112 Montreal Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report (Revision #2)

Prepared for:

2705460 Ontario Inc.

Prepared by:

6 Plaza Court
Ottawa, ON K2H 7W1

July 2023

PN: 2022-109

Table of Contents

List of Figures

Table of Tables

List of Appendices

1 Screening

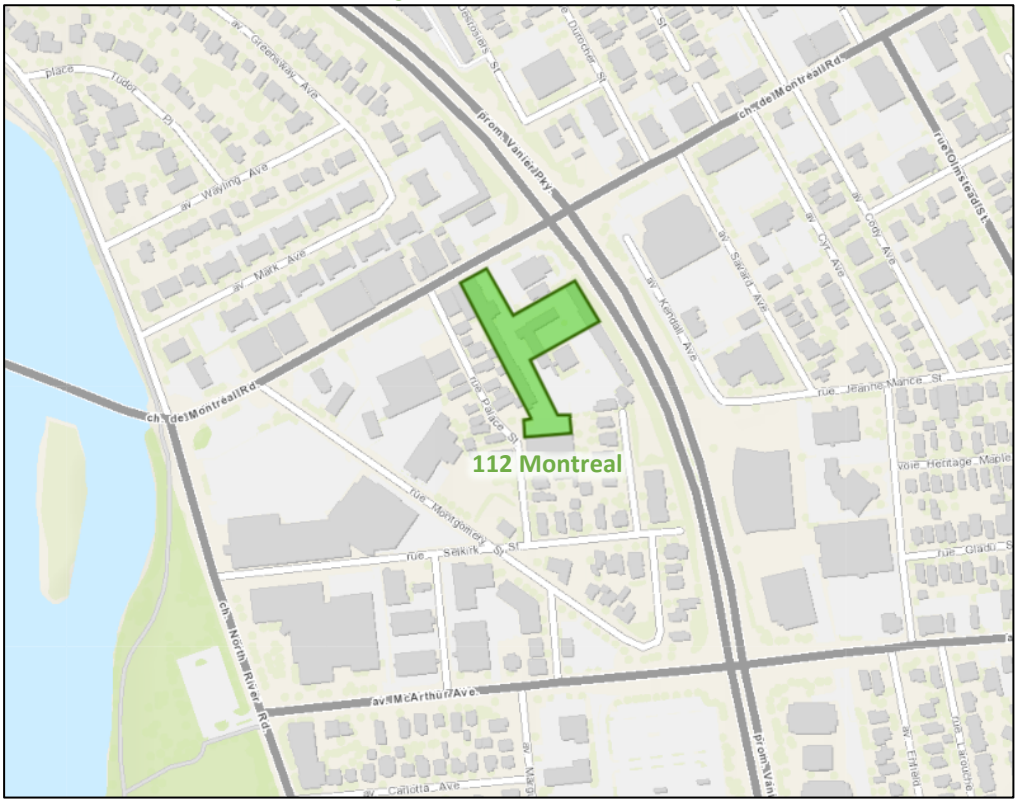
Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for TIA Study PM. As shown in the Screening Form, the trip generation, location, and safety triggers were met, and a TIA is required including the Design Review component and the Network Impact Component. This TIA is in support of a site plan application.

2 Existing and Planned Conditions

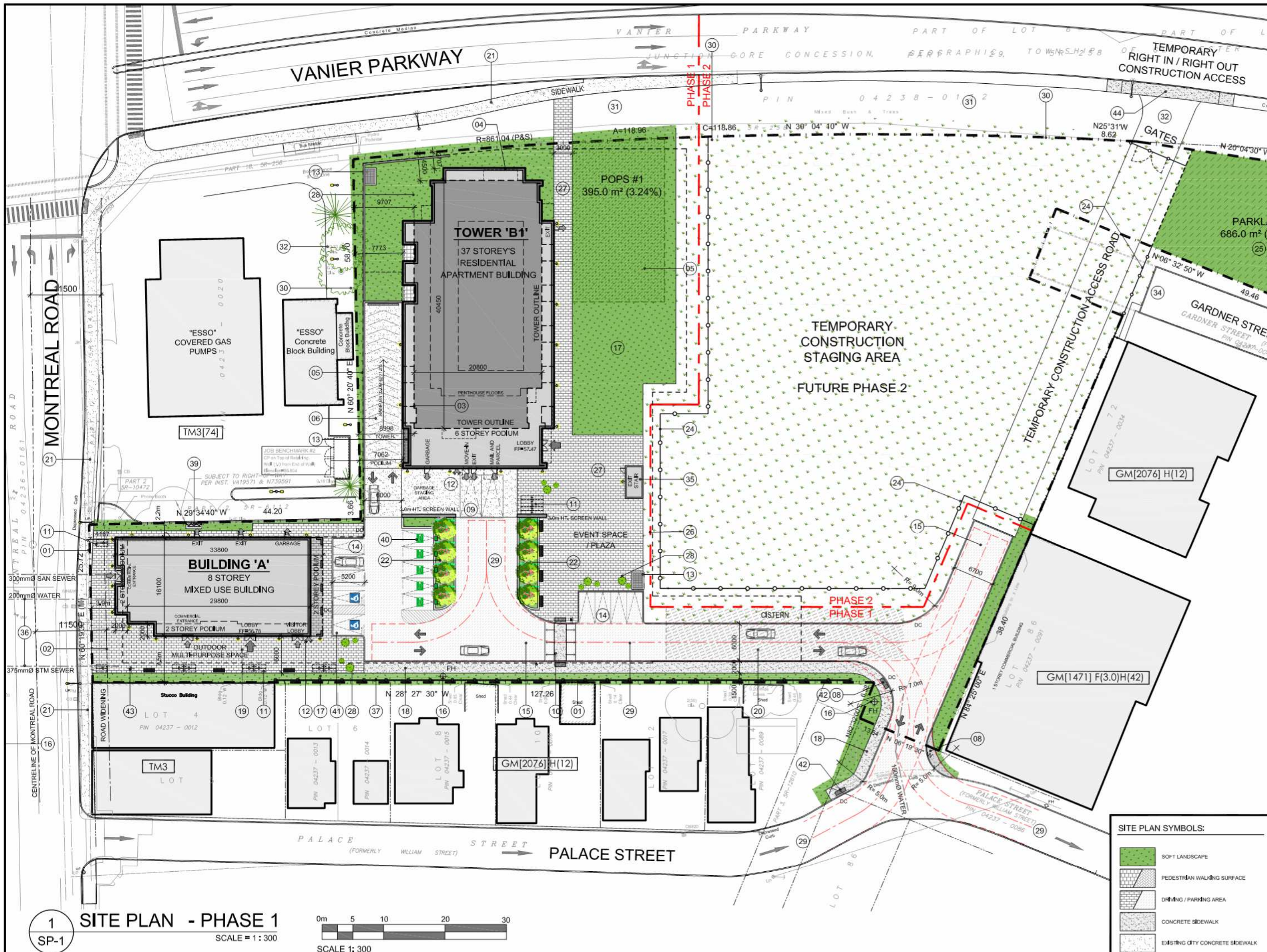
2.1 Proposed Development

The proposed development, located at 112 Montreal Road, is currently zoned as Traditional Mainstreet (TM[2363] S365-h). The site plan application is for the first phase of redevelopment on the north end of the parcel, which is planned to include an eight-storey mixed-use building fronting Montreal Road comprising 36 dwelling units and 2,525 sq. ft. of ground floor commercial space, and a 37-storey residential building fronting Vanier Parkway comprising 394 dwelling units. The anticipated build-out for phase one is 2024. The development is proposed as including 390 vehicle parking spaces. Access is proposed one left-in/left-out access on the one-way Palace Street. The site is located within the Montreal Road District Secondary Plan area and intersects the Montreal Arterial Mainstreet design priority area. Figure 1 illustrates the study area context and Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: August 25, 2022



1 SP-1 SITE PLAN - PHASE 1
SCALE = 1 : 300

SCALE 1: 300

PROJECT DEVELOPER	PROJECT MANAGER	LEGAL DESCRIPTION
Manor Park Management 231 Brittany Drive, Suite D Ottawa, ON Canada, K1K 0R8 E-Mail: lsa@manorparkcap.com	**Renfroe Land Management** 371A Richmond Rd, Unit 2, Ottawa, ON K2L 1Y3 Tel: (613) 883-6124 E-Mail: davidrenfroe@outlook.com	TOPOGRAPHIC SURVEY OF LOT 5 AND PART OF LOTS 6 AND 7 BLOCK 2 REGISTERED PLAN 29 AND LOT 88 AND PART OF LOTS 40 & 41 REGISTERED PLAN 49 CITY OF OTTAWA
SURVEYOR	GEOTECHNICAL ENGINEER	URBAN PLANNER
FAIRHALL, MOFFATT & WOODLAND LIMITED 100-600 TERRY FOX DRIVE KANATA, ONTARIO K2L 4B6 Tel: (613) 591-2580 Fax: (613) 591-1495 Email:	**paterson group** 154 Colonnade Road South Ottawa, Ontario, K2E 7J5 Tel: 613-226-7381 Email: DGilbert@Patersongroup.ca	**FoTenn Consultants Inc.** 396 Cooper Street, Unit 300 Ottawa, ON Canada, K2P 2H7 Tel.: (613) 730-5709 Fax: (613) 730-1136 E-Mail: posen@fotenn.com
CIVIL ENGINEER	TRANSPORTATION ENGINEER	LANDSCAPE DESIGNER
WSP 300 - 2611 Queensview Drive Ottawa, ON K2B 8K2 Tel: +1 613-829-2800 Email: Ishaque.Jafferjee@wsp.com	**CGH Transportation Inc.** 6 Plaza Court Ottawa, ON K2H 7W1 Tel: (343) 999-9117 Cell: (613) 697-3797 Email: andrew.harte@cghtransportation.com	**LEVSTEK CONSULTANTS** 5871 Hugh Crescent Ottawa, ON Canada, K0a 2w0 Tel: (613) 826-0518 E-Mail: rlevstek@larocquelevstek.com

KEY MAP

SITE PLAN SYMBOLS:

- SOFT LANDSCAPE
- PEDESTRIAN WALKING SURFACE
- DRIVING / PARKING AREA
- CONCRETE SIDEWALK
- EXISTING CITY CONCRETE SIDEWALK
- CONCRETE DRIVEWAY / RAMP
- UNDEVELOPED AREA
- PARKLAND DEDICATION
- PROPERTY LINE
- FENCE LINE
- BIKE RACK
- ENTRANCE / EXIT DOOR
- COMMERCIAL / EXIT DOOR
- FH FIRE HYDRANT
- VEHICULAR DIRECTION
- EXISTING TREE TO REMAIN
- SIAMESE CONNECTION

NOTE:
SEE LANDSCAPE FOR ALL SURFACE MATERIAL AND PATTERN

SOLID WASTE

BUILDING 'A' - 36 UNITS

GARBAGE	0.110 Y³ PER UNIT	4 Y³
RECYCLING - GMP	0.018 Y³ PER UNIT	1 Y³
RECYCLING - FIBRE	0.038 Y³ PER UNIT	1 Y³
ORGANICS	1 - 240 L BIN PER PER 50 UNITS	1

BUILDING 'B' - 394 UNITS

GARBAGE	0.110 Y³ PER UNIT	40 Y³
RECYCLING - GMP	0.018 Y³ PER UNIT	7 Y³
RECYCLING - FIBRE	0.038 Y³ PER UNIT	14 Y³
ORGANICS	1 - 240 L BIN PER PER 50 UNITS	8

AMENITY SPACE

EXTERIOR AT GRADE =	1,300.0 sq. m.
GROUND FLOOR COMMUNAL INTERIOR =	220.0 sq. m.
7th FLOOR COMMUNAL INTERIOR =	120.0 sq. m.
7th FLOOR COMMUNAL EXTERIOR TERRACE =	130.0 sq. m.
35th FLOOR COMMUNAL EXTERIOR TERRACE =	100.0 sq. m.
PRIVATE BALCONIES / TERRACES =	1,700.0 sq. m.
TOTAL =	3,570.0 sq. m.
TOTAL COMMUNAL =	1,870.0 sq. m.
REQUIRED - 6.0M² PER UNIT (430) =	2,580.0 sq. m.
REQUIRED COMMUNAL @ 50% =	1,290.0 sq. m.

DRAWING NOTES:

1. PROPERTY LINE
2. PROPOSED ROAD WIDENING
3. OUTLINE OF TOWER
4. LINE OF TOWER BALCONIES ABOVE
5. LINE OF PARKING GARAGE BELOW
6. HEATED RAMP TO U/G GARAGE WITH TRENCH DRAIN
7. EXTERIOR ROOF TOP AMENITY SPACE
8. MOUNTABLE CURB WITH CONCRETE TRUCK APRON
9. SERVICE AREA
10. RAISED PEDESTRIAN CROSS WALK WITH TWSI
11. BICYCLE RACKS, SEE LANDSCAPE PLAN FOR TYPE
12. SIAMESE CONNECTION
13. PARKING GARAGE INTAKE / EXHAUST GRILL
14. 2.6 X 5.2m STANDARD PARKING SPACES
15. ASPHALT DRIVEWAY WITH 150mm BARRIER CURB
16. FIRE HYDRANT
17. SOFT LANDSCAPING
18. 2.0m WIDE CONCRETE SIDEWALK
19. EXTERIOR PATIO (COMMERCIAL / COMMUNAL)
20. BELOW GRADE CISTERN
21. EXISTING CITY SIDEWALK INSTALL SUMMER OF 2021
22. RAISED PLANTER
23. EXISTING CHAIN LINK FENCE
24. CONSTRUCTION STAGING FENCE
25. PARKLAND DEDICATION AREA
26. PHASING LINE
27. HARD SURFACE WALKING SURFACE
28. AT GRADE PRIVATE PATIOS
29. 6.0M WIDE FIRE ROUTE
30. EXISTING CHAIN LINK FENCE
31. EXISTING SOFT LANDSCAPED BOULEVARD
32. PHASE 1 CONSTRICTION ACCESS
33. EXISTING TREE TO REMAIN PROTECT AS REQUIRED
34. ALTER EXISTING STREET AS SHOWN
35. PARKING GARAGE EXIT STAIR
36. PROPOSED BUILDING SERVICES, SEE CIVIL
37. 2.1m HT. SOLID WOOD FENCE
38. SEASONAL PLANTERS
39. GAS PRESSURE RELEASE STATION
40. ELECTRIC VEHICLE CHARGING STATION
41. ACCESSIBLE PARKING SPACE
42. DEPRESSED CURB - TWSI AS SHOWN
43. CYCLE REPAIR STATION
44. DEPRESSED CURB AND CONTINUOUS SIDEWALK TO CITY STANDARDS, SEE CIVIL

PROJECT INFORMATION

ZONING	TM[2363] S365-h
SITE AREA	12,165.45 sq m 130,948 sq ft
PHASE 1 AREA	6,150.19 sq m 66,200 sq ft
PHASE 2 AREA	6,015.26 sq m 64,748 sq ft

REQUIRED

BUILDING HEIGHT - BLDG A	8 Storey's / 29.0m
BUILDING HEIGHT - BLDG B1	37 Storey's / 116.0m
BUILDING HEIGHT - BLDG B2	28 Storey's / 89.0m
BUILDING HEIGHT - BLDG B3	16 Storey's / 53.0m
BUILDING SETBACKS	as per Schedule S365-h
RESIDENTIAL PARKING - AREA 'Y'	0.5 per unit
VISITOR PARKING - AREA 'Y'	0.1 per unit
COMMERCIAL PARKING - RESTAURANT	not requited
BICYCLE PARKING	0.5 per unit
BICYCLE PARKING - COMMERCIAL	1 per 250m² of GFA
AMENITY SPACE	6.0 m² per unit

PROJECT STATISTICS - PHASE 1

BUILDING 'A' STAGE 1 CONSTRUCTION

PARKING LEVEL			0.0 sq. m. 000 sq. ft.
GROUND FLOOR			234.6 sq. m. 2,525 sq. ft.
2nd FLOOR			415.8 sq. m. 4,476 sq. ft.
3rd - 8th FLOOR		6 x 311.0 sq. m. 6 x 3,348 sq. ft.	1,866.2 sq. m. 20,088 sq. ft.
MECHANICAL LEVEL			0.0 sq. m. 000 sq. ft.
TOTAL AREA			2,516.6 sq. m. 27,088 sq. ft.
COMMERCIAL AREA			234.6 sq. m. 2,525 sq. ft.
UNIT COUNT			36
UNIT PARKING	0.5 PER UNIT AFTER 12 UNITS		12
VISITOR PARKING	0.1 PER UNIT AFTER 12 UNITS		2
BICYCLE PARKING	0.5 PER UNIT		18
COMMERCIAL BICYCLE	1.0 PER 250m² of GFA		1

BUILDING 'B' STAGE 2 CONSTRUCTION

PARKING LEVEL			0.0 sq. m. 000 sq. ft.
GROUND FLOOR			257.2 sq. m. 2,768 sq. ft.
2nd - 6th FLOOR		5 x 889.83 sq. m. 5 x 9,578 sq. ft.	4,449.1 sq. m. 47,890 sq. ft.
7th FLOOR			524.4 sq. m. 5,645 sq. ft.
8th - 34th FLOOR TOWER		27 x 650.04 sq. m. 27 x 6,997 sq. ft.	17,551.15 sq. m. 188,919 sq. ft.
35th - 37th FLOOR		3 x 454.8 sq. m. 3 x 4,896 sq. ft.	1,364.56 sq. m. 14,688 sq. ft.
MECHANICAL LEVEL			0.0 sq. m. 000 sq. ft.
TOTAL AREA			24,146.4 sq. m. 259,910 sq. ft.
TOWER FOOTPRINT			807.2 sq. m. 8,689 sq. ft.
UNIT COUNT			394
UNIT PARKING	0.5 PER UNIT AFTER 12 UNITS		191
VISITOR PARKING (MAXIMUM 30 REQUIRED)	0.1 PER UNIT AFTER 12 UNITS		30
BICYCLE PARKING	0.5 PER UNIT		197

UNIT MIX

TOWNHOUSE UNIT	0
ONE BEDROOM	291
TWO BEDROOM UNIT	107
THREE BEDROOM UNIT	32
TOTAL UNITS	430

CAR PARKING

REQUIRED by ZONING BY-LAW

RESIDENCE	- 0.5 PER UNIT (AFTER 12 UNITS)	203
VISITOR	- 0.1 PER DWELLING UNIT (AFTER 12 UNITS) (MAX 30)	32
COMMERCIAL RETAIL	- NON REQUIRED	0
TOTAL		235

PROVIDED

RESIDENCE	- 0.59 PER UNIT	358
VISITOR	- 0.07 PER UNIT	32
COMMERCIAL RETAIL		0
TOTAL		390

LOCATION

SURFACE	14
BELOW GRADE - 3 LEVELS	369

BICYCLE PARKING

REQUIRED

RESIDENCE	- 0.5 PER UNIT (430 UNITS)	215
COMMERCIAL RETAIL	- 1.0 PER 250m² OF G.F.A.	1
TOTAL		216

PROVIDED

EXTERIOR	26
U/G PARKING LEVEL P1 FOR - PHASE 1	410
U/G PARKING LEVEL P1 FOR - PHASE 2	465
TOTAL	901

LOT COVERAGE

UNDEVELOPED AREA =	43.81%	5,329.2 sq. m.
PARK LAND SPACE =	5.64%	686.0 sq. m.
PAVED SURFACE =	13.64%	1,660.0 sq. m.
BUILDING FOOTPRINT =	13.13%	1,597.5 sq. m.
LANDSCAPE OPEN SPACE =	23.78%	2,892.69 sq. m.
TOTAL =	100.00%	12,165.45 sq. m.

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- ◇00 INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.
- ⬡00 INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- DETAIL NUMBER / TITLE / SCALE / DETAIL REFERENCE PAGE / DETAIL CROSS REFERENCE PAGE

No.	DESCRIPTION	DATE
7	ISSUED FOR SPC 1st COMMENT RESPONCE	2023 03 15
6	ISSUED FOR SPC 1st COMMENT REVIEW	2023 03 04
5	ISSUED FOR UDRP SPC SUBMISSION	2023 01 19
4	ISSUED FOR CONSULTANT COORDINATION	2023 01 10
3	ISSUED FOR SPC APPLICATION - PHASE 1	2022 09 13
2	ISSUED FOR CONSULTANT COORDINATION	2022 08 22
1	ISSUED FOR CONSULTANT COORDINATION	2022 02 21

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS RODERICK I. LAHEY LICENCE 4375
SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:
2705460 Ontario Inc.

ARCHITECT:
rla/architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t. 613.724.9932 f. 613.724.1209 rlaarchitecture.ca

PROJECT TITLE:
112 MONTREAL ROAD
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN
PHASE 1

DRAWN:	CHECKED:
RV	R.V.
SCALE:	SHEET No.
1:300	SP-1
PROJECT No.	
2026	

D07-12-22-0138

PAPER SIZE: ISO_B1_(707.00_x_1000.00_MM) | PLOT DATE: Monday, March 27, 2023 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb

F:\2020\2026 - 112 Montreal Rd\01 Design Development\00 Site Plan\112 Montreal Rd - Site Plan 2023 03 03.dwg

Plan # 18856

2.2 Existing Conditions

2.2.1 Area Road Network

Vanier Parkway: Vanier Parkway is a City of Ottawa arterial road with a divided, four-lane urban cross-section, sidewalks on both sides of the road, and a posted speed limit of 60 km/h within the study area. A cycle track and shared bike lanes are provided in the northbound direction between McArthur Avenue and Montreal Road. The existing right of way throughout the study area varies along adjacent properties.

Montreal Road: Montreal Road is a City of Ottawa arterial road with a four-lane urban cross-section with sidewalks on both sides of the road. The curbside lanes serve as peak hour bus/taxi lanes in the westbound direction during the AM peak and the eastbound direction during the PM peak. On-street parking restricted on the north side of the road between 7-9 AM and on the south side between 3:30-5:30 PM. The posted speed limit is 40 km/h, and the city-protected right of way is 23.0 metres east of North River Road. Cycletracks are present on both sides of the road east of Vanier Parkway. Montreal Road is designated a truck route.

McArthur Avenue: McArthur Avenue is a City of Ottawa arterial road with a two-lane urban cross-section west of Vanier Parkway and a two-lane urban cross-section east of Vanier Parkway. Sidewalks and bike lanes are on both sides of the road, the posted speed limit is 50 km/h, and the existing right of way provided is 20.0 metres west of Vanier Parkway and 23.5 metres east of Vanier Parkway. McArthur Avenue is designated a truck route east of Vanier Parkway.

North River Road: North River Road is a City of Ottawa local road north of Montreal Road, an arterial road between Montreal Road and McArthur Avenue, and a collector road south of McArthur Avenue, each with a two-lane urban cross-section. A MUP and sidewalk are provided north of Montreal Road on the west and east sides of the road respectively, sidewalks on both sides of the road are provided between Montreal Road and McArthur Avenue and a single sidewalk on the east side of the road is provide south of McArthur Avenue. On-street parking is permitted on the east side of the road south of McArthur Avenue. The unposted speed limit is assumed to be 50 km/h, and the existing right-of-way provided is 13.0 metres north of Montreal Road, varies from 19.0 metres to 27.0 metres between Montreal Road and McArthur Avenue, and 17.5 metres south of McArthur Avenue.

Montgomery Street: Montgomery Street is a City of Ottawa local road with a two-lane urban cross-section. A sidewalk is provided on the east side of the road and a sidewalk is provided on the west side of the road between Selkirk Street and Mayfield Street. Parking is permitted on both sides of the road with restrictions at the school for loading and bus zones. The posted speed limit is 30 km/h, and a school zone is signed between Montreal Road and Selkirk Street. The existing right-of-way provided is 18.5 metres.

Palace Street: Palace Street is a one-way southbound City of Ottawa local road with a posted speed limit of 30 km/h. The existing right of way is 8.0 metres to the north of the s-bend and 11.5 metres south of that point. The Official Plan reserves an additional 2.0 metres from each side from Montreal Road to Lot 85.

Selkirk Street: Selkirk Street is a City of Ottawa local road with a two-lane urban cross section. West of Dundas Street, Selkirk Street is one-way westbound and has a sidewalk, permits on-street parking for 60 metres, and has a taxi stand for 60 metres each on the south side of the road. East of Gardner Street, Selkirk Street is no-exit. The posted speed limit is 30 km/h, and the existing right-of-way provided is 13.5 metres.

Dundas Street: Dundas Street is a City of Ottawa local road with a two-lane urban cross-section and a sidewalk on the west side of the road. The posted speed limit is 30 km/h, and the existing right of way provided is 12.0 metres. No on-street parking is permitted.

Mayfield Street: Mayfield Street is a one-way southbound City of Ottawa local road with a sidewalk of the west side of the road. The posted speed limit is 30 km/h, and the existing right of way provided is 12.0 metres. No on-street parking is permitted.

Marguerite Avenue: Marguerite Avenue is a City of Ottawa local road with a two-lane urban cross-section, a sidewalk on the west side of the road and on-street parking permitted on the east side of the road. The posted speed limit is 40 km/h, and the existing right of way within the study area provided is 15.0 metres.

Gardner Street: Gardner Street is a City of Ottawa local road with a two-lane urban cross-section, on-street parking permitted on the east side of the road between 6:00 pm and 7:00 am, and a sidewalk on the east side of the road south of the site. The road alignment sits approximately 10 metres east on the south side of Selkirk Street. The posted speed limit is 30 km/h, and the existing right of way provided is 12.0 metres. Gardner Street terminates south of the site property line.

2.2.2 Existing Intersections

The existing area intersections adjacent to the proposed site and signalized intersections confirmed with City staff have been summarized below:

Montreal Road & North River Road	The intersection of Montreal Road and North River Road is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane, and the southbound approach consists of a shared all-movements lane. The eastbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane, and the westbound approach consists of a through lane and a shared through/right-turn lane. Eastbound left turns are prohibited weekdays during peak periods, eastbound right turns on red are prohibited, and westbound left turns are prohibited. Trucks are restricted from turning onto south leg.
Montreal Road & Montgomery Street	The intersection of Montreal Road and Montgomery Street is signalized intersection. The northbound approach consists of a left-turn lane and a right-turn lane. The eastbound approach consists of a through lane and a shared through/right-turn lane and the westbound approach consists of a shared left-turn/through lane and a through lane. No turn restrictions are noted.
Montreal Road & Palace Street	The intersection Montreal Road and Palace Street is an uncontrolled intersection. The eastbound approach consists of a through lane and a shared-right-turn lane, the westbound approach consists of a shared left-turn/through lane and a through lane, and the south leg is inbound only. No turn restrictions are noted.
Montreal Road & Vanier Parkway	The intersection of Montreal Road & Vanier Parkway is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, two through lanes, and an auxiliary shared through/right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and a right-turn lane and the westbound approach consists of an auxiliary left-turn lane, a through lane, and a shared through/right-turn lane. Trucks are restricted from turning onto Vanier Parkway.

Selkirk Street & North River Road	The intersection of Selkirk Street and North River Road is a stop-controlled T-intersection on the minor approach of Selkirk Street. The northbound and southbound approaches consist of a single through lane each. The westbound approach consists of a left-turn lane and a right-turn lane. No turn restrictions are noted.
Selkirk Street & Dundas Street	The intersection of Selkirk Street and Dundas Street is a stop-controlled T-intersection on the minor approach of Dundas Street. The northbound approach consists of a shared left-turn/right-turn lane. The westbound approach consists of a shared left-turn/through lane, and the one-way west leg of the intersection is inbound only. No turn restrictions are noted.
Selkirk Street & Montgomery Street	The intersection of Selkirk Street and Montgomery Street is a stop-controlled intersection on the minor approaches of Selkirk Street. The northbound and southbound approaches of Montgomery Street each consist of a shared all-movements lane, as do the eastbound and westbound approaches. No turn restrictions are noted.
McArthur Avenue & North River Road	The intersection of McArthur Avenue and North River Road is a signalized intersection. The northbound and eastbound approaches each consist of shared all-movements lane. The southbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. The westbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane. The eastbound and westbound approaches each additionally include a bike lane. No turn restrictions are noted.
McArthur Avenue & Dundas Street	The intersection of McArthur Avenue and Dundas Street is a stop-controlled intersection on the minor approach of Dundas Street. The southbound approach consists of a shared left-turn/right-turn lane. The eastbound approach consists of a shared left-turn/through lane, and the westbound approach consists of a shared through/right-turn lane. No turn restrictions are noted.
McArthur Avenue & Marguerite Avenue	The intersection of McArthur Avenue and Marguerite Avenue is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a right-turn lane. The eastbound approach consists of a shared through/right-turn lane and the westbound approach consists of a shared left-turn/through lane. No turn restrictions are noted.
McArthur Avenue & Mayfield Street	The intersection of McArthur Avenue and Mayfield Street is a stop-controlled intersection on the minor approach of Mayfield Street. The southbound approach consists of a left-turn lane and a right-turn lane and the eastbound and westbound approaches each consist of a through lane. No turn restrictions are noted.

McArthur Avenue & Vanier Parkway	The intersection of McArthur Avenue and Vanier Parkway is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, two through lanes and an auxiliary, channelized right turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, a floating bike lane, and an auxiliary channelized right turn lane. The westbound approach consists of two auxiliary left-turn lanes, a through lane, a bike lane, and a right-turn lane channel. All U-turn movements are prohibited at this intersection.

2.2.3 Existing Driveways

Within 200 metres, private accesses to small commercial lots, and low-rise residential land uses exist on both sides of the road in each direction from the site access on Palace Street. None of the driveways within the area of consideration are significant traffic generators.

2.2.4 Cycling and Pedestrian Facilities

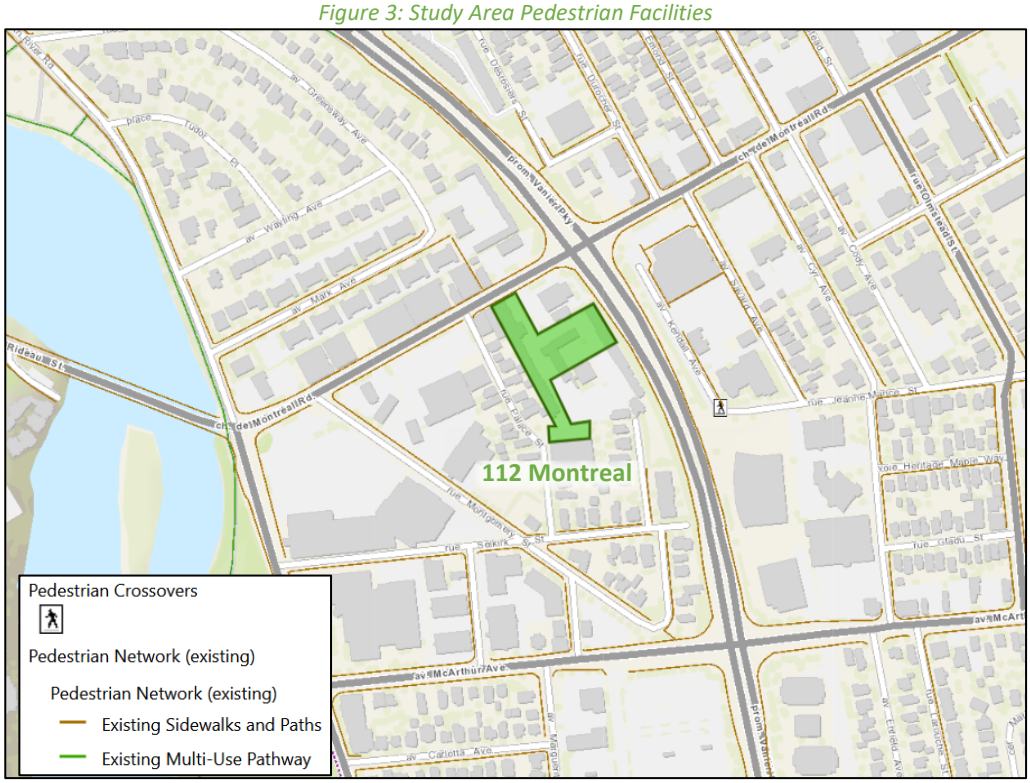
Sidewalks are provided along both sides on North River Road, Vanier Parkway, Montreal Road, and McArthur Avenue. Sidewalks are provided on both sides of Selkirk Street between Montgomery Street and Gardner Street, along the east side of Montgomery Street and on the west side of Montgomery Street between Mayfield Street and Selkirk Street. Sidewalks are also provided on the east side of Gardner Street, and along the west side of Dundas Street, Mayfield Street and Marguerite Avenue.

Cycletracks are present on both sides of Montreal Road east of Vanier Parkway. Bike lanes are provided along both sides of McArthur Avenue and on the north side of Montreal Road west of North River Road. A shared use lane is on the south side of Montreal Road west of North River Road. Along the west side of North River Road is the Rideau River Eastern Pathway. MUP connections to the communities north or Montreal Road are provided to the intersection of Montreal Road at Vanier Parkway. North River Road, Vanier Parkway, and Montreal Road are spine routes.

Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

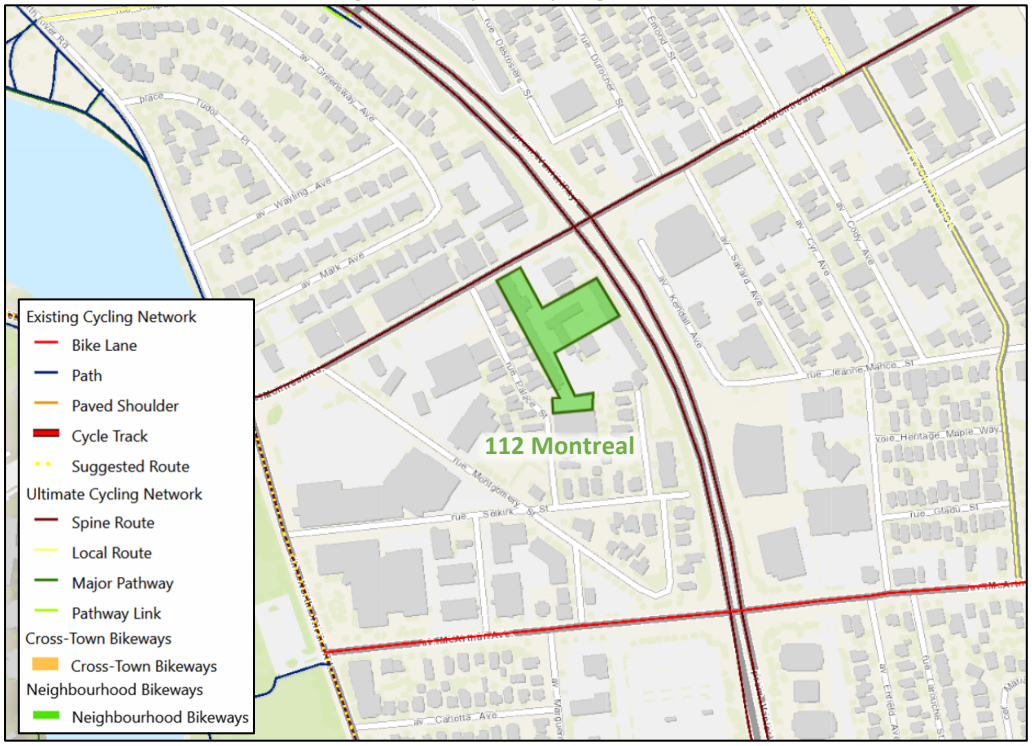
Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively.

Figure 3: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: August 25, 2022

Figure 4: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: August 25, 2022

Figure 5: Existing Pedestrian Volumes

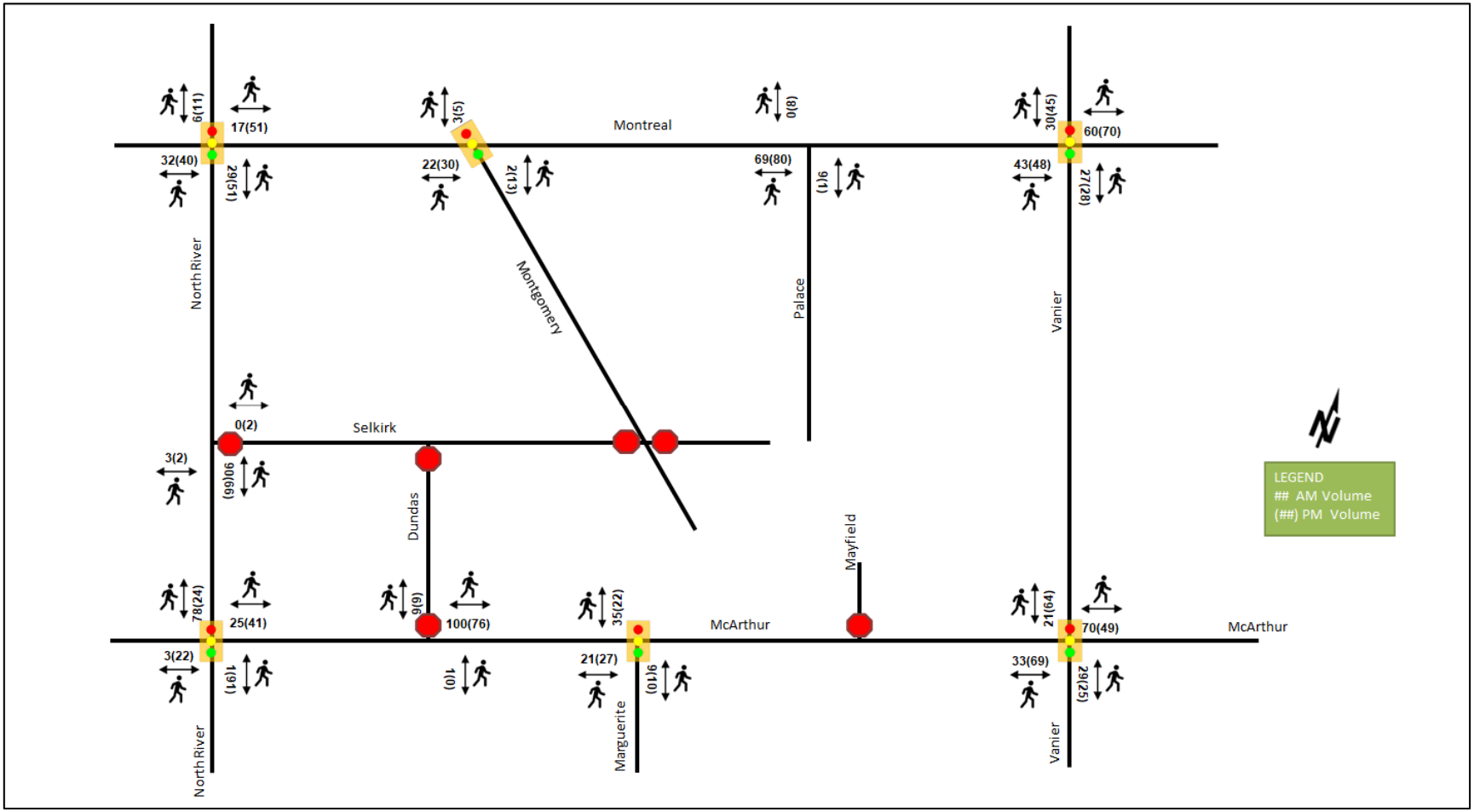
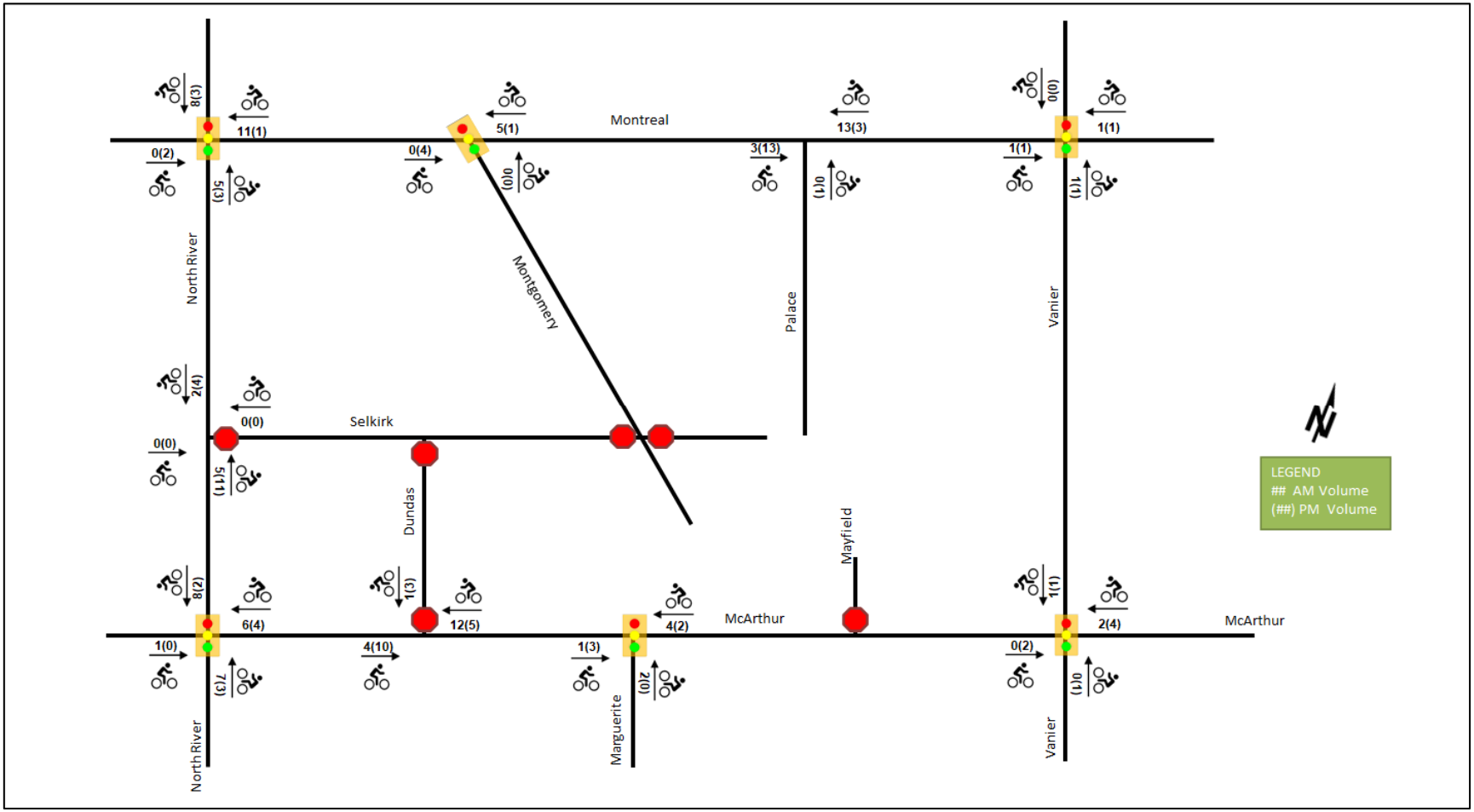


Figure 6: Existing Cyclist Volumes



2.2.5 Existing Transit

At the time of this report, temporary transit detours due to construction on Montreal Road and the existing service is not reflective of typical conditions. Within the study area, the route #18 travels along North River Road, the routes #9 and #19 travel along Vanier Parkway, the route #14 travels along McArthur Avenue, and the route #15 (and typically the route #12) travels along Montreal Road. Stops are located at Montreal Road and North River Road, Montreal Road and Montgomery Street, Montreal Road and Vanier Parkway, Selkirk Street and North River Road, and McArthur Avenue and Vanier Parkway. The frequency of these routes within proximity of the proposed site are currently:

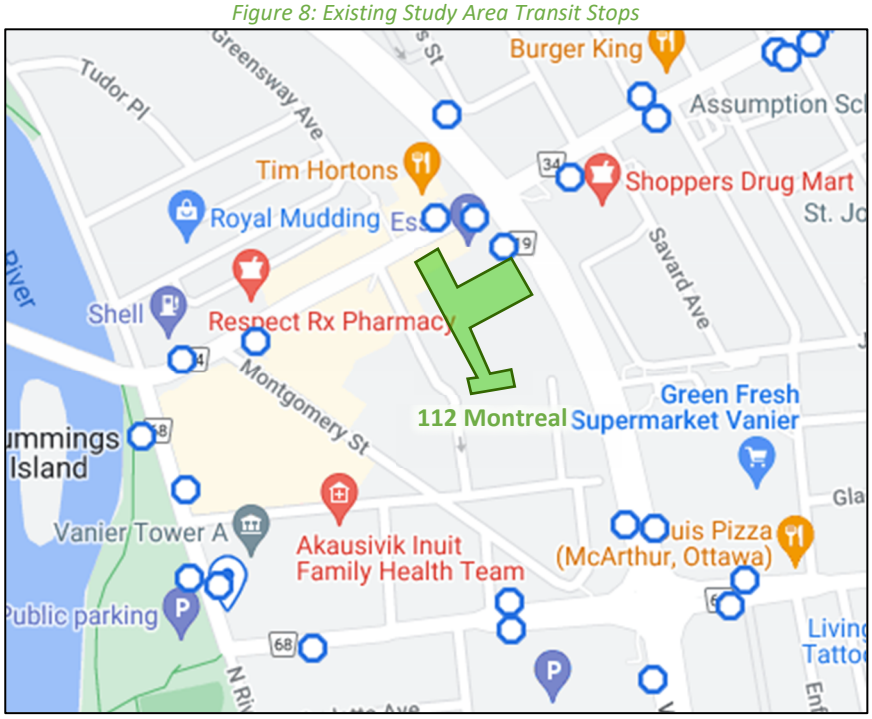
- Route #9 – 15-minute service in peak direction/period, 30-minute service all day
- Route #14 – 15-minute service all day, 30-minute service after 7:00PM
- Route #15 – 10-minute service all day, 30-minute service before 7:00AM after 8:00PM
- Route #18 – 30-minute service all day
- Route #19 – 30-minute service all day

Figure 7 illustrates the transit system map in the study area and Figure 8 illustrates nearby transit stops.

Figure 7: Existing Study Area Transit Service

Source: http://www.octranspo.com/ Accessed: August 25, 2022

Figure 8: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: August 25, 2022

2.2.6 Existing Area Traffic Management Measures

Signage indicating a "Traffic Calmed Neighbourhood" and flexible bollards are present on Montgomery Street. No further traffic management measures are present in the study area.

2.2.7 Existing Peak Hour Travel Demand

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

Table 1: Intersection Count Date

Intersection	Count Date	Source
Montreal Road & North River Road	Tuesday, March 10, 2020	City of Ottawa
Montreal Road & Montgomery Street	Wednesday, February 19, 2020	City of Ottawa
Montreal Road & Palace Street	Tuesday, November 26, 2019	The Traffic Specialist
Montreal Road & Vanier Parkway	Tuesday, March 26, 2019	City of Ottawa
Selkirk Street & North River Road	Tuesday, November 26, 2019	The Traffic Specialist
McArthur Avenue & North River Road	Tuesday, March 19, 2019	City of Ottawa
McArthur Avenue & Dundas Street	Tuesday, November 26, 2019	The Traffic Specialist
McArthur Avenue & Marguerite Avenue	Tuesday, March 26, 2019	City of Ottawa
McArthur Avenue & Vanier Parkway	Tuesday, March 26, 2019	City of Ottawa

Figure 9 illustrates the existing traffic counts balanced along Montreal Road and North River Road and Table 2 summarizes the existing intersection operations. The internal intersections of Selkirk Street at Dundas Street, Selkirk Street at Montgomery Street, and McArthur Avenue at Mayfield Street have been interpolated from existing area traffic work. The level of service for signalized intersections is based on volume-to-capacity (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM 2010 average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 9: Existing Traffic Counts

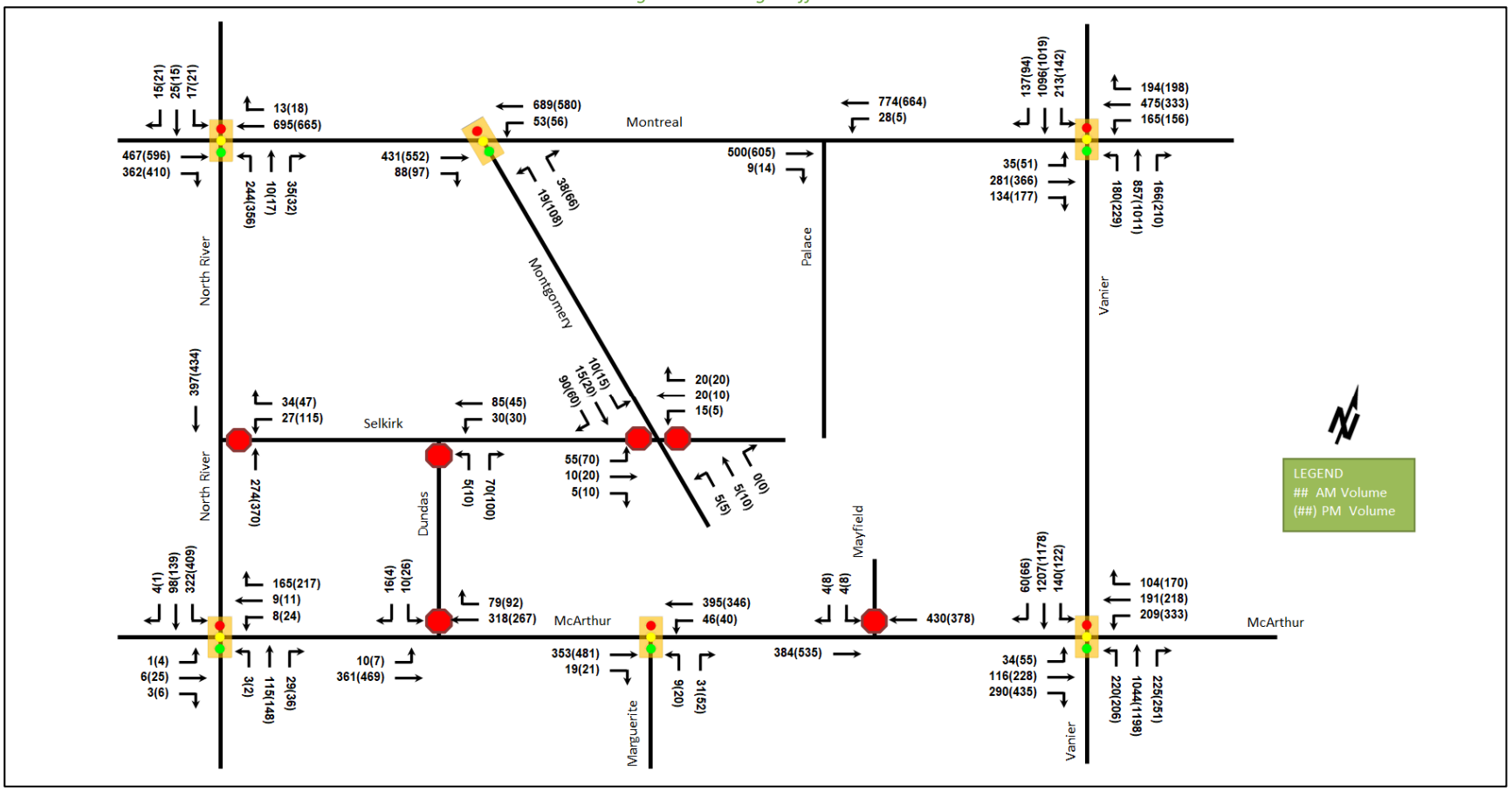


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay(s)	Q (95th)	LOS	V/C	Delay(s)	Q (95th)
Montreal Road & North River Road *Signalized*	EBT/R	D	0.87	39.9	**#130.0**	D	0.90	40.7	**#175.8**
	WBT/R	B	0.69	**81.7**	90.7	A	0.59	**83.8**	101.4
	NBL	B	0.70	43.0	68.3	D	0.84	55.6	116.4
	NBT/R	A	0.10	9.3	8.6	A	0.10	11.3	10.8
	SB	A	0.37	38.2	20.8	A	0.43	47.7	24.2
	Overall	**B**	**0.66**	**55.2**	**-**	**C**	**0.75**	**56.3**	**-**
Montreal Road & Montgomery Street *Signalized*	EBT/R	A	0.22	3.3	20.0	A	0.30	6.0	29.8
	WBT/L	A	0.36	4.1	36.1	A	0.35	5.1	33.6
	NBL	A	0.09	30.6	8.6	A	0.56	50.5	37.9
	NBR	A	0.19	12.2	8.1	A	0.31	12.5	11.6
	Overall	**A**	**0.36**	**4.4**	**-**	**A**	**0.38**	**9.2**	**-**
Montreal Road & Vanier Parkway *Signalized*	EBL	A	0.38	72.8	22.2	A	0.48	74.7	29.2
	EBT	C	0.76	62.5	**#116.4**	D	0.89	71.7	**#179.7**
	EBR	A	0.33	8.3	17.2	A	0.39	10.0	24.3
	WBL	**F**	**1.20**	**190.0**	**#108.9**	C	0.77	**80.2**	**70.7**
	WBT/R	D	0.82	53.2	**#142.2**	A	0.54	34.5	84.2
	NBL	D	0.82	**88.6**	m73.5	E	0.92	**89.2**	m79.2
	NBT/R	C	0.77	48.6	87.2	**F**	**1.06**	**95.6**	**m#168.3**
	SBL	D	0.89	**90.2**	**#108.5**	C	0.73	77.3	64.3
	SBT/R	D	0.89	52.5	**#165.2**	**F**	**1.09**	**103.5**	**#172.6**
	Overall	**E**	**0.96**	**60.5**	**-**	**E**	**0.96**	**81.8**	**-**
Selkirk Street & North River Road *Unsignalized*	WB	B	0.11	11.8	3.0	C	0.39	17.7	13.5
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.0**	**-**	**A**	**-**	**3.0**	**-**
Selkirk Street & Dundas Street *Unsignalized*	Low volumes at intersection return LOS A and zero second delay for intersection								
Selkirk Street & Montgomery Street *Unsignalized*	EB	A	0.10	9.9	2.3	B	0.14	10.1	3.8
	WB	A	0.07	9.5	1.5	A	0.04	9.1	0.8
	NB	A	0.00	7.5	0.0	A	0.00	7.4	0.0
	SB	A	0.01	7.2	0.0	A	0.01	7.3	0.0
	Overall	**A**	**-**	**5.3**	**-**	**A**	**-**	**6.0**	**-**
McArthur Avenue & North River Road *Signalized*	EB	A	0.02	14.6	3.8	A	0.09	18.3	10.0
	WBT/L	A	0.04	11.3	m5.3	A	0.11	21.2	12.4
	WBR	A	0.33	8.1	25.6	A	0.45	13.2	35.6
	NB	A	0.19	8.4	18.2	A	0.22	7.5	20.8
	SBL	B	0.67	20.4	62.5	D	0.81	27.5	**#104.4**
	SBT/R	A	0.13	9.1	14.2	A	0.16	8.0	17.4
	Overall	**A**	**0.46**	**13.6**	**-**	**B**	**0.61**	**17.6**	**-**
McArthur Avenue & Dundas Street *Unsignalized*	EB	A	0.01	9.0	0.0	A	0.01	8.5	0.0
	WB	-	-	-	-	-	-	-	-
	SB	C	0.08	15.6	2.3	C	0.13	20.7	3.0
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.8**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay(s)	Q (95th)	LOS	V/C	Delay(s)	Q (95th)
McArthur Avenue & Mayfield Street ***Unsignalized***	EB	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SBL	C	0.01	16.9	0.0	C	0.03	19.1	0.8
	SBR	B	0.01	11.2	0.0	B	0.01	10.8	0.0
	Overall	**A**	**-**	**0.1**	**-**	**A**	**-**	**0.3**	**-**
McArthur Avenue & Marguerite Street ***Signalized***	EBT/R	A	0.31	4.7	28.4	A	0.44	6.3	m38.4
	WBT/L	A	0.39	8.4	m50.4	A	0.37	7.2	48.5
	NBL	A	0.03	20.1	4.1	A	0.08	23.6	7.5
	NBR	A	0.11	8.4	5.9	A	0.19	8.3	8.1
	Overall	**A**	**0.37**	**6.9**	**-**	**A**	**0.39**	**7.1**	**-**
McArthur Avenue & Vanier Parkway ***Signalized***	EBL	A	0.29	65.1	22.8	A	0.42	68.7	30.8
	EBT	A	0.41	46.1	44.2	B	0.69	61.7	95.6
	EBR	B	0.70	21.8	42.4	**F**	**1.03**	**75.9**	**#154.8**
	WBL	C	0.77	79.1	**#48.7**	**F**	**1.19**	**166.5**	**#95.2**
	WBT	A	0.59	57.5	80.0	A	0.58	55.2	91.5
	WBR	A	0.28	3.1	3.8	A	0.40	8.7	20.4
	NBL	**F**	**1.22**	**185.4**	**#136.1**	**F**	**1.15**	**161.3**	**#126.3**
	NBT	D	0.82	42.9	**#200.7**	E	1.00	66.6	**#252.7**
	NBR	A	0.34	6.8	24.4	A	0.40	9.7	34.1
	SBL	C	0.80	**82.7**	m51.9	C	0.75	**80.4**	m42.9
	SBT	E	0.95	77.9	**m#236.8**	**F**	**1.01**	**94.5**	**m187.5**
	SBR	A	0.10	17.2	m6.6	A	0.13	21.3	m8.4
	Overall	**E**	**0.91**	**61.3**	**-**	**F**	**1.07**	**80.2**	**-**

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

A number of capacity issues may be noted at the study area intersections in the existing conditions. It is noted that the volumes modelled at the study area intersections are associated with pre-construction geometry. Given restriction in lanes on Montreal Road east of Vanier Parkway and the reduction of lanes on Vanier Parkway at its intersection with Montreal Road, it is anticipated that volumes will change post construction.

At the intersection of Montreal Road and North River Road, high delays are noted on the westbound through/right movement, and extended queues are noted on the eastbound through/right movement during both peak hours.

During the AM peak hour at the intersection of Montreal Road and Vanier Parkway the southbound left-turn movement may be subject to high delays and extended queues, the northbound left-turn movement may experience high delays, and the eastbound through, westbound through/right, and the southbound through/right movement may exhibit extended queues. During the PM peak hour, the northbound through/right and southbound through/right movements are over theoretical capacity, the westbound left, northbound left, and overall intersection may experience high delays, and the eastbound through movement may exhibit extended queues.

The southbound left movement at the intersection of McArthur Avenue and North River Road may exhibit extended queues during the PM peak hour.

During the AM peak hour, the intersection of McArthur Avenue and Vanier Parkway's northbound left movement is over theoretical capacity and may exhibit be subject to high delays and extended queues, the westbound left, northbound through, and southbound through movements may exhibit extended queues. During the PM peak

hour, westbound left and northbound left movements are over theoretical capacity and may be subject to high delays and extended queues, the eastbound right movement is over theoretical capacity and may exhibit extended queues, the southbound through movement and overall intersection are over theoretical capacity and may be subject to high delays, the northbound through movement is at capacity and may exhibit extended queues, and the southbound left movement may experience high delays.

Given the recent Montreal Road Revitalization project, no further improvements are recommended to address the existing conditions. Post-construction volumes will be modeled within the future traffic studies and condition should be monitored by the City for it to determine the impacts of the improvements and to apply any necessary mitigations.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study are road network. Table 3 summarizes the collision types and conditions in the study area, Figure 10 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2016-2020

		Number	%
Total Collisions		**206**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	41	20%
	Property Damage Only	165	80%
Initial Impact Type	**Approaching**	2	1%
	Angle	30	15%
	Rear end	65	32%
	Sideswipe	49	24%
	Turning Movement	36	17%
	SMV Unattended	4	2%
	SMV Other	15	7%
	Other	5	2%
Road Surface Condition	**Dry**	144	70%
	Wet	33	16%
	Loose Snow	12	6%
	Slush	8	4%
	Packed Snow	3	1%
	Ice	6	3%
Pedestrian Involved		15	7%
Cyclists Involved		8	4%

Figure 10: Representation of Study Area Collision Records

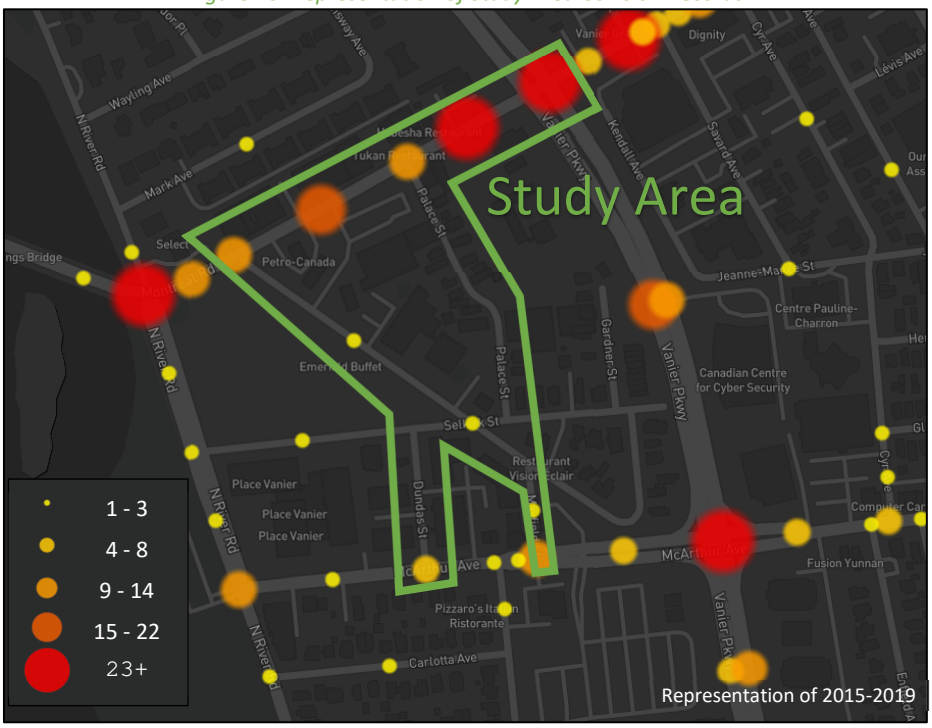


Table 4: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**206**	**100%**
Montreal Rd @ Vanier Pkwy	118	57%
Montreal Rd btwn Palace St & Vanier Pkwy	35	17%
Montreal Rd btwn Montgomery St & Palace St	16	8%
Mayfield St @ McArthur Ave	11	5%
Montgomery St @ Montreal Rd	9	4%
Montreal Rd @ Palace St	9	4%
Dundas St @ McArthur Ave	4	2%
Montgomery St btwn Montreal Rd & Selkirk St	2	1%
Montgomery St @ Selkirk St	1	0%
Mayfield St btwn Montgomery St & McArthur Ave	1	0%

Within the study area, the intersections of Montreal Road at Vanier Parkway and McArthur Avenue at Mayfield Street, and segments of Montreal Road between Palace Street and Vanier Parkway, and between Montgomery Street and Palace Street are noted to have experienced higher collisions than other intersections. Furthermore, the City has requested an analysis of collisions at Montreal Road and Palace Street. Table 5, Table 6, Table 7, Table 8, and Table 9 summarize the collision types and conditions for each location.

Table 5: Montreal Road at Vanier Parkway Collision Summary

		Number	%
Total Collisions		**118**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	23	19%
	Property Damage Only	95	81%
Initial Impact Type	**Angle**	9	8%
	Rear end	54	46%

		Number	%
Total Collisions		**118**	**100%**
	Sideswipe	32	27%
	Turning Movement	13	11%
	SMV Other	8	7%
	Other	2	2%
Road Surface Condition	**Dry**	81	69%
	Wet	19	16%
	Loose Snow	6	5%
	Slush	8	7%
	Packed Snow	1	1%
	Ice	3	3%
Pedestrian Involved		9	8%
Cyclists Involved		2	2%

The Montreal Road at Vanier Parkway intersection had a total of 118 collisions during the 2016-2020 time period, with 95 involving property damage only, and the remaining 23 collisions having non-fatal injuries. The collision types are most represented by rear end with 54 collisions followed by 32 sideswipe, 13 turning movement, and ten or less each of angle, SMV other and other. The rear end collisions are typical of congested areas as are sideswipe collisions where multiple lanes and/or auxiliary lanes are present. The turning movement and angle collisions may be influenced by the turn channels that were present within the collision study period and have since been removed. Six of the pedestrian collisions occurred in 2016 and it is unknown why this year was a significant spike in collisions. Weather conditions are not considered to have influenced collisions at this location. Future studies will document how collisions change beyond the 2022 horizon that have resulted from the corridor revitalization improvements along Montreal Road. No further analysis is required as part of this study.

Table 6: Montreal Road between Palace Street and Vanier Parkway Collision Summary

		Number	%
Total Collisions		**35**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	4	11%
	Property Damage Only	31	89%
Initial Impact Type	**Approaching**	1	3%
	Angle	7	20%
	Rear end	3	9%
	Sideswipe	8	23%
	Turning Movement	11	31%
	SMV Unattended	2	6%
	SMV Other	3	9%
Road Surface Condition	**Dry**	23	66%
	Wet	8	23%
	Loose Snow	2	6%
	Packed Snow	1	3%
	Ice	1	3%
Pedestrian Involved		3	9%
Cyclists Involved		0	0%

The Montreal Road segments between Palace Street and Vanier Parkway had a total of 35 collisions during the 2016-2020 time period including 31 property damage only collisions and four non-fatal injuries collisions. Turning movement comprised the majority of collision types at this intersection with eleven collisions, followed by eight sideswipe and seven angle collisions, with the remaining collision types represented by approaching, rear end, SMV unattended other and SMV other. Turning movement collisions may be associated with multiple accesses along Montreal Road. Weather conditions are not considered to have influenced collisions at this location. It is noted that no changes to access driveways were made by the City during the Montreal Revitalization project. Collision reductions at this intersection may be experienced in the future as a result of the Revitalization project. No further analysis is required as part of this study.

Table 7: Montreal Road between Montgomery Street and Palace Street Collision Summary

		Number	%
Total Collisions		**16**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	4	25%
	Property Damage Only	12	75%
Initial Impact Type	**Approaching**	1	6%
	Angle	3	19%
	Rear end	2	13%
	Sideswipe	2	13%
	Turning Movement	3	19%
	SMV Unattended	2	13%
	SMV Other	2	13%
	Other	1	6%
Road Surface Condition	**Dry**	13	81%
	Wet	1	6%
	Loose Snow	1	6%
	Ice	1	6%
Pedestrian Involved		1	6%
Cyclists Involved		2	13%

The Montreal Road segments between Montgomery Street and Palace Street had a total of 16 collisions during the 2016-2020 time period. Twelve collisions had property damage only and the remaining four collisions had non-fatal injuries. Three collisions each for the turning movement and angle, followed by two collisions each for the rear end, sideswipe, SMV unattended, and SMV other, and the remaining split between approaching and other. Weather conditions do not affect collisions at this location. It is noted that no changes to access driveways were made by the City during the Montreal Revitalization project. No collision pattern is noted for this segment and no further collision review is required within the scope of the subject development.

Table 8: Montreal Road at Palace Street Collision Summary

		Number	%
Total Collisions		**9**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	3	33%
	Property Damage Only	6	67%
Initial Impact Type	**Sideswipe**	2	22%
	Turning Movement	6	67%
	SMV Other	1	11%

		Number	%
Total Collisions		**9**	**100%**
Road Surface Condition	**Dry**	8	89%
	Wet	1	11%
Pedestrian Involved		1	11%
Cyclists Involved		1	11%

The intersection of Montreal Road at Palace Street had a total of nine collisions during the 2016-2020 time period including six property damage only collisions and three non-fatal injuries collisions. Turning movement collisions comprised the majority of collision types at this intersection with six collisions, followed by two sideswipe collisions and one collision as SMV (other). While absolute values of collisions are low and it may be impossible to make normative statements about the data, it is noted that five of six turning movement collisions involved property damage only, where four of six turning movement collisions occurred during the PM peak period and one occurred during the AM peak period. Two of these collisions involved a pedestrian or cyclist. While no identifiable issues are present, if the City was concerned about the collisions at this location, and as part of its review, a solution to possible collision issues at this location was possible, it is assumed that this treatment would have been part of the design of the Montreal Road Revitalization. No further analysis is required as part of this study.

Table 9: McArthur Avenue at Mayfield Street Collision Summary

		Number	%
Total Collisions		**11**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	3	27%
	Property Damage Only	8	73%
Initial Impact Type	**Angle**	8	73%
	Rear end	2	18%
	Other	1	9%
Road Surface Condition	**Dry**	8	73%
	Wet	1	9%
	Loose Snow	1	9%
	Ice	1	9%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The intersection of McArthur Avenue at Mayfield Street had a total of 11 collisions during the 2016-2020 time period including eight property damage only collisions and three non-fatal injuries collisions. Angle collisions comprised the majority of collision types at this intersection with eight collisions, followed by two rear end collisions and one collision as other. Seven out of eight angle collisions occurred in the three-year period of 2016-2018, where the McArthur Avenue included four travel lanes through the intersection. Only one further angle collision was noted in 2019 around the time of the curb lanes being repainted to buffered bike lanes reducing the vehicle travel lanes by two. As such, no additional mitigation beyond this previous treatment is considered necessary to address angle collisions at this intersection. No further analysis is required as part of this study.

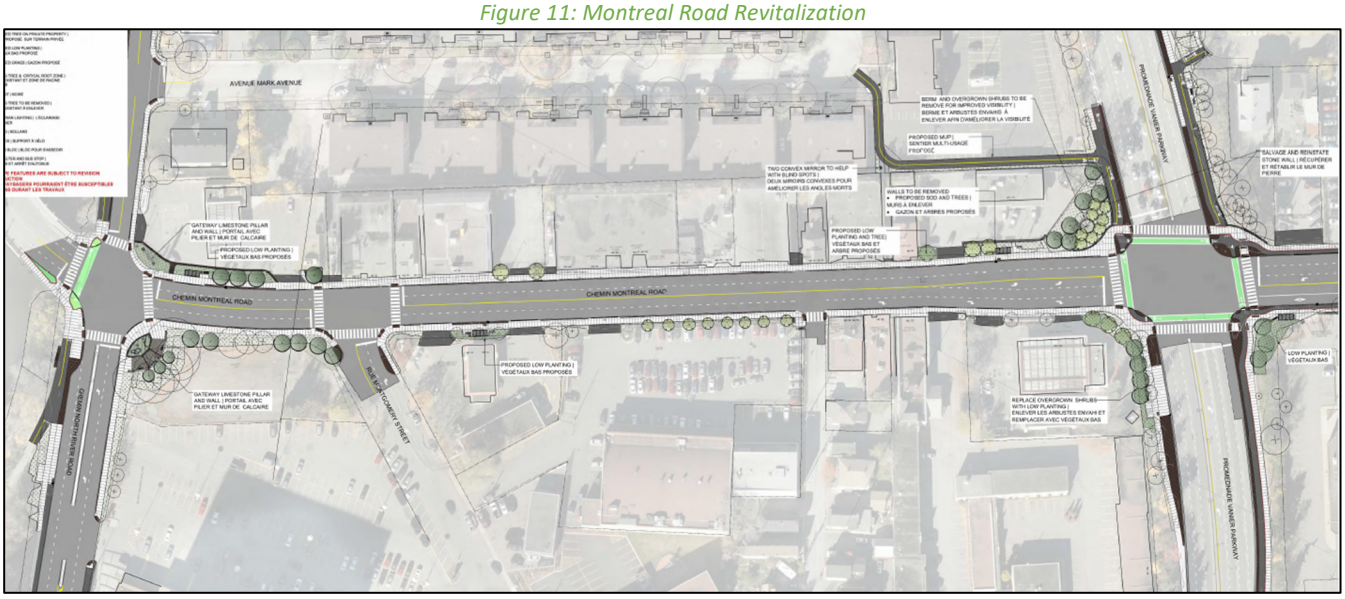
2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The Transportation Master Plan identifies continuous transit priority along Montreal Road within the Affordable and Ultimate Network Concepts. In the Ultimate Network Concept, isolated transit priority measures are identified as along North River Road between Montreal Road and McArthur Avenue, and along McArthur Avenue.

The Montreal Road Revitalization is a project that is currently underway and is scheduled to be completed by autumn of 2022. Major transportation-related changes contained in this plan include changes to the cross-section of Montreal Road, east of Vanier Parkway as well as a review of transit stops and the addition of shelters along the arterial. The newly planned cross-section east of Vanier Parkway includes two westbound lanes, one eastbound lane and cycling tacks/lanes in both directions. Figure 9 illustrates examples of the new study area conditions on Montreal Road.

Figure 11: Montreal Road Revitalization



2.3.2 Other Study Area Developments

337-345 Montgomery Street and 94 Selkirk Street

The application includes an Official Plan amendment/zoning by-law amendment for the construction of a 20-storey high-rise apartment building. The anticipated full build-out and occupancy horizon is 2026 and the development is anticipated to generate 31 new AM and 33 new PM peak hour two-way auto trips (CGH, 2021).

263 Greensway Avenue

The application includes a site plan proposing the construction of a six-storey apartment building with 77 residential units on the site. The anticipated full build-out and occupancy horizon is assumed to be 2023. The development is anticipated to generate 21 new AM two-way peak-hour auto trips and 24 new PM two-way peak-hour auto trips (Parsons, 2019).

18 McArthur Avenue

The application includes a site plane proposing the replacement of a surface parking lot with a three-storey, ten residential unit building. No TIA is available for this application.

353-357 Gardner Street
The application includes a zoning by-law amendment and site plan for the construction of a nine-storey building comprising 61 dwelling units. No TIA is available for this application.

2 Montreal Road, 3 Selkirk Street, 280 & 300 Montgomery Street
The application includes a site plan application for a multi-phase mixed-use development. Phase 1 is comprised of 294 residential units and a 16,143 ft^2 grocery store, Phase 2 is comprised of 433 residential units and 5,132 ft^2 of retail space, and Phase 3 is comprised of 364 residential units. Phase 1 of development is anticipated to be built-out by 2023 and to generate 106 new AM and 154 new PM peak hour two-way auto trips. Phase 2 and Phase 3 are anticipated to be built-out by 2025 and to generate 234 new AM and 249 new PM peak hour two-way auto trips (Parsons, 2022).

26 McArthur Avenue
The application includes a site plan application for the construction of a four-storey residential building with 12 units. The initially anticipated full build-out and occupancy horizon was 2021. Based on the TIA screening form, no TIA is required for the development.

216 McArthur Avenue
The application includes a site plan application for a three-storey, low-rise, mixed-use building with a retail unit on ground floor and twelve dwelling units. No TIA is available for this application.

641 Rideau Street
The application includes a zoning by-law amendment and official plan amendment 25-storey residential building comprising 292 dwelling units. The anticipated full build-out and occupancy horizon is 2024. The development is anticipated to generate 24 new AM two-way peak-hour auto trips and 23 new PM two-way peak-hour auto trips (CGH, 2021).

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Montreal Road at:
  - North River Road
  - Montgomery Street
  - Palace Street
  - Vanier Parkway
- Selkirk Street at North River Road
- McArthur Avenue at:
  - Dundas Street
  - Marguerite Avenue
  - Vanier Parkway
  - North River Road
- The newly proposed site access at Palace Street

The intersections of Montreal Road at Olmstead Street, Montreal Road at Hannah Street/Cody Avenue, and Deschamps Avenue at Vanier Parkway have been excluded from the analysis prescribed within the TIA Guidelines. While they are within 400 metres of the site, the traffic impacts from the proposed development will be captured by the upstream intersections examined and/or will only be impacted by through traffic from the proposed site.

The boundary roads are Montreal Road, Vanier Parkway, and Palace Street. TRANS Screenline 33 is present within proximity to the site, though will not be analyzed as part of this study.

3.2 Time Periods

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

3.3 Horizon Years

The anticipated build-out year is 2024. As a result, the full build-out plus five years horizon year is 2029.

4 Exemption Review

Table 10 summarizes the exemptions for this TIA.

Table 10: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt
Network Impact Component			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Required
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the recommended district mode shares by land use for Ottawa East have been summarized in Table 11.

Table 11: TRANS Trip Generation Manual Recommended Mode Shares – Ottawa East

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	39%	40%	57%	55%
Auto Passenger	7%	14%	10%	18%
Transit	38%	28%	15%	11%
Cycling	2%	3%	1%	1%
Walking	14%	15%	17%	15%
Total	**100%**	**100%**	**100%**	**100%**

Based upon the site's context of being within 400 metres' walk of the Montreal Road arterial mainstreet and transit priority corridor, modified mode share targets with a 5% shift from auto travel to transit are proposed for all development land uses and are summarized in Table 12.

Table 12: Proposed Development Mode Shares

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	34%	35%	52%	50%
Auto Passenger	7%	14%	10%	18%
Transit	43%	33%	20%	16%
Cycling	2%	3%	1%	1%
Walking	14%	15%	17%	15%
Total	**100%**	**100%**	**100%**	**100%**

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11h Edition (2021) using the City-prescribed conversion factor of 1.28. Table 13 summarizes the person trip rates for the proposed residential land use for each peak period and the person trip rates for the commercial land use by peak hour.

Table 13: Trip Generation Person Trip Rates by Peak Period

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

Using the above person trip rates, the total person trip generation has been estimated. Table 14 summarizes the total person trip generation for the residential land use by peak period and for the commercial land use by peak hour.

Table 14: Total Residential Person Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit High-Rise	430	107	237	344	224	163	387
Land Use	**GFA (sq. ft.)**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Retail (<40k sq. ft.)	2,525	5	3	8	11	11	22

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 15 represent the percentage of trips to/from the retail use based on the residential component.

Table 15: Internal Capture Rates

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

Pass-by reductions applied to the retail trip generation at a rate of 40% have been included using the recommended value presented in the ITE Trip Generation Manual 11th Edition (2021) for the most similar land use with a recommended rate, "Retail (40k – 150k sq. ft.)".

Using the proposed site mode share targets and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 16 summarizes the residential trip generation and the commercial trip generation by mode and peak hour.

Table 16: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**34%**	17	39	56	**35%**	34	25	59
	Auto Passenger	**7%**	4	8	12	**14%**	14	10	24
	Transit	**43%**	25	56	81	**33%**	35	25	60
	Cycling	**2%**	1	3	4	**3%**	3	3	6
	Walking	**14%**	9	19	28	**15%**	17	13	30
	Total	**100%**	**56**	**125**	**181**	**100%**	**103**	**76**	**179**
Retail (<40k sq. ft.)	Auto Driver	**52%**	1	1	2	**50%**	3	3	5
	Auto Passenger	**10%**	0	0	0	**18%**	1	1	2
	Transit	**20%**	0	0	1	**16%**	1	1	2
	Cycling	**1%**	0	0	0	**1%**	0	0	0
	Walking	**17%**	0	0	1	**15%**	1	1	2
	Pass-by	*40%*	*-2*	*-1*	*-3*	*40%*	*-4*	*-4*	*-8*
	Internal Capture	*varies*	*-1*	*0*	*-1*	*varies*	*-1*	*-2*	*-3*
	Total	**100%**	**2**	**2**	**4**	**100%**	**6**	**5**	**11**
Total	Auto Driver	-	18	40	58	-	37	28	64
	Auto Passenger	-	4	8	12	-	15	11	26
	Transit	-	25	56	82	-	36	26	62
	Cycling	-	1	3	4	-	3	3	6
	Walking	-	9	19	29	-	18	14	32
	Total	-	**58**	**127**	**185**	-	**109**	**81**	**190**

As shown above, a total of 58 new AM and 64 new PM peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Ottawa East. Table 17 below summarizes the distribution.

Table 17: OD Survey Distribution – Ottawa East

To/From	% of Trips
North	5%
South	30%
East	25%
West	40%
Total	**100%**

5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 18 summarizes the proportional assignment to the study area roadways, and Figure 12 and Figure 13 illustrate the new site generated volumes and pass-by volumes.

Table 18: Trip Assignment

To/From	Inbound Via	Outbound Via
North	5% Vanier Pkwy (N)	5% Vanier Pkwy (N)
South	20% North River Rd (S), 10% Vanier Pkwy (S)	20% Vanier Pkwy (S) 10% North River Rd (S)
East	10% Montreal Rd (E) 10% McArthur Ave (E) 5% Vanier Pkwy (S)	10% McArthur Ave (E), 10% Montreal Rd (E), 5% Vanier Pkwy (S)
West	20% Montreal Rd (W), 10% North River Rd (S), 10% Vanier Pkwy (S)	20% Montreal Rd (W), 10% Vanier Pkwy (S) 10% North River Rd (S)
Total	**100%**	**100%**

Figure 12: New Site-Generated Auto Volumes

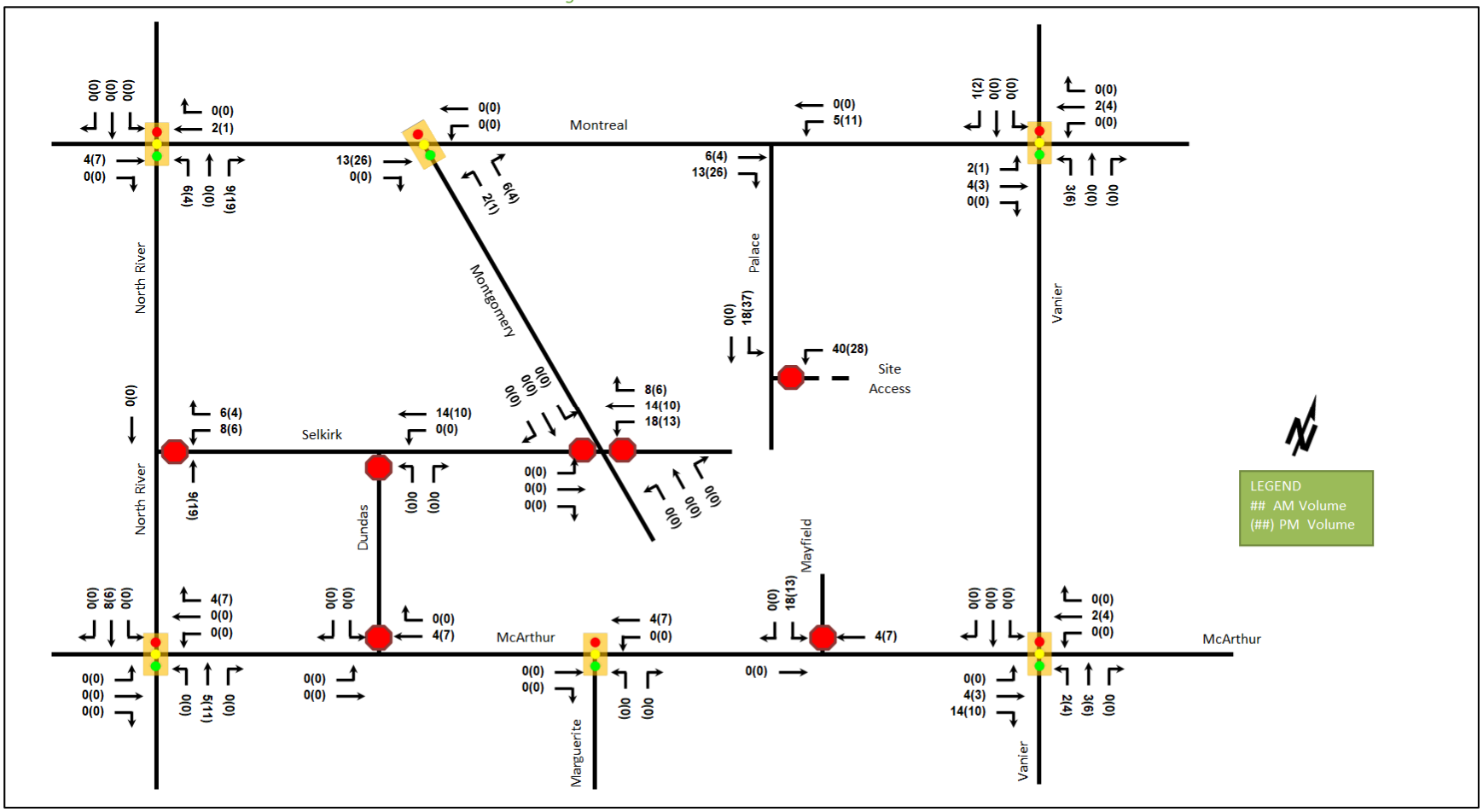
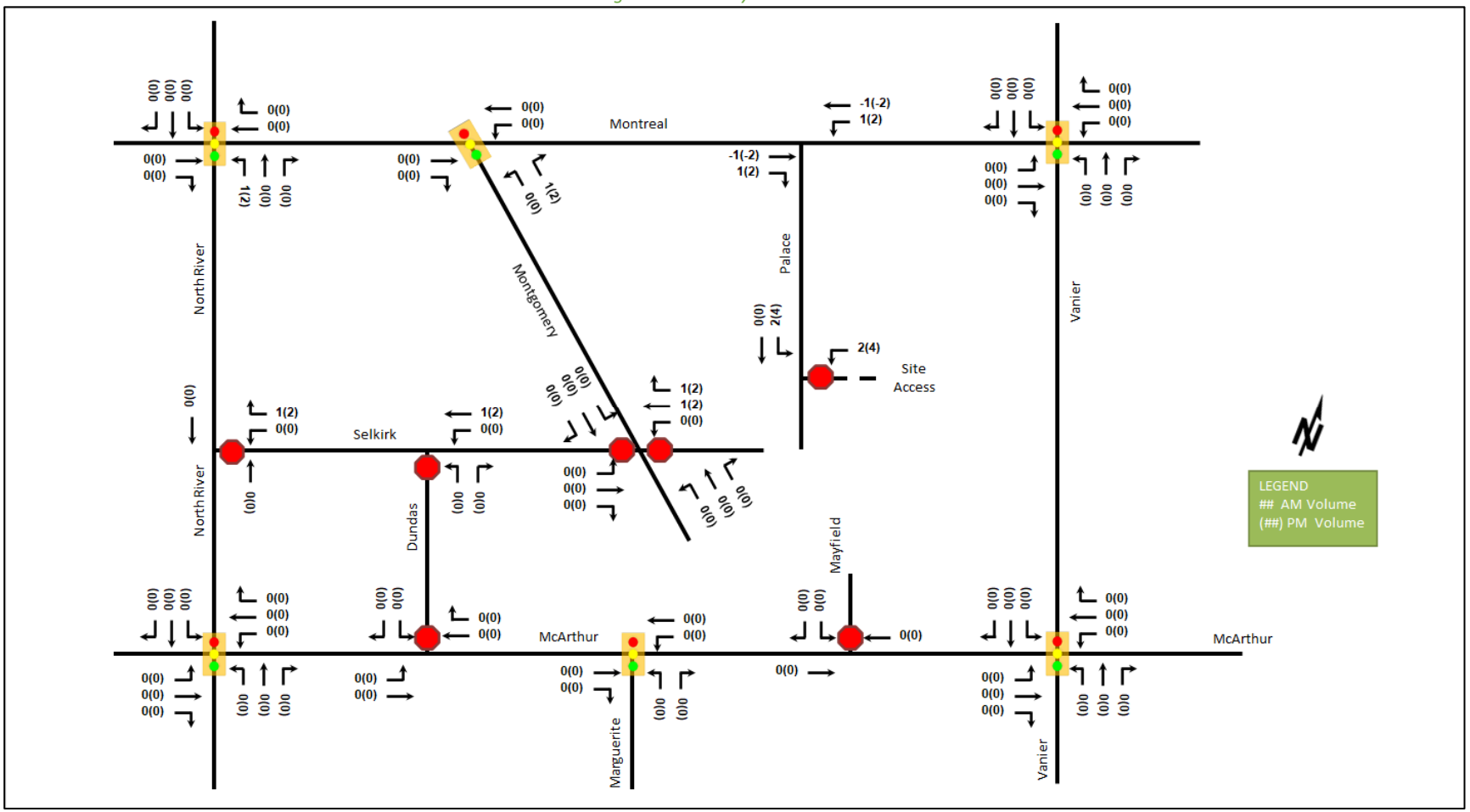


Figure 13: Pass-By Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3.1. Construction activities associated with the Montreal Road Revitalization are concluding at the time of this report and the improvements have been included in the existing conditions. No other plans for the study area were noted.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for the arterial network. Table 19 summarizes the results of the model and the projections are provided in Appendix E.

Table 19: TRANS Regional Model Projections – Study Area Growth Rates

Street	Direction Growth Percentage	
	Eastbound	**Westbound**
Montreal Rd	0.66%	-0.30%
McArthur Ave	1.15%	0.02%
	Northbound	**Southbound**
North River Rd	-2.05%	1.80%
Vanier Pkwy	0.37%	0.68%

In general, the TRANS projections forecast growth rates within the range of -2.0% to 1.8% in the study area. Historically, it is shown that rates of contraction of -4% to -2% for volumes at the intersection of Montreal Road at North River Road and of -2% to -0.2% at the intersection of Montreal Road at Vanier Parkway have been observed between 2000 and 2016 in both the AM and PM peak hours. Additionally, with the reduction in lanes on McArthur Avenue and on Montreal Road east of Vanier Parkway, it is not anticipated that these roadways can accommodate future growth. Therefore, a growth rate of 0.5% will be applied to the mainline volumes on Vanier Parkway. Table 20 summarizes the growth rates applied within the study area.

Table 20: TRANS Regional Model Projections – Study Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	**Westbound**	**Eastbound**	**Westbound**
Montreal Rd	-	-	-	-
McArthur Ave	-	-	-	-
	Northbound	**Southbound**	**Northbound**	**Southbound**
North River Rd	-	-	-	-
Vanier Pkwy	0.50%	0.50%	0.50%	0.50%

6.3 Other Developments

As the only developments with non-negligible traffic generation in the study area, the background developments explicitly considered in the background conditions (Section 6.2) include:

- 337-345 Montgomery Street and 94 Selkirk Street
- 641 Rideau Street
- 2 Montreal Road, 3 Selkirk Street, 280 & 300 Montgomery Street

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

7 Demand Rationalization

7.1 2024 Future Background Operations

Figure 14 illustrates the 2024 background volumes and Table 21 summarizes the 2024 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2024 future background horizon are provided in Appendix G

Figure 14: 2024 Future Background Volumes

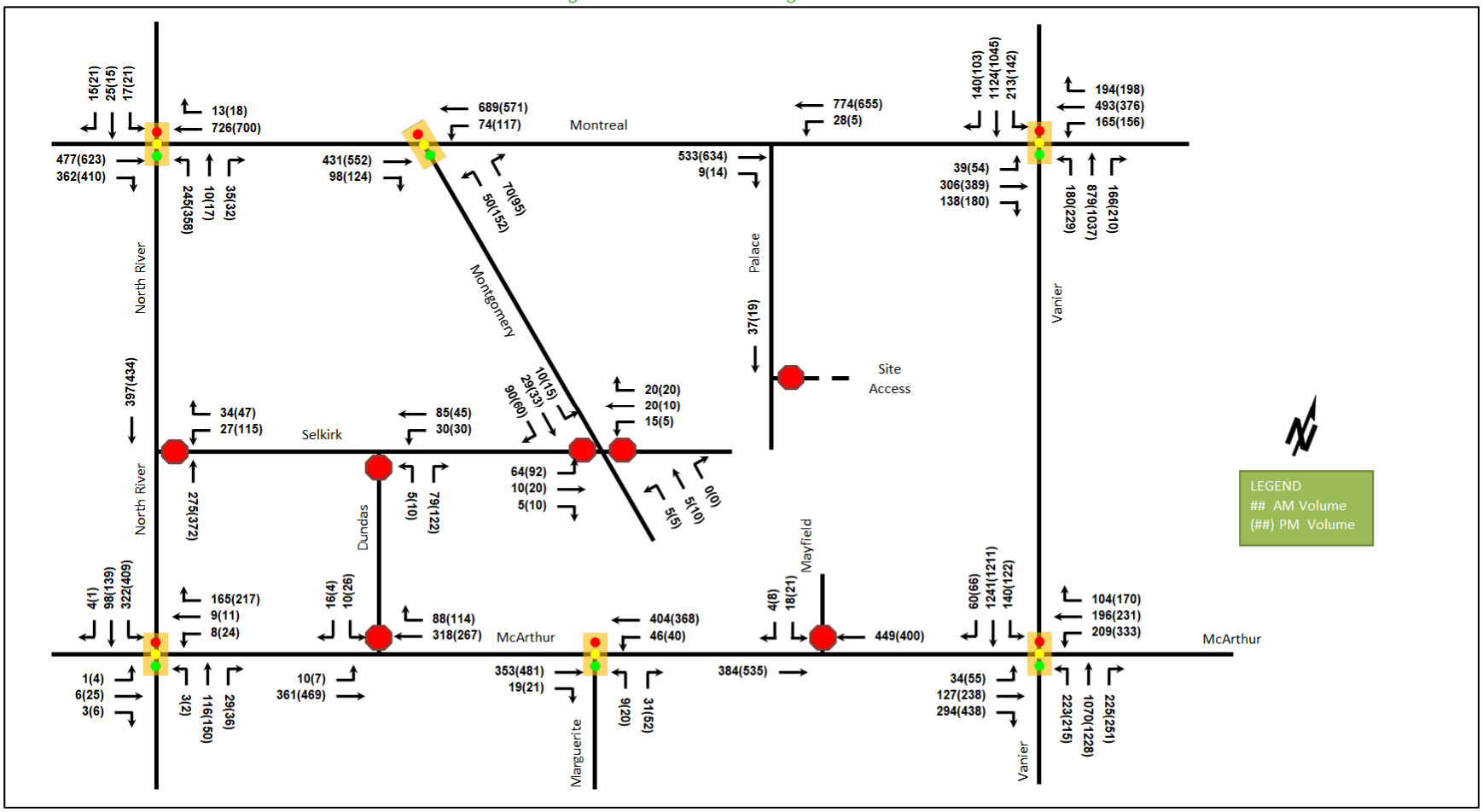


Table 21: 2024 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Montreal Road & North River Road *Signalized*	EBT/R	C	0.75	31.5	**#109.4**	C	0.77	30.8	**#141.8**
	WBT/R	A	0.60	59.4	82.1	A	0.49	59.8	86.7
	NBL	C	0.71	45.9	62.8	D	0.83	58.7	105.3
	NBT/R	A	0.10	10.1	8.3	A	0.09	12.6	10.4
	SB	A	0.33	36.5	18.7	A	0.40	45.8	22.0
	Overall	**A**	**0.60**	**43.7**	-	**B**	**0.68**	**44.6**	-
Montreal Road & Montgomery Street *Signalized*	EBT/R	A	0.22	4.2	17.8	A	0.27	5.4	25.3
	WBT/L	A	0.37	5.2	33.1	A	0.31	4.6	28.3
	NBL	A	0.21	31.7	15.7	A	0.53	50.2	35.1
	NBR	A	0.27	10.8	10.2	A	0.29	13.2	11.2
	Overall	**A**	**0.37**	**6.0**	-	**A**	**0.34**	**8.7**	-
Montreal Road & Vanier Parkway *Signalized*	EBL	A	0.38	72.8	22.2	A	0.45	74.0	27.1
	EBT	C	0.75	61.6	113.2	C	0.78	60.0	**#153.8**
	EBR	A	0.32	8.5	16.6	A	0.35	7.8	18.7
	WBL	**F**	**1.09**	**155.2**	**#96.9**	C	0.74	78.3	63.9
	WBT/R	C	0.76	50.2	**#124.8**	A	0.49	32.4	73.1
	NBL	C	0.78	**88.8**	m71.9	D	0.87	**88.7**	m78.8
	NBT/R	B	0.70	44.4	80.4	E	0.93	71.0	**#163.5**
	SBL	D	0.84	**84.5**	**#93.0**	B	0.70	76.2	58.2
	SBT/R	C	0.80	46.8	140.0	E	0.96	69.0	**#146.3**
	Overall	**D**	**0.88**	**55.1**	-	**D**	**0.87**	**63.0**	-
Selkirk Street & North River Road *Unsignalized*	WB	B	0.10	11.4	2.3	C	0.33	15.7	10.5
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.9**	**-**	**A**	**-**	**2.6**	**-**
Selkirk Street & Dundas Street *Unsignalized*	Low volumes at intersection return LOS A and zero second delay for intersection								
Selkirk Street & Montgomery Street *Unsignalized*	EB	A	0.10	9.9	2.3	A	0.12	9.9	3.0
	WB	A	0.06	9.5	1.5	A	0.04	9.1	0.8
	NB	A	0.00	7.5	0.0	A	0.00	7.4	0.0
	SB	A	0.01	7.2	0.0	A	0.01	7.3	0.0
	Overall	**A**	**-**	**5.2**	**-**	**A**	**-**	**5.9**	**-**
McArthur Avenue & North River Road *Signalized*	EB	A	0.02	14.4	3.5	A	0.08	18.4	9.4
	WBT/L	A	0.03	10.9	m5.4	A	0.10	21.0	11.5
	WBR	A	0.31	8.1	22.1	A	0.42	12.9	32.5
	NB	A	0.17	8.1	16.4	A	0.20	7.2	18.6
	SBL	A	0.55	15.9	49.1	C	0.73	21.5	**#80.7**
	SBT/R	A	0.12	9.0	13.1	A	0.14	7.9	15.9
	Overall	**A**	**0.38**	**11.7**	-	**A**	**0.55**	**15.1**	-
McArthur Avenue & Dundas Street *Unsignalized*	EB	A	0.01	8.9	0.0	A	0.01	8.5	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.07	14.9	1.5	C	0.10	18.8	2.3
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.7**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
McArthur Avenue & Mayfield Street *Unsignalized*	EB	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SBL	C	0.05	16.2	1.5	C	0.03	17.2	0.8
	SBR	B	0.01	10.9	0.0	B	0.01	10.4	0.0
	Overall	**A**	**-**	**0.4**	**-**	**A**	**-**	**0.2**	**-**
McArthur Avenue & Marguerite Street *Signalized*	EBT/R	A	0.29	4.0	16.3	A	0.37	5.1	37.4
	WBT/L	A	0.37	8.0	m47.8	A	0.31	6.1	42.3
	NBL	A	0.03	19.0	3.9	A	0.07	23.4	7.1
	NBR	A	0.09	8.4	5.5	A	0.17	8.5	7.7
	Overall	**A**	**0.33**	**6.4**	**-**	**A**	**0.35**	**6.0**	**-**
McArthur Avenue & Vanier Parkway *Signalized*	EBL	A	0.29	65.4	21.5	A	0.38	67.2	28.5
	EBT	A	0.40	45.2	41.1	B	0.62	58.4	86.0
	EBR	B	0.64	17.3	30.4	E	0.93	50.6	**#124.5**
	WBL	C	0.71	75.0	42.8	**F**	**1.07**	**130.2**	**#83.3**
	WBT	A	0.49	51.7	74.3	A	0.53	53.2	82.2
	WBR	A	0.24	1.5	0.5	A	0.37	8.8	19.3
	NBL	**F**	**1.11**	**152.4**	**#122.3**	**F**	**1.03**	**130.6**	**#110.8**
	NBT	C	0.74	39.1	169.8	D	0.89	48.7	**#212.2**
	NBR	A	0.31	5.5	18.7	A	0.37	7.5	26.3
	SBL	C	0.76	**84.3**	m51.3	B	0.70	**83.2**	m42.2
	SBT	D	0.88	72.1	**m#211.6**	E	0.91	**81.9**	**m186.2**
	SBR	A	0.10	14.9	m6.0	A	0.12	19.3	m8.6
	Overall	**D**	**0.82**	**55.6**	**-**	**E**	**0.94**	**65.2**	**-**

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

At the 2024 future background horizon, the study area intersections are noted to have minor operational improvements above the existing conditions with the peak hour factor changing from 0.90 to 1.00. No new capacity issues are noted.

7.2 2029 Future Background Operations

Figure 15 illustrates the 2029 background volumes and Table 22 summarizes the 2029 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2029 future background horizon are provided in Appendix H.

Figure 15: *2029 Future Background Volumes*

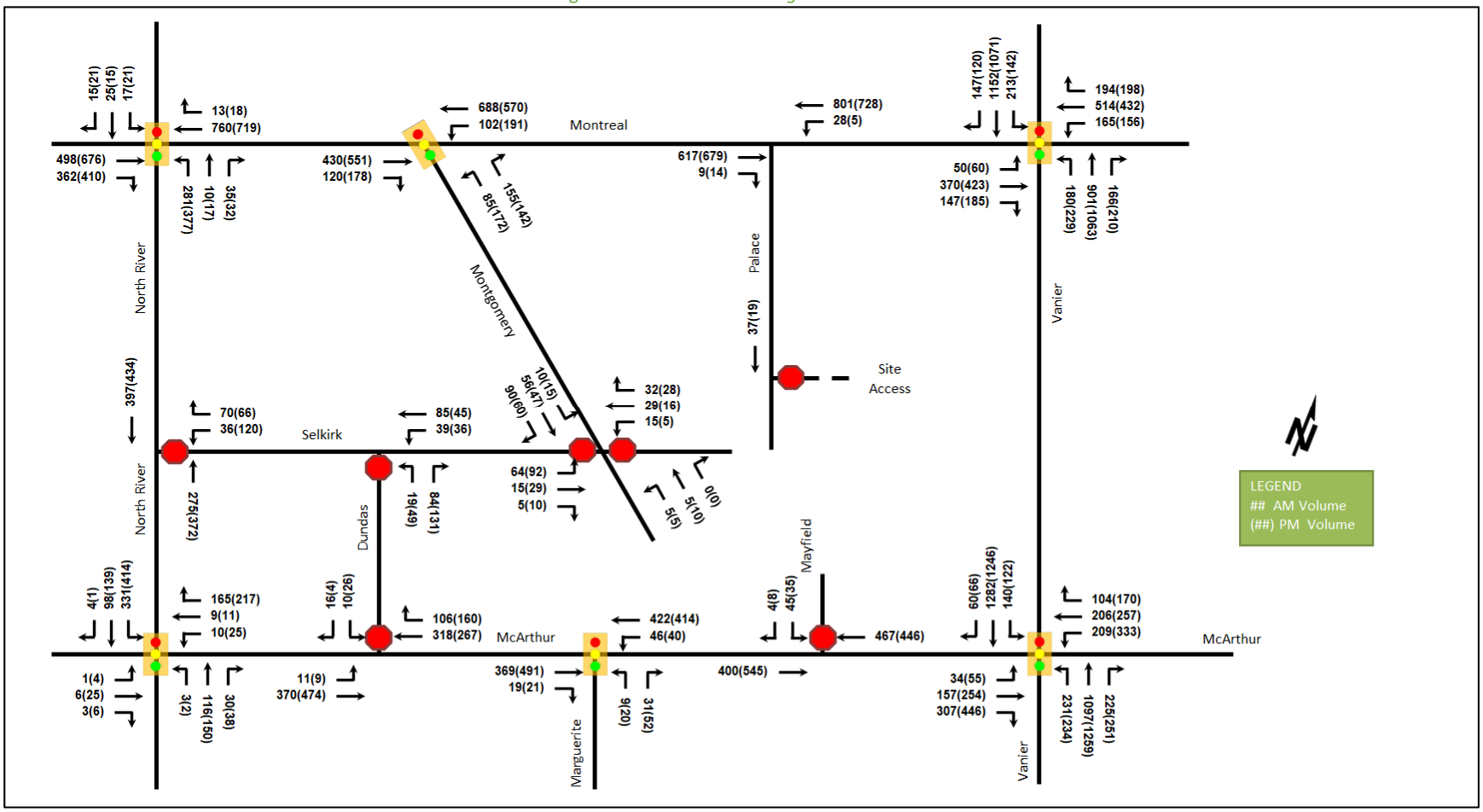


Table 22: 2029 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Montreal Road & North River Road *Signalized*	EBT/R	D	0.85	38.9	**#119.4**	D	0.86	38.2	**#171.8**
	WBT/R	B	0.70	**82.8**	89.7	A	0.55	**82.0**	96.6
	NBL	B	0.70	41.7	70.4	D	0.84	57.5	111.3
	NBT/R	A	0.09	9.3	8.0	A	0.09	12.0	10.2
	SB	A	0.33	36.5	18.7	A	0.40	45.8	22.0
	Overall	**B**	**0.64**	**55.4**	-	**C**	**0.73**	**55.0**	-
Montreal Road & Montgomery Street *Signalized*	EBT/R	A	0.25	4.9	18.0	A	0.32	6.3	29.3
	WBT/L	A	0.44	6.2	36.0	A	0.51	7.7	46.0
	NBL	A	0.36	34.8	23.7	B	0.70	55.2	51.9
	NBR	A	0.47	10.4	14.9	A	0.44	10.9	15.8
	Overall	**A**	**0.43**	**7.7**	-	**A**	**0.54**	**11.9**	-
Montreal Road & Vanier Parkway *Signalized*	EBL	A	0.45	74.6	26.6	A	0.49	74.9	30.6
	EBT	D	0.90	77.3	**#156.1**	D	0.90	72.2	**#190.0**
	EBR	A	0.33	8.5	17.0	A	0.38	10.9	25.1
	WBL	**F**	**1.09**	**155.2**	**#96.9**	C	0.74	78.3	63.9
	WBT/R	C	0.80	52.8	**#134.5**	A	0.59	38.2	96.3
	NBL	C	0.78	**88.1**	m70.1	D	0.87	**86.7**	m75.0
	NBT/R	C	0.71	45.1	81.8	E	0.97	75.6	**m#165.1**
	SBL	D	0.84	**84.5**	**#93.0**	B	0.70	76.2	58.2
	SBT/R	D	0.82	47.8	**#145.1**	**F**	**1.02**	**83.4**	**#163.2**
	Overall	**E**	**0.91**	**57.3**	-	**E**	**0.93**	**69.9**	-
Selkirk Street & North River Road *Unsignalized*	WB	B	0.16	11.6	4.5	C	0.37	16.2	12.8
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.6**	**-**	**A**	**-**	**3.0**	**-**
Selkirk Street & Dundas Street *Unsignalized*	Low volumes at intersection return LOS A and zero second delay for intersection								
Selkirk Street & Montgomery Street *Unsignalized*	EB	B	0.11	10.4	3.0	B	0.17	10.5	4.5
	WB	A	0.09	9.7	2.3	A	0.06	9.2	1.5
	NB	A	0.00	7.5	0.0	A	0.00	7.4	0.0
	SB	A	0.01	7.2	0.0	A	0.01	7.3	0.0
	Overall	**A**	**-**	**5.3**	**-**	**A**	**-**	**6.2**	**-**
McArthur Avenue & North River Road *Signalized*	EB	A	0.02	14.4	3.5	A	0.08	18.4	9.4
	WBT/L	A	0.04	10.8	m5.6	A	0.10	20.7	11.8
	WBR	A	0.31	8.0	22.8	A	0.42	12.7	33.0
	NB	A	0.17	8.0	16.4	A	0.20	7.2	19.0
	SBL	A	0.56	16.3	51.1	C	0.74	22.1	**#90.1**
	SBT/R	A	0.12	9.0	13.1	A	0.14	7.9	15.9
	Overall	**A**	**0.39**	**11.8**	-	**A**	**0.55**	**15.3**	-
McArthur Avenue & Dundas Street *Unsignalized*	EB	A	0.01	9.0	0.0	A	0.01	8.7	0.0
	WB	-	-	-	-	-	-	-	-
	SB	C	0.07	15.1	1.5	C	0.11	19.9	3.0
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.7**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
McArthur Avenue & Mayfield Street *Unsignalized*	EB	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SBL	C	0.14	17.9	3.8	C	0.13	20.1	3.0
	SBR	B	0.01	11.1	0.0	B	0.01	11.0	0.0
	Overall	**A**	**-**	**0.9**	**-**	**A**	**-**	**0.8**	**-**
McArthur Avenue & Marguerite Street *Signalized*	EBT/R	A	0.30	4.2	18.4	A	0.38	5.2	38.1
	WBT/L	A	0.39	8.6	m50.0	A	0.36	6.5	51.8
	NBL	A	0.03	19.0	3.9	A	0.07	23.4	7.1
	NBR	A	0.09	8.4	5.5	A	0.17	8.5	7.7
	Overall	**A**	**0.35**	**6.8**	**-**	**A**	**0.36**	**6.3**	**-**
McArthur Avenue & Vanier Parkway *Signalized*	EBL	A	0.29	65.6	21.7	A	0.38	67.2	28.5
	EBT	A	0.49	47.6	49.9	C	0.73	64.9	95.9
	EBR	B	0.66	18.4	33.1	E	0.98	62.0	**#132.4**
	WBL	C	0.71	75.0	42.8	E	0.97	**103.1**	#83.3
	WBT	A	0.51	52.2	77.8	B	0.62	56.6	97.3
	WBR	A	0.24	1.4	0.5	A	0.37	8.8	19.3
	NBL	**F**	**1.16**	**164.3**	**#127.5**	**F**	**1.17**	**169.0**	**#129.8**
	NBT	C	0.77	40.1	175.7	E	0.94	53.8	**#231.0**
	NBR	A	0.31	5.9	19.9	A	0.37	8.4	28.7
	SBL	C	0.76	**83.6**	m50.0	B	0.70	**81.0**	m40.3
	SBT	E	0.91	74.0	**m#224.2**	E	0.96	**85.8**	**m186.8**
	SBR	A	0.10	14.7	m5.7	A	0.12	18.9	m7.7
	Overall	**D**	**0.85**	**57.4**	**-**	**E**	**0.99**	**69.4**	**-**

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

During both the AM and PM peak hours, the study area intersections operate similarly to the 2024 future background conditions. As in the existing conditions, at the intersection of Montreal Road and North River Road, high delays are anticipated on the westbound through/right movement during both peak hours. Similarly, as in the existing conditions, at the intersection of Montreal Road at Vanier Parkway, the eastbound through and southbound shared through/right-turn movements may exhibit extended queues during the AM peak hour and the southbound through/right movement is forecast to be over theoretical capacity and may be subject to high delays during the PM peak hour at this horizon.

7.3 Modal Share Sensitivity and Demand Rationalization Conclusions

With respect to background conditions, no rationalization for the forecasted traffic contributing to capacity issues is required. The Montreal Revitalization is expected to change the background volumes within the study area. Any residual demand requiring rationalization will be discussed in future study area TIAs.

The TIA supporting the zoning by-law amendment for both phases of the subject development was previously approved, and traffic volumes forecasted with the first phase of development of the subject parcel are consistent with those from the approved TIA. Therefore, travel demand for the subject development does not require rationalization.

8 Development Design

8.1 Design for Sustainable Modes

The proposed development is a residential site plan with underground parking for both automobiles and bicycles via an 11% grade for the ramps. Hard surface connections to existing area pedestrian facilities along the site's Montreal Road and Vanier Parkway frontages are proposed connecting to all site building entrances.

Stops for route #15 are within 200 metres' walk from the site, for route #9 within 300 metres' walk, for routes #14 and #18 within 400 metres' walk, and for route #19 within 500 metres' walk.

8.2 Circulation and Access

Access for vehicles and cyclists is provided via a left-in/left-out access on Palace Street on the west side of the site. Garbage collection is to take place on the internal site drive aisles and a fire route is designated along the internal site drive aisles serving both site buildings. Aisle widths and radii permit the intended site operations and turning template for site design vehicles are provided in Appendix I.

9 Parking

9.1 Parking Supply

The site provides 436 bicycle parking spaces for the first phase of development, with 410 parking spaces provided below ground on the first parking level and 26 spaces are provided in surface racks near building entrances. Also within the first underground parking level as part of phase one, 465 bicycle parking spaces will be reserved for the second phase of development. A total of 390 vehicle parking spaces are proposed, with 358 for residents and 32 for visitors, with 376 spaces across three parking levels and 14 spaces in surface lots. The minimum parking provision from the zoning by-law is 203 resident vehicle parking spaces, 32 visitor vehicle parking spaces, and 215 bicycle parking spaces. Therefore, the minimum parking requirements from the zoning by-law are satisfied.

10 Boundary Street Design

Table 23 summarizes the MMLOS analysis for the site boundary roads of Montreal Road, Vanier Parkway, and Palace Street. Where the existing and future conditions will be the same, they are considered in one row. In the case of Vanier Parkway, the Phase 2 conditions will be considered for the future analysis. The analysis is based on the policy area "Within 300m of a school", Mauril-Belanger Elementary School. The MMLOS worksheets are provided in Appendix J.

Table 23: Boundary Street Segment MMLOS Analysis

Segment		Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TkLOS	Target
Vanier Pkwy	Ex.	**F**	A	**F**	C	D	D	A	D
	Fut.	**D**	A	A	C	D	D	A	D
Montreal Rd	Ex./Fut.	**C**	A	**E**	C	D	C	C	D
Palace St	Ex./Fut.	**F**	A	B	B	-	-	-	-

The site boundary streets do not meet the MMLOS targets for pedestrian LOS Montreal Road and for Vanier Parkway in the existing conditions and Montreal Road does not meet the bicycle LOS targets.

The pedestrian LOS target of A will not be met on Montreal Road and Vanier Parkway, typical of arterial roads. On Palace Street, no sidewalks are present and a 1.8-metre-wide sidewalk with a two-metre-wide boulevard, or a two-metre-wide sidewalk with a 0.5-metre-wide boulevard would be required to meet targets.

Bicycle LOS on Montreal Road is limited by the mixed traffic conditions and would require physically separated facilities to meet targets.

Overall, no recommended improvements along the boundary streets are proposed as part of this Phase 1 site plan. During Phase 2, improvements will be undertaken along Vanier Parkway in conjunction with the new access. Montreal Road has recently been studied and redesigned by the City, and therefore are assumed to meet City MMLOS objectives for this corridor.

11 Access Intersections Design

11.1 Location and Design of Access

The site accesses consist of a left-in/left-out connection onto Palace Street via a 6.7-metre-wide driveway with an approximately 15-metre-long clear throat. The curb radius on the north side of the access is 18.0 metres constituting a gradual return given the access location on the bend of Palace Street, and the curb radius on the south side of the access is 5.0 metres, each permitting ingress and egress for emergency services and garbage collection vehicles. The site access is approximately 4.5 metres from the adjacent property line to the north on Palace Street and approximately 2.5 metres from the adjacent property to the south.

The existing site access on Montreal Road is to be removed as part of development. The construction interim access is proposed on the Vanier Parkway frontage to avoid community impacts of vehicles entering and exiting the site. The proposed interim access width is anticipated to be a typical width to permit contractor vehicles to turn right, both inbound and outbound, and will be controlled per Ontario Traffic Manual (OTM) Book 7. Similarly, the truck entrance signage will need to be compliant with OTM Book 7. The contractor will be responsible for submitting the interim access size and signage prior to opening of the access. It is noted that pedestrian movements along Vanier Parkway must be maintained throughout the construction timeframe and have priority at the interim access crossing.

11.2 Intersection Control

Based on the projected volumes, site access will have a stop-control on the minor access approach. No further traffic control is necessary to address operational issues.

11.3 Access Intersection Design

11.3.1 2024 Future Total Access Intersection Operations

The 2024 future total future traffic volumes have been illustrated in Figure 16. The level of service is based on average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix K.

It is noted that given the low volumes at the site access, negligible delay and no level of service value result from the Synchro analysis and the intersection is anticipated to operate well.

11.3.2 2029 Future Total Access Intersection Operations

The 2029 future total intersection volumes are illustrated in Figure 17 . The level of service is based on average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix L.

It is again noted that given the low volumes at the site access, negligible delay and no level of service value result from the Synchro analysis and the intersection is anticipated to operate well.

Figure 16: *2024 Future Total Volumes*

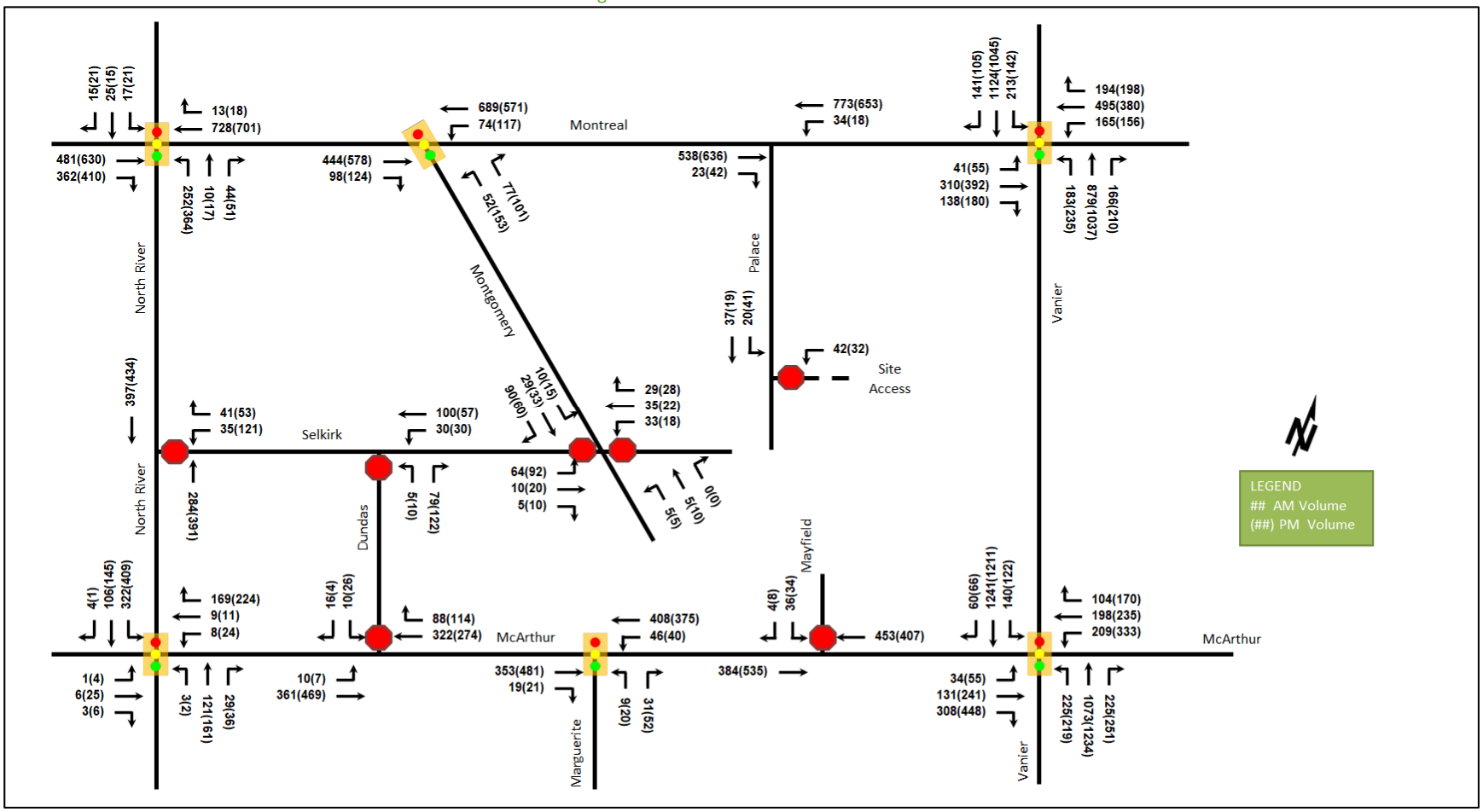
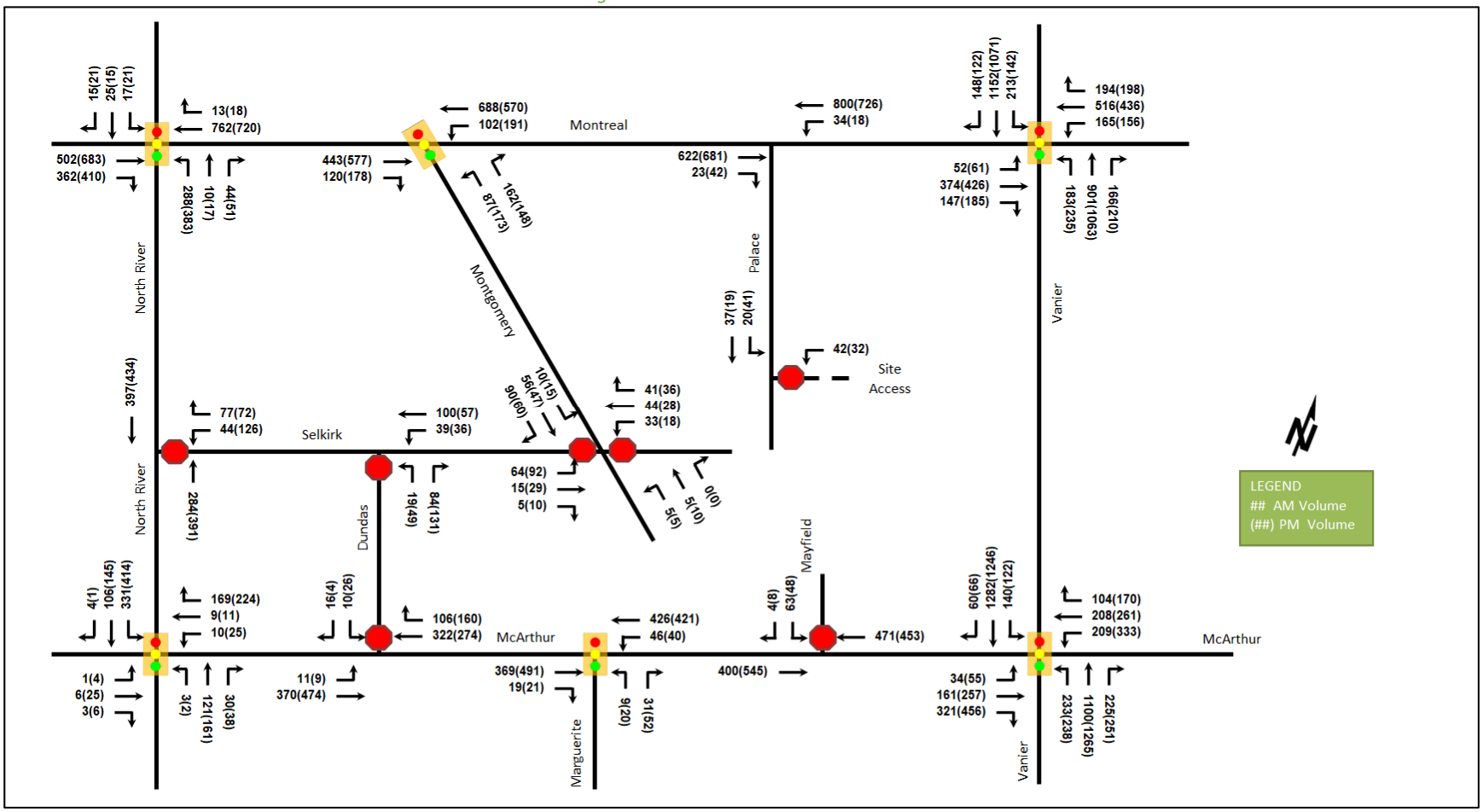


Figure 17: 2029 Future Total Volumes



11.3.3 Access Intersection MMLOS

As the access intersection is unsignalized, no access intersection MMLOS analysis is required.

11.3.4 Recommended Design Elements

As noted above, the site access is 2.5 metres from the adjacent property line to the south, which is under the three metres recommended by the private approach by-law. The location of the access is constrained by property for the provision of a sidewalk on the north side of the driveway. Furthermore, no impacts to the adjacent property are noted as a building on that site is 0.5 metres from the subject property line. Site plan approval in exemption to the private approach by-law will be required.

12 Transportation Demand Management

12.1 Context for TDM

The mode shares used within the TIA represent a slight shift to in transit from the typical district shares and these assumptions have been carried through the analysis. Given the presence of the transit priority corridor, the increase in transit modal share of 5% in each peak hour are likely to be achieved.

The site intersects the Montreal Arterial Mainstreet design priority area. A unit breakdown of 291 one-bedroom units, 107 two-bedroom units, and 32 three-bedroom units is proposed for a total of 601 bedrooms within the development. No age restrictions are noted.

12.2 Need and Opportunity

The mode shares used within the TIA represent a minor change from the typical recommended district mode shares. Risks associated with failing to meet mode share targets would result in a negligible increase in traffic on the overcapacity northbound left movement at the intersection of McArthur Avenue at Vanier Parkway. Supportive TDM measures should be included to achieve these and potential further shifts towards transit.

12.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for both the residential and non-residential land uses. The checklist is provided in Appendix M.

The key TDM measures recommended include:

- Posting of pedestrian, cycling, and transit information and maps at primary entrances/exits
- Inclusion of a 1-year Presto card for first time new residential and retail tenants, along with a set time frame for this offer (e.g., 6-months) from the ‘opening’ of the buildings/towers
- Contract with provider to install on-site micromobility (e.g., scooter or bike share) station
- Contract with provider to install on-site carshare vehicles and promote their use by residents
- Provide a permanent bicycle repair station with common tools for the use of residents
- Unbundle parking from rental costs

13 Neighbourhood Traffic Management

The proposed development will connect to the arterial network via Palace Street (a local road) and is additionally forecasted to make use of Selkirk Street (a local road) and Montgomery Street (a local road). The TIA guidelines have outlined neighbourhood traffic management thresholds of 120 two-way vehicles on local roads. City Staff have noted that these NTM thresholds are too low for the purposes of the analysis, and they under review and

will be updated in the future. The volumes at the 2024 future background horizon and the site volumes each by peak hour are summarized for each road in the NTM analysis in Table 24.

Table 24: 2024 NTM Review

Segment	AM Peak Hour			PM Peak Hour		
	FB2024	Site Vols	FT2024	FB2024	Site Vols	FT2024
Palace Street	37	18	55	19	37	56
Montgomery Street	**292**	8	**300**	**488**	6	**494**
Segment	**AM Peak Hour**			**PM Peak Hour**		
	FB2024	**Site Vols**	**FT2024**	**FB2024**	**Site Vols**	**FT2024**
Selkirk Street	**61**	14	75	**162**	10	**172**

As noted above, Montgomery Street and Selkirk Street are above NTM thresholds in the background conditions. The site is forecast to contribute 15 vehicles or less to each road. Thus, no impact to the roads functions or classifications are forecast to result from the proposed development.

14 Transit

14.1 Route Capacity

In section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 25 summarizes the transit trip generation.

Table 25: Trip Generation by Transit Mode

Travel Mode	Residential Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	Varies	25	56	82	36	26	62

The proposed development is anticipated to generate an additional 83 AM and 61 PM peak hour two-way transit trips. From the trip distribution found in section 5.2, these values can be further broken down. Table 26 summarizes forecasted site-generated transit ridership trips by direction, the routes that are impacted, and the equivalent bus loads.

Table 26: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Routes Serving	Approximate Equivalent Peak Hour/Direction Bus Loads
	In	Out	In	Out		
North	1	3	2	1	#9	Negligible
South	8	17	11	8	#9, #12, #18, #19	One third of a standard bus
East	6	14	9	7	#12, #14, #15	One quarter of a standard bus
West	10	22	14	10	#14, #15, #18, #19	Half of a standard bus

14.2 Transit Priority

No impacts to the Montreal Road transit priority result from the site access location on Palace Street. As summarized in Section 10.2.3, no change in transit LOS is noted throughout the study area.

15 Network Intersection Design

15.1 Network Intersection Control

No change in control is recommended for the network intersections as part of this study.

15.2 Network Intersection Design

15.2.1 2024 Future Total Network Intersection Operations

Figure 14 illustrates the 2024 total volumes and Table 21 summarizes the 2024 total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2024 future background horizon are provided in Appendix K.

Table 27: 2024 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Montreal Road & North River Road *Signalized*	EBT/R	C	0.77	32.6	**#111.6**	D	0.81	33.7	**#155.4**
	WBT/R	B	0.61	63.1	83.0	A	0.53	76.6	92.8
	NBL	C	0.71	45.2	64.2	D	0.83	58.1	107.5
	NBT/R	A	0.11	9.1	8.8	A	0.13	10.1	11.6
	SB	A	0.33	36.5	18.7	A	0.40	45.8	22.0
	Overall	**B**	**0.61**	**45.3**	**-**	**B**	**0.70**	**51.0**	**-**
Montreal Road & Montgomery Street *Signalized*	EBT/R	A	0.22	3.9	18.4	A	0.30	6.3	29.7
	WBT/L	A	0.37	4.8	33.1	A	0.41	6.2	36.6
	NBL	A	0.24	33.2	16.3	B	0.65	53.2	46.7
	NBR	A	0.31	11.3	10.8	A	0.36	11.3	13.4
	Overall	**A**	**0.37**	**5.8**	**-**	**A**	**0.45**	**10.9**	**-**
Montreal Road & Vanier Parkway *Signalized*	EBL	A	0.39	73.0	23.0	A	0.47	74.5	28.4
	EBT	C	0.76	62.2	**#114.9**	D	0.83	64.5	**#169.9**
	EBR	A	0.33	8.7	16.6	A	0.37	9.3	21.7
	WBL	**F**	**1.09**	**155.2**	**#96.9**	C	0.74	78.3	63.9
	WBT/R	C	0.77	50.7	**#126.7**	A	0.54	35.5	84.5
	NBL	C	0.79	**88.9**	m72.3	D	0.88	**88.8**	m78.8
	NBT/R	B	0.70	44.3	80.4	E	0.95	73.3	**m#164.4**
	SBL	D	0.84	**84.5**	**#93.0**	B	0.70	76.2	58.2
	SBT/R	D	0.81	47.4	140.6	E	1.00	78.8	**#155.2**
	Overall	**D**	**0.88**	**55.5**	**-**	**D**	**0.90**	**67.1**	**-**
Selkirk Street & North River Road *Unsignalized*	WB	B	0.12	11.7	3.0	C	0.36	16.5	12.0
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**2.9**	**-**
Selkirk Street & Dundas Street *Unsignalized*	Low volumes at intersection return LOS A and zero second delay for intersection								
Selkirk Street & Montgomery Street *Unsignalized*	EB	B	0.10	10.1	2.3	B	0.15	10.3	3.8
	WB	A	0.11	9.8	3.0	A	0.08	9.5	1.5
	NB	A	0.00	7.5	0.0	A	0.00	7.4	0.0
	SB	A	0.01	7.2	0.0	A	0.01	7.3	0.0
	Overall	**A**	**-**	**5.9**	**-**	**A**	**-**	**6.5**	**-**
McArthur Avenue & North River Road *Signalized*	EB	A	0.02	14.4	3.5	A	0.08	18.4	9.4
	WBT/L	A	0.03	11.4	5.4	A	0.10	20.9	11.6
	WBR	A	0.31	8.3	22.6	A	0.43	12.9	33.8
	NB	A	0.18	8.2	17.0	A	0.21	7.5	20.2
	SBL	A	0.55	16.0	49.3	C	0.73	22.0	**#88.9**
	SBT/R	A	0.13	9.1	14.1	A	0.15	8.0	16.4
	Overall	**A**	**0.39**	**11.7**	**-**	**A**	**0.55**	**15.2**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
McArthur Avenue & Dundas Street *Unsignalized*	EB	A	0.01	8.9	0.0	A	0.01	8.5	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.07	14.9	1.5	C	0.11	19.2	2.3
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.7**	**-**
McArthur Avenue & Mayfield Street *Unsignalized*	EB	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SBL	C	0.11	17.0	3.0	C	0.11	18.9	3.0
	SBR	B	0.01	11.0	0.0	B	0.01	10.7	0.0
	Overall	**A**	**-**	**0.7**	**-**	**A**	**-**	**0.7**	**-**
McArthur Avenue & Marguerite Street *Signalized*	EBT/R	A	0.28	3.6	16.5	A	0.37	5.1	37.4
	WBT/L	A	0.36	7.6	m48.1	A	0.33	6.2	46.1
	NBL	A	0.03	20.1	3.9	A	0.07	23.4	7.1
	NBR	A	0.11	8.6	5.5	A	0.18	8.5	7.7
	Overall	**A**	**0.34**	**6.0**	**-**	**A**	**0.35**	**6.1**	**-**
McArthur Avenue & Vanier Parkway *Signalized*	EBL	A	0.29	65.9	21.4	A	0.38	67.2	28.5
	EBT	A	0.42	46.2	42.2	B	0.66	60.0	90.8
	EBR	B	0.67	18.9	32.7	E	0.96	56.9	**#132.8**
	WBL	B	0.67	72.4	42.8	**F**	**1.07**	**130.2**	**#83.3**
	WBT	A	0.48	51.3	74.9	A	0.57	54.6	88.7
	WBR	A	0.24	1.4	0.5	A	0.37	8.8	19.3
	NBL	**F**	**1.12**	**155.3**	**#123.5**	**F**	**1.09**	**146.8**	**#119.4**
	NBT	C	0.75	39.7	170.2	E	0.92	51.4	**#223.1**
	NBR	A	0.31	5.6	19.0	A	0.37	8.0	27.7
	SBL	C	0.76	**84.0**	m50.9	B	0.70	**81.7**	m41.1
	SBT	D	0.89	73.2	**m#211.6**	E	0.94	**83.8**	**m184.5**
	SBR	A	0.10	14.9	m6.0	A	0.12	19.2	m8.2
	Overall	**D**	**0.82**	**56.2**	**-**	**E**	**0.97**	**68.0**	**-**

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

The network intersections at the 2024 future total horizon are forecast to operate similarly to the 2024 future background conditions. No new capacity issues are noted.

15.2.2 2029 Future Total Network Intersection Operations

Figure 15 illustrates the 2029 total volumes and Table 22 summarizes the 2029 total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2029 future background horizon are provided in Appendix L.

Table 28: 2029 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Montreal Road & North River Road *Signalized*	EBT/R	D	0.88	42.0	**#121.9**	D	0.88	39.9	**#175.2**
	WBT/R	C	0.72	**84.1**	90.6	A	0.56	**82.4**	97.3
	NBL	B	0.69	40.5	71.8	D	0.84	56.9	112.6
	NBT/R	A	0.10	8.4	8.4	A	0.12	9.8	11.4
	SB	A	0.33	36.5	18.7	A	0.40	45.8	22.0
	Overall	**B**	**0.65**	**56.8**	**-**	**C**	**0.74**	**55.4**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Montreal Road & Montgomery Street *Signalized*	EBT/R	A	0.25	4.7	18.6	A	0.33	6.6	31.0
	WBT/L	A	0.44	5.9	36.1	A	0.51	7.8	46.5
	NBL	A	0.39	36.3	24.2	B	0.70	55.3	52.3
	NBR	A	0.49	11.0	15.2	A	0.45	10.9	15.9
	Overall	**A**	**0.43**	**7.7**	-	**A**	**0.55**	**12.0**	-
Montreal Road & Vanier Parkway *Signalized*	EBL	A	0.46	75.0	27.5	A	0.50	74.9	30.6
	EBT	E	0.91	78.8	#159.0	E	0.91	73.1	#191.2
	EBR	A	0.35	8.7	17.2	A	0.39	11.3	25.7
	WBL	F	1.09	155.2	#96.9	C	0.74	78.3	63.9
	WBT/R	D	0.81	53.2	#135.3	A	0.60	38.5	97.6
	NBL	C	0.79	88.3	m70.4	D	0.88	87.6	m76.8
	NBT/R	C	0.72	45.1	81.9	E	0.97	76.1	m#164.4
	SBL	D	0.84	84.5	#93.0	B	0.70	76.2	58.2
	SBT/R	D	0.83	48.5	#147.7	F	1.04	87.8	#164.3
	Overall	**E**	**0.91**	**57.8**	-	**E**	**0.93**	**71.4**	-
Selkirk Street & North River Road *Unsignalized*	WB	B	0.19	12.0	5.3	C	0.40	17.0	14.3
	NB	-	-	-	-	-	-	-	-
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.8**	**-**	**A**	**-**	**3.3**	**-**
Selkirk Street & Dundas Street *Unsignalized*	Low volumes at intersection return LOS A and zero second delay for intersection								
Selkirk Street & Montgomery Street *Unsignalized*	EB	B	0.12	10.6	3.0	B	0.17	10.7	4.5
	WB	B	0.14	10.0	3.8	A	0.09	9.6	2.3
	NB	A	0.00	7.5	0.0	A	0.00	7.4	0.0
	SB	A	0.01	7.2	0.0	A	0.01	7.3	0.0
	Overall	**A**	**-**	**5.9**	**-**	**A**	**-**	**6.6**	**-**
McArthur Avenue & North River Road *Signalized*	EB	A	0.02	14.4	3.5	A	0.08	18.4	9.4
	WBT/L	A	0.04	11.2	5.7	A	0.10	20.6	11.8
	WBR	A	0.31	8.1	23.3	A	0.43	12.7	34.1
	NB	A	0.18	8.2	17.0	A	0.21	7.4	20.4
	SBL	A	0.57	16.4	51.2	C	0.74	22.6	#90.8
	SBT/R	A	0.13	9.1	14.1	A	0.15	8.0	16.4
	Overall	**A**	**0.40**	**11.9**	-	**A**	**0.56**	**15.4**	-
McArthur Avenue & Dundas Street *Unsignalized*	EB	A	0.01	9.0	0.0	A	0.01	8.7	0.0
	WB	-	-	-	-	-	-	-	-
	SB	C	0.07	15.2	1.5	C	0.11	19.9	3.0
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.7**	**-**
McArthur Avenue & Mayfield Street *Unsignalized*	EB	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SBL	C	0.20	18.9	5.3	C	0.17	21.1	4.5
	SBR	B	0.01	11.1	0.0	B	0.01	11.0	0.0
	Overall	**A**	**-**	**1.3**	**-**	**A**	**-**	**1.0**	**-**
McArthur Avenue & Marguerite Street *Signalized*	EBT/R	A	0.29	3.9	18.7	A	0.38	5.2	m38.0
	WBT/L	A	0.38	8.1	m50.4	A	0.36	6.5	52.9
	NBL	A	0.03	20.1	3.9	A	0.07	23.4	7.1
	NBR	A	0.11	8.6	5.5	A	0.18	8.5	7.7
	Overall	**A**	**0.35**	**6.4**	-	**A**	**0.36**	**6.3**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
McArthur Avenue & Vanier Parkway *Signalized*	EBL	A	0.29	65.8	21.6	A	0.38	67.2	28.5
	EBT	A	0.50	48.3	51.4	C	0.72	63.5	97.3
	EBR	B	0.69	19.9	36.3	E	0.98	63.6	**#138.5**
	WBL	B	0.69	73.8	42.8	**F**	**1.03**	**119.0**	**#83.3**
	WBT	A	0.51	52.0	78.5	B	0.63	57.0	98.7
	WBR	A	0.24	1.4	0.5	A	0.37	8.8	19.3
	NBL	**F**	**1.17**	**167.4**	**#128.6**	**F**	**1.19**	**175.4**	**#132.1**
	NBT	C	0.77	40.4	176.4	E	0.94	54.4	**#232.7**
	NBR	A	0.32	6.0	20.1	A	0.37	8.5	28.9
	SBL	C	0.76	**83.2**	m49.5	B	0.70	**80.3**	m40.1
	SBT	E	0.92	74.7	**m#224.2**	E	0.96	**85.9**	m184.7
	SBR	A	0.10	14.7	m5.5	A	0.12	18.9	m7.5
	Overall	**D**	**0.85**	**57.9**	**-**	**F**	**1.01**	**71.2**	**-**

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

The network intersection operations for the 2029 future total horizon operate similarly to the 2029 future background conditions. No new capacity issues are noted.

15.2.3 Network Intersection MMLOS

Table 25 summarizes the MMLOS analysis for the network intersections in the study area. The existing and future conditions will be the same and are considered in one row. The analysis is based on the policy area "Within 300m of a school," with the study area intersections falling within 300m of Mauril-Belanger Elementary School. The MMLOS worksheets have been provided in Appendix J.

Table 29: Study Area Intersection MMLOS

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TkLOS	Target	ALOS	Target
Montreal Road & North River Road	**E**	A	**E**	C	**F**	C	-	-	C	E
Montreal Road & Montgomery Street	**E**	A	**E**	C	B	C	-	-	A	E
Montreal Road & Vanier Parkway	**F**	A	**F**	C	**F**	C	D	E	E	E
McArthur Avenue & North River Road	**F**	A	**E**	C	D	D	-	-	A	E
McArthur Avenue & Marguerite Street	**D**	A	**E**	B	B	D	-	-	A	E
McArthur Avenue & Vanier Parkway	**F**	A	**F**	C	**F**	D	A	E	**F**	E

Throughout the study area, pedestrian and cycling LOS targets will not be met at all intersections and transit LOS targets will not be met at the arterial-arterial intersections of Montreal Road at North River Road, Montreal Road at Vanier Parkway, and McArthur Road at Vanier Parkway.

To meet pedestrian LOS at all intersections, the maximum crossing distances would need to be no more than two lane widths at all crossings. To meet cycling LOS targets, protected crossings on the eastbound approach of the

intersection of Montreal Road at Vanier Parkway, and on the northbound and southbound approaches of the intersection of McArthur Avenue at Vanier Parkway, and left-turn boxes/two-stage left-turns on all multi-lane approaches. To meet transit LOS, the delay would need to be reduced to below 30 seconds on all transit approach movements.

As the Montreal Road was recently reconstructed, and McArthur Avenue has been improved within the past five years, it is assumed the City's desired balance of MMLOS objectives has been achieved at all signalized study area intersections.

15.2.4 Recommended Design Elements

No design elements are proposed for the network intersections as part of this study.

16 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed site includes an eight-storey mixed use building and a 37-storey residential building comprising a total of 430 apartment units and 2,525 ft^2 of commercial space
- Accesses to the site are proposed as one left-in/left-out access on Palace Street
- The site proposes the inclusion of 390 vehicle parking spaces
- The development is proposed as the first phase of the redevelopment of the site and is anticipated to be built-out by 2024
- The Trip Generation, Location, and Safety triggers were all met through the TIA Screening
- The application for the proposed site is for a site plan

Existing Conditions

- Montreal Road, Vanier Parkway, McArthur Avenue, and a portion of North River Road are the study area arterial roads
- Sidewalks are provided along both sides on North River Road, Vanier Parkway, Montreal Road, and McArthur Avenue, on both sides of Selkirk Street between Montgomery Street and Gardner Street, along the east side of Montgomery Street and on the west side of Montgomery Street between Mayfield Street and Selkirk Street, and on the east side of Gardner Street, and along the west side of Dundas Street, Mayfield Street and Marguerite Avenue
- Cycletracks are present on both sides of Montreal Road east of Vanier Parkway, bike lanes are provided along both sides of McArthur Avenue and on the north side of Montreal Road west of North River Road, a shared use lane is on the south side of Montreal Road west of North River Road, along the west side of North River Road is the Rideau River Eastern Pathway and MUP connections to the communities north or Montreal Road are provided to the intersection of Montreal Road at Vanier Parkway; North River Road, Vanier Parkway, and Montreal Road are spine routes
- The existing transit routes #9, 14, 15, 18, and 19 stop on the within walking distance of the proposed site
- The Montreal Road at Vanier Parkway and McArthur Avenue at Vanier Parkway intersections are noted to have capacity issues during both the AM and PM peak hours
- Given the recent Montreal Road Revitalization project, no further improvements are recommended to address the existing conditions

- Post-construction volumes will be modeled within the future traffic studies and condition should be monitored by the City for it to determine the impacts of the improvements and to apply any necessary mitigations.
- A number of collisions are noted along Montreal Road, of which the majority are rear end and sideswipe indicating that they are generally lower speed and a result of congestion

Development Generated Travel Demand

- The proposed development is forecasted to generate 185 two-way people trips during the AM peak hour and 190 two-way people trips during the PM peak hour
- Based on a 5% increase in transit mode share target from typical district shares due to the transit priority corridor along Montreal Road/Rideau Street, a total of 58 two-way vehicle trips will be generated during the AM peak hour and 64 two-way vehicle trips during the PM peak
- The distribution of the site trips is estimated to be 5% to the north, 30% to the south, 25% to the east, and 40% to the west

Background Conditions

- Area background development traffic was explicitly included on the network at the future horizons
- The background growth applied is an annual 0.5% growth on existing Vanier Parkway mainline volumes
- The future background intersection operations are anticipated to operate similarly to the existing conditions

Development Design

- Underground parking for bicycles and autos is proposed via a ramp with an 11% grade
- Pedestrian connections will be made between site building entrances and the surrounding sidewalks on Montreal Road and Vanier Parkway
- All area bus routes are within 500 metres' walk of the site buildings, with all but the route #19 being within 400 metres' walk
- Emergency services and garbage collection vehicles are able to circulate the site drive aisles

Parking

- The development is proposed as including 436 bicycle parking spaces for the first phase of development, reserving 465 bicycle spaces for later phases, and 390 vehicle parking spaces of which 358 are for residents and 32 are for visitors
- The zoning by-law prescribes a minimum of 225 bicycle spaces, 208 resident vehicles spaces, and 32 visitor parking spaces
- Minimum vehicle and bicycle parking provisions from the zoning by-law are being met

Boundary Street Design

- The site boundary streets do not meet the MMLOS targets for pedestrian LOS Montreal Road and for Vanier Parkway in the existing conditions and Montreal Road does not meet the bicycle LOS targets
- Pedestrian LOS targets will not typically be met on arterial roads, and Montreal Road would require separated bicycle facilities to meet Bicycle LOS targets
- No improvements are recommended as part of the Phase 1 site plan

- As part of the Phase 2 site plan, improvements will be undertaken along Vanier Parkway in conjunction with the new access
- Montreal Road was recently redesigned and is assumed to meet City MMLOS objectives for the corridor

Access Intersections Design

- A 6.7-metre-wide left-in/left-out access on Place Street is proposed with an 18.0-metre curb return on the north side and a 5.0-metre curb return on the south side of the access
- The clear throat of the access is approximately 15 metres in length, and the access is proposed as being 4.5 metres from the north property line and 2.5 metres from the south property line on Palace Street
- The existing site access on Montreal is to be removed as part of the redevelopment
- The access intersection is anticipated to operate well at both future horizons
- The site access will be minor stop-controlled, and will require approval exempting it from the minimum three metres offset from an adjacent property line from the private approach by-law

TDM

- Supportive TDM measures include:
    - Posting of pedestrian, cycling, and transit information and maps at primary entrances/exits
    - Inclusion of a 1-year Presto card for first time new residential and retail tenants, along with a set time frame for this offer (e.g. 6-months) from the 'opening' of the buildings/towers
    - Contract with provider to install on-site bikeshare or scootershare station (multi-family)
    - Contract with provider to install on-site carshare vehicles and promote their use by residents
    - Provide a permanent bicycle repair station with common tools for the use of residents
    - Unbundle parking from rental costs

NTM

- Palace Street will be under local road thresholds, and Selkirk Street and Montgomery Street will be above local road thresholds in both the background and total conditions
- Site traffic is forecasted to be a marginal increase to the background traffic and is not anticipated to impact any of the roadway classifications

Transit

- The forecasted transit trips will include 82 two-way trips during the AM peak and 62 two-way trips during the PM peak
- Peak hour increases in transit ridership resulting from the site equate to a half bus load west of the site, a quarter of a standard bus load east of the site, a third of a standard bus load south of the site and a negligible increase in traffic north of the site
- No impact on transit priority are anticipated as a result of development based on access location or and no increase in transit LOS is anticipated to result from the addition of site traffic to the network

Network Intersection Design

- The network intersections at the future total horizons are forecast to operate similarly to the future background conditions
- The MMLOS targets for pedestrians will be met at all study area intersections, and bicycle and transit LOS will not be met at the arterial-arterial intersections of Montreal Road at North River Road, Montreal Road at Vanier Parkway, and McArthur Road at Vanier Parkway

- To meet pedestrian LOS targets, crossings would need to be no wider than three lane-widths
- To meet bicycle LOS, protected crossings on the eastbound approach of the intersection of Montreal Road at Vanier Parkway, and on the northbound and southbound approaches of the intersection of McArthur Avenue at Vanier Parkway, and all approaches would require two-stage left turn or left-turn boxes on all multi-lane approaches
- As the Montreal Road intersections and McArthur Avenue have been improved in the last five years, signalized intersections are assumed to meet the City's balance of MMLOS objectives

17 Conclusion

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

Prepared By:

John Kingsley, EIT
Transportation Engineering-Intern

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

13 Markham Avenue
Ottawa ON K2G 3Z1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 09-Sep-22
Project Number: 2022-109
Project Reference: 112 Montreal Rd

1.1 Description of Proposed Development	
Municipal Address	112 Montreal Road
Description of Location	Ward 12 - PIN: 042370019 PLAN 29 LOT 5 PT LOT 6-7 BLK;2 LOT 88 & PT LOT 40 41 PLAN;49 RP4R-6112 PT 1 TOG WIT;ROW
Land Use Classification	Tradditional Mainstreet (TM(2363) F(3.5) S365-h
Development Size	484 apartment units, 2,200 sq. ft. commercial
Accesses	One left-in/left-out on Palace Street
Phase of Development	First phase
Buildout Year	2024
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	484	Units
Trip Generation Trigger	Yes	

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

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

Appendix B

Turning Movement Counts

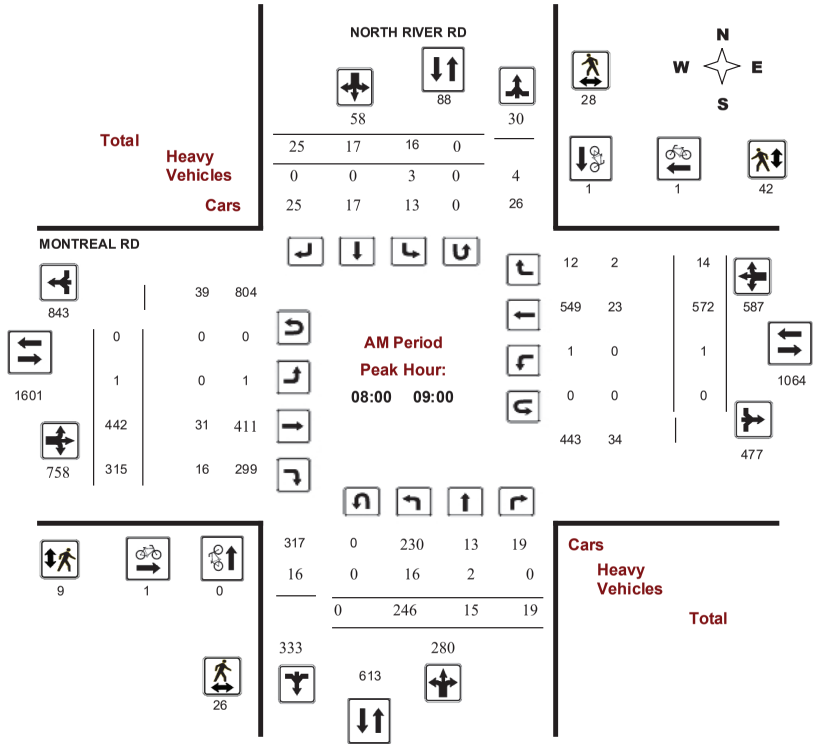
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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



Comments

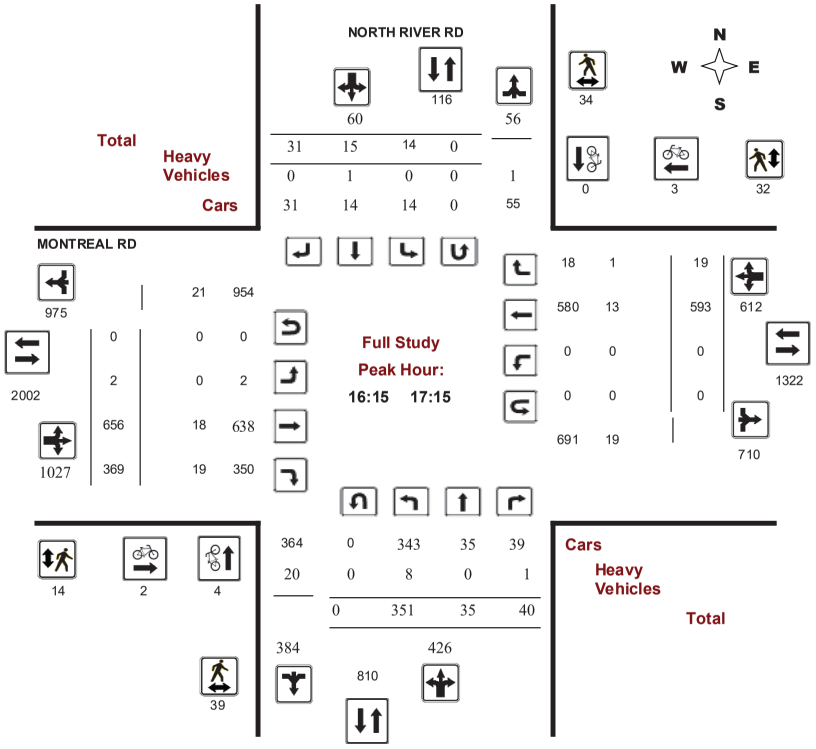
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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



Comments

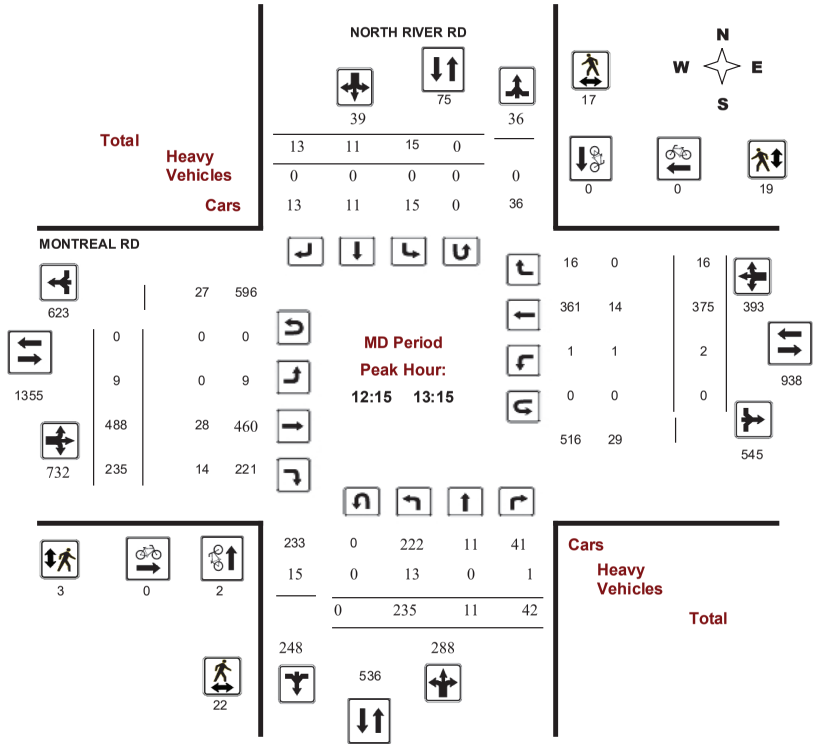
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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



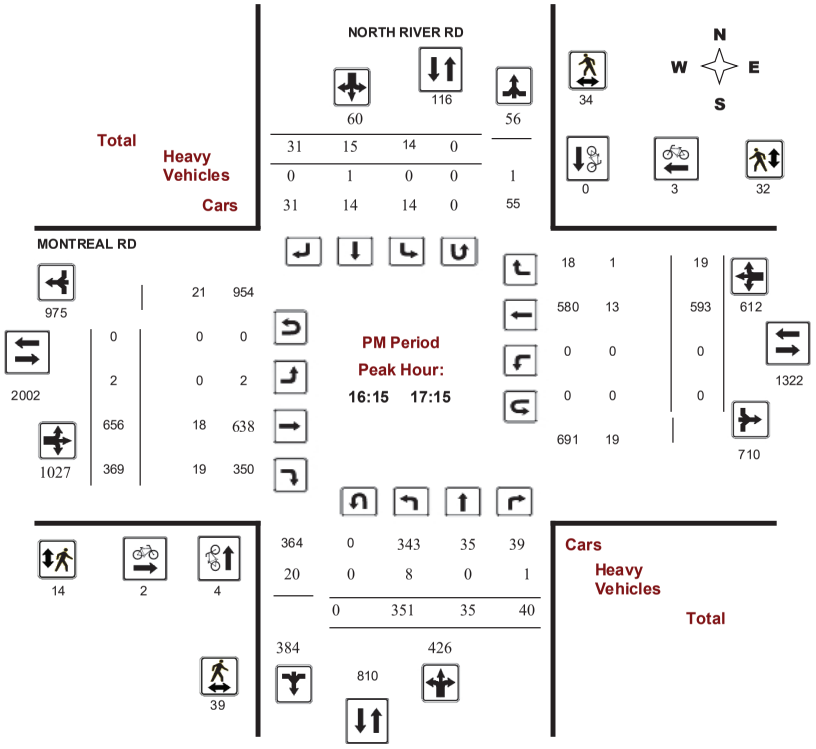
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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



Transportation Services - Traffic Services

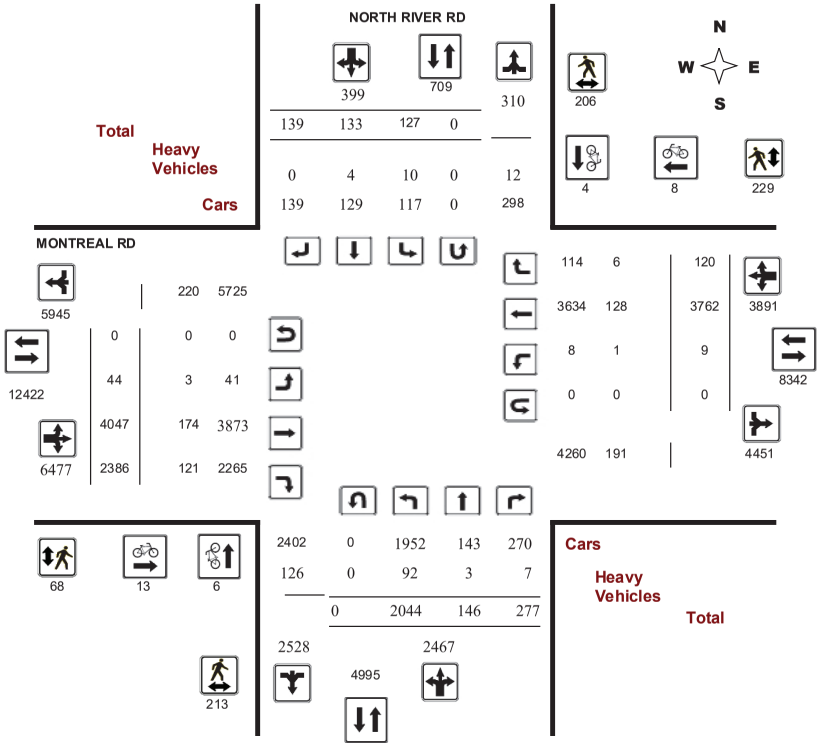
Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study Diagram



Transportation Services - Traffic Services

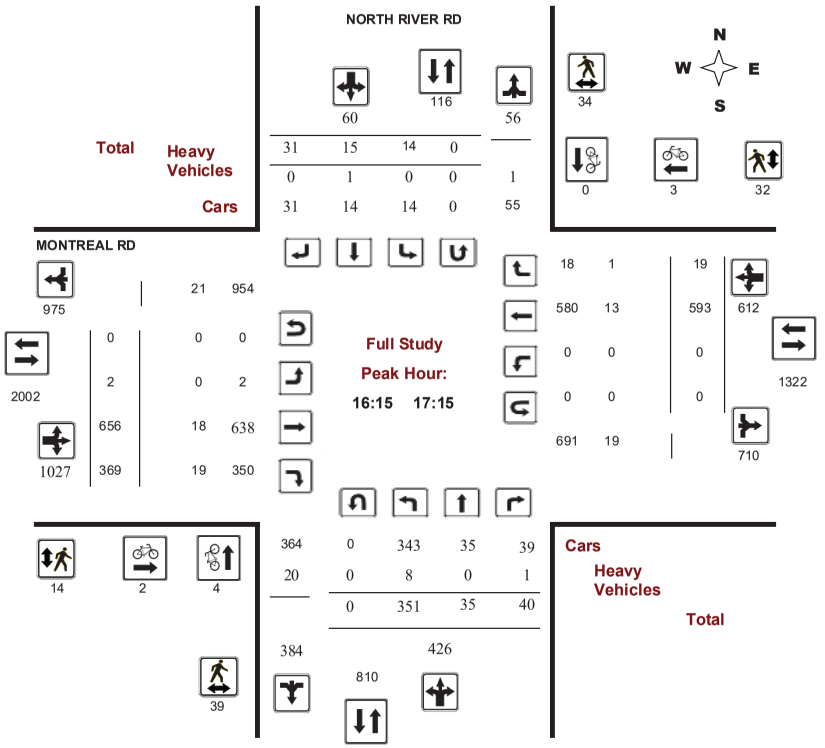
Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, January 19, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

1.53

	NORTH RIVER RD									MONTREAL RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	158	4	25	**187**	17	9	6	**32**	**219**	2	408	284	**694**	1	412	6	**419**	**1113**	**1332**
08:00 09:00	246	15	19	**280**	16	17	25	**58**	**338**	1	442	315	**758**	1	572	14	**587**	**1345**	**1683**
09:00 10:00	188	12	26	**226**	12	18	2	**32**	**258**	5	419	245	**669**	2	361	10	**373**	**1042**	**1300**
11:30 12:30	227	11	40	**278**	16	22	10	**48**	**326**	7	455	246	**708**	3	380	15	**398**	**1106**	**1432**
12:30 13:30	225	12	42	**279**	14	14	13	**41**	**320**	10	494	238	**742**	0	368	13	**381**	**1123**	**1443**
15:00 16:00	341	28	35	**404**	21	24	23	**68**	**472**	10	567	374	**951**	2	570	24	**596**	**1547**	**2019**
16:00 17:00	358	39	47	**444**	16	13	34	**63**	**507**	2	637	350	**989**	0	607	16	**623**	**1612**	**2119**
17:00 18:00	301	25	43	**369**	15	16	26	**57**	**426**	7	625	334	**966**	0	492	22	**514**	**1480**	**1906**
Sub Total	2044	146	277	**2467**	127	133	139	**399**	**2866**	44	4047	2386	**6477**	9	3762	120	**3891**	**10368**	**13234**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	2044	146	277	**2467**	127	133	139	**399**	**2866**	44	4047	2386	**6477**	9	3762	120	**3891**	**10368**	**13234**
EQ 12Hr	2841	203	385	**3429**	177	185	193	**555**	**3984**	61	5625	3317	**9003**	13	5229	167	**5408**	**14412**	**18395**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	3125	223	424	**3772**	194	203	213	**610**	**4382**	67	6188	3648	**9903**	14	5752	183	**5949**	**15853**	**20234**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.1**					
AVG 24Hr	4094	292	555	**4941**	254	266	278	**799**	**5740**	88	8106	4779	**12973**	18	7535	240	**7794**	**20767**	**26507**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study 15 Minute Increments

		NORTH RIVER RD									MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	30	2	7	39	5	4	0	9	125	0	98	68	166	0	81	3	84	125	298
07:15	07:30	38	0	3	41	2	2	4	8	129	1	79	76	156	0	75	1	76	129	281
07:30	07:45	45	2	9	56	6	3	2	11	146	1	109	71	181	1	115	1	117	146	365
07:45	08:00	45	0	6	51	4	0	0	4	125	0	122	69	191	0	141	1	142	125	388
08:00	08:15	59	4	8	71	5	6	4	15	169	0	115	70	185	1	126	2	129	169	400
08:15	08:30	64	3	3	70	4	5	8	17	181	0	84	80	164	0	149	6	155	181	406
08:30	08:45	62	5	4	71	2	5	11	18	186	0	117	83	200	0	161	4	165	186	454
08:45	09:00	61	3	4	68	5	1	2	8	165	1	126	82	209	0	136	2	138	165	423
09:00	09:15	43	4	7	54	4	5	0	9	139	1	102	62	165	0	112	4	116	139	344
09:15	09:30	47	0	7	54	1	4	1	6	130	1	94	64	159	1	79	0	80	130	299
09:30	09:45	46	4	3	53	4	3	0	7	124	1	110	49	160	1	90	6	97	124	317
09:45	10:00	52	4	9	65	3	6	1	10	157	2	113	70	185	0	80	0	80	157	340
11:30	11:45	61	0	8	69	2	6	2	10	155	1	98	68	167	0	106	1	107	155	353
11:45	12:00	45	3	12	60	6	7	4	17	150	2	128	54	184	0	98	7	105	150	366
12:00	12:15	59	6	10	75	5	8	2	15	182	3	116	72	191	1	87	2	90	182	371
12:15	12:30	62	2	10	74	3	1	2	6	143	1	113	52	166	2	89	5	96	143	342
12:30	12:45	55	2	9	66	6	3	2	11	140	3	117	51	171	0	94	4	98	140	346
12:45	13:00	66	4	9	79	4	4	5	13	171	4	128	65	197	0	100	2	102	171	391
13:00	13:15	52	3	14	69	2	3	4	9	157	1	130	67	198	0	92	5	97	157	373
13:15	13:30	52	3	10	65	2	4	2	8	139	2	119	55	176	0	82	2	84	139	333
15:00	15:15	88	4	11	103	6	7	6	19	222	6	125	80	211	0	118	3	121	222	454
15:15	15:30	77	11	4	92	5	5	5	15	230	4	171	100	275	1	141	2	144	230	526
15:30	15:45	76	6	9	91	5	8	4	17	224	0	154	94	248	1	178	7	186	224	542
15:45	16:00	100	7	11	118	5	4	8	17	258	0	117	100	217	0	133	12	145	258	497
16:00	16:15	82	10	17	109	6	2	8	16	218	0	170	78	248	0	149	3	152	218	525
16:15	16:30	93	14	7	114	5	5	12	22	247	2	142	83	227	0	162	7	169	247	532
16:30	16:45	99	6	12	117	2	0	5	7	231	0	140	99	239	0	168	2	170	231	533
16:45	17:00	84	9	11	104	3	6	9	18	231	0	185	90	275	0	128	4	132	231	529
17:00	17:15	75	6	10	91	4	4	5	13	217	0	189	97	286	0	135	6	141	217	531
17:15	17:30	68	6	14	88	4	2	7	13	196	0	167	80	247	0	145	7	152	196	500
17:30	17:45	84	5	11	100	2	6	7	15	197	0	120	68	188	0	114	3	117	197	420
17:45	18:00	74	8	8	90	5	4	7	16	220	7	149	89	245	0	98	6	104	220	455
Total:		2044	146	277	2467	127	133	139	399	5704	44	4047	2386	6477	9	3762	120	3891	5704	13,234

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study Cyclist Volume

Time Period		NORTH RIVER RD			MONTREAL RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	2	2	0	0	0	2
07:30	07:45	0	1	1	0	0	0	1
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	1	1	0	1	1	2
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	1	0	1	1
09:00	09:15	0	0	0	1	1	2	2
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	2	2	2
11:30	11:45	0	0	0	1	0	1	1
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	2	0	2	0	0	0	2
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	1	0	1	1
15:00	15:15	0	0	0	1	0	1	1
15:15	15:30	0	0	0	2	0	2	2
15:30	15:45	0	0	0	1	0	1	1
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	2	0	2	2
16:15	16:30	0	0	0	1	0	1	1
16:30	16:45	0	0	0	1	0	1	1
16:45	17:00	3	0	3	0	2	2	5
17:00	17:15	1	0	1	0	1	1	2
17:15	17:30	0	0	0	0	1	1	1
17:30	17:45	0	0	0	1	0	1	1
17:45	18:00	0	0	0	0	0	0	0
Total		6	4	**10**	13	8	21	31

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study Pedestrian Volume

Time Period	NORTH RIVER RD			MONTREAL RD			
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	5	4	**9**	0	3	**3**	**12**
07:15 07:30	3	6	**9**	0	0	**0**	**9**
07:30 07:45	6	4	**10**	2	3	**5**	**15**
07:45 08:00	8	5	**13**	0	11	**11**	**24**
08:00 08:15	8	6	**14**	1	16	**17**	**31**
08:15 08:30	9	9	**18**	5	11	**16**	**34**
08:30 08:45	5	6	**11**	2	7	**9**	**20**
08:45 09:00	4	7	**11**	1	8	**9**	**20**
09:00 09:15	3	5	**8**	2	6	**8**	**16**
09:15 09:30	4	4	**8**	1	4	**5**	**13**
09:30 09:45	5	3	**8**	1	5	**6**	**14**
09:45 10:00	6	2	**8**	1	2	**3**	**11**
11:30 11:45	1	7	**8**	3	11	**14**	**22**
11:45 12:00	4	6	**10**	1	12	**13**	**23**
12:00 12:15	4	6	**10**	1	7	**8**	**18**
12:15 12:30	4	5	**9**	0	5	**5**	**14**
12:30 12:45	10	3	**13**	0	5	**5**	**18**
12:45 13:00	6	4	**10**	2	4	**6**	**16**
13:00 13:15	2	5	**7**	1	5	**6**	**13**
13:15 13:30	3	2	**5**	2	5	**7**	**12**
15:00 15:15	6	10	**16**	3	5	**8**	**24**
15:15 15:30	9	9	**18**	3	10	**13**	**31**
15:30 15:45	12	7	**19**	1	11	**12**	**31**
15:45 16:00	13	4	**17**	1	7	**8**	**25**
16:00 16:15	4	9	**13**	5	11	**16**	**29**
16:15 16:30	5	9	**14**	3	7	**10**	**24**
16:30 16:45	9	10	**19**	3	9	**12**	**31**
16:45 17:00	14	8	**22**	7	9	**16**	**38**
17:00 17:15	11	7	**18**	1	7	**8**	**26**
17:15 17:30	8	16	**24**	5	8	**13**	**37**
17:30 17:45	12	8	**20**	5	8	**13**	**33**
17:45 18:00	10	10	**20**	5	7	**12**	**32**
Total	213	206	**419**	68	229	**297**	**716**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study Heavy Vehicles

		NORTH RIVER RD									MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	3	0	0	**8**	0	0	0	**0**	**8**	0	4	5	**17**	0	5	0	**9**	**26**	**17**
07:15	07:30	3	0	0	**6**	0	0	0	**0**	**6**	0	3	3	**14**	0	5	0	**8**	**22**	**14**
07:30	07:45	4	0	0	**10**	1	0	0	**2**	**12**	1	5	6	**22**	0	6	0	**12**	**34**	**23**
07:45	08:00	2	0	0	**5**	0	0	0	**0**	**5**	0	3	3	**16**	0	8	0	**11**	**27**	**16**
08:00	08:15	5	0	0	**11**	1	0	0	**1**	**12**	0	9	6	**25**	0	5	0	**15**	**40**	**26**
08:15	08:30	2	0	0	**5**	0	0	0	**0**	**5**	0	7	3	**16**	0	4	0	**11**	**27**	**16**
08:30	08:45	6	1	0	**11**	0	0	0	**2**	**13**	0	7	4	**27**	0	10	1	**18**	**45**	**29**
08:45	09:00	3	1	0	**7**	2	0	0	**4**	**11**	0	8	3	**18**	0	4	1	**15**	**33**	**22**
09:00	09:15	1	0	0	**5**	1	1	0	**2**	**7**	0	9	3	**17**	0	4	0	**14**	**31**	**19**
09:15	09:30	4	0	1	**7**	0	0	0	**0**	**7**	0	6	2	**17**	0	5	0	**12**	**29**	**18**
09:30	09:45	5	1	0	**12**	1	0	0	**2**	**14**	0	5	6	**19**	0	3	0	**9**	**28**	**21**
09:45	10:00	3	0	1	**6**	0	0	0	**0**	**6**	0	5	2	**13**	0	3	0	**9**	**22**	**14**
11:30	11:45	5	0	0	**7**	1	0	0	**1**	**8**	0	5	2	**15**	0	3	0	**9**	**24**	**16**
11:45	12:00	2	0	0	**4**	2	0	0	**4**	**8**	1	5	2	**16**	0	6	1	**14**	**30**	**19**
12:00	12:15	2	0	1	**8**	0	1	0	**1**	**9**	0	6	4	**16**	0	4	0	**11**	**27**	**18**
12:15	12:30	3	0	1	**9**	0	0	0	**0**	**9**	0	7	4	**18**	1	4	0	**13**	**31**	**20**
12:30	12:45	2	0	0	**7**	0	0	0	**0**	**7**	0	6	5	**16**	0	3	0	**9**	**25**	**16**
12:45	13:00	5	0	0	**6**	0	0	0	**0**	**6**	0	7	1	**14**	0	1	0	**8**	**22**	**14**
13:00	13:15	3	0	0	**7**	0	0	0	**0**	**7**	0	8	4	**21**	0	6	0	**14**	**35**	**21**
13:15	13:30	2	0	1	**6**	0	0	0	**1**	**7**	1	9	3	**16**	0	1	0	**11**	**27**	**17**
15:00	15:15	4	0	0	**8**	0	0	0	**0**	**8**	0	6	4	**19**	0	5	0	**11**	**30**	**19**
15:15	15:30	1	0	0	**4**	0	0	0	**0**	**4**	0	7	3	**14**	0	3	0	**10**	**24**	**14**
15:30	15:45	3	0	0	**10**	0	1	0	**2**	**12**	0	4	6	**19**	0	6	1	**11**	**30**	**21**
15:45	16:00	1	0	0	**6**	1	0	0	**2**	**8**	0	5	5	**15**	0	4	1	**11**	**26**	**17**
16:00	16:15	4	0	0	**8**	0	0	0	**0**	**8**	0	3	4	**14**	0	3	0	**6**	**20**	**14**
16:15	16:30	3	0	0	**11**	0	1	0	**2**	**13**	0	5	7	**17**	0	2	1	**8**	**25**	**19**
16:30	16:45	3	0	0	**7**	0	0	0	**0**	**7**	0	5	4	**18**	0	6	0	**11**	**29**	**18**
16:45	17:00	1	0	0	**7**	0	0	0	**0**	**7**	0	4	6	**13**	0	2	0	**6**	**19**	**13**
17:00	17:15	1	0	1	**4**	0	0	0	**0**	**4**	0	4	2	**10**	0	3	0	**8**	**18**	**11**
17:15	17:30	2	0	1	**6**	0	0	0	**0**	**6**	0	3	3	**8**	0	0	0	**4**	**12**	**9**
17:30	17:45	2	0	0	**6**	0	0	0	**0**	**6**	0	2	4	**10**	0	2	0	**4**	**14**	**10**
17:45	18:00	2	0	0	**4**	0	0	0	**0**	**4**	0	2	2	**8**	0	2	0	**4**	**12**	**8**
Total:	None	92	3	7	**228**	10	4	0	**26**	**254**	3	174	121	**518**	1	128	6	**326**	**844**	**549**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016 **WO No:** 35162

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

Full Study 15 Minute U-Turn Total

		NORTH RIVER RD	MONTREAL RD			
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0

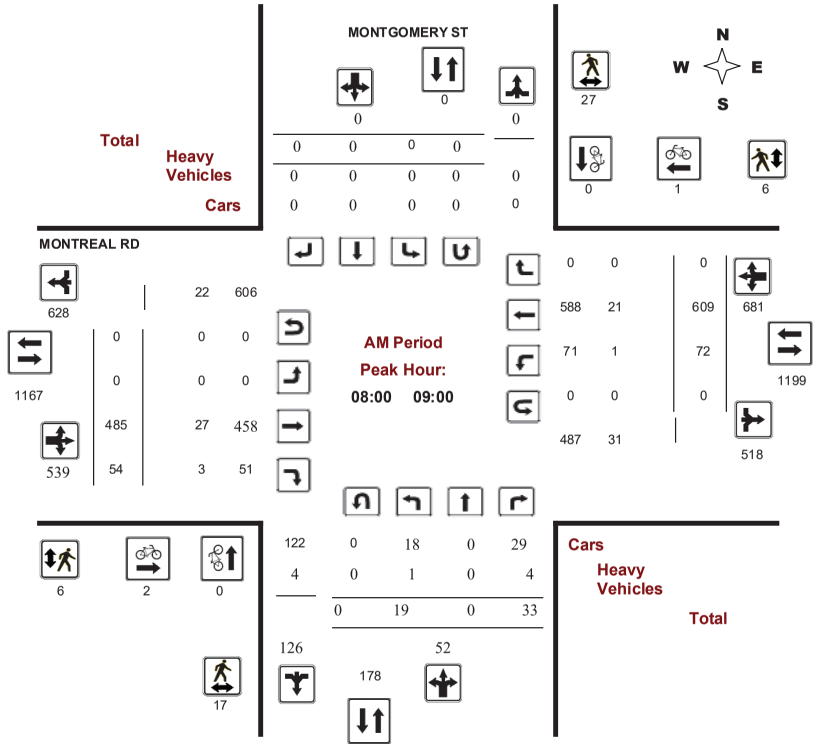
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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



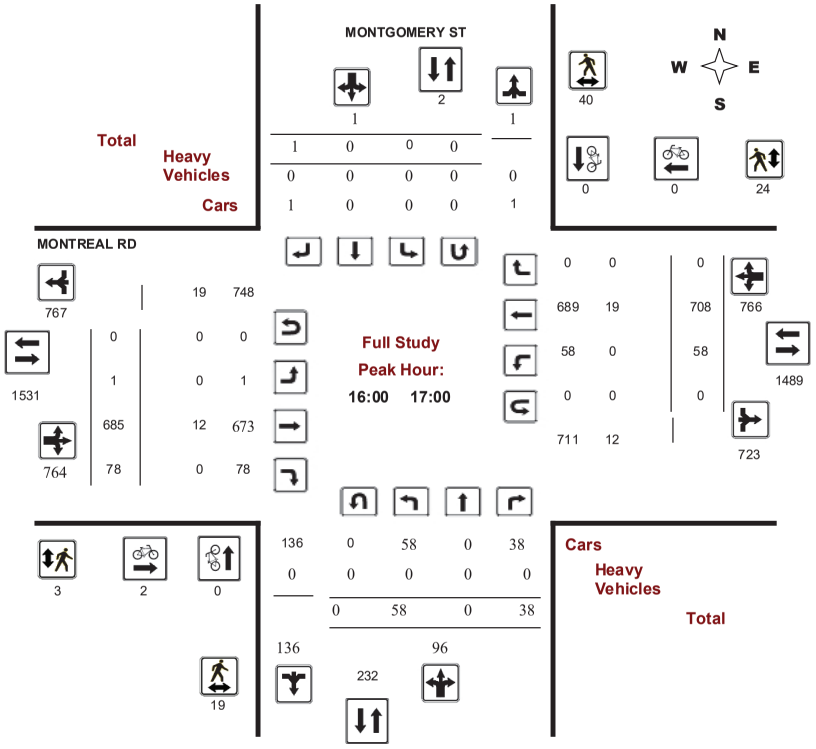
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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



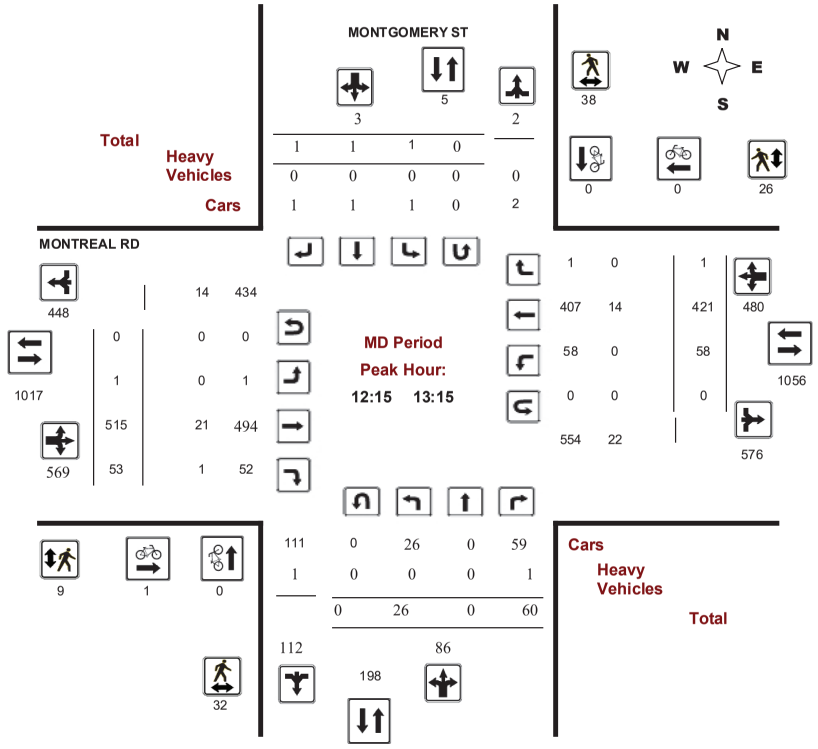
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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



Comments

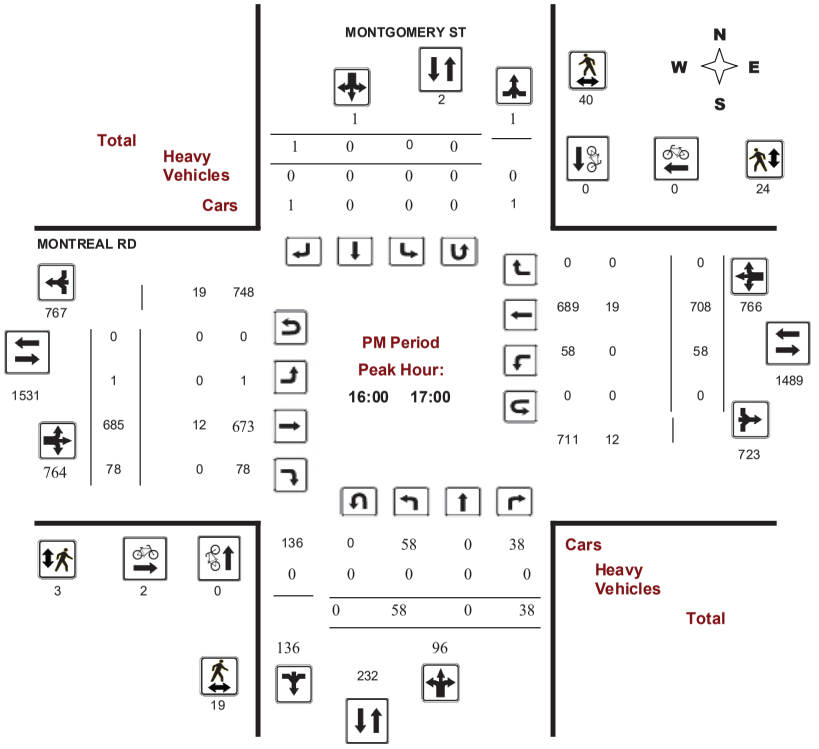
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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



Comments

Transportation Services - Traffic Services

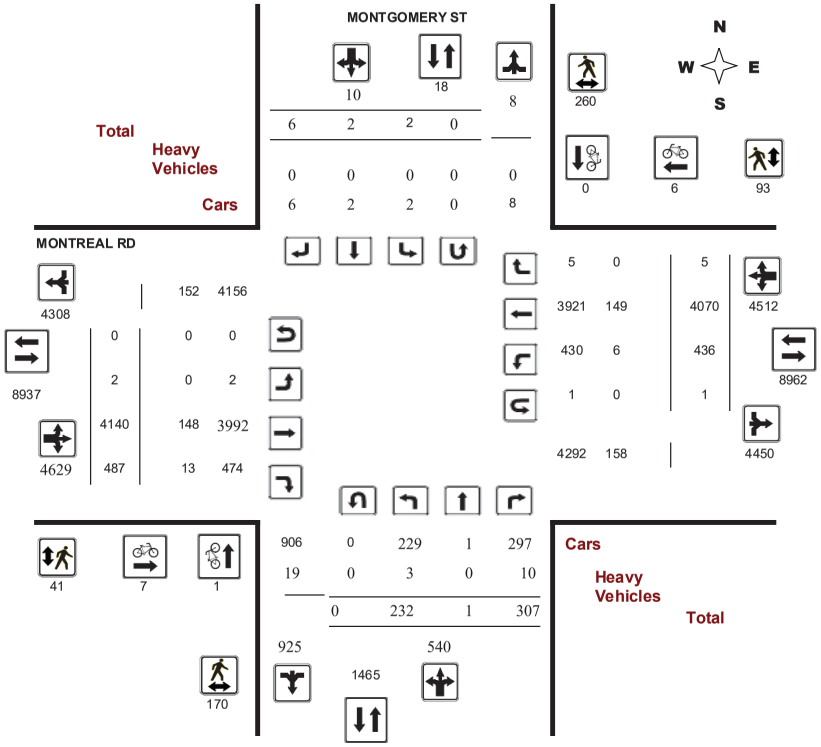
Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study Diagram



Transportation Services - Traffic Services

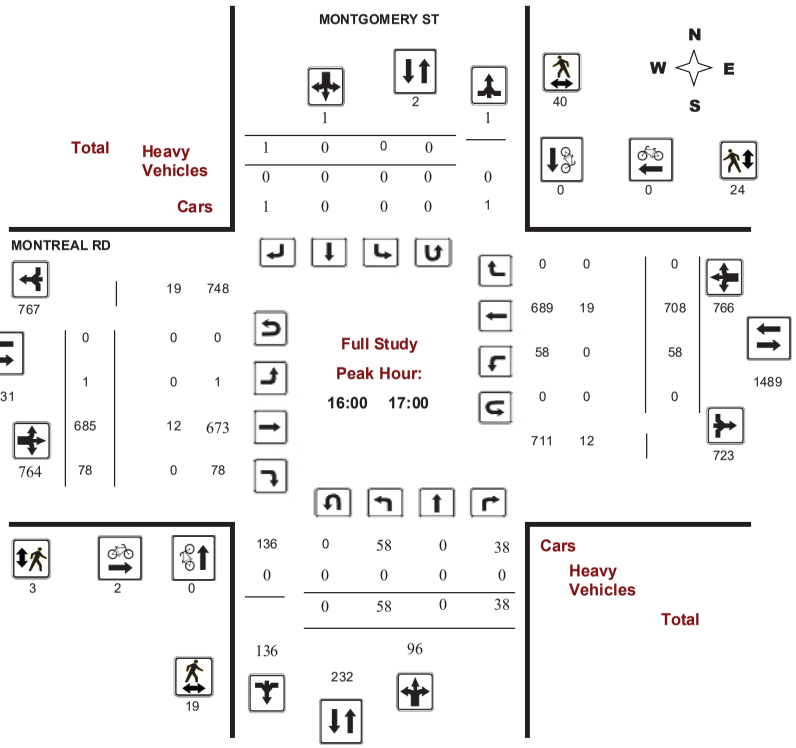
Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, January 13, 201

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

AADT Factor 1.39

	MONTGOMERY ST									MONTREAL RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	7	0	20	**27**	0	0	0	**0**	**27**	0	402	37	**439**	42	418	0	**460**	**899**	**926**
08:00 09:00	19	0	33	**52**	0	0	0	**0**	**52**	0	485	54	**539**	72	609	0	**681**	**1220**	**1272**
09:00 10:00	10	0	22	**32**	0	0	0	**0**	**32**	0	403	55	**458**	45	440	1	**486**	**944**	**976**
11:30 12:30	20	0	44	**64**	0	1	0	**1**	**65**	0	488	86	**574**	47	419	1	**467**	**1041**	**1106**
12:30 13:30	24	0	57	**81**	1	1	2	**4**	**85**	1	488	53	**542**	64	380	1	**445**	**987**	**1072**
15:00 16:00	51	0	65	**116**	0	0	2	**2**	**118**	0	578	71	**649**	53	561	1	**615**	**1264**	**1382**
16:00 17:00	58	0	38	**96**	0	0	1	**1**	**97**	1	685	78	**764**	58	708	0	**766**	**1530**	**1627**
17:00 18:00	43	1	28	**72**	1	0	1	**2**	**74**	0	611	53	**664**	55	535	1	**591**	**1255**	**1329**
Sub Total	232	1	307	**540**	2	2	6	**10**	**550**	2	4140	487	**4629**	436	4070	5	**4511**	**9140**	**9690**
U Turns				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	232	1	307	**540**	2	2	6	**10**	**550**	2	4140	487	**4629**	436	4070	5	**4512**	**9141**	**9691**
EQ 12Hr	322	1	427	**751**	3	3	8	**14**	**764**	3	5755	677	**6434**	606	5657	7	**6272**	**12706**	**13470**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	322	1	427	**751**	3	3	8	**14**	**764**	3	5755	677	**6434**	606	5657	7	**6272**	**12706**	**13470**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	422	2	559	**983**	4	4	11	**18**	**1001**	4	7539	887	**8429**	794	7411	9	**8216**	**16645**	**17646**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study 15 Minute Increments

		MONTGOMERY ST									MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	0	2	3	0	0	0	0	18	0	90	6	96	9	88	0	97	18	196
07:15	07:30	1	0	7	8	0	0	0	0	23	0	93	7	100	8	85	0	93	23	201
07:30	07:45	3	0	6	9	0	0	0	0	28	0	105	8	113	11	118	0	129	28	251
07:45	08:00	2	0	5	7	0	0	0	0	37	0	114	16	130	14	127	0	142	37	279
08:00	08:15	5	0	7	12	0	0	0	0	39	0	122	13	135	14	133	0	147	39	294
08:15	08:30	3	0	10	13	0	0	0	0	31	0	123	9	132	9	153	0	162	31	307
08:30	08:45	3	0	8	11	0	0	0	0	48	0	115	13	128	24	164	0	188	48	327
08:45	09:00	8	0	8	16	0	0	0	0	60	0	125	19	144	25	159	0	184	60	344
09:00	09:15	3	0	5	8	0	0	0	0	35	0	101	14	115	13	127	0	140	35	263
09:15	09:30	4	0	4	8	0	0	0	0	31	0	109	13	122	10	123	0	133	31	263
09:30	09:45	1	0	10	11	0	0	0	0	37	0	100	13	113	12	107	1	120	37	244
09:45	10:00	2	0	3	5	0	0	0	0	30	0	93	15	108	10	83	0	93	30	206
11:30	11:45	5	0	8	13	0	1	0	1	59	0	113	35	148	8	92	1	101	59	263
11:45	12:00	2	0	11	13	0	0	0	0	50	0	115	23	138	14	112	0	126	50	277
12:00	12:15	6	0	10	16	0	0	0	0	49	0	128	16	144	17	93	0	110	49	270
12:15	12:30	7	0	15	22	0	0	0	0	42	0	132	12	144	8	122	0	130	42	296
12:30	12:45	7	0	12	19	0	0	1	1	54	0	126	15	141	19	105	0	124	54	285
12:45	13:00	7	0	21	28	1	1	0	2	62	1	118	16	135	14	105	0	119	62	284
13:00	13:15	5	0	12	17	0	0	0	0	45	0	139	10	149	17	89	1	107	45	273
13:15	13:30	5	0	12	17	0	0	1	1	44	0	105	12	117	14	81	0	95	44	230
15:00	15:15	9	0	19	28	0	0	1	1	56	0	130	13	143	14	110	0	124	56	296
15:15	15:30	16	0	28	44	0	0	1	1	85	0	147	24	171	15	141	1	157	85	373
15:30	15:45	18	0	14	32	0	0	0	0	65	0	135	22	157	11	157	0	168	65	357
15:45	16:00	8	0	4	12	0	0	0	0	37	0	166	12	178	13	153	0	166	37	356
16:00	16:15	18	0	8	26	0	0	1	1	59	1	161	16	178	15	169	0	184	59	389
16:30	16:45	9	0	11	20	0	0	0	0	52	0	172	17	189	15	176	0	191	52	400
16:45	17:00	11	0	9	20	0	0	0	0	61	0	173	25	198	16	186	0	202	61	420
17:00	17:15	20	1	8	29	1	0	0	1	62	0	168	14	182	17	132	0	149	62	361
17:15	17:30	11	0	6	17	0	0	1	1	43	0	154	12	166	12	151	1	164	43	348
17:30	17:45	9	0	6	15	0	0	0	0	49	0	127	19	146	15	126	0	141	49	302
17:45	18:00	3	0	8	11	0	0	0	0	30	0	162	8	170	11	126	0	137	30	318
16:15	16:30	20	0	10	30	0	0	0	0	62	0	179	20	199	12	177	0	189	62	418
Total:		232	1	307	540	2	2	6	10	1483	2	4140	487	4629	436	4070	5	4512	1483	9,691

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study Cyclist Volume

Time Period		MONTGOMERY ST Northbound	MONTGOMERY ST Southbound	MONTGOMERY ST Street Total	MONTREAL RD Eastbound	MONTREAL RD Westbound	MONTREAL RD Street Total	Grand Total
07:00	07:15	1	0	1	0	2	2	3
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	1	1	1
08:00	08:15	0	0	0	1	0	1	1
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	1	0	1	1
08:45	09:00	0	0	0	0	1	1	1
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	1	0	1	1
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	2	0	2	2
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	1	0	1	1
16:30	16:45	0	0	0	1	0	1	1
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	2	2	2
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
Total		1	0	1	7	6	13	14

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study Pedestrian Volume

Time Period	MONTGOMERY ST NB Approach (E or W Crossing)	MONTGOMERY ST SB Approach (E or W Crossing)	MONTGOMERY ST Total	MONTREAL RD EB Approach (N or S Crossing)	MONTREAL RD WB Approach (N or S Crossing)	MONTREAL RD Total	Grand Total
07:00 07:15	2	4	**6**	1	0	**1**	**7**
07:15 07:30	7	4	**11**	2	0	**2**	**13**
07:30 07:45	8	5	**13**	0	2	**2**	**15**
07:45 08:00	1	8	**9**	0	0	**0**	**9**
08:00 08:15	6	3	**9**	0	1	**1**	**10**
08:15 08:30	5	10	**15**	2	2	**4**	**19**
08:30 08:45	3	10	**13**	3	3	**6**	**19**
08:45 09:00	3	4	**7**	1	0	**1**	**8**
09:00 09:15	6	6	**12**	0	4	**4**	**16**
09:15 09:30	4	2	**6**	0	1	**1**	**7**
09:30 09:45	2	5	**7**	0	1	**1**	**8**
09:45 10:00	1	6	**7**	1	2	**3**	**10**
11:30 11:45	0	9	**9**	0	1	**1**	**10**
11:45 12:00	4	4	**8**	1	1	**2**	**10**
12:00 12:15	2	10	**12**	0	1	**1**	**13**
12:15 12:30	12	9	**21**	4	10	**14**	**35**
12:30 12:45	5	8	**13**	1	5	**6**	**19**
12:45 13:00	2	11	**13**	0	7	**7**	**20**
13:00 13:15	13	10	**23**	4	4	**8**	**31**
13:15 13:30	4	5	**9**	2	6	**8**	**17**
15:00 15:15	6	14	**20**	2	2	**4**	**24**
15:15 15:30	6	7	**13**	1	1	**2**	**15**
15:30 15:45	3	8	**11**	1	2	**3**	**14**
15:45 16:00	11	8	**19**	1	1	**2**	**21**
16:00 16:15	4	9	**13**	0	2	**2**	**15**
16:30 16:45	4	10	**14**	1	10	**11**	**25**
16:45 17:00	4	13	**17**	1	6	**7**	**24**
17:00 17:15	12	13	**25**	3	3	**6**	**31**
17:15 17:30	9	9	**18**	3	2	**5**	**23**
17:30 17:45	5	17	**22**	3	5	**8**	**30**
17:45 18:00	9	11	**20**	2	2	**4**	**24**
16:15 16:30	7	8	**15**	1	6	**7**	**22**
Total	170	260	**430**	41	93	**134**	**564**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study Heavy Vehicles

		MONTGOMERY ST									MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**1**	0	0	0	**0**	**1**	0	6	0	**10**	1	4	0	**11**	**21**	**11**
07:15	07:30	0	0	0	**1**	0	0	0	**0**	**1**	0	3	1	**9**	0	5	0	**8**	**17**	**9**
07:30	07:45	0	0	0	**1**	0	0	0	**0**	**1**	0	5	1	**14**	0	8	0	**13**	**27**	**14**
07:45	08:00	1	0	1	**5**	0	0	0	**0**	**5**	0	2	2	**10**	1	5	0	**9**	**19**	**12**
08:00	08:15	0	0	0	**1**	0	0	0	**0**	**1**	0	7	1	**12**	0	4	0	**11**	**23**	**12**
08:15	08:30	1	0	1	**3**	0	0	0	**0**	**3**	0	8	1	**15**	0	5	0	**14**	**29**	**16**
08:30	08:45	0	0	1	**1**	0	0	0	**0**	**1**	0	4	0	**9**	0	5	0	**10**	**19**	**10**
08:45	09:00	0	0	2	**4**	0	0	0	**0**	**4**	0	8	1	**16**	1	7	0	**18**	**34**	**19**
09:00	09:15	0	0	0	**1**	0	0	0	**0**	**1**	0	8	1	**14**	0	5	0	**13**	**27**	**14**
09:15	09:30	0	0	0	**2**	0	0	0	**0**	**2**	0	7	0	**12**	2	5	0	**14**	**26**	**14**
09:30	09:45	0	0	0	**1**	0	0	0	**0**	**1**	0	3	1	**7**	0	3	0	**6**	**13**	**7**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**10**	0	7	0	**10**	**20**	**10**
11:30	11:45	0	0	0	**1**	0	0	0	**0**	**1**	0	7	1	**15**	0	7	0	**14**	**29**	**15**
11:45	12:00	0	0	0	**1**	0	0	0	**0**	**1**	0	3	1	**12**	0	8	0	**11**	**23**	**12**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	8	0	**13**	0	5	0	**13**	**26**	**13**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**8**	0	5	0	**8**	**16**	**8**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**12**	0	5	0	**12**	**24**	**12**
12:45	13:00	0	0	1	**1**	0	0	0	**0**	**1**	0	5	0	**6**	0	1	0	**7**	**13**	**7**
13:00	13:15	0	0	0	**1**	0	0	0	**0**	**1**	0	6	1	**10**	0	3	0	**9**	**19**	**10**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**3**	0	1	0	**3**	**6**	**3**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**10**	0	6	0	**10**	**20**	**10**
15:15	15:30	0	0	3	**3**	0	0	0	**0**	**3**	0	5	0	**8**	0	3	0	**11**	**19**	**11**
15:30	15:45	1	0	0	**2**	0	0	0	**0**	**2**	0	5	0	**11**	1	5	0	**11**	**22**	**12**
15:45	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**12**	0	5	0	**12**	**24**	**12**
16:00	16:15	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**8**	0	4	0	**8**	**16**	**8**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**7**	0	4	0	**7**	**14**	**7**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**8**	0	5	0	**8**	**16**	**8**
17:00	17:15	0	0	0	**1**	0	0	0	**0**	**1**	0	4	1	**9**	0	4	0	**8**	**17**	**9**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**6**	0	3	0	**6**	**12**	**6**
17:30	17:45	0	0	1	**1**	0	0	0	**0**	**1**	0	3	0	**4**	0	1	0	**5**	**9**	**5**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**5**	0	5	0	**5**	**10**	**5**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**8**	0	6	0	**8**	**16**	**8**
Total:	None	3	0	10	**32**	0	0	0	**0**	**32**	0	148	13	**313**	6	149	0	**313**	**626**	**329**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MONTGOMERY ST @ MONTREAL RD

Survey Date: Wednesday, January 13, 2016 **WO No:** 35640

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

Full Study 15 Minute U-Turn Total

		MONTGOMERY ST	MONTREAL RD			
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	1	1
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
16:15	16:30	0	0	0	0	0
Total		0	0	0	1	1

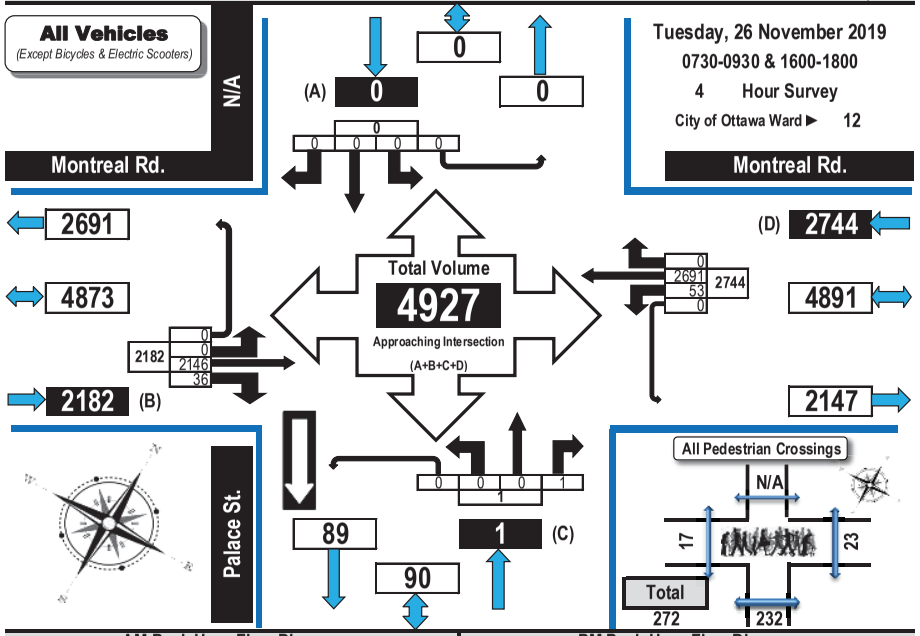
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

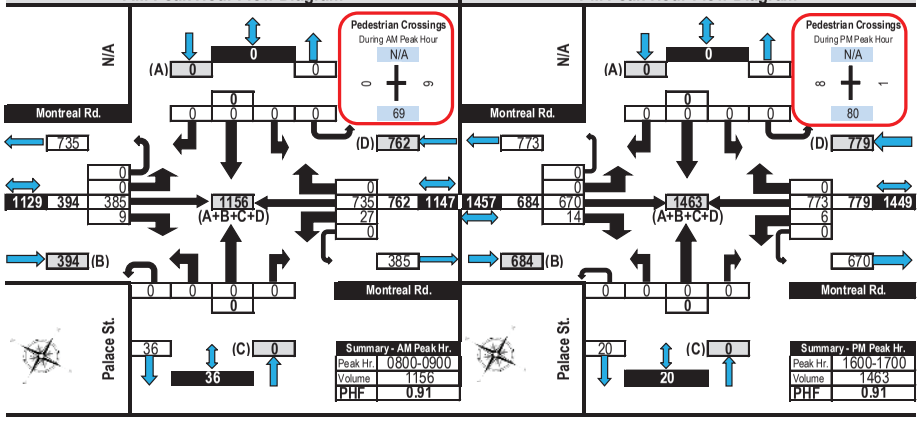
Montreal Road & Palace Street — **Vanier, ON**

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, 26 November 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 12



AM Peak Hour Flow Diagram



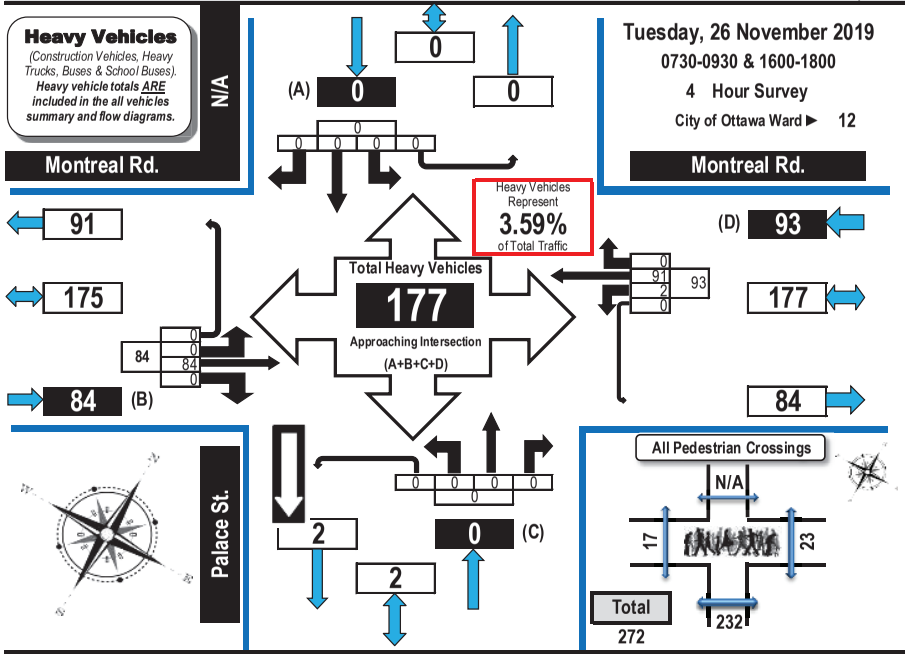
PM Peak Hour Flow Diagram

Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Montreal Road & Palace Street — **Vanier, ON**

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

Tuesday, 26 November 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 12

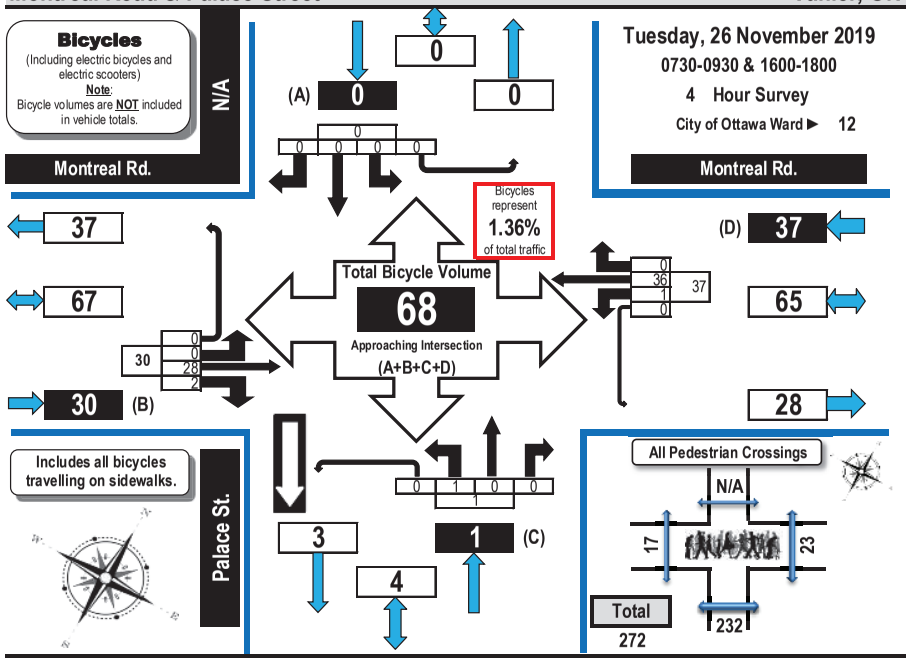


	Montreal Rd. Eastbound					Montreal Rd. Westbound					Palace St. Northbound					N/A Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	0	9	0	0	9	0	16	0	0	16	0	0	0	0	0	0	0	0	0	0	25
0800-0900	0	30	0	0	30	2	35	0	0	37	0	0	0	0	0	0	0	0	0	0	67
0900-0930	0	17	0	0	17	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	31
1600-1700	0	14	0	0	14	0	18	0	0	18	0	0	0	0	0	0	0	0	0	0	32
1700-1800	0	14	0	0	14	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	22
Totals	0	84	0	0	84	2	91	0	0	93	0	0	0	0	0	0	0	0	0	0	177

Comments:
Palace Street is one way southbound and there was 1 northound right turn to Montreal Road. During the evening portion of the traffic count and occasionally in the morning eastbound traffic backs up from the Vanier Parkway.

Turning Movement Count
Bicycle Summary
Flow Diagram

Montreal Road & Palace Street — **Vanier, ON**

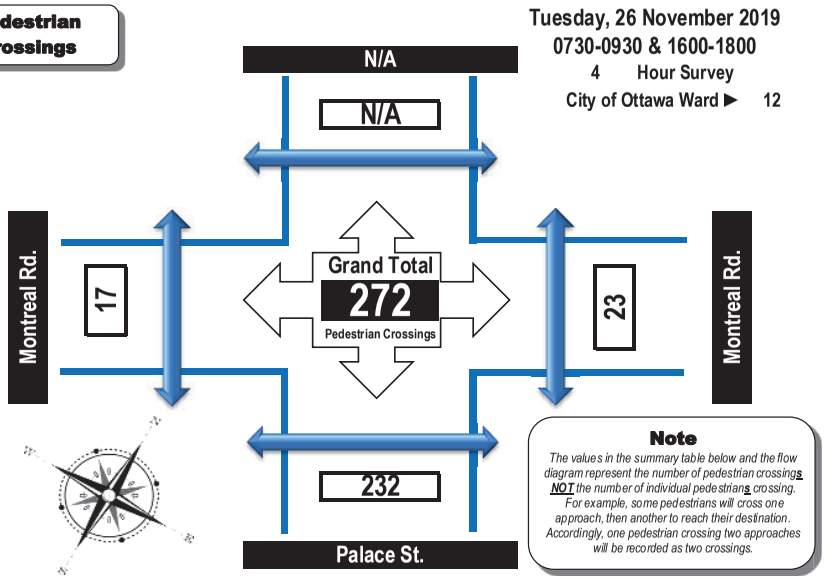


	Montreal Rd. Eastbound					Montreal Rd. Westbound					Palace St. Northbound					N/A Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	5
0800-0900	0	3	0	0	3	0	13	0	0	13	0	0	0	0	0	0	0	0	0	0	16
0900-0930	0	2	0	0	2	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	7
1600-1700	0	11	2	0	13	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0	17
1700-1800	0	12	0	0	12	1	10	0	0	11	0	0	0	0	0	0	0	0	0	0	23
Totals	0	28	2	0	30	1	36	0	0	37	1	0	0	0	1	0	0	0	0	0	68

Comments:
Palace Street is one way southbound and there was 1 northound right turn to Montreal Road. During the evening portion of the traffic count and occasionally in the morning eastbound traffic backs up from the Vanier Parkway.

Turning Movement Count
Pedestrian Crossings Summary
and Flow Diagram

Montreal Road & Palace Street — **Vanier, ON**



Time Period	West Side Crossing Montreal Rd.	East Side Crossing Montreal Rd.	Street Total	South Side Crossing Palace St.	North Side Crossing N/A	Street Total	Grand Total
0730-0800	5	6	11	23	0	23	34
0800-0900	0	9	9	69	0	69	78
0900-0930	0	2	2	8	0	8	10
1600-1700	8	1	9	80	0	80	89
1700-1800	4	5	9	52	0	52	61
Totals	17	23	40	232	0	232	272

Comments:
Palace Street is one way southbound and there was 1 northound right turn to Montreal Road. During the evening portion of the traffic count and occasionally in the morning eastbound traffic backs up from the Vanier Parkway.

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Montreal Road & Palace Street — Vanier, ON

Survey Date: Tuesday, 26 November 2019 **Start Time:** 0730 **AADT Factor:** 1.0
Weather AM: Overcast +5°C **Survey Duration:** 4 Hrs. **Survey Hours:** 0730-0930 & 1600-1800
Weather PM: Overcast +10°C **Surveyor(s):** Carmody

	Montreal Rd. Eastbound					Montreal Rd. Westbound						Palace St. Northbound					N/A Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0730-0800	0	189	4	0	193	6	288	0	0	294	487	0	0	0	0	0	0	0	0	0	0	0	487
0800-0900	0	385	9	0	394	27	735	0	0	762	1156	0	0	0	0	0	0	0	0	0	0	0	1156
0900-0930	0	224	2	0	226	7	285	0	0	292	518	0	0	1	0	1	0	0	0	0	0	1	519
1600-1700	0	670	14	0	684	6	773	0	0	779	1463	0	0	0	0	0	0	0	0	0	0	0	1463
1700-1800	0	678	7	0	685	7	610	0	0	617	1302	0	0	0	0	0	0	0	0	0	0	0	1302
Totals	0	2146	36	0	2182	53	2691	0	0	2744	4926	0	0	1	0	1	0	0	0	0	0	1	4927

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

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

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

Equ. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0

AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 0700h & 1000h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	0	385	9	0	394	27	735	0	0	762	1156	0	0	0	0	0	0	0	0	0	0	0	1156

PM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 1500h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1600-1700	0	670	14	0	684	6	773	0	0	779	1463	0	0	0	0	0	0	0	0	0	0	0	1463

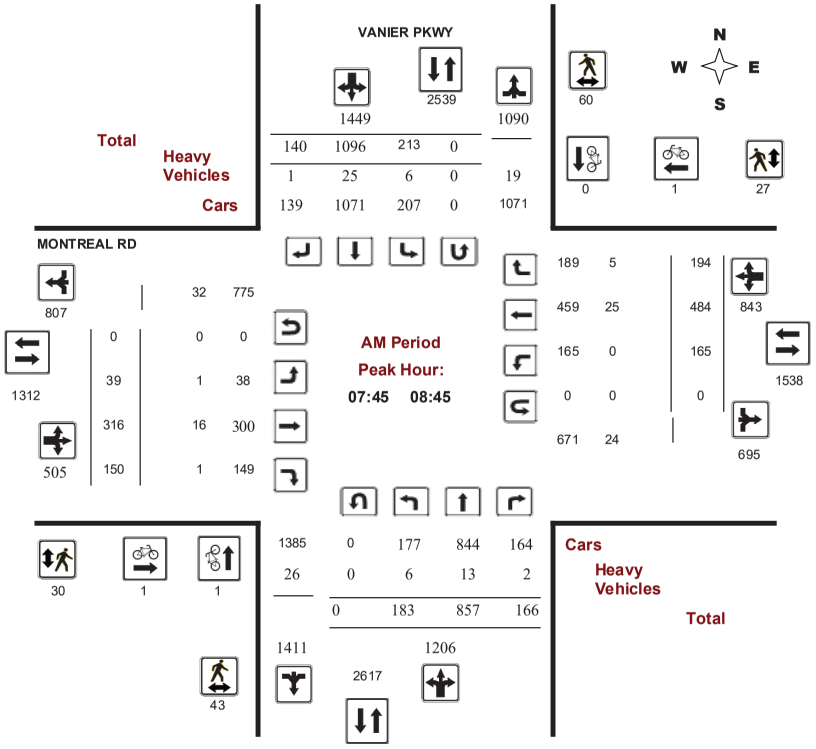
Comments:
Palace Street is one way southbound and there was 1 northound right turn to Montreal Road. During the evening portion of the traffic count and occasionally in the morning eastbound traffic backs up from the Vanier Parkway.

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

Ottawa

Transportation Services - Traffic Services
Turning Movement Count - Full Study Peak Hour Diagram
MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38462
Start Time: 07:00 **Device:** Miovision



Comments

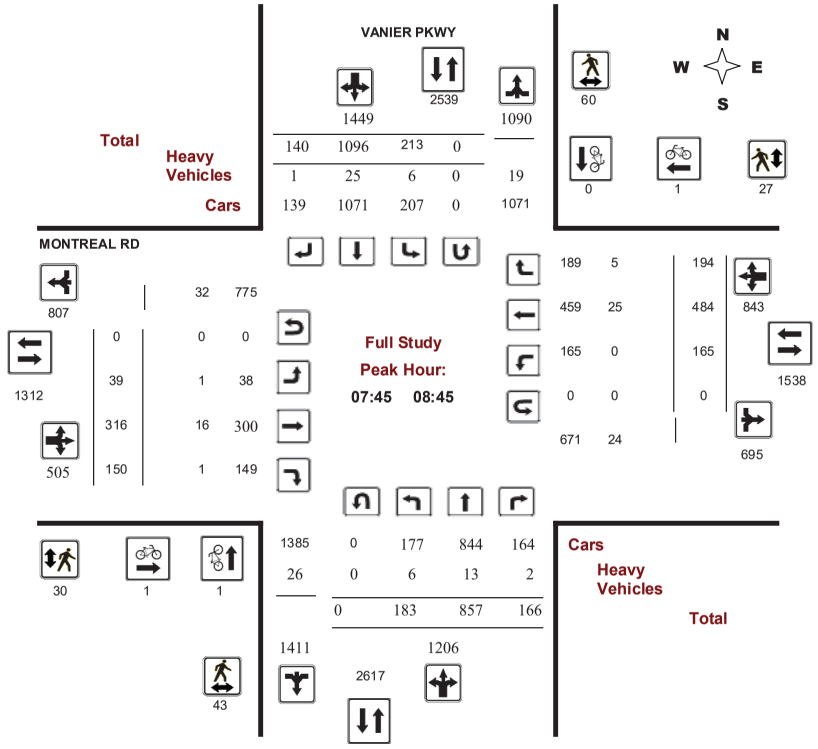
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38462

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



Comments

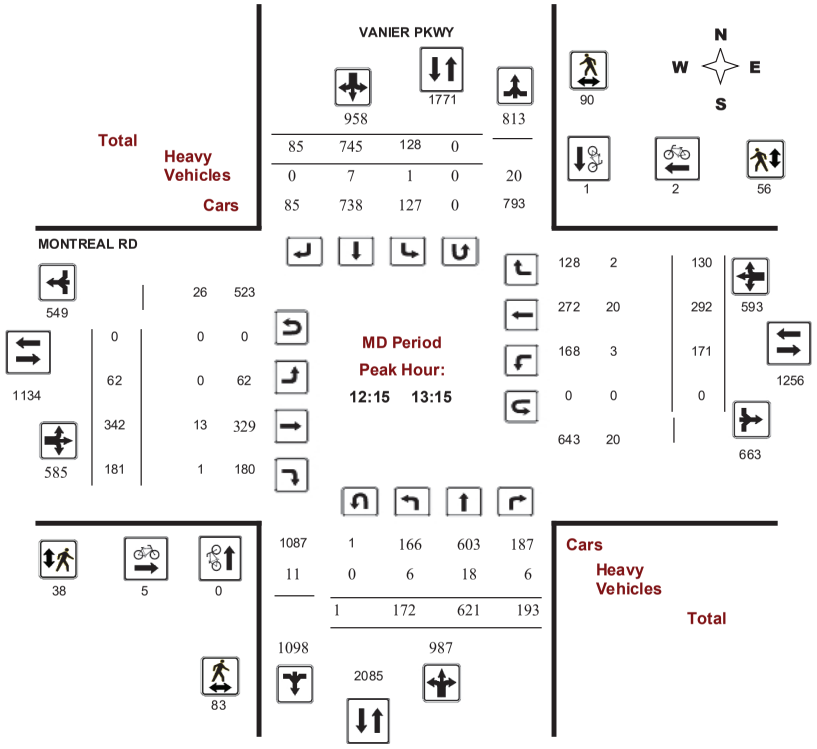
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38462

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



Comments

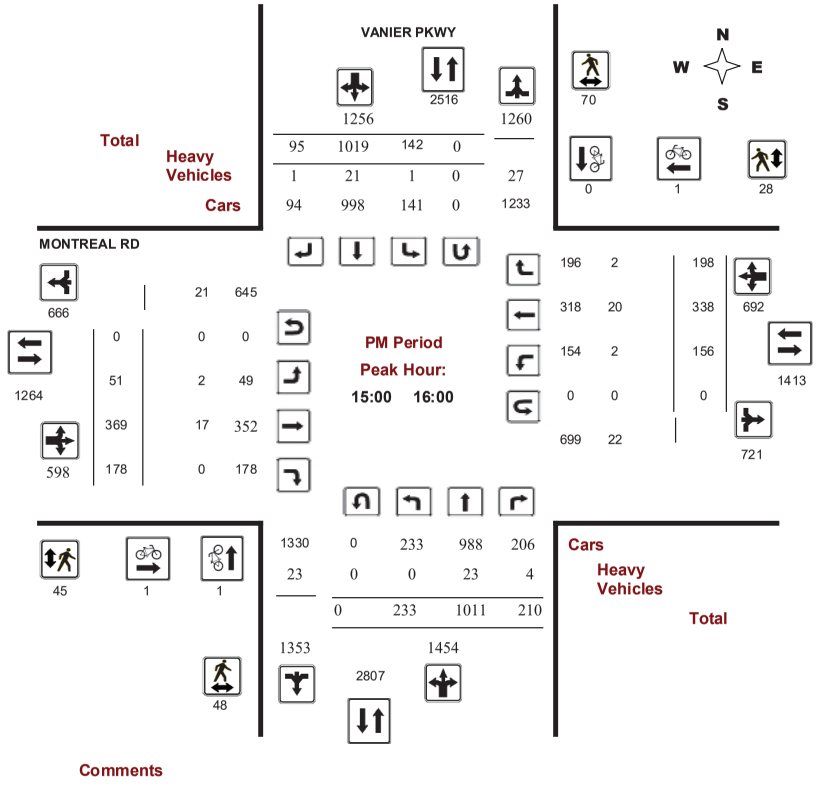
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38462

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



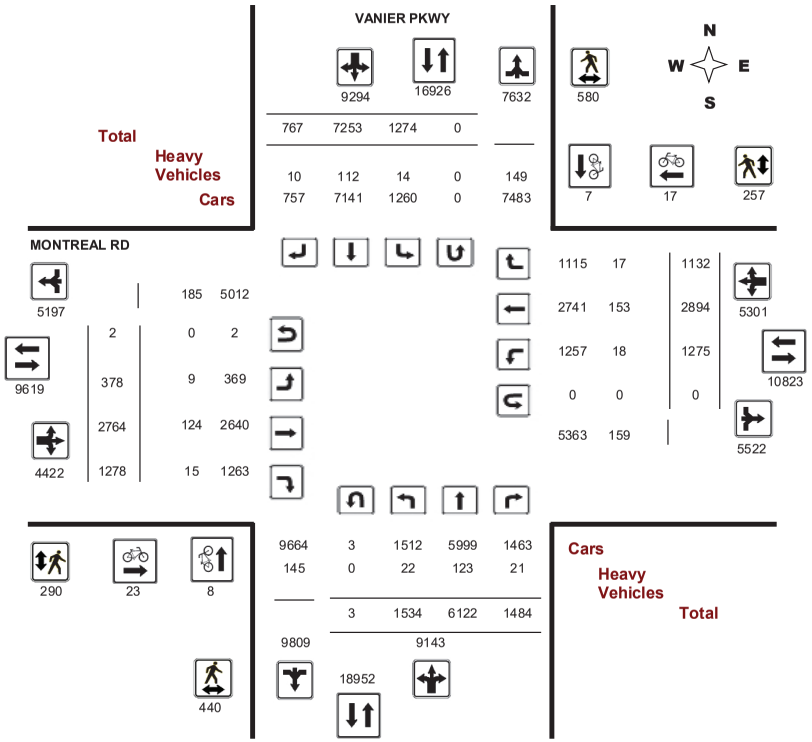
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO#:** 38462

Device: Miovision



Transportation Services - Traffic Services

Work Order 38462

Turning Movement Count - Full Study Summary Report

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019

Total Observed U-Turns

Northbound: 3 Southbound: 0

Eastbound: 2 Westbound: 0

AADT Factor 1.00

Full Study

	VANIER PKWY									MONTREAL RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	128	674	122	**924**	218	999	89	**1306**	**2230**	38	270	140	**448**	162	329	162	**653**	**1101**	**3331**
08:00 09:00	185	806	165	**1156**	185	1132	128	**1445**	**2601**	39	318	144	**501**	164	506	178	**848**	**1349**	**3950**
09:00 10:00	196	677	195	**1068**	155	879	97	**1131**	**2199**	42	247	151	**440**	160	306	109	**575**	**1015**	**3214**
11:30 12:30	163	588	181	**932**	138	703	86	**927**	**1859**	55	331	173	**559**	165	271	119	**555**	**1114**	**2973**
12:30 13:30	158	624	187	**969**	135	731	69	**935**	**1904**	58	351	176	**585**	170	314	145	**629**	**1214**	**3118**
15:00 16:00	233	1011	210	**1454**	142	1019	95	**1256**	**2710**	51	369	178	**598**	156	338	198	**692**	**1290**	**4000**
16:00 17:00	256	907	196	**1359**	133	863	103	**1099**	**2458**	51	440	177	**668**	140	439	123	**702**	**1370**	**3828**
17:00 18:00	215	835	228	**1278**	168	927	100	**1195**	**2473**	44	438	139	**621**	158	391	98	**647**	**1268**	**3741**
Sub Total	1534	6122	1484	**9140**	1274	7253	767	**9294**	**18434**	378	2764	1278	**4420**	1275	2894	1132	**5301**	**9721**	**28155**
U Turns				**3**				**0**	**3**				**2**				**0**	**2**	**5**
Total	1534	6122	1484	**9143**	1274	7253	767	**9294**	**18437**	378	2764	1278	**4422**	1275	2894	1132	**5301**	**9723**	**28160**
EQ 12Hr	2132	8510	2063	**12709**	1771	10082	1066	**12919**	**25628**	525	3842	1776	**6147**	1772	4023	1573	**7368**	**13515**	**39143**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	2132	8510	2063	**12709**	1771	10082	1066	**12919**	**25628**	525	3842	1776	**6147**	1772	4023	1573	**7368**	**13515**	**39143**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	2793	11148	2702	**16648**	2320	13207	1397	**16923**	**33571**	688	5033	2327	**8052**	2322	5270	2061	**9653**	**17705**	**51276**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

Comments:

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

Transportation Services - Traffic Services

W.O. 38462

Turning Movement Count - 15 Minute Summary Report

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019

Total Observed U-Turns

Northbound: 3 Southbound: 0

Eastbound: 2 Westbound: 0

	VANIER PKWY									MONTREAL RD									
	Northbound				Southbound					Eastbound				Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	23	137	19	**179**	46	276	11	**333**	**512**	6	64	40	**110**	36	66	32	**134**	**244**	**756**
07:15 07:30	27	137	30	**194**	47	302	17	**366**	**560**	10	63	31	**104**	39	65	37	**141**	**245**	**805**
07:30 07:45	32	162	34	**228**	51	192	19	**262**	**490**	10	69	31	**110**	45	95	41	**181**	**291**	**781**
07:45 08:00	46	238	39	**323**	74	229	42	**345**	**668**	12	74	38	**124**	42	103	52	**197**	**321**	**989**
08:00 08:15	39	194	47	**280**	42	285	36	**363**	**643**	15	78	33	**126**	42	123	36	**201**	**327**	**970**
08:15 08:30	53	205	35	**293**	49	258	28	**335**	**628**	5	89	38	**132**	41	134	68	**243**	**375**	**1003**
08:30 08:45	45	220	45	**310**	48	324	34	**406**	**716**	7	75	41	**123**	40	124	38	**202**	**325**	**1041**
08:45 09:00	48	187	38	**273**	46	265	30	**341**	**614**	12	76	32	**120**	41	125	36	**202**	**322**	**936**
09:00 09:15	47	208	41	**296**	41	259	30	**330**	**626**	7	56	32	**95**	37	78	37	**152**	**247**	**873**
09:15 09:30	50	169	56	**275**	43	191	21	**255**	**530**	15	65	42	**122**	41	82	19	**142**	**264**	**794**
09:30 09:45	55	163	41	**259**	33	234	14	**281**	**540**	12	62	43	**117**	45	66	22	**133**	**250**	**790**
09:45 10:00	44	137	57	**238**	38	195	32	**265**	**503**	8	64	34	**106**	37	80	31	**148**	**254**	**757**
11:30 11:45	30	165	39	**234**	34	176	20	**230**	**464**	12	87	42	**141**	50	63	26	**139**	**280**	**744**
11:45 12:00	42	106	47	**195**	32	184	13	**229**	**424**	12	66	48	**126**	40	70	35	**145**	**271**	**695**
12:00 12:15	47	176	46	**269**	43	156	29	**228**	**497**	15	95	41	**151**	35	79	32	**146**	**297**	**794**
12:15 12:30	44	141	49	**234**	29	187	24	**240**	**474**	16	83	42	**141**	40	59	26	**125**	**266**	**740**
12:30 12:45	53	162	47	**262**	41	193	20	**254**	**516**	14	89	42	**145**	50	82	42	**174**	**319**	**835**
12:45 13:00	32	165	48	**245**	31	167	21	**219**	**464**	18	85	38	**141**	41	75	25	**141**	**282**	**746**
13:00 13:15	43	153	49	**246**	27	198	20	**245**	**491**	14	85	59	**158**	40	76	37	**153**	**311**	**802**
13:15 13:30	30	144	43	**217**	36	173	8	**217**	**434**	12	92	37	**141**	39	81	41	**161**	**302**	**736**
15:00 15:15	64	270	55	**389**	35	244	27	**306**	**695**	22	78	56	**156**	34	65	43	**142**	**298**	**993**
15:15 15:30	46	271	62	**379**	38	273	25	**336**	**715**	9	83	50	**142**	40	77	59	**176**	**318**	**1033**
15:30 15:45	57	228	46	**331**	29	215	23	**267**	**598**	6	116	42	**164**	43	105	49	**197**	**361**	**959**
15:45 16:00	66	242	47	**355**	40	287	20	**347**	**702**	14	92	30	**136**	39	91	47	**177**	**313**	**1015**
16:00 16:15	62	237	54	**353**	32	247	13	**292**	**645**	7	97	44	**148**	30	116	31	**177**	**325**	**970**
16:15 16:30	76	242	38	**356**	30	184	26	**240**	**596**	19	100	38	**157**	37	115	26	**178**	**335**	**931**
16:30 16:45	45	242	58	**345**	30	223	27	**280**	**625**	5	103	38	**147**	43	99	35	**177**	**324**	**949**
16:45 17:00	73	186	46	**306**	41	209	37	**287**	**593**	20	140	57	**217**	30	109	31	**170**	**387**	**980**
17:00 17:15	64	206	60	**330**	53	276	29	**358**	**688**	11	103	24	**138**	34	96	29	**159**	**297**	**985**
17:15 17:30	56	193	55	**304**	35	236	32	**303**	**607**	19	122	43	**184**	44	122	21	**187**	**371**	**978**
17:30 17:45	39	195	70	**305**	43	242	17	**302**	**607**	6	100	34	**141**	33	82	22	**137**	**278**	**885**
17:45 18:00	56	241	43	**340**	37	173	22	**232**	**572**	8	113	38	**159**	47	91	26	**164**	**323**	**895**
TOTAL:	1534	6122	1484	**9143**	1274	7253	767	**9294**	**18437**	378	2764	1278	**4422**	1275	2894	1132	**5301**	**9723**	**28160**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 38462

MONTREAL RD @ VANIER PKWY

Count Date: Tuesday, March 26, 2019 **Start Time:** 07:00

Time Period	VANIER PKWY Northbound	VANIER PKWY Southbound	VANIER PKWY Street Total	MONTREAL RD Eastbound	MONTREAL RD Westbound	MONTREAL RD Street Total	Grand Total
07:00 08:00	0	1	**1**	0	3	**3**	**4**
08:00 09:00	1	0	**1**	1	0	**1**	**2**
09:00 10:00	0	0	**0**	1	3	**4**	**4**
11:30 12:30	0	1	**1**	3	1	**4**	**5**
12:30 13:30	0	0	**0**	9	3	**12**	**12**
15:00 16:00	1	0	**1**	1	1	**2**	**3**
16:00 17:00	2	1	**3**	1	1	**2**	**5**
17:00 18:00	4	4	**8**	7	5	**12**	**20**
Total	8	7	**15**	23	17	**40**	**55**

Comment:

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

Transportation Services - Traffic Services

W.O. 38462

Turning Movement Count - Heavy Vehicle Report

MONTREAL RD @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019

Time Period	VANIER PKWY Northbound LT	ST	RT	N TOT	Southbound LT	ST	RT	S TOT	STR TOT	MONTREAL RD Eastbound LT	ST	RT	E TOT	Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 08:00	3	17	1	**21**	4	8	1	**13**	**34**	0	24	4	**28**	3	16	1	**20**	**48**	**82**
08:00 09:00	5	15	3	**23**	2	24	2	**28**	**51**	2	20	3	**25**	1	30	5	**36**	**61**	**112**
09:00 10:00	4	14	4	**22**	1	15	3	**19**	**41**	2	12	2	**16**	1	25	1	**27**	**43**	**84**
11:30 12:30	2	15	2	**19**	2	15	1	**18**	**37**	2	13	0	**15**	4	12	2	**18**	**33**	**70**
12:30 13:30	5	15	5	**25**	1	7	0	**8**	**33**	1	14	3	**18**	3	20	2	**25**	**43**	**76**
15:00 16:00	0	23	4	**27**	1	21	1	**23**	**50**	2	17	0	**19**	2	20	2	**24**	**43**	**93**
16:00 17:00	2	12	1	**15**	2	13	2	**17**	**32**	0	16	3	**19**	1	17	2	**20**	**39**	**71**
17:00 18:00	1	12	1	**14**	1	9	0	**10**	**24**	0	8	0	**8**	3	13	2	**18**	**26**	**50**
Sub Total	22	123	21	**166**	14	112	10	**136**	**302**	9	124	15	**148**	18	153	17	**188**	**336**	**638**
U-Turns (Heavy Vehicles)				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	22	123	21	**0**	14	112	10	**136**	**302**	9	124	15	**148**	18	153	17	**188**	**336**	**638**

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

Transportation Services - Traffic Services

Work Order 38462

Turning Movement Count - Pedestrian Volume Report

MONTREAL RD @ VANIER PKWY

Count Date: Tuesday, March 26, 2019 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	4	10	**14**	10	2	**12**	**26**
07:15 07:30	10	11	**21**	5	8	**13**	**34**
07:30 07:45	14	7	**21**	4	7	**11**	**32**
07:45 08:00	8	9	**17**	9	7	**16**	**33**
07:00 08:00	36	37	**73**	28	24	**52**	**125**
08:00 08:15	13	18	**31**	6	4	**10**	**41**
08:15 08:30	13	17	**30**	4	11	**15**	**45**
08:30 08:45	9	16	**25**	11	5	**16**	**41**
08:45 09:00	12	18	**30**	11	6	**17**	**47**
08:00 09:00	47	69	**116**	32	26	**58**	**174**
09:00 09:15	16	12	**28**	3	13	**16**	**44**
09:15 09:30	8	18	**26**	6	4	**10**	**36**
09:30 09:45	9	13	**22**	11	9	**20**	**42**
09:45 10:00	8	12	**20**	3	9	**12**	**32**
09:00 10:00	41	55	**96**	23	35	**58**	**154**
11:30 11:45	7	17	**24**	14	8	**22**	**46**
11:45 12:00	19	16	**35**	4	9	**13**	**48**
12:00 12:15	12	18	**30**	17	3	**20**	**50**
12:15 12:30	17	16	**33**	10	6	**16**	**49**
11:30 12:30	55	67	**122**	45	26	**71**	**193**
12:30 12:45	31	22	**53**	15	22	**37**	**90**
12:45 13:00	26	24	**50**	6	10	**16**	**66**
13:00 13:15	9	28	**37**	7	18	**25**	**62**
13:15 13:30	31	26	**57**	7	15	**22**	**79**
12:30 13:30	97	100	**197**	35	65	**100**	**297**
15:00 15:15	10	16	**26**	3	2	**5**	**31**
15:15 15:30	5	17	**22**	20	8	**28**	**50**
15:30 15:45	19	20	**39**	8	11	**19**	**58**
15:45 16:00	14	17	**31**	14	7	**21**	**52**
15:00 16:00	48	70	**118**	45	28	**73**	**191**
16:00 16:15	21	26	**47**	16	6	**22**	**69**
16:15 16:30	18	16	**34**	13	14	**27**	**61**
16:30 16:45	12	25	**37**	11	4	**15**	**52**
16:45 17:00	17	20	**37**	8	1	**9**	**46**
16:00 17:00	68	87	**155**	48	25	**73**	**228**
17:00 17:15	14	18	**32**	10	5	**15**	**47**
17:15 17:30	11	19	**30**	15	3	**18**	**48**
17:30 17:45	7	29	**36**	5	5	**10**	**46**
17:45 18:00	16	29	**45**	4	15	**19**	**64**
17:00 18:00	48	95	**143**	34	28	**62**	**205**
Total	440	580	**1020**	290	257	**547**	**1567**

Comment:

Transportation Services - Traffic Services

Work Order 38462

Turning Movement Count - 15 Min U-Turn Total Report

MONTREAL RD @ VANIER PKWY

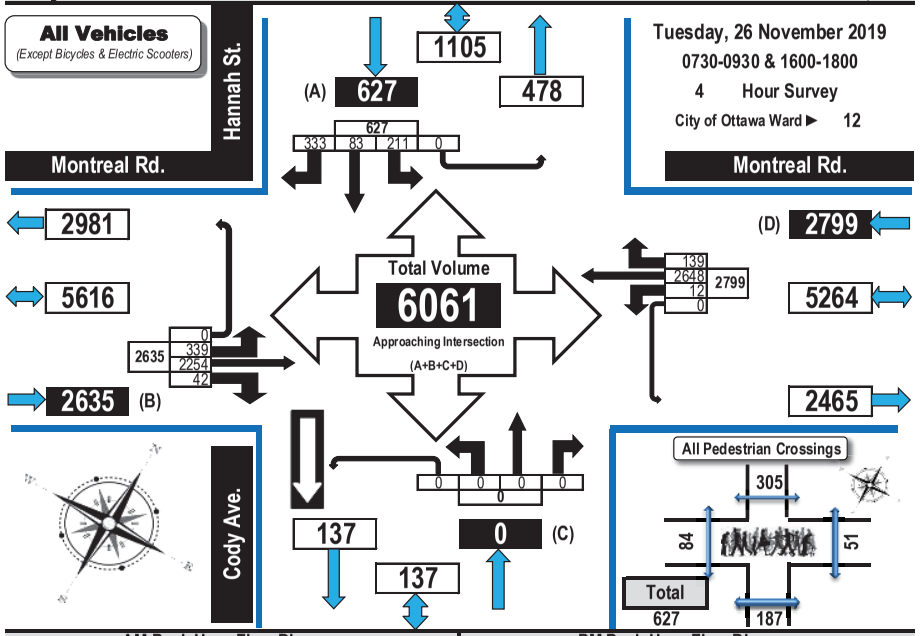
Survey Date: Tuesday, March 26, 2019

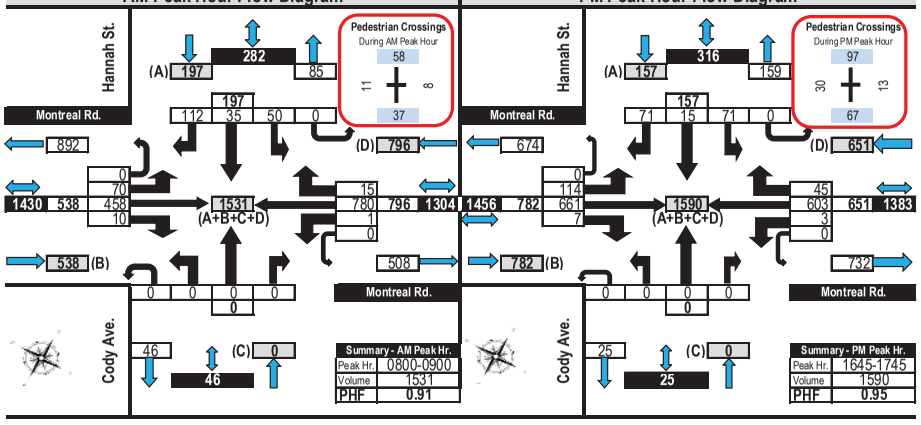
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15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

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

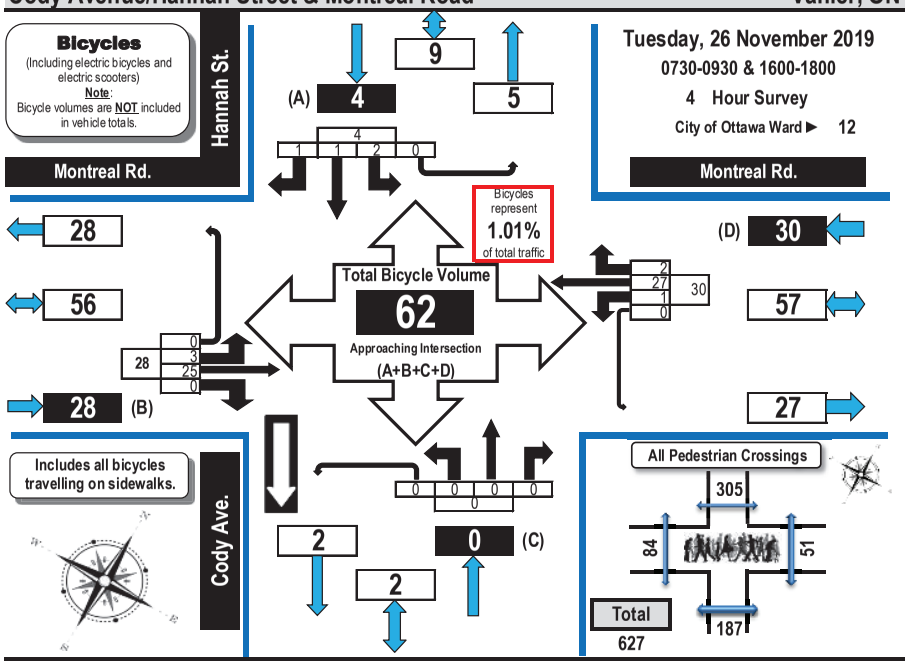
Cody Avenue/Hannah Street & Montreal Road — **Vanier, ON**





Turning Movement Count
Bicycle Summary Flow Diagram

Cody Avenue/Hannah Street & Montreal Road — **Vanier, ON**



	Montreal Rd. Eastbound					Montreal Rd. Westbound					Cody Ave. Northbound					Hannah St. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	0	1	0	0	1	0	6	0	0	6	0	0	0	0	0	0	0	1	0	1	8
0800-0900	0	1	0	0	1	1	8	0	0	9	0	0	0	0	0	0	0	0	0	0	10
0900-0930	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	5
1600-1700	1	11	0	0	12	0	5	2	0	7	0	0	0	0	0	2	0	0	0	2	21
1700-1800	2	10	0	0	12	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	18
Totals	3	25	0	0	28	1	27	2	0	30	0	0	0	0	0	2	1	1	0	4	62

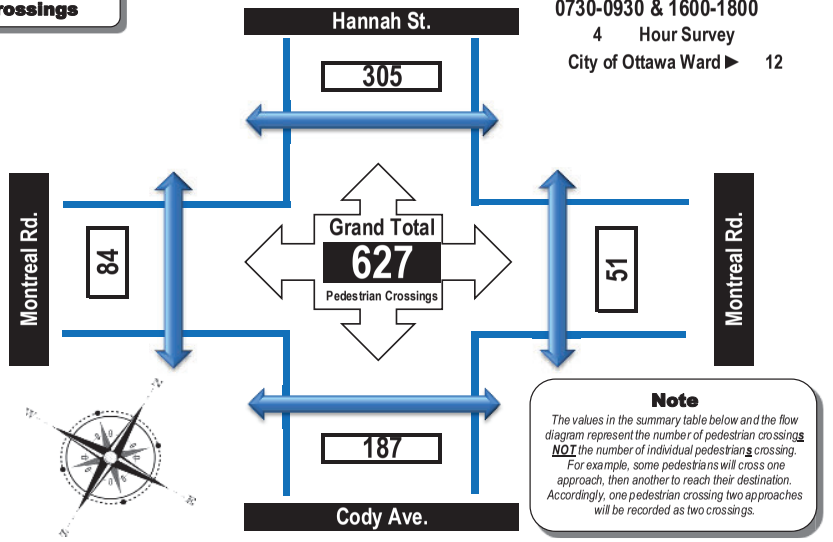
Comments:
Cody Avenue is one way southbound.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Cody Avenue/Hannah Street & Montreal Road — **Vanier, ON**

Pedestrian Crossings

Tuesday, 26 November 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 12



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

Time Period	West Side Crossing Montreal Rd.	East Side Crossing Montreal Rd.	Street Total	South Side Crossing Cody Ave.	North Side Crossing Hannah St.	Street Total	Grand Total
0730-0800	3	1	4	11	13	24	28
0800-0900	11	8	19	37	58	95	114
0900-0930	6	11	17	12	41	53	70
1600-1700	36	13	49	63	102	165	214
1700-1800	28	18	46	64	91	155	201
Totals	84	51	135	187	305	492	627

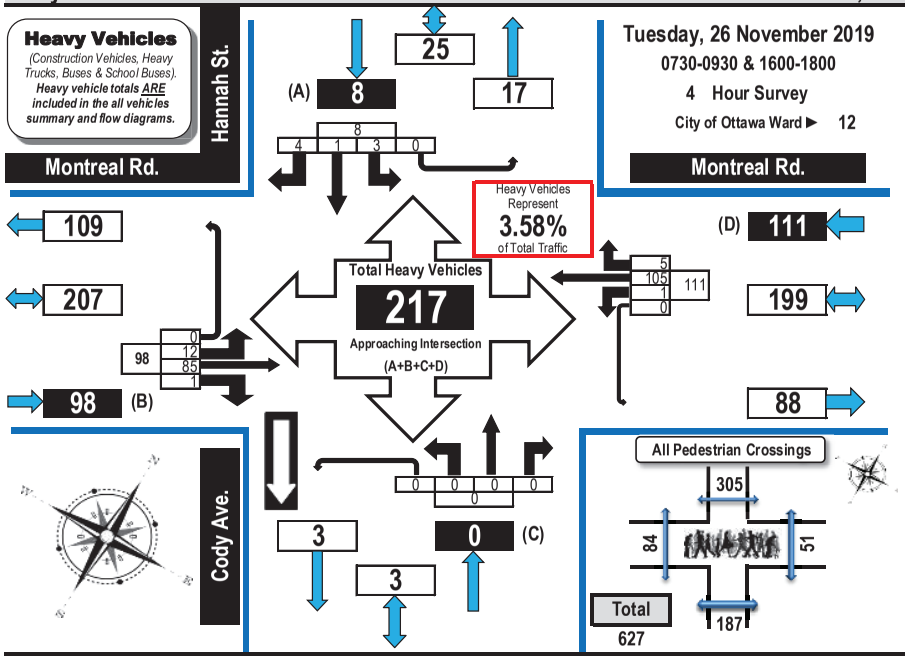
Comments:
Cody Avenue is one way southbound.

Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Cody Avenue/Hannah Street & Montreal Road — **Vanier, ON**

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

Tuesday, 26 November 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 12



	Montreal Rd. Eastbound					Montreal Rd. Westbound					Cody Ave. Northbound					Hannah St. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	1	12	0	0	13	0	18	1	0	19	0	0	0	0	0	0	0	0	0	0	32
0800-0900	5	24	0	0	29	0	36	1	0	37	0	0	0	0	0	1	1	2	0	4	70
0900-0930	3	15	0	0	18	1	15	1	0	17	0	0	0	0	0	1	0	0	0	1	36
1600-1700	0	19	1	0	20	0	20	2	0	22	0	0	0	0	0	0	0	0	0	0	42
1700-1800	3	15	0	0	18	0	16	0	0	16	0	0	0	0	0	1	0	2	0	3	37
Totals	12	85	1	0	98	1	105	5	0	111	0	0	0	0	0	3	1	4	0	8	217

Comments:
Cody Avenue is one way southbound.

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Cody Avenue/Hannah Street & Montreal Road — Vanier, ON

Survey Date: Tuesday, 26 November 2019 **Start Time:** 0730 **AADT Factor:** 1.0
Weather AM: Overcast +5°C **Survey Duration:** 4 Hrs. **Survey Hours:** 0730-0930 & 1600-1800
Weather PM: Overcast +10°C **Surveyor(s):** Carmody

	Montreal Rd. Eastbound					Montreal Rd. Westbound						Cody Ave. Northbound					Hannah St. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0730-0800	20	224	3	0	247	2	364	13	0	379	626	0	0	0	0	0	23	10	50	0	83	83	709
0800-0900	70	458	10	0	538	1	780	15	0	796	1334	0	0	0	0	0	50	35	112	0	197	197	1531
0900-0930	36	257	8	0	301	5	274	13	0	292	593	0	0	0	0	0	15	8	47	0	70	70	663
1600-1700	97	658	13	0	768	2	641	48	0	691	1459	0	0	0	0	0	54	14	55	0	123	123	1582
1700-1800	116	657	8	0	781	2	589	50	0	641	1422	0	0	0	0	0	69	16	69	0	154	154	1576
Totals	339	2254	42	0	2635	12	2648	139	0	2799	5434	0	0	0	0	0	211	83	333	0	627	627	6061

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

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

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

Equ. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0

AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 0700h & 1000h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	70	458	10	0	538	1	780	15	0	796	1334	0	0	0	0	0	50	35	112	0	197	197	1531

PM Peak Hour Factor ➡ 0.95 — Highest Hourly Vehicle Volume Between 1500h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1645-1745	114	661	7	0	782	3	603	45	0	651	1433	0	0	0	0	0	71	15	71	0	157	157	1590

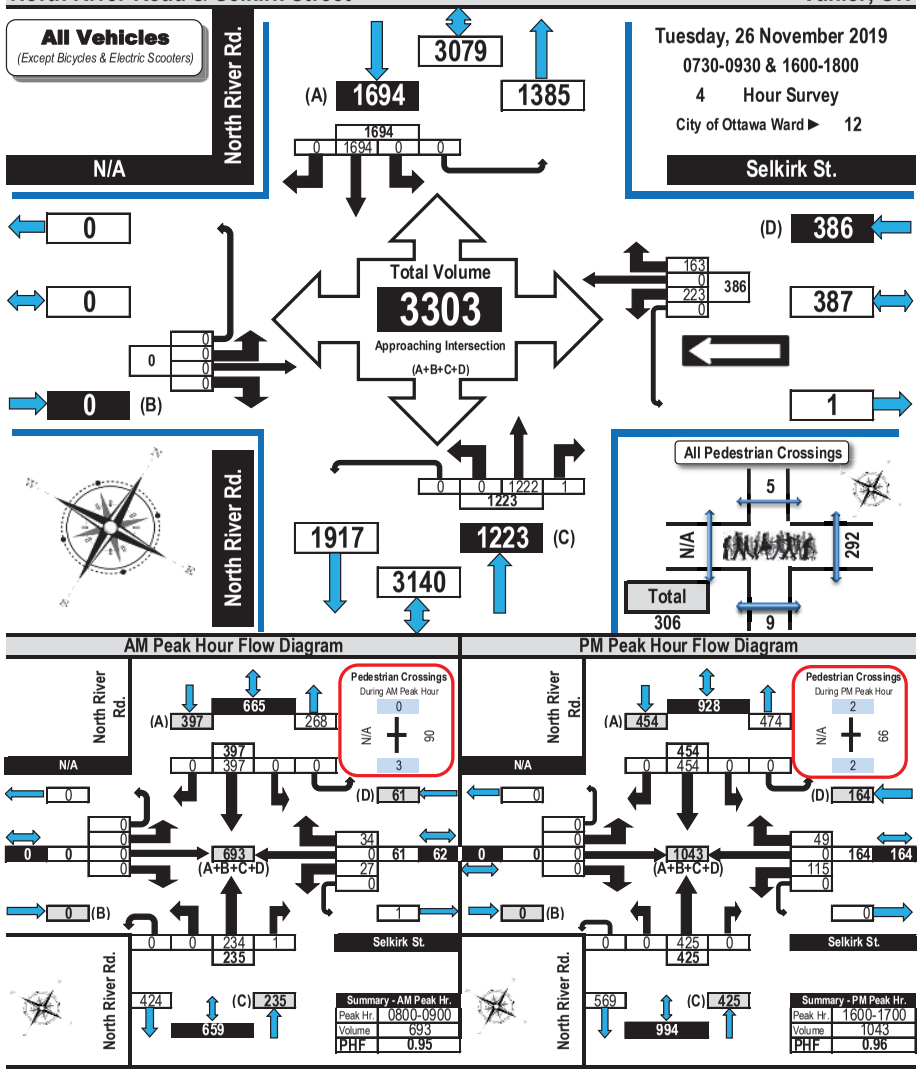
Comments:
Cody Avenue is one way southbound.

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

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

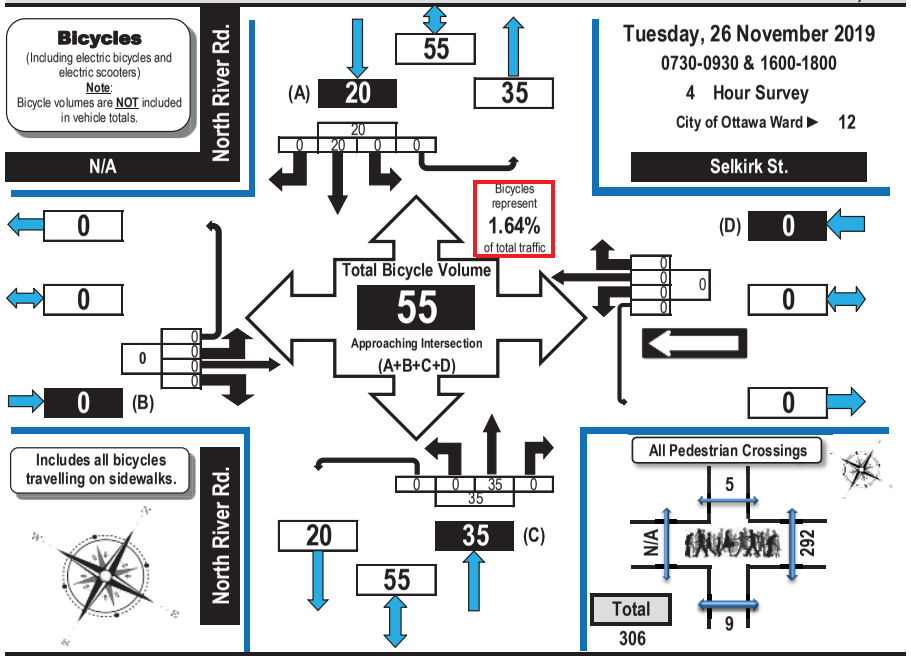
Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

North River Road & Selkirk Street — Vanier, ON



Turning Movement Count
Bicycle Summary
Flow Diagram

North River Road & Selkirk Street — **Vanier, ON**



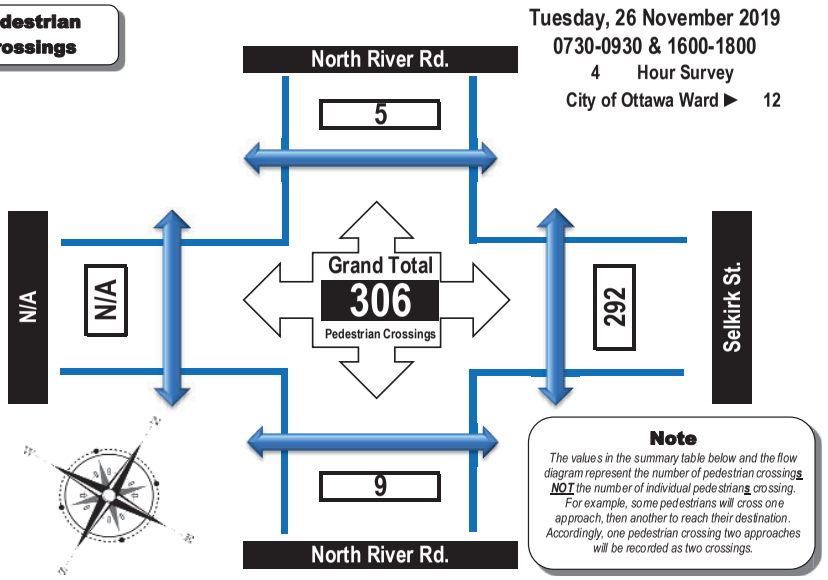
	N/A Eastbound					Selkirk St. Westbound					North River Rd. Northbound					North River Rd. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	4	0	0	4	5
0800-0900	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	2	0	0	2	7
0900-0930	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
1600-1700	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	0	4	0	0	4	15
1700-1800	0	0	0	0	0	0	0	0	0	0	0	16	0	0	16	0	9	0	0	9	25
Totals	0	0	0	0	0	0	0	0	0	0	0	35	0	0	35	0	20	0	0	20	55

Comments:

Selkirk Street is one way westbound. One northbound heavy vehicle turned right from North River Road. Southbound traffic backs up from McArthur Avenue, primarily during the evening portion of the survey to Selkirk Street and occasionally to Montreal Road. Some westbound left turns from Selkirk Street force their way into traffic to complete their turn.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

North River Road & Selkirk Street — **Vanier, ON**



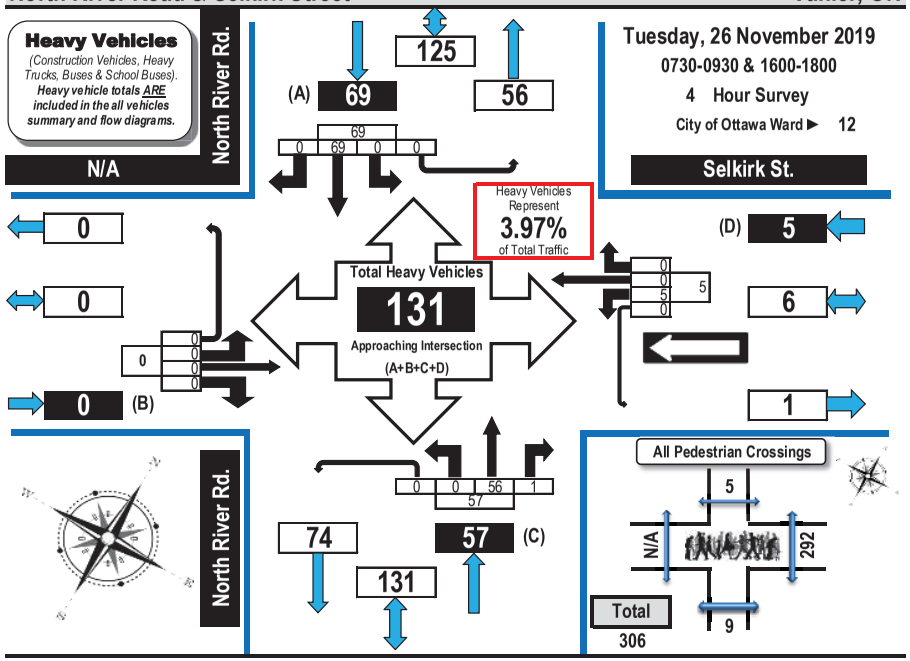
Time Period	West Side Crossing N/A	East Side Crossing Selkirk St.	Street Total	South Side Crossing North River Rd.	North Side Crossing North River Rd.	Street Total	Grand Total
0730-0800	0	48	48	1	0	1	49
0800-0900	0	90	90	3	0	3	93
0900-0930	0	28	28	2	2	4	32
1600-1700	0	66	66	2	2	4	70
1700-1800	0	60	60	1	1	2	62
Totals	0	292	292	9	5	14	306

Comments:

Selkirk Street is one way westbound. One northbound heavy vehicle turned right from North River Road. Southbound traffic backs up from McArthur Avenue, primarily during the evening portion of the survey to Selkirk Street and occasionally to Montreal Road. Some westbound left turns from Selkirk Street force their way into traffic to complete their turn.

Turning Movement Count
Heavy Vehicle Summary
Flow Diagram

North River Road & Selkirk Street — **Vanier, ON**



	N/A					Selkirk St.					North River Rd.					North River Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	0	0	0	0	0	1	0	0	0	1	0	9	0	0	9	0	8	0	0	8	18
0800-0900	0	0	0	0	0	2	0	0	0	2	0	18	1	0	19	0	9	0	0	9	30
0900-0930	0	0	0	0	0	1	0	0	0	1	0	9	0	0	9	0	20	0	0	20	30
1600-1700	0	0	0	0	0	1	0	0	0	1	0	13	0	0	13	0	19	0	0	19	33
1700-1800	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	13	0	0	13	20
Totals	0	0	0	0	0	5	0	0	0	5	0	56	1	0	57	0	69	0	0	69	131

Comments:
Selkirk Street is one way westbound. One northbound heavy vehicle turned right from North River Road. Southbound traffic backs up from McArthur Avenue, primarily during the evening portion of the survey to Selkirk Street and occasionally to Montreal Road. Some westbound left turns from Selkirk Street force their way into traffic to complete their turn.

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

North River Road & Selkirk Street — **Vanier, ON**

Survey Date: Tuesday, 26 November 2019 **Start Time:** 0730 **AADT Factor:** 1.0
Weather AM: Overcast +5°C **Survey Duration:** 4 Hrs. **Survey Hours:** 0730-0930 & 1600-1800
Weather PM: Overcast +10°C **Surveyor(s):** Carmody

	N/A					Selkirk St.					North River Rd.					North River Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0730-0800	0	0	0	0	0	12	0	16	0	28	28	0	121	0	0	121	0	182	0	0	182	303	331
0800-0900	0	0	0	0	0	27	0	34	0	61	61	0	234	1	0	235	0	397	0	0	397	632	693
0900-0930	0	0	0	0	0	11	0	19	0	30	30	0	106	0	0	106	0	177	0	0	177	283	313
1600-1700	0	0	0	0	0	115	0	49	0	164	164	0	425	0	0	425	0	454	0	0	454	879	1043
1700-1800	0	0	0	0	0	58	0	45	0	103	103	0	336	0	0	336	0	484	0	0	484	820	923
Totals	0	0	0	0	0	223	0	163	0	386	386	0	1222	1	0	1223	0	1694	0	0	1694	2917	3303

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

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

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

Equ. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0

AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.95 — Highest Hourly Vehicle Volume Between 0700h & 1000h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0800-0900	0	0	0	0	0	27	0	34	0	61	61	0	234	1	0	235	0	397	0	0	397	632	693

PM Peak Hour Factor ➡ 0.96 — Highest Hourly Vehicle Volume Between 1500h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1600-1700	0	0	0	0	0	115	0	49	0	164	164	0	425	0	0	425	0	454	0	0	454	879	1043

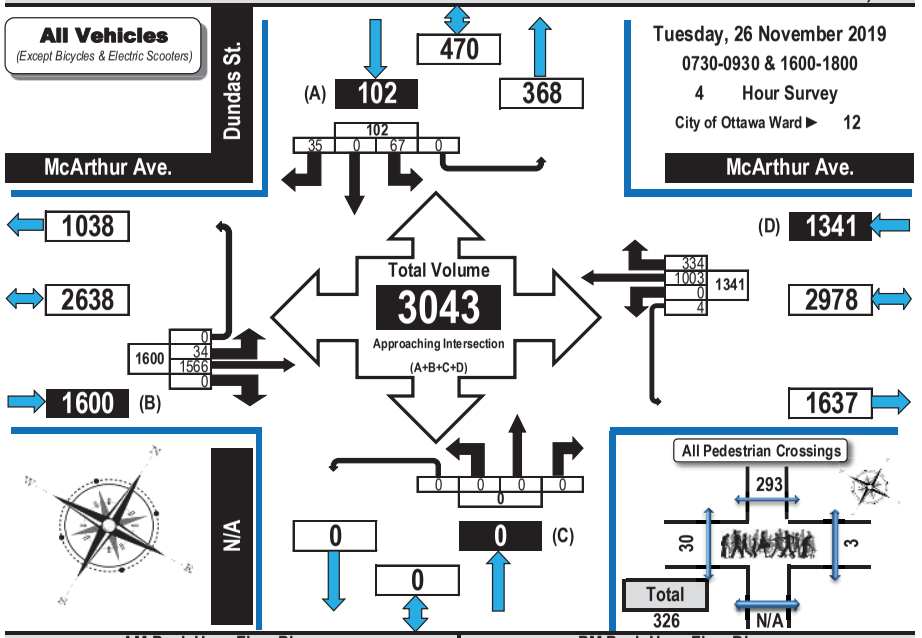
Comments:
Selkirk Street is one way westbound. One northbound heavy vehicle turned right from North River Road. Southbound traffic backs up from McArthur Avenue, primarily during the evening portion of the survey to Selkirk Street and occasionally to Montreal Road. Some westbound left turns from Selkirk Street force their way into traffic to complete their turn.

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

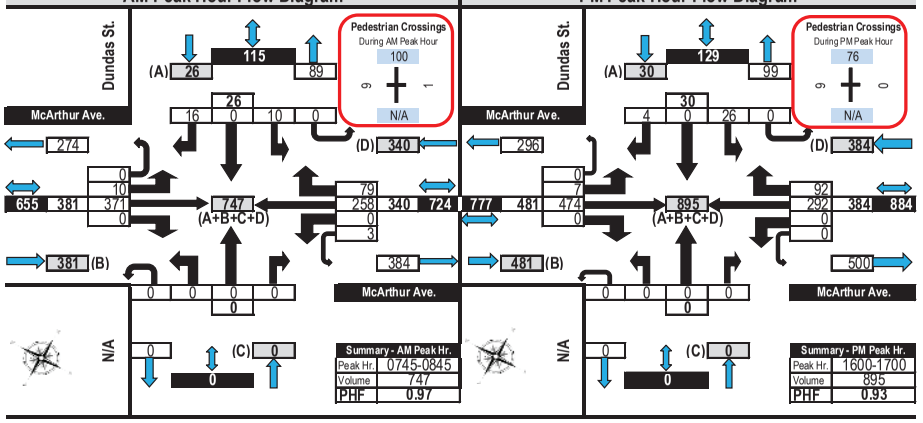
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Dundas Street & McArthur Avenue — **Vanier, ON**



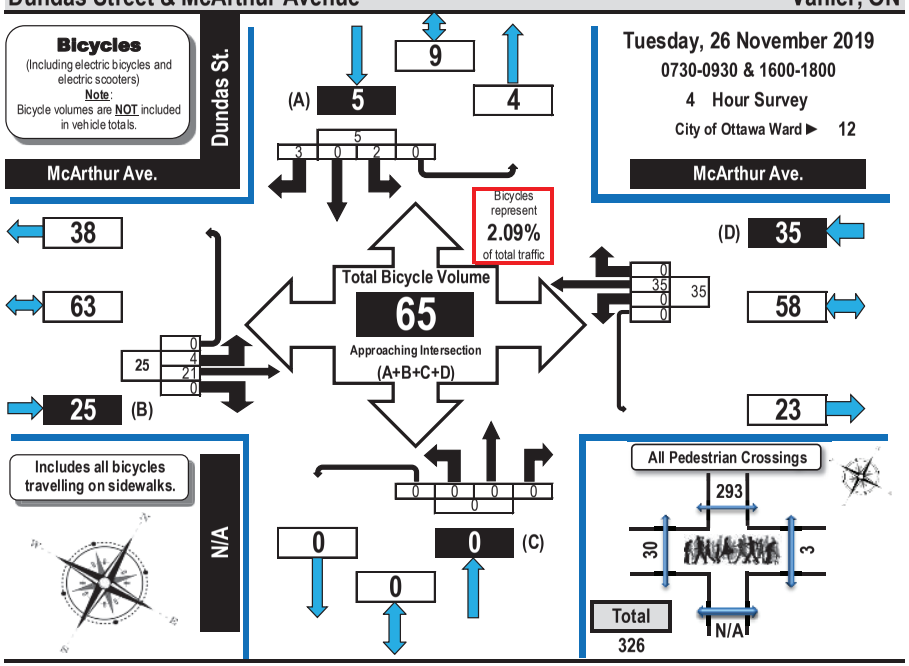
AM Peak Hour Flow Diagram



PM Peak Hour Flow Diagram

Turning Movement Count
Bicycle Summary Flow Diagram

Dundas Street & McArthur Avenue — **Vanier, ON**



	McArthur Ave. Eastbound					McArthur Ave. Westbound					N/A Northbound					Dundas St. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	0	1	0	0	1	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	10
0800-0900	2	2	0	0	4	0	12	0	0	12	0	0	0	0	0	0	0	1	0	1	17
0900-0930	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
1600-1700	1	9	0	0	10	0	5	0	0	5	0	0	0	0	0	1	0	2	0	3	18
1700-1800	1	9	0	0	10	0	7	0	0	7	0	0	0	0	0	1	0	0	0	1	18
Totals	4	21	0	0	25	0	35	0	0	35	0	0	0	0	0	2	0	3	0	5	65

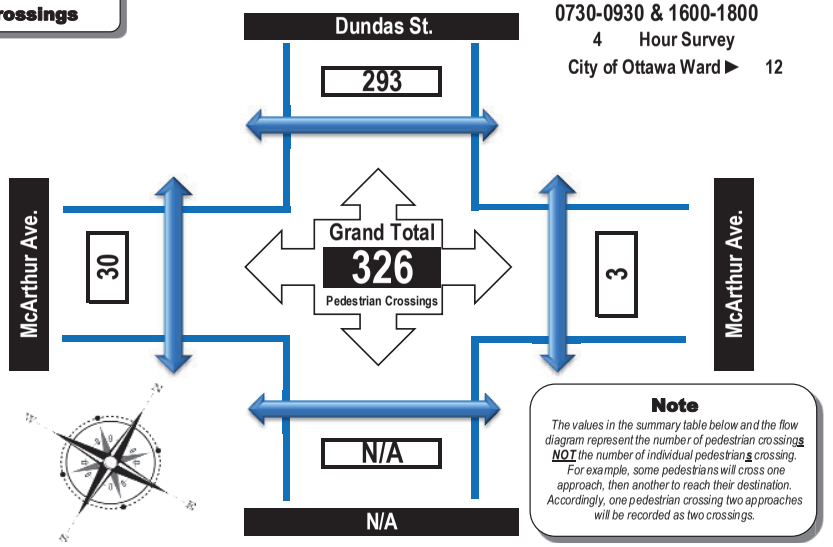
Comments:
There were no traffic issues observed.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Dundas Street & McArthur Avenue — **Vanier, ON**

Pedestrian Crossings

Tuesday, 26 November 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 12



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

Time Period	West Side Crossing McArthur Ave.	East Side Crossing McArthur Ave.	Street Total	South Side Crossing N/A	North Side Crossing Dundas St.	Street Total	Grand Total
0730-0800	4	0	4	0	50	50	54
0800-0900	11	1	12	0	91	91	103
0900-0930	5	0	5	0	32	32	37
1600-1700	9	0	9	0	76	76	85
1700-1800	1	2	3	0	44	44	47
Totals	30	3	33	0	293	293	326

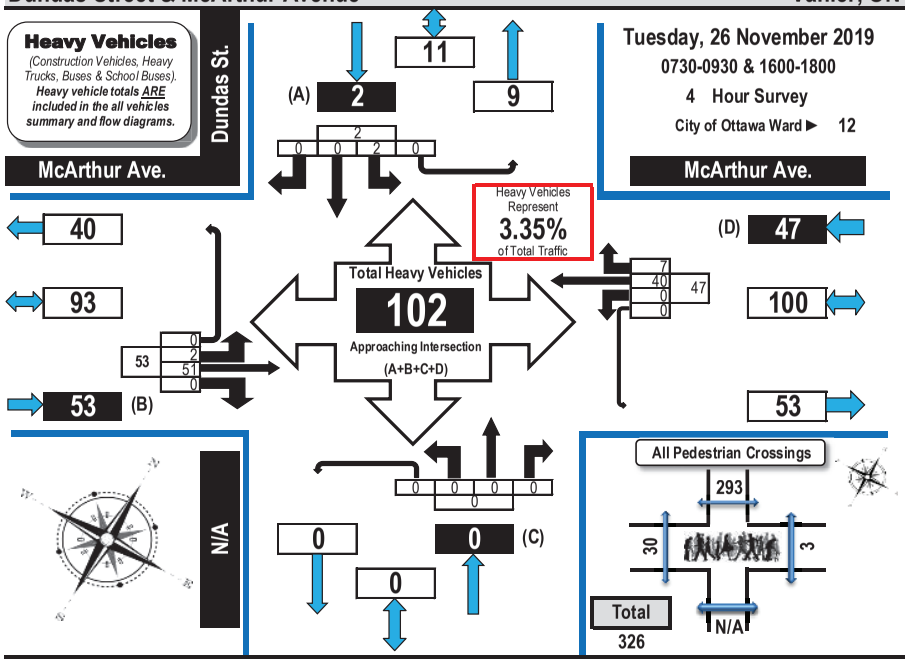
Comments:
There were no traffic issues observed.

Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Dundas Street & McArthur Avenue — **Vanier, ON**

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

Tuesday, 26 November 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 12



	McArthur Ave. Eastbound					McArthur Ave. Westbound					N/A Northbound					Dundas St. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0730-0800	1	7	0	0	8	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	13
0800-0900	1	9	0	0	10	0	14	2	0	16	0	0	0	0	0	0	0	0	0	0	26
0900-0930	0	13	0	0	13	0	7	4	0	11	0	0	0	0	0	0	0	0	0	0	24
1600-1700	0	14	0	0	14	0	10	0	0	10	0	0	0	0	0	2	0	0	0	2	26
1700-1800	0	8	0	0	8	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	13
Totals	2	51	0	0	53	0	40	7	0	47	0	0	0	0	0	2	0	0	0	2	102

Comments:
There were no traffic issues observed.

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary Report
AADT and Expansion Factors

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Dundas Street & McArthur Avenue — Vanier, ON

Survey Date: Tuesday, 26 November 2019 **Start Time:** 0730 **AADT Factor:** 1.0
Weather AM: Overcast +5°C **Survey Duration:** 4 Hrs. **Survey Hours:** 0730-0930 & 1600-1800
Weather PM: Overcast +10°C **Surveyor(s):** Merrett/Mousseau

	McArthur Ave. Eastbound					McArthur Ave. Westbound						N/A Northbound					Dundas St. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0730-0800	4	181	0	0	185	0	139	32	0	171	356	0	0	0	0	0	5	0	12	0	17	17	373
0800-0900	15	354	0	0	369	0	258	92	3	353	722	0	0	0	0	0	11	0	13	0	24	24	746
0900-0930	5	133	0	0	138	0	105	49	1	155	293	0	0	0	0	0	2	0	2	0	4	4	297
1600-1700	7	474	0	0	481	0	292	92	0	384	865	0	0	0	0	0	26	0	4	0	30	30	895
1700-1800	3	424	0	0	427	0	209	69	0	278	705	0	0	0	0	0	23	0	4	0	27	27	732
Totals	34	1566	0	0	1600	0	1003	334	4	1341	2941	0	0	0	0	0	67	0	35	0	102	102	3043

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

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

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

Equ. 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.0

AADT 12-hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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

AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.97 — Highest Hourly Vehicle Volume Between 0700h & 1000h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0745-0845	10	371	0	0	381	0	258	79	3	340	721	0	0	0	0	0	10	0	16	0	26	26	747

PM Peak Hour Factor ➡ 0.93 — Highest Hourly Vehicle Volume Between 1500h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1600-1700	7	474	0	0	481	0	292	92	0	384	865	0	0	0	0	0	26	0	4	0	30	30	895

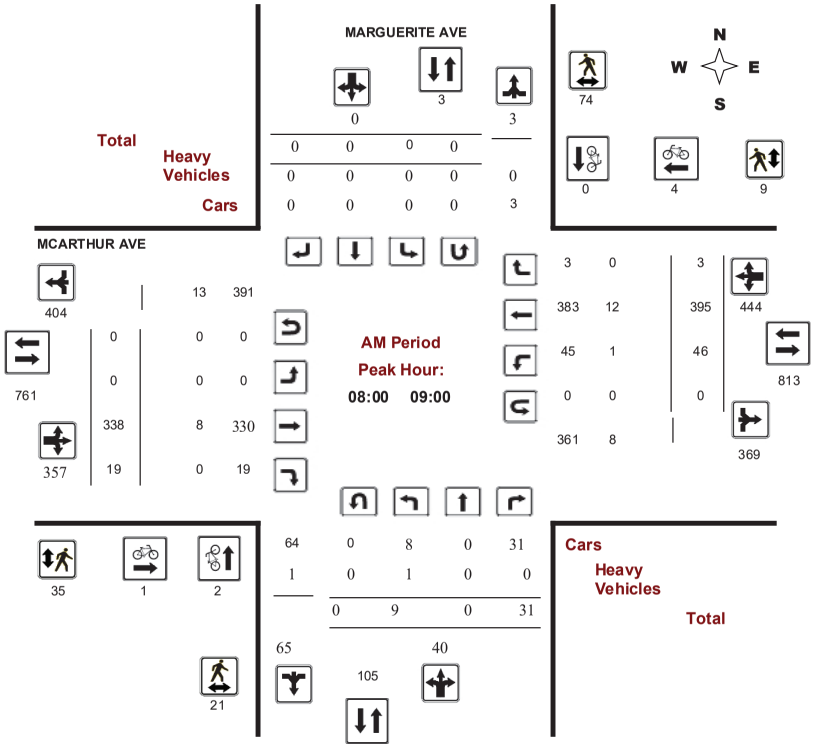
Comments:
There were no traffic issues observed.

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

Ottawa

Transportation Services - Traffic Services
Turning Movement Count - Full Study Peak Hour Diagram
MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444
Start Time: 07:00 **Device:** Miovision



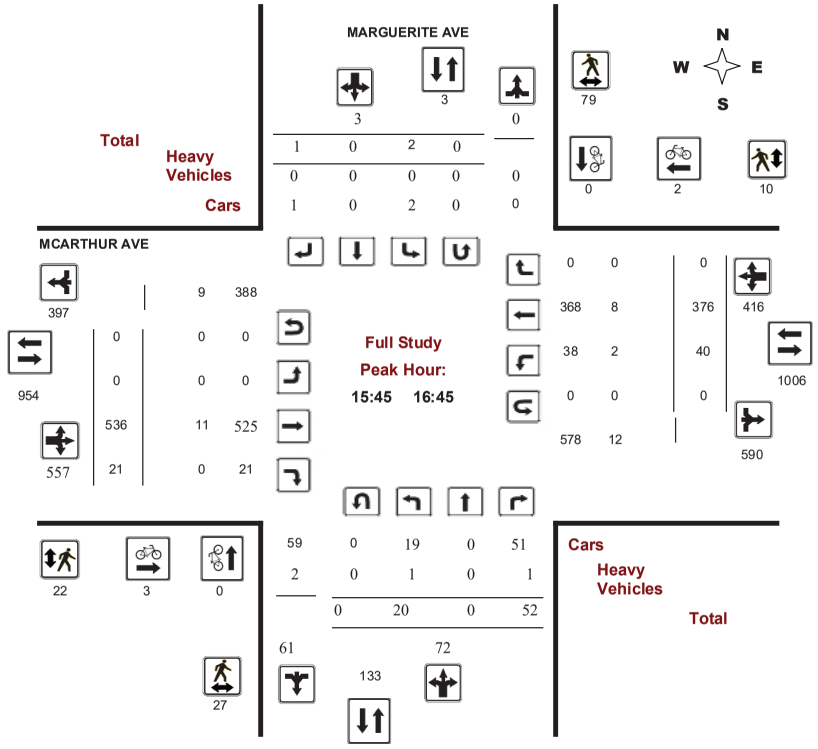
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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



Comments

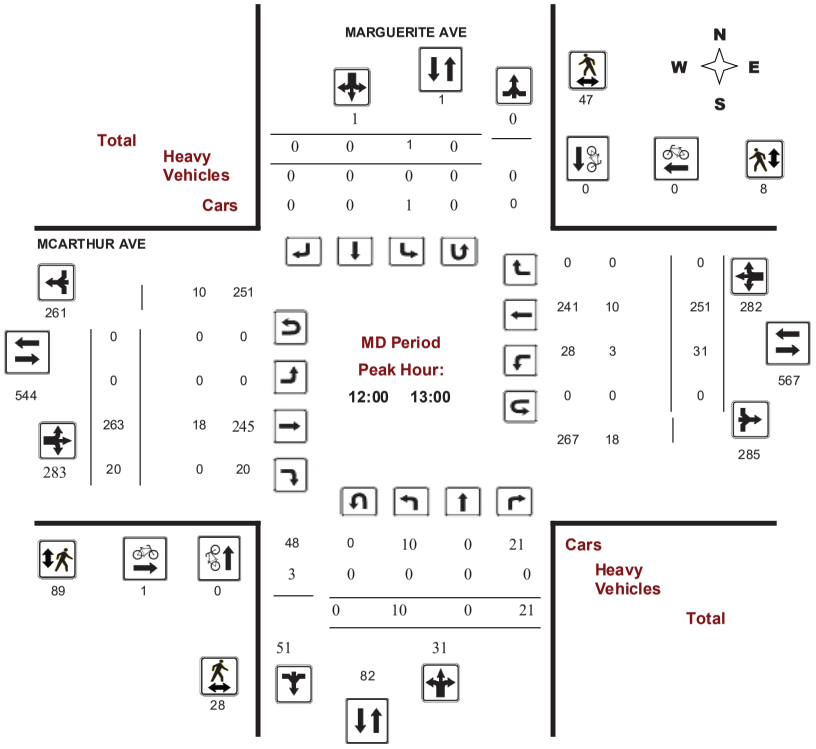
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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



Comments

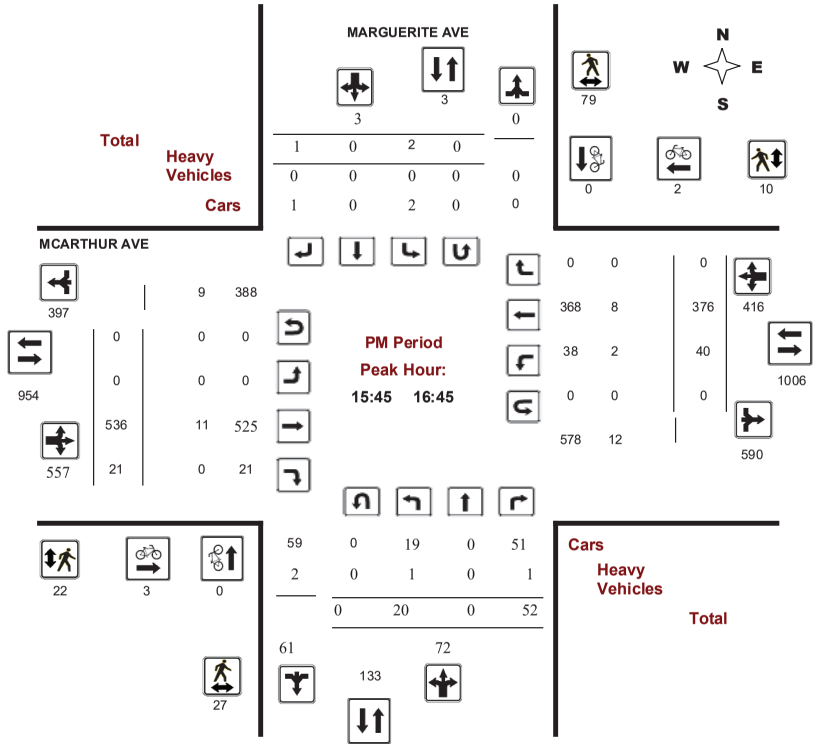
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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



Comments

Transportation Services - Traffic Services

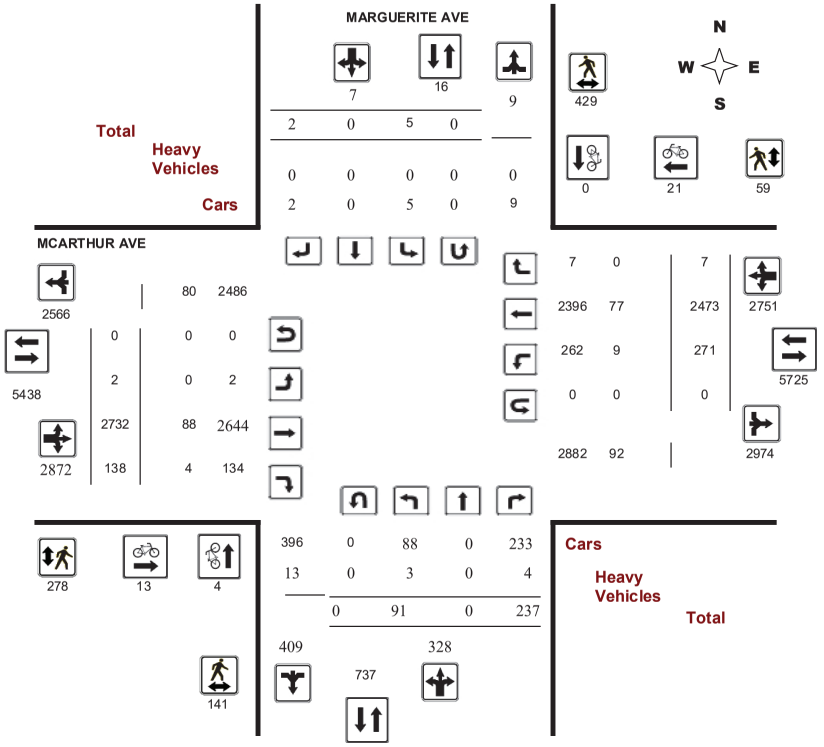
Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study Diagram



Transportation Services - Traffic Services

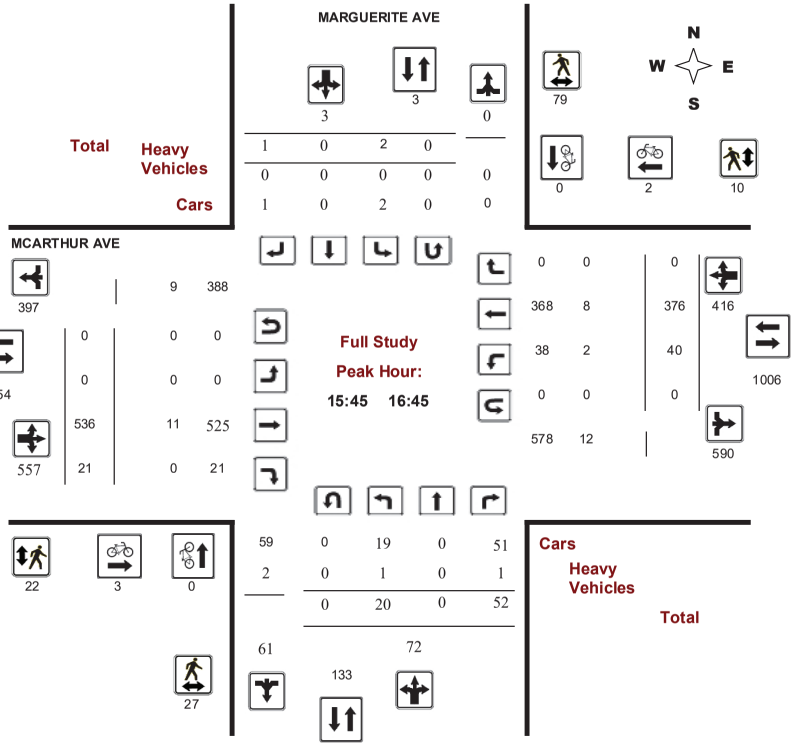
Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 26, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor 1.39

	MARGUERITE AVE								MCARTHUR AVE									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	6	0	14	**20**	0	0	0	**0**	**20**	1	265	9	**275**	46	358	2	**406**	**681**	**701**
08:00 09:00	9	0	31	**40**	0	0	0	**0**	**40**	0	338	19	**357**	46	395	3	**444**	**801**	**841**
09:00 10:00	5	0	14	**19**	0	0	0	**0**	**19**	1	234	17	**252**	22	283	1	**306**	**558**	**577**
11:30 12:30	7	0	15	**22**	1	0	0	**1**	**23**	0	253	20	**273**	27	214	0	**241**	**514**	**537**
12:30 13:30	13	0	24	**37**	0	0	0	**0**	**37**	0	237	19	**256**	27	259	1	**287**	**543**	**580**
15:00 16:00	12	0	55	**67**	0	0	1	**1**	**68**	0	472	11	**483**	32	327	0	**359**	**842**	**910**
16:00 17:00	21	0	51	**72**	4	0	1	**5**	**77**	0	530	26	**556**	36	360	0	**396**	**952**	**1029**
17:00 18:00	18	0	33	**51**	0	0	0	**0**	**51**	0	403	17	**420**	35	277	0	**312**	**732**	**783**
Sub Total	91	0	237	**328**	5	0	2	**7**	**335**	2	2732	138	**2872**	271	2473	7	**2751**	**5623**	**5958**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	91	0	237	**328**	5	0	2	**7**	**335**	2	2732	138	**2872**	271	2473	7	**2751**	**5623**	**5958**
EQ 12Hr	126	0	329	**456**	7	0	3	**10**	**466**	3	3797	192	**3992**	377	3437	10	**3824**	**7816**	**8282**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	126	0	329	**456**	7	0	3	**10**	**466**	3	3797	192	**3992**	377	3437	10	**3824**	**7816**	**8282**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	166	0	432	**597**	9	0	4	**13**	**610**	4	4975	251	**5230**	493	4503	13	**5009**	**10239**	**10849**

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study 15 Minute Increments

		MARGUERITE AVE									MCARTHUR AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	3	0	2	5	0	0	0	0	21	0	43	4	47	11	59	1	71	21	123
07:15	07:30	1	0	4	5	0	0	0	0	21	0	60	2	62	14	95	0	109	21	176
07:30	07:45	0	0	3	3	0	0	0	0	16	1	92	3	96	9	96	0	105	16	204
07:45	08:00	2	0	5	7	0	0	0	0	20	0	70	0	70	12	108	1	121	20	198
08:00	08:15	3	0	10	13	0	0	0	0	32	0	94	4	98	13	88	2	103	32	214
08:15	08:30	5	0	5	10	0	0	0	0	24	0	86	3	89	11	94	0	105	24	204
08:30	08:45	1	0	10	11	0	0	0	0	29	0	82	7	89	10	114	1	125	29	225
08:45	09:00	0	0	6	6	0	0	0	0	23	0	76	5	81	12	99	0	111	23	198
09:00	09:15	1	0	7	8	0	0	0	0	26	1	63	7	71	9	94	1	104	26	183
09:15	09:30	1	0	0	1	0	0	0	0	7	0	55	2	57	4	71	0	75	7	133
09:30	09:45	2	0	1	3	0	0	0	0	7	0	62	0	62	4	67	0	71	7	136
09:45	10:00	1	0	6	7	0	0	0	0	20	0	54	8	62	5	51	0	56	20	125
11:30	11:45	1	0	5	6	0	0	0	0	9	0	64	3	67	0	64	0	64	9	137
11:45	12:00	0	0	2	2	0	0	0	0	17	0	50	7	57	8	41	0	49	17	108
12:00	12:15	2	0	5	7	1	0	0	1	27	0	72	7	79	12	57	0	69	27	156
12:15	12:30	4	0	3	7	0	0	0	0	17	0	67	3	70	7	52	0	59	17	136
12:30	12:45	3	0	5	8	0	0	0	0	23	0	56	6	62	9	75	0	84	23	154
12:45	13:00	1	0	8	9	0	0	0	0	16	0	68	4	72	3	67	0	70	16	151
13:00	13:15	5	0	5	10	0	0	0	0	28	0	66	6	72	11	48	1	60	28	142
13:15	13:30	4	0	6	10	0	0	0	0	17	0	47	3	50	4	69	0	73	17	133
15:00	15:15	5	0	13	18	0	0	1	1	31	0	117	3	120	9	71	0	80	31	219
15:15	15:30	1	0	8	9	0	0	0	0	19	0	99	4	103	6	76	0	82	19	194
15:30	15:45	2	0	23	25	0	0	0	0	37	0	123	3	126	9	84	0	93	37	244
15:45	16:00	4	0	11	15	0	0	0	0	24	0	133	1	134	8	96	0	104	24	253
16:00	16:15	7	0	16	23	1	0	1	2	40	0	124	5	129	10	94	0	104	40	258
16:15	16:30	4	0	18	22	1	0	0	1	45	0	140	7	147	15	106	0	121	45	291
16:30	16:45	5	0	7	12	0	0	0	0	27	0	139	8	147	7	80	0	87	27	246
16:45	17:00	5	0	10	15	2	0	0	2	27	0	127	6	133	4	80	0	84	27	234
17:00	17:15	8	0	9	17	0	0	0	0	34	0	125	6	131	11	77	0	88	34	236
17:15	17:30	6	0	8	14	0	0	0	0	35	0	108	7	115	14	69	0	83	35	212
17:30	17:45	3	0	10	13	0	0	0	0	21	0	84	3	87	5	76	0	81	21	181
17:45	18:00	1	0	6	7	0	0	0	0	13	0	86	1	87	5	55	0	60	13	154
Total:		91	0	237	328	5	0	2	7	753	2	2732	138	2872	271	2473	7	2751	753	5,958

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study Cyclist Volume

		MARGUERITE AVE			MCARTHUR AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	1	1	1
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	1	1	1
07:45	08:00	0	0	0	0	1	1	1
08:00	08:15	0	0	0	0	2	2	2
08:15	08:30	1	0	1	1	1	2	3
08:30	08:45	1	0	1	0	1	1	2
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	1	1	1
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	1	1	1
09:45	10:00	0	0	0	0	2	2	2
11:30	11:45	0	0	0	1	0	1	1
11:45	12:00	0	0	0	0	1	1	1
12:00	12:15	0	0	0	1	0	1	1
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	1	0	1	0	0	0	1
13:15	13:30	0	0	0	1	0	1	1
15:00	15:15	0	0	0	1	1	2	2
15:15	15:30	0	0	0	1	0	1	1
15:30	15:45	0	0	0	0	1	1	1
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	2	2	2
16:15	16:30	0	0	0	2	0	2	2
16:30	16:45	0	0	0	1	0	1	1
16:45	17:00	0	0	0	2	0	2	2
17:00	17:15	0	0	0	0	3	3	3
17:15	17:30	0	0	0	1	0	1	1
17:30	17:45	0	0	0	0	2	2	2
17:45	18:00	1	0	1	1	0	1	2
Total		4	0	4	13	21	34	38

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study Pedestrian Volume

Time Period	MARGUERITE AVE NB Approach (E or W Crossing)	MARGUERITE AVE SB Approach (E or W Crossing)	MARGUERITE AVE Total	MCARTHUR AVE EB Approach (N or S Crossing)	MCARTHUR AVE WB Approach (N or S Crossing)	MCARTHUR AVE Total	Grand Total
07:00 07:15	3	20	**23**	9	2	**11**	**34**
07:15 07:30	1	12	**13**	8	2	**10**	**23**
07:30 07:45	0	12	**12**	6	1	**7**	**19**
07:45 08:00	6	18	**24**	4	1	**5**	**29**
08:00 08:15	5	14	**19**	6	2	**8**	**27**
08:15 08:30	6	19	**25**	10	2	**12**	**37**
08:30 08:45	7	19	**26**	12	4	**16**	**42**
08:45 09:00	3	22	**25**	7	1	**8**	**33**
09:00 09:15	4	13	**17**	10	2	**12**	**29**
09:15 09:30	1	9	**10**	8	1	**9**	**19**
09:30 09:45	1	5	**6**	4	3	**7**	**13**
09:45 10:00	1	5	**6**	4	0	**4**	**10**
11:30 11:45	0	4	**4**	3	1	**4**	**8**
11:45 12:00	0	9	**9**	7	0	**7**	**16**
12:00 12:15	5	18	**23**	28	1	**29**	**52**
12:15 12:30	9	4	**13**	25	3	**28**	**41**
12:30 12:45	10	7	**17**	21	3	**24**	**41**
12:45 13:00	4	18	**22**	15	1	**16**	**38**
13:00 13:15	4	11	**15**	13	3	**16**	**31**
13:15 13:30	3	10	**13**	6	1	**7**	**20**
15:00 15:15	9	24	**33**	9	0	**9**	**42**
15:15 15:30	2	11	**13**	7	0	**7**	**20**
15:30 15:45	7	21	**28**	6	5	**11**	**39**
15:45 16:00	9	19	**28**	4	3	**7**	**35**
16:00 16:15	6	26	**32**	3	2	**5**	**37**
16:15 16:30	8	10	**18**	8	2	**10**	**28**
16:30 16:45	4	24	**28**	7	3	**10**	**38**
16:45 17:00	8	10	**18**	8	3	**11**	**29**
17:00 17:15	3	15	**18**	7	1	**8**	**26**
17:15 17:30	6	11	**17**	7	4	**11**	**28**
17:30 17:45	3	5	**8**	5	0	**5**	**13**
17:45 18:00	3	4	**7**	1	2	**3**	**10**
Total	141	429	**570**	278	59	**337**	**907**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study Heavy Vehicles

Time Period		MARGUERITE AVE Northbound LT	ST	RT	N TOT	MARGUERITE AVE Southbound LT	ST	RT	S TOT	STR TOT	MCARTHUR AVE Eastbound LT	ST	RT	E TOT	MCARTHUR AVE Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**3**	0	1	0	**3**	**6**	**3**
07:15	07:30	0	0	2	**3**	0	0	0	**0**	**3**	0	1	0	**3**	1	2	0	**6**	**9**	**6**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**6**	0	5	0	**6**	**12**	**6**
07:45	08:00	0	0	0	**1**	0	0	0	**0**	**1**	0	2	0	**4**	1	2	0	**5**	**9**	**5**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**4**	0	3	0	**4**	**8**	**4**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**3**	0	1	0	**3**	**6**	**3**
08:30	08:45	1	0	0	**2**	0	0	0	**0**	**2**	0	1	0	**6**	1	4	0	**6**	**12**	**7**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**8**	0	4	0	**8**	**16**	**8**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**10**	0	7	0	**10**	**20**	**10**
09:15	09:30	0	0	0	**1**	0	0	0	**0**	**1**	0	2	1	**5**	0	2	0	**4**	**9**	**5**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**5**	0	3	0	**5**	**10**	**5**
09:45	10:00	0	0	0	**2**	0	0	0	**0**	**2**	0	4	2	**6**	0	0	0	**4**	**10**	**6**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**11**	0	5	0	**11**	**22**	**11**
11:45	12:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	0	0	**1**	**2**	**1**
12:00	12:15	0	0	0	**1**	0	0	0	**0**	**1**	0	3	0	**5**	1	2	0	**6**	**11**	**6**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	0	0	**3**	**6**	**3**
12:30	12:45	0	0	0	**2**	0	0	0	**0**	**2**	0	4	0	**10**	2	6	0	**12**	**22**	**12**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	8	0	**10**	0	2	0	**10**	**20**	**10**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**5**	0	2	0	**5**	**10**	**5**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**7**	0	4	0	**7**	**14**	**7**
15:00	15:15	0	0	1	**1**	0	0	0	**0**	**1**	0	4	0	**6**	0	2	0	**7**	**13**	**7**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**4**	0	3	0	**4**	**8**	**4**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**7**	0	4	0	**7**	**14**	**7**
15:45	16:00	0	0	1	**2**	0	0	0	**0**	**2**	0	3	0	**5**	1	2	0	**7**	**12**	**7**
16:00	16:15	1	0	0	**1**	0	0	0	**0**	**1**	0	3	0	**6**	0	2	0	**5**	**11**	**6**
16:15	16:30	0	0	0	**1**	0	0	0	**0**	**1**	0	2	0	**5**	1	3	0	**6**	**11**	**6**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**4**	0	1	0	**4**	**8**	**4**
16:45	17:00	1	0	0	**2**	0	0	0	**0**	**2**	0	4	1	**7**	0	1	0	**5**	**12**	**7**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	0	0	**2**	**4**	**2**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**4**	0	2	0	**4**	**8**	**4**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**3**	0	1	0	**3**	**6**	**3**
17:45	18:00	0	0	0	**1**	0	0	0	**0**	**1**	0	3	0	**4**	1	1	0	**5**	**9**	**5**
Total:	None	3	0	4	**20**	0	0	0	**0**	**20**	0	88	4	**172**	9	77	0	**178**	**350**	**185**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MARGUERITE AVE @ MCARTHUR AVE

Survey Date: Tuesday, March 26, 2019 **WO No:** 38444

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

Full Study 15 Minute U-Turn Total

		MARGUERITE AVE		MCARTHUR AVE		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0

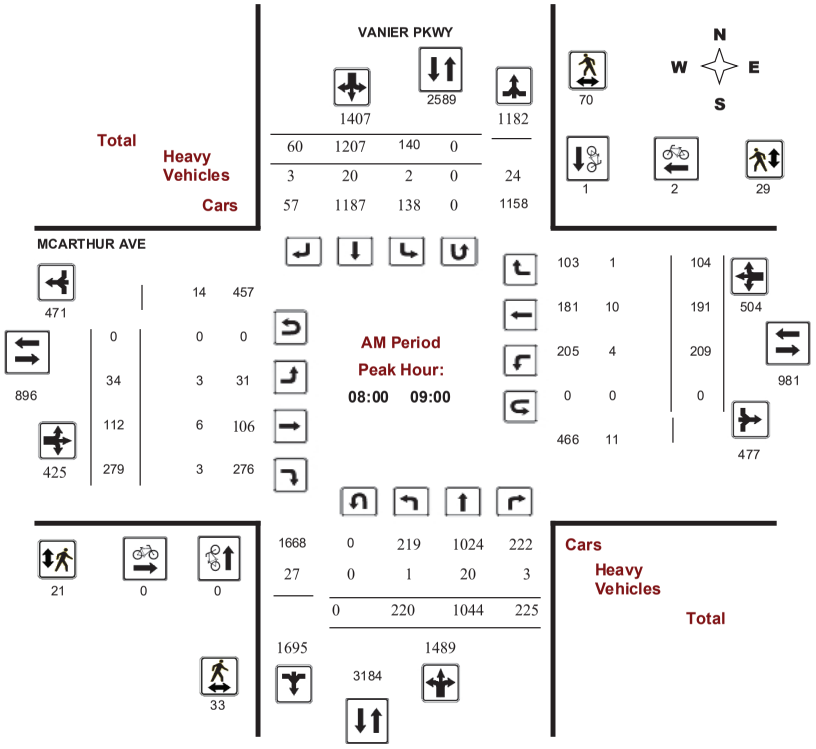
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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



Comments

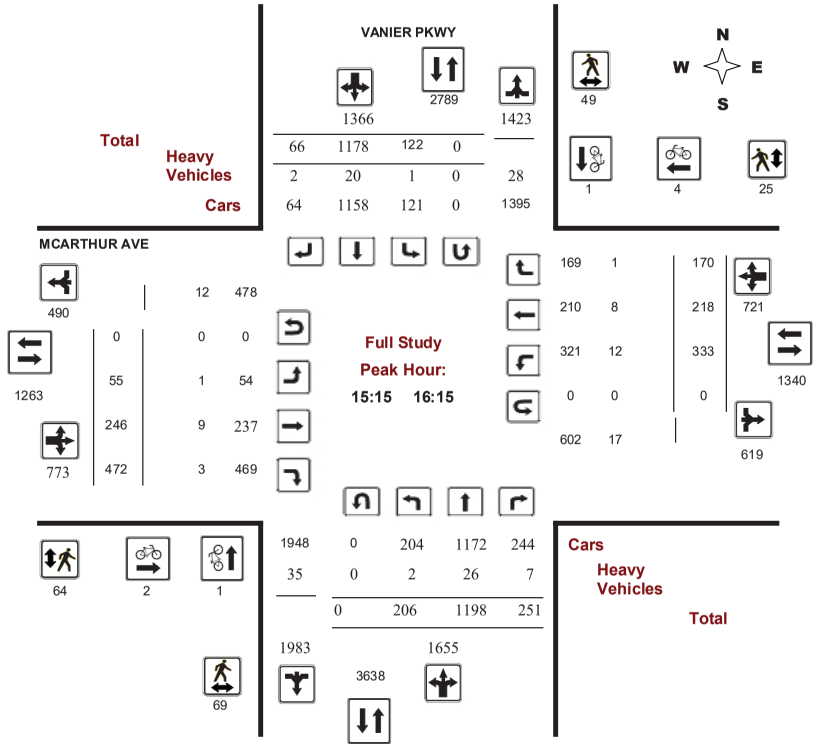
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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



Comments

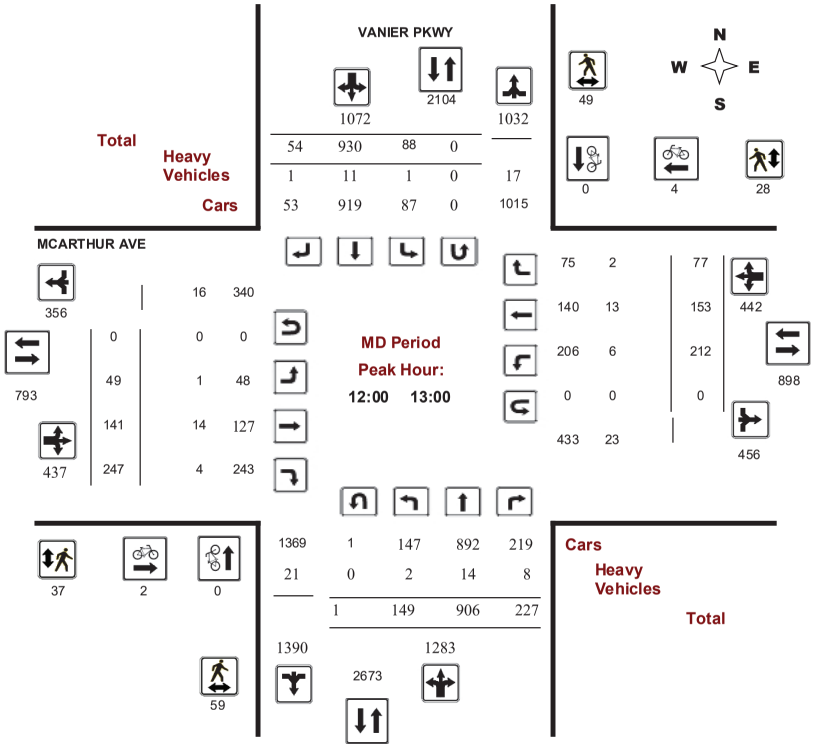
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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



Comments

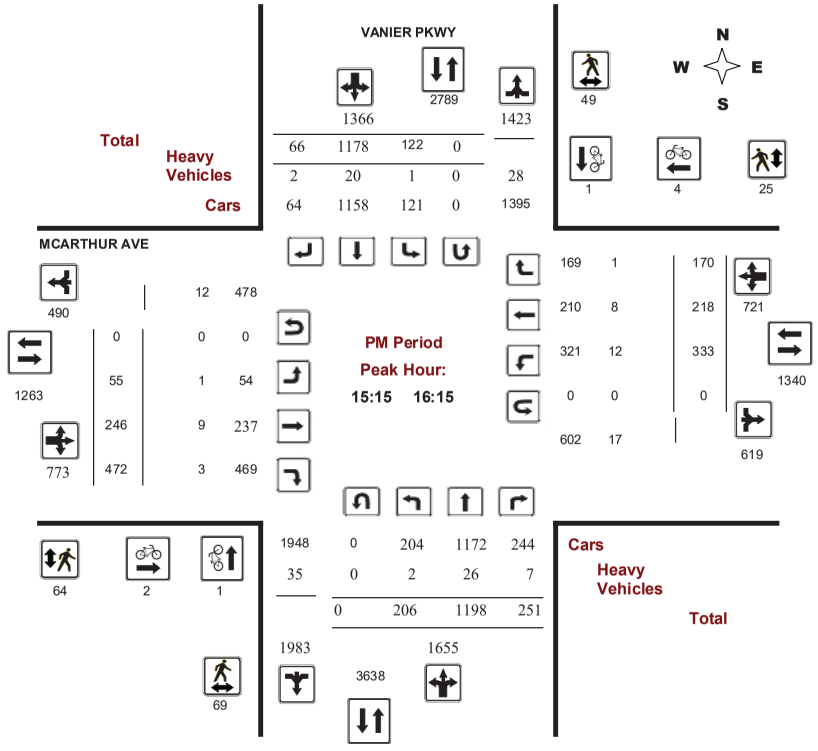
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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



Transportation Services - Traffic Services

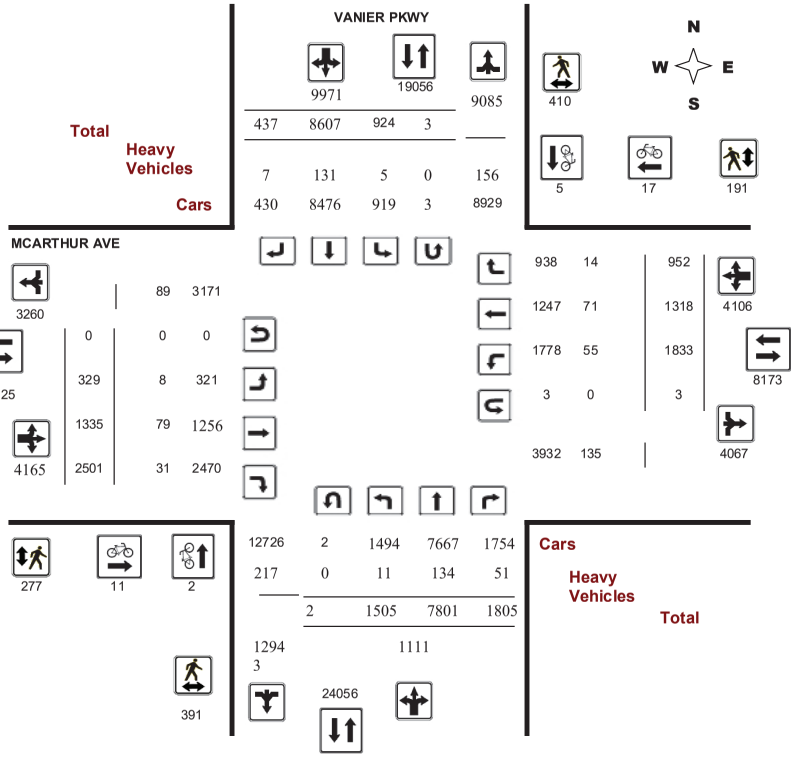
Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study Diagram



Transportation Services - Traffic Services

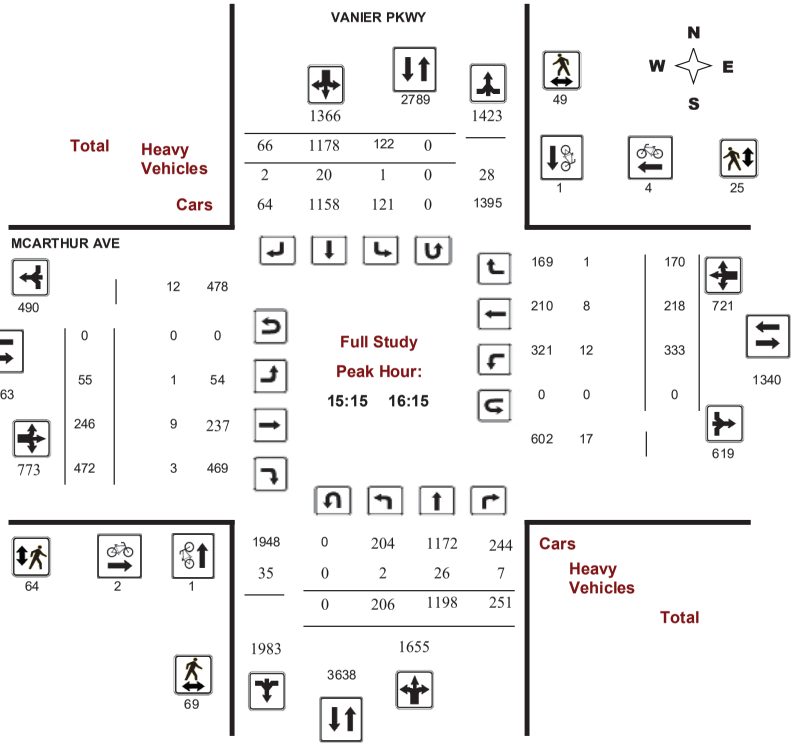
Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 26, 2019

Total Observed U-Turns

Northbound: 2 Southbound: 3

Eastbound: 0 Westbound: 3

AADT Factor 1.39

	VANIER PKWY									MCARTHUR AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	200	794	163	**1157**	175	1027	45	**1247**	**2404**	19	106	186	**311**	201	162	96	**459**	**770**	**3174**
08:00 09:00	220	1044	225	**1489**	140	1207	60	**1407**	**2896**	34	112	279	**425**	209	191	104	**504**	**929**	**3825**
09:00 10:00	202	923	195	**1320**	80	1142	49	**1271**	**2591**	35	107	196	**338**	194	108	114	**416**	**754**	**3345**
11:30 12:30	135	867	199	**1201**	87	941	50	**1078**	**2279**	31	129	240	**400**	204	129	82	**415**	**815**	**3094**
12:30 13:30	151	769	214	**1134**	78	979	56	**1113**	**2247**	46	129	250	**425**	224	141	71	**436**	**861**	**3108**
15:00 16:00	200	1196	255	**1651**	119	1148	65	**1332**	**2983**	54	231	477	**762**	349	209	195	**753**	**1515**	**4498**
16:00 17:00	207	1144	271	**1622**	103	1066	54	**1223**	**2845**	55	286	492	**833**	245	216	140	**601**	**1434**	**4279**
17:00 18:00	190	1064	283	**1537**	142	1097	58	**1297**	**2834**	55	235	381	**671**	207	162	150	**519**	**1190**	**4024**
Sub Total	1505	7801	1805	**11111**	924	8607	437	**9968**	**21079**	329	1335	2501	**4165**	1833	1318	952	**4103**	**8268**	**29347**
U Turns				**2**				**3**	**5**				**0**				**3**	**3**	**8**
Total	1505	7801	1805	**11113**	924	8607	437	**9971**	**21084**	329	1335	2501	**4165**	1833	1318	952	**4106**	**8271**	**29355**
EQ 12Hr	2092	10843	2509	**15447**	1284	11964	607	**13860**	**29307**	457	1856	3476	**5789**	2548	1832	1323	**5707**	**11497**	**40803**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	2092	10843	2509	**15447**	1284	11964	607	**13860**	**29307**	457	1856	3476	**5789**	2548	1832	1323	**5707**	**11497**	**40803**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	2740	14205	3287	**20236**	1683	15672	796	**18156**	**38392**	599	2431	4554	**7584**	3338	2400	1733	**7477**	**15061**	**53453**

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study 15 Minute Increments

		VANIER PKWY									MCARTHUR AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	47	160	40	247	26	305	11	342	1153	3	19	31	53	48	27	17	92	1153	734
07:15	07:30	50	161	42	253	57	270	10	337	1144	4	22	41	67	53	35	25	113	1144	770
07:30	07:45	42	217	39	298	50	175	17	242	1070	3	36	62	101	53	53	20	127	1070	768
07:45	08:00	61	256	42	359	42	277	7	329	1366	9	29	52	90	47	47	34	130	1366	908
08:00	08:15	54	277	51	382	36	286	15	337	1423	6	35	77	118	43	41	15	99	1423	936
08:15	08:30	60	245	53	358	33	287	18	338	1396	11	26	63	100	56	43	38	137	1396	933
08:30	08:45	49	275	52	376	31	367	14	412	1592	6	17	73	96	57	51	26	134	1592	1018
08:45	09:00	57	247	69	373	40	267	13	320	1362	11	34	66	111	53	56	25	134	1362	938
09:00	09:15	69	235	54	358	22	315	9	346	1411	8	28	59	95	54	37	36	127	1411	926
09:15	09:30	49	248	47	344	20	275	17	312	1311	7	25	41	73	47	22	37	106	1311	835
09:30	09:45	56	222	45	323	17	282	13	312	1286	11	28	52	91	62	21	22	105	1286	831
09:45	10:00	28	218	49	295	21	270	10	301	1187	9	26	44	79	31	28	19	78	1187	753
11:30	11:45	37	192	38	267	20	235	6	261	1093	4	26	64	94	53	40	17	110	1093	732
11:45	12:00	31	200	61	292	28	258	15	301	1176	5	27	54	86	43	22	23	88	1176	767
12:00	12:15	26	230	54	310	22	203	14	239	1129	10	48	66	124	51	42	20	113	1129	786
12:15	12:30	41	245	46	332	17	245	15	277	1246	12	28	56	96	57	25	22	104	1246	809
12:30	12:45	44	206	64	314	21	239	14	274	1194	16	31	64	111	61	48	20	129	1194	828
12:45	13:00	38	225	63	327	28	243	11	282	1208	11	34	61	106	43	38	15	96	1208	811
13:00	13:15	29	191	46	266	17	229	17	263	1130	15	34	69	118	70	32	27	129	1130	776
13:15	13:30	40	147	41	228	12	268	14	294	1056	4	30	56	90	50	23	9	82	1056	694
15:00	15:15	45	305	70	420	23	264	12	299	1571	12	58	123	193	84	47	64	195	1571	1107
15:15	15:30	49	320	59	428	37	325	9	371	1684	14	48	105	167	88	48	33	169	1684	1135
15:30	15:45	50	291	65	406	29	228	20	277	1493	13	69	128	210	97	67	53	217	1493	1110
15:45	16:00	56	280	61	397	30	331	24	385	1654	15	56	121	192	80	47	45	172	1654	1146
16:00	16:15	51	307	66	424	26	294	13	333	1596	13	73	118	204	68	56	39	163	1596	1124
16:15	16:30	67	277	70	414	23	238	15	276	1450	15	81	141	237	50	65	39	154	1450	1081
16:30	16:45	39	303	71	413	18	292	13	323	1561	18	69	115	202	66	49	31	146	1561	1084
16:45	17:00	50	257	64	371	36	242	13	291	1380	9	63	118	190	61	46	31	138	1380	990
17:00	17:15	53	255	77	385	36	290	16	342	1503	10	49	123	182	51	40	47	138	1503	1047
17:15	17:30	37	266	66	370	34	298	20	352	1483	11	70	101	182	53	54	31	138	1483	1042
17:30	17:45	54	242	67	363	38	270	11	319	1390	18	46	92	156	54	37	32	123	1390	961
17:45	18:00	46	301	73	420	34	239	11	284	1414	16	70	65	151	49	31	40	120	1414	975
Total:		1505	7801	1805	1111	924	8607	437	9971	43112	329	1335	2501	4165	1833	1318	952	4106	43112	29,355

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study Cyclist Volume

		VANIER PKWY			MCARTHUR AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	1	2	3	3
07:15	07:30	0	0	0	0	1	1	1
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	1	1	1
08:15	08:30	0	1	1	0	0	0	1
08:30	08:45	0	0	0	0	1	1	1
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	1	1	1
09:30	09:45	0	0	0	0	2	2	2
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	1	1	1
12:00	12:15	0	0	0	1	0	1	1
12:15	12:30	0	0	0	1	3	4	4
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	1	1	1
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	1	1	0	0	0	1
15:45	16:00	1	0	1	0	3	3	4
16:00	16:15	0	0	0	2	1	3	3
16:15	16:30	0	0	0	3	0	3	3
16:30	16:45	1	0	1	2	0	2	3
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	1	1	0	0	0	1
17:15	17:30	0	0	0	1	0	1	1
17:30	17:45	0	1	1	0	0	0	1
17:45	18:00	0	1	1	0	0	0	1
Total		2	5	7	11	17	28	35

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study Pedestrian Volume

Time Period	VANIER PKWY NB Approach (E or W Crossing)	VANIER PKWY SB Approach (E or W Crossing)	VANIER PKWY Total	MCARTHUR AVE EB Approach (N or S Crossing)	MCARTHUR AVE WB Approach (N or S Crossing)	MCARTHUR AVE Total	Grand Total
07:00 07:15	5	22	**27**	2	6	**8**	**35**
07:15 07:30	2	15	**17**	1	6	**7**	**24**
07:30 07:45	6	15	**21**	0	6	**6**	**27**
07:45 08:00	12	18	**30**	2	15	**17**	**47**
08:00 08:15	11	11	**22**	6	9	**15**	**37**
08:15 08:30	9	20	**29**	3	9	**12**	**41**
08:30 08:45	6	14	**20**	2	5	**7**	**27**
08:45 09:00	7	25	**32**	10	6	**16**	**48**
09:00 09:15	1	8	**9**	0	2	**2**	**11**
09:15 09:30	0	8	**8**	4	2	**6**	**14**
09:30 09:45	0	2	**2**	4	4	**8**	**10**
09:45 10:00	4	5	**9**	3	4	**7**	**16**
11:30 11:45	14	7	**21**	10	5	**15**	**36**
11:45 12:00	10	17	**27**	9	3	**12**	**39**
12:00 12:15	21	11	**32**	9	8	**17**	**49**
12:15 12:30	15	9	**24**	13	9	**22**	**46**
12:30 12:45	12	10	**22**	4	7	**11**	**33**
12:45 13:00	11	19	**30**	11	4	**15**	**45**
13:00 13:15	13	9	**22**	8	5	**13**	**35**
13:15 13:30	13	9	**22**	5	4	**9**	**31**
15:00 15:15	15	25	**40**	13	8	**21**	**61**
15:15 15:30	9	8	**17**	8	5	**13**	**30**
15:30 15:45	13	14	**27**	12	8	**20**	**47**
15:45 16:00	23	6	**29**	22	6	**28**	**57**
16:00 16:15	24	21	**45**	22	6	**28**	**73**
16:15 16:30	22	13	**35**	17	6	**23**	**58**
16:30 16:45	21	15	**36**	18	5	**23**	**59**
16:45 17:00	17	19	**36**	9	11	**20**	**56**
17:00 17:15	14	14	**28**	14	1	**15**	**43**
17:15 17:30	24	11	**35**	13	4	**17**	**52**
17:30 17:45	18	8	**26**	13	4	**17**	**43**
17:45 18:00	19	2	**21**	10	8	**18**	**39**
Total	391	410	**801**	277	191	**468**	**1269**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study Heavy Vehicles

Time Period		VANIER PKWY Northbound LT	ST	RT	N TOT	VANIER PKWY Southbound LT	ST	RT	S TOT	STR TOT	MCARTHUR AVE Eastbound LT	ST	RT	E TOT	MCARTHUR AVE Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	5	1	**15**	0	5	0	**12**	**27**	0	3	0	**6**	4	3	2	**13**	**19**	**23**
07:15	07:30	1	5	1	**12**	1	2	0	**8**	**20**	0	1	0	**4**	3	2	0	**8**	**12**	**16**
07:30	07:45	1	4	2	**12**	0	3	0	**8**	**20**	0	3	1	**8**	1	3	1	**10**	**18**	**19**
07:45	08:00	0	5	0	**9**	0	2	0	**7**	**16**	0	2	1	**6**	1	3	0	**6**	**12**	**14**
08:00	08:15	0	7	2	**14**	0	3	0	**11**	**25**	1	1	1	**6**	1	3	0	**7**	**13**	**19**
08:15	08:30	0	1	0	**6**	0	4	1	**6**	**12**	0	1	0	**2**	1	0	0	**2**	**4**	**8**
08:30	08:45	0	7	0	**17**	1	8	2	**20**	**37**	1	0	1	**7**	1	3	1	**6**	**13**	**25**
08:45	09:00	1	5	1	**14**	1	5	0	**12**	**26**	1	4	1	**11**	1	4	0	**11**	**22**	**24**
09:00	09:15	1	5	3	**22**	0	7	0	**14**	**36**	1	3	3	**13**	3	5	1	**15**	**28**	**32**
09:15	09:30	0	5	4	**21**	0	10	1	**16**	**37**	0	3	0	**6**	2	2	0	**11**	**17**	**27**
09:30	09:45	1	5	2	**14**	0	4	0	**9**	**23**	0	3	0	**6**	2	2	0	**9**	**15**	**19**
09:45	10:00	0	6	1	**12**	0	2	0	**10**	**22**	1	2	1	**5**	2	1	1	**7**	**12**	**17**
11:30	11:45	0	2	1	**11**	0	5	0	**7**	**18**	0	4	2	**11**	1	5	0	**11**	**22**	**20**
11:45	12:00	0	3	4	**14**	0	5	0	**9**	**23**	0	1	2	**3**	0	0	1	**6**	**9**	**16**
12:00	12:15	0	1	1	**11**	0	6	0	**7**	**18**	0	3	0	**6**	3	3	0	**10**	**16**	**17**
12:15	12:30	0	3	0	**5**	0	2	0	**6**	**11**	0	1	0	**2**	0	1	1	**3**	**5**	**8**
12:30	12:45	1	8	3	**16**	0	1	1	**11**	**27**	1	2	1	**13**	2	7	0	**14**	**27**	**27**
12:45	13:00	1	2	4	**13**	1	2	0	**6**	**19**	0	8	3	**14**	1	2	1	**17**	**31**	**25**
13:00	13:15	0	6	2	**16**	0	3	0	**10**	**26**	1	4	2	**9**	3	2	0	**11**	**20**	**23**
13:15	13:30	1	1	1	**8**	0	3	0	**5**	**13**	0	1	1	**5**	1	2	1	**6**	**11**	**12**
15:00	15:15	0	2	2	**12**	0	3	0	**6**	**18**	0	4	1	**6**	4	1	1	**12**	**18**	**18**
15:15	15:30	1	9	1	**19**	1	3	0	**14**	**33**	1	1	0	**5**	5	2	0	**10**	**15**	**24**
15:30	15:45	1	6	2	**24**	0	9	0	**15**	**39**	0	2	2	**7**	4	2	0	**10**	**17**	**28**
15:45	16:00	0	2	1	**13**	0	7	2	**11**	**24**	0	1	1	**5**	2	1	0	**5**	**10**	**17**
16:00	16:15	0	9	3	**14**	0	1	0	**11**	**25**	0	5	0	**8**	1	3	1	**13**	**21**	**23**
16:15	16:30	1	5	1	**15**	0	5	0	**10**	**25**	0	3	3	**10**	0	3	0	**7**	**17**	**21**
16:30	16:45	0	4	0	**9**	0	3	0	**7**	**16**	0	3	1	**5**	1	1	0	**5**	**10**	**13**
16:45	17:00	0	2	2	**11**	0	5	0	**8**	**19**	0	2	1	**4**	1	1	1	**7**	**11**	**15**
17:00	17:15	0	3	1	**7**	0	2	0	**5**	**12**	0	1	1	**2**	0	0	0	**2**	**4**	**8**
17:15	17:30	0	3	1	**9**	0	3	0	**7**	**16**	0	2	0	**4**	2	2	1	**8**	**12**	**14**
17:30	17:45	0	2	3	**11**	0	4	0	**6**	**17**	0	2	1	**4**	1	1	0	**7**	**11**	**14**
17:45	18:00	0	1	1	**7**	0	4	0	**5**	**12**	0	3	0	**4**	1	1	0	**6**	**10**	**11**
Total:	None	11	134	51	**413**	5	131	7	**299**	**712**	8	79	31	**207**	55	71	14	**275**	**482**	**597**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ VANIER PKWY

Survey Date: Tuesday, March 26, 2019 **WO No:** 38463

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

Full Study 15 Minute U-Turn Total

Time Period		VANIER PKWY Northbound U-Turn Total	VANIER PKWY Southbound U-Turn Total	MCARTHUR AVE Eastbound U-Turn Total	MCARTHUR AVE Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	1	1
07:45	08:00	0	3	0	2	5
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	1	0	0	0	1
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	1	0	0	0	1
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		2	3	0	3	8

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCARTHUR AVE @ NORTH RIVER RD

Survey Date: Tuesday, March 19, 2019 **WO No:** 38447

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 19, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor 1.00

	NORTH RIVER RD								MCARTHUR AVE								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	2	67	20	**89**	287	56	5	**348**	**437**	1	5	0	**6**	12	11	110	**133**	**139**	**576**
08:00 09:00	3	125	29	**157**	332	102	4	**438**	**595**	1	6	3	**10**	8	9	165	**182**	**192**	**787**
09:00 10:00	6	125	18	**149**	201	107	2	**310**	**459**	0	4	2	**6**	11	5	103	**119**	**125**	**584**
11:30 12:30	5	122	22	**149**	228	119	4	**351**	**500**	1	5	3	**9**	10	3	131	**144**	**153**	**653**
12:30 13:30	4	112	28	**144**	241	109	5	**355**	**499**	4	6	1	**11**	14	2	138	**154**	**165**	**664**
15:00 16:00	2	148	36	**186**	409	139	1	**549**	**735**	4	25	6	**35**	24	11	217	**252**	**287**	**1022**
16:00 17:00	2	147	26	**175**	437	108	0	**545**	**720**	3	15	0	**18**	13	5	216	**234**	**252**	**972**
17:00 18:00	0	186	28	**214**	359	157	4	**520**	**734**	5	5	3	**13**	23	1	211	**235**	**248**	**982**
Sub Total	24	1032	207	**1263**	2494	897	25	**3416**	**4679**	19	71	18	**108**	115	47	1291	**1453**	**1561**	**6240**
U Turns				**0**				**1**	**1**				**0**				**0**	**0**	**1**
Total	24	1032	207	**1263**	2494	897	25	**3417**	**4680**	19	71	18	**108**	115	47	1291	**1453**	**1561**	**6241**
EQ 12Hr	33	1434	288	**1756**	3467	1247	35	**4750**	**6505**	26	99	25	**150**	160	65	1794	**2020**	**2170**	**8675**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	31	1352	271	**1655**	3267	1175	33	**4476**	**6505**	25	93	24	**141**	151	62	1691	**1903**	**2170**	**8675**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	41	1771	355	**2167**	4280	1539	43	**5864**	**8031**	33	122	31	**185**	197	81	2215	**2493**	**2678**	**10709**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

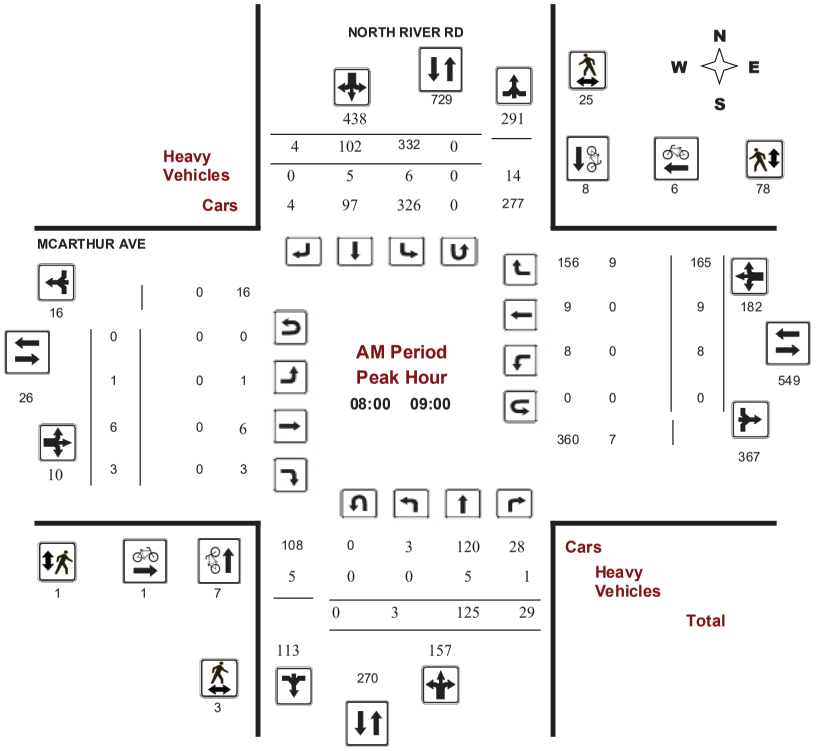
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MCARTHUR AVE @ NORTH RIVER RD

Survey Date: Tuesday, March 19, 2019 **WO No:** 38447

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



Comments

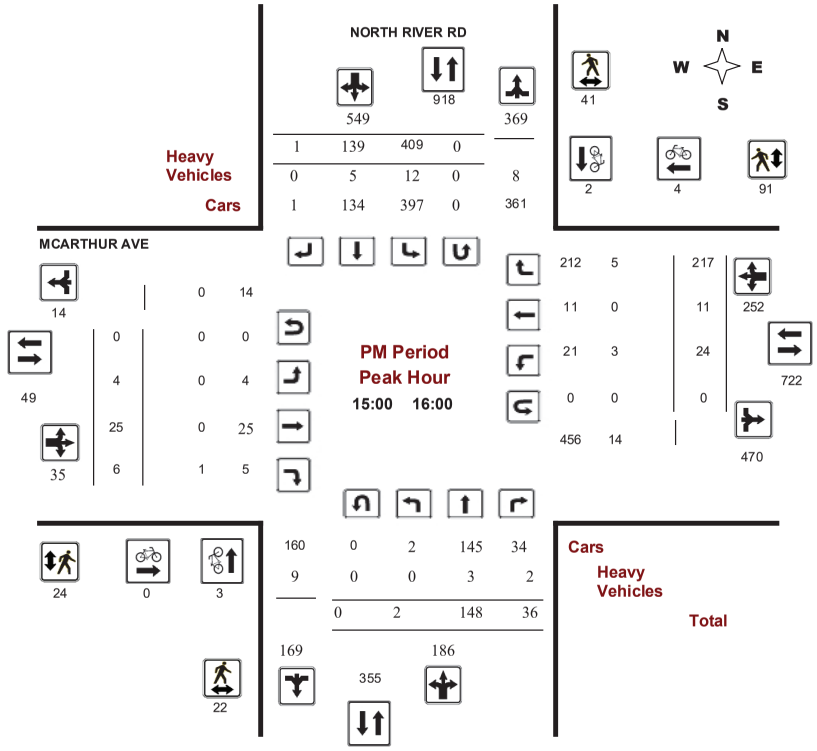
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MCARTHUR AVE @ NORTH RIVER RD

Survey Date: Tuesday, March 19, 2019 **WO No:** 38447

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



Comments

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	467	362	0	695	13	244	10	35	17	25	15
Future Volume (vph)	0	467	362	0	695	13	244	10	35	17	25	15
Satd. Flow (prot)	0	2927	0	0	3167	0	1595	1336	0	0	1519	0
Flt Permitted							0.950				0.985	
Satd. Flow (perm)	0	2927	0	0	3167	0	1581	1336	0	0	1499	0
Satd. Flow (RTOR)								39			15	
Lane Group Flow (vph)	0	921	0	0	786	0	271	50	0	0	64	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		29.0			29.0		24.0	49.0		17.0	17.0	
Total Split (%)		30.5%			30.5%		25.3%	51.6%		17.9%	17.9%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		34.4			34.4		22.9	34.1			10.1	
Actuated g/C Ratio		0.36			0.36		0.24	0.36			0.11	
v/c Ratio		0.87			0.69		0.70	0.10			0.37	
Control Delay		39.9			30.3		43.0	9.3			38.2	
Queue Delay		0.0			51.4		0.0	0.0			0.0	
Total Delay		39.9			81.7		43.0	9.3			38.2	
LOS		D			F		D	A			D	
Approach Delay		39.9			81.7			37.7			38.2	
Approach LOS		D			F			D			D	
Queue Length 50th (m)		82.6			64.2		45.1	1.4			8.5	
Queue Length 95th (m)		#130.0			90.7		68.3	8.6			20.8	
Internal Link Dist (m)		194.5			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1059			1146		386	619			181	
Starvation Cap Reductn		0			460		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.87			1.15		0.70	0.08			0.35	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	44%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

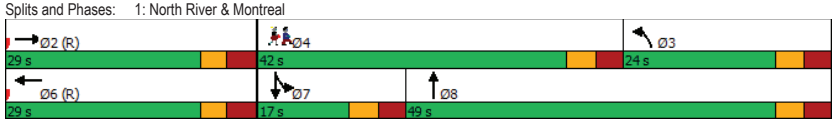
Intersection Summary

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 55.2	Intersection LOS: E
Intersection Capacity Utilization 59.1%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



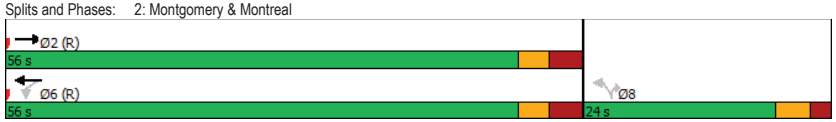
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	431	88	53	689	19	38
Future Volume (vph)	431	88	53	689	19	38
Satd. Flow (prot)	3131	0	0	3182	1658	1401
Flt Permitted				0.868	0.950	
Satd. Flow (perm)	3131	0	0	2771	1649	1379
Satd. Flow (RTOR)	56					42
Lane Group Flow (vph)	577	0	0	825	21	42
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	40.4		16.4	16.4	19.5	19.5
Total Split (s)	56.0		56.0	56.0	24.0	24.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%	30.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	66.1			66.1	10.8	10.8
Actuated g/C Ratio	0.83			0.83	0.14	0.14
v/c Ratio	0.22			0.36	0.09	0.19
Control Delay	3.0			4.1	30.6	12.2
Queue Delay	0.3			0.0	0.0	0.0
Total Delay	3.3			4.1	30.6	12.2
LOS	A			A	C	B
Approach Delay	3.3			4.1	18.3	
Approach LOS	A			A	B	
Queue Length 50th (m)	11.0			20.7	2.9	0.0
Queue Length 95th (m)	20.0			36.1	8.6	8.1
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2595			2288	381	351
Starvation Cap Reductn	1337			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.46			0.36	0.06	0.12

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 4.4	Intersection LOS: A
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	281	134	165	475	194	180	857	166	213	1096	137
Future Volume (vph)	35	281	134	165	475	194	180	857	166	213	1096	137
Satd. Flow (prot)	1642	1695	1483	1658	3018	0	1642	4573	0	1642	4649	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1597	1695	1385	1599	3018	0	1628	4573	0	1614	4649	0
Satd. Flow (RTOR)			149		42			29			16	
Lane Group Flow (vph)	39	312	149	183	744	0	200	1136	0	237	1370	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	20.0	41.0	41.0	20.0	41.0		30.0	49.0		30.0	49.0	
Total Split (%)	14.3%	29.3%	29.3%	14.3%	29.3%		21.4%	35.0%		21.4%	35.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	8.7	33.9	33.9	12.9	40.6		20.9	44.3		22.7	46.1	
Actuated g/C Ratio	0.06	0.24	0.24	0.09	0.29		0.15	0.32		0.16	0.33	
v/c Ratio	0.38	0.76	0.33	1.20	0.82		0.82	0.77		0.89	0.89	
Control Delay	72.8	62.5	8.3	190.0	53.2		88.6	48.6		90.2	52.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	72.8	62.5	8.3	190.0	53.2		88.6	48.6		90.2	52.5	
LOS	E	E	A	F	D		F	D		F	D	
Approach Delay		47.2			80.2			54.6			58.0	
Approach LOS		D			F			D			E	
Queue Length 50th (m)	10.6	80.9	0.0	~61.2	98.9		58.0	72.9		64.4	132.5	
Queue Length 95th (m)	22.2	#116.4	17.2	#108.9	#142.2		m73.5	87.2		#108.5	#165.2	
Internal Link Dist (m)		99.5			262.7			154.6			239.2	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	151	410	448	152	904		280	1466		280	1542	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.76	0.33	1.20	0.82		0.71	0.77		0.85	0.89	

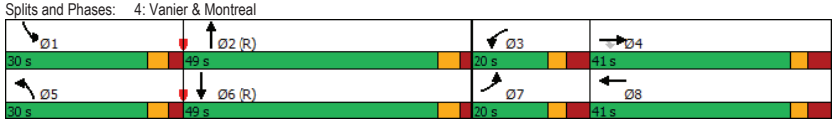
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 60.5	Intersection LOS: E
Intersection Capacity Utilization 95.4%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	34	274	0	0	397
Future Vol, veh/h	27	34	274	0	0	397
Conflicting Peds, #/hr	3	0	0	90	90	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	2	8	2	2	2
Mvmt Flow	30	38	304	0	0	441

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	528	304	0	-	-	-
Stage 1	304	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.705	6.23	-	-	-	-
Critical Hdwy Stg 1	5.505	-	-	-	-	-
Critical Hdwy Stg 2	5.905	-	-	-	-	-
Follow-up Hdwy	3.5665	3.319	-	-	-	-
Pot Cap-1 Maneuver	485	735	-	0	0	-
Stage 1	734	-	-	0	0	-
Stage 2	779	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	484	735	-	-	-	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	734	-	-	-	-	-
Stage 2	777	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	598	-
HCM Lane V/C Ratio	-	0.113	-
HCM Control Delay (s)	-	11.8	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	30	85	5	70
Future Vol, veh/h	0	0	30	85	5	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	33	94	6	78

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	160	0	
Stage 1	-	-	0	-	
Stage 2	-	-	160	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	831	-	
Stage 1	-	-	-	-	
Stage 2	-	-	869	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	831	-	
Mov Cap-2 Maneuver	-	-	831	-	
Stage 1	-	-	-	-	
Stage 2	-	-	869	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	10	5	15	20	20	5	5	0	10	15	90
Future Vol, veh/h	55	10	5	15	20	20	5	5	0	10	15	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	11	6	17	22	22	6	6	0	11	17	100

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	129	107	67	116	157	6	117	0	0	6	0	0
Stage 1	89	89	-	18	18	-	-	-	-	-	-	-
Stage 2	40	18	-	98	139	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	844	783	997	861	735	1077	1471	-	-	1615	-	-
Stage 1	918	821	-	1001	880	-	-	-	-	-	-	-
Stage 2	975	880	-	908	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	801	774	997	839	727	1077	1471	-	-	1615	-	-
Mov Cap-2 Maneuver	801	774	-	839	727	-	-	-	-	-	-	-
Stage 1	914	815	-	997	876	-	-	-	-	-	-	-
Stage 2	927	876	-	884	777	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.5	3.7	0.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1471	-	-	808	860	1615	-	-
HCM Lane V/C Ratio	0.004	-	-	0.096	0.071	0.007	-	-
HCM Control Delay (s)	7.5	0	-	9.9	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	6	3	8	9	165	3	115	29	322	98	4
Future Volume (vph)	1	6	3	8	9	165	3	115	29	322	98	4
Satd. Flow (prot)	0	1660	0	0	1705	1441	0	1624	0	1658	1687	0
Flt Permitted		0.989			0.922			0.997		0.654		
Satd. Flow (perm)	0	1644	0	0	1605	1341	0	1621	0	1042	1687	0
Satd. Flow (RTOR)		3				183		26			4	
Lane Group Flow (vph)	0	11	0	0	19	183	0	163	0	358	113	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	28.0	28.0		28.0	28.0	28.0	42.0	42.0		42.0	42.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		22.4			22.4	22.4		35.9		35.9	35.9	
Actuated g/C Ratio		0.32			0.32	0.32		0.51		0.51	0.51	
v/c Ratio		0.02			0.04	0.33		0.19		0.67	0.13	
Control Delay		14.6			11.1	8.1		8.4		20.4	9.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		14.6			11.1	8.1		8.4		20.4	9.1	
LOS		B			B	A		A		C	A	
Approach Delay		14.6			8.3			8.4			17.7	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		0.7			1.7	12.8		8.9		32.4	6.9	
Queue Length 95th (m)		3.8			m5.2	25.6		18.2		62.5	14.2	
Internal Link Dist (m)		22.5			128.8			367.7			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		528			513	553		844		534	867	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.02			0.04	0.33		0.19		0.67	0.13	

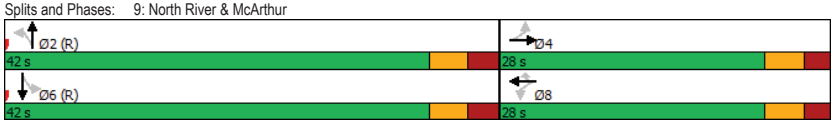
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 13.6	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	361	318	79	10	16
Future Vol, veh/h	10	361	318	79	10	16
Conflicting Peds, #/hr	100	0	0	100	1	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	2	5	3	2	2
Mvmt Flow	11	401	353	88	11	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	541	0	-	0	921	506
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	424	-
Critical Hdwy	4.2	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	988	-	-	-	300	566
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	911	-	-	-	251	518
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	609	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	911	-	-	-	368
HCM Lane V/C Ratio	0.012	-	-	-	0.079
HCM Control Delay (s)	9	0	-	-	15.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	353	19	46	395	9	31
Future Volume (vph)	353	19	46	395	9	31
Satd. Flow (prot)	1728	0	0	1736	1658	1483
Flt Permitted				0.929	0.950	
Satd. Flow (perm)	1728	0	0	1618	1551	1426
Satd. Flow (RTOR)	6					34
Lane Group Flow (vph)	413	0	0	490	10	34
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	53.8			53.8	13.6	13.6
Actuated g/C Ratio	0.77			0.77	0.19	0.19
v/c Ratio	0.31			0.39	0.03	0.11
Control Delay	4.7			8.4	20.1	8.4
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	4.7			8.4	20.1	8.4
LOS	A			A	C	A
Approach Delay	4.7			8.4	11.1	
Approach LOS	A			A	B	
Queue Length 50th (m)	10.4			43.2	1.2	0.0
Queue Length 95th (m)	28.4			m50.4	4.1	5.9
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					20.0	
Base Capacity (vph)	1329			1243	432	421
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.31			0.39	0.02	0.08

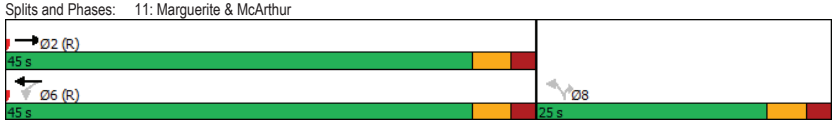
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 69.6%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	116	290	209	191	104	220	1044	225	140	1207	60
Future Volume (vph)	34	116	290	209	191	104	220	1044	225	140	1207	60
Satd. Flow (prot)	1551	1695	1483	3216	1695	1483	1658	3316	1483	1658	3316	1441
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1438	1695	1398	3092	1695	1320	1645	3316	1407	1644	3316	1342
Satd. Flow (RTOR)			246			168			219			121
Lane Group Flow (vph)	38	129	322	232	212	116	244	1160	250	156	1341	67
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.0	26.0	26.0	13.1	29.5	29.5	16.9	59.8	59.8	16.4	59.4	59.4
Actuated g/C Ratio	0.09	0.19	0.19	0.09	0.21	0.21	0.12	0.43	0.43	0.12	0.42	0.42
v/c Ratio	0.29	0.41	0.70	0.77	0.59	0.28	1.22	0.82	0.34	0.80	0.95	0.10
Control Delay	65.2	46.0	21.8	79.1	57.5	3.1	185.4	42.9	6.8	82.7	77.9	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	46.0	21.8	79.1	57.5	3.1	185.4	42.9	6.8	82.7	77.9	17.2
LOS	E	D	C	E	E	A	F	D	A	F	E	B
Approach Delay		31.5			55.2			58.5			75.8	
Approach LOS		C			E			E			E	
Queue Length 50th (m)	11.1	25.2	20.9	32.7	53.2	0.0	~82.7	159.2	5.4	45.6	~200.4	4.1
Queue Length 95th (m)	22.8	44.2	42.4	#48.7	80.0	3.8	#136.1	#200.7	24.4	m51.9	m#236.8	m6.6
Internal Link Dist (m)		122.9			141.8			130.7			202.5	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	152	363	492	317	363	414	200	1417	726	211	1405	639
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.36	0.65	0.73	0.58	0.28	1.22	0.82	0.34	0.74	0.95	0.10

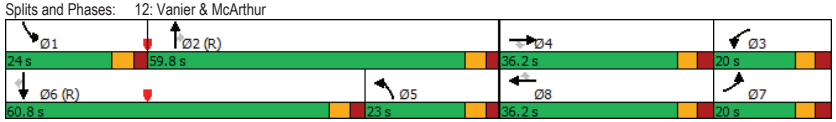
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 61.3	Intersection LOS: E
Intersection Capacity Utilization 93.2%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	384	430	0	4	4
Future Vol, veh/h	0	384	430	0	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	427	478	0	4	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	905	478
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	427	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	307	587
Stage 1	0	-	-	0	624	-
Stage 2	0	-	-	0	658	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	307	587
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	307	587
HCM Lane V/C Ratio	-	-	0.014	0.008
HCM Control Delay (s)	-	-	16.9	11.2
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	596	410	0	665	18	356	17	32	21	15	21
Future Volume (vph)	0	596	410	0	665	18	356	17	32	21	15	21
Satd. Flow (prot)	0	2913	0	0	3235	0	1658	1448	0	0	1523	0
Flt Permitted							0.950				0.982	
Satd. Flow (perm)	0	2913	0	0	3235	0	1648	1448	0	0	1470	0
Satd. Flow (RTOR)		142						36			19	
Lane Group Flow (vph)	0	1118	0	0	759	0	396	55	0	0	63	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		39.0			39.0		39.0	64.0		17.0	17.0	
Total Split (%)		32.5%			32.5%		32.5%	53.3%		14.2%	14.2%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		48.0			48.0		34.3	45.4			10.2	
Actuated g/C Ratio		0.40			0.40		0.29	0.38			0.08	
v/c Ratio		0.90			0.59		0.84	0.10			0.43	
Control Delay		40.7			31.6		55.6	11.3			47.7	
Queue Delay		0.0			52.2		0.0	0.0			0.0	
Total Delay		40.7			83.8		55.6	11.3			47.7	
LOS		D			F		E	B			D	
Approach Delay		40.7			83.8			50.2			47.7	
Approach LOS		D			F			D			D	
Queue Length 50th (m)		116.3			73.8		86.4	2.9			10.0	
Queue Length 95th (m)		#175.8			101.4		116.4	10.8			24.2	
Internal Link Dist (m)		179.1			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1249			1292		495	712			150	
Starvation Cap Reductn		0			640		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.90			1.16		0.80	0.08			0.42	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.5
Total Split (s)	42.0
Total Split (%)	35%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

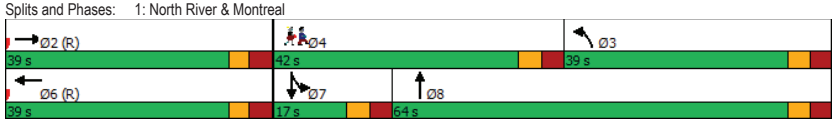
Intersection Summary

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 56.3	Intersection LOS: E
Intersection Capacity Utilization 71.1%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



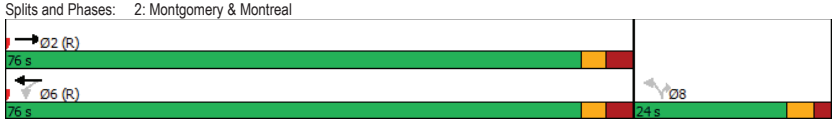
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	552	97	56	580	108	66
Future Volume (vph)	552	97	56	580	108	66
Satd. Flow (prot)	3184	0	0	3268	1658	1401
Flt Permitted				0.819	0.950	
Satd. Flow (perm)	3184	0	0	2683	1640	1346
Satd. Flow (RTOR)	47					73
Lane Group Flow (vph)	721	0	0	706	120	73
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	39.9		16.4	16.4	19.5	19.5
Total Split (s)	76.0		76.0	76.0	24.0	24.0
Total Split (%)	76.0%		76.0%	76.0%	24.0%	24.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	75.0			75.0	13.1	13.1
Actuated g/C Ratio	0.75			0.75	0.13	0.13
v/c Ratio	0.30			0.35	0.56	0.31
Control Delay	4.3			5.1	50.5	12.5
Queue Delay	1.6			0.0	0.0	0.0
Total Delay	6.0			5.1	50.5	12.5
LOS	A			A	D	B
Approach Delay	6.0			5.1	36.1	
Approach LOS	A			A	D	
Queue Length 50th (m)	17.6			19.7	22.3	0.0
Queue Length 95th (m)	29.8			33.6	37.9	11.6
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2400			2013	303	308
Starvation Cap Reductn	1445			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.75			0.35	0.40	0.24

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.2	Intersection LOS: A
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	366	177	156	333	198	229	1011	210	142	1019	94
Future Volume (vph)	51	366	177	156	333	198	229	1011	210	142	1019	94
Satd. Flow (prot)	1626	1695	1483	1658	2941	0	1658	4557	0	1658	4666	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1562	1695	1376	1600	2941	0	1633	4557	0	1636	4666	0
Satd. Flow (RTOR)			181		82			30			10	
Lane Group Flow (vph)	57	407	197	173	590	0	254	1356	0	158	1236	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	30.0	41.0	41.0	30.0	41.0		30.0	39.0		30.0	39.0	
Total Split (%)	21.4%	29.3%	29.3%	21.4%	29.3%		21.4%	27.9%		21.4%	27.9%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	10.3	37.8	37.8	19.0	49.2		23.2	38.7		18.3	33.8	
Actuated g/C Ratio	0.07	0.27	0.27	0.14	0.35		0.17	0.28		0.13	0.24	
v/c Ratio	0.48	0.89	0.39	0.77	0.54		0.92	1.06		0.73	1.09	
Control Delay	74.7	71.7	10.0	80.2	34.5		89.2	95.6		77.3	103.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.7	71.7	10.0	80.2	34.5		89.2	95.6		77.3	103.5	
LOS	E	E	A	F	C		F	F		E	F	
Approach Delay		53.6			44.9			94.6			100.5	
Approach LOS		D			D			F			F	
Queue Length 50th (m)	15.4	109.7	3.3	46.6	61.1		74.5	~144.4		42.6	~142.7	
Queue Length 95th (m)	29.2	#179.7	24.3	70.7	84.2		m79.2	m#168.3		64.3	#172.6	
Internal Link Dist (m)		99.5			237.5			154.5			139.4	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	265	457	503	271	1085		283	1282		283	1133	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.89	0.39	0.64	0.54		0.90	1.06		0.56	1.09	

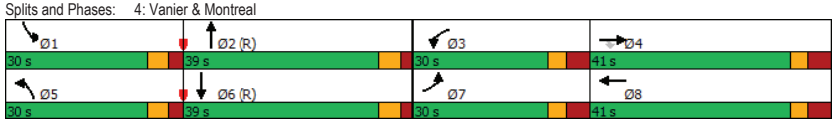
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 81.8	Intersection LOS: F
Intersection Capacity Utilization 95.1%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	115	47	370	0	0	434
Future Vol, veh/h	115	47	370	0	0	434
Conflicting Peds, #/hr	2	2	0	66	66	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	128	52	411	0	0	482

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	654	413	0	-	-	-
Stage 1	411	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	415	638	-	0	0	-
Stage 1	668	-	-	0	0	-
Stage 2	775	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	414	637	-	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	773	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	461	-
HCM Lane V/C Ratio	-	0.39	-
HCM Control Delay (s)	-	17.7	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	1.8	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	30	45	10	100
Future Vol, veh/h	0	0	30	45	10	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	33	50	11	111

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	116	0	
Stage 1	-	-	0	-	
Stage 2	-	-	116	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	880	-	
Stage 1	-	-	-	-	
Stage 2	-	-	909	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	880	-	
Mov Cap-2 Maneuver	-	-	880	-	
Stage 1	-	-	-	-	
Stage 2	-	-	909	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	20	10	5	10	20	5	10	0	15	20	60
Future Vol, veh/h	70	20	10	5	10	20	5	10	0	15	20	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	78	22	11	6	11	22	6	11	0	17	22	67

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	130	113	56	129	146	11	89	0	0	11	0	0
Stage 1	90	90	-	23	23	-	-	-	-	-	-	-
Stage 2	40	23	-	106	123	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	843	777	1011	844	745	1070	1506	-	-	1608	-	-
Stage 1	917	820	-	995	876	-	-	-	-	-	-	-
Stage 2	975	876	-	900	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	807	765	1011	807	734	1070	1506	-	-	1608	-	-
Mov Cap-2 Maneuver	807	765	-	807	734	-	-	-	-	-	-	-
Stage 1	913	811	-	991	872	-	-	-	-	-	-	-
Stage 2	939	872	-	856	785	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.1	2.5	1.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1506	-	-	814	909	1608	-	-
HCM Lane V/C Ratio	0.004	-	-	0.137	0.043	0.01	-	-
HCM Control Delay (s)	7.4	0	-	10.1	9.1	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	25	6	24	11	217	2	148	36	409	139	1
Future Volume (vph)	4	25	6	24	11	217	2	148	36	409	139	1
Satd. Flow (prot)	0	1633	0	0	1570	1483	0	1636	0	1642	1709	0
Flt Permitted		0.981			0.833			0.998		0.629		
Satd. Flow (perm)	0	1598	0	0	1316	1334	0	1632	0	976	1709	0
Satd. Flow (RTOR)		7				241		27			1	
Lane Group Flow (vph)	0	39	0	0	39	241	0	206	0	454	155	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	49.0	49.0		49.0	49.0	
Total Split (%)	34.7%	34.7%		34.7%	34.7%	34.7%	65.3%	65.3%		65.3%	65.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		20.4			20.4	20.4		42.9		42.9	42.9	
Actuated g/C Ratio		0.27			0.27	0.27		0.57		0.57	0.57	
v/c Ratio		0.09			0.11	0.45		0.22		0.81	0.16	
Control Delay		18.3			21.0	13.6		7.5		27.5	8.0	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		18.3			21.0	13.6		7.5		27.5	8.0	
LOS		B			C	B		A		C	A	
Approach Delay		18.3			14.7			7.5			22.6	
Approach LOS		B			B			A			C	
Queue Length 50th (m)		3.4			4.7	4.0		11.1		46.8	9.3	
Queue Length 95th (m)		10.0			12.4	35.6		20.8		#104.4	17.4	
Internal Link Dist (m)		22.5			128.8			119.0			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		439			357	538		945		558	977	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.09			0.11	0.45		0.22		0.81	0.16	

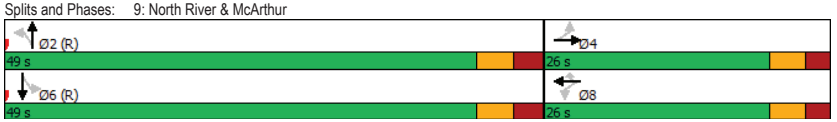
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 76.3%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	469	267	92	26	4
Future Vol, veh/h	7	469	267	92	26	4
Conflicting Peds, #/hr	76	0	0	76	0	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	3	2	8	2
Mvmt Flow	8	521	297	102	29	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	475	0	-	0	961	433
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	4.12	-	-	-	6.48	6.22
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.218	-	-	-	3.572	3.318
Pot Cap-1 Maneuver	1087	-	-	-	277	623
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	574	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1023	-	-	-	243	582
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1023	-	-	-	263
HCM Lane V/C Ratio	0.008	-	-	-	0.127
HCM Control Delay (s)	8.5	0	-	-	20.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	481	21	40	346	20	52
Future Volume (vph)	481	21	40	346	20	52
Satd. Flow (prot)	1730	0	0	1736	1658	1483
Flt Permitted				0.915	0.950	
Satd. Flow (perm)	1730	0	0	1594	1586	1425
Satd. Flow (RTOR)	5					58
Lane Group Flow (vph)	557	0	0	428	22	58
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	50.0		50.0	50.0	25.0	25.0
Total Split (%)	66.7%		66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	54.6			54.6	13.6	13.6
Actuated g/C Ratio	0.73			0.73	0.18	0.18
v/c Ratio	0.44			0.37	0.08	0.19
Control Delay	6.3			7.2	23.6	8.3
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	6.3			7.2	23.6	8.3
LOS	A			A	C	A
Approach Delay	6.3			7.2	12.5	
Approach LOS	A			A	B	
Queue Length 50th (m)	15.9			18.6	2.8	0.0
Queue Length 95th (m)	m38.4			48.5	7.5	8.1
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					30.0	
Base Capacity (vph)	1261			1160	412	413
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.44			0.37	0.05	0.14

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 7.1	Intersection LOS: A
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	228	435	333	218	170	206	1198	251	122	1178	66
Future Volume (vph)	55	228	435	333	218	170	206	1198	251	122	1178	66
Satd. Flow (prot)	1658	1712	1483	3154	1712	1483	1658	3316	1469	1658	3316	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1577	1712	1323	2940	1712	1360	1618	3316	1400	1649	3316	1223
Satd. Flow (RTOR)			238			189			213			121
Lane Group Flow (vph)	61	253	483	370	242	189	229	1331	279	136	1309	73
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.3	30.0	30.0	13.8	34.0	34.0	16.9	56.2	56.2	15.4	54.7	54.7
Actuated g/C Ratio	0.09	0.21	0.21	0.10	0.24	0.24	0.12	0.40	0.40	0.11	0.39	0.39
v/c Ratio	0.42	0.69	1.03	1.19	0.58	0.40	1.15	1.00	0.40	0.75	1.01	0.13
Control Delay	68.7	61.7	75.9	166.5	55.2	8.7	161.3	66.6	9.7	80.4	94.5	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.7	61.7	75.9	166.5	55.2	8.7	161.3	66.6	9.7	80.4	94.5	21.3
LOS	E	E	E	F	E	A	F	E	A	F	F	C
Approach Delay		70.8			95.6			69.8			89.7	
Approach LOS		E			F			E			F	
Queue Length 50th (m)	16.1	65.2	~87.2	~63.5	61.9	0.0	~74.1	~205.8	11.6	39.6	~194.7	6.9
Queue Length 95th (m)	30.8	95.6	#154.8	#95.2	91.5	20.4	#126.3	#252.7	34.1	m42.9	m187.5	m8.4
Internal Link Dist (m)		122.9			146.0			119.5			202.0	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	163	366	470	310	415	473	200	1330	689	211	1295	551
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.69	1.03	1.19	0.58	0.40	1.15	1.00	0.40	0.64	1.01	0.13

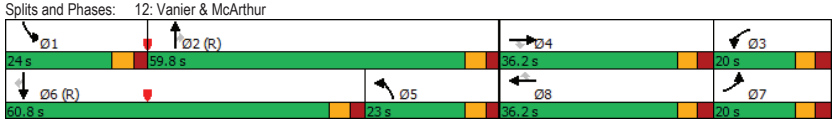
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 80.2	Intersection LOS: F
Intersection Capacity Utilization 100.7%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	535	378	0	8	8
Future Vol, veh/h	0	535	378	0	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	594	420	0	9	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1014	420
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	594	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	264	633
Stage 1	0	-	-	0	663	-
Stage 2	0	-	-	0	552	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	264	633
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	264	633
HCM Lane V/C Ratio	-	-	0.034	0.014
HCM Control Delay (s)	-	-	19.1	10.8
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.1	0

Appendix D

Collision Data

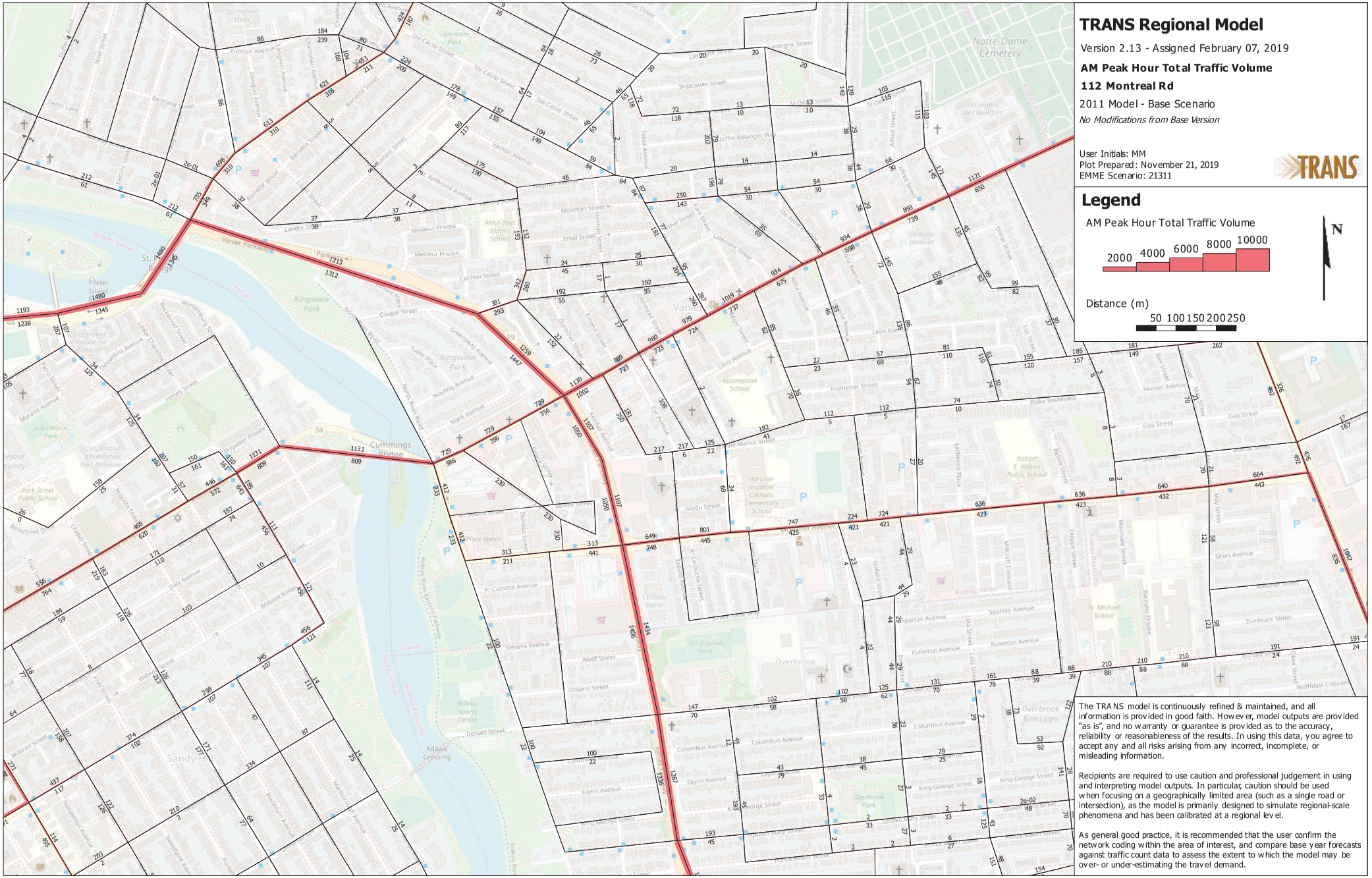
CGH TRANSPORTATION

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2016-06-01	2016	16:00	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-05-18	2016	12:41	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-12-08	2017	20:49	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2017-02-09	2017	9:50	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-08-17	2017	16:10	MONTGOMERY ST @ MONTREAL RD (0009342)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2017-09-06	2017	15:55	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0	1	0
2018-10-18	2018	13:02	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-02-11	2019	14:20	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	1	0
2020-08-17	2020	7:10	MONTGOMERY ST @ MONTREAL RD (0009342)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	02 - Wet	2	0	0	0
2016-04-24	2016	12:06	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	1	0	0	0
2016-05-25	2016	18:21	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	01 - Approaching	01 - Dry	2	0	1	0
2016-06-14	2016	12:04	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2016-08-19	2016	11:44	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-09-04	2016	14:00	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2017-11-08	2017	15:38	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2017-05-30	2017	16:07	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2017-09-15	2017	17:30	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2018-12-06	2018	13:54	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	02 - Wet	2	0	0	0
2018-06-01	2018	18:24	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	1	0
2019-03-18	2019	9:01	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	06 - Ice	2	0	0	0
2019-04-14	2019	13:59	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	3	0	0	0
2019-07-09	2019	17:00	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	3	0	0	0
2019-08-12	2019	11:50	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2020-02-07	2020	15:00	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	03 - Loose snow	1	0	0	0
2020-02-23	2020	13:10	MONTREAL RD btwn MONTGOMERY ST & PALACE ST (__3ZA3KD)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2016-05-17	2016	16:45	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-05-25	2016	7:00	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2016-07-14	2016	17:15	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2017-03-08	2017	17:17	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-10-23	2018	17:13	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-12-15	2018	18:16	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	2
2019-12-13	2019	9:40	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2019-07-22	2019	17:39	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0	1	0
2020-08-26	2020	20:36	MONTREAL RD @ PALACE ST (0004699)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-11-20	2016	0:16	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	02 - Rain	07 - Dark	10 - No control	0	03 - P.D. only	01 - Approaching	02 - Wet	2	0	0	0
2016-02-03	2016	16:50	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-02-05	2016	13:00	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-03-03	2016	15:54	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-05-31	2016	22:03	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-05-27	2016	22:14	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-05-20	2016	15:30	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2016-01-17	2016	0:36	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	03 - Loose snow	1	0	0	0
2016-07-30	2016	14:15	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-07-30	2016	15:25	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-01-20	2016	13:53	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2016-08-04	2016	6:47	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2017-11-19	2017	21:19	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	03 - Snow	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	03 - Loose snow	1	0	0	1
2017-04-07	2017	17:22	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-04-03	2017	12:37	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-07-31	2017	16:06	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2017-09-05	2017	10:53	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2017-09-24	2017	10:30	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2018-01-27	2018	2:59	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-02-23	2018	17:35	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	04 - Freezing Rain	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	06 - Ice	2	0	0	0
2018-05-03	2018	18:20	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2018-07-20	2018	12:05	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-07-20	2018	18:05	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-08-16	2018	15:15	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-07-28	2018	22:21	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	02 - Wet	1	0	0	0
2019-08-26	2019	15:00	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-01-03	2019	17:57	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	1
2019-09-24	2019	22:21	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-10-11	2019	13:37	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2019-01-04	2019	12:00	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-02-02	2019	12:45	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	05 - Packed snow	2	0	0	0
2019-05-27	2019	22:30	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2019-01-17	2019	17:51	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2020-01-21	2020	7:48	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	01 - Clear	03 - Dawn	10 - No control	0	03 - P.D. only	05 - Turning movement	02 - Wet	2	0	0	0
2020-08-29	2020	7:50	MONTREAL RD btwn PALACE ST & VANIER PKWY (__3ZA3LL)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	02 - Wet	2	0	0	0
2016-09-28	2016	8:52	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-10-25	2016	13:40	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-11-06	2016	8:43	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0	0	2
2016-01-04	2016	7:25	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	03 - Dawn	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-11-23	2016	16:34	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-11-26	2016	0:17	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	1
2016-01-27	2016	23:43	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2016-12-02	2016	19:05	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-12-08	2016	16:59	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	05 - Dusk	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	1
2016-12-19	2016	16:30	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	05 - Dusk	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	04 - Sideswipe	04 - Slush	2	0	0	1
2016-12-17	2016	15:03	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	04 - Slush	2	0	0	0
2016-12-27	2016	22:36	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-02-05	2016	9:59	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	3	0	0	0
2016-02-22	2016	12:15	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-02-17	2016	22:23	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	06 - Ice	2	0	0	0
2016-02-17	2016	20:56	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
2016-04-02	2016	10:00	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-03-24	2016	18:51	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	04 - Slush	2	0	0	0
2016-01-02	2016	8:58	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	3	0	0	0
2016-04-15	2016	15:34	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2016-04-08	2016	3:00	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	99 - Other	02 - Wet	2	0	0	0
2016-04-23	2016	20:43	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-04-25	2016	11:10	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2016-04-25	2016	21:01	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2016-01-14	2016	17:19	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2016-05-30	2016	13:27	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2016-06-11	2016	23:58	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2016-06-15	2016	19:43	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2016-07-18	2016	12:12	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-08-02	2016	10:35	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2016-08-18	2016	18:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-09-04	2016	3:25	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-09-05	2016	12:32	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-10-16	2017	6:21	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	03 - Dawn	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	3	0	0	0
2017-11-11	2017	21:07	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-11-01	2017	19:26	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	02 - Wet	2	0	0	0
2017-11-07	2017	13:10	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-11-17	2017	5:48	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	03 - Loose snow	1	0	0	1
2017-11-28	2017	16:48	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0

2017-12-20	2017	22:46	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	3	0	0	0
2017-02-10	2017	20:15	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2017-02-21	2017	16:41	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2017-03-24	2017	23:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0	0	0
2017-05-02	2017	15:38	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2017-05-02	2017	8:16	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2017-05-25	2017	8:05	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-05-15	2017	10:04	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2017-05-15	2017	10:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	3	0	0	0
2017-05-30	2017	8:26	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-05-30	2017	9:13	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-06-14	2017	18:12	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2017-06-16	2017	21:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-07-21	2017	15:27	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-08-19	2017	16:35	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2017-08-25	2017	23:12	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2017-09-26	2017	10:51	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-11-02	2018	19:45	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2018-11-11	2018	13:08	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-11-24	2018	19:03	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	1
2018-12-07	2018	18:47	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-01-02	2018	19:35	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	07 - Dark	01 - Traffic signal	00 - Unknown	03 - P.D. only	04 - Sideswipe	03 - Loose snow	2	0	0	0
2018-12-29	2018	22:55	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2018-12-13	2018	14:12	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-02-09	2018	12:54	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2018-01-31	2018	18:13	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	03 - Loose snow	3	0	0	0
2018-01-03	2018	16:00	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	04 - Slush	2	0	0	0
2018-03-04	2018	15:34	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-03-19	2018	8:41	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2018-03-16	2018	10:19	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-05-17	2018	10:05	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	1	0
2018-05-11	2018	20:58	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-06-08	2018	19:04	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-06-18	2018	14:35	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-07-14	2018	12:15	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-08-04	2018	19:49	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-08-11	2018	17:24	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-09-13	2018	16:02	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-09-15	2018	20:00	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-09-23	2018	1:03	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2018-01-17	2018	19:16	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0	0	0
2019-09-03	2019	20:39	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-01-21	2019	11:00	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2019-10-08	2019	13:01	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2019-10-08	2019	17:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-10-04	2019	16:39	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-12-02	2019	19:24	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-11-26	2019	10:18	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-11-29	2019	18:01	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-12-24	2019	9:04	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	0
2019-12-26	2019	12:05	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-12-19	2019	9:01	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-02-07	2019	12:50	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-12-31	2019	12:52	MONTREAL RD @ VANIER PKWY (0004630)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0	0	0
2019-02-19	2019	8:07	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	05 - Packed snow	2	0	0	0
2019-03-26	2019	12:22	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-05-06	2019	10:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-05-02	2019	21:17	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2019-05-23	2019	19:20	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-05-18	2019	11:13	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-06-29	2019	18:57	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2019-01-19	2019	11:30	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
2020-01-23	2020	17:40	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-01-01	2020	16:50	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-12-31	2020	16:11	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2020-03-05	2020	18:45	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	05 - Dusk	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-02-25	2020	10:21	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	0	0
2020-03-03	2020	9:51	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2020-03-29	2020	14:59	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	04 - Sideswipe	02 - Wet	2	0	0	0
2020-03-29	2020	6:10	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	03 - Dawn	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	1	0
2020-05-21	2020	17:42	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-06-30	2020	11:47	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
2020-07-03	2020	15:00	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2020-06-26	2020	8:31	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	1
2020-01-16	2020	13:43	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0	0	0
2020-01-03	2020	2:27	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	07 - Dark	01 - Traffic signal	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	02 - Wet	3	0	0	0
2020-11-16	2020	10:32	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-12-04	2020	8:00	MONTREAL RD @ VANIER PKWY (0004630)	02 - Rain	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2020-01-03	2020	8:20	MONTREAL RD @ VANIER PKWY (0004630)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	04 - Sideswipe	04 - Slush	2	0	0	0
2016-12-16	2016	18:32	MONTGOMERY ST btwn MONTREAL RD & SELKIRK ST (__3ZA7B5)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	03 - Loose snow	2	0	0	0
2016-05-20	2016	15:25	MONTGOMERY ST btwn MONTREAL RD & SELKIRK ST (__3ZA7B5)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-01-16	2016	9:41	MONTGOMERY ST @ SELKIRK ST (0009240)	03 - Snow	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	05 - Turning movement	03 - Loose snow	2	0	0	0
2016-09-30	2016	12:59	DUNDAS ST @ MCARTHUR AVE (0009192)	01 - Clear	01 - Daylight	02 - Stop sign	00 - Unknown	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-12-05	2016	14:27	DUNDAS ST @ MCARTHUR AVE (0009192)	03 - Snow	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	02 - Angle	02 - Wet	2	0	0	0
2018-06-13	2018	12:28	DUNDAS ST @ MCARTHUR AVE (0009192)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-06-12	2019	7:34	DUNDAS ST @ MCARTHUR AVE (0009192)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	1	0

Appendix E

TRANS Model Plots


TRANS Regional Model
Version 2.13 - Assigned February 07, 2019
AM Peak Hour Total Traffic Volume
112 Montreal Rd
2011 Model - Base Scenario
No Modifications from Base Version
User Initials: MM
Plot Prepared: November 21, 2019
EMME Scenario: 21311
TRANS
Legend
AM Peak Hour Total Traffic Volume
2000 4000 6000 8000 10000
Distance (m)
50 100 150 200 250
N
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 October 31, 2019

AM Peak Hour Total Traffic Volume

112 Montreal Rd

2031 Model - Affordable Road & Transit Network

No Modifications from Base Version

User Initials: MM
Plot Prepared: November 21, 2019
EMME Scenario: 21131

TRANS

Legend

AM Peak Hour Total Traffic Volume

2000 4000 6000 8000 10000

N

Distance (m)

100 200 300 400 500

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 F

Background Development Traffic Volumes

CGH TRANSPORTATION

Figure 10: New Site Generation Auto Volumes

Figure 13: Phase 1 'New' and 'Pass-By' Site-Generated Traffic

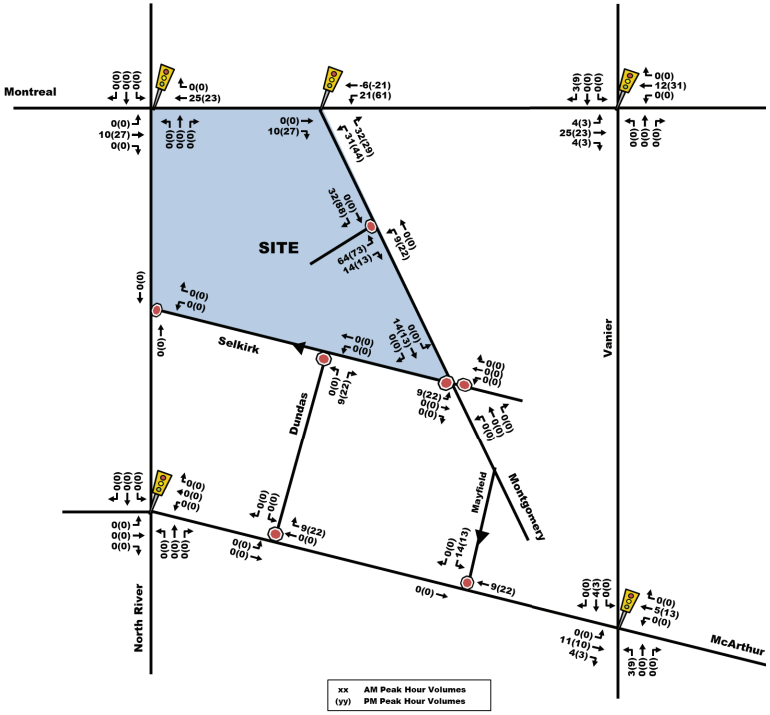


Figure 14: Phase 2 and 3 'New' and 'Pass-By' Site-Generated Traffic

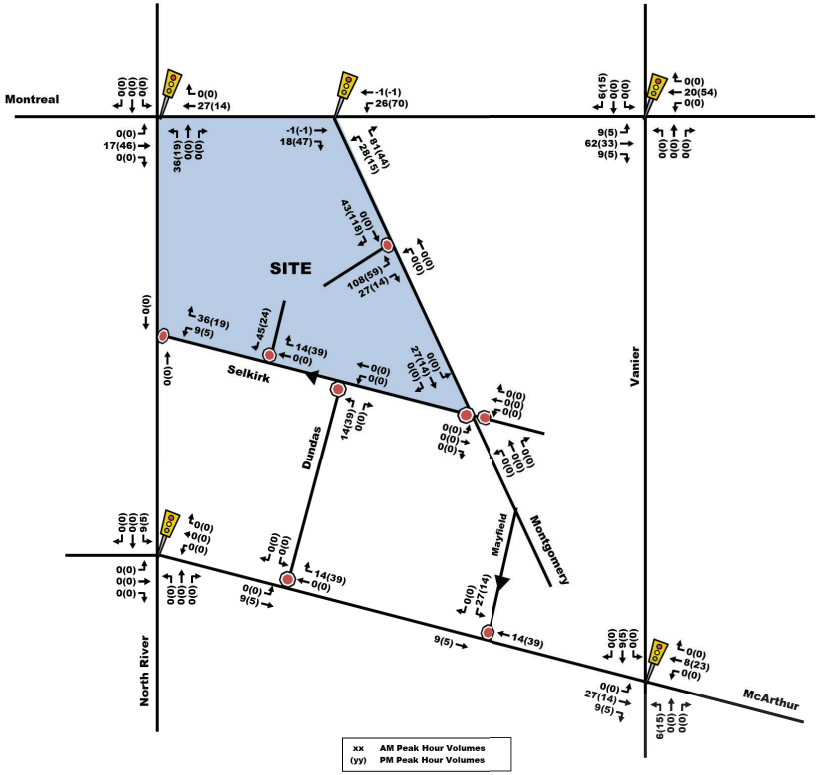
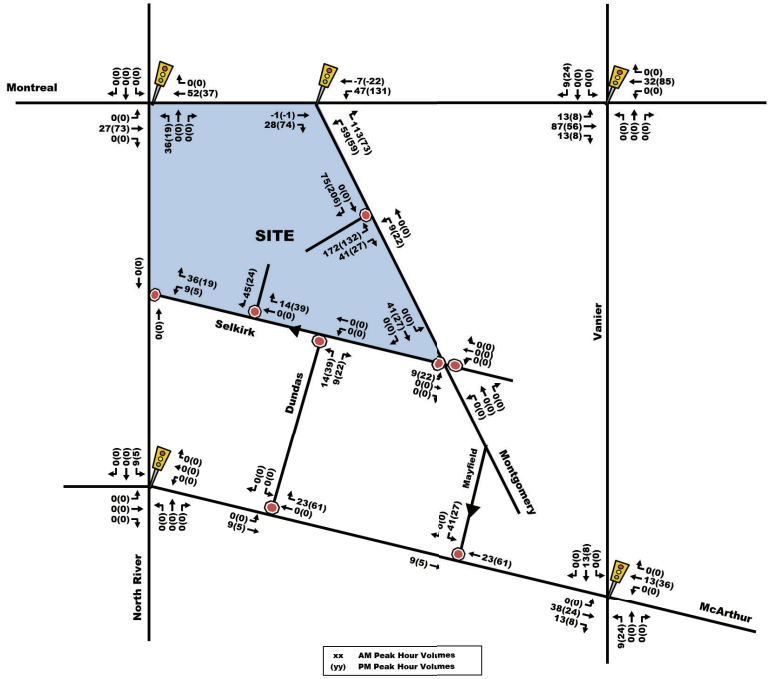


Figure 15: Total Site Trip Generation



3.2. BACKGROUND NETWORK TRAFFIC

3.2.1. TRANSPORTATION NETWORK PLANS

Refer to Section 2.1.3.

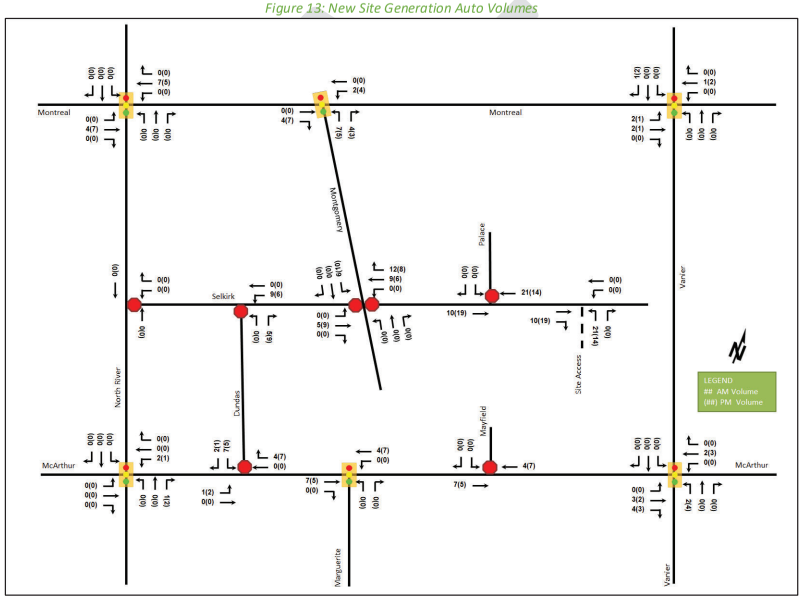
3.2.2. BACKGROUND GROWTH

The following background traffic growth (summarized in Table 20) was calculated based on historical traffic count data (years 2010, 2016 and 2020) provided by the City of Ottawa at the North River/Montreal intersection. Detailed background traffic growth analysis is included as Appendix D.

Table 20: North River/Montreal Historical Background Growth (2010-2020)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	-1.31%	-0.79%	-1.06%	-1.28%	**-1.08%**
AM Peak	-0.65%	-0.97%	-0.38%	-0.83%	**-0.63%**
PM Peak	-5.20%	-2.46%	-1.40%	-0.91%	**-1.53%**

Figure 13: New Site Generation Auto Volumes



Appendix G

Synchro Intersection Worksheets – 2024 Future Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	477	362	0	726	13	245	10	35	17	25	15
Future Volume (vph)	0	477	362	0	726	13	245	10	35	17	25	15
Satd. Flow (prot)	0	2892	0	0	3164	0	1595	1327	0	0	1511	0
Flt Permitted							0.950				0.985	
Satd. Flow (perm)	0	2892	0	0	3164	0	1569	1327	0	0	1489	0
Satd. Flow (RTOR)								35			15	
Lane Group Flow (vph)	0	839	0	0	739	0	245	45	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		29.0			29.0		24.0	49.0		17.0	17.0	
Total Split (%)		30.5%			30.5%		25.3%	51.6%		17.9%	17.9%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		36.8			36.8		20.5	31.7			10.1	
Actuated g/C Ratio		0.39			0.39		0.22	0.33			0.11	
v/c Ratio		0.75			0.60		0.71	0.10			0.33	
Control Delay		31.5			26.8		45.9	10.1			36.5	
Queue Delay		0.0			32.6		0.0	0.0			0.0	
Total Delay		31.5			59.4		45.9	10.1			36.5	
LOS		C			E		D	B			D	
Approach Delay		31.5			59.4			40.3			36.5	
Approach LOS		C			E			D			D	
Queue Length 50th (m)		69.2			56.4		41.6	1.3			7.2	
Queue Length 95th (m)		#109.4			82.1		62.8	8.3			18.7	
Internal Link Dist (m)		194.5			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1121			1226		355	613			180	
Starvation Cap Reductn		0			522		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.75			1.05		0.69	0.07			0.32	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	44%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

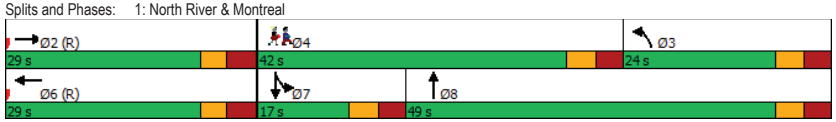
Intersection Summary

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 43.7	Intersection LOS: D
Intersection Capacity Utilization 59.8%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



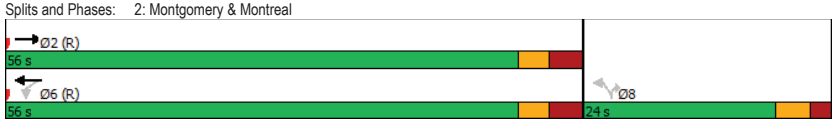
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	431	98	74	689	50	70
Future Volume (vph)	431	98	74	689	50	70
Satd. Flow (prot)	3109	0	0	3180	1658	1401
Flt Permitted				0.842	0.950	
Satd. Flow (perm)	3109	0	0	2686	1635	1368
Satd. Flow (RTOR)	64					70
Lane Group Flow (vph)	529	0	0	763	50	70
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	40.4		16.4	16.4	19.5	19.5
Total Split (s)	56.0		56.0	56.0	24.0	24.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%	30.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	60.9			60.9	11.6	11.6
Actuated g/C Ratio	0.76			0.76	0.14	0.14
v/c Ratio	0.22			0.37	0.21	0.27
Control Delay	3.7			5.2	31.7	10.8
Queue Delay	0.5			0.0	0.0	0.0
Total Delay	4.2			5.2	31.7	10.8
LOS	A			A	C	B
Approach Delay	4.2			5.2	19.5	
Approach LOS	A			A	B	
Queue Length 50th (m)	9.6			18.8	7.0	0.0
Queue Length 95th (m)	17.8			33.1	15.7	10.2
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2381			2044	378	370
Starvation Cap Reductn	1349			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.51			0.37	0.13	0.19

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.0	Intersection LOS: A
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	306	138	165	493	194	180	879	166	213	1124	140
Future Volume (vph)	39	306	138	165	493	194	180	879	166	213	1124	140
Satd. Flow (prot)	1642	1695	1483	1658	3008	0	1642	4551	0	1642	4639	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1581	1695	1355	1578	3008	0	1621	4551	0	1598	4639	0
Satd. Flow (RTOR)			138		39			28			16	
Lane Group Flow (vph)	39	306	138	165	687	0	180	1045	0	213	1264	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	20.0	41.0	41.0	20.0	41.0		30.0	49.0		30.0	49.0	
Total Split (%)	14.3%	29.3%	29.3%	14.3%	29.3%		21.4%	35.0%		21.4%	35.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	8.7	33.9	33.9	12.9	40.6		19.7	45.4		21.6	47.3	
Actuated g/C Ratio	0.06	0.24	0.24	0.09	0.29		0.14	0.32		0.15	0.34	
v/c Ratio	0.38	0.75	0.32	1.09	0.76		0.78	0.70		0.84	0.80	
Control Delay	72.8	61.6	8.5	155.2	50.2		88.8	44.4		84.5	46.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	72.8	61.6	8.5	155.2	50.2		88.8	44.4		84.5	46.8	
LOS	E	E	A	F	D		F	D		F	D	
Approach Delay		47.3			70.5			51.0			52.2	
Approach LOS		D			E			D			D	
Queue Length 50th (m)	10.6	78.9	0.0	~50.9	89.1		51.7	61.6		57.0	116.0	
Queue Length 95th (m)	22.2	113.2	16.6	#96.9	#124.8		m71.9	80.4		#93.0	140.0	
Internal Link Dist (m)		99.5			262.7			154.6			239.2	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	151	410	432	152	899		280	1494		280	1577	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.75	0.32	1.09	0.76		0.64	0.70		0.76	0.80	

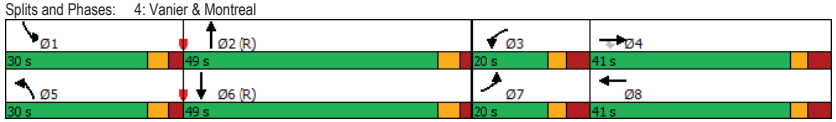
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 55.1	Intersection LOS: E
Intersection Capacity Utilization 96.1%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	34	275	0	0	397
Future Vol, veh/h	27	34	275	0	0	397
Conflicting Peds, #/hr	8	5	0	95	95	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	8	2	2	2
Mvmt Flow	27	34	275	0	0	397

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	482	280	0	-	-	-
Stage 1	275	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.705	6.23	-	-	-	-
Critical Hdwy Stg 1	5.505	-	-	-	-	-
Critical Hdwy Stg 2	5.905	-	-	-	-	-
Follow-up Hdwy	3.5665	3.319	-	-	-	-
Pot Cap-1 Maneuver	517	758	-	0	0	-
Stage 1	757	-	-	0	0	-
Stage 2	795	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	514	755	-	-	-	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	625	-
HCM Lane V/C Ratio	-	0.098	-
HCM Control Delay (s)	-	11.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.3	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	30	85	5	79
Future Vol, veh/h	0	0	30	85	5	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	30	85	5	79

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	145	0	
Stage 1	-	-	0	-	
Stage 2	-	-	145	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	847	-	
Stage 1	-	-	-	-	
Stage 2	-	-	882	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	847	-	
Mov Cap-2 Maneuver	-	-	847	-	
Stage 1	-	-	-	-	
Stage 2	-	-	882	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	10	5	15	20	20	5	5	0	10	29	90
Future Vol, veh/h	64	10	5	15	20	20	5	5	0	10	29	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	10	5	15	20	20	5	5	0	10	29	90

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	129	109	74	117	154	5	119	0	0	5	0	0
Stage 1	94	94	-	15	15	-	-	-	-	-	-	-
Stage 2	35	15	-	102	139	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	844	781	988	859	738	1078	1469	-	-	1616	-	-
Stage 1	913	817	-	1005	883	-	-	-	-	-	-	-
Stage 2	981	883	-	904	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	805	773	988	840	731	1078	1469	-	-	1616	-	-
Mov Cap-2 Maneuver	805	773	-	840	731	-	-	-	-	-	-	-
Stage 1	910	811	-	1002	880	-	-	-	-	-	-	-
Stage 2	938	880	-	882	777	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.5	3.7	0.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1469	-	-	810	862	1616	-	-
HCM Lane V/C Ratio	0.003	-	-	0.098	0.064	0.006	-	-
HCM Control Delay (s)	7.5	0	-	9.9	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	6	3	8	9	165	3	116	29	322	98	4
Future Volume (vph)	1	6	3	8	9	165	3	116	29	322	98	4
Satd. Flow (prot)	0	1647	0	0	1705	1441	0	1658	0	1658	1678	0
Flt Permitted		0.988			0.925			0.997		0.663		
Satd. Flow (perm)	0	1627	0	0	1604	1325	0	1651	0	1149	1678	0
Satd. Flow (RTOR)		3				165		26			4	
Lane Group Flow (vph)	0	10	0	0	17	165	0	148	0	322	102	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	28.0	28.0		28.0	28.0	28.0	42.0	42.0		42.0	42.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		22.4			22.4	22.4		35.9		35.9	35.9	
Actuated g/C Ratio		0.32			0.32	0.32		0.51		0.51	0.51	
v/c Ratio		0.02			0.03	0.31		0.17		0.55	0.12	
Control Delay		14.4			10.9	8.1		8.1		15.9	9.0	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		14.4			10.9	8.1		8.1		15.9	9.0	
LOS		B			B	A		A		B	A	
Approach Delay		14.4			8.4			8.1			14.3	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		0.6			1.6	13.4		7.8		26.6	6.2	
Queue Length 95th (m)		3.5			m5.4	22.1		16.4		49.1	13.1	
Internal Link Dist (m)		22.5			128.8			367.7			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		522			513	536		859		589	862	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.02			0.03	0.31		0.17		0.55	0.12	

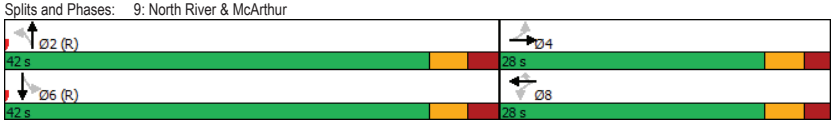
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	361	318	88	10	16
Future Vol, veh/h	10	361	318	88	10	16
Conflicting Peds, #/hr	105	0	0	105	6	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	2	5	3	2	2
Mvmt Flow	10	361	318	88	10	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	511	0	-	0	854	481
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	4.2	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1014	-	-	-	329	585
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	931	-	-	-	274	531
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	630	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	931	-	-	-	390
HCM Lane V/C Ratio	0.011	-	-	-	0.067
HCM Control Delay (s)	8.9	0	-	-	14.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	353	19	46	404	9	31
Future Volume (vph)	353	19	46	404	9	31
Satd. Flow (prot)	1727	0	0	1736	1658	1483
Flt Permitted				0.937	0.950	
Satd. Flow (perm)	1727	0	0	1631	1536	1412
Satd. Flow (RTOR)	6					31
Lane Group Flow (vph)	372	0	0	450	9	31
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	52.0			52.0	15.4	15.4
Actuated g/C Ratio	0.74			0.74	0.22	0.22
v/c Ratio	0.29			0.37	0.03	0.09
Control Delay	4.0			8.0	19.0	8.4
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	4.0			8.0	19.0	8.4
LOS	A			A	B	A
Approach Delay	4.0			8.0	10.8	
Approach LOS	A			A	B	
Queue Length 50th (m)	10.4			37.8	0.9	0.0
Queue Length 95th (m)	16.3			m47.8	3.9	5.5
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					20.0	
Base Capacity (vph)	1284			1212	427	415
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.29			0.37	0.02	0.07

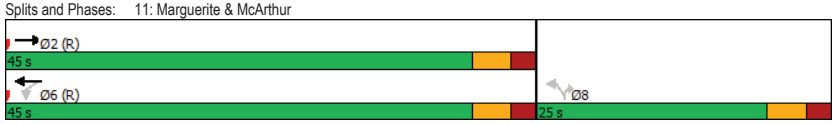
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	127	294	209	196	104	223	1070	225	140	1241	60
Future Volume (vph)	34	127	294	209	196	104	223	1070	225	140	1241	60
Satd. Flow (prot)	1551	1695	1483	3216	1695	1483	1658	3316	1483	1658	3316	1441
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1427	1695	1385	3073	1695	1308	1636	3316	1385	1637	3316	1306
Satd. Flow (RTOR)			251			168			214			121
Lane Group Flow (vph)	34	127	294	209	196	104	223	1070	225	140	1241	60
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	10.8	26.0	26.0	12.9	33.1	33.1	16.9	60.8	60.8	15.7	59.6	59.6
Actuated g/C Ratio	0.08	0.19	0.19	0.09	0.24	0.24	0.12	0.43	0.43	0.11	0.43	0.43
v/c Ratio	0.29	0.40	0.64	0.71	0.49	0.24	1.11	0.74	0.31	0.76	0.88	0.10
Control Delay	65.4	45.2	17.3	75.0	51.7	1.5	152.4	39.1	5.5	84.3	72.1	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	45.2	17.3	75.0	51.7	1.5	152.4	39.1	5.5	84.3	72.1	14.9
LOS	E	D	B	E	D	A	F	D	A	F	E	B
Approach Delay		28.7			51.0			50.8			70.9	
Approach LOS		C			D			D			E	
Queue Length 50th (m)	9.6	25.0	18.0	29.2	48.6	0.0	~70.6	139.7	1.9	40.7	171.1	2.9
Queue Length 95th (m)	21.5	41.1	30.4	42.8	74.3	0.5	#122.3	169.8	18.7	m51.3	m#211.6	m6.0
Internal Link Dist (m)		122.9			141.8			130.7			202.5	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	152	363	494	317	409	443	200	1440	722	211	1411	625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.35	0.60	0.66	0.48	0.23	1.11	0.74	0.31	0.66	0.88	0.10

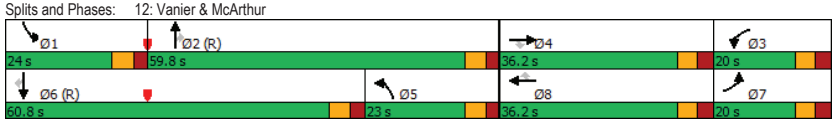
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 55.6	Intersection LOS: E
Intersection Capacity Utilization 97.8%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	384	449	0	18	4
Future Vol, veh/h	0	384	449	0	18	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	384	449	0	18	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	833	449
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	339	610
Stage 1	0	-	-	0	643	-
Stage 2	0	-	-	0	688	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	339	610
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	339	610
HCM Lane V/C Ratio	-	-	0.053	0.007
HCM Control Delay (s)	-	-	16.2	10.9
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.2	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	596	410	0	665	18	356	17	32	21	15	21
Future Volume (vph)	0	596	410	0	665	18	356	17	32	21	15	21
Satd. Flow (prot)	0	2868	0	0	3230	0	1658	1438	0	0	1496	0
Flt Permitted							0.950				0.982	
Satd. Flow (perm)	0	2868	0	0	3230	0	1631	1438	0	0	1438	0
Satd. Flow (RTOR)		141						32			19	
Lane Group Flow (vph)	0	1006	0	0	683	0	356	49	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		39.0			39.0		39.0	64.0		17.0	17.0	
Total Split (%)		32.5%			32.5%		32.5%	53.3%		14.2%	14.2%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		51.4			51.4		30.9	42.1			10.1	
Actuated g/C Ratio		0.43			0.43		0.26	0.35			0.08	
v/c Ratio		0.77			0.49		0.83	0.09			0.40	
Control Delay		30.8			27.6		58.7	12.6			45.8	
Queue Delay		0.0			32.2		0.0	0.0			0.0	
Total Delay		30.8			59.8		58.7	12.6			45.8	
LOS		C			E		E	B			D	
Approach Delay		30.8			59.8			53.1			45.8	
Approach LOS		C			E			D			D	
Queue Length 50th (m)		92.0			60.7		79.1	2.7			8.6	
Queue Length 95th (m)		#141.8			86.7		105.3	10.4			22.0	
Internal Link Dist (m)		179.1			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1308			1382		472	705			148	
Starvation Cap Reductn		0			729		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.77			1.05		0.75	0.07			0.39	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	35%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

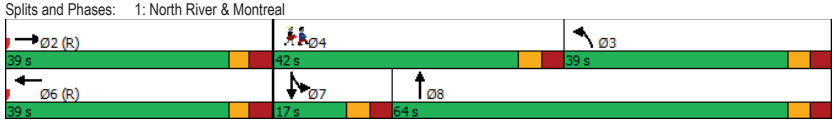
Intersection Summary

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 44.6	Intersection LOS: D
Intersection Capacity Utilization 71.5%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



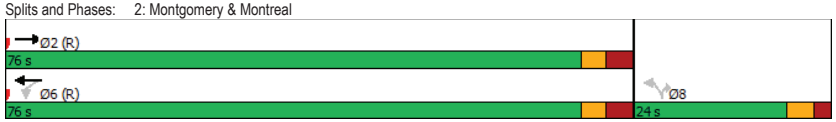
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	552	97	56	580	108	66
Future Volume (vph)	552	97	56	580	108	66
Satd. Flow (prot)	3172	0	0	3268	1658	1401
Flt Permitted				0.836	0.950	
Satd. Flow (perm)	3172	0	0	2736	1622	1331
Satd. Flow (RTOR)	47					66
Lane Group Flow (vph)	649	0	0	636	108	66
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	39.9		16.4	16.4	19.5	19.5
Total Split (s)	76.0		76.0	76.0	24.0	24.0
Total Split (%)	76.0%		76.0%	76.0%	24.0%	24.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	75.6			75.6	12.5	12.5
Actuated g/C Ratio	0.76			0.76	0.12	0.12
v/c Ratio	0.27			0.31	0.53	0.29
Control Delay	4.0			4.6	50.2	13.2
Queue Delay	1.4			0.0	0.0	0.0
Total Delay	5.4			4.6	50.2	13.2
LOS	A			A	D	B
Approach Delay	5.4			4.6	36.2	
Approach LOS	A			A	D	
Queue Length 50th (m)	14.6			16.4	20.1	0.0
Queue Length 95th (m)	25.3			28.3	35.1	11.2
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2408			2067	300	300
Starvation Cap Reductn	1501			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.72			0.31	0.36	0.22

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 70.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	366	177	156	333	198	229	1011	210	142	1019	94
Future Volume (vph)	51	366	177	156	333	198	229	1011	210	142	1019	94
Satd. Flow (prot)	1626	1695	1483	1658	2918	0	1658	4531	0	1658	4658	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1542	1695	1345	1578	2918	0	1622	4531	0	1623	4658	0
Satd. Flow (RTOR)			177		83			30			10	
Lane Group Flow (vph)	51	366	177	156	531	0	229	1221	0	142	1113	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	30.0	41.0	41.0	30.0	41.0		30.0	39.0		30.0	39.0	
Total Split (%)	21.4%	29.3%	29.3%	21.4%	29.3%		21.4%	27.9%		21.4%	27.9%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	9.8	38.8	38.8	18.0	49.6		22.2	39.8		17.2	34.8	
Actuated g/C Ratio	0.07	0.28	0.28	0.13	0.35		0.16	0.28		0.12	0.25	
v/c Ratio	0.45	0.78	0.35	0.74	0.49		0.87	0.93		0.70	0.96	
Control Delay	74.0	60.0	7.8	78.3	32.4		88.7	71.0		76.2	69.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.0	60.0	7.8	78.3	32.4		88.7	71.0		76.2	69.0	
LOS	E	E	A	E	C		F	E		E	E	
Approach Delay		45.7			42.9			73.8			69.8	
Approach LOS		D			D			E			E	
Queue Length 50th (m)	13.8	94.2	0.0	42.0	52.3		66.8	99.4		38.3	~113.6	
Queue Length 95th (m)	27.1	#153.8	18.7	63.9	73.1		m78.8	#163.5		58.2	#146.3	
Internal Link Dist (m)		99.5			237.5			154.5			139.4	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	265	470	500	271	1087		283	1308		283	1165	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.78	0.35	0.58	0.49		0.81	0.93		0.50	0.96	

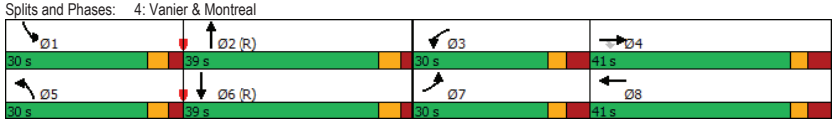
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 63.0	Intersection LOS: E
Intersection Capacity Utilization 95.2%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	115	47	370	0	0	434
Future Vol, veh/h	115	47	370	0	0	434
Conflicting Peds, #/hr	7	7	0	71	71	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	115	47	370	0	0	434

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	594	377	0	-	-	-
Stage 1	370	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	452	669	-	0	0	-
Stage 1	698	-	-	0	0	-
Stage 2	793	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	450	665	-	-	-	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	497	-
HCM Lane V/C Ratio	-	0.326	-
HCM Control Delay (s)	-	15.7	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	1.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	30	45	10	100
Future Vol, veh/h	0	0	30	45	10	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	30	45	10	100

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	105	0	
Stage 1	-	-	0	-	
Stage 2	-	-	105	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	893	-	
Stage 1	-	-	-	-	
Stage 2	-	-	919	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	893	-	
Mov Cap-2 Maneuver	-	-	893	-	
Stage 1	-	-	-	-	
Stage 2	-	-	919	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	20	10	5	10	20	5	10	0	15	20	60
Future Vol, veh/h	70	20	10	5	10	20	5	10	0	15	20	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	20	10	5	10	20	5	10	0	15	20	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	115	100	50	115	130	10	80	0	0	10	0	0
Stage 1	80	80	-	20	20	-	-	-	-	-	-	-
Stage 2	35	20	-	95	110	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	862	790	1018	862	761	1071	1518	-	-	1610	-	-
Stage 1	929	828	-	999	879	-	-	-	-	-	-	-
Stage 2	981	879	-	912	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	829	780	1018	828	751	1071	1518	-	-	1610	-	-
Mov Cap-2 Maneuver	829	780	-	828	751	-	-	-	-	-	-	-
Stage 1	926	820	-	996	876	-	-	-	-	-	-	-
Stage 2	949	876	-	872	796	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.1	2.5	1.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1518	-	-	834	920	1610	-	-
HCM Lane V/C Ratio	0.003	-	-	0.12	0.038	0.009	-	-
HCM Control Delay (s)	7.4	0	-	9.9	9.1	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

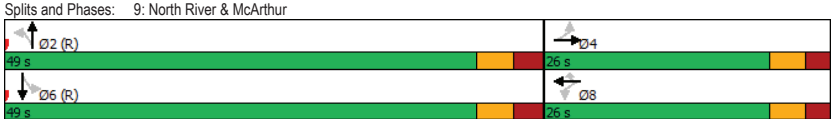
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	25	6	24	11	217	2	148	36	409	139	1
Future Volume (vph)	4	25	6	24	11	217	2	148	36	409	139	1
Satd. Flow (prot)	0	1633	0	0	1571	1483	0	1632	0	1642	1709	0
Flt Permitted		0.980			0.841			0.998		0.640		
Satd. Flow (perm)	0	1594	0	0	1321	1317	0	1630	0	983	1709	0
Satd. Flow (RTOR)		6				217		27			1	
Lane Group Flow (vph)	0	35	0	0	35	217	0	186	0	409	140	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	49.0	49.0		49.0	49.0	
Total Split (%)	34.7%	34.7%		34.7%	34.7%	34.7%	65.3%	65.3%		65.3%	65.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		20.4			20.4	20.4		42.9		42.9	42.9	
Actuated g/C Ratio		0.27			0.27	0.27		0.57		0.57	0.57	
v/c Ratio		0.08			0.10	0.42		0.20		0.73	0.14	
Control Delay		18.4			21.0	12.9		7.2		21.5	7.9	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		18.4			21.0	12.9		7.2		21.5	7.9	
LOS		B			C	B		A		C	A	
Approach Delay		18.4			14.0			7.2			18.0	
Approach LOS		B			B			A			B	
Queue Length 50th (m)		3.0			4.3	1.5		9.7		38.6	8.4	
Queue Length 95th (m)		9.4			11.5	32.5		18.6		#80.7	15.9	
Internal Link Dist (m)		22.5			128.8			119.0			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		437			359	516		943		562	977	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.08			0.10	0.42		0.20		0.73	0.14	

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73
Intersection Signal Delay: 15.1 — Intersection LOS: B
Intersection Capacity Utilization 76.3% — ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	469	267	92	26	4
Future Vol, veh/h	7	469	267	92	26	4
Conflicting Peds, #/hr	81	0	0	81	5	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	8	2
Mvmt Flow	7	469	267	92	26	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	440	0	-	0	882	408
Stage 1	-	-	-	-	394	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	4.12	-	-	-	6.48	6.22
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.218	-	-	-	3.572	3.318
Pot Cap-1 Maneuver	1120	-	-	-	309	643
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	605	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1050	-	-	-	269	596
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	567	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1050	-	-	-	290
HCM Lane V/C Ratio	0.007	-	-	-	0.103
HCM Control Delay (s)	8.5	0	-	-	18.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

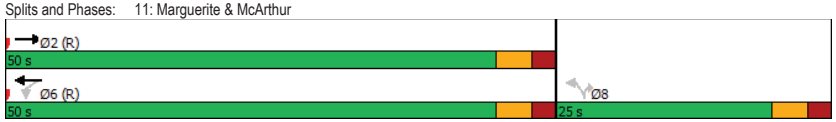
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	481	21	40	346	20	52
Future Volume (vph)	481	21	40	346	20	52
Satd. Flow (prot)	1729	0	0	1736	1658	1483
Flt Permitted				0.924	0.950	
Satd. Flow (perm)	1729	0	0	1609	1569	1411
Satd. Flow (RTOR)	5					52
Lane Group Flow (vph)	502	0	0	386	20	52
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	50.0		50.0	50.0	25.0	25.0
Total Split (%)	66.7%		66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	58.8			58.8	13.6	13.6
Actuated g/C Ratio	0.78			0.78	0.18	0.18
v/c Ratio	0.37			0.31	0.07	0.17
Control Delay	5.1			6.1	23.4	8.5
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	5.1			6.1	23.4	8.5
LOS	A			A	C	A
Approach Delay	5.1			6.1	12.6	
Approach LOS	A			A	B	
Queue Length 50th (m)	14.3			16.1	2.5	0.0
Queue Length 95th (m)	37.4			42.3	7.1	7.7
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					30.0	
Base Capacity (vph)	1356			1261	407	405
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.37			0.31	0.05	0.13

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.0	Intersection LOS: A
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	228	435	333	218	170	206	1198	251	122	1178	66
Future Volume (vph)	55	228	435	333	218	170	206	1198	251	122	1178	66
Satd. Flow (prot)	1658	1712	1483	3154	1712	1483	1658	3316	1469	1658	3316	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1565	1712	1310	2916	1712	1348	1602	3316	1378	1642	3316	1188
Satd. Flow (RTOR)			241			170			213			121
Lane Group Flow (vph)	55	228	435	333	218	170	206	1198	251	122	1178	66
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.2	30.0	30.0	13.8	34.0	34.0	16.9	56.8	56.8	14.8	54.7	54.7
Actuated g/C Ratio	0.09	0.21	0.21	0.10	0.24	0.24	0.12	0.41	0.41	0.11	0.39	0.39
v/c Ratio	0.38	0.62	0.93	1.07	0.53	0.37	1.03	0.89	0.37	0.70	0.91	0.12
Control Delay	67.2	58.4	50.6	130.2	53.2	8.8	130.6	48.7	7.5	83.2	81.9	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	58.4	50.6	130.2	53.2	8.8	130.6	48.7	7.5	83.2	81.9	19.3
LOS	E	E	D	F	D	A	F	D	A	F	F	B
Approach Delay		54.3			78.3			52.7			79.0	
Approach LOS		D			E			D			E	
Queue Length 50th (m)	14.5	57.8	59.3	~52.5	54.8	0.0	~60.9	162.5	6.4	35.7	173.1	5.5
Queue Length 95th (m)	28.5	86.0	#124.5	#83.3	82.2	19.3	#110.8	#212.2	26.3	m42.2	m186.2	m8.6
Internal Link Dist (m)		122.9			146.0			119.5			202.0	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	163	366	470	310	415	456	200	1344	685	211	1295	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.62	0.93	1.07	0.53	0.37	1.03	0.89	0.37	0.58	0.91	0.12

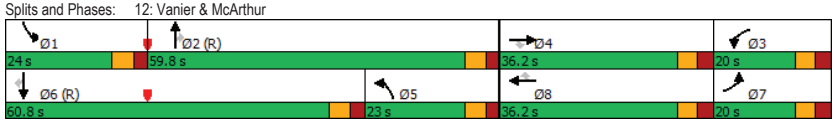
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 65.2	Intersection LOS: E
Intersection Capacity Utilization 100.9%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	535	378	0	8	8
Future Vol, veh/h	0	535	378	0	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	535	378	0	8	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	913	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	304	669
Stage 1	0	-	-	0	693	-
Stage 2	0	-	-	0	587	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	304	669
Mov Cap-2 Maneuver	-	-	-	-	304	-
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	304	669
HCM Lane V/C Ratio	-	-	0.026	0.012
HCM Control Delay (s)	-	-	17.2	10.4
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.1	0

Appendix H

Synchro Intersection Worksheets – 2029 Future Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	498	362	0	760	13	281	10	35	17	25	15
Future Volume (vph)	0	498	362	0	760	13	281	10	35	17	25	15
Satd. Flow (prot)	0	2901	0	0	3165	0	1595	1327	0	0	1511	0
Flt Permitted							0.950				0.985	
Satd. Flow (perm)	0	2901	0	0	3165	0	1569	1327	0	0	1489	0
Satd. Flow (RTOR)								35			15	
Lane Group Flow (vph)	0	860	0	0	773	0	281	45	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		29.0			29.0		24.0	49.0		17.0	17.0	
Total Split (%)		30.5%			30.5%		25.3%	51.6%		17.9%	17.9%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		33.3			33.3		24.0	35.2			10.1	
Actuated g/C Ratio		0.35			0.35		0.25	0.37			0.11	
v/c Ratio		0.85			0.70		0.70	0.09			0.33	
Control Delay		38.9			31.3		41.7	9.3			36.5	
Queue Delay		0.0			51.5		0.0	0.0			0.0	
Total Delay		38.9			82.8		41.7	9.3			36.5	
LOS		D			F		D	A			D	
Approach Delay		38.9			82.8			37.2			36.5	
Approach LOS		D			F			D			D	
Queue Length 50th (m)		76.4			63.9		46.4	1.2			7.2	
Queue Length 95th (m)		#119.4			89.7		70.4	8.0			18.7	
Internal Link Dist (m)		194.5			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1016			1108		403	616			180	
Starvation Cap Reductn		0			443		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.85			1.16		0.70	0.07			0.32	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	44%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

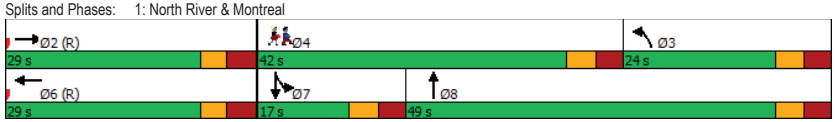
Intersection Summary

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 55.4	Intersection LOS: E
Intersection Capacity Utilization 62.5%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



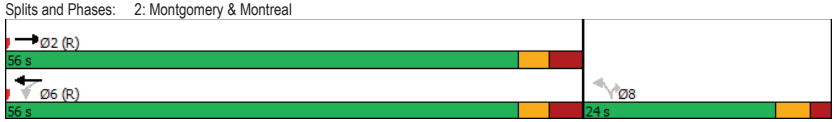
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	430	120	102	688	85	155
Future Volume (vph)	430	120	102	688	85	155
Satd. Flow (prot)	3089	0	0	3179	1658	1401
Flt Permitted				0.793	0.950	
Satd. Flow (perm)	3089	0	0	2529	1635	1368
Satd. Flow (RTOR)	84					155
Lane Group Flow (vph)	550	0	0	790	85	155
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	40.4		16.4	16.4	19.5	19.5
Total Split (s)	56.0		56.0	56.0	24.0	24.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%	30.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	56.5			56.5	11.6	11.6
Actuated g/C Ratio	0.71			0.71	0.14	0.14
v/c Ratio	0.25			0.44	0.36	0.47
Control Delay	4.0			6.2	34.8	10.4
Queue Delay	0.9			0.0	0.0	0.0
Total Delay	4.9			6.2	34.8	10.4
LOS	A			A	C	B
Approach Delay	4.9			6.2	19.1	
Approach LOS	A			A	B	
Queue Length 50th (m)	9.7			20.3	12.1	0.0
Queue Length 95th (m)	18.0			36.0	23.7	14.9
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2206			1786	378	435
Starvation Cap Reductn	1323			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.62			0.44	0.22	0.36

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 74.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	370	147	165	514	194	180	901	166	213	1152	147
Future Volume (vph)	50	370	147	165	514	194	180	901	166	213	1152	147
Satd. Flow (prot)	1642	1695	1483	1658	3013	0	1642	4558	0	1642	4638	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1583	1695	1355	1585	3013	0	1622	4558	0	1600	4638	0
Satd. Flow (RTOR)			147		37			27			17	
Lane Group Flow (vph)	50	370	147	165	708	0	180	1067	0	213	1299	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	20.0	41.0	41.0	20.0	41.0		30.0	49.0		30.0	49.0	
Total Split (%)	14.3%	29.3%	29.3%	14.3%	29.3%		21.4%	35.0%		21.4%	35.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	9.5	33.9	33.9	12.9	39.9		19.7	45.4		21.6	47.3	
Actuated g/C Ratio	0.07	0.24	0.24	0.09	0.28		0.14	0.32		0.15	0.34	
v/c Ratio	0.45	0.90	0.33	1.09	0.80		0.78	0.71		0.84	0.82	
Control Delay	74.6	77.3	8.5	155.2	52.8		88.1	45.1		84.5	47.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.6	77.3	8.5	155.2	52.8		88.1	45.1		84.5	47.8	
LOS	E	E	A	F	D		F	D		F	D	
Approach Delay		59.2			72.1			51.3			53.0	
Approach LOS		E			E			D			D	
Queue Length 50th (m)	13.6	100.0	0.0	~50.9	94.0		51.7	64.0		57.0	120.3	
Queue Length 95th (m)	26.6	#156.1	17.0	#96.9	#134.5		m70.1	81.8		#93.0	#145.1	
Internal Link Dist (m)		99.5			262.7			154.6			239.2	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	151	410	439	152	884		280	1495		280	1577	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.90	0.33	1.09	0.80		0.64	0.71		0.76	0.82	

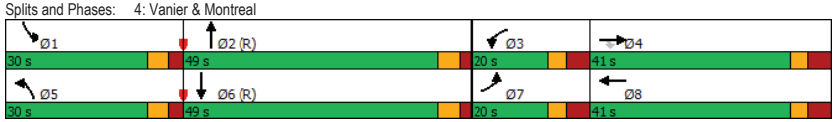
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 57.3	Intersection LOS: E
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	70	275	0	0	397
Future Vol, veh/h	36	70	275	0	0	397
Conflicting Peds, #/hr	8	5	0	95	95	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	8	2	2	2
Mvmt Flow	36	70	275	0	0	397

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	482	280	0	-	-	-
Stage 1	275	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.705	6.23	-	-	-	-
Critical Hdwy Stg 1	5.505	-	-	-	-	-
Critical Hdwy Stg 2	5.905	-	-	-	-	-
Follow-up Hdwy	3.5665	3.319	-	-	-	-
Pot Cap-1 Maneuver	517	758	-	0	0	-
Stage 1	757	-	-	0	0	-
Stage 2	795	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	514	755	-	-	-	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	651	-
HCM Lane V/C Ratio	-	0.163	-
HCM Control Delay (s)	-	11.6	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.6	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	39	85	19	84
Future Vol, veh/h	0	0	39	85	19	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	39	85	19	84

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	163	0	
Stage 1	-	-	0	-	
Stage 2	-	-	163	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	828	-	
Stage 1	-	-	-	-	
Stage 2	-	-	866	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	828	-	
Mov Cap-2 Maneuver	-	-	828	-	
Stage 1	-	-	-	-	
Stage 2	-	-	866	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	15	5	15	29	32	5	5	0	10	56	90
Future Vol, veh/h	64	15	5	15	29	32	5	5	0	10	56	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	15	5	15	29	32	5	5	0	10	56	90

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	167	136	101	146	181	5	146	0	0	5	0	0
Stage 1	121	121	-	15	15	-	-	-	-	-	-	-
Stage 2	46	15	-	131	166	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	797	755	954	823	713	1078	1436	-	-	1616	-	-
Stage 1	883	796	-	1005	883	-	-	-	-	-	-	-
Stage 2	968	883	-	873	761	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	744	747	954	800	706	1078	1436	-	-	1616	-	-
Mov Cap-2 Maneuver	744	747	-	800	706	-	-	-	-	-	-	-
Stage 1	880	790	-	1002	880	-	-	-	-	-	-	-
Stage 2	906	880	-	846	756	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	9.7	3.8	0.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1436	-	-	754	849	1616	-	-
HCM Lane V/C Ratio	0.003	-	-	0.111	0.09	0.006	-	-
HCM Control Delay (s)	7.5	0	-	10.4	9.7	7.2	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.3	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	6	3	10	9	165	3	116	30	331	98	4
Future Volume (vph)	1	6	3	10	9	165	3	116	30	331	98	4
Satd. Flow (prot)	0	1647	0	0	1700	1441	0	1656	0	1658	1678	0
Flt Permitted		0.988			0.912			0.997		0.662		
Satd. Flow (perm)	0	1627	0	0	1580	1325	0	1649	0	1147	1678	0
Satd. Flow (RTOR)		3				165		27			4	
Lane Group Flow (vph)	0	10	0	0	19	165	0	149	0	331	102	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	28.0	28.0		28.0	28.0	28.0	42.0	42.0		42.0	42.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		22.4			22.4	22.4		35.9		35.9	35.9	
Actuated g/C Ratio		0.32			0.32	0.32		0.51		0.51	0.51	
v/c Ratio		0.02			0.04	0.31		0.17		0.56	0.12	
Control Delay		14.4			10.8	8.0		8.0		16.3	9.0	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		14.4			10.8	8.0		8.0		16.3	9.0	
LOS		B			B	A		A		B	A	
Approach Delay		14.4			8.3			8.0			14.6	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		0.6			1.8	12.5		7.8		27.6	6.2	
Queue Length 95th (m)		3.5			m5.6	22.8		16.4		51.1	13.1	
Internal Link Dist (m)		22.5			128.8			367.7			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		522			505	536		858		588	862	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.02			0.04	0.31		0.17		0.56	0.12	

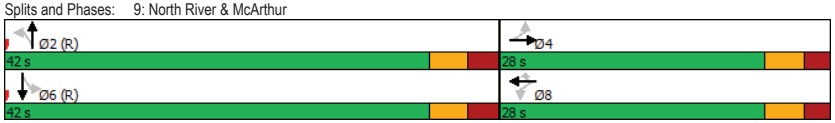
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 11.8	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	370	318	106	10	16
Future Vol, veh/h	11	370	318	106	10	16
Conflicting Peds, #/hr	105	0	0	105	6	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	2	5	3	2	2
Mvmt Flow	11	370	318	106	10	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	529	0	-	0	874	490
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.2	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	999	-	-	-	320	578
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	678	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	918	-	-	-	266	525
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	623	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	918	-	-	-	382
HCM Lane V/C Ratio	0.012	-	-	-	0.068
HCM Control Delay (s)	9	0	-	-	15.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	369	19	46	422	9	31
Future Volume (vph)	369	19	46	422	9	31
Satd. Flow (prot)	1728	0	0	1736	1658	1483
Flt Permitted				0.937	0.950	
Satd. Flow (perm)	1728	0	0	1632	1536	1412
Satd. Flow (RTOR)	6					31
Lane Group Flow (vph)	388	0	0	468	9	31
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	52.0			52.0	15.4	15.4
Actuated g/C Ratio	0.74			0.74	0.22	0.22
v/c Ratio	0.30			0.39	0.03	0.09
Control Delay	4.2			8.6	19.0	8.4
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	4.2			8.6	19.0	8.4
LOS	A			A	B	A
Approach Delay	4.2			8.6	10.8	
Approach LOS	A			A	B	
Queue Length 50th (m)	11.0			40.9	0.9	0.0
Queue Length 95th (m)	18.4			m50.0	3.9	5.5
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					20.0	
Base Capacity (vph)	1285			1212	427	415
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.30			0.39	0.02	0.07

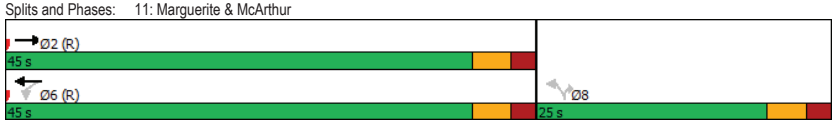
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	157	307	209	206	104	231	1097	225	140	1282	60
Future Volume (vph)	34	157	307	209	206	104	231	1097	225	140	1282	60
Satd. Flow (prot)	1551	1695	1483	3216	1695	1483	1658	3316	1483	1658	3316	1441
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1429	1695	1385	3079	1695	1308	1638	3316	1385	1638	3316	1306
Satd. Flow (RTOR)			250			168			209			121
Lane Group Flow (vph)	34	157	307	209	206	104	231	1097	225	140	1282	60
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	10.8	26.3	26.3	12.9	33.4	33.4	16.9	60.5	60.5	15.7	59.3	59.3
Actuated g/C Ratio	0.08	0.19	0.19	0.09	0.24	0.24	0.12	0.43	0.43	0.11	0.42	0.42
v/c Ratio	0.29	0.49	0.66	0.71	0.51	0.24	1.16	0.77	0.31	0.76	0.91	0.10
Control Delay	65.6	47.6	18.4	75.0	52.2	1.4	164.3	40.1	5.9	83.6	74.0	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	47.6	18.4	75.0	52.2	1.4	164.3	40.1	5.9	83.6	74.0	14.7
LOS	E	D	B	E	D	A	F	D	A	F	E	B
Approach Delay		30.8			51.2			53.6			72.5	
Approach LOS		C			D			D			E	
Queue Length 50th (m)	9.8	31.3	19.0	29.2	51.5	0.0	~75.2	145.0	2.7	41.0	177.8	2.8
Queue Length 95th (m)	21.7	49.9	33.1	42.8	77.8	0.5	#127.5	175.7	19.9	m50.0	m#224.2	m5.7
Internal Link Dist (m)		122.9			141.8			130.7			202.5	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	152	363	493	317	409	443	200	1432	717	211	1403	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.43	0.62	0.66	0.50	0.23	1.16	0.77	0.31	0.66	0.91	0.10

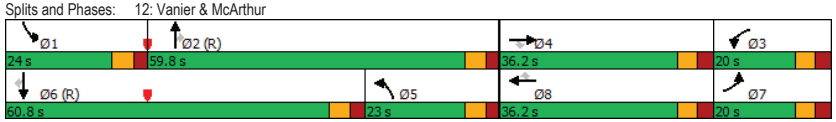
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 57.4	Intersection LOS: E
Intersection Capacity Utilization 99.5%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	400	467	0	45	4
Future Vol, veh/h	0	400	467	0	45	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	400	467	0	45	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	867	467
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	400	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	323	596
Stage 1	0	-	-	0	631	-
Stage 2	0	-	-	0	677	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	323	596
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	323	596
HCM Lane V/C Ratio	-	-	0.139	0.007
HCM Control Delay (s)	-	-	17.9	11.1
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.5	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	676	410	0	719	18	377	17	32	21	15	21
Future Volume (vph)	0	676	410	0	719	18	377	17	32	21	15	21
Satd. Flow (prot)	0	2896	0	0	3233	0	1658	1438	0	0	1496	0
Flt Permitted							0.950				0.982	
Satd. Flow (perm)	0	2896	0	0	3233	0	1631	1438	0	0	1438	0
Satd. Flow (RTOR)		104						32			19	
Lane Group Flow (vph)	0	1086	0	0	737	0	377	49	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		39.0			39.0		39.0	64.0		17.0	17.0	
Total Split (%)		32.5%			32.5%		32.5%	53.3%		14.2%	14.2%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		49.7			49.7		32.6	43.8			10.1	
Actuated g/C Ratio		0.41			0.41		0.27	0.36			0.08	
v/c Ratio		0.86			0.55		0.84	0.09			0.40	
Control Delay		38.2			29.7		57.5	12.0			45.8	
Queue Delay		0.0			52.2		0.0	0.0			0.0	
Total Delay		38.2			82.0		57.5	12.0			45.8	
LOS		D			F		E	B			D	
Approach Delay		38.2			82.0			52.3			45.8	
Approach LOS		D			F			D			D	
Queue Length 50th (m)		112.1			68.8		83.3	2.6			8.6	
Queue Length 95th (m)		#171.8			96.6		111.3	10.2			22.0	
Internal Link Dist (m)		179.1			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1260			1339		482	705			148	
Starvation Cap Reductn		0			681		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.86			1.12		0.78	0.07			0.39	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	35%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

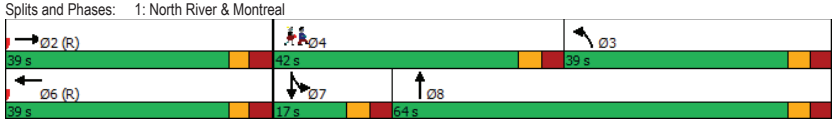
Intersection Summary

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 55.0	Intersection LOS: D
Intersection Capacity Utilization 74.9%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



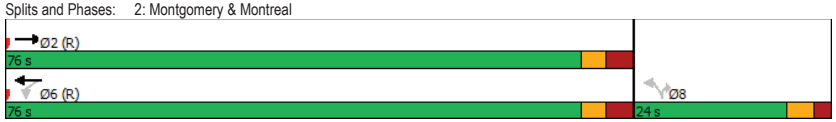
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	551	178	191	570	172	142
Future Volume (vph)	551	178	191	570	172	142
Satd. Flow (prot)	3098	0	0	3236	1658	1401
Flt Permitted				0.633	0.950	
Satd. Flow (perm)	3098	0	0	2060	1622	1331
Satd. Flow (RTOR)	102					142
Lane Group Flow (vph)	729	0	0	761	172	142
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	39.9		16.4	16.4	19.5	19.5
Total Split (s)	76.0		76.0	76.0	24.0	24.0
Total Split (%)	76.0%		76.0%	76.0%	24.0%	24.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	72.9			72.9	15.2	15.2
Actuated g/C Ratio	0.73			0.73	0.15	0.15
v/c Ratio	0.32			0.51	0.70	0.44
Control Delay	4.7			7.7	55.2	10.9
Queue Delay	1.6			0.0	0.0	0.0
Total Delay	6.3			7.7	55.2	10.9
LOS	A			A	E	B
Approach Delay	6.3			7.7	35.2	
Approach LOS	A			A	D	
Queue Length 50th (m)	19.0			29.1	31.8	0.0
Queue Length 95th (m)	29.3			46.0	51.9	15.8
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2287			1502	300	361
Starvation Cap Reductn	1324			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.76			0.51	0.57	0.39

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.9	Intersection LOS: B
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	423	185	156	432	198	229	1063	210	142	1071	120
Future Volume (vph)	60	423	185	156	432	198	229	1063	210	142	1071	120
Satd. Flow (prot)	1626	1695	1483	1658	2961	0	1658	4540	0	1658	4640	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1553	1695	1345	1584	2961	0	1626	4540	0	1625	4640	0
Satd. Flow (RTOR)			163		50			28			13	
Lane Group Flow (vph)	60	423	185	156	630	0	229	1273	0	142	1191	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	30.0	41.0	41.0	30.0	41.0		30.0	39.0		30.0	39.0	
Total Split (%)	21.4%	29.3%	29.3%	21.4%	29.3%		21.4%	27.9%		21.4%	27.9%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	10.5	38.8	38.8	18.0	49.0		22.2	39.8		17.2	34.8	
Actuated g/C Ratio	0.08	0.28	0.28	0.13	0.35		0.16	0.28		0.12	0.25	
v/c Ratio	0.49	0.90	0.38	0.74	0.59		0.87	0.97		0.70	1.02	
Control Delay	74.9	72.2	10.9	78.3	38.2		86.7	75.6		76.2	83.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.9	72.2	10.9	78.3	38.2		86.7	75.6		76.2	83.4	
LOS	E	E	B	E	D		F	E		E	F	
Approach Delay		55.5			46.2			77.3			82.6	
Approach LOS		E			D			E			F	
Queue Length 50th (m)	16.3	113.7	4.5	42.0	71.4		67.0	105.3		38.3	~133.3	
Queue Length 95th (m)	30.6	#190.0	25.1	63.9	96.3		m75.0	m#165.1		58.2	#163.2	
Internal Link Dist (m)		99.5			237.5			154.5			139.4	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	265	470	491	271	1068		283	1309		283	1162	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.90	0.38	0.58	0.59		0.81	0.97		0.50	1.02	

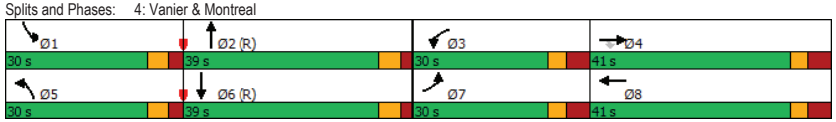
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 69.9	Intersection LOS: E
Intersection Capacity Utilization 96.9%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection						
Int Delay, s/veh	3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	120	66	372	0	0	434
Future Vol, veh/h	120	66	372	0	0	434
Conflicting Peds, #/hr	7	7	0	71	71	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	120	66	372	0	0	434

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	596	379	0	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	450	667	-	0	0	-
Stage 1	696	-	-	0	0	-
Stage 2	793	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	448	663	-	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	506	-
HCM Lane V/C Ratio	-	0.368	-
HCM Control Delay (s)	-	16.2	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	1.7	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	36	45	49	131
Future Vol, veh/h	0	0	36	45	49	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	36	45	49	131

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	117	0	
Stage 1	-	-	0	-	
Stage 2	-	-	117	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	879	-	
Stage 1	-	-	-	-	
Stage 2	-	-	908	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	879	-	
Mov Cap-2 Maneuver	-	-	879	-	
Stage 1	-	-	-	-	
Stage 2	-	-	908	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	29	10	5	16	28	5	10	0	15	47	60
Future Vol, veh/h	92	29	10	5	16	28	5	10	0	15	47	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	29	10	5	16	28	5	10	0	15	47	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	149	127	77	147	157	10	107	0	0	10	0	0
Stage 1	107	107	-	20	20	-	-	-	-	-	-	-
Stage 2	42	20	-	127	137	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	819	764	984	821	735	1071	1484	-	-	1610	-	-
Stage 1	898	807	-	999	879	-	-	-	-	-	-	-
Stage 2	972	879	-	877	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	776	754	984	781	725	1071	1484	-	-	1610	-	-
Mov Cap-2 Maneuver	776	754	-	781	725	-	-	-	-	-	-	-
Stage 1	895	799	-	996	876	-	-	-	-	-	-	-
Stage 2	927	876	-	828	775	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	9.2	2.5	0.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1484	-	-	784	897	1610	-	-
HCM Lane V/C Ratio	0.003	-	-	0.167	0.055	0.009	-	-
HCM Control Delay (s)	7.4	0	-	10.5	9.2	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	25	6	25	11	217	2	150	38	414	139	1
Future Volume (vph)	4	25	6	25	11	217	2	150	38	414	139	1
Satd. Flow (prot)	0	1633	0	0	1568	1483	0	1628	0	1642	1709	0
Flt Permitted		0.979			0.838			0.998		0.638		
Satd. Flow (perm)	0	1593	0	0	1315	1317	0	1626	0	981	1709	0
Satd. Flow (RTOR)		6				217		28			1	
Lane Group Flow (vph)	0	35	0	0	36	217	0	190	0	414	140	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	49.0	49.0		49.0	49.0	
Total Split (%)	34.7%	34.7%		34.7%	34.7%	34.7%	65.3%	65.3%		65.3%	65.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		20.4			20.4	20.4		42.9		42.9	42.9	
Actuated g/C Ratio		0.27			0.27	0.27		0.57		0.57	0.57	
v/c Ratio		0.08			0.10	0.42		0.20		0.74	0.14	
Control Delay		18.4			20.7	12.7		7.2		22.1	7.9	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		18.4			20.7	12.7		7.2		22.1	7.9	
LOS		B			C	B		A		C	A	
Approach Delay		18.4			13.8			7.2			18.5	
Approach LOS		B			B			A			B	
Queue Length 50th (m)		3.0			4.4	3.9		10.0		39.6	8.4	
Queue Length 95th (m)		9.4			11.8	33.0		19.0		#90.1	15.9	
Internal Link Dist (m)		22.5			128.8			119.0			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		437			357	516		942		561	977	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.08			0.10	0.42		0.20		0.74	0.14	

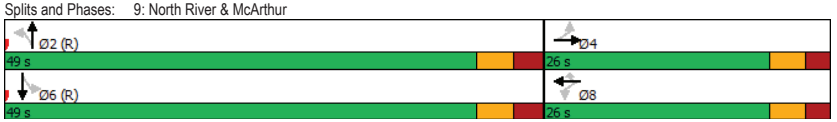
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 76.5%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	474	267	160	26	4
Future Vol, veh/h	9	474	267	160	26	4
Conflicting Peds, #/hr	81	0	0	81	5	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	8	2
Mvmt Flow	9	474	267	160	26	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	508	0	-	0	925	442
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	497	-
Critical Hdwy	4.12	-	-	-	6.48	6.22
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.218	-	-	-	3.572	3.318
Pot Cap-1 Maneuver	1057	-	-	-	291	615
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	991	-	-	-	252	570
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.9
HCM LOS			C

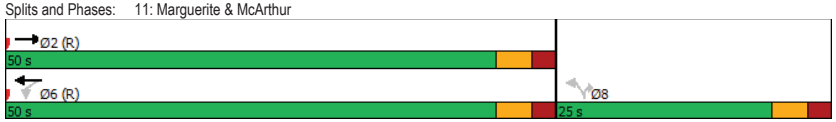
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	991	-	-	-	272
HCM Lane V/C Ratio	0.009	-	-	-	0.11
HCM Control Delay (s)	8.7	0	-	-	19.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	491	21	40	414	20	52
Future Volume (vph)	491	21	40	414	20	52
Satd. Flow (prot)	1729	0	0	1738	1658	1483
Flt Permitted				0.933	0.950	
Satd. Flow (perm)	1729	0	0	1625	1569	1411
Satd. Flow (RTOR)	5					52
Lane Group Flow (vph)	512	0	0	454	20	52
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	50.0		50.0	50.0	25.0	25.0
Total Split (%)	66.7%		66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	58.8			58.8	13.6	13.6
Actuated g/C Ratio	0.78			0.78	0.18	0.18
v/c Ratio	0.38			0.36	0.07	0.17
Control Delay	5.2			6.5	23.4	8.5
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	5.2			6.5	23.4	8.5
LOS	A			A	C	A
Approach Delay	5.2			6.5	12.6	
Approach LOS	A			A	B	
Queue Length 50th (m)	14.6			20.0	2.5	0.0
Queue Length 95th (m)	38.1			51.8	7.1	7.7
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					30.0	
Base Capacity (vph)	1356			1274	407	405
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.38			0.36	0.05	0.13

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 78.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	254	446	333	257	170	234	1259	251	122	1246	66
Future Volume (vph)	55	254	446	333	257	170	234	1259	251	122	1246	66
Satd. Flow (prot)	1658	1712	1483	3154	1712	1483	1658	3316	1469	1658	3316	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1570	1712	1310	2925	1712	1348	1607	3316	1378	1644	3316	1188
Satd. Flow (RTOR)			239			170			203			121
Lane Group Flow (vph)	55	254	446	333	257	170	234	1259	251	122	1246	66
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.2	28.5	28.5	15.3	34.0	34.0	16.9	56.8	56.8	14.8	54.7	54.7
Actuated g/C Ratio	0.09	0.20	0.20	0.11	0.24	0.24	0.12	0.41	0.41	0.11	0.39	0.39
v/c Ratio	0.38	0.73	0.98	0.97	0.62	0.37	1.17	0.94	0.37	0.70	0.96	0.12
Control Delay	67.2	64.9	62.0	103.1	56.6	8.8	169.0	53.8	8.4	81.0	85.8	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	0.0
Total Delay	67.2	64.9	62.0	103.1	56.6	8.8	169.0	53.8	8.4	81.0	85.8	18.9
LOS	E	E	E	F	E	A	F	D	A	F	F	B
Approach Delay		63.3			66.3			62.7			82.3	
Approach LOS		E			E			E			F	
Queue Length 50th (m)	14.5	65.5	64.4	~52.5	66.4	0.0	~76.9	176.0	8.2	35.7	184.3	5.4
Queue Length 95th (m)	28.5	95.9	#132.4	#83.3	97.3	19.3	#129.8	#231.0	28.7	m40.3	m186.8	m7.7
Internal Link Dist (m)		122.9			146.0			119.5			202.0	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	163	366	468	343	415	456	200	1344	679	211	1295	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.69	0.95	0.97	0.62	0.37	1.17	0.94	0.37	0.58	0.96	0.12

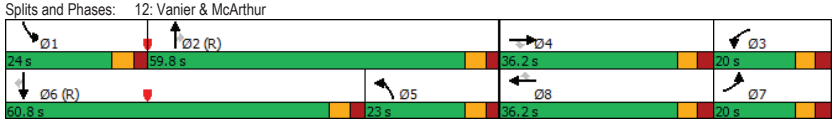
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 69.4	Intersection LOS: E
Intersection Capacity Utilization 104.6%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	545	446	0	35	8
Future Vol, veh/h	0	545	446	0	35	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	545	446	0	35	8

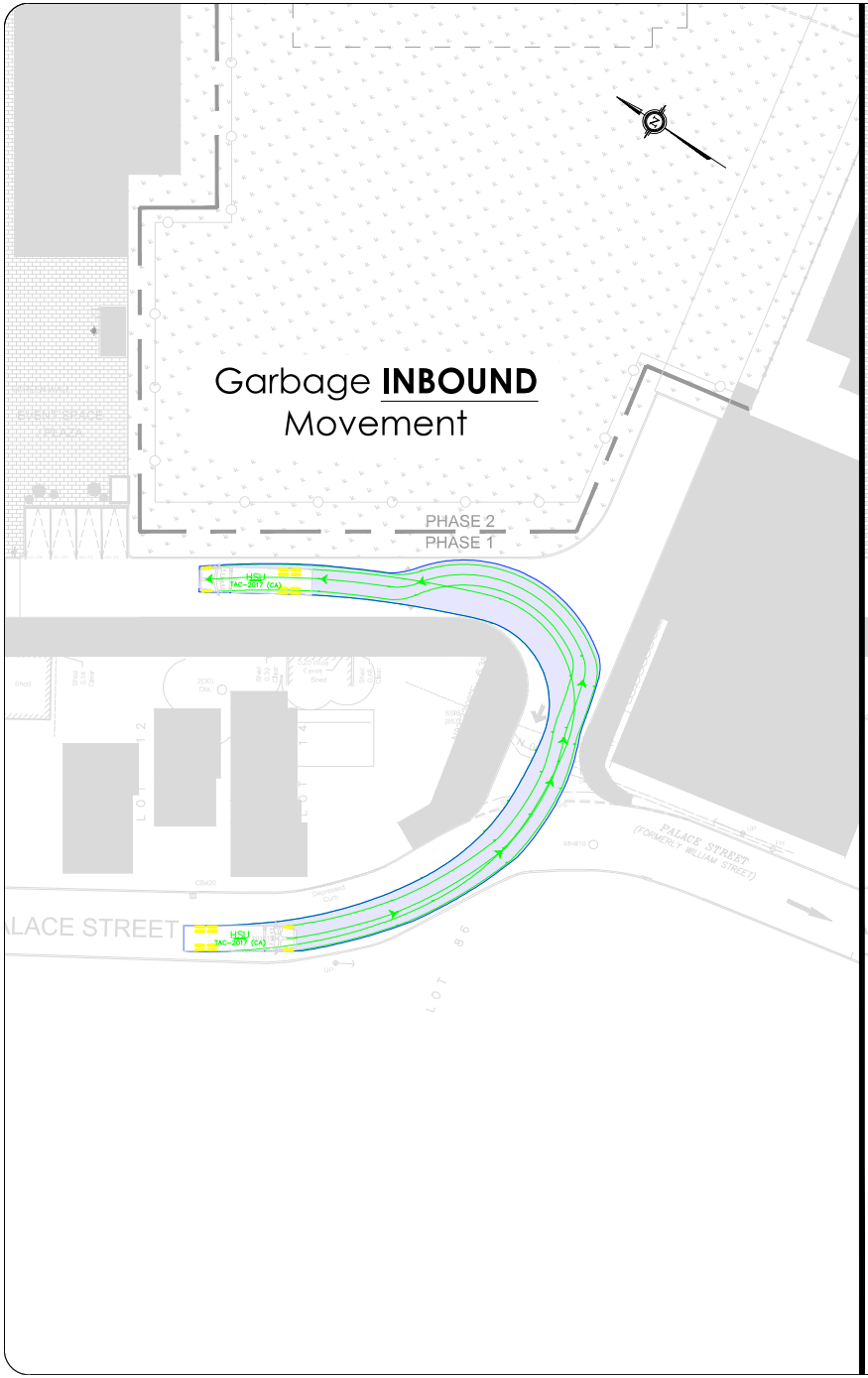
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	991	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	545	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	273	612
Stage 1	0	-	-	0	645	-
Stage 2	0	-	-	0	581	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	273	612
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	581	-

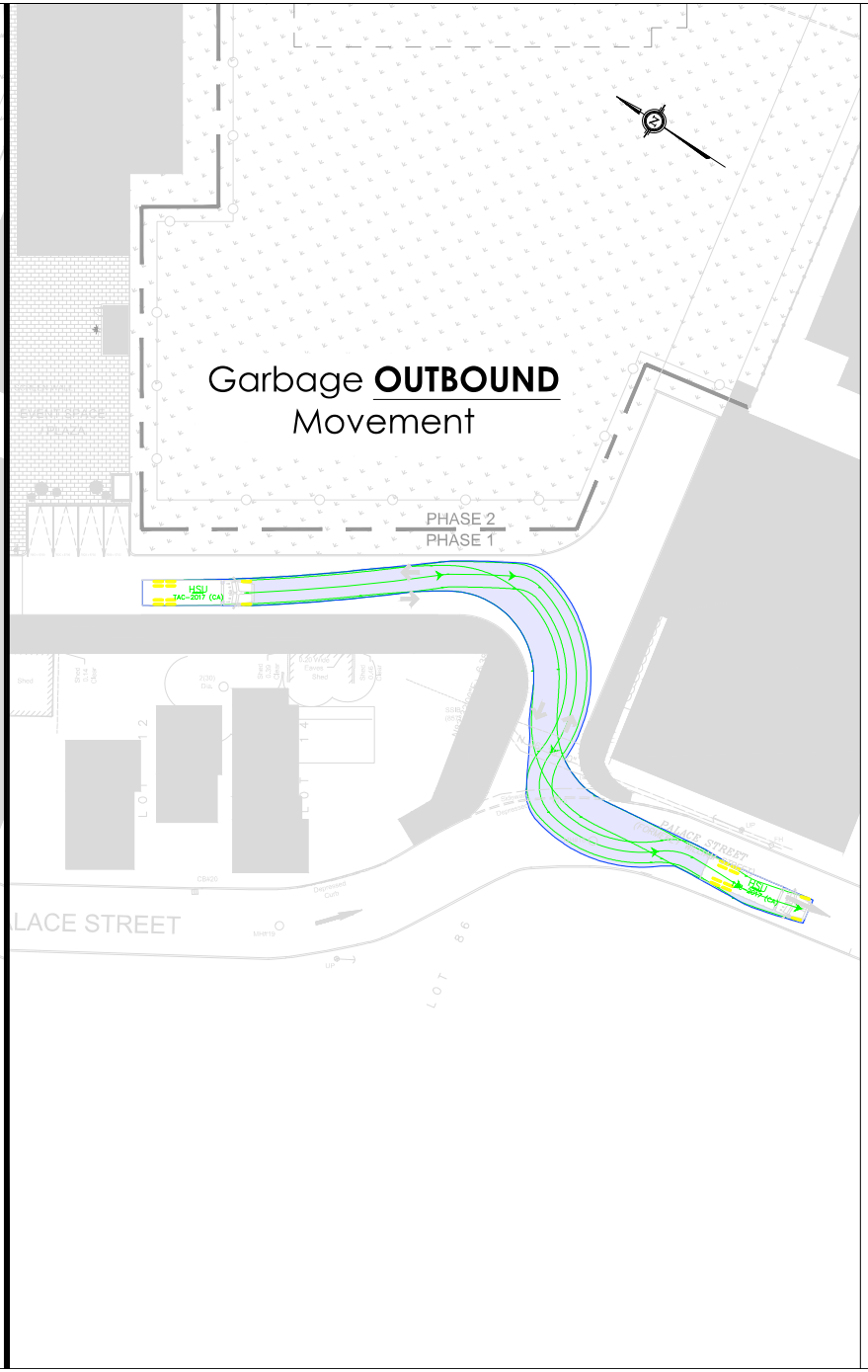
Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	273	612
HCM Lane V/C Ratio	-	-	0.128	0.013
HCM Control Delay (s)	-	-	20.1	11
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	0

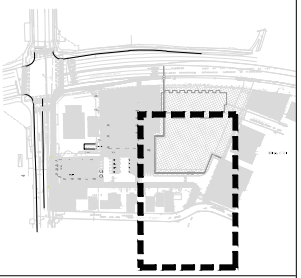
Appendix I

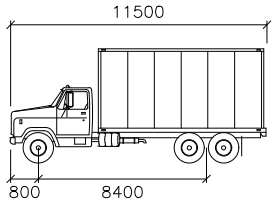
Site Turning Templates





Notes:





HSU

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

REV:	DESCRIPTION:	BY:	DATE:
02	Updated Site Plan	AN	2023-03-16
01	Issued for Review	AN	2023-01-27

STATUS:

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

CLIENT: 2705460 Ontario Inc.

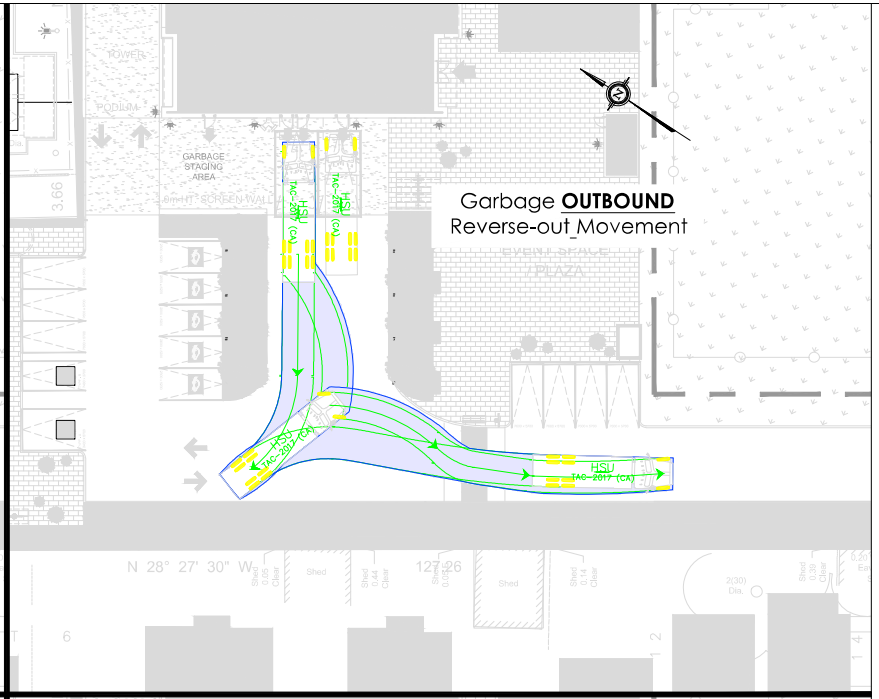
ARCHITECT:

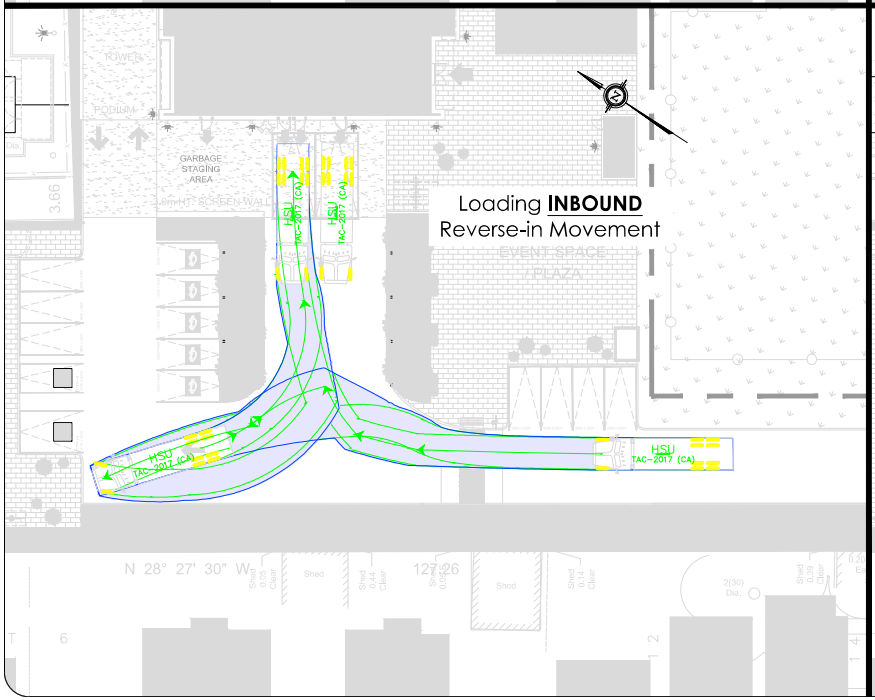
SITE: 112 Montreal

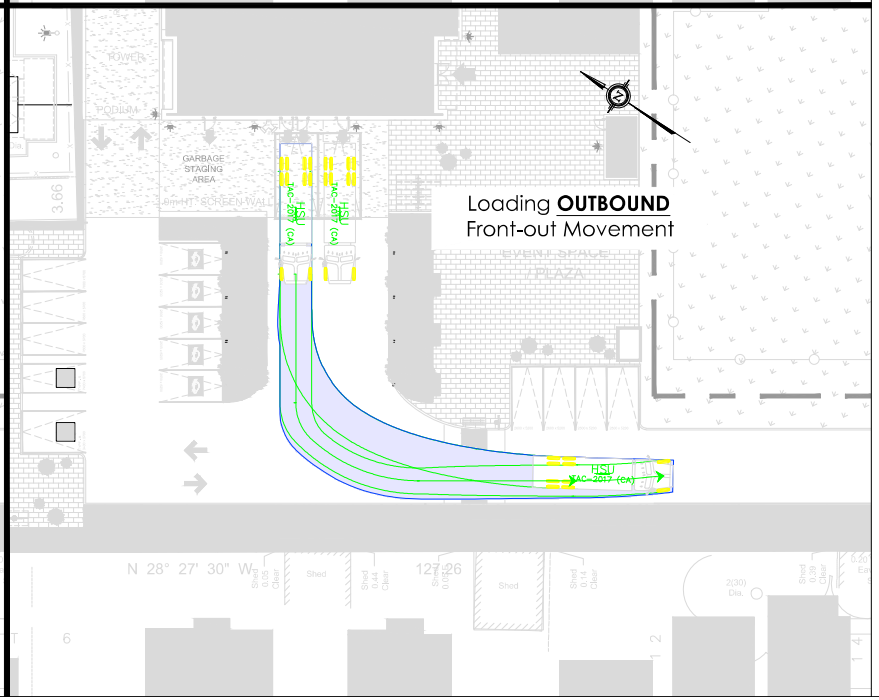
TITLE: Turning Movement Analysis
Garbage Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-03-16	AN	AH

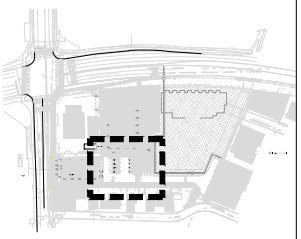
PROJECT NO:	DRAWING NO:	REVISION:
2022-109	001	02

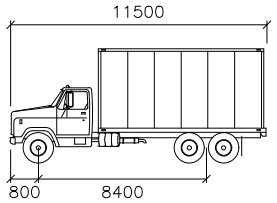






Notes:





HSU

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

REV:	DESCRIPTION:	BY:	DATE:
02	Updated Site Plan	AN	2023-03-16
01	Issued for Review	AN	2023-01-27

STATUS:

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

CLIENT: 2705460 Ontario Inc.

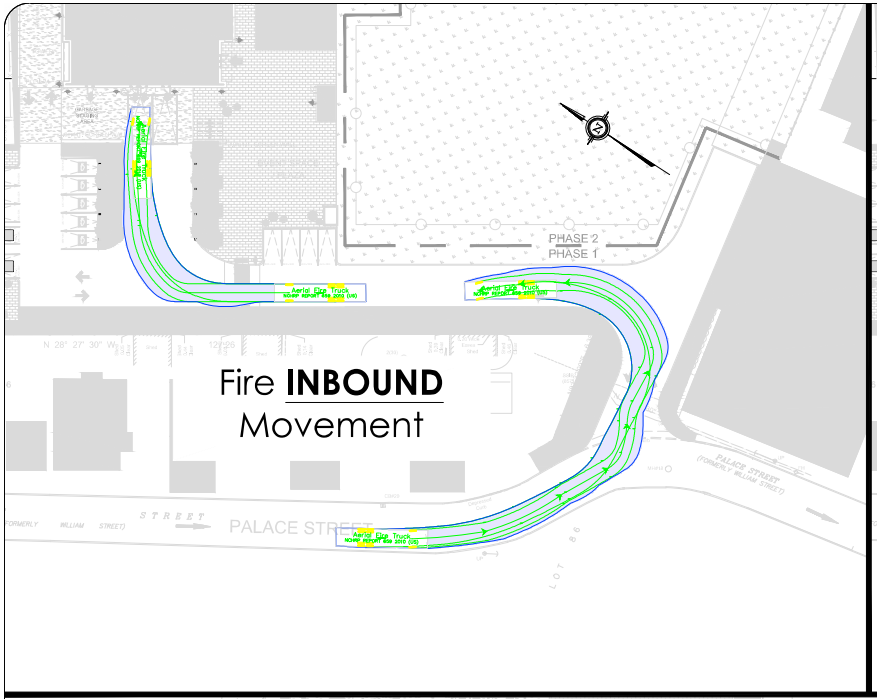
ARCHITECT:

SITE: 112 Montreal

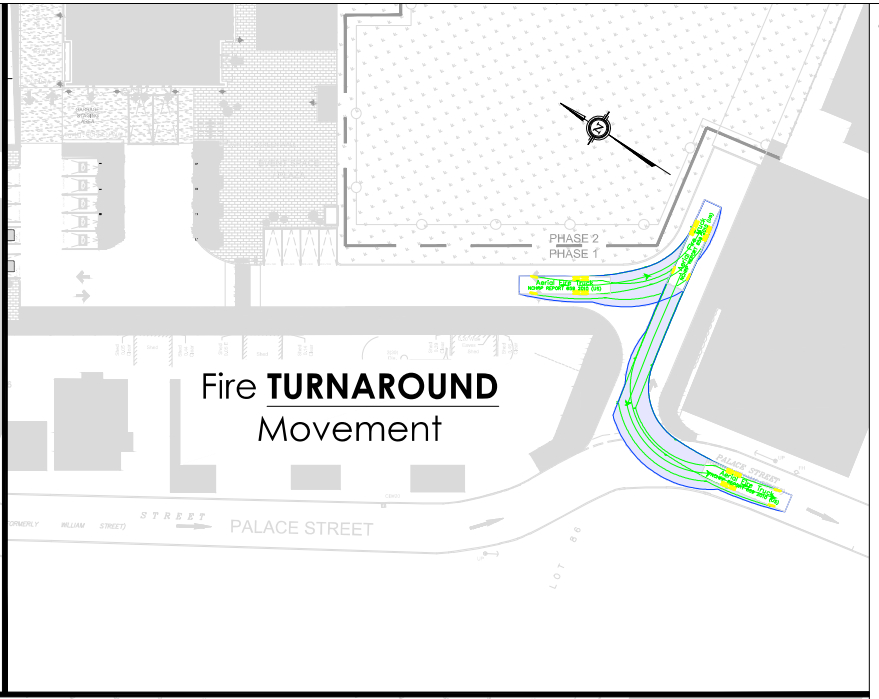
TITLE: Turning Movement Analysis
HSU Loading Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-03-16	AN	AH

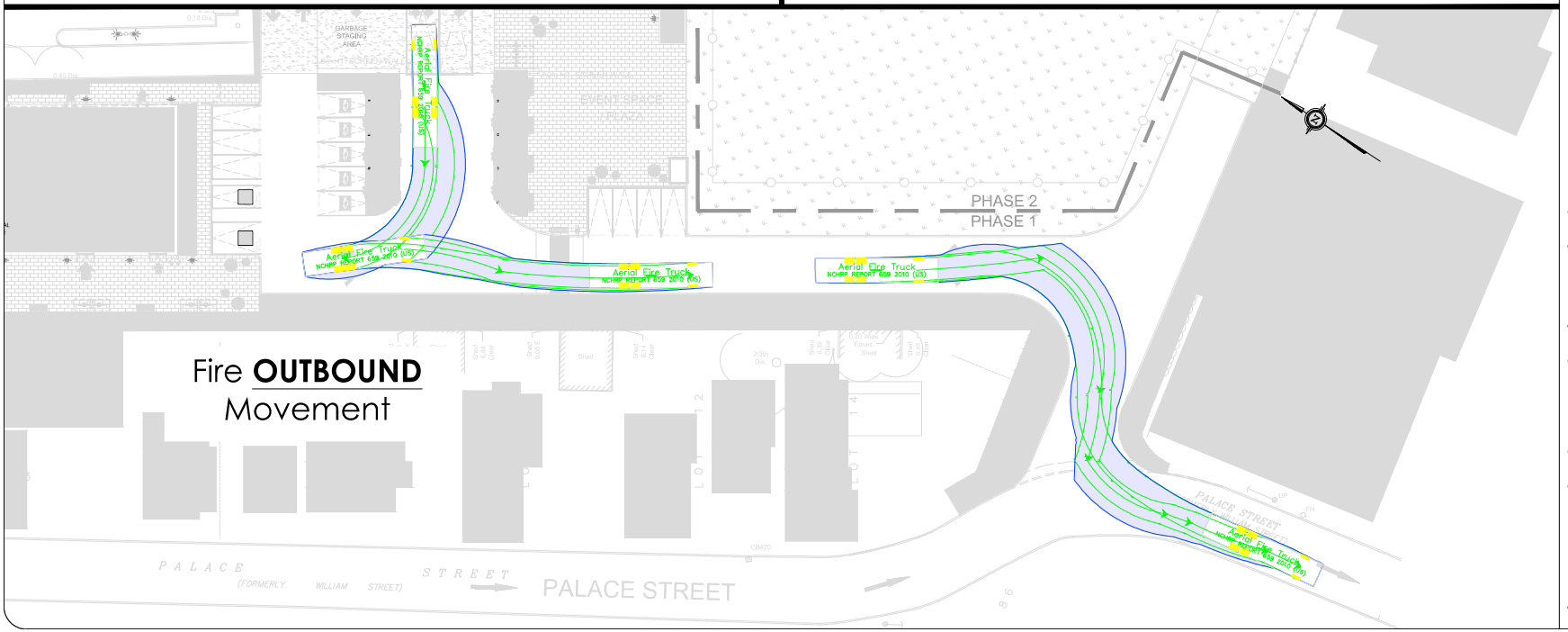
PROJECT NO:	DRAWING NO:	REVISION:
2022-109	002	02



Fire **INBOUND** Movement

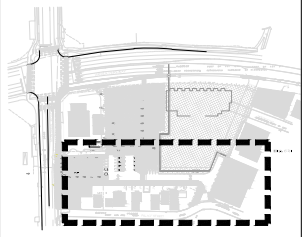


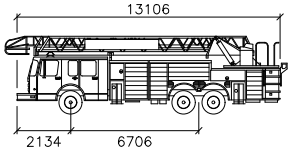
Fire **TURNAROUND** Movement



Fire **OUTBOUND** Movement

Notes:





Aerial Fire Truck

	mm
Width	: 2591
Track	: 2591
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

REV:	DESCRIPTION:	BY:	DATE:
02	Updated Site Plan	AN	2023-03-16
01	Issued for Review	AN	2023-01-27

STATUS:

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

CLIENT: 2705460 Ontario Inc.

ARCHITECT:

SITE: 112 Montreal

TITLE: Turning Movement Analysis
Fire Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2023-03-16	AN	AH

PROJECT NO:	DRAWING NO:	REVISION:
2022-109	003	02

Appendix J

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc.**	**Project**	**112 Montreal Road**
Scenario	**Existing/Future**	**Date**	**08-Jun-23**
Comments			

SEGMENTS			Vanier Existing	Montreal Ex/Fut	Palace Ex/Fut	Vanier Future
Pedestrian	Sidewalk Width Boulevard Width	-	≥ 2 m < 0.5	≥ 2 m < 0.5	no sidewalk n/a	≥ 2 m > 2 m
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	≤ 3000	> 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 30 to 50 km/h no	> 30 to 50 km/h no	> 60 km/h no
	Exposure to Traffic PLoS		**F**	**C**	**F**	**D**
	Effective Sidewalk Width					
	Pedestrian Volume					
	Crowding PLoS		-	-	-	-
	Level of Service		**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic	Mixed Traffic	Mixed Traffic	Physically Separated
	Number of Travel Lanes		≥ 6 lanes total	4-5 lanes total	≤ 2 (no centreline)	
	Operating Speed		≥ 60 km/h	≥ 50 to 60 km/h	>40 to <50 km/h	
	# of Lanes & Operating Speed LoS		**F**	**E**	**B**	**-**
	Bike Lane (+ Parking Lane) Width					
	Bike Lane Width LoS		-	-	-	-
	Bike Lane Blockages					
	Blockage LoS		-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge	
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes	
	Sidestreet Operating Speed		≤ 40 km/h	>40 to 50 km/h	>40 to 50 km/h	
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**A**	**A**
	Level of Service		**F**	**E**	**B**	**A**
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic		Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8		Vt/Vp ≥ 0.8
	Level of Service		**D**	**D**	**-**	**D**
Truck	Truck Lane Width	**C**	> 3.7 m	≤ 3.5 m		> 3.7 m
	Travel Lanes per Direction		> 1	1		> 1
	Level of Service		**A**	**C**	**-**	**A**

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation Inc.**	**Project**	**112 Montreal Road**
Scenario	**Existing/Future**	**Date**	**08-Jun-23**
Comments			

INTERSECTIONS		**Montreal & North River**				**Montreal & Montgomery**				**Montreal & Vanier**			
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes	0 - 2	4	4	4		5	4	4	7	7	5	5
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	No left turn / Prohib.	Protected/ Permissive	Protected		Permissive	No left turn / Prohib.	Permissive	Protected/ Permissive	Protected/ Permissive	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No		No	No	No	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel		No Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	10-15m	5-10m	5-10m	5-10m		3-5m	No Right Turn	10-15m	5-10m	5-10m	5-10m	5-10m
	Crosswalk Type	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings		Std transverse markings	Zebra stripe hi-vis markings	Std transverse markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
	PETSI Score	**88**	**68**	**57**	**65**		**39**	**74**	**61**	**8**	**8**	**49**	**49**
	Ped. Exposure to Traffic LoS	**B**	**C**	**D**	**C**	**-**	**E**	**C**	**C**	**F**	**F**	**D**	**D**
	Cycle Length	120	95	95	95		100	80	80	140	140	140	140
	Effective Walk Time	3	35	14	14		10	50	43	17	17	8	8
	Average Pedestrian Delay	**57**	**19**	**35**	**35**		**41**	**6**	**9**	**54**	**54**	**62**	**62**
	Pedestrian Delay LoS	**E**	**B**	**D**	**D**	**-**	**E**	**A**	**A**	**E**	**E**	**F**	**F**
	Level of Service	**E**	**C**	**D**	**D**	**-**	**E**	**C**	**C**	**F**	**F**	**F**	**F**
		E				**E**				**F**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Mixed Traffic		Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic
	Right Turn Lane Configuration	Not Applicable											> 50 m
	Right Turning Speed	Not Applicable											≤ 25 km/h
	Cyclist relative to RT motorists	**Not Applicable**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**Not Applicable**	**Not Applicable**	**Not Applicable**	**F**
	Separated or Mixed Traffic	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**-**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Separated**	**Mixed Traffic**
	Left Turn Approach	2-stage, LT box	One lane crossed				One lane crossed	One lane crossed		2-stage, LT box	2-stage, LT box	2-stage, LT box	One lane crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h				> 50 to < 60 km/h	> 40 to ≤ 50 km/h		≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h
	Left Turning Cyclist	**A**	**E**	**-**	**-**	**-**	**E**	**D**	**-**	**A**	**A**	**A**	**D**
	Level of Service	**A**	**E**	**-**	**-**	**-**	**E**	**D**	**-**	**A**	**A**	**A**	**F**
		E				**E**				**F**			
Transit	Average Signal Delay		≤ 10 sec	> 40 sec	> 40 sec			≤ 10 sec	≤ 10 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec
	Level of Service	**-**	**B**	**F**	**F**	**-**	**-**	**B**	**B**	**F**	**F**	**F**	**F**
		F				**B**				**F**			
Truck	Effective Corner Radius										< 10 m		< 10 m
	Number of Receiving Lanes on Departure from Intersection										1		≥ 2
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**F**	**-**	**D**
		-				**-**				**F**			
Auto	Volume to Capacity Ratio	0.71 - 0.80				0.0 - 0.60				0.91 - 1.00			
	Level of Service	**C**				**A**				**E**			

McArthur & North River				McArthur & Marguerite				McArthur & Vanier			
NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
4	5	6	5		4	5	5	7	7	7	6
No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
Permissive	Permissive	Permissive	Permissive		Permissive	No left turn / Prohib.	Permissive	Protected	Protected	Protected	Protected
Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
No	No	No	No		No	No	No	No	No	No	No
No Channel	No Channel	No Channel	No Channel		No Channel	No Right Turn	No Channel	Conv'tl without Receiving Lane	Conventional with Receiving Lane	Conv'tl without Receiving Lane	Conventional with Receiving Lane
5-10m	5-10m	10-15m	5-10m		5-10m	No Right Turn	5-10m	15-25m	15-25m	15-25m	10-15m
Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Textured/coloured pavement	Textured/coloured pavement	Std transverse markings
54	**38**	**20**	**38**		**54**	**55**	**46**	**14**	**14**	**17**	**29**
D	**E**	**F**	**E**	**-**	**D**	**D**	**D**	**F**	**F**	**F**	**F**
70	70	75	75		75	70	70	140	140	140	140
25	25	7	7		8	40	28	32	31	7	7
14	**14**	**31**	**31**		**30**	**6**	**13**	**42**	**42**	**63**	**63**
B	**B**	**D**	**D**	**-**	**D**	**A**	**B**	**E**	**E**	**F**	**F**
D	**E**	**F**	**E**	**-**	**D**	**D**	**D**	**F**	**F**	**F**	**F**
F				**D**				**F**			
NORTH	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Pocket Bike Lane		Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
			Bike lane shifts to the left of right turn					> 50 m	> 50 m	Not Applicable	Not Applicable
			≤ 25 km/h					>25 km/h	>25 km/h	Not Applicable	Not Applicable
-	**-**	**-**	**D**	**-**	**-**	**Not Applicable**	**Not Applicable**	**F**	**F**	**Not Applicable**	**Not Applicable**
Mixed Traffic	**Mixed Traffic**	**Separated**	**Separated**	**-**	**Mixed Traffic**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**
One lane crossed	No lane crossed	1 lane crossed	No lane crossed		One lane crossed	1 lane crossed		≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed
> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h		> 50 to < 60 km/h	> 50 to < 60 km/h		≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h
E	**C**	**D**	**C**	**-**	**E**	**D**	**-**	**F**	**F**	**F**	**F**
E	**C**	**D**	**D**	**-**	**E**	**D**	**-**	**F**	**F**	**F**	**F**
E				**E**				**F**			
≤ 30 sec		≤ 20 sec				≤ 10 sec	≤ 10 sec	> 40 sec	> 40 sec	> 40 sec	> 40 sec
D	**-**	**C**	**-**	**-**	**-**	**B**	**B**	**F**	**F**	**F**	**F**
D				**B**				**F**			
										> 15 m	
										≥ 2	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**A**	**-**
-				**-**				**A**			
0.0 - 0.60				0.0 - 0.60				> 1.00			
A				**A**				**F**			

Appendix K

Synchro Intersection Worksheets – 2024 Future Total Conditions

CGH TRANSPORTATION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	481	362	0	728	13	252	10	44	17	25	15
Future Volume (vph)	0	481	362	0	728	13	252	10	44	17	25	15
Satd. Flow (prot)	0	2887	0	0	3164	0	1595	1320	0	0	1511	0
Flt Permitted							0.950				0.985	
Satd. Flow (perm)	0	2887	0	0	3164	0	1569	1320	0	0	1489	0
Satd. Flow (RTOR)								44			15	
Lane Group Flow (vph)	0	843	0	0	741	0	252	54	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		29.0			29.0		24.0	49.0		17.0	17.0	
Total Split (%)		30.5%			30.5%		25.3%	51.6%		17.9%	17.9%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		36.2			36.2		21.1	32.3			10.1	
Actuated g/C Ratio		0.38			0.38		0.22	0.34			0.11	
v/c Ratio		0.77			0.61		0.71	0.11			0.33	
Control Delay		32.6			27.4		45.2	9.1			36.5	
Queue Delay		0.0			35.7		0.0	0.0			0.0	
Total Delay		32.6			63.1		45.2	9.1			36.5	
LOS		C			E		D	A			D	
Approach Delay		32.6			63.1			38.9			36.5	
Approach LOS		C			E			D			D	
Queue Length 50th (m)		70.6			57.4		42.5	1.3			7.2	
Queue Length 95th (m)		#111.6			83.0		64.2	8.8			18.7	
Internal Link Dist (m)		194.5			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1100			1206		363	614			180	
Starvation Cap Reductn		0			506		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.77			1.06		0.69	0.09			0.32	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	44%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

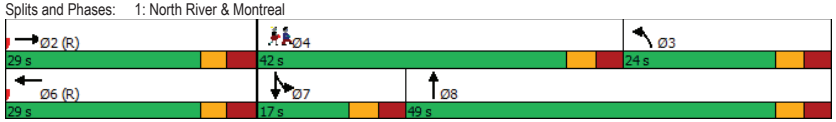
Intersection Summary

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 45.3	Intersection LOS: D
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



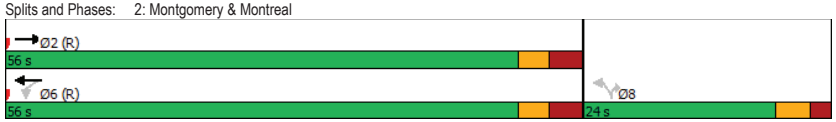
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	444	98	74	689	52	77
Future Volume (vph)	444	98	74	689	52	77
Satd. Flow (prot)	3110	0	0	3180	1658	1401
Flt Permitted				0.840	0.950	
Satd. Flow (perm)	3110	0	0	2679	1635	1365
Satd. Flow (RTOR)	62					77
Lane Group Flow (vph)	542	0	0	763	52	77
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	40.4		16.4	16.4	19.5	19.5
Total Split (s)	56.0		56.0	56.0	24.0	24.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%	30.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	61.7			61.7	10.8	10.8
Actuated g/C Ratio	0.77			0.77	0.14	0.14
v/c Ratio	0.22			0.37	0.24	0.31
Control Delay	3.5			4.8	33.2	11.3
Queue Delay	0.5			0.0	0.0	0.0
Total Delay	3.9			4.8	33.2	11.3
LOS	A			A	C	B
Approach Delay	3.9			4.8	20.1	
Approach LOS	A			A	C	
Queue Length 50th (m)	10.0			18.9	7.3	0.0
Queue Length 95th (m)	18.4			33.1	16.3	10.8
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2412			2065	378	374
Starvation Cap Reductn	1342			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.51			0.37	0.14	0.21

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 5.8	Intersection LOS: A
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	310	138	165	495	194	183	879	166	213	1124	141
Future Volume (vph)	41	310	138	165	495	194	183	879	166	213	1124	141
Satd. Flow (prot)	1642	1695	1483	1658	3000	0	1642	4536	0	1642	4602	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1576	1695	1292	1533	3000	0	1600	4536	0	1590	4602	0
Satd. Flow (RTOR)			138		39			28			16	
Lane Group Flow (vph)	41	310	138	165	689	0	183	1045	0	213	1265	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	20.0	41.0	41.0	20.0	41.0		30.0	49.0		30.0	49.0	
Total Split (%)	14.3%	29.3%	29.3%	14.3%	29.3%		21.4%	35.0%		21.4%	35.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	8.9	33.9	33.9	12.9	40.4		19.9	45.4		21.6	47.1	
Actuated g/C Ratio	0.06	0.24	0.24	0.09	0.29		0.14	0.32		0.15	0.34	
v/c Ratio	0.39	0.76	0.33	1.09	0.77		0.79	0.70		0.84	0.81	
Control Delay	73.0	62.2	8.7	155.2	50.7		88.9	44.3		84.5	47.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.0	62.2	8.7	155.2	50.7		88.9	44.3		84.5	47.4	
LOS	E	E	A	F	D		F	D		F	D	
Approach Delay		48.0			70.9			51.0			52.8	
Approach LOS		D			E			D			D	
Queue Length 50th (m)	11.1	80.2	0.0	~50.9	89.7		53.0	61.6		57.0	116.8	
Queue Length 95th (m)	23.0	#114.9	16.6	#96.9	#126.7		m72.3	80.4		#93.0	140.6	
Internal Link Dist (m)		99.5			262.7			154.6			239.2	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	151	410	417	152	893		280	1489		280	1558	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.27	0.76	0.33	1.09	0.77		0.65	0.70		0.76	0.81	

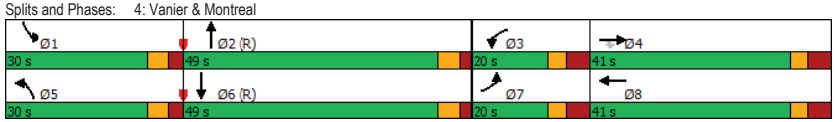
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 55.5	Intersection LOS: E
Intersection Capacity Utilization 96.5%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	41	284	0	0	397
Future Vol, veh/h	35	41	284	0	0	397
Conflicting Peds, #/hr	8	5	0	95	95	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	8	2	2	2
Mvmt Flow	35	41	284	0	0	397

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	491	289	0	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.705	6.23	-	-	-	-
Critical Hdwy Stg 1	5.505	-	-	-	-	-
Critical Hdwy Stg 2	5.905	-	-	-	-	-
Follow-up Hdwy	3.5665	3.319	-	-	-	-
Pot Cap-1 Maneuver	511	749	-	0	0	-
Stage 1	750	-	-	0	0	-
Stage 2	795	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	508	746	-	-	-	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	614	-
HCM Lane V/C Ratio	-	0.124	-
HCM Control Delay (s)	-	11.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	30	100	5	79
Future Vol, veh/h	0	0	30	100	5	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	30	100	5	79

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	160	0	
Stage 1	-	-	0	-	
Stage 2	-	-	160	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	831	-	
Stage 1	-	-	-	-	
Stage 2	-	-	869	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	831	-	
Mov Cap-2 Maneuver	-	-	831	-	
Stage 1	-	-	-	-	
Stage 2	-	-	869	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	10	5	33	35	29	5	5	0	10	29	90
Future Vol, veh/h	64	10	5	33	35	29	5	5	0	10	29	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	10	5	33	35	29	5	5	0	10	29	90

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	141	109	74	117	154	5	119	0	0	5	0	0
Stage 1	94	94	-	15	15	-	-	-	-	-	-	-
Stage 2	47	15	-	102	139	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	829	781	988	859	738	1078	1469	-	-	1616	-	-
Stage 1	913	817	-	1005	883	-	-	-	-	-	-	-
Stage 2	967	883	-	904	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	771	773	988	840	731	1078	1469	-	-	1616	-	-
Mov Cap-2 Maneuver	771	773	-	840	731	-	-	-	-	-	-	-
Stage 1	910	811	-	1002	880	-	-	-	-	-	-	-
Stage 2	901	880	-	882	777	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.8	3.7	0.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1469	-	-	782	850	1616	-	-
HCM Lane V/C Ratio	0.003	-	-	0.101	0.114	0.006	-	-
HCM Control Delay (s)	7.5	0	-	10.1	9.8	7.2	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0	-	-

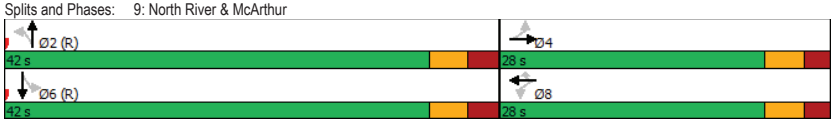
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	6	3	8	9	169	3	121	29	322	106	4
Future Volume (vph)	1	6	3	8	9	169	3	121	29	322	106	4
Satd. Flow (prot)	0	1647	0	0	1705	1441	0	1658	0	1658	1680	0
Flt Permitted		0.988			0.925			0.997		0.660		
Satd. Flow (perm)	0	1627	0	0	1604	1325	0	1652	0	1144	1680	0
Satd. Flow (RTOR)		3				169		25			4	
Lane Group Flow (vph)	0	10	0	0	17	169	0	153	0	322	110	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	28.0	28.0		28.0	28.0	28.0	42.0	42.0		42.0	42.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		22.4			22.4	22.4		35.9		35.9	35.9	
Actuated g/C Ratio		0.32			0.32	0.32		0.51		0.51	0.51	
v/c Ratio		0.02			0.03	0.31		0.18		0.55	0.13	
Control Delay		14.4			11.4	8.3		8.2		16.0	9.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		14.4			11.4	8.3		8.2		16.0	9.1	
LOS		B			B	A		A		B	A	
Approach Delay		14.4			8.6			8.2			14.3	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		0.6			1.6	13.7		8.3		26.6	6.7	
Queue Length 95th (m)		3.5			5.4	22.6		17.0		49.3	14.1	
Internal Link Dist (m)		22.5			128.8			367.7			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		522			513	538		859		586	863	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.02			0.03	0.31		0.18		0.55	0.13	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: North River & McArthur



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	361	322	88	10	16
Future Vol, veh/h	10	361	322	88	10	16
Conflicting Peds, #/hr	105	0	0	105	6	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	2	5	3	2	2
Mvmt Flow	10	361	322	88	10	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	515	0	-	0	858	485
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	4.2	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1011	-	-	-	327	582
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	929	-	-	-	273	529
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	630	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	929	-	-	-	389
HCM Lane V/C Ratio	0.011	-	-	-	0.067
HCM Control Delay (s)	8.9	0	-	-	14.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	353	19	46	408	9	31
Future Volume (vph)	353	19	46	408	9	31
Satd. Flow (prot)	1727	0	0	1736	1658	1483
Flt Permitted				0.938	0.950	
Satd. Flow (perm)	1727	0	0	1633	1533	1394
Satd. Flow (RTOR)	6					31
Lane Group Flow (vph)	372	0	0	454	9	31
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	53.8			53.8	13.6	13.6
Actuated g/C Ratio	0.77			0.77	0.19	0.19
v/c Ratio	0.28			0.36	0.03	0.11
Control Delay	3.6			7.6	20.1	8.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	3.6			7.6	20.1	8.6
LOS	A			A	C	A
Approach Delay	3.6			7.6	11.2	
Approach LOS	A			A	B	
Queue Length 50th (m)	9.3			38.3	1.0	0.0
Queue Length 95th (m)	16.5			m48.1	3.9	5.5
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					20.0	
Base Capacity (vph)	1328			1255	427	410
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.28			0.36	0.02	0.08

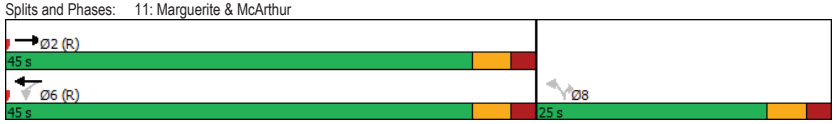
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 6.0	Intersection LOS: A
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	131	308	209	198	104	225	1073	225	140	1241	60
Future Volume (vph)	34	131	308	209	198	104	225	1073	225	140	1241	60
Satd. Flow (prot)	1551	1695	1483	3216	1695	1483	1658	3316	1483	1658	3316	1441
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1423	1695	1383	3070	1695	1302	1634	3316	1383	1637	3316	1293
Satd. Flow (RTOR)			250			168			213			121
Lane Group Flow (vph)	34	131	308	209	198	104	225	1073	225	140	1241	60
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	10.8	26.0	26.0	13.6	33.8	33.8	16.9	60.1	60.1	15.7	58.9	58.9
Actuated g/C Ratio	0.08	0.19	0.19	0.10	0.24	0.24	0.12	0.43	0.43	0.11	0.42	0.42
v/c Ratio	0.29	0.42	0.67	0.67	0.48	0.24	1.12	0.75	0.31	0.76	0.89	0.10
Control Delay	65.9	46.2	18.9	72.4	51.3	1.4	155.3	39.7	5.6	84.0	73.2	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	46.2	18.9	72.4	51.3	1.4	155.3	39.7	5.6	84.0	73.2	14.9
LOS	E	D	B	E	D	A	F	D	A	F	E	B
Approach Delay		29.8			49.8			51.7			71.8	
Approach LOS		C			D			D			E	
Queue Length 50th (m)	9.5	25.9	18.0	29.2	49.2	0.0	~71.8	140.3	2.0	40.8	172.3	3.0
Queue Length 95th (m)	21.4	42.2	32.7	42.8	74.9	0.5	#123.5	170.2	19.0	m50.9	m#211.6	m6.0
Internal Link Dist (m)		122.9			141.8			130.7			202.5	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	152	363	492	317	409	442	200	1424	715	211	1395	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.36	0.63	0.66	0.48	0.24	1.13	0.75	0.31	0.66	0.89	0.10

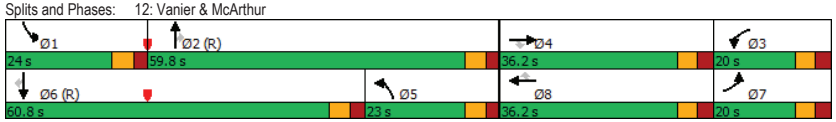
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 56.2	Intersection LOS: E
Intersection Capacity Utilization 98.0%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	41	0	0	0	20	37
Future Vol, veh/h	41	0	0	0	20	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	0	0	0	20	37

Major/Minor	Minor1			Major2	
Conflicting Flow All	77	-		0	0
Stage 1	0	-		-	-
Stage 2	77	-		-	-
Critical Hdwy	6.42	-		4.12	-
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	5.42	-		-	-
Follow-up Hdwy	3.518	-		2.218	-
Pot Cap-1 Maneuver	926	0		-	-
Stage 1	-	0		-	-
Stage 2	946	0		-	-
Platoon blocked, %					-
Mov Cap-1 Maneuver	926	-		-	-
Mov Cap-2 Maneuver	926	-		-	-
Stage 1	-	-		-	-
Stage 2	946	-		-	-

Approach	WB	SB
HCM Control Delay, s	9.1	
HCM LOS	A	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.044	-	-
HCM Control Delay (s)	9.1	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	384	453	0	36	4
Future Vol, veh/h	0	384	453	0	36	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	384	453	0	36	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	837	453
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	337	607
Stage 1	0	-	-	0	640	-
Stage 2	0	-	-	0	688	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	337	607
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	337	607
HCM Lane V/C Ratio	-	-	0.107	0.007
HCM Control Delay (s)	-	-	17	11
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱		↰	↱			✣	
Traffic Volume (vph)	0	630	410	0	701	18	364	17	51	21	15	21
Future Volume (vph)	0	630	410	0	701	18	364	17	51	21	15	21
Satd. Flow (prot)	0	2871	0	0	3232	0	1658	1394	0	0	1496	0
Flt Permitted							0.950				0.982	
Satd. Flow (perm)	0	2871	0	0	3232	0	1631	1394	0	0	1440	0
Satd. Flow (RTOR)		123						51			19	
Lane Group Flow (vph)	0	1040	0	0	719	0	364	68	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		39.0			39.0		39.0	64.0		17.0	17.0	
Total Split (%)		32.5%			32.5%		32.5%	53.3%		14.2%	14.2%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		50.7			50.7		31.6	42.7			10.1	
Actuated g/C Ratio		0.42			0.42		0.26	0.36			0.08	
v/c Ratio		0.81			0.53		0.83	0.13			0.40	
Control Delay		33.7			28.6		58.1	10.1			45.8	
Queue Delay		0.0			48.1		0.0	0.0			0.0	
Total Delay		33.7			76.6		58.1	10.1			45.8	
LOS		C			E		E	B			D	
Approach Delay		33.7			76.6			50.6			45.8	
Approach LOS		C			E			D			D	
Queue Length 50th (m)		100.6			65.5		80.7	2.7			8.6	
Queue Length 95th (m)		#155.4			92.8		107.5	11.6			22.0	
Internal Link Dist (m)		179.1			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1284			1366		475	694			148	
Starvation Cap Reductn		0			706		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.81			1.09		0.77	0.10			0.39	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	35%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

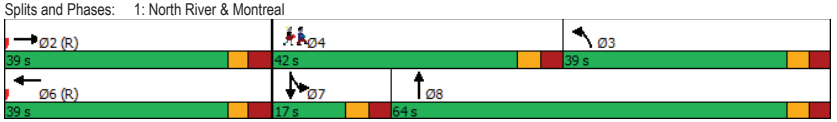
Intersection Summary	

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 51.0	Intersection LOS: D
Intersection Capacity Utilization 72.9%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



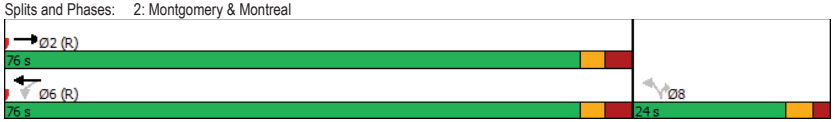
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	578	124	117	571	153	101
Future Volume (vph)	578	124	117	571	153	101
Satd. Flow (prot)	3148	0	0	3252	1658	1401
Flt Permitted				0.706	0.950	
Satd. Flow (perm)	3148	0	0	2303	1622	1325
Satd. Flow (RTOR)	60					101
Lane Group Flow (vph)	702	0	0	688	153	101
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	39.9		16.4	16.4	19.5	19.5
Total Split (s)	76.0		76.0	76.0	24.0	24.0
Total Split (%)	76.0%		76.0%	76.0%	24.0%	24.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	73.6			73.6	14.5	14.5
Actuated g/C Ratio	0.74			0.74	0.14	0.14
v/c Ratio	0.30			0.41	0.65	0.36
Control Delay	4.7			6.2	53.2	11.3
Queue Delay	1.6			0.0	0.0	0.0
Total Delay	6.3			6.2	53.2	11.3
LOS	A			A	D	B
Approach Delay	6.3			6.2	36.5	
Approach LOS	A			A	D	
Queue Length 50th (m)	18.3			22.3	28.3	0.0
Queue Length 95th (m)	29.7			36.6	46.7	13.4
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2333			1695	300	327
Starvation Cap Reductn	1393			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.75			0.41	0.51	0.31

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal

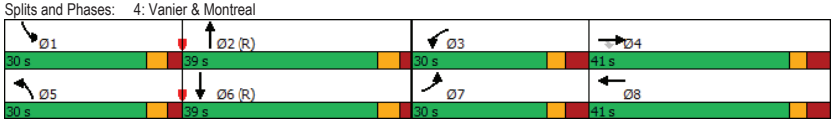


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	392	180	156	380	198	235	1037	210	142	1045	105
Future Volume (vph)	55	392	180	156	380	198	235	1037	210	142	1045	105
Satd. Flow (prot)	1626	1695	1483	1658	2932	0	1658	4524	0	1658	4624	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1542	1695	1293	1546	2932	0	1604	4524	0	1619	4624	0
Satd. Flow (RTOR)			171		63			29			11	
Lane Group Flow (vph)	55	392	180	156	578	0	235	1247	0	142	1150	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	30.0	41.0	41.0	30.0	41.0		30.0	39.0		30.0	39.0	
Total Split (%)	21.4%	29.3%	29.3%	21.4%	29.3%		21.4%	27.9%		21.4%	27.9%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	10.1	38.8	38.8	18.0	49.3		22.5	39.8		17.2	34.5	
Actuated g/C Ratio	0.07	0.28	0.28	0.13	0.35		0.16	0.28		0.12	0.25	
v/c Ratio	0.47	0.83	0.37	0.74	0.54		0.88	0.95		0.70	1.00	
Control Delay	74.5	64.5	9.3	78.3	35.5		88.8	73.3		76.2	78.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.5	64.5	9.3	78.3	35.5		88.8	73.3		76.2	78.8	
LOS	E	E	A	E	D		F	E		E	E	
Approach Delay		49.5			44.6			75.8			78.5	
Approach LOS		D			D			E			E	
Queue Length 50th (m)	14.9	102.9	1.8	42.0	61.7		68.9	102.4		38.3	~125.3	
Queue Length 95th (m)	28.4	#169.9	21.7	63.9	84.5		m78.8	m#164.4		58.2	#155.2	
Internal Link Dist (m)		99.5			237.5			154.5			139.4	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	265	470	482	271	1073		283	1306		283	1148	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.21	0.83	0.37	0.58	0.54		0.83	0.95		0.50	1.00	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00
Intersection Signal Delay: 67.1 Intersection LOS: E
Intersection Capacity Utilization 96.5% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	120	53	391	0	0	434
Future Vol, veh/h	120	53	391	0	0	434
Conflicting Peds, #/hr	7	7	0	71	71	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	120	53	391	0	0	434

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	615	398	0	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	439	651	-	0	0	-
Stage 1	683	-	-	0	0	-
Stage 2	793	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	437	647	-	-	-	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	485	-
HCM Lane V/C Ratio	-	0.357	-
HCM Control Delay (s)	-	16.5	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	1.6	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	30	56	10	122
Future Vol, veh/h	0	0	30	56	10	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	30	56	10	122

Major/Minor	Major2		Minor1	
Conflicting Flow All	0	0	116	0
Stage 1	-	-	0	-
Stage 2	-	-	116	-
Critical Hdwy	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	-
Follow-up Hdwy	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	880	-
Stage 1	-	-	-	-
Stage 2	-	-	909	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	880	-
Mov Cap-2 Maneuver	-	-	880	-
Stage 1	-	-	-	-
Stage 2	-	-	909	-

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	92	20	10	17	21	27	5	10	0	15	33	60
Future Vol, veh/h	92	20	10	17	21	27	5	10	0	15	33	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	20	10	17	21	27	5	10	0	15	33	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	137	113	63	128	143	10	93	0	0	10	0	0
Stage 1	93	93	-	20	20	-	-	-	-	-	-	-
Stage 2	44	20	-	108	123	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	834	777	1002	845	748	1071	1501	-	-	1610	-	-
Stage 1	914	818	-	999	879	-	-	-	-	-	-	-
Stage 2	970	879	-	897	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	787	767	1002	812	738	1071	1501	-	-	1610	-	-
Mov Cap-2 Maneuver	787	767	-	812	738	-	-	-	-	-	-	-
Stage 1	911	810	-	996	876	-	-	-	-	-	-	-
Stage 2	920	876	-	857	786	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9.5	2.5	1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1501	-	-	798	871	1610	-	-
HCM Lane V/C Ratio	0.003	-	-	0.153	0.075	0.009	-	-
HCM Control Delay (s)	7.4	0	-	10.3	9.5	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↱		↕		↰	↕	
Traffic Volume (vph)	4	25	6	24	11	224	2	161	36	409	144	1
Future Volume (vph)	4	25	6	24	11	224	2	161	36	409	144	1
Satd. Flow (prot)	0	1633	0	0	1571	1483	0	1639	0	1642	1709	0
Flt Permitted		0.980			0.841			0.998		0.633		
Satd. Flow (perm)	0	1594	0	0	1321	1317	0	1637	0	974	1709	0
Satd. Flow (RTOR)		6				224		25			1	
Lane Group Flow (vph)	0	35	0	0	35	224	0	199	0	409	145	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	49.0	49.0		49.0	49.0	
Total Split (%)	34.7%	34.7%		34.7%	34.7%	34.7%	65.3%	65.3%		65.3%	65.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		20.4			20.4	20.4		42.9		42.9	42.9	
Actuated g/C Ratio		0.27			0.27	0.27		0.57		0.57	0.57	
v/c Ratio		0.08			0.10	0.43		0.21		0.73	0.15	
Control Delay		18.4			20.9	12.9		7.5		22.0	8.0	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		18.4			20.9	12.9		7.5		22.0	8.0	
LOS		B			C	B		A		C	A	
Approach Delay		18.4			14.0			7.5			18.3	
Approach LOS		B			B			A			B	
Queue Length 50th (m)		3.0			4.3	2.9		10.7		38.9	8.7	
Queue Length 95th (m)		9.4			11.6	33.8		20.2		#88.9	16.4	
Internal Link Dist (m)		22.5			128.8			119.0			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		437			359	521		947		557	977	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.08			0.10	0.43		0.21		0.73	0.15	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 76.3%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 9: North River & McArthur

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	469	274	114	26	4
Future Vol, veh/h	7	469	274	114	26	4
Conflicting Peds, #/hr	81	0	0	81	5	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	8	2
Mvmt Flow	7	469	274	114	26	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	469	0	-	0	900	426
Stage 1	-	-	-	-	412	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	4.12	-	-	-	6.48	6.22
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.218	-	-	-	3.572	3.318
Pot Cap-1 Maneuver	1093	-	-	-	302	628
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	605	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1024	-	-	-	263	582
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	567	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1024	-	-	-	284
HCM Lane V/C Ratio	0.007	-	-	-	0.106
HCM Control Delay (s)	8.5	0	-	-	19.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

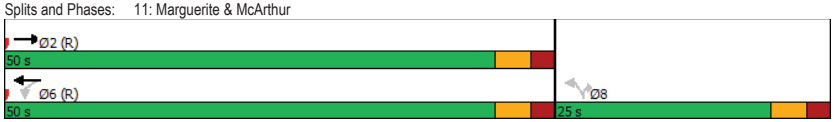
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	481	21	40	375	20	52
Future Volume (vph)	481	21	40	375	20	52
Satd. Flow (prot)	1729	0	0	1736	1658	1483
Flt Permitted				0.929	0.950	
Satd. Flow (perm)	1729	0	0	1617	1563	1393
Satd. Flow (RTOR)	5					52
Lane Group Flow (vph)	502	0	0	415	20	52
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	50.0		50.0	50.0	25.0	25.0
Total Split (%)	66.7%		66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	58.8			58.8	13.6	13.6
Actuated g/C Ratio	0.78			0.78	0.18	0.18
v/c Ratio	0.37			0.33	0.07	0.18
Control Delay	5.1			6.2	23.4	8.5
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	5.1			6.2	23.4	8.5
LOS	A			A	C	A
Approach Delay	5.1			6.2	12.7	
Approach LOS	A			A	B	
Queue Length 50th (m)	14.3			17.8	2.5	0.0
Queue Length 95th (m)	37.4			46.1	7.1	7.7
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					30.0	
Base Capacity (vph)	1356			1268	406	400
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.37			0.33	0.05	0.13

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 77.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	241	447	333	235	170	219	1234	251	122	1211	66
Future Volume (vph)	55	241	447	333	235	170	219	1234	251	122	1211	66
Satd. Flow (prot)	1658	1712	1483	3154	1712	1483	1658	3316	1469	1658	3316	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1562	1712	1306	2914	1712	1342	1601	3316	1374	1642	3316	1171
Satd. Flow (RTOR)			240			170			207			121
Lane Group Flow (vph)	55	241	447	333	235	170	219	1234	251	122	1211	66
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.2	30.0	30.0	13.8	34.0	34.0	16.9	56.8	56.8	14.8	54.7	54.7
Actuated g/C Ratio	0.09	0.21	0.21	0.10	0.24	0.24	0.12	0.41	0.41	0.11	0.39	0.39
v/c Ratio	0.38	0.66	0.96	1.07	0.57	0.37	1.09	0.92	0.37	0.70	0.94	0.12
Control Delay	67.2	60.0	56.9	130.2	54.6	8.8	146.8	51.4	8.0	81.7	83.8	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	60.0	56.9	130.2	54.6	8.8	146.8	51.4	8.0	81.7	83.8	19.2
LOS	E	E	E	F	D	A	F	D	A	F	F	B
Approach Delay		58.7			78.2			57.3			80.6	
Approach LOS		E			E			E			F	
Queue Length 50th (m)	14.5	61.6	64.5	~52.5	59.9	0.0	~68.3	170.3	7.5	35.9	178.7	5.5
Queue Length 95th (m)	28.5	90.8	#132.8	#83.3	88.7	19.3	#119.4	#223.1	27.7	m41.1	m184.5	m8.2
Internal Link Dist (m)		122.9			146.0			119.5			202.0	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	163	366	468	310	415	454	200	1344	679	211	1295	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.66	0.96	1.07	0.57	0.37	1.09	0.92	0.37	0.58	0.94	0.12

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

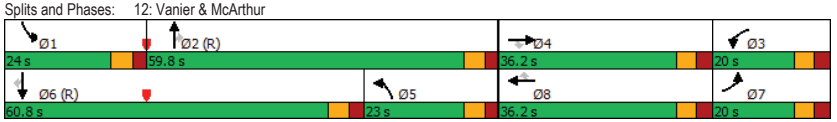
Intersection Signal Delay: 68.0	Intersection LOS: E
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	0	0	0	41	19
Future Vol, veh/h	31	0	0	0	41	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	0	0	0	41	19

Major/Minor	Minor1			Major2	
Conflicting Flow All	101	-		0	0
Stage 1	0	-		-	-
Stage 2	101	-		-	-
Critical Hdwy	6.42	-		4.12	-
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	5.42	-		-	-
Follow-up Hdwy	3.518	-		2.218	-
Pot Cap-1 Maneuver	898	0		-	-
Stage 1	-	0		-	-
Stage 2	923	0		-	-
Platoon blocked, %					-
Mov Cap-1 Maneuver	898	-		-	-
Mov Cap-2 Maneuver	898	-		-	-
Stage 1	-	-		-	-
Stage 2	923	-		-	-

Approach	WB	SB
HCM Control Delay, s	9.2	
HCM LOS	A	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	898	-	-
HCM Lane V/C Ratio	0.035	-	-
HCM Control Delay (s)	9.2	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	535	407	0	33	8
Future Vol, veh/h	0	535	407	0	33	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	535	407	0	33	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	942	407
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	292	644
Stage 1	0	-	-	0	672	-
Stage 2	0	-	-	0	587	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	292	644
Mov Cap-2 Maneuver	-	-	-	-	292	-
Stage 1	-	-	-	-	672	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	292	644
HCM Lane V/C Ratio	-	-	0.113	0.012
HCM Control Delay (s)	-	-	18.9	10.7
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	0

Appendix L

Synchro Intersection Worksheets – 2029 Future Total Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	502	362	0	762	13	288	10	44	17	25	15
Future Volume (vph)	0	502	362	0	762	13	288	10	44	17	25	15
Satd. Flow (prot)	0	2894	0	0	3165	0	1595	1320	0	0	1511	0
Flt Permitted							0.950				0.985	
Satd. Flow (perm)	0	2894	0	0	3165	0	1569	1320	0	0	1489	0
Satd. Flow (RTOR)								44			15	
Lane Group Flow (vph)	0	864	0	0	775	0	288	54	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		29.0			29.0		24.0	49.0		17.0	17.0	
Total Split (%)		30.5%			30.5%		25.3%	51.6%		17.9%	17.9%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		32.3			32.3		25.0	36.2			10.1	
Actuated g/C Ratio		0.34			0.34		0.26	0.38			0.11	
v/c Ratio		0.88			0.72		0.69	0.10			0.33	
Control Delay		42.0			32.6		40.5	8.4			36.5	
Queue Delay		0.0			51.5		0.0	0.0			0.0	
Total Delay		42.0			84.1		40.5	8.4			36.5	
LOS		D			F		D	A			D	
Approach Delay		42.0			84.1			35.4			36.5	
Approach LOS		D			F			D			D	
Queue Length 50th (m)		77.8			64.8		47.3	1.2			7.2	
Queue Length 95th (m)		#121.9			90.6		71.8	8.4			18.7	
Internal Link Dist (m)		194.5			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		985			1077		419	622			180	
Starvation Cap Reductn		0			428		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.88			1.19		0.69	0.09			0.32	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	44%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

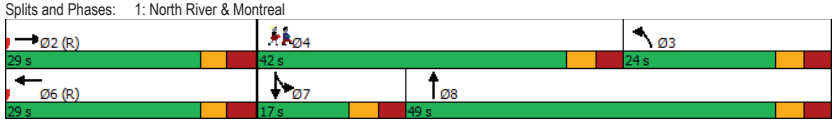
Intersection Summary

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 56.8	Intersection LOS: E
Intersection Capacity Utilization 63.1%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



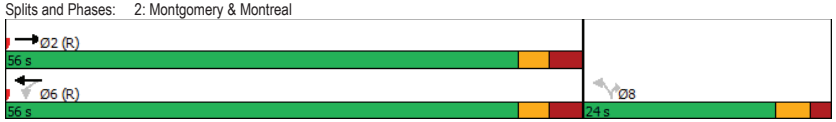
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	443	120	102	688	87	162
Future Volume (vph)	443	120	102	688	87	162
Satd. Flow (prot)	3090	0	0	3179	1658	1401
Flt Permitted				0.791	0.950	
Satd. Flow (perm)	3090	0	0	2522	1635	1365
Satd. Flow (RTOR)	81					162
Lane Group Flow (vph)	563	0	0	790	87	162
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	40.4		16.4	16.4	19.5	19.5
Total Split (s)	56.0		56.0	56.0	24.0	24.0
Total Split (%)	70.0%		70.0%	70.0%	30.0%	30.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	57.1			57.1	11.0	11.0
Actuated g/C Ratio	0.71			0.71	0.14	0.14
v/c Ratio	0.25			0.44	0.39	0.49
Control Delay	3.8			5.9	36.3	11.0
Queue Delay	0.9			0.0	0.0	0.0
Total Delay	4.7			5.9	36.3	11.0
LOS	A			A	D	B
Approach Delay	4.7			5.9	19.8	
Approach LOS	A			A	B	
Queue Length 50th (m)	10.1			20.3	12.4	0.0
Queue Length 95th (m)	18.6			36.1	24.2	15.2
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2227			1798	378	440
Starvation Cap Reductn	1317			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.62			0.44	0.23	0.37

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	374	147	165	516	194	183	901	166	213	1152	148
Future Volume (vph)	52	374	147	165	516	194	183	901	166	213	1152	148
Satd. Flow (prot)	1642	1695	1483	1658	3006	0	1642	4543	0	1642	4600	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1578	1695	1292	1544	3006	0	1602	4543	0	1592	4600	0
Satd. Flow (RTOR)			147		37			27			17	
Lane Group Flow (vph)	52	374	147	165	710	0	183	1067	0	213	1300	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	20.0	41.0	41.0	20.0	41.0		30.0	49.0		30.0	49.0	
Total Split (%)	14.3%	29.3%	29.3%	14.3%	29.3%		21.4%	35.0%		21.4%	35.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	9.6	33.9	33.9	12.9	39.8		19.9	45.4		21.6	47.1	
Actuated g/C Ratio	0.07	0.24	0.24	0.09	0.28		0.14	0.32		0.15	0.34	
v/c Ratio	0.46	0.91	0.35	1.09	0.81		0.79	0.72		0.84	0.83	
Control Delay	75.0	78.8	8.7	155.2	53.2		88.3	45.1		84.5	48.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	75.0	78.8	8.7	155.2	53.2		88.3	45.1		84.5	48.5	
LOS	E	E	A	F	D		F	D		F	D	
Approach Delay		60.5			72.5			51.4			53.6	
Approach LOS		E			E			D			D	
Queue Length 50th (m)	14.1	101.4	0.0	~50.9	94.6		52.7	64.1		57.0	121.3	
Queue Length 95th (m)	27.5	#159.0	17.2	#96.9	#135.3		m70.4	81.9		#93.0	#147.7	
Internal Link Dist (m)		99.5			262.7			154.6			239.2	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	151	410	424	152	880		280	1490		280	1558	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.34	0.91	0.35	1.09	0.81		0.65	0.72		0.76	0.83	

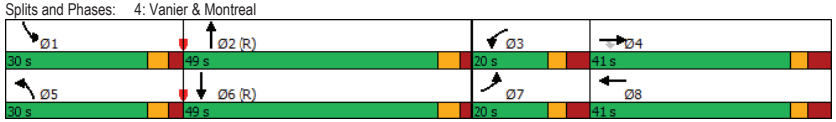
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 57.8	Intersection LOS: E
Intersection Capacity Utilization 97.3%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	44	77	284	0	0	397
Future Vol, veh/h	44	77	284	0	0	397
Conflicting Peds, #/hr	8	5	0	95	95	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	8	2	2	2
Mvmt Flow	44	77	284	0	0	397

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	491	289	0	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.705	6.23	-	-	-	-
Critical Hdwy Stg 1	5.505	-	-	-	-	-
Critical Hdwy Stg 2	5.905	-	-	-	-	-
Follow-up Hdwy	3.5665	3.319	-	-	-	-
Pot Cap-1 Maneuver	511	749	-	0	0	-
Stage 1	750	-	-	0	0	-
Stage 2	795	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	508	746	-	-	-	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	637	-
HCM Lane V/C Ratio	-	0.19	-
HCM Control Delay (s)	-	12	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.7	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	39	100	19	84
Future Vol, veh/h	0	0	39	100	19	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	39	100	19	84

Major/Minor	Major2		Minor1		
Conflicting Flow All	0	0	178	0	
Stage 1	-	-	0	-	
Stage 2	-	-	178	-	
Critical Hdwy	4.12	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	
Critical Hdwy Stg 2	-	-	5.42	-	
Follow-up Hdwy	2.218	-	3.518	3.318	
Pot Cap-1 Maneuver	-	-	812	-	
Stage 1	-	-	-	-	
Stage 2	-	-	853	-	
Platoon blocked, %		-			
Mov Cap-1 Maneuver	-	-	812	-	
Mov Cap-2 Maneuver	-	-	812	-	
Stage 1	-	-	-	-	
Stage 2	-	-	853	-	

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	15	5	33	44	41	5	5	0	10	56	90
Future Vol, veh/h	64	15	5	33	44	41	5	5	0	10	56	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	15	5	33	44	41	5	5	0	10	56	90

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	136	101	146	181	5	146	0	0	5	0	0
Stage 1	121	121	-	15	15	-	-	-	-	-	-	-
Stage 2	58	15	-	131	166	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	755	954	823	713	1078	1436	-	-	1616	-	-
Stage 1	883	796	-	1005	883	-	-	-	-	-	-	-
Stage 2	954	883	-	873	761	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	712	747	954	800	706	1078	1436	-	-	1616	-	-
Mov Cap-2 Maneuver	712	747	-	800	706	-	-	-	-	-	-	-
Stage 1	880	790	-	1002	880	-	-	-	-	-	-	-
Stage 2	869	880	-	846	756	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10	3.8	0.5
HCM LOS	B	B		

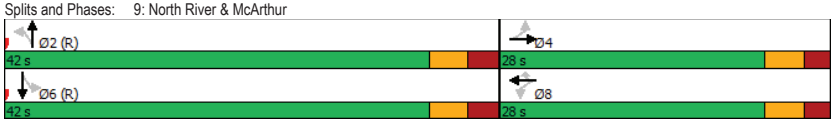
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1436	-	-	729	833	1616	-	-
HCM Lane V/C Ratio	0.003	-	-	0.115	0.142	0.006	-	-
HCM Control Delay (s)	7.5	0	-	10.6	10	7.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.5	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	6	3	10	9	169	3	121	30	331	106	4
Future Volume (vph)	1	6	3	10	9	169	3	121	30	331	106	4
Satd. Flow (prot)	0	1647	0	0	1700	1441	0	1658	0	1658	1680	0
Flt Permitted		0.988			0.912			0.997		0.659		
Satd. Flow (perm)	0	1627	0	0	1580	1325	0	1651	0	1142	1680	0
Satd. Flow (RTOR)		3				169		26			4	
Lane Group Flow (vph)	0	10	0	0	19	169	0	154	0	331	110	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	28.0	28.0		28.0	28.0	28.0	42.0	42.0		42.0	42.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		22.4			22.4	22.4		35.9		35.9	35.9	
Actuated g/C Ratio		0.32			0.32	0.32		0.51		0.51	0.51	
v/c Ratio		0.02			0.04	0.31		0.18		0.57	0.13	
Control Delay		14.4			11.2	8.1		8.2		16.4	9.1	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		14.4			11.2	8.1		8.2		16.4	9.1	
LOS		B			B	A		A		B	A	
Approach Delay		14.4			8.4			8.2			14.6	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		0.6			1.7	12.7		8.3		27.7	6.7	
Queue Length 95th (m)		3.5			5.7	23.3		17.0		51.2	14.1	
Internal Link Dist (m)		22.5			128.8			367.7			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		522			505	538		859		585	863	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.02			0.04	0.31		0.18		0.57	0.13	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 11.9	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: North River & McArthur



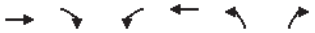
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	370	322	106	10	16
Future Vol, veh/h	11	370	322	106	10	16
Conflicting Peds, #/hr	105	0	0	105	6	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	2	5	3	2	2
Mvmt Flow	11	370	322	106	10	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	533	0	-	0	878	494
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.2	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	995	-	-	-	318	575
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	678	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	914	-	-	-	265	522
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	623	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	914	-	-	-	380
HCM Lane V/C Ratio	0.012	-	-	-	0.068
HCM Control Delay (s)	9	0	-	-	15.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	369	19	46	426	9	31
Future Volume (vph)	369	19	46	426	9	31
Satd. Flow (prot)	1727	0	0	1736	1658	1483
Flt Permitted				0.938	0.950	
Satd. Flow (perm)	1727	0	0	1633	1533	1394
Satd. Flow (RTOR)	6					31
Lane Group Flow (vph)	388	0	0	472	9	31
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	53.8			53.8	13.6	13.6
Actuated g/C Ratio	0.77			0.77	0.19	0.19
v/c Ratio	0.29			0.38	0.03	0.11
Control Delay	3.9			8.1	20.1	8.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	3.9			8.1	20.1	8.6
LOS	A			A	C	A
Approach Delay	3.9			8.1	11.2	
Approach LOS	A			A	B	
Queue Length 50th (m)	9.8			41.1	1.0	0.0
Queue Length 95th (m)	18.7			m50.4	3.9	5.5
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					20.0	
Base Capacity (vph)	1328			1255	427	410
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.29			0.38	0.02	0.08

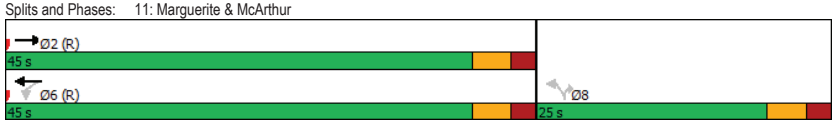
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38

Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	161	321	209	208	104	233	1100	225	140	1282	60
Future Volume (vph)	34	161	321	209	208	104	233	1100	225	140	1282	60
Satd. Flow (prot)	1551	1695	1483	3216	1695	1483	1658	3316	1483	1658	3316	1441
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1424	1695	1383	3076	1695	1302	1635	3316	1383	1638	3316	1293
Satd. Flow (RTOR)			249			168			208			121
Lane Group Flow (vph)	34	161	321	209	208	104	233	1100	225	140	1282	60
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	10.8	26.4	26.4	13.2	33.8	33.8	16.9	60.1	60.1	15.7	58.9	58.9
Actuated g/C Ratio	0.08	0.19	0.19	0.09	0.24	0.24	0.12	0.43	0.43	0.11	0.42	0.42
v/c Ratio	0.29	0.50	0.69	0.69	0.51	0.24	1.17	0.77	0.32	0.76	0.92	0.10
Control Delay	65.8	48.3	19.9	73.8	52.0	1.4	167.4	40.4	6.0	83.2	74.7	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	48.3	19.9	73.8	52.0	1.4	167.4	40.4	6.0	83.2	74.7	14.7
LOS	E	D	B	E	D	A	F	D	A	F	E	B
Approach Delay		31.8			50.6			54.5			73.0	
Approach LOS		C			D			D			E	
Queue Length 50th (m)	9.8	32.3	18.4	29.2	52.1	0.0	~76.4	145.5	2.9	41.1	178.8	2.8
Queue Length 95th (m)	21.6	51.4	36.3	42.8	78.5	0.5	#128.6	176.4	20.1	m49.5	m#224.2	m5.5
Internal Link Dist (m)		122.9			141.8			130.7			202.5	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	152	363	492	317	409	442	200	1424	712	211	1395	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.44	0.65	0.66	0.51	0.24	1.17	0.77	0.32	0.66	0.92	0.10

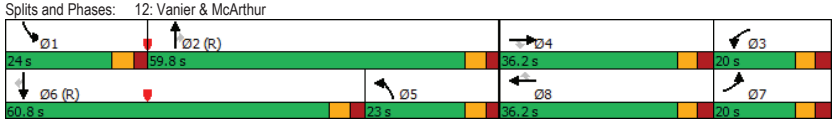
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 57.9	Intersection LOS: E
Intersection Capacity Utilization 99.7%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	41	0	0	0	20	37
Future Vol, veh/h	41	0	0	0	20	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	0	0	0	20	37

Major/Minor	Minor1			Major2	
Conflicting Flow All	77	-		0	0
Stage 1	0	-		-	-
Stage 2	77	-		-	-
Critical Hdwy	6.42	-		4.12	-
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	5.42	-		-	-
Follow-up Hdwy	3.518	-		2.218	-
Pot Cap-1 Maneuver	926	0		-	-
Stage 1	-	0		-	-
Stage 2	946	0		-	-
Platoon blocked, %					-
Mov Cap-1 Maneuver	926	-		-	-
Mov Cap-2 Maneuver	926	-		-	-
Stage 1	-	-		-	-
Stage 2	946	-		-	-

Approach	WB	SB
HCM Control Delay, s	9.1	
HCM LOS	A	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.044	-	-
HCM Control Delay (s)	9.1	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	400	471	0	63	4
Future Vol, veh/h	0	400	471	0	63	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	400	471	0	63	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	871	471
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	400	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	322	593
Stage 1	0	-	-	0	628	-
Stage 2	0	-	-	0	677	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	322	593
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	322	593
HCM Lane V/C Ratio	-	-	0.196	0.007
HCM Control Delay (s)	-	-	18.9	11.1
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.7	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱		↰	↱			✣	
Traffic Volume (vph)	0	683	410	0	720	18	383	17	51	21	15	21
Future Volume (vph)	0	683	410	0	720	18	383	17	51	21	15	21
Satd. Flow (prot)	0	2891	0	0	3233	0	1658	1394	0	0	1496	0
Flt Permitted							0.950				0.982	
Satd. Flow (perm)	0	2891	0	0	3233	0	1631	1394	0	0	1440	0
Satd. Flow (RTOR)		102						51			19	
Lane Group Flow (vph)	0	1093	0	0	738	0	383	68	0	0	57	0
Turn Type		NA			NA		Prot	NA		Split	NA	
Protected Phases		2			6		3!	8		7	7!	
Permitted Phases												
Detector Phase		2			6		3	8		7	7	
Switch Phase												
Minimum Initial (s)		10.0			10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)		21.7			21.7		11.5	24.5		16.5	16.5	
Total Split (s)		39.0			39.0		39.0	64.0		17.0	17.0	
Total Split (%)		32.5%			32.5%		32.5%	53.3%		14.2%	14.2%	
Yellow Time (s)		3.0			3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)		3.7			3.7		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		6.7			6.7		6.5	6.5			6.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode		C-Max			C-Max		None	Ped		None	None	
Act Effct Green (s)		49.2			49.2		33.1	44.3			10.1	
Actuated g/C Ratio		0.41			0.41		0.28	0.37			0.08	
v/c Ratio		0.88			0.56		0.84	0.12			0.40	
Control Delay		39.9			30.2		56.9	9.8			45.8	
Queue Delay		0.0			52.2		0.0	0.0			0.0	
Total Delay		39.9			82.4		56.9	9.8			45.8	
LOS		D			F		E	A			D	
Approach Delay		39.9			82.4			49.8			45.8	
Approach LOS		D			F			D			D	
Queue Length 50th (m)		115.0			69.6		84.3	2.6			8.6	
Queue Length 95th (m)		#175.2			97.3		112.6	11.4			22.0	
Internal Link Dist (m)		179.1			52.8			112.9			59.0	
Turn Bay Length (m)							90.0					
Base Capacity (vph)		1244			1324		486	694			148	
Starvation Cap Reductn		0			671		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.88			1.13		0.79	0.10			0.39	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.5
Total Split (s)	42.0
Total Split (%)	35%
Yellow Time (s)	3.3
All-Red Time (s)	3.2
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	Ped
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

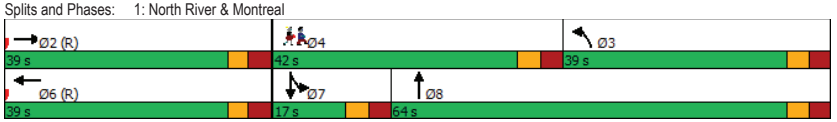
Intersection Summary	

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 55.4	Intersection LOS: E
Intersection Capacity Utilization 75.5%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 1: North River & Montreal



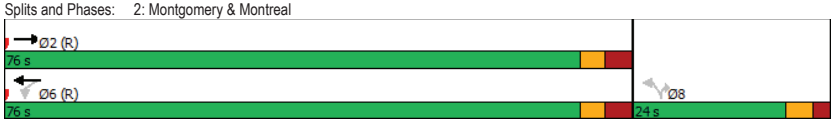
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	577	178	191	570	173	148
Future Volume (vph)	577	178	191	570	173	148
Satd. Flow (prot)	3103	0	0	3236	1658	1401
Flt Permitted				0.625	0.950	
Satd. Flow (perm)	3103	0	0	2034	1622	1325
Satd. Flow (RTOR)	96					148
Lane Group Flow (vph)	755	0	0	761	173	148
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	39.9		16.4	16.4	19.5	19.5
Total Split (s)	76.0		76.0	76.0	24.0	24.0
Total Split (%)	76.0%		76.0%	76.0%	24.0%	24.0%
Yellow Time (s)	3.0		3.0	3.0	3.3	3.3
All-Red Time (s)	3.4		3.4	3.4	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	6.4			6.4	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	72.9			72.9	15.2	15.2
Actuated g/C Ratio	0.73			0.73	0.15	0.15
v/c Ratio	0.33			0.51	0.70	0.45
Control Delay	4.9			7.8	55.3	10.9
Queue Delay	1.7			0.0	0.0	0.0
Total Delay	6.6			7.8	55.3	10.9
LOS	A			A	E	B
Approach Delay	6.6			7.8	34.8	
Approach LOS	A			A	C	
Queue Length 50th (m)	20.1			29.3	32.0	0.0
Queue Length 95th (m)	31.0			46.5	52.3	15.9
Internal Link Dist (m)	52.8			138.9	214.6	
Turn Bay Length (m)					35.0	
Base Capacity (vph)	2288			1482	300	365
Starvation Cap Reductn	1310			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.77			0.51	0.58	0.41

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 12.0	Intersection LOS: B
Intersection Capacity Utilization 75.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Montgomery & Montreal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	426	185	156	436	198	235	1063	210	142	1071	122
Future Volume (vph)	61	426	185	156	436	198	235	1063	210	142	1071	122
Satd. Flow (prot)	1626	1695	1483	1658	2953	0	1658	4526	0	1658	4611	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1548	1695	1293	1552	2953	0	1607	4526	0	1620	4611	0
Satd. Flow (RTOR)			162		49			28			13	
Lane Group Flow (vph)	61	426	185	156	634	0	235	1273	0	142	1193	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.1	40.1	40.1	12.1	40.1		11.1	28.9		11.1	28.9	
Total Split (s)	30.0	41.0	41.0	30.0	41.0		30.0	39.0		30.0	39.0	
Total Split (%)	21.4%	29.3%	29.3%	21.4%	29.3%		21.4%	27.9%		21.4%	27.9%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1		2.4	2.2		2.4	2.2	
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)	7.1	7.1	7.1	7.1	7.1		6.1	5.9		6.1	5.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max	Max	None	Max		None	C-Max		None	C-Max	
Act Effct Green (s)	10.6	38.8	38.8	18.0	48.9		22.5	39.8		17.2	34.5	
Actuated g/C Ratio	0.08	0.28	0.28	0.13	0.35		0.16	0.28		0.12	0.25	
v/c Ratio	0.50	0.91	0.39	0.74	0.60		0.88	0.97		0.70	1.04	
Control Delay	74.9	73.1	11.3	78.3	38.5		87.6	76.1		76.2	87.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.9	73.1	11.3	78.3	38.5		87.6	76.1		76.2	87.8	
LOS	E	E	B	E	D		F	E		E	F	
Approach Delay		56.3			46.4			77.9			86.5	
Approach LOS		E			D			E			F	
Queue Length 50th (m)	16.5	114.9	4.7	42.0	72.2		68.6	105.4		38.3	~134.5	
Queue Length 95th (m)	30.6	#191.2	25.7	63.9	97.6		m76.8	m#164.4		58.2	#164.3	
Internal Link Dist (m)		99.5			237.5			154.5			139.4	
Turn Bay Length (m)	30.0			35.0			94.5			90.0		
Base Capacity (vph)	265	470	475	271	1062		283	1306		283	1147	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.91	0.39	0.58	0.60		0.83	0.97		0.50	1.04	

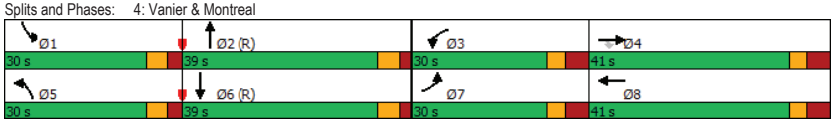
Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04
Intersection Signal Delay: 71.4 — Intersection LOS: E
Intersection Capacity Utilization 97.5% — ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	125	72	391	0	0	434
Future Vol, veh/h	125	72	391	0	0	434
Conflicting Peds, #/hr	7	7	0	71	71	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	125	72	391	0	0	434

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	615	398	0	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	439	651	-	0	0	-
Stage 1	683	-	-	0	0	-
Stage 2	793	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	437	647	-	-	-	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	496	-
HCM Lane V/C Ratio	-	0.397	-
HCM Control Delay (s)	-	17	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	1.9	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	36	56	49	131
Future Vol, veh/h	0	0	36	56	49	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	36	56	49	131

Major/Minor	Major2		Minor1	
Conflicting Flow All	0	0	128	0
Stage 1	-	-	0	-
Stage 2	-	-	128	-
Critical Hdwy	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	-
Follow-up Hdwy	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	866	-
Stage 1	-	-	-	-
Stage 2	-	-	898	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	866	-
Mov Cap-2 Maneuver	-	-	866	-
Stage 1	-	-	-	-
Stage 2	-	-	898	-

Approach	WB	NB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	92	29	10	17	27	35	5	10	0	15	47	60
Future Vol, veh/h	92	29	10	17	27	35	5	10	0	15	47	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	29	10	17	27	35	5	10	0	15	47	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	158	127	77	147	157	10	107	0	0	10	0	0
Stage 1	107	107	-	20	20	-	-	-	-	-	-	-
Stage 2	51	20	-	127	137	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	808	764	984	821	735	1071	1484	-	-	1610	-	-
Stage 1	898	807	-	999	879	-	-	-	-	-	-	-
Stage 2	962	879	-	877	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	752	754	984	781	725	1071	1484	-	-	1610	-	-
Mov Cap-2 Maneuver	752	754	-	781	725	-	-	-	-	-	-	-
Stage 1	895	799	-	996	876	-	-	-	-	-	-	-
Stage 2	899	876	-	828	775	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	9.6	2.5	0.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1484	-	-	766	862	1610	-	-
HCM Lane V/C Ratio	0.003	-	-	0.171	0.092	0.009	-	-
HCM Control Delay (s)	7.4	0	-	10.7	9.6	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.3	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↰↕	↱		↕		↰	↕	
Traffic Volume (vph)	4	25	6	25	11	224	2	161	38	414	144	1
Future Volume (vph)	4	25	6	25	11	224	2	161	38	414	144	1
Satd. Flow (prot)	0	1633	0	0	1568	1483	0	1635	0	1642	1709	0
Flt Permitted		0.979			0.838			0.998		0.632		
Satd. Flow (perm)	0	1593	0	0	1315	1317	0	1631	0	973	1709	0
Satd. Flow (RTOR)		6				224		26			1	
Lane Group Flow (vph)	0	35	0	0	36	224	0	201	0	414	145	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.6	25.6		25.6	25.6	25.6	31.1	31.1		31.1	31.1	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	49.0	49.0		49.0	49.0	
Total Split (%)	34.7%	34.7%		34.7%	34.7%	34.7%	65.3%	65.3%		65.3%	65.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3	2.3	2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6	5.6		6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max	Max	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		20.4			20.4	20.4		42.9		42.9	42.9	
Actuated g/C Ratio		0.27			0.27	0.27		0.57		0.57	0.57	
v/c Ratio		0.08			0.10	0.43		0.21		0.74	0.15	
Control Delay		18.4			20.6	12.7		7.4		22.6	8.0	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		18.4			20.6	12.7		7.4		22.6	8.0	
LOS		B			C	B		A		C	A	
Approach Delay		18.4			13.8			7.4			18.8	
Approach LOS		B			B			A			B	
Queue Length 50th (m)		3.0			4.4	4.3		10.8		39.7	8.7	
Queue Length 95th (m)		9.4			11.8	34.1		20.4		#90.8	16.4	
Internal Link Dist (m)		22.5			128.8			119.0			94.3	
Turn Bay Length (m)						60.0				55.0		
Base Capacity (vph)		437			357	521		944		556	977	
Starvation Cap Reductn		0			0	0		0		0	0	
Spillback Cap Reductn		0			0	0		0		0	0	
Storage Cap Reductn		0			0	0		0		0	0	
Reduced v/c Ratio		0.08			0.10	0.43		0.21		0.74	0.15	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 76.5%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 9: North River & McArthur

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	474	274	160	26	4
Future Vol, veh/h	9	474	274	160	26	4
Conflicting Peds, #/hr	81	0	0	81	5	14
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	8	2
Mvmt Flow	9	474	274	160	26	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	515	0	-	0	932	449
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	497	-
Critical Hdwy	4.12	-	-	-	6.48	6.22
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.218	-	-	-	3.572	3.318
Pot Cap-1 Maneuver	1051	-	-	-	289	610
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	985	-	-	-	251	565
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	985	-	-	-	271
HCM Lane V/C Ratio	0.009	-	-	-	0.111
HCM Control Delay (s)	8.7	0	-	-	19.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	491	21	40	421	20	52
Future Volume (vph)	491	21	40	421	20	52
Satd. Flow (prot)	1729	0	0	1738	1658	1483
Flt Permitted				0.934	0.950	
Satd. Flow (perm)	1729	0	0	1627	1563	1393
Satd. Flow (RTOR)	5					52
Lane Group Flow (vph)	512	0	0	461	20	52
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	27.5		15.5	15.5	24.5	24.5
Total Split (s)	50.0		50.0	50.0	25.0	25.0
Total Split (%)	66.7%		66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.2		2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max		C-Max	C-Max	None	None
Act Effct Green (s)	58.8			58.8	13.6	13.6
Actuated g/C Ratio	0.78			0.78	0.18	0.18
v/c Ratio	0.38			0.36	0.07	0.18
Control Delay	5.2			6.5	23.4	8.5
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	5.2			6.5	23.4	8.5
LOS	A			A	C	A
Approach Delay	5.2			6.5	12.7	
Approach LOS	A			A	B	
Queue Length 50th (m)	14.6			20.5	2.5	0.0
Queue Length 95th (m)	m38.0			52.9	7.1	7.7
Internal Link Dist (m)	36.3			7.3	144.2	
Turn Bay Length (m)					30.0	
Base Capacity (vph)	1356			1275	406	400
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.38			0.36	0.05	0.13

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38

Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 79.7%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Marguerite & McArthur

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	257	455	333	261	170	238	1265	251	122	1246	66
Future Volume (vph)	55	257	455	333	261	170	238	1265	251	122	1246	66
Satd. Flow (prot)	1658	1712	1483	3154	1712	1483	1658	3316	1469	1658	3316	1469
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1566	1712	1306	2919	1712	1342	1604	3316	1374	1643	3316	1171
Satd. Flow (RTOR)			239			170			202			121
Lane Group Flow (vph)	55	257	455	333	261	170	238	1265	251	122	1246	66
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.2	36.2	20.0	36.2	36.2	23.0	59.8	59.8	24.0	60.8	60.8
Total Split (%)	14.3%	25.9%	25.9%	14.3%	25.9%	25.9%	16.4%	42.7%	42.7%	17.1%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.2	29.5	29.5	14.3	34.0	34.0	16.9	56.8	56.8	14.8	54.7	54.7
Actuated g/C Ratio	0.09	0.21	0.21	0.10	0.24	0.24	0.12	0.41	0.41	0.11	0.39	0.39
v/c Ratio	0.38	0.72	0.98	1.03	0.63	0.37	1.19	0.94	0.37	0.70	0.96	0.12
Control Delay	67.2	63.5	63.6	119.0	57.0	8.8	175.4	54.4	8.5	80.3	85.9	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	0.0
Total Delay	67.2	63.5	63.6	119.0	57.0	8.8	175.4	54.4	8.5	80.3	85.9	18.9
LOS	E	E	E	F	E	A	F	D	A	F	F	B
Approach Delay		63.8			73.3			64.3			82.4	
Approach LOS		E			E			E			F	
Queue Length 50th (m)	14.5	66.4	68.2	~52.5	67.6	0.0	~79.2	177.3	8.4	35.7	184.4	5.4
Queue Length 95th (m)	28.5	97.3	#138.5	#83.3	98.7	19.3	#132.1	#232.7	28.9	m40.1	m184.7	m7.5
Internal Link Dist (m)		122.9			146.0			119.5			202.0	
Turn Bay Length (m)	30.0		50.0	120.0		115.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	163	366	467	322	415	454	200	1344	677	211	1295	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.70	0.97	1.03	0.63	0.37	1.19	0.94	0.37	0.58	0.96	0.12

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

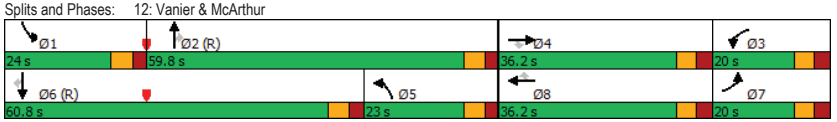
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 71.2 — Intersection LOS: E
Intersection Capacity Utilization 105.0% — ICU Level of Service G
Analysis Period (min) 15

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Vanier & McArthur



Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	0	0	0	41	19
Future Vol, veh/h	31	0	0	0	41	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	0	0	0	41	19

Major/Minor	Minor1			Major2	
Conflicting Flow All	101	-		0	0
Stage 1	0	-		-	-
Stage 2	101	-		-	-
Critical Hdwy	6.42	-		4.12	-
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	5.42	-		-	-
Follow-up Hdwy	3.518	-		2.218	-
Pot Cap-1 Maneuver	898	0		-	-
Stage 1	-	0		-	-
Stage 2	923	0		-	-
Platoon blocked, %					-
Mov Cap-1 Maneuver	898	-		-	-
Mov Cap-2 Maneuver	898	-		-	-
Stage 1	-	-		-	-
Stage 2	923	-		-	-

Approach	WB	SB
HCM Control Delay, s	9.2	
HCM LOS	A	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	898	-	-
HCM Lane V/C Ratio	0.035	-	-
HCM Control Delay (s)	9.2	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	545	453	0	47	8
Future Vol, veh/h	0	545	453	0	47	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	545	453	0	47	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	998	453
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	545	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	270	607
Stage 1	0	-	-	0	640	-
Stage 2	0	-	-	0	581	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	270	607
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	270	607
HCM Lane V/C Ratio	-	-	0.174	0.013
HCM Control Delay (s)	-	-	21.1	11
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.6	0

Appendix M

TDM Checklist

CGH TRANSPORTATION

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

Legend

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

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

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

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

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

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

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

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

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

Legend

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

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

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

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

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

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

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

Legend

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

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

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

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

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

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

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

Legend

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

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

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

TDM-Supportive Development Design and Infrastructure Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

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

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