5 – Categories of Cyclists in Ottawa



There are a variety of factors that may influence a cyclist's perception of safety, including the speed and volume of adjacent motor vehicles, cyclist volumes, transit operations, the presence and relative location of on-street parking, surface quality and maintenance, and sightlines. These concerns can often be addressed through appropriate roadway design and operation practices.

4.3.1 Facility Types

Ottawa's cycling network largely consists of four different types of facilities: on-street bike lanes, shared lanes with mixed traffic, multi-use pathways and cycle tracks (separated bike lanes). Depending on the circumstances, these facilities have differing characteristics in terms of the level of comfort for residents.

Bike Lanes

Painted bike lanes are on-road facilities that provide reserved space for cyclists, but are not physically separated from vehicle traffic. Bike lanes are appropriate to use where physical separation is not required, but a dedicated lane is still needed for the safety of cyclists. Typically, collector roads and minor arterial roads are appropriate applications for bike lanes. While not as comfortable as a cycle track, providing dedicated road space for cyclists may be sufficient to increase the attractiveness of a route when vehicle volumes and speeds are appropriately low. Bike lanes may also be enhanced with painted buffer strips and seasonal "whip post bollards" that can reduce the likelihood of illegal parking or stopping in bike lanes.

Shared Lanes (Mixed Traffic)

Shared lanes provide no reserved or separated space for bicycles. Where vehicle volumes and speed are low (e.g. on local streets), cyclists can be comfortable riding in mixed-traffic lanes. In some traffic conditions, cycling design treatments (e.g. sharrows, as shown in Exhibit 4.6 below) may improve the visibility of cyclists in shared lanes.

Exhibit 4.6 – Cyclist in Mixed Traffic with Sharrow in Ottawa

Multi-use Pathways

Multi-use pathways are facilities that are physically separated from the road and shared with pedestrians. These facilities may be either adjacent to a road or away from the roadway corridor. As physically separated facilities, multi-use pathways provide a high level of comfort for cyclists.

Multi-use pathways may also be used in place of sidewalks and on-road cycling facilities, where long continuous corridors exist without an active land use pattern (e.g. through the Greenbelt). Such parallel facilities can also be more cost effective to maintain and may be the preferred option along suburban arterials. In areas with a more urban street environment and where intensification is the long-term goal, a phased approach to cycling and walking facilities can be envisaged. Multi-use pathways can be initially deployed, then as land-use evolves a more urban cross-section with cycle tracks and sidewalks could be added without impacting the curb-to-curb portion of the roadway.

Multi-use pathways paralleling arterial roads are often a preferred alternative to cycle tracks in suburban areas where long stretches of unimpeded roadway may occur.

Cycle Tracks (Separated Bike Lanes)

Cycle tracks are an emerging design in North America, although they can be found in many cycling-friendly European cities. They consist of a bike lane within a road corridor that is physically separated from motor vehicle traffic and distinct from the sidewalk. Separation between motor vehicles and cyclists is recommended to ensure safety where vehicle volumes and speeds on roads are high. There are several forms of separation, including concrete curbs, bollards, planter boxes, and on-street parking.

Separated facilities can be provided as either unidirectional or bidirectional. Bidirectional bicycle lanes provide a bicycle lane travelling in both directions on one side of the road. As described in OTM Book 18, bidirectional facilities may provide some benefits in terms of maintenance operations and capital costs, but are more challenging with respect to cycling connections and managing conflicts between bicycles and motor vehicles at intersections. As a result, unidirectional facilities are recommended but bidirectional facilities may be provided at specific locations with careful consideration towards mitigating conflicts at intersections and driveways.

Cycle tracks are especially recommended in urban areas as they provide attractive and safe cycling facilities that meet the needs of all spectrums of cyclists while limiting the right-of-way requirements and minimizing accessibility concerns. Preliminary work has been undertaken to develop a design guideline. This guideline will be further refined and updated to reflect best practices.

4.3.2 Guidance on Designing Cycling Facilities

The following design guidelines have been updated or created recently to reflect some of the new treatments used in bicycle facility design:

- Ontario Traffic Manual (OTM) Book 12 – Bicycle Traffic Signals (in progress)
- Ontario Traffic Manual (OTM) Book 18 – Bicycle Facilities (May 2013 draft)[66]
- Bikeway Traffic Control Guidelines for Canada (Transportation Association of Canada, 2012)[67]
- National Association of City Transportation Officials Urban Bikeway Design Guide (2012) [68]
- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (2012)
- OCP2008 Technical Annex (approved in 2008)