TRANSPORTATION IMPACT ASSESSMENT (DRAFT)
STEP 4 – ANALYSIS REPORT

Project No.: CCO-23-0480

Prepared for:

BBS Construction
1805 Woodward Drive
Ottawa, ON
K2C 0P9

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON
K0A 1L0

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McINTOSH PERRY

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1.0 SCREENING FORM

The following section describes the initial assessment of the proposed development with respect to the City of Ottawa Transportation Impact Assessment (TIA) Screening Form and will provide reasoning for potential triggers. The TIA screening form is attached in Appendix A.

1.1 Trip Generation Triggers

The proposed development includes the construction of a single building which includes 291 m^2 of Gross Floor Area (GFA) dedicated to office space and 1,824 m^2 dedicated to auto body repair shop land use. The development GFA is smaller than the minimum of 5,000 m^2 for industrial uses. However, a cursory review of the trip generation using the ITE land use code 942 (Automobile Care center) results in 63 person trips during the AM peak hour and 87 person trips during the PM peak hour. As such, the criteria for the trip generation trigger has been met.

1.2 Location Trigger

The proposed development not located within a Design Priority Area (DPA) or a Transit-oriented Development (TOD) zone.

The site will not have a driveway that accesses a roadway that is designated as part of the City's Spine Bicycle Network. As such, the criteria for a location trigger has not been met.

1.3 Safety Trigger

The development is not located within 150 m of a signalized intersection and there is no significant curvature on any area roadways that would result in safety concerns. The development does not have a driveway within an auxiliary lane, nor does it make use of an existing median break. The proposed development does not include a drive-through. The proposed development, however, is located within 500 m of a number of collisions in the surrounding roadway network. As such, the criteria for a safety trigger has been met.

2.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development will be located at 1400/1410 Youville Drive in the City of Ottawa suburb of Orleans. The proposed development is located approximately 200 m from the intersection of Youville Drive/Forest Valley Drive and St. Joseph Boulevard, as illustrated in Figure 2.2. The Site is located within lands zoned Light Industrial II2 H(14) under The City of Ottawa Zoning By-Law. The zone permits a variety of non-residential uses such as recreational, health and fitness, and service uses.

The proposed development will include one building with the uses of autobody repair shop and office space with a total GFA of 2,023 m^2. The build-out date is expected to be 2024. The proposed development is anticipated to provide 140 parking spaces, one loading space and 4 bicycle parking spaces. The proposed development is anticipated to make use of the one existing full movements access and one new proposed full movements access off of Youville Drive. A proposed landscaped area behind a concrete curb with no sidewalks

along the roadway are provided in the site plan. A sidewalk is proposed that leads from the front of the building to the two entrances on the north and south sides of the proposed development. Figure 2.1 illustrates the proposed development with a detailed site plan provided in Appendix B.

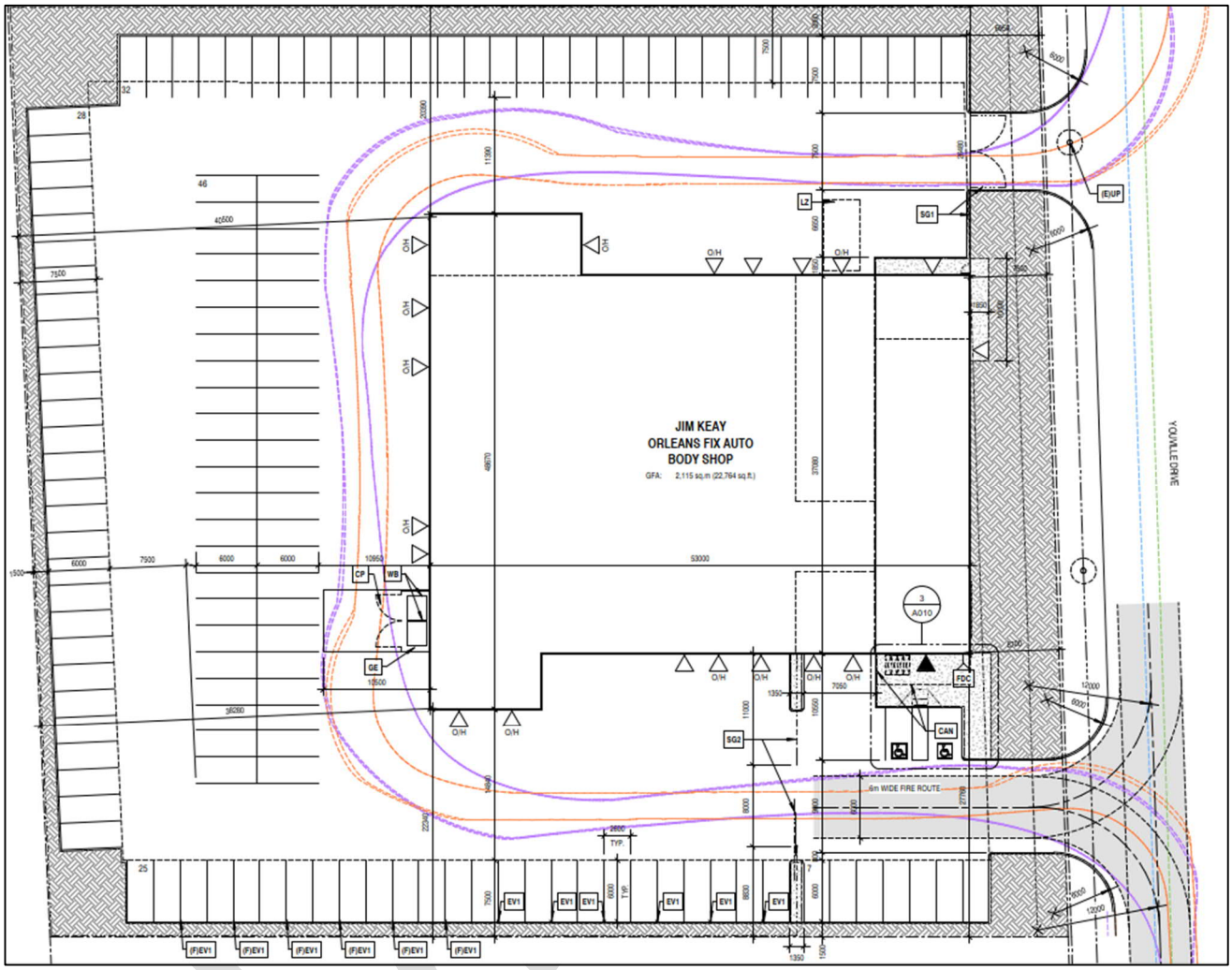

Figure 2.1 Proposed Development

Figure 2.2 illustrates the surrounding area of the proposed development.

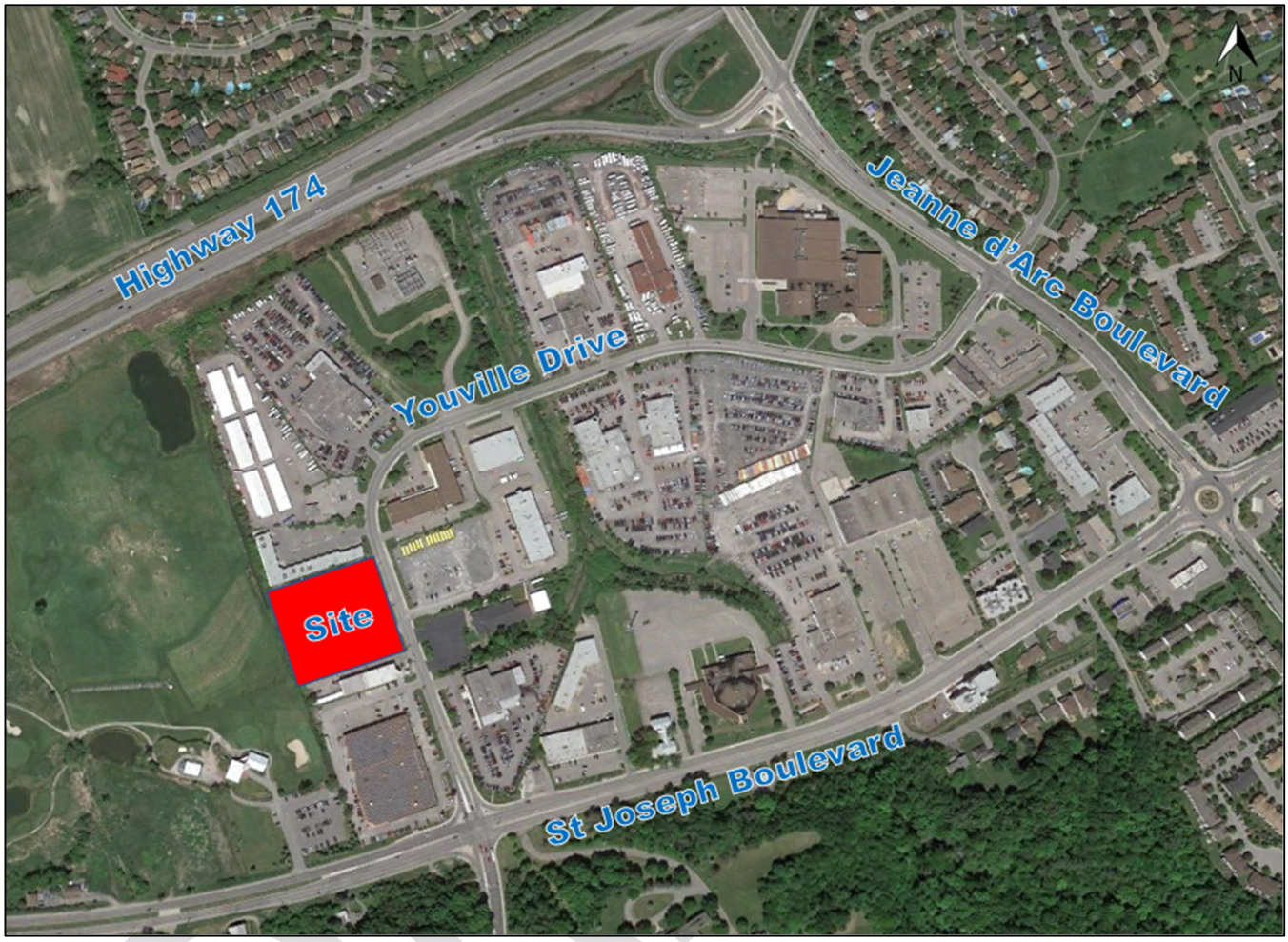

Figure 2.2 Proposed Development Location

3.0 EXISTING CONDITIONS

The following outlines the existing site characteristics and provides a summary of the expected development transportation conditions.

3.1 Roadways

The following section outlines the existing study area roadways, obtained from the City of Ottawa Official Plan, Annex 1 – Road Classification and Right-of-Way.

Jeanne d'Arc Boulevard, within the vicinity of the subject site is a four-lane divided urban arterial roadway. The roadway has a 37.5 m right-of-way and a posted speed limit of 60 km/h. Jeanne d'Arc Boulevard runs nominally east-west, however, within the vicinity of the proposed development, it runs north-south. Currently there are separated concrete sidewalks on both sides of the roadway.

St Joseph Boulevard within the vicinity of the subject site is a four-lane divided urban arterial roadway. The roadway has a 32 m right-of-way and a posted speed limit of 60 km/h. St. Joseph Boulevard runs east-west with concrete sidewalks on both sides of the roadway.

Youville Drive, within the vicinity of the proposed development is a two-lane undivided urban collector roadway. The roadway has a Right of Way of 20 m and an unposted speed limit of 50 km/h. Youville Drive runs north-south at the intersection of St Joseph Boulevard, and east-west at the intersection of Jeanne d'Arc Boulevard. Youville Drive has concrete sidewalks along the south/east side of the roadway.

3.2 Intersections

The following section documents the existing study intersections including their control type, lane configurations, turning restrictions, and any other relevant data. The following three intersections were identified for this study:

- Youville Drive and St Joseph Boulevard;
- Youville Drive and Jeanne d'Arc Boulevard; and,
- St Joseph Boulevard and Jeanne d'Arc Boulevard.

3.2.1 Youville Drive and St Joseph Boulevard

Youville Drive and St Joseph Boulevard, illustrated in Figure 3.1, is a four leg, signalized intersection, located to the south of the proposed development. The intersection has protected pedestrian crossings at all four of the approaches. There is a significant island at the northern approach which suggests the potential for an additional through lane or an additional left turning lane. There are designated bike lanes to the east of the intersection in both the eastbound and westbound lanes.

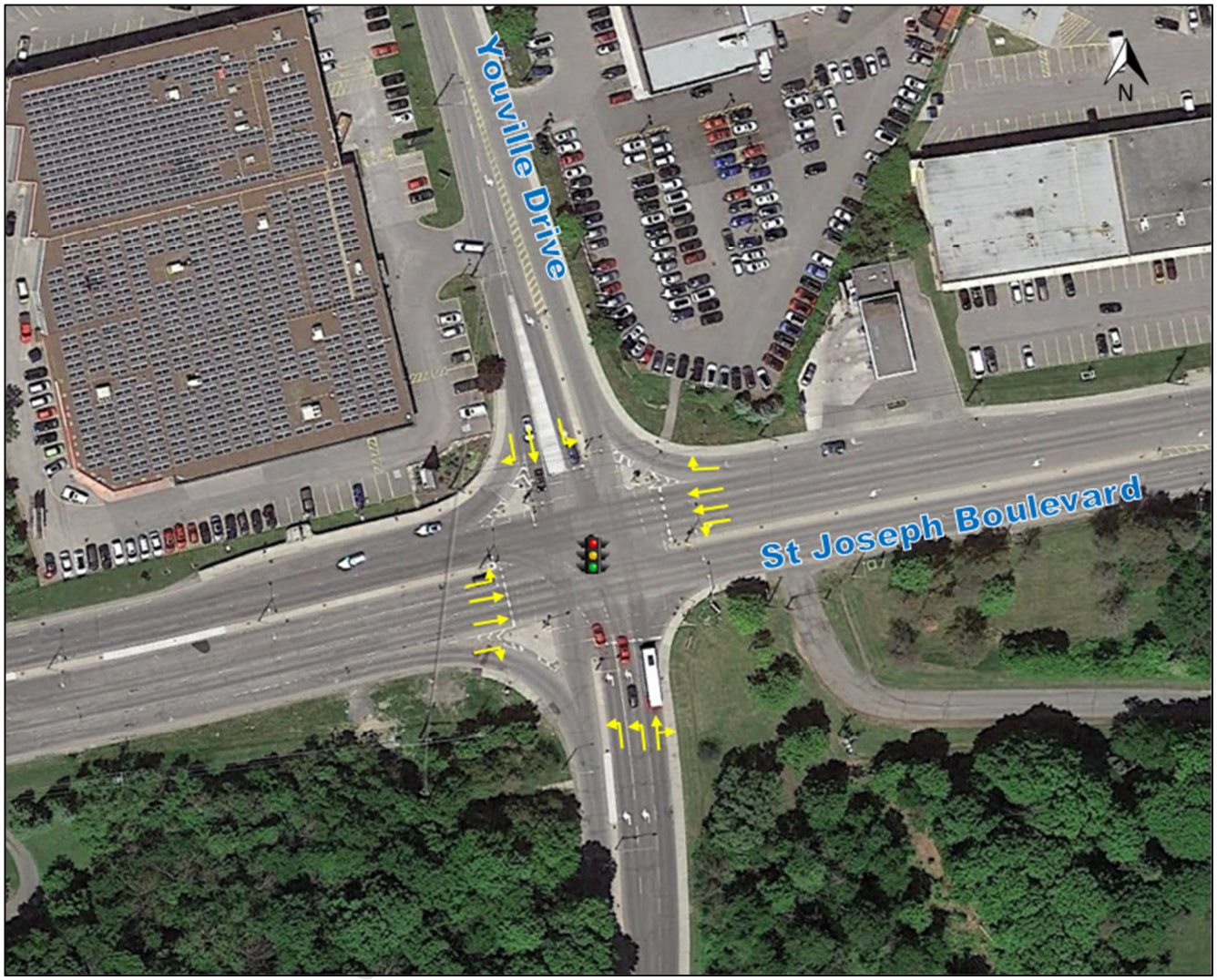

Figure 3.1 Youville Drive and St Joseph Boulevard

3.2.2 Youville Drive and Jeanne d'Arc Boulevard

Youville Drive and Jeanne d'Arc Boulevard, illustrated in Figure 3.2, is a four leg, signalized intersection, located to the east of the proposed development. The intersection has protected pedestrian crossings at all four of the approaches. There are no bike lanes, islands or any traffic calming measures present.

Figure 3.2 Youville Drive and Jeanne d'Arc Boulevard

3.2.3 St Joseph Boulevard and Jeanne d'Arc Boulevard

St Joseph Boulevard and Jeanne d'Arc Boulevard, illustrated in Figure 3.3, is a four leg, roundabout, located to the southeast of the proposed development. There are pedestrian crossings at all legs of the intersection with concrete islands at all legs, where the pedestrians must yield to oncoming vehicles. There are no bike lanes on any leg of the intersection

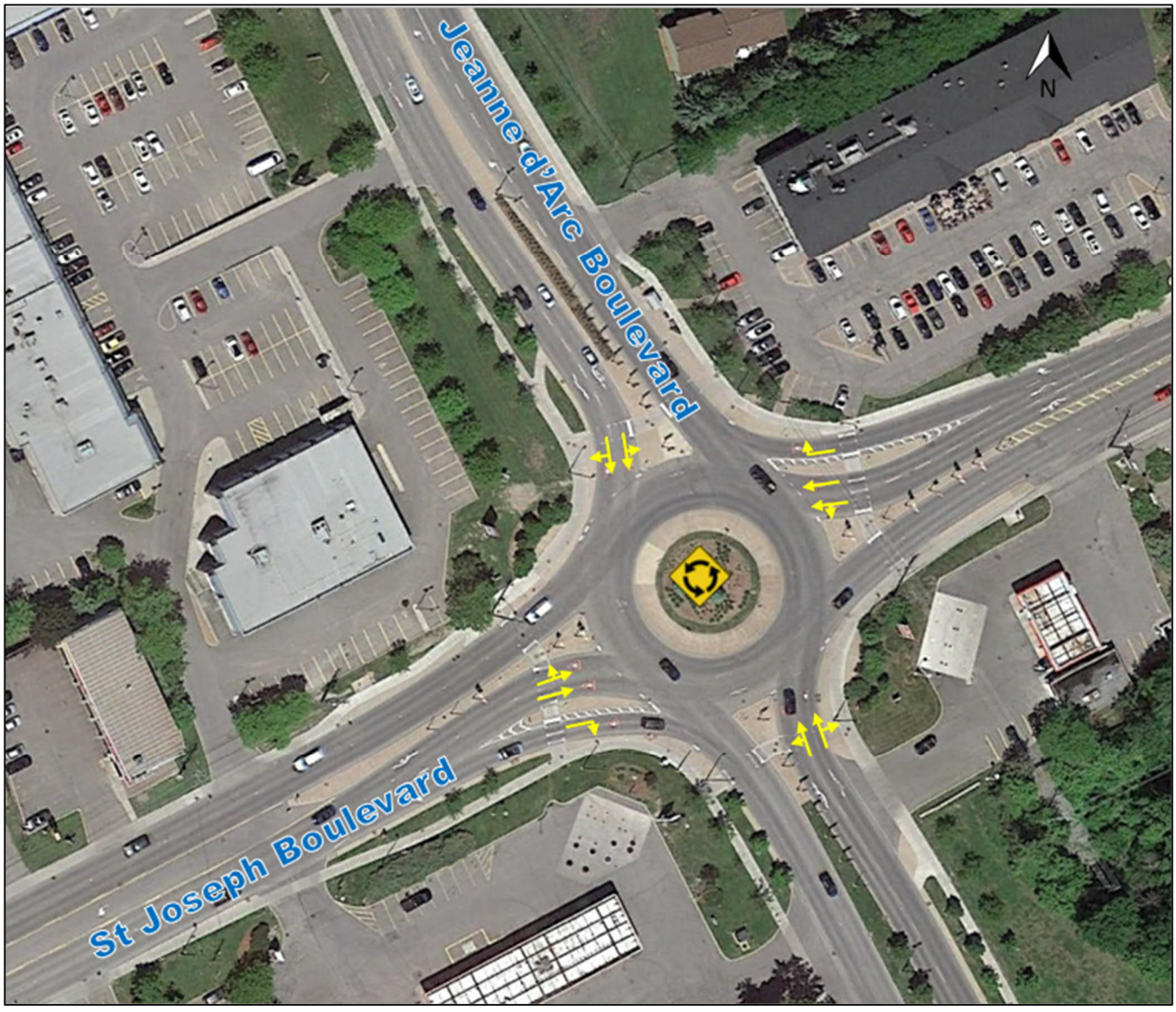

Figure 3.3 St Joseph Boulevard and Jeanne d'Arc Boulevard

3.3 Existing Driveways

The following section documents the existing driveway entrance within 200 m of the proposed site access. Figure 3.4 illustrates the driveways within the vicinity of the proposed site.

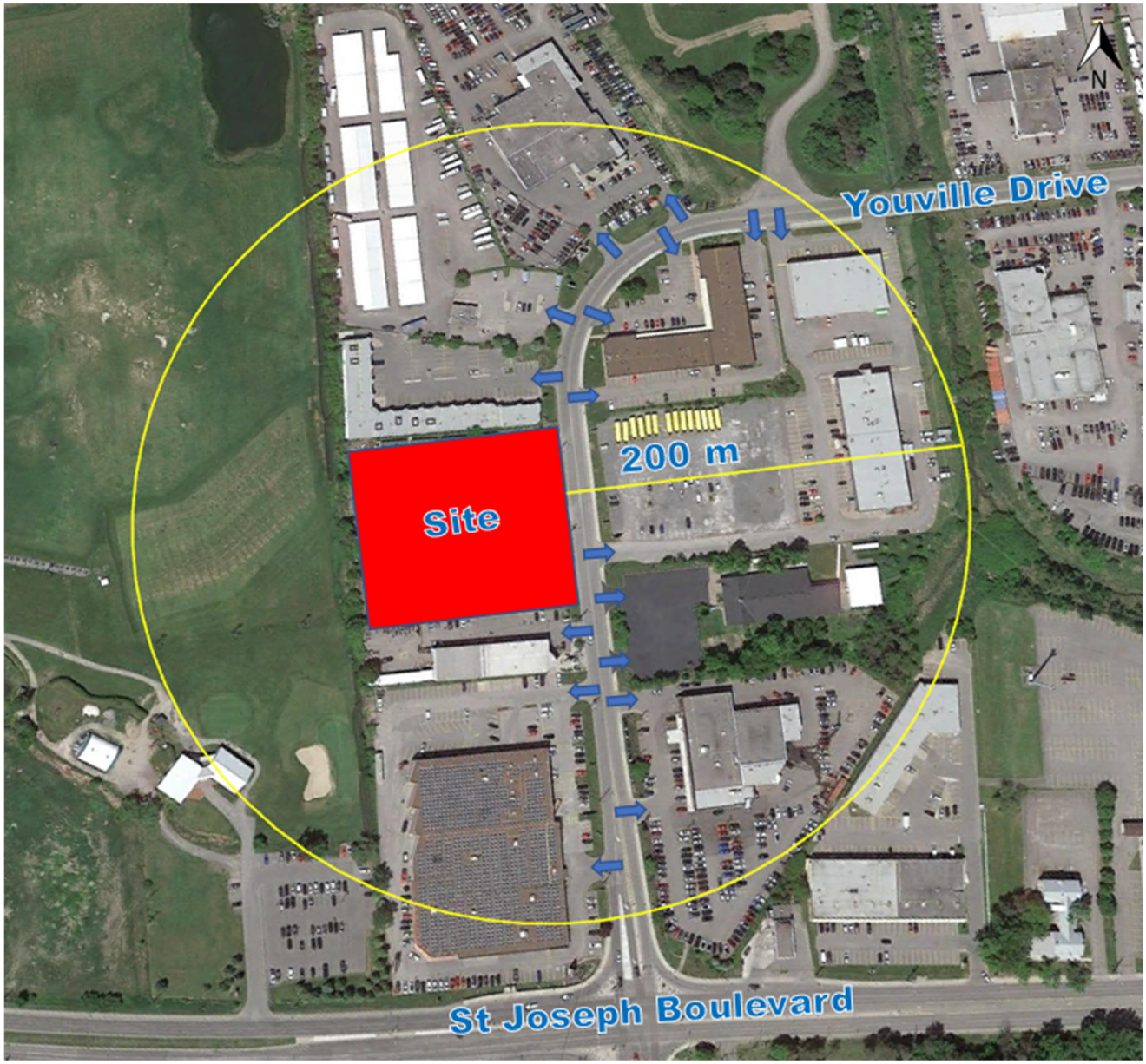

Figure 3.4 Existing Driveways

As shown in Figure 3.4, there are a total of 17 existing accesses within 200 m of the proposed development. The majority of the entrances belong to other businesses and services along Youville Drive.

3.4 Existing Multi-Use Pathways

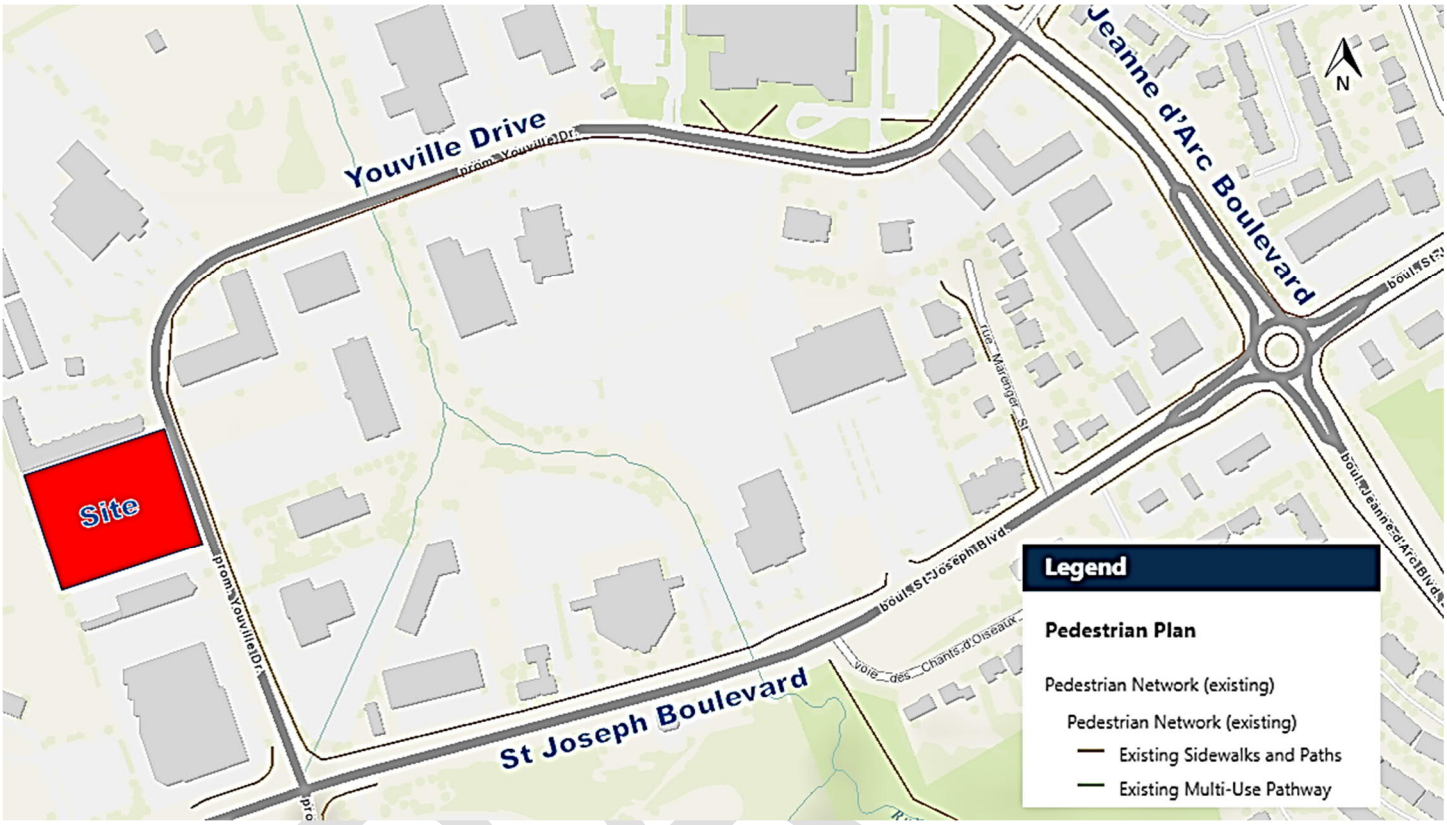

Figure 3.5 Existing Multi-use Pathways

As shown in Figure 3.5, there are no existing multi-use pathways within the vicinity of the proposed development, however, there is a large network of sidewalks along all roadways within the vicinity of the proposed development such as the south-east side of Youville Drive, the northern side of St Joseph Boulevard and on both sides of the roadway along Jeanne d'Arc Boulevard as discussed in Section 3.1.

3.5 Existing Transit Network

The following section documents the existing transit networks within the surrounding area. Figure 3.6 illustrates the existing bus routes within the study area of the proposed site. A detailed map of the transit network can be found in Appendix C.

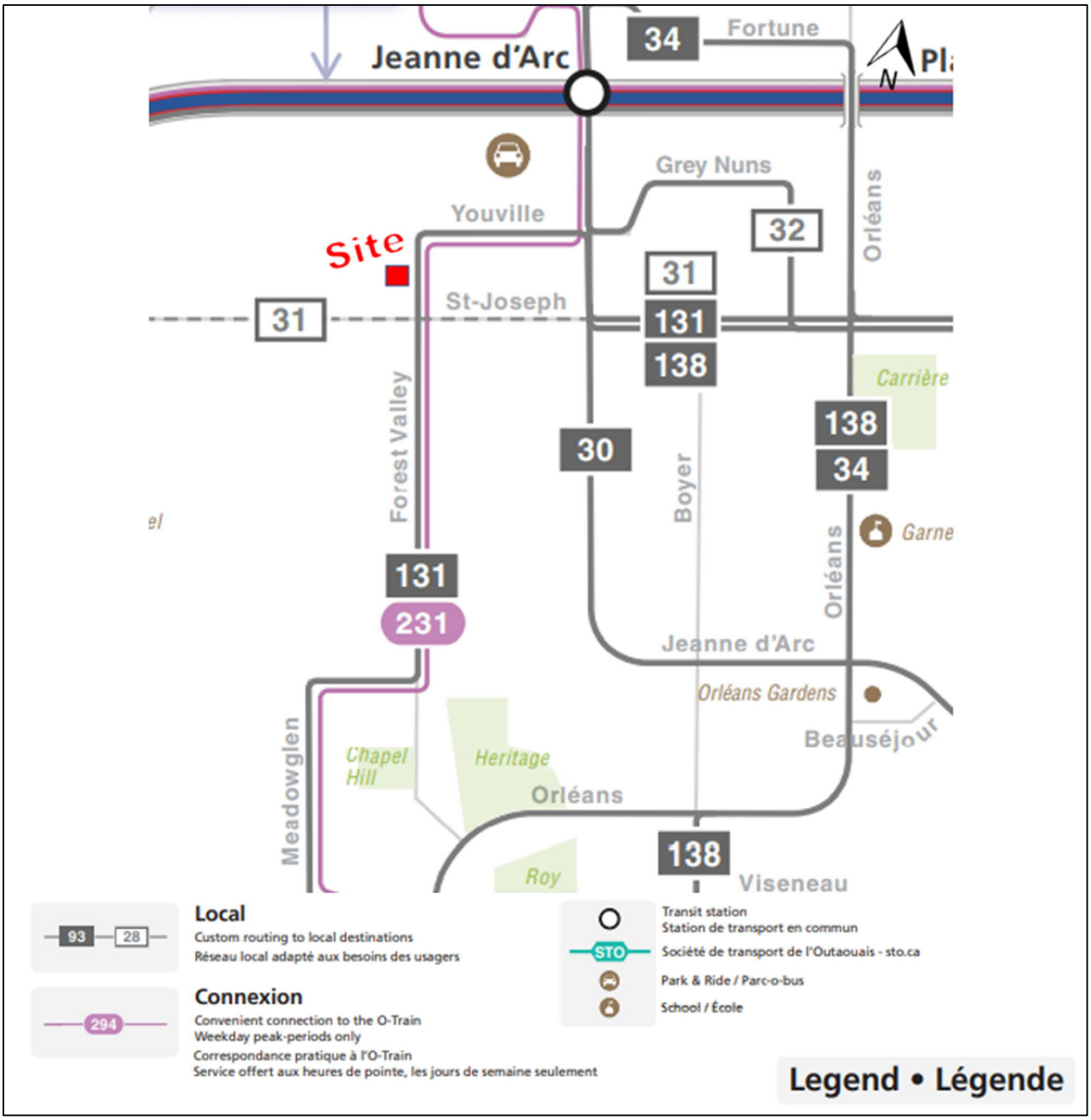

Figure 3.6 Existing Transit Routes

Currently there are 3 transit routes that service the proposed development directly, and one route that provides access via St Joseph Boulevard that requires a 250 m walk to the proposed development including:

- Route 131: Provides service from Fallingbrook to Place d'Orleans Station, operating every 30 minutes, with a stop at 1420 Youville Drive (Signed Sidewalk Stop);

- Route 231: Provides occasional service from Viseneau/Markwell Center to Blair station, with 3 buses in the morning and 3 buses in the afternoon, with a stop at 1420 Youville Drive (Signed Sidewalk Stop); and,
- Route 31: Provides occasional service from Place d'Orleans Station to Blair Station with only 4-6 busses running a day (Signed Sidewalk Stop).

Figure 3.7 Illustrates the location of the transit stops, which route is associated with the stop within the vicinity of the proposed development.

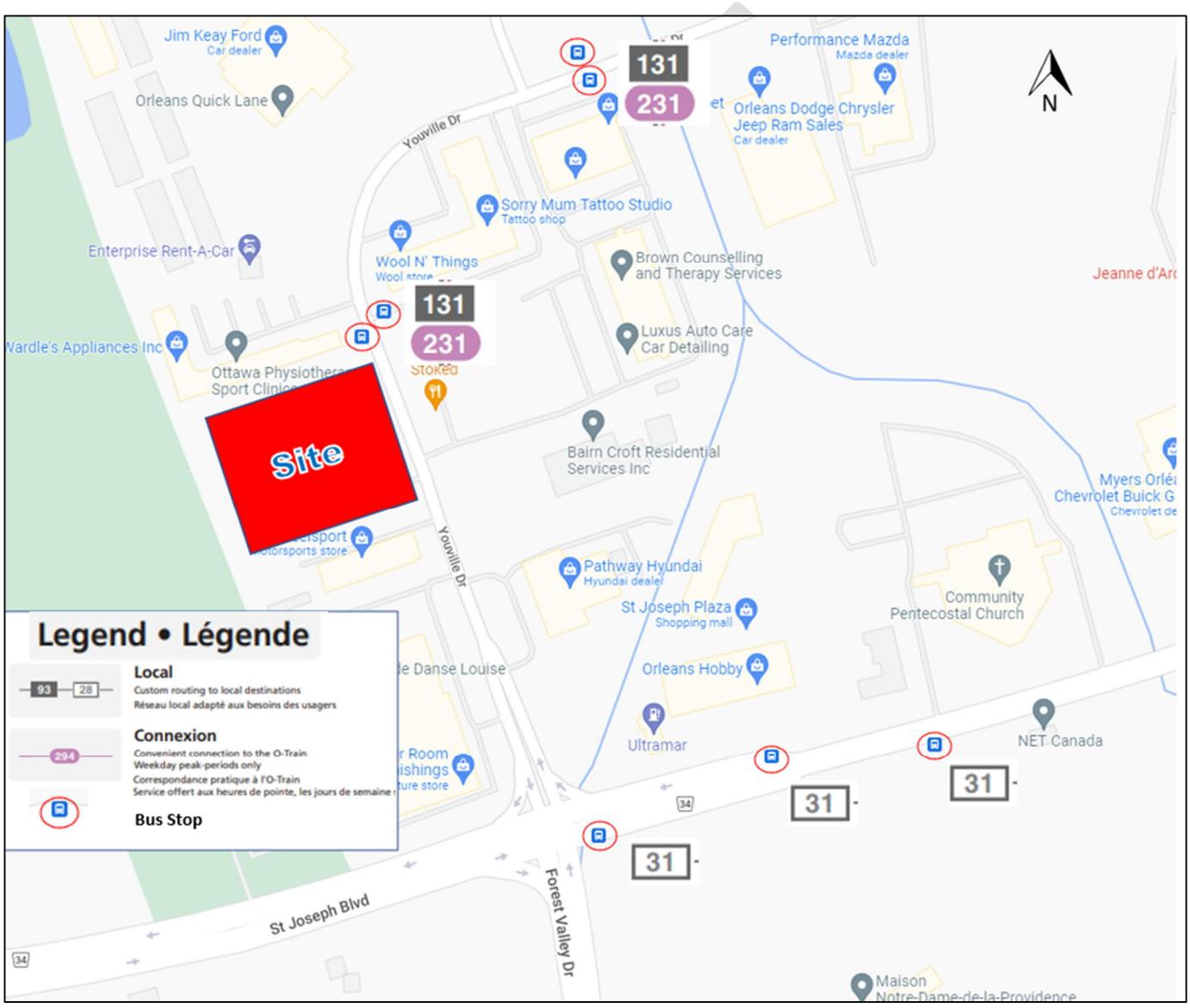

Figure 3.7 Transit Stop Locations

As seen in Figure 3.7, there are two bus stops directly north of the proposed development. Both of these bus stops are located on landscaped boulevards of adjacent businesses and as such may cause some difficulties accessing the bus stops during the winter months.

3.6 Existing Traffic Management Measures

No area traffic calming measures were identified within a 250 m radius of the subject site. Additionally, no traffic calming measures were identified along Youville Drive within the study area.

3.7 Existing Peak Hour Travel Demand by Mode

The proposed site is located in Ottawa's outer suburbs area, Orleans. Transit mode shares based on the City of Ottawa Transportation Master Plan (TMP) leaving the area to other areas of Ottawa accounted for 24% of morning peak period trips in 2011.The2031 target for transit mode shares leaving is 26%. The 2011 transit mode shares of the morning peak trips arriving to the area is 9% where the target 2031 rate is 13%.

The observed 2011, 24-hour mode shares from the 2011 O-D Trans Survey for the Orleans area, where the development is located, is summarized in Table 3.1 O-D survey information can be found in Appendix C.

Table 3.1 O-D Survey Transportation Mode Shares

Mode	From District (%)	To District (%)	Average (%)
Auto Drive	60	61	60
Auto Passenger	15	15	15
Transit	22	22	22
bicycle	1	0	1
Walk	0	0	0
Other	2	2	2

Based on this survey the Orleans area was shown to have the following mode shares; 15 % of auto passenger, 22% transit, 1 % bicycle, 0 % walking and 2 % other. It should be noted that the other category accounts for trips such as taxis, school buses, motorcycle and scooters. As such, for the purposes of modelling traffic conditions and projections of future conditions, the percentages of "other" trips will be distributed to auto driver, resulting in 61% auto driver trips.

3.8 Existing Collision History

Collision data was provided by the city for the years 2016-2020. The data was reviewed for boundary roads within the study area, as identified in Section 3.0. The data was divided into 4 sections, Table 3.2 illustrates the data.

- Youville Drive at St Joseph Boulevard;
- Youville Drive between St Joseph Boulevard and Jeanne d'Arc Boulevard;
- Youville Drive at Jeanne d'Arc Boulevard, and;
- Jeanne d'Arc Boulevard and St Joseph Boulevard.

Table 3.2 Collision data

Location	Collisions								
	2016	2017	2018	2019	2020	Total	Cyclist	Pedestrian	Fatalities
Youville Drive at St Joseph Boulevard	5	7	1	4	5	22	0	0	0
Youville Drive between St Joseph Boulevard and Jeanne d'Arc Boulevard	1	0	1	2	3	7	0	0	0
Youville Drive at Jeanne d'Arc Boulevard	10	4	7	9	2	32	0	3	0
Jeanne d'Arc Boulevard at St Joseph Boulevard	59	54	49	48	32	242	0	0	0

As seen from Table 3.2, there were 22 total collisions at the intersection of Youville Drive and St Joseph Boulevard, 7 along Youville Drive from St Joseph Boulevard and Jeanne d'Arc Boulevard, 32 at the intersection of Youville Drive and Jeanne d'Arc Boulevard with 3 collisions including pedestrians that all happened in 2016, and 242 at the intersection of Jeanne d'Arc and St Joseph Boulevard from the years 2016-2020. Throughout these 5 years there were no collision that involved cyclists or resulted in a Fatality.

As seen from the data, there is a high frequency of collision at the intersection of Jeanne d'Arc Boulevard and St Joseph Boulevard, averaging 48.4 collisions per year. However, none of the recorded collisions involved pedestrians or cyclists. Additionally, no collision resulted in a fatality. Also, a trend in present as the number of collisions is continuing to decrease each year and has decreased from 59 collisions in 2016 to only 32 collisions in 2020, this may be due to the general increase in education and experience within the City of Ottawa and Canada as a whole of the operations of roundabouts. As the construction of the roundabout (2010) predates the collision data, it can be said that its construction does not contribute to the reducing numbers of collisions. Table 3.3 summarizes the collision impact type and whether the collision resulted in injury or property damage only.

Table 3.3 St Joseph Boulevard and Jeanne d'Arc Boulevard Collision Breakdown

Collision Type	Collisions							
	2016	2017	2018	2019	2020	Total	Property Damage	Injury
Angle	26	21	19	17	9	92	88	4
Rear End	9	7	2	7	6	31	30	1
Sideswipe	23	24	27	24	17	115	112	3
Other	1	2	1	0	0	4	3	1
Total	59	54	49	48	32	242	233	9

As shown above the most common type of collision was a sideswipe collision with 115 of the total 242 collisions at the roundabout with angled collisions resulting in 92 of the collisions reported. This is most likely caused within the roundabout with vehicles both entering and exiting the roundabout. However, it is shown that the number of collisions is decreasing over time.

As discussed, there were no fatalities presented at this location as a result of a collision. Nine collisions resulted in injury of the 242 where the other 233 collisions resulted in property damages only.

The number of collision as well as the collision impact type is most likely a result of the intersection being a high-volume, two-lane roundabout with driver inexperience. As such, it is recommended the City of Ottawa monitor this intersection for safety and operational deficiencies.

3.9 Existing Traffic Volumes

MP obtained 8-hour (7:00-10:00, 11:30-13:00, and 15:00-18:00) Traffic Movement Counts (TMC) data from the City of Ottawa for the following Intersections:

- Youville Drive and Jeanne d'Arc Boulevard (Thursday, January 17, 2019);
- Youville Drive at St Joseph Boulevard (Wednesday, July 6, 2022); and,
- Jeanne d'Arc Boulevard at St Joseph Boulevard (Wednesday, July 6, 2022).

MP used a growth factor of 1.5% annually, non-compounding to adjust volumes to 2022 (existing conditions). This factor was determined based on the City of Ottawa Transportation Master Plan, which states that the City of Ottawa is expected to increase its population from 922,00 to 1.14 million residents from 2011 to 2031, this results in an annual growth rate of 1.1%. Since traffic growth is a function of both population and employment growth, a growth rate of 1.5% was used to ensure that both background growths are taken into account. Figure 3.8 and Figure 3.9 illustrates the existing conditions volumes for vehicular traffic, pedestrian and cyclist traffic. TMC and signal timing data can be found in Appendix C.

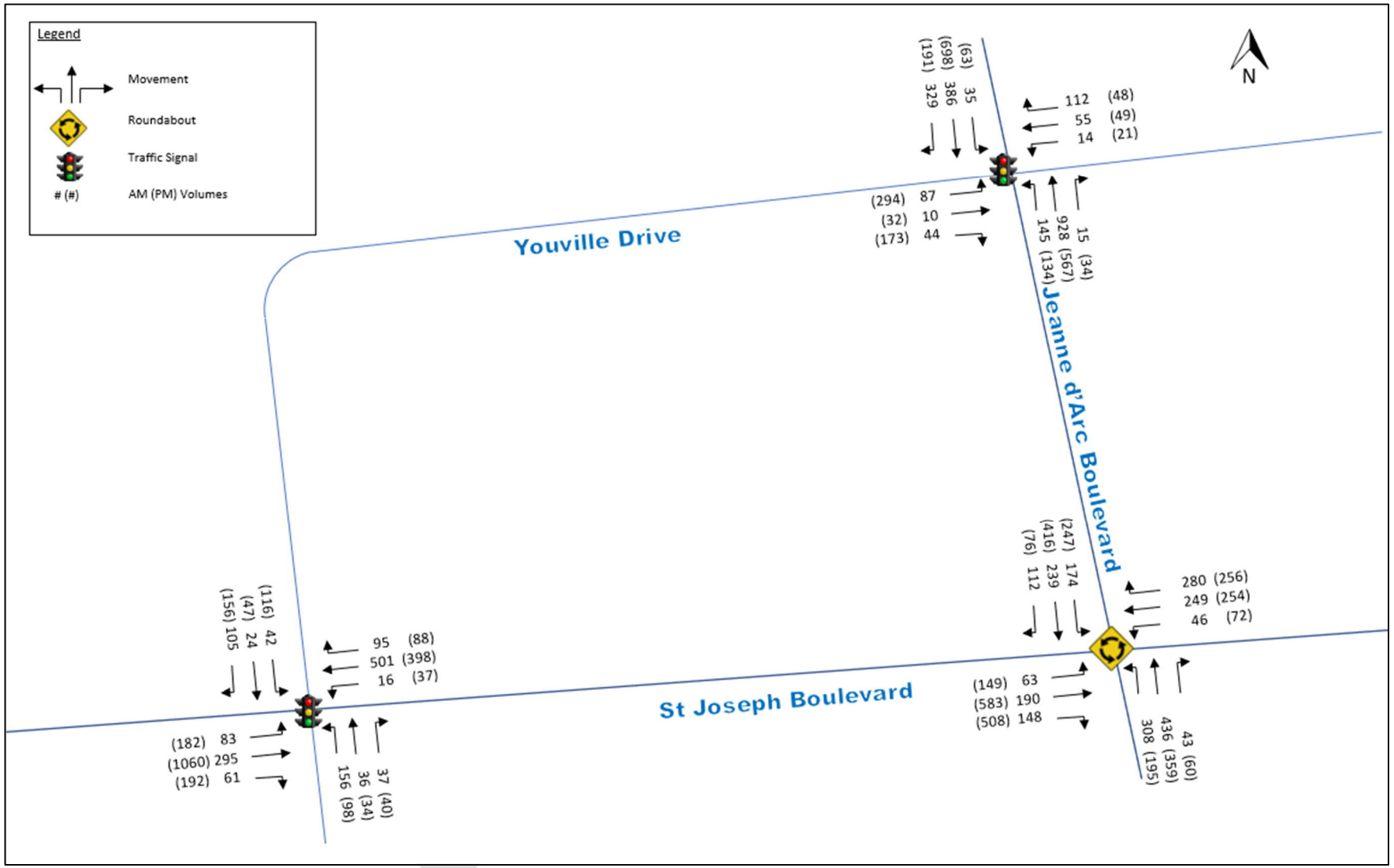

Figure 3.8 Existing Conditions Traffic Movement Volumes

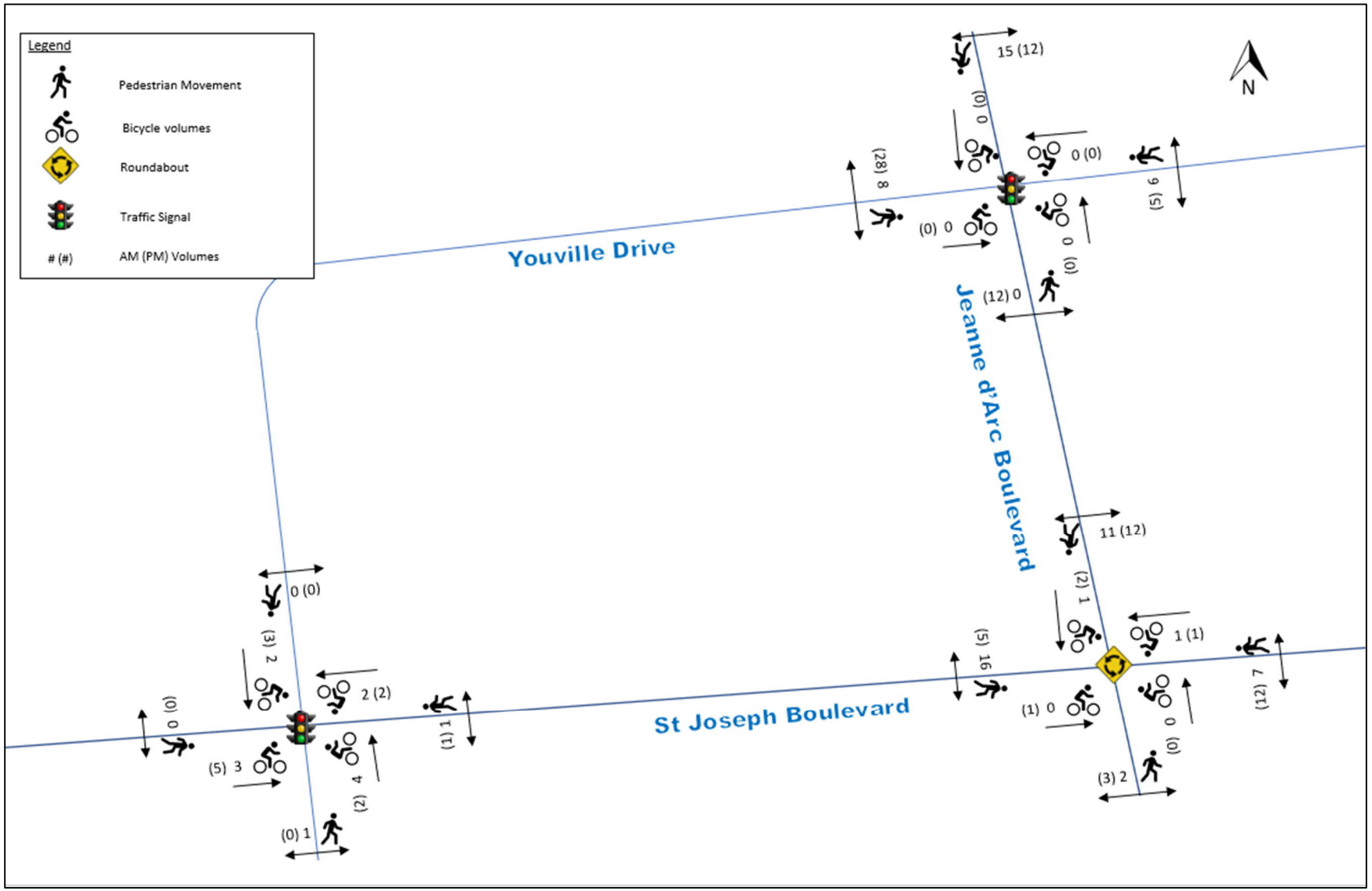

Figure 3.9 Existing Conditions Pedestrian and Cyclist Movement Volumes

3.10 Existing Traffic Operations

Level of Service (LOS) is a qualitative measure of the operating conditions, based on lane configuration, signal operation/phasing. LOS criteria for signalized and unsignalized intersection based on the Multi Modal Level of Service (MMLOS) Guidelines, are illustrated in Table 3.4.

Table 3.4 Definition of LOS for Intersections

Level of Service	v/c Ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Existing traffic operations analysis for the intersection of Youville Drive and St Joseph Boulevard and Youville Drive and Jeanne d'Arc Boulevard was performed using Synchro 11 software. Signal timing information was provided by The City of Ottawa. Table 3.5 summarizes the Synchro 11 output results for existing conditions.

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Table 3.5 Existing Conditions – Synchro 11 output

Movement	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay (s)	LOS	V/c	Delay (s)
Youville Drive and St Joseph Boulevard						
EBL	A	0.19	11	A	0.38	13
EBTR	A	0.16	10	A	0.58	15
EBR	A	0.07	2	A	0.22	2
WBL	A	0.04	19	A	0.22	23
WBT	A	0.32	19	A	0.29	19
WBR	A	0.13	2	A	0.13	1
NBL	A	0.52	52	A	0.42	49
NBTR	A	0.29	25	A	0.34	24
SBL	A	0.37	56	D	0.87	93
SBT	A	0.15	44	A	0.22	40
SBR	A	0.39	7	A	0.49	11
Youville Drive and Jeanne d'Arc Boulevard						
EBL	A	0.60	43	D	0.87	53
EBTR	A	0.19	10	A	0.38	7
WBTRL	A	0.53	17	A	0.26	16
NBL	A	0.40	10	A	0.55	20
NBTR	A	0.56	16	A	0.44	22
SBL	A	0.12	8	A	0.19	13
SBTR	A	0.50	11	C	0.75	29
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

During the AM peak hour all movements at both intersections operate well with an LOS of A, a v/c of 0.60 or less and a max delay of 56 seconds.

During the PM peak hour, the intersection of Youville Drive and St Joseph Boulevard operates well with all movements operating at an LOS of A with the exception of the southbound left turn movement that operates at an LOS of D, with a v/c of 0.87 and a delay of 93 s. The intersection of Youville Drive and Jeanne d'Arc Boulevard operates well with all movements operating at an LOS of A, with the exception of the southbound through-right turn movement that operates at an LOS of C with a v/c of 0.75 and a delay of 29s, and the eastbound left turn movement that operates at an LOS of D with a v/c of 0.87 and a delay of 53s.

Synchro 11 reports can be found in Appendix D.

The analysis of the roundabout intersection of St Joseph Boulevard and Jeanne d'Arc Boulevard was performed in Arcady (Junctions 9) software. Table 3.6 summarizes the Arcady 9 output results for existing conditions.

Table 3.6 Existing Conditions – Arcady 9 Output

Leg	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay	LOS	V/c	Delay
St Joseph Boulevard and Jeanne d'Arc Boulevard Roundabout						
Westbound (Leg 1)	A	0.23	2	A	0.22	2
Southbound (Leg 2)	A	0.29	3	A	0.39	3
Eastbound (Leg 3)	A	0.09	1	A	0.50	1
Northbound (Leg 4)	A	0.42	3	A	0.42	1

During both the AM and PM peak hours it is shown that the St Joseph Boulevard and Jeanne d'Arc Boulevard roundabout operates at an LOS A, with a v/c of 0.50 or less and an average delay of 3 seconds or less.

Arcady 9 output reports can be found in Appendix D.

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4.0 PLANNED CONDITIONS

4.1 Roadway Network Modifications

According to the City of Ottawa Transportation Master Plan, Transit signal priority will be implemented along Jeanne d'Arc boulevard in the form of queue jump lanes at selected intersections from Innes Road to Jeanne d'Arc Station by the year 2031. There is also a new LRT station planned at Jeanne d'Arc that is anticipated to be completed in 2024 as part of the Stage 2 of the LRT plan. However this is not expected to cause any roadway modifications within the study area. No other roadway modifications are currently planned within the vicinity of the proposed development

4.2 Other Study Area Developments

Within 1 km to the south of the proposed development there is currently one other site plan control application located at 1479 Youville Drive, that includes upgrading the existing site services by replacing and adding storm drains and catch basins and asphalt paving. This is not anticipated to generate additional trips to the road network.

5.0 STUDY AREA AND TIME PERIODS

5.1 Study Area

The proposed study area is limited to the following intersection:

- Youville Drive and Jeanne d'Arc Boulevard;
- Youville Drive at St Joseph Boulevard; and,
- Jeanne d'Arc Boulevard at St Joseph Boulevard.

5.2 Time Periods

The proposed time periods for the analysis are:

- AM Peak (8:00-9:00) hour of adjacent roadways, and;
- PM Peak (15:45-16:45) hour of adjacent roadways.

5.3 Horizon Years

The proposed horizon years for analysis are:

- Existing Conditions (2022);
- Background Future (2024) and Total Future (2024) conditions and,
- Horizon Background (2029) and Total Horizon Traffic (2029) Conditions.

6.0 EXEMPTION REVIEW

Table 6.1 summarizes the exemptions review in accordance with the City of Ottawa TIA Guidelines.

Table 6.1 Exemptions Review

Module	Element	Exempted	Reasoning
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	No	Not exempted due to being a Site Plan
	4.1.3 New Street Networks	Yes	The development is not a subdivision
4.2 Parking	4.2.1 Parking Supply	No	Not exempted due to being a Site Plan
	4.2.2 Spillover Parking	Yes	The development has more parking spots than needed with 146 spaces provided
Network Impact Component			
4.5 Transportation Demand Management	All elements	Yes	The development is expected to have less than 60 employees
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbours	Yes	The development uses a collector roadway as a boundary street, and roadway is not in a residential development
4.8 Network Concept		Yes	It is assumed that the Autobody shop will not generate more than 200 new person trips during peak hour

7.0 DEVELOPMENT GENERATED TRAVEL DEMAND

7.1 Trip Generation

The proposed development will include one building with the uses of autobody repair shop (1,824 m^2) and office space (291 m^2) with a total GFA of 2,023 m^2. Table 7.1 shows the ITE Trip Generation for the proposed development.

Table 7.1 ITE Trip Generation

Land Use	ITE LUC	GFA Sq Ft. (m)	Rate		Trips Generated		Trip Distribution			
			AM	PM	AM	PM	AM		PM	
							In	Out	In	Out
Autobody Shop	943 - Automobile Parts and Service Center	19,634 (1,824)	1.91	1.97	37	40	27	10	15	25
Office	712 - Small Office Building	3,130 (291)	1.67	2.16	5	7	4	1	2	5
Total Vehicle Trips					42	47	31	11	17	30
Total Person Trips (x1.28)					54	60	40	14	22	38

As ITE trip generation results is in new vehicles trips, these values must be multiplied by a factor of 1.28 from the City of Ottawa Transportation Impact Assessment Guidelines (2017), in order to represent development generated Person-Trips. As such, the proposed development is anticipated to generate 54 person trips during the AM peak hour with 40 entering the site and 14 leaving the site, and 60 person trips during the PM peak hour with 22 entering the site and 38 leaving the site.

7.2 Mode Share

As stated previously in this report, the expected build out year is 2024. Additionally, the proposed development and surrounding study area is serviced by public transit and has adequate pedestrian and cycling facilities. The City of Ottawa Long Range Financial Plan (2011) estimates a transit ridership increase of 3.8% from 2016 to 2020 and 2.0% increase from 2021-2025. The City of Ottawa Transportation Master Plan has also identified mode share targets for the year 2031 city wide. Table 7.2 shows the mode share targets expected for traffic within the study area.

Table 7.2 Future 2031 Mode Share Targets

Travel Mode	Mode Share Target	Rationale
Auto Drive	50%	Currently average of 71% of person trips. This is expected to decrease in the future as more transit and cycling options become available.
Auto Passenger	9%	% of auto passenger person trips will not change in proportion to Auto Drivers.
Transit	26%	Transit person trips are expected to increase over time, as predicted by City of Ottawa Long Range Financial Plan.
Bicycle	5%	% of cycling is expected to increase as cycling networks become more accessible and increase
Walk	10%	% of walking person trips is expected to increase.

However as these are for the 2031 horizon year, and the use of the development is for an autobody repair shop, it is anticipated that trips will be mainly made up of people bringing in their vehicles for maintenance. As such, to remain conservative, it was assumed that all new person trips will be made up of entirely of new Auto Driver trips.

7.3 Trip Distribution

Trip distribution was based on existing traffic patterns from acquired TMC data. Table 7.3 illustrates the splits.

Table 7.3 Directional Distribution

Direction	AM	PM
North	34%	24%
East	18%	28%
South	19%	31%
West	29%	17%
Total	100%	100%

7.4 Trip Assignment

Figure 7.1 illustrates the AM and PM trip assignment for the proposed development generated auto driver trips.

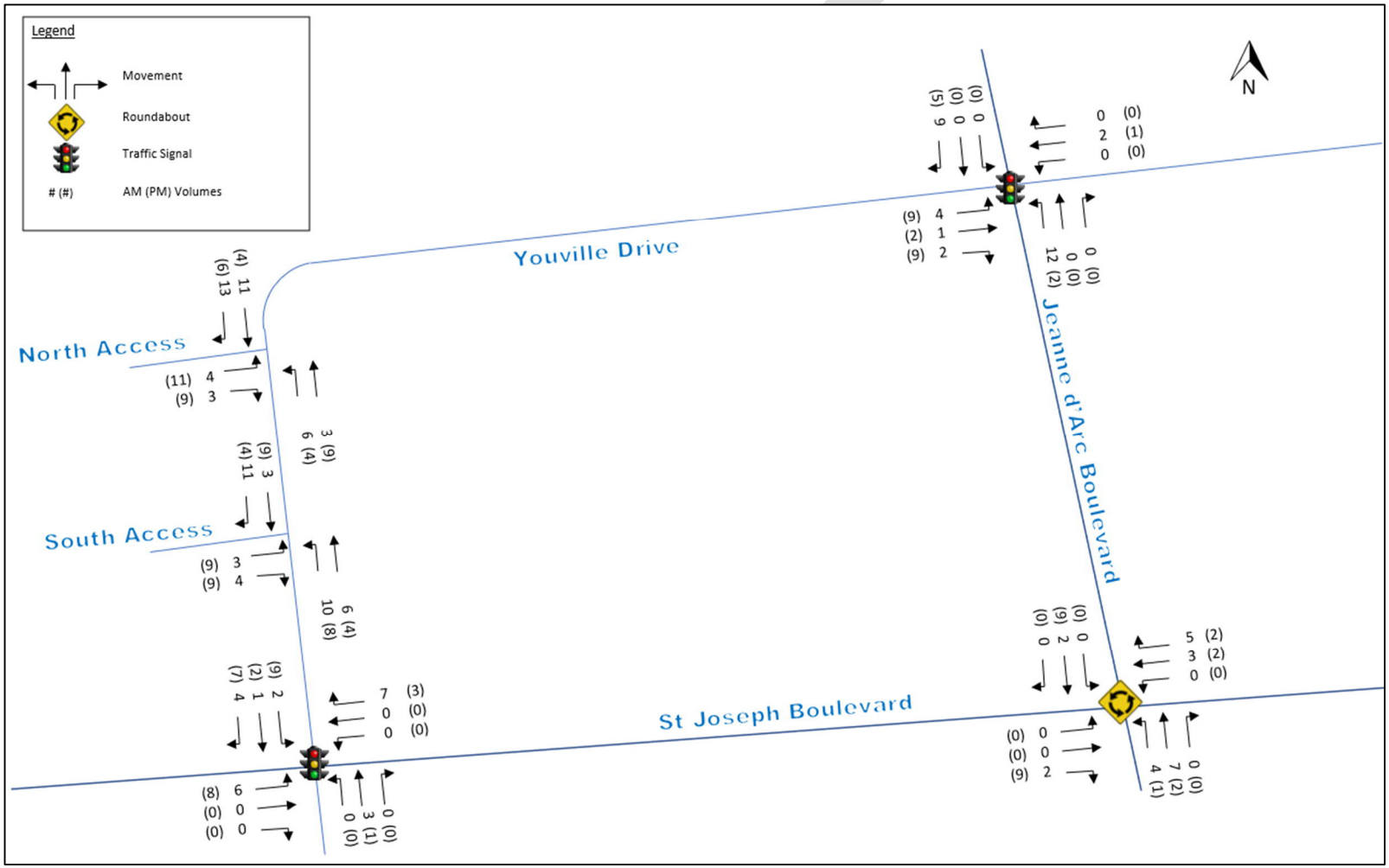

Figure 7.1 Proposed Development Trip Assignment

8.0 BACKGROUND TRAVEL DEMAND

As previously stated in Section 3.9, MP obtained turning movements counts from the City, taken at:

- Youville Drive and Jeanne d'Arc Boulevard (Thursday, January 17, 2019);
- Youville Drive at St Joseph Boulevard (Wednesday, July 6, 2022); and,
- Jeanne d'Arc Boulevard at St Joseph Boulevard (Wednesday, July 6, 2022).

The traffic volumes were projected to 2022, applied to the network and balanced accordingly.

8.1 Transportation Network Plans

As mentioned in section 4.1, the City of Ottawa Transportation Master Plan indicates that a new LRT station planned at Jeanne d'Arc that is anticipated to be completed in 2024 as part of Stage 2 of the LRT plan. As well, Jeanne d'Arc boulevard will have transit signal priorities and queue jump lanes at selected intersections from Innes Road to Jeanne d'Arc Station by the year 2031. This is anticipated in aiding the city with the goal of reaching a 26 % Transit Mode share increasing the appeal for travellers to take Public Transit.

8.2 Background Growth

To project the traffic volume to the current and future years, a growth rate of 1.5% was used as stated in Section 3.9. The growth rate is considered appropriate as it is to include both the population and employment growth within the City of Ottawa.

8.3 Other Developments

As discussed in section 4.2 earlier there is a proposed site upgrade within the vicinity of the proposed development, that includes upgrading the existing site services by replacing and adding storm drains and catch basins and asphalt paving. This is not anticipated to generate addition trips to the road network.

9.0 DEMAND RATIONALIZATION

As the proposed development is anticipated to generate less then 60 person trips in both the AM and PM peak hours, it is anticipated that the future road network will be able to support the additional volumes with minimal impact to background conditions.

10.0 DEVELOPMENT DESIGN

This section will review the proposed development and its transportation network elements in order to ensure that a safe and efficient design has been proposed, to encourage walking, cycling, and transit use. The City of Ottawa's TDM-supportive Development Design and Infrastructure checklist has been completed and attached in Appendix E for reference. The TDM-supportive Development Design and Infrastructure checklist outlines the TDM elements to be included in the proposed development.

10.1 Design Suitable Modes

The proposed site plan is anticipated to include a total of 140 parking spaces with 2 barrier free parking spaces, 1 loading space and 4 bicycle parking spaces. As described in Section 3.5, the closest transit stops to the proposed development are located directly north of the proposed development along Youville Drive.

10.2 Circulation Access

The proposed development is anticipated to include 2, full-movements, accesses fronting on Youville Drive located approximately 190 m (existing) and 250 m to the north of the intersection of Youville Drive and St Joseph Boulevard. All accesses are expected are to be unsignalized with stop control on the minor approach.

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11.0 PARKING

The site plan includes a total of 140 parking spaces with 2 barrier free parking spaces, 1 loading space and 4 bicycle parking spaces. The City of Ottawa Zoning By-Law 2008-250, Section 101, Schedule 1A lists the proposed development as being in Area C (Suburban). Table 101 within the City of Ottawa By-law provides the minimum parking rates for varying land uses. The proposed development is located further than 600m from rapid transit and given there is no limit on the number of parking spaces imposed on the development. Table 11.1 illustrates the City of Ottawa By-Law minimum number of parking spaces for the proposed development.

Table 11.1 City of Ottawa By-Law Parking Requirements

Land Use	Minimum Parking Spaces Rate	Gross Floor Area (m^2)	Minimum Number of Spaces Required
Autobody Shop	3 parking spaces per service bay.	1733 (13 service Bays)	39
Office Space	2.4 parking spaces per 100 m^2 of Gross Floor Area	291	7

The proposed development is anticipated to include 140 parking spaces, which satisfies the by-law requirement of 46 parking spaces for the proposed autobody shop and office space uses.

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12.0 BOUNDARY STREET

This section will examine the design elements of the noted boundary street and their ability to accommodate the proposed development while being consistent with the City of Ottawa's Complete Street design philosophy as well as its urban design objectives.

12.1 Segment Mobility

12.1.1 Pedestrian Level of Service (PLOS)

The pedestrian level of service (PLOS) is used to evaluate pedestrian comfort, safety and convenience on the boundary street segment. PLOS was assessed for Youville Drive which provides direct access to the proposed development. Table 12.1 illustrates the PLOS of Youville Drive.

Table 12.1 PLOS

Side of Roadway	Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume	Presence of On-Street Parking	Operating Speed	LOS
Youville Drive						
East	1.8	N/A	<3000	N/A	60	C
West	N/a	N/A	<3000	N/A	60	F

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification Youville Drive has a target of C based on the site being located on a collector road in an employment area. As such, Youville Drive does not meet the requirement as it has a PLOS of F.

12.1.2 Bicycle Level of Service (BLOS)

Bicycle level of service (BLOS) is used to evaluate the level of stress experienced by cyclists using the roadway corridor. The BLOS for Youville Drive is lustrated in Table 12.2.

Table 12.2 BLOS

Bike Lane Facility	Number of Travel Lanes	Operating Speed (km/h)	BLOS
Youville Drive			
Mixed Traffic	2	60	F

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification Youville Drive has a target of E based on the site being located in an employment area and not on a bicycle route. As such the target has not been met for Youville Drive.

12.1.3 Transit Level of Service (TLOS)

Transit level of service (TLOS) is to evaluate the relative attractiveness of transit based on travel time and transit priority. The TLOS of Youville Drive was reviewed and is illustrated in Table 12.3.

Table 12.3 TLOS

Transit Facility	Level of Exposure	TLOS
Mixed Traffic	Medium	E

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification Youville Drive has a target of D. As such the target has not been met for Youville Drive.

12.1.4 Truck Level of Service (tkLOS)

Truck level of service (tkLOS) is to evaluate the level of ease of trucks to operate within a corridor. The tkLOS was reviewed for Youville Drive and is illustrated in Table 12.4.

Table 12.4 tkLOS

Side of Roadway	Curb Lane Width	Number of Travel Lanes	tkLOS
Youville Drive			
East	5.5	2	B
West	5.5	2	B

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification Youville Drive has a target of D as Youville drive is not a truck route and based on the site being located in an employment area. As such the target has been met for all directions on Youville Drive.

12.2 Road Safety

Available collision data within the study area was reviewed and is presented in Section 3.7. No road safety concerns were identified on boundary streets. As City of Ottawa collision records do not indicate the direction of travel for vehicles involved, collision diagrams are not feasible.

13.0 ACCESS INTERSECTION DESIGN

This section will examine design elements of the proposed developments access points and assess their alignment with the City of Ottawa's Complete Streets philosophy, MMLOS Guidelines and urban design objectives.

13.1 Location and Design of Access

The proposed development is anticipated to include 2 entrances fronting on Youville Drive approximately 190 m and 250 m north of the intersection of Youville Drive and St Joseph Boulevard. Both accesses are expected to operate as full movements accesses. All intersections are to be unsignalized with the accesses being stop controlled.

13.1.1 Access Sightlines

The TAC Geometric Design Guide for Canadian Roads, June 2017, was used to determine the required sight distances. Section 9.9.4 Design Intersection Sight Distances – Case B1, Left Turn From Stop, and Table 9.9.6 Design Intersection Sight Distances – Case B2, Right Turn from stop, were used in the review of the sight lines for the access of the proposed development.

Table 13.1 illustrates the minimum required length of sight triangle leg. As Youville Drive has a design speed of 60 km/h, a 60 km/h design speed will be used for the left and right turns at both accesses onto Youville Drive.

Table 13.1 Length of Sight Triangle- Case B, Stop Control on the Minor Road

Design Speed (Km/h)	Left Turn Required Sight Distance (m)	Right Turn Required Distance (m)
60	130	110

Table 13.2 summarizes the available sight distance for each manoeuvre.

Table 13.2 Available Sight Distances

Available Sight Distances	Northern Access (m)	Southern Access (m)
Right Turn	115	150
Left Turn	250	190

Based on Table 13.1, all manoeuvres are expected to meet the required site distance to perform both the right and left turn on Youville Drive. Figure 13.1 illustrates the critical sightline, the sightline around the horizontal curve from the northern access.

Figure 13.1 Critical Sightline

13.2 Access Intersection Control

In consideration of existing and projected volumes of traffic anticipated to utilize the site accesses, a stop control at accesses fronting onto Youville Drive is recommended.

13.3 Access Intersection Design

No concerns are anticipated due to the existing sightlines of the proposed site access and expected low speed of vehicles traveling through the intersection of the proposed site accesses. As the proposed site accesses will not be signalized, the MMLOS guidelines do not apply for these intersections.

14.0 TRANSPORTATION DEMAND MANAGEMENT

As the autobody shop is not anticipated to include more then 60 employees working at one time, this section is exempt from the report.

15.0 NEIGHBOURHOOD TRAFFIC MANAGEMENT

This module reviews the significant access routes to the development and identifies any required neighbourhood traffic management (NTM) measures to mitigate impacts on collector and local roads.

15.1 Adjacent Neighbourhoods

The proposed development includes two accesses onto Youville Drive, an urban collector roadway. However, as Youville Drive is designated within the industrial park in Orleans and not residential, it is anticipated that the traffic generated from the proposed development will not impact any Neighbourhoods within the vicinity of the proposed development.

16.0 TRANSIT

This section will review the potential impacts of the proposed development on existing and planned transit networks and services in order to ensure TLOS is not negatively impacted.

16.1 Route Capacity

Due to the nature of the development, it is anticipated that very few new transit trips will be generated by the development. The relatively low number of development-generated trips are expected to be adequately accommodated by the existing transit routes and is not expected to result in any requirement for additional transit capacity. Further, it is not anticipated that the existing transit routes will require modification as a result of the proposed development.

16.2 Transit Capacity

As noted in Section 3.5, there are three routes in the area which travelers may use to travel to and from the development. It is anticipated that the relatively low number of development-generated transit trips can be accommodated, and it is not anticipated that any additional transit trips will result in impacts to travel times.

17.0 REVIEW OF NETWORK CONCEPT

The proposed development is not anticipated to generate more then 200 peak hour person auto-driver trips, this section has been exempted from this TIA Report.

18.0 INTERSECTION DESIGN

18.1 Intersection Control

This section will determine the design elements of the study area intersections required to accommodate the proposed development, ensuring they are consistent with the City of Ottawa Complete Streets philosophy and MMLOS practices.

18.2 Intersection Design

All study intersections within the study area of the proposed development are signalized with the exception of the intersection of St Joseph Boulevard and Jeanne d'Arc Boulevard which operates as a Roundabout, and the proposed Site Accesses, which operate under two-way stop control. No signal warrants were completed as a result of the low volumes of vehicles at the site accesses.

18.2.1 Intersection Vehicular Level of Service (LOS)

Level of Service (LOS) is a qualitative measure of the operating conditions, based on lane configuration, signal operation/phasing. LOS criteria for signalized and unsignalized intersection based on the Multi Modal Level Of Service (MMLOS) Guidelines, are illustrated in Table 18.1.

Table 18.1 Definition of LOS for Intersections

Level of Service	v/c Ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Signal timings were optimized for future conditions with all Synchro 11 parameter taken in Accordance with Appendix C: Synchro Analysis Parameters of the City of Ottawa TIA Guidelines (2017). Additionally, all pedestrian clearance timings as well as amber and all red times that were provided by the City of Ottawa which were used in the analysis of future operating conditions.

MP reviewed the existing 2022 conditions which can be found in Section 3.3, the future 2024 buildout year: background and total traffic, and the 2029 Background and total traffic operating conditions at all study area intersections. Synchro 11 reports for all analysis periods can be found in Appendix D. Table 18.2 summarizes the 2024 Background Traffic V/C and LOS according to the City of Ottawa TIA methodologies.

Table 18.2 2024 Background Traffic Conditions

Movement	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay (s)	LOS	V/c	Delay (s)
Youville Drive and St Joseph Boulevard						
EBL	A	0.21	11	A	0.41	15
EBTR	A	0.16	10	B	0.61	17
EBR	A	0.08	2	A	0.23	3
WBL	A	0.04	19	A	0.26	27
WBT	A	0.35	20	A	0.31	21
WBR	A	0.14	2	A	0.14	1
NBL	A	0.53	52	A	0.40	50
NBTR	A	0.29	25	A	0.37	25
SBL	A	0.38	56	B	0.68	62
SBT	A	0.15	44	A	0.20	39
SBR	A	0.40	7	A	0.47	10
Youville Drive and Jeanne d'Arc Boulevard						
EBL	B	0.62	45	D	0.87	53
EBTR	A	0.19	10	A	0.38	7
WBTRL	A	0.54	18	A	0.26	16
NBL	A	0.43	11	A	0.60	24
NBTR	A	0.58	17	A	0.47	23
SBL	A	0.13	8	A	0.20	14
SBTR	A	0.51	12	C	0.79	31
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

During the 2024 background conditions all movements at all intersections are anticipated to operate well during the AM peak period with a LOS of B or better and a v/c of 0.62 or less and a max delay of 56 s. During the PM peak hour, it is shown that all movements at all intersections operate well with a LOS of D or better, a v/c of 0.87 or less and a delay of 62 s or less.

The analysis of the roundabout intersection of St Joseph Boulevard and Jeanne d'Arc Boulevard was performed in Arcady (Junctions 9). Table 18.3 summarizes the Arcady 9 output results for 2024 background conditions.

Table 18.3 2024 Background Conditions – Arcady 9 Output

Leg	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay	LOS	V/c	Delay
St Joseph Boulevard and Jeanne d'Arc Boulevard Roundabout						
Westbound Leg 1	A	0.24	2	A	0.23	2
Southbound Leg 2	A	0.30	3	A	0.40	3
Eastbound Leg 3	A	0.15	1	A	0.52	3
Northbound Leg 4	A	0.45	3	A	0.44	4

During both the AM and PM peak hours it is shown that the St Joseph Boulevard and Jeanne d'Arc Boulevard roundabout operates at an LOS A, with a v/c of 0.52 or less and an average delay of 4 seconds or less.

table 18.4 summarizes the 2029 Background Traffic V/C and LOS

Table 18.4 2029 Background Traffic Conditions

Movement	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay (s)	LOS	V/c	Delay (s)
Youville Drive and St Joseph Boulevard						
EBL	A	0.24	12	A	0.46	17
EBTR	A	0.18	11	B	0.66	18
EBR	A	0.08	2	A	0.24	3
WBL	A	0.04	20	A	0.34	32
WBT	A	0.38	21	A	0.33	22
WBR	A	0.15	2	A	0.15	1
NBL	A	0.55	52	A	0.42	50
NBTR	A	0.31	26	A	0.39	26
SBL	A	0.40	56	C	0.71	64
SBT	A	0.16	44	A	0.22	40
SBR	A	0.44	9	A	0.49	10
Youville Drive and Jeanne d'Arc Boulevard						
EBL	B	0.68	45	D	0.89	55
EBTR	A	0.19	10	A	0.39	6
WBTRL	A	0.57	18	A	0.26	16
NBL	A	0.49	11	C	0.72	38
NBTR	B	0.63	17	A	0.53	25
SBL	A	0.15	8	A	0.24	15
SBTR	A	0.57	12	D	0.89	40
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

During the 2029 background conditions all movements at all intersections are anticipated to operate well during the AM peak period with a LOS of B or better and a v/c of 0.68 or less and a max delay of 56 s. During the PM peak hour, it is shown that all movements at all intersections operate well with a LOS of D or better, a v/c of 0.89 or less and a delay of 64 s or less.

The analysis of the roundabout intersection of St Joseph Boulevard and Jeanne d'Arc Boulevard was performed in Arcady (Junctions 9) software. Table 18.5 summarizes the Arcady 9 output results for 2029 background conditions.

Table 18.5 2029 Background Conditions – Arcady 9 Output

Leg	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay	LOS	V/c	Delay
St Joseph Boulevard and Jeanne d'Arc Boulevard Roundabout						
Westbound Leg 1	A	0.26	2	A	0.25	2
Southbound Leg 2	A	0.33	3	A	0.44	3
Eastbound Leg 3	A	0.16	1	A	0.57	3
Northbound Leg 4	A	0.49	3	A	0.49	5

During both the AM and PM peak hours it is shown that the St Joseph Boulevard and Jeanne d'Arc Boulevard roundabout operates at an LOS A, with a v/c of 0.57 or less and an average delay of 5 seconds or less.

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Table 18.6 summarizes the 2024 Total Traffic V/C and LOS

Table 18.6 2024 Total Traffic Conditions

Movement	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay (s)	LOS	V/c	Delay (s)
Youville Drive and St Joseph Boulevard						
EBL	A	0.23	11	A	0.43	16
EBTR	A	0.17	10	B	0.61	17
EBR	A	0.08	2	A	0.23	3
WBL	A	0.04	20	A	0.26	27
WBT	A	0.35	20	A	0.31	21
WBR	A	0.15	2	A	0.14	1
NBL	A	0.53	52	A	0.40	50
NBTR	A	0.31	27	A	0.37	26
SBL	A	0.38	56	C	0.71	64
SBT	A	0.16	44	A	0.21	39
SBR	A	0.41	8	A	0.48	10
Youville Drive and Jeanne d'Arc Boulevard						
EBL	B	0.64	46	D	0.89	55
EBTR	A	0.19	10	A	0.39	7
WBTRL	A	0.54	19	A	0.26	16
NBL	A	0.46	11	B	0.62	26
NBTR	A	0.58	17	A	0.47	23
SBL	A	0.13	9	A	0.20	14
SBTR	A	0.53	12	C	0.80	32
Youville Drive and Northern Site Access						
EBLR	A	0.01	11	A	0.05	13
NBTL	A	0.01	8	A	0.01	8
SBTR	-	-	-	-	-	-
Youville Drive and Southern Site Access						
EBLR	A	0.01	10	A	0.04	13
NBTL	A	0.01	8	A	0.01	8
SBTR	-	-	-	-	-	-
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

During the 2024 total conditions all movements at all intersections are anticipated to operate well during the AM peak period with a LOS of B or better and a v/c of 0.64 or less and a max delay of 56 s. During the PM peak hour, it is shown that all movements at all intersections operate well with a LOS of D or better, a v/c of 0.89 or less and a delay of 64 s or less.

The analysis of the roundabout intersection of St Joseph Boulevard and Jeanne d'Arc Boulevard was performed in Arcady (Junctions 9) software. Table 18.7 summarizes the Arcady 9 output results for 2024 total conditions.

Table 18.7 Total 2024 Conditions – Arcady 9 Output

Leg	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay	LOS	V/c	Delay
St Joseph Boulevard and Jeanne d'Arc Boulevard Roundabout						
Westbound Leg 1	A	0.24	2	A	0.23	2
Southbound Leg 2	A	0.30	3	A	0.41	3
Eastbound Leg 3	A	0.15	1	A	0.52	3
Northbound Leg 4	A	0.45	3	A	0.44	4

During both the AM and PM peak hours it is shown that the St Joseph Boulevard and Jeanne d'Arc Boulevard roundabout operates at an LOS A, with a v/c of 0.52 or less and an average delay of 4 seconds or less.

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table 18.8 summarizes the 2029 Total Traffic V/C and LOS

Table 18.8 2029 Total Traffic Conditions

Movement	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay (s)	LOS	V/c	Delay (s)
Youville Drive and St Joseph Boulevard						
EBL	A	0.25	12	A	0.48	17
EBTR	A	0.18	11	B	0.66	18
EBR	A	0.08	2	A	0.25	3
WBL	A	0.04	20	A	0.34	32
WBT	A	0.38	21	A	0.34	22
WBR	A	0.16	3	A	0.15	2
NBL	A	0.55	52	A	0.42	50
NBTR	A	0.33	28	A	0.39	26
SBL	A	0.41	56	C	0.75	67
SBT	A	0.17	45	A	0.22	40
SBR	A	0.45	10	A	0.50	10
Youville Drive and Jeanne d'Arc Boulevard						
EBL	B	0.70	50	D	0.90	56
EBTR	A	0.20	10	A	0.39	6
WBTRL	A	0.57	20	A	0.26	16
NBL	A	0.53	13	C	0.73	39
NBTR	B	0.63	19	A	0.53	26
SBL	A	0.15	9	A	0.25	16
SBTR	A	0.58	14	E	0.92	43
Youville Drive and Northern Site Access						
EBLR	A	0.01	11	A	0.05	14
NBTL	A	0.01	8	A	0.01	8
SBTR	-	-	-	-	-	-
Youville Drive and Southern Site Access						
EBLR	A	0.01	11	A	0.04	13
NBTL	A	0.01	8	A	0.01	8
SBTR	-	-	-	-	-	-
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn						

During the 2029 Total conditions all movements at all intersections are anticipated to operate well during the AM peak period with a LOS of B or better and a v/c of 0.70 or less and a max delay of 56 s. During the PM peak hour, it is shown that all movements at all intersections operate well with a LOS of D or better, a v/c of 0.90 or less and a delay of 67 s or less with the exception of the Southbound Through Right Lane of the intersection of Youville Drive and Jeanne d'Arc Boulevard which operates at an LOS of E with a v/c of 0.92 and a delay of 43s. This shows that the southbound through right turn approach is beginning to near capacity by the year 2029.

When comparing the total traffic scenario to the background traffic scenario we see a reduction in the LOS for the southbound right turn approach at the intersection of Youville Drive and Jeanne d'Arc Boulevard. During the background 2019 conditions it is shown to be a LOS of D and a v/c of 0.89 where the total 2029 conditions results in a LOS of E and a v/c of 0.92. This is expected to be the result of the site generated trips. The analysis presented here assumed that no non-automobile trips would be generated by the development. In addition, the analysis did not include a reduction of automobile trips as a result of the Jeanne D'Arc LRT station, expected to be completed in 2024. As such, it is anticipated that background automobile trips would be reduced as a result of the LRT station and related transit upgrades.

The analysis of the roundabout intersection of St Joseph Boulevard and Jeanne d'Arc Boulevard was performed in Arcady (Junctions 9) software. Table 18.9 summarizes the Arcady 9 output results for 2029 total conditions.

Table 18.9 2029 Total Conditions – Arcady 9 Output

Leg	AM Peak Hour			PM Peak Hour		
	LOS	V/c	Delay	LOS	V/c	Delay
St Joseph Boulevard and Jeanne d'Arc Boulevard Roundabout						
Westbound Leg 1	A	0.27	2	A	0.25	2
Southbound Leg 2	A	0.33	3	A	0.45	3
Eastbound Leg 3	A	0.16	1	A	0.57	3
Northbound Leg 4	A	0.49	4	A	0.49	5

During both the AM and PM peak hours it is shown that the St Joseph Boulevard and Jeanne d'Arc Boulevard roundabout operates at an LOS A, with a v/c of 0.57 or less and an average delay of 5 seconds or less.

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18.2.2 Intersection Pedestrian Level of Service (PLOS)

The PLSO for the study intersections were determined in accordance with The City of Ottawa's MMLOS Guidelines. The Pedestrian Exposure at Signalized Intersection (PETSI), average delay to pedestrians, and corresponding levels of service at the signalized intersections are summarized below in Table 18.10.

Table 18.10 Signalized Intersection Pedestrian Level of Service

Intersection / Approach (crossing)	PETSI Evaluation		Pedestrian Delay Evaluation		Critical PLOS
	Total Points	LOS	Delay (sec)	LOS	
Youville Drive (NB/SB) at St Joseph Boulevard (EB/WB)					
Northbound (E-W)	61	C	48	E	E
Southbound (E-W)	81	B	48	E	E
Eastbound (N-S)	40	E	48	E	E
Westbound (N-S)	40	E	48	E	E
Youville Drive (EB/WB) at Jeanne d'Arc Boulevard (NB/SB)					
Northbound (E-W)	41	E	33	D	E
Southbound (E-W)	41	E	33	D	E
Eastbound (N-S)	72	C	33	D	D
Westbound (N-S)	87	B	33	D	D

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification both intersections have a PLOS target of C based on the site being located in an employment area. As such neither intersection meets the target.

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18.2.3 Intersection Bicycle Level of Service (BLOS)

The Bicycle Level of Service (BLOS) for the study intersection was determined in accordance with the City of Ottawa's MMLOS Guidelines. Table 18.11 illustrates the BLOS.

Table 18.11 Signalized Intersection Bicycle Level of Service

Intersection / Approach (crossing)	Bike Lane Facility	Lanes crossed to turn left	Speed (km/h)	LOS
Youville Drive (NB/SB) at St Joseph Boulevard (EB/WB)				
Northbound (E-W)	Mixed Traffic	dual left turn lane	60	F
Southbound (E-W)	Mixed Traffic	1	60	F
Eastbound (N-S)	Mixed Traffic	2	70	F
Westbound (N-S)	Separated Bike Lane	2	70	F
Youville Drive (EB/WB) at Jeanne d'Arc Boulevard (NB/SB)				
Northbound (E-W)	Mixed Traffic	2	70	F
Southbound (E-W)	Mixed Traffic	2	70	F
Eastbound (N-S)	Mixed Traffic	1	60	F
Westbound (N-S)	Mixed Traffic	0	60	D

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification both intersections have a target of D based on the site being located in an urban employment area. As such the target has not been met for either intersection.

18.2.4 Intersection Transit Level of Service (TLOS)

In order to evaluate Transit Level of Service at the study intersections, average delays at approaches were determined based on the intersectional analysis completed as part of this investigation. Detailed analysis reports are presented in Appendix D.

Upon review of Exhibit 16 of The City of Ottawa's MMLOS Guidelines, all signalized intersections operate at an TLOS of F, due to high cycle timings and delays.

18.2.5 Intersection Truck Level of Service (tkLOS)

The Truck Level of Service (tkLOS) for the study area intersections was determined in accordance with the City of Ottawa's MMLOS Guidelines. The effective radii, number of receiving lanes and corresponding LOS at the signalized intersections are summarized in Table 18.12.

Table 18.12 Signalized Intersection Truck Level of Service

Intersection / Approach (crossing)	Effective Corner Radius (m)	Number of Receiving Lanes	LOS
Youville Drive (NB/SB) at St Joseph Boulevard (EB/WB)			
Northbound (E-W)	10 to 15	2	B
Southbound (E-W)	>15	2	A
Eastbound (N-S)	>15	1	C
Westbound (N-S)	>15	1	C
Youville Drive (EB/WB) at Jeanne d'Arc Boulevard (NB/SB)			
Northbound (E-W)	10 to 15	1	E
Southbound (E-W)	10 to 15	2	B
Eastbound (N-S)	>15	2	A
Westbound (N-S)	>15	2	A

Based on Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road classification both intersections have a target of D based on the site being located in an urban employment area. As such all approaches at both intersections meet the target with the exception of the northbound approach of the intersection of Youville Drive and Jeanne d'Arc Boulevard.

(This section intentionally left blank.)

19.0 SUMMARY

The following summarizes the findings and assumptions developed within this Step 4 – Analysis Report:

- The proposed development will include a single building consisting of an autobody repair shop and office with a total combined GFA of 2,115 m^2.
- Build-out of the proposed development is anticipated to be complete by year 2024.
- Based on the 2011 Trans O-D survey, the Orleans area was shown to have the following mode shares; 15 % of auto passenger, 15 % of auto passenger, 22% transit, 1 % bicycle, 0 % walking and 2 % other, resulting in 61% automobile drivers.
- 22 total collisions at the intersection of Youville Drive and St Joseph Boulevard, 7 along Youville Drive from St Joseph Boulevard and Jeanne d'Arc Boulevard, 32 at the intersection of Youville Drive and Jeanne d'Arc Boulevard with 3 collisions including pedestrians that all happened in 2016, and 242 at the intersection of Jeanne d'Arc and St Joseph Boulevard from the years 2016-2020.
- All movements operate well with a LOS C or better during both the AM and PM peak hour with the exception of the southbound left turn movement of the intersection of Youville Drive and St Joseph Boulevard and the eastbound left turn movement at the intersection of Youville Drive and Jeanne d'Arc Boulevard which both operates at LOS D during the PM peak hour. All movements operate at acceptable levels of service.
- The only planned roadway modifications in the area is the addition of transit signal priorities and queue jump lanes at selected intersections along Jeanne d'Arc Boulevard by the year 2031, as well as a LRT Station at Jeanne d'Arc to be built by 2024.
- The study years include the existing conditions (2022), and the background and total conditions for the buildout year 2024 and the 5-year horizon of 2029.
- The proposed development is anticipated to generate 52 person trips during the AM peak hour with 38 entering the site and 14 leaving the site, and 58 person trips during the PM peak hour with 22 entering the site and 36 leaving the site
- It is anticipated that the proposed development will provide adequate facilities to meet the City of Ottawa's complete Street design philosophy, meeting the majority of the basic and required TDM measures in bicycle walking, and transit. Along the boundary road transit level of service is relatively low, however as the development is not anticipated to generate a large volume of transit mode share trips, the impact on transit due to the development is expected to be minimal.
- Overall, all the roadways within the project study area operate at acceptable levels of service through all study analysis horizons.

Prepared by,

William Sherwin, EIT

Transportation and Traffic Engineering Intern

w.sherwin@mcintoshperry.com

613.858.2864

Thomas Gryz, M.A.Sc., P.Eng

Transportation and Traffic Engineer

t.gryz@mcintoshperry.com

613.903.5772

APPENDIX A – CITY OF OTTAWA TIA SCREENING FORM

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	1400-1410 Youville Drive
Description of Location	West side of Youville Drive, +/- 150m north of St. Joseph Boulevard
Land Use Classification	Industrial
Development Size (units)	N/a
Development Size (m^2)	+/- 2035 square metres
Number of Accesses and Locations	Two, north and south sides of subject land.
Phase of Development	One
Buildout Year	2023

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

2. Trip Generation Trigger

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

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

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

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

3. **Location Triggers**

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

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

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

4. Safety Triggers

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

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

5. Summary

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

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

APPENDIX B – SITE PLAN

1 / A010 LOCATION PLAN
SCALE: N.T.S.

LEGAL DESCRIPTION:

PARCELS WW-8 AND WW-11 ON SEC 4M-152

PART OF BLOCK WW ON REGISTERED PLAN 4M-152

PARTS 1 AND 3 ON PLAN 4R-6509, FORMER CITY OF GLOUCESTER, NOW IN CITY OF OTTAWA

AS PREPARED BY STANTEC GEOMATICS LTD., 29 MARCH 2022

Project Zoning Review/Statistics

Municipality: City of Ottawa
Municipal Address: 1400-1410 Youville Drive
Registered Owner: Jim Keay
Lot Area: 9,188 sq.m. (98,894 sq.ft. (2.27 acres))
Zoning By-law: 2008-250
Zone: IL2 H(14) - *Light Industrial*
Proposed Use: Automobile Body Shop & Automobile Service Station

Building Areas

	Gross (out-to-out) Sq.m.	Sq.ft
Proposed Development		
Ground Floor, Offices	291	3,130
Ground Floor, Body & Service Shop	1,596	17,177
Ground Floor, Parts	228	2,457
Total	**2,115**	**22,764**

Development Standards

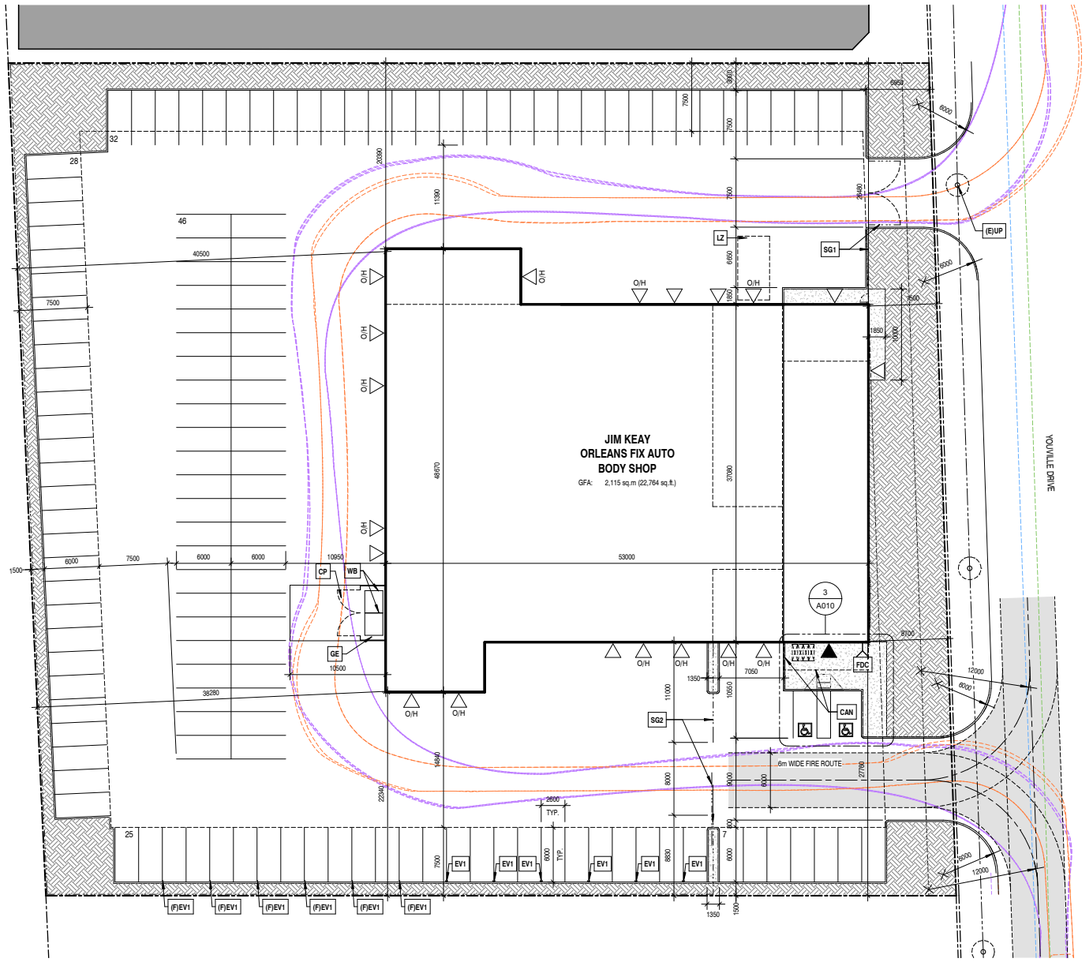
	Required	Provided
Minimum Lot Area	2,000 sq.m.	9,188 sq.m.
Minimum Lot Width	No min.	91.3m
Minimum Required Yard		
Front Yard (min.)	7.5m	7.5m
Interior Side Yard (min.)	7.5m	20.39m
Rear Yard (min.)	7.5m	38.28m
Maximum Building Height	14m	<14m
Maximum Lot Coverage	65%	22%
Maximum Floor Space Index	2	±0.2
Minimum Width of Landscaped Area		
Abutting a street	3m	6.95m
All other cases	No min.	1.5m

Parking, Loading, Queuing

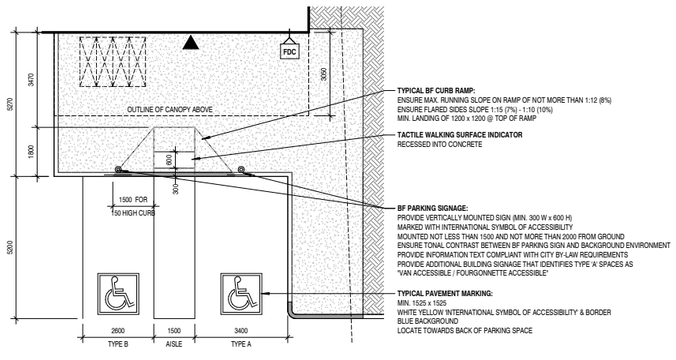
Existing Parking

Parking Spaces (Minimum 2.6m x 5.2m)

Offices (2.4 spaces / 100 sq.m.)	Required:	7	*Area C of Schedule 1A*
	Provided:	30	
Body Shop & Service Station (3 spaces per Service Bay @ 13 Service Bays)	Required:	39	
	Provided:	108	
Accessible Parking *Section 111 of By-law 2017-301*	Required:	2	
	Provided:	2	*1x Type A & 1x Type B*
Loading Spaces (3.5m x 9m)	Required:	1	
	Provided:	1	
Bicycle Parking (Offices: 1 space / 250 sq.m. ; All other: 1 space / 1,500 sq.m.)	Required:	2	*1x for Offices; 1x for Body Shop/Service Station*
	Provided:	4	*3x for Offices; 1x for Body Shop/Service Station*



2 / A010 SITE PLAN
SCALE: 1 : 300
0 1.5 3 6 9 12 15 18 21 24 27 30 METRES



3 / A010 BARRIER-FREE PARKING PLAN
SCALE: 1 : 100
0 0.5 1 2 3 4 5 6 7 8 9 10 METRES

FIRE ROUTE SIGNAGE:

1. FIRE ROUTE TO BE IDENTIFIED BY VERTICALLY MOUNTED SIGNS PROHIBITING PARKING, AND SHALL:
   A. BE NOT LESS THAN 45cm IN HEIGHT AND NOT LESS THAN 30cm IN WIDTH;
   B. BEAR THE MARKINGS AND MESSAGE THAT THE AREA IS A FIRE ROUTE WHERE PARKING IS PROHIBITED AND INCLUDE DOUBLE ARROWS, EXCEPT AT THE ENDS OF THE FIRE ROUTE WHERE A SINGLE ARROW SHALL BE INCLUDED;
   C. INCLUDE, IN BLACK LETTERS OF A MINIMUM HEIGHT OF 3cm, THE ENGLISH LANGUAGE MESSAGE "FIRE ROUTE" AND THE FRENCH LANGUAGE MESSAGE "ROUTE DES POMPIERS" OR "ROUTE D'INCENDIE", BELOW THE ENGLISH MESSAGE, AND;
   D. HAVE THE DESIGN AND DIMENSIONS DESCRIBED IN THE FOLLOWING FIGURE:

2. FIRE ROUTE SIGNS SHALL BE LOCATED NO MORE THAN 25m APART UNLESS OTHERWISE SPECIFICALLY APPROVED BECAUSE OF UNUSUAL SITE CONDITIONS OR THE FIRE ROUTE CONFIGURATION, AND THE LOWER EDGE OF EACH SIGN SHALL BE BETWEEN 2m AND 2.5m ABOVE THE GROUND.

SITE PLAN SYMBOLS

ICON	DESCRIPTION
	Existing Buildings
	Proposed Buildings
	Property Lines
	Setback Lines
	Landscape Buffer
	Overhead Wires
	Fence
	Sanitary Line - refer to Civil
	Stormwater Line - refer to Civil
	Vehicle Transport Truck Pathing/Route
	Waste Management Truck Pathing/Route
	Proposed Concrete Curb
	Depressed Concrete Curb
	Proposed Concrete Sidewalk
	Proposed Landscape Area
	Barrier Free Parking Space
	Principal Entrance Door
	Exterior Door ('O/H' indicates Overhead Door)
	Exterior 6m Wide Fire Route (12m centerline radius on all turns, TYP.)

SITE PLAN NOTES

NOTE#	NOTE
(E)UP	Existing Utility Pole, to be relocated. Refer also to Civil.
(F)EV1	Future Electric Vehicle Charging Station
CAN	Outline of Carport/Canopy above
CP	Concrete Pad - refer to Structural
EV1	Electric Vehicle Charging Station; post-mounted level 2 dual-charging station by Owner
GE	Prefinished Metal Panel on Galvanized Steel framing Garbage Enclosure
LZ	Loading Zone, 3.5m W x 7.0m L
SG1	Steel post & chain linked swinging gate, c/w locking mechanism
SG2	Steel post & chain linked sliding gate, c/w locking mechanism
WB	Waste Bins, by Owner

REVISIONS

No.	DATE	DESCRIPTION
0	05 July 2022	Issued for Coordination
1	12 August 2022	Issued for Coordination
2	18 August 2022	Issued for Site Plan Control

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and / or omissions to the Architect.
All contractors must comply with all pertinent codes and by-laws.
Do not scale drawings.
This drawing may not be used for construction until signed by KWC Architects Inc. and shall not be used without the Architect's consent.

north

architect's seal

383 Parkdale Avenue, Suite 201
Ottawa, Ontario, Canada, K1Y 4R4

KWC ARCHITECTS INC.

Phone: 613 238-2217
Fax: 613 238-6595
E-Mail: kwc@kwc-arch.com

BUILDING A REPUTATION ON EXCELLENCE

BBS CONTRUCTION (ONTARIO) LTD.
1805 WOODWARD DRIVE,
OTTAWA, ON. K2C 0P9 CANADA
TEL: (613) 226-8830 FAX: (613) 226-7709
www.bbsconstruction.ca

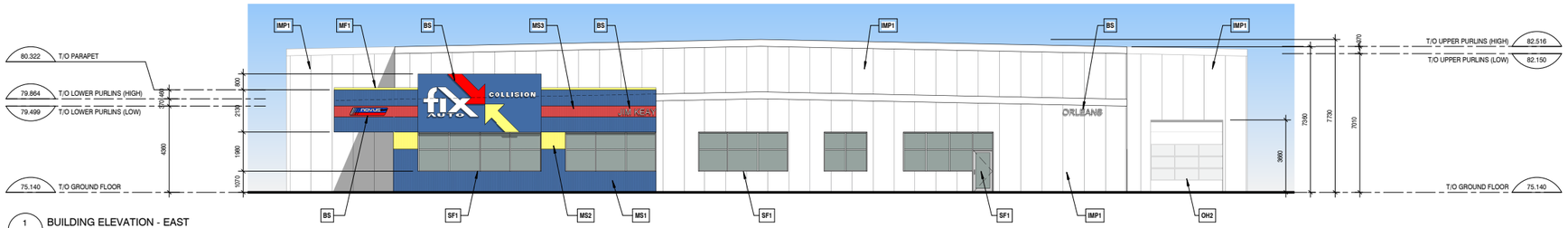
owner
JIM KEAY

project
'FIX AUTO' ORLEANS - AUTOMOBILE BODY SHOP

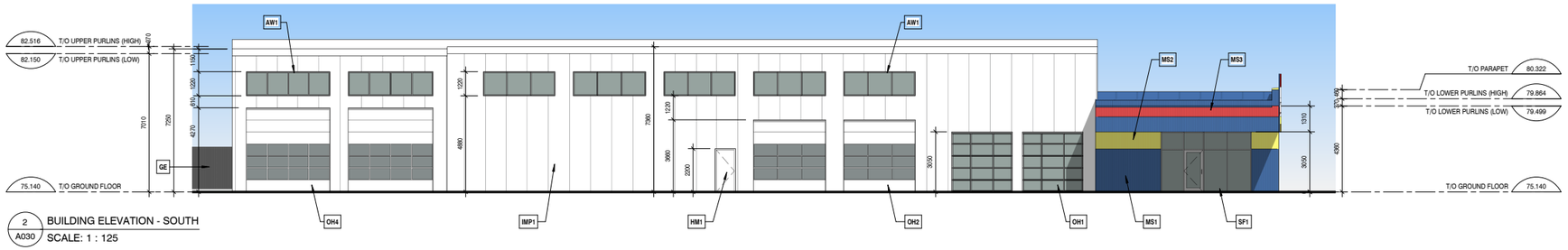
drawing title
SITE PLAN

project no. **2250**
scale **As indicated**
drawn by **TC**
date **2022 JULY 15**

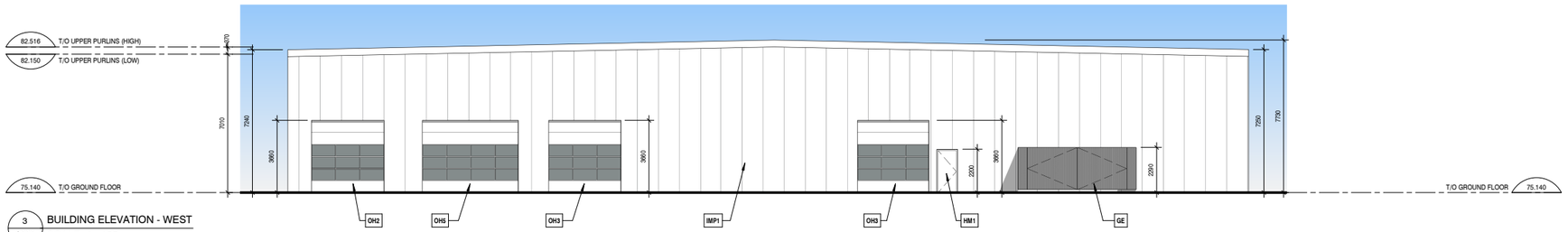
drawing no.
A010



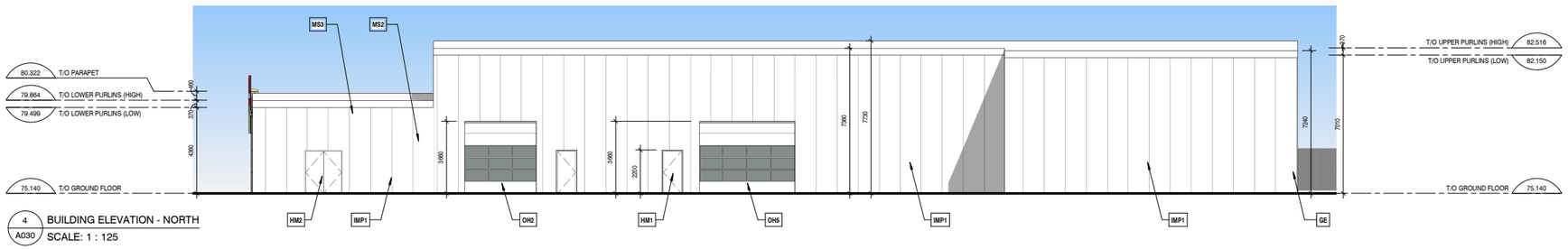
1 / A030 BUILDING ELEVATION - EAST
SCALE: 1 : 125



2 / A030 BUILDING ELEVATION - SOUTH
SCALE: 1 : 125



3 / A030 BUILDING ELEVATION - WEST
SCALE: 1 : 125



4 / A030 BUILDING ELEVATION - NORTH
SCALE: 1 : 125

5 / A030 3D PERSPECTIVE FROM YOUVILLE DR.
SCALE:

ELEVATION NOTES

NOTE#	NOTE
AW1	Clear Anodized Aluminum Window c/w Clear Glass
BS	Building Signage, by others
GE	Prefinished Metal Panel on Galvanized Steel framing Garbage Enclosure
HM1	Painted Hollow-Metal Single Door and Steel Frame; Paint colour to match exterior wall colour.
HM2	Painted Hollow-Metal Double Door and Steel Frame; Paint colour to match exterior wall colour.
IMP1	Insulated Metal Panel Walls (Kingspan or sim.), installed vertically. Colour; Regal White
MF1	Prefinished Metal Flashing, matching MS2
MS1	Prefinished Metal Siding, Colour; TBD
MS2	Prefinished Metal Siding, Colour; TBD
MS3	Prefinished Metal Siding, Colour; TBD
OH1	Full-Glazed Aluminum Overhead Door, Clear Glass in Clear Anodized framing; 10'-0" W x 10'-0" H
OH2	Prefinished Insulated Sectional Overhead Door c/w Clear Glass Sections as shown; Size: 12'-0"W x 12'-0"H
OH3	Prefinished Insulated Sectional Overhead Door c/w Clear Glass Sections as shown; Size: 14'-0"W x 14'-0"H
OH4	Prefinished Insulated Sectional Overhead Door c/w Clear Glass Sections as shown; Size: 14'-0"W x 14'-0"H
OH5	Prefinished Insulated Sectional Overhead Door c/w Clear Glass Sections as shown; Size: 16'-0"W x 12'-0"H
SF1	Clear Anodized Aluminum Storefront c/w Clear Glass

REVISIONS

No.	DATE	DESCRIPTION
0	12 August 2022	Issued for Coordination
1	18 August 2022	Issued for Site Plan Control

north

architect's seal

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www.bbsconstruction.ca

owner
JIM KEAY

project
'FIX AUTO' ORLEANS - AUTOMOBILE BODY SHOP

drawing title
BUILDING ELEVATIONS, PERSPECTIVE VIEW

project no. 2250
scale 1 : 125
drawn by TC
date 2022 JULY 15

drawing no.
A030

APPENDIX C – TRAFFIC DATA

McINTOSH PERRY

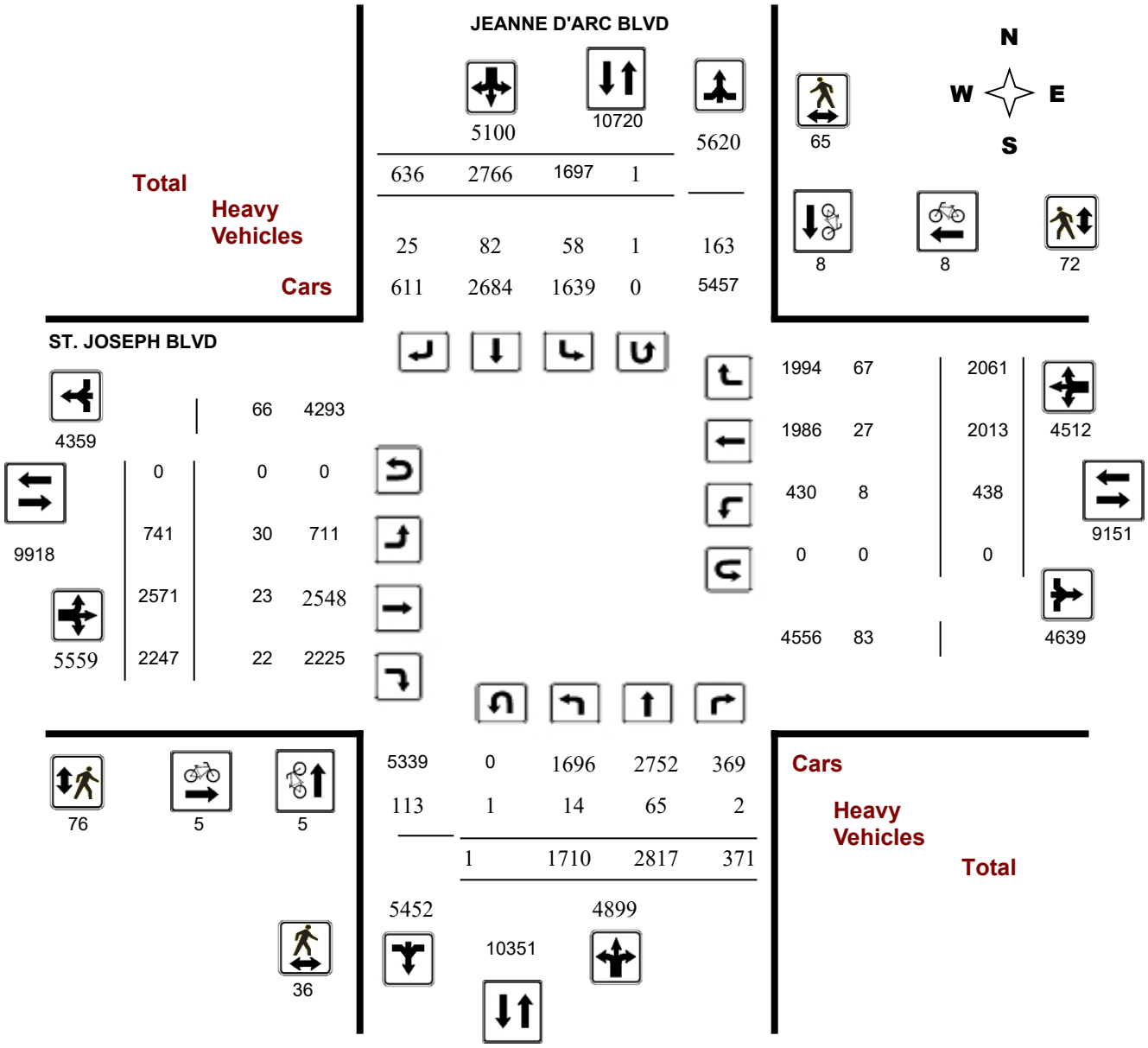
Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022
Start Time: 07:00
WO No: 40427
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

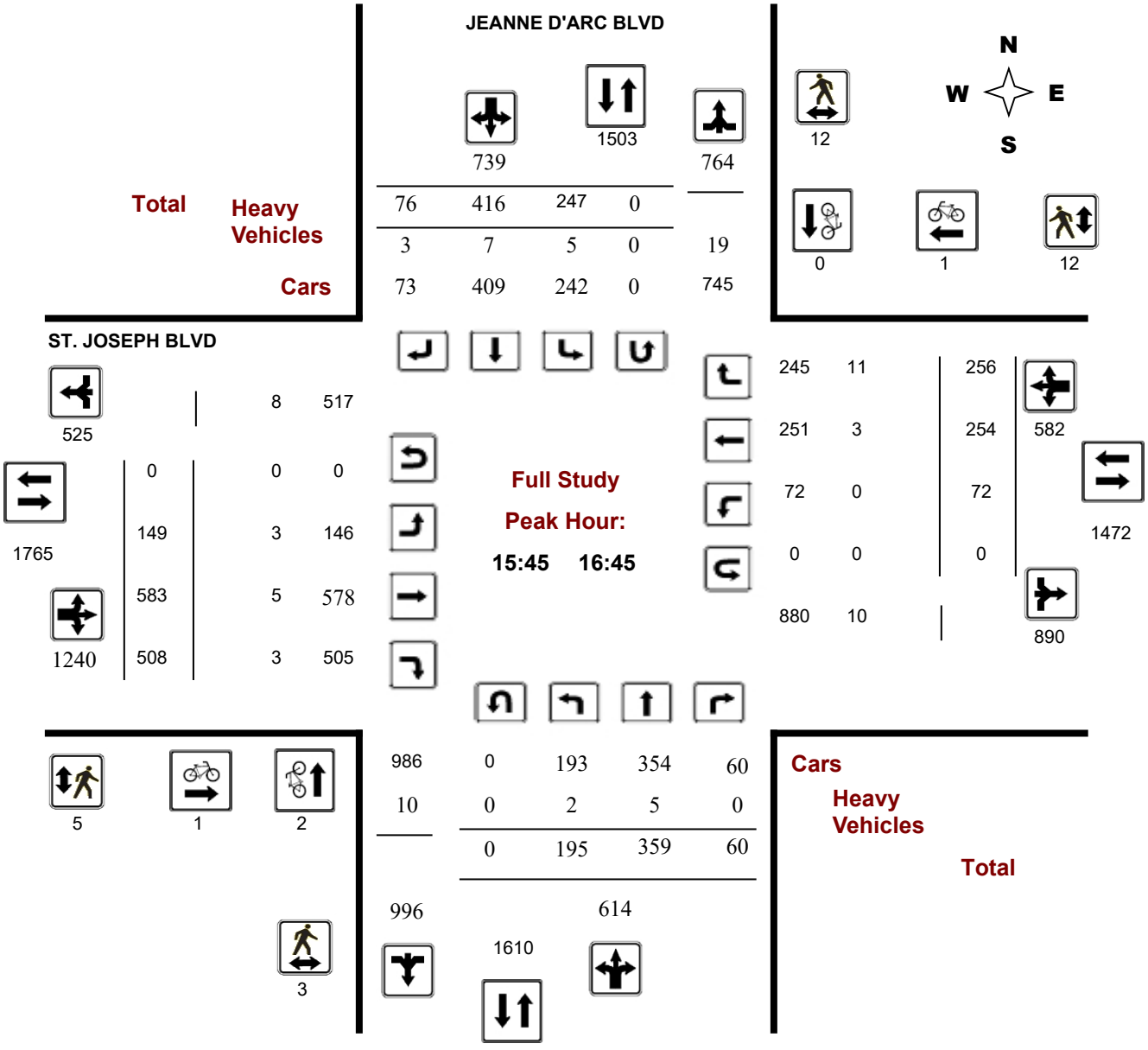
Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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

Full Study Peak Hour Diagram



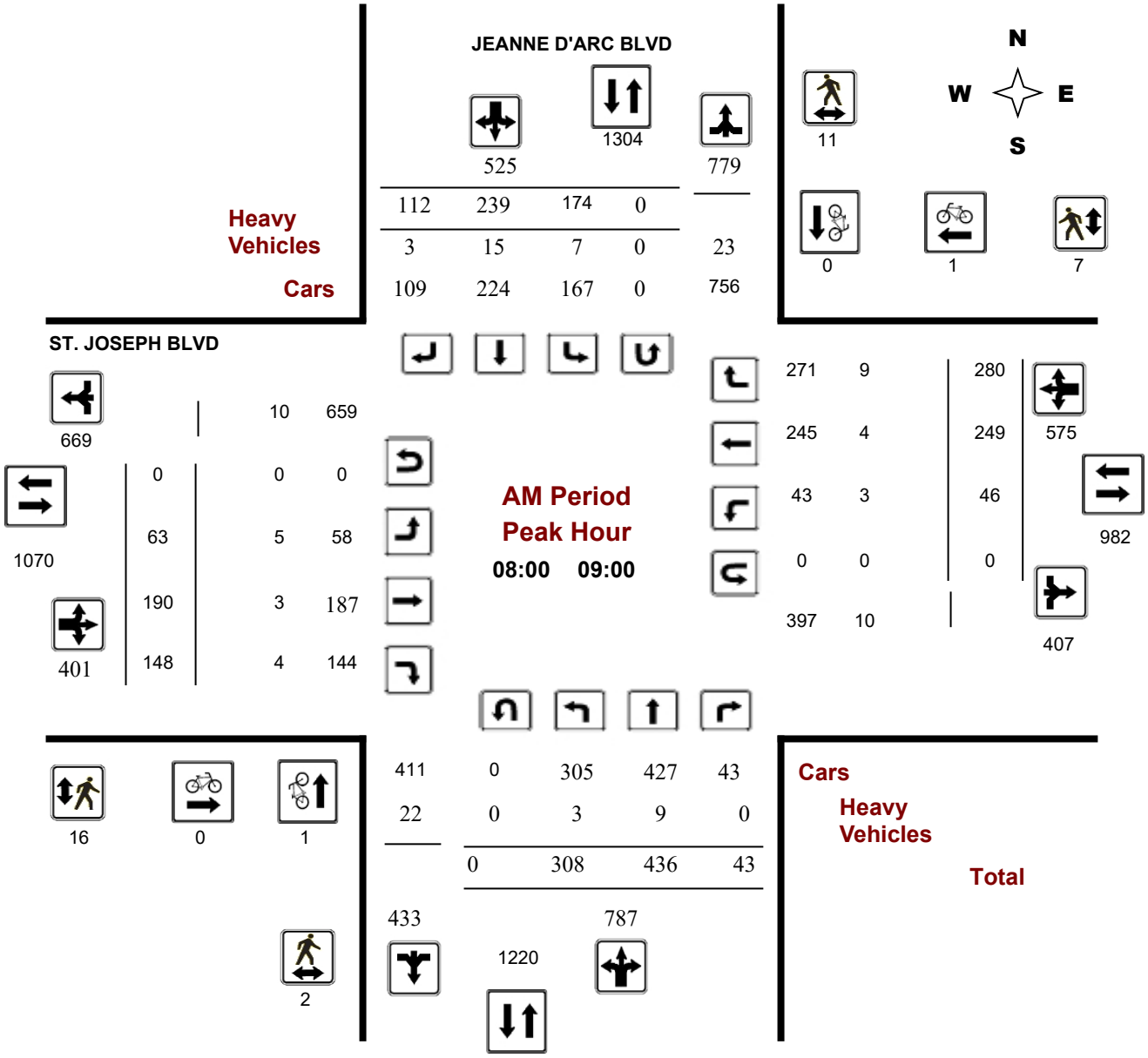
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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



Comments

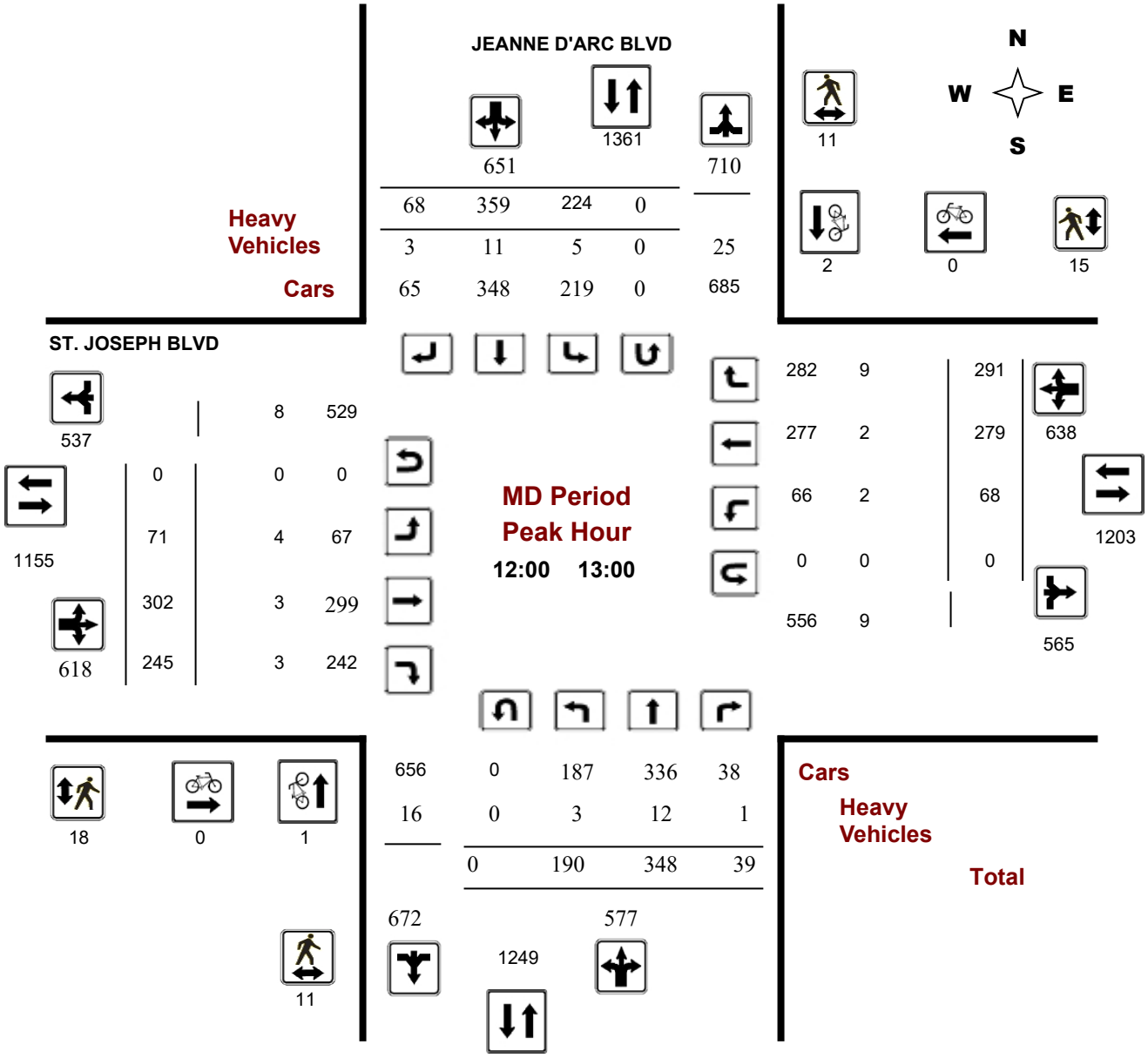
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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



Comments

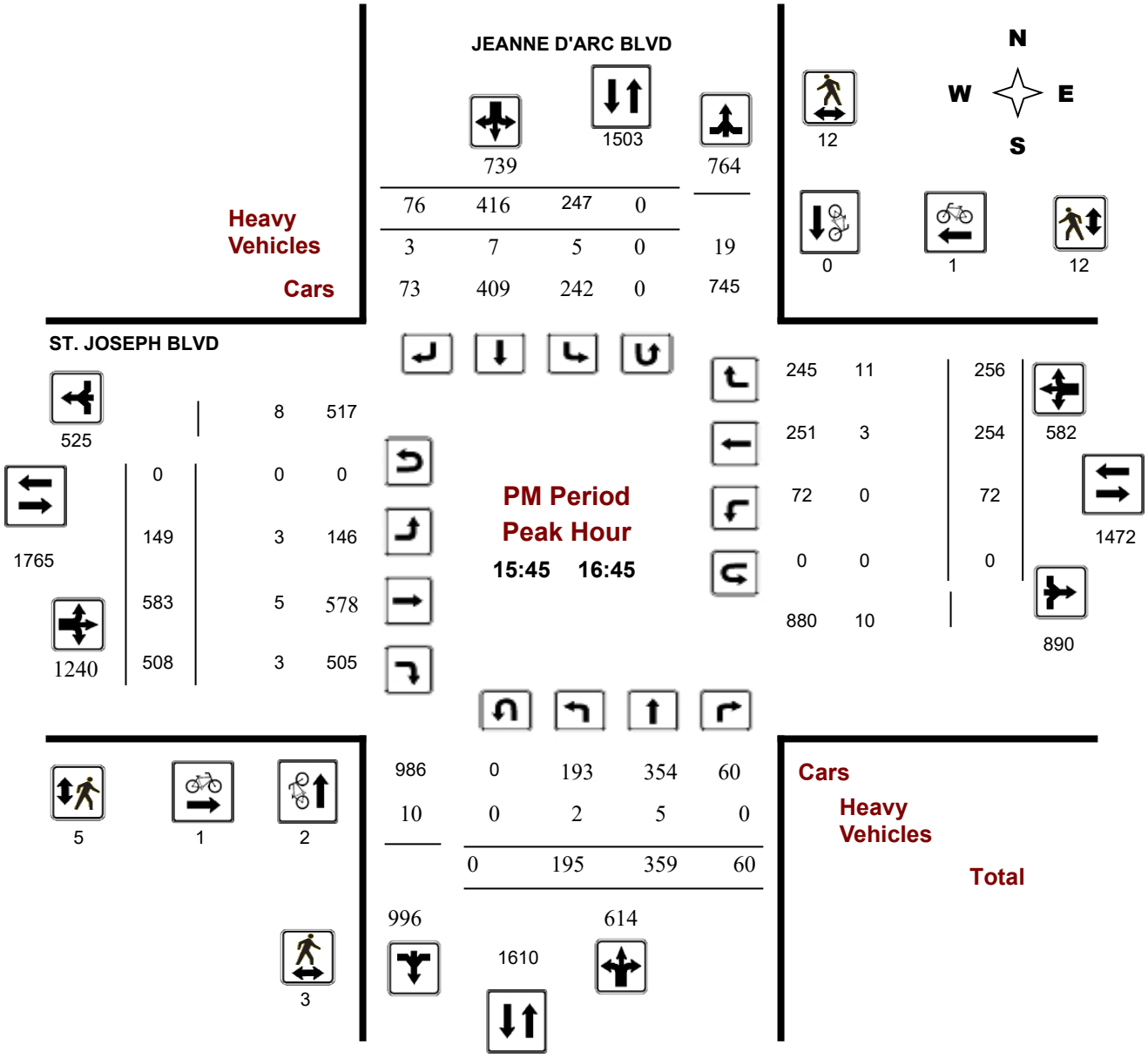
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 06, 2022

Total Observed U-Turns

Northbound: 1 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor

.90

	JEANNE D'ARC BLVD									ST. JOSEPH BLVD									
	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	265	342	20	**627**	126	210	72	**408**	**1035**	55	98	83	**236**	14	213	249	**476**	**712**	**1747**
08:00 09:00	308	436	43	**787**	174	239	112	**525**	**1312**	63	190	148	**401**	46	249	280	**575**	**976**	**2288**
09:00 10:00	192	305	36	**533**	193	287	81	**561**	**1094**	65	223	193	**481**	50	242	237	**529**	**1010**	**2104**
11:30 12:30	173	324	45	**542**	248	367	68	**683**	**1225**	86	306	213	**605**	66	260	263	**589**	**1194**	**2419**
12:30 13:30	185	324	41	**550**	211	372	77	**660**	**1210**	70	311	253	**634**	58	294	284	**636**	**1270**	**2480**
15:00 16:00	195	336	60	**591**	253	464	92	**809**	**1400**	104	425	382	**911**	66	259	256	**581**	**1492**	**2892**
16:00 17:00	197	351	63	**611**	247	411	68	**726**	**1337**	153	572	511	**1236**	68	251	242	**561**	**1797**	**3134**
17:00 18:00	195	399	63	**657**	245	416	66	**727**	**1384**	145	446	464	**1055**	70	245	250	**565**	**1620**	**3004**
Sub Total	1710	2817	371	**4898**	1697	2766	636	**5099**	**9997**	741	2571	2247	**5559**	438	2013	2061	**4512**	**10071**	**20068**
U Turns	1			**1**	1			**1**	**2**	**0**			**0**	0			**0**	**0**	**2**
Total	1711	2817	371	**4899**	1698	2766	636	**5100**	**9999**	741	2571	2247	**5559**	438	2013	2061	**4512**	**10071**	**20070**
EQ 12Hr	2378	3916	516	**6810**	2360	3845	884	**7089**	**13899**	1030	3574	3123	**7727**	609	2798	2865	**6272**	**13999**	**27898**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	2140	3524	464	**6128**	2124	3460	796	**6380**	**12508**	927	3217	2811	**6955**	548	2518	2578	**5644**	**12599**	**25107**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	2803	4616	608	**8027**	2782	4533	1043	**8358**	**16385**	1214	4214	3682	**9110**	718	3299	3377	**7394**	**16504**	**32889**
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

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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

Full Study Cyclist Volume

Time Period		JEANNE D'ARC BLVD			ST. JOSEPH BLVD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	1	**1**	0	0	**0**	**1**
07:15	07:30	0	1	**1**	0	1	**1**	**2**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	1	0	**1**	**1**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	1	0	**1**	0	1	**1**	**2**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	1	1	**2**	**2**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	1	**1**	**1**
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	1	2	**3**	0	0	**0**	**3**
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**	1	1	**2**	**3**
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**	1	1	**2**	**2**
15:45	16:00	0	0	**0**	0	1	**1**	**1**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	1	0	**1**	0	0	**0**	**1**
16:30	16:45	1	0	**1**	1	0	**1**	**2**
16:45	17:00	0	4	**4**	0	1	**1**	**5**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		5	8	**13**	5	8	**13**	**26**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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

Full Study Pedestrian Volume

	JEANNE D'ARC BLVD			ST. JOSEPH BLVD			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	**Total**	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	**Total**	**Grand Total**
07:00 07:15	1	2	**3**	2	2	**4**	**7**
07:15 07:30	1	1	**2**	1	2	**3**	**5**
07:30 07:45	0	0	**0**	0	2	**2**	**2**
07:45 08:00	0	2	**2**	3	1	**4**	**6**
08:00 08:15	1	5	**6**	6	2	**8**	**14**
08:15 08:30	0	1	**1**	3	2	**5**	**6**
08:30 08:45	1	1	**2**	4	0	**4**	**6**
08:45 09:00	0	4	**4**	3	3	**6**	**10**
09:00 09:15	1	3	**4**	2	2	**4**	**8**
09:15 09:30	0	0	**0**	1	2	**3**	**3**
09:30 09:45	0	3	**3**	4	0	**4**	**7**
09:45 10:00	1	2	**3**	1	1	**2**	**5**
11:30 11:45	5	2	**7**	1	0	**1**	**8**
11:45 12:00	0	3	**3**	3	2	**5**	**8**
12:00 12:15	4	4	**8**	4	7	**11**	**19**
12:15 12:30	5	1	**6**	1	1	**2**	**8**
12:30 12:45	1	2	**3**	5	4	**9**	**12**
12:45 13:00	1	4	**5**	8	3	**11**	**16**
13:00 13:15	2	2	**4**	0	1	**1**	**5**
13:15 13:30	3	0	**3**	2	0	**2**	**5**
15:00 15:15	2	2	**4**	3	4	**7**	**11**
15:15 15:30	3	0	**3**	2	1	**3**	**6**
15:30 15:45	1	2	**3**	0	3	**3**	**6**
15:45 16:00	0	4	**4**	1	3	**4**	**8**
16:00 16:15	3	5	**8**	2	3	**5**	**13**
16:15 16:30	0	1	**1**	2	5	**7**	**8**
16:30 16:45	0	2	**2**	0	1	**1**	**3**
16:45 17:00	0	0	**0**	2	0	**2**	**2**
17:00 17:15	0	2	**2**	3	5	**8**	**10**
17:15 17:30	0	1	**1**	3	3	**6**	**7**
17:30 17:45	0	3	**3**	2	3	**5**	**8**
17:45 18:00	0	1	**1**	2	4	**6**	**7**
Total	36	65	**101**	76	72	**148**	**249**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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

Full Study Heavy Vehicles

		JEANNE D'ARC BLVD									ST. JOSEPH BLVD									
		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	1	0		3	2	0		**6**	2	0	0		0	0	1		**3**	**9**
07:15	07:30	0	1	0		3	3	0		**7**	2	0	0		0	2	0		**4**	**11**
07:30	07:45	1	1	0		3	5	1		**11**	1	1	1		0	1	4		**8**	**19**
07:45	08:00	0	5	0		2	2	1		**10**	0	0	4		0	1	3		**8**	**18**
08:00	08:15	0	1	0		3	6	1		**11**	0	1	2		0	0	3		**6**	**17**
08:15	08:30	1	5	0		2	5	0		**13**	1	1	0		3	3	2		**10**	**23**
08:30	08:45	1	1	0		0	2	1		**5**	3	0	1		0	1	4		**9**	**14**
08:45	09:00	1	2	0		2	2	1		**8**	1	1	1		0	0	0		**3**	**11**
09:00	09:15	0	3	1		2	2	1		**9**	0	2	0		0	1	2		**5**	**14**
09:15	09:30	0	1	0		2	6	1		**10**	2	1	0		0	0	1		**4**	**14**
09:30	09:45	0	6	0		5	3	0		**14**	0	1	0		0	0	4		**5**	**20**
09:45	10:00	0	1	0		2	2	1		**6**	0	0	0		0	1	2		**3**	**9**
11:30	11:45	0	1	0		2	3	0		**6**	2	0	1		0	2	4		**9**	**15**
11:45	12:00	0	1	0		3	2	1		**7**	1	0	2		1	1	1		**6**	**13**
12:00	12:15	1	6	0		2	4	0		**13**	2	1	0		1	0	3		**7**	**20**
12:15	12:30	0	3	1		1	1	2		**8**	1	1	1		1	1	0		**5**	**13**
12:30	12:45	1	1	0		1	4	0		**7**	1	0	0		0	0	2		**3**	**10**
12:45	13:00	1	2	0		1	2	1		**7**	0	1	2		0	1	4		**8**	**15**
13:00	13:15	3	2	0		2	2	3		**12**	2	3	0		0	0	3		**8**	**20**
13:15	13:30	0	2	0		3	1	1		**7**	2	1	1		1	1	0		**6**	**13**
15:00	15:15	1	4	0		1	2	2		**10**	0	0	0		0	1	2		**3**	**14**
15:15	15:30	0	0	0		1	5	1		**7**	0	1	2		0	1	2		**6**	**13**
15:30	15:45	0	0	0		1	2	2		**5**	1	1	0		0	0	2		**4**	**9**
15:45	16:00	0	1	0		3	2	1		**7**	0	1	2		0	0	1		**4**	**11**
16:00	16:15	2	0	0		1	0	1		**4**	2	2	1		0	1	3		**9**	**13**
16:15	16:30	0	2	0		1	2	0		**5**	0	1	0		0	1	2		**4**	**9**
16:30	16:45	0	2	0		0	3	1		**6**	1	1	0		0	1	5		**8**	**14**
16:45	17:00	0	3	0		2	3	0		**8**	0	0	1		0	2	1		**4**	**12**
17:00	17:15	0	3	0		0	1	0		**4**	1	0	0		0	0	2		**3**	**7**
17:15	17:30	0	1	0		2	1	0		**4**	2	1	0		1	3	0		**7**	**11**
17:30	17:45	1	1	0		1	2	1		**6**	0	0	0		0	1	2		**3**	**9**
17:45	18:00	0	2	0		1	0	0		**3**	0	0	0		0	0	2		**2**	**5**
Total:	None	14	65	2	**0**	58	82	25	**0**	**246**	30	23	22	**0**	8	27	67	**0**	**177**	**425**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022 **WO No:** 40427

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

Full Study 15 Minute U-Turn Total

Time Period		JEANNE D'ARC BLVD Northbound U-Turn Total	JEANNE D'ARC BLVD Southbound U-Turn Total	ST. JOSEPH BLVD Eastbound U-Turn Total	ST. JOSEPH BLVD 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	1	0	0	0	**1**
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	1	0	0	**1**
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		1	1	0	0	**2**

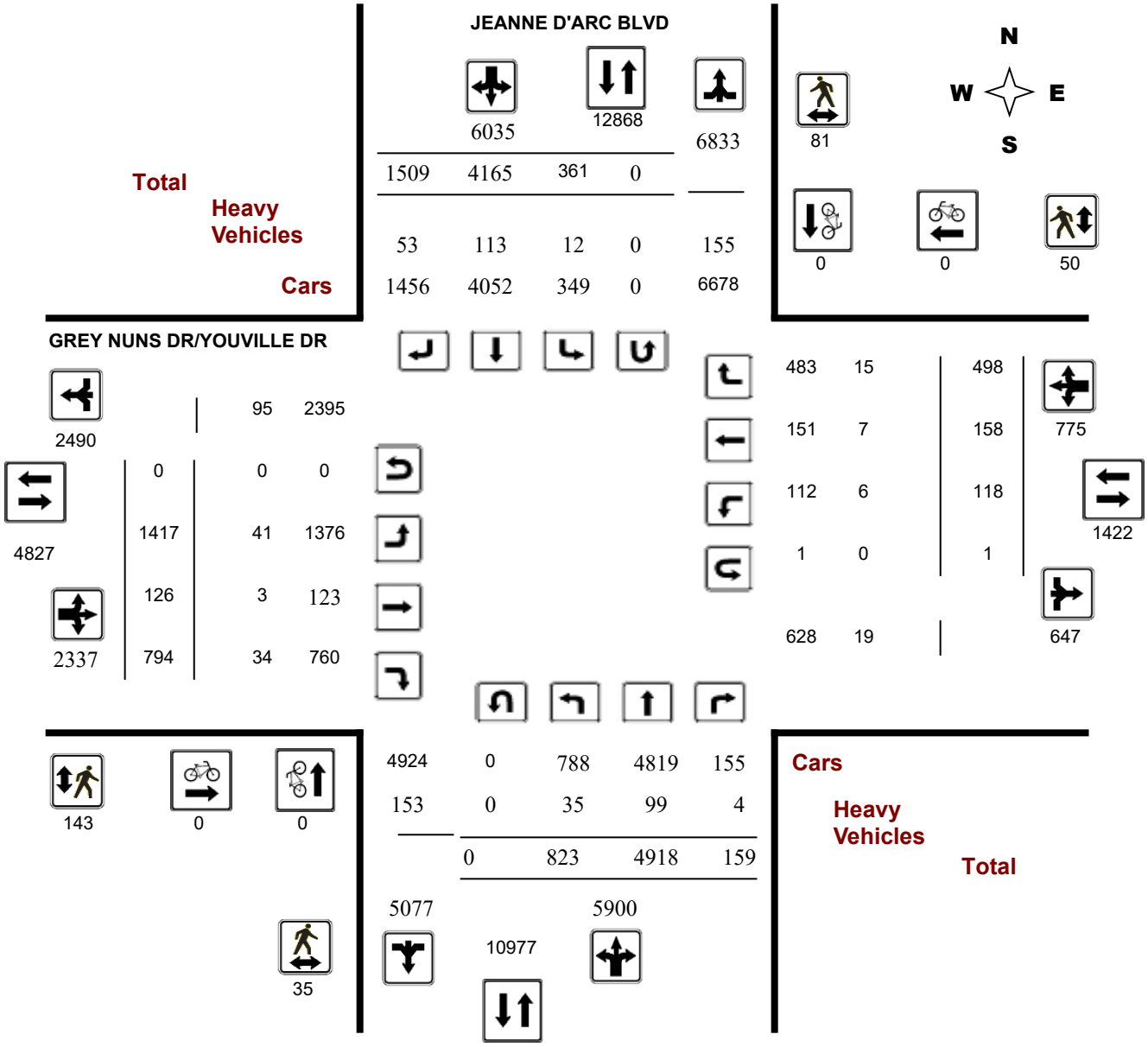
Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019
Start Time: 07:00
WO No: 38291
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

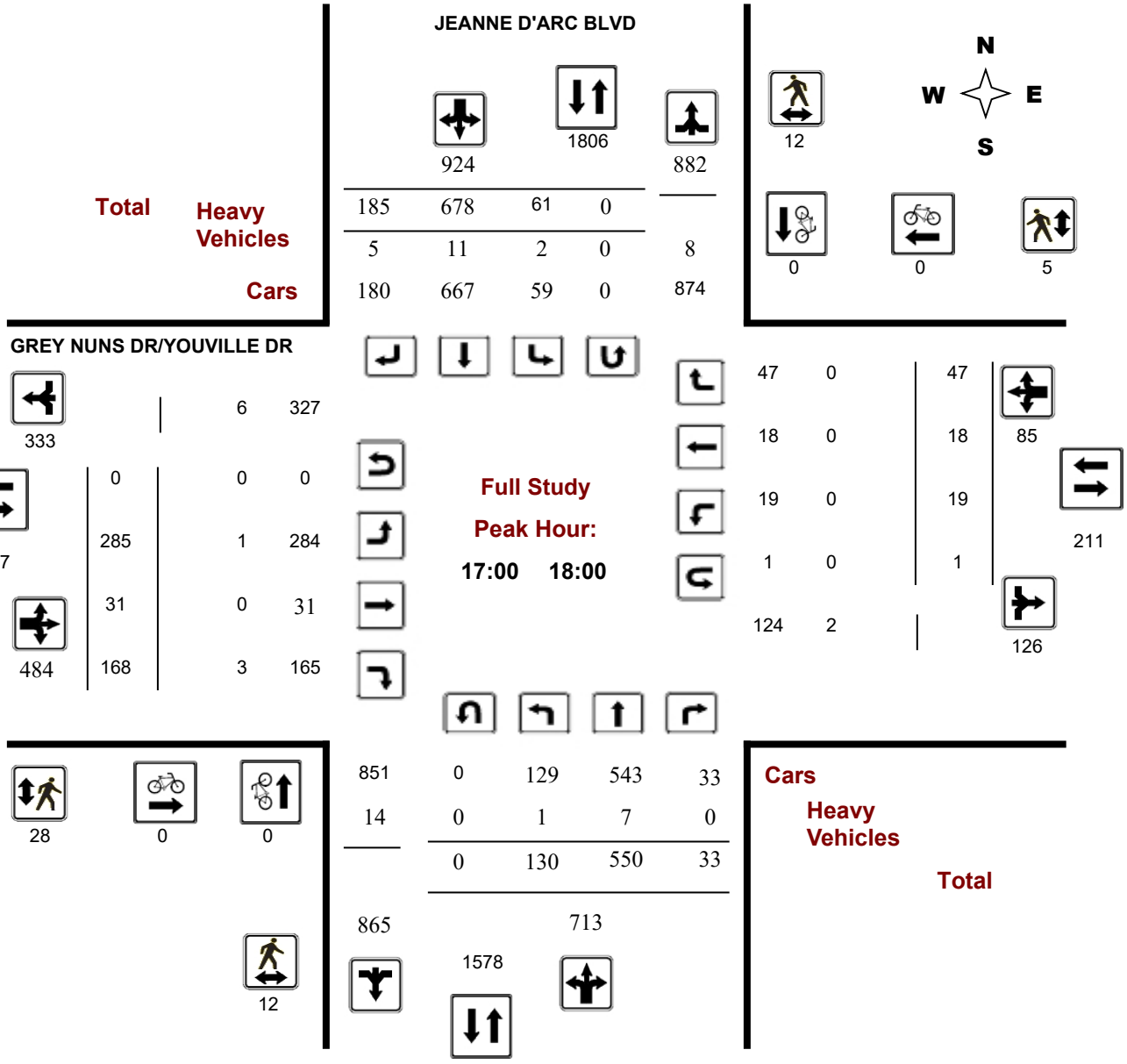
Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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

Full Study Peak Hour Diagram



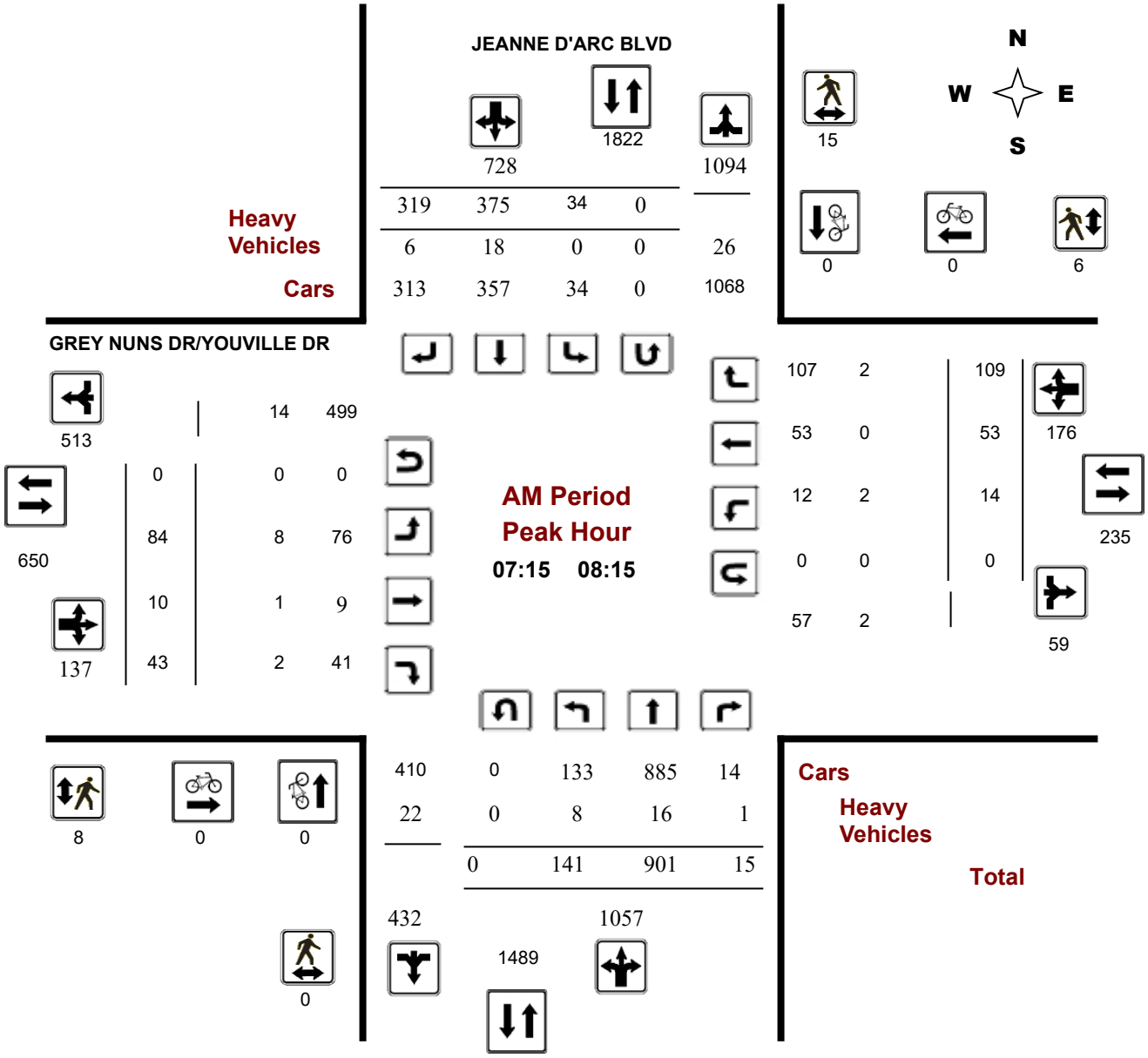
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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



Comments

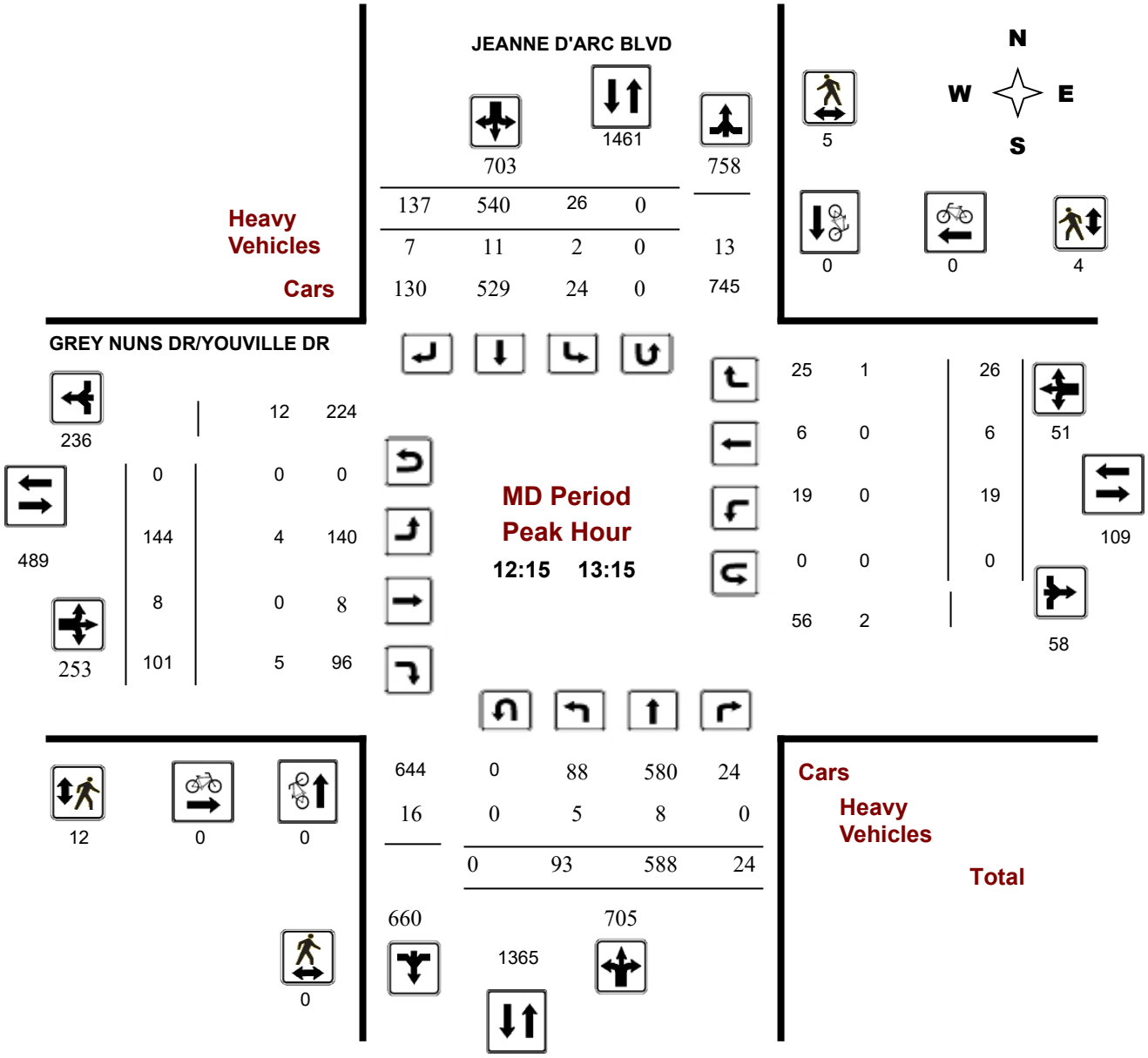
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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



Comments

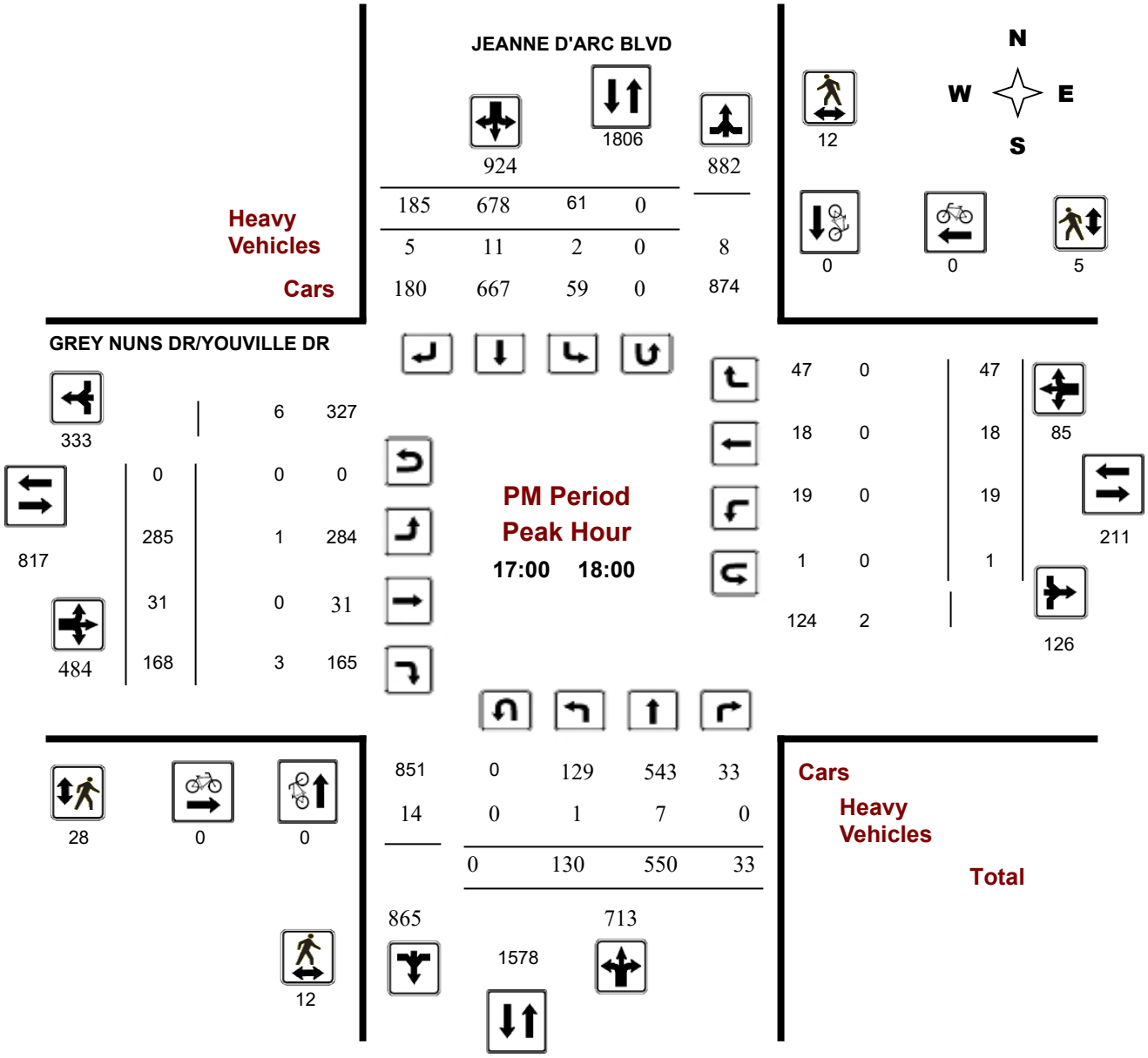
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, January 17, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

AADT Factor

1.00

	JEANNE D'ARC BLVD								GREY NUNS DR/YOUVILLE DR									
	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	120	902	13	**1035**	24	361	324	**709**	**1744**	58	9	27	**94**	15	55	90	**160**	**254**	**1998**
08:00 09:00	137	728	14	**879**	39	393	248	**680**	**1559**	105	10	53	**168**	14	31	99	**144**	**312**	**1871**
09:00 10:00	99	558	7	**664**	32	414	173	**619**	**1283**	123	5	71	**199**	10	13	87	**110**	**309**	**1592**
11:30 12:30	59	518	13	**590**	39	479	132	**650**	**1240**	165	5	105	**275**	11	4	35	**50**	**325**	**1565**
12:30 13:30	91	568	24	**683**	26	521	142	**689**	**1372**	133	10	97	**240**	15	8	27	**50**	**290**	**1662**
15:00 16:00	97	574	29	**700**	77	671	161	**909**	**1609**	252	26	131	**409**	15	17	49	**81**	**490**	**2099**
16:00 17:00	90	520	26	**636**	63	648	144	**855**	**1491**	296	30	142	**468**	19	12	64	**95**	**563**	**2054**
17:00 18:00	130	550	33	**713**	61	678	185	**924**	**1637**	285	31	168	**484**	19	18	47	**84**	**568**	**2205**
Sub Total	823	4918	159	**5900**	361	4165	1509	**6035**	**11935**	1417	126	794	**2337**	118	158	498	**774**	**3111**	**15046**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	1			**1**	**1**	**1**
Total	823	4918	159	**5900**	361	4165	1509	**6035**	**11935**	1417	126	794	**2337**	119	158	498	**775**	**3112**	**15047**
EQ 12Hr	1144	6836	221	**8201**	502	5789	2098	**8389**	**16590**	1970	175	1104	**3249**	165	220	692	**1077**	**4326**	**20916**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1144	6836	221	**8201**	502	5789	2098	**8389**	**16590**	1970	175	1104	**3249**	165	220	692	**1077**	**4326**	**20916**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	1499	8955	290	**10744**	658	7584	2748	**10990**	**21734**	2581	229	1446	**4256**	216	288	907	**1411**	**5667**	**27401**
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

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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

Full Study Cyclist Volume

Time Period		JEANNE D'ARC BLVD			GREY NUNS DR/YOUVILLE DR			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	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**	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	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
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**
Total		0	0	**0**	0	0	**0**	**0**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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

Full Study Pedestrian Volume

	JEANNE D'ARC BLVD			GREY NUNS DR/YOUVILLE DR			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	**Total**	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	**Total**	**Grand Total**
07:00 07:15	1	1	**2**	1	2	**3**	**5**
07:15 07:30	0	3	**3**	1	1	**2**	**5**
07:30 07:45	0	7	**7**	3	2	**5**	**12**
07:45 08:00	0	2	**2**	1	2	**3**	**5**
08:00 08:15	0	3	**3**	3	1	**4**	**7**
08:15 08:30	1	6	**7**	3	3	**6**	**13**
08:30 08:45	0	5	**5**	5	1	**6**	**11**
08:45 09:00	4	4	**8**	8	2	**10**	**18**
09:00 09:15	0	2	**2**	4	2	**6**	**8**
09:15 09:30	0	3	**3**	3	2	**5**	**8**
09:30 09:45	0	0	**0**	2	1	**3**	**3**
09:45 10:00	0	0	**0**	4	0	**4**	**4**
11:30 11:45	0	2	**2**	0	0	**0**	**2**
11:45 12:00	0	0	**0**	4	1	**5**	**5**
12:00 12:15	1	1	**2**	2	1	**3**	**5**
12:15 12:30	0	5	**5**	5	1	**6**	**11**
12:30 12:45	0	0	**0**	1	0	**1**	**1**
12:45 13:00	0	0	**0**	2	2	**4**	**4**
13:00 13:15	0	0	**0**	4	1	**5**	**5**
13:15 13:30	0	1	**1**	5	4	**9**	**10**
15:00 15:15	4	1	**5**	10	1	**11**	**16**
15:15 15:30	0	3	**3**	4	0	**4**	**7**
15:30 15:45	1	0	**1**	8	0	**8**	**9**
15:45 16:00	0	5	**5**	9	4	**13**	**18**
16:00 16:15	4	6	**10**	5	5	**10**	**20**
16:15 16:30	4	2	**6**	7	0	**7**	**13**
16:30 16:45	2	6	**8**	6	5	**11**	**19**
16:45 17:00	1	1	**2**	5	1	**6**	**8**
17:00 17:15	7	4	**11**	13	0	**13**	**24**
17:15 17:30	2	3	**5**	6	1	**7**	**12**
17:30 17:45	2	3	**5**	4	1	**5**	**10**
17:45 18:00	1	2	**3**	5	3	**8**	**11**
Total	35	81	**116**	143	50	**193**	**309**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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

Full Study Heavy Vehicles

		JEANNE D'ARC BLVD									GREY NUNS DR/YOUVILLE DR									
		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	3	0		0	4	0		**7**	3	0	1		0	0	1		**5**	**12**
07:15	07:30	3	4	0		0	1	2		**10**	1	0	0		0	0	0		**1**	**11**
07:30	07:45	1	2	1		0	9	2		**15**	2	0	1		1	0	1		**5**	**20**
07:45	08:00	1	7	0		0	5	2		**15**	1	0	0		0	0	0		**1**	**16**
08:00	08:15	3	3	0		0	3	0		**9**	4	1	1		1	0	1		**8**	**17**
08:15	08:30	1	4	0		0	6	1		**12**	4	0	1		0	0	1		**6**	**18**
08:30	08:45	2	6	1		0	5	1		**15**	0	0	1		0	0	3		**4**	**19**
08:45	09:00	2	2	0		0	5	0		**9**	3	1	1		1	0	0		**6**	**15**
09:00	09:15	2	6	0		0	8	4		**20**	2	0	2		0	0	3		**7**	**27**
09:15	09:30	1	5	0		0	2	4		**12**	0	0	1		0	0	0		**1**	**13**
09:30	09:45	2	4	0		1	2	1		**10**	0	0	2		0	0	0		**2**	**12**
09:45	10:00	0	2	0		0	3	4		**9**	1	0	1		0	0	0		**2**	**11**
11:30	11:45	1	4	0		0	3	0		**8**	0	0	2		0	1	1		**4**	**12**
11:45	12:00	0	2	0		0	3	1		**6**	2	0	0		0	0	1		**3**	**9**
12:00	12:15	1	2	0		2	5	0		**10**	0	0	2		1	1	0		**4**	**14**
12:15	12:30	1	1	0		1	2	1		**6**	1	0	1		0	0	0		**2**	**8**
12:30	12:45	1	2	0		1	3	0		**7**	2	0	1		0	0	0		**3**	**10**
12:45	13:00	1	2	0		0	5	1		**9**	0	0	1		0	0	0		**1**	**10**
13:00	13:15	2	3	0		0	1	5		**11**	1	0	2		0	0	1		**4**	**15**
13:15	13:30	1	3	1		0	4	2		**11**	5	0	1		0	1	0		**7**	**18**
15:00	15:15	1	2	0		2	1	4		**10**	0	0	2		1	1	0		**4**	**14**
15:15	15:30	0	2	0		0	2	3		**7**	2	0	1		0	1	0		**4**	**11**
15:30	15:45	1	5	0		1	3	1		**11**	3	0	0		0	1	0		**4**	**15**
15:45	16:00	2	3	0		0	6	4		**15**	1	1	1		1	1	0		**5**	**20**
16:00	16:15	1	3	0		1	2	0		**7**	2	0	2		0	0	1		**5**	**12**
16:15	16:30	0	2	1		0	5	3		**11**	0	0	0		0	0	1		**1**	**12**
16:30	16:45	3	4	0		1	2	2		**12**	0	0	2		0	0	0		**2**	**14**
16:45	17:00	0	4	0		0	2	0		**6**	0	0	1		0	0	0		**1**	**7**
17:00	17:15	1	0	0		1	2	2		**6**	1	0	2		0	0	0		**3**	**9**
17:15	17:30	0	2	0		0	5	1		**8**	0	0	0		0	0	0		**0**	**8**
17:30	17:45	0	1	0		1	2	1		**5**	0	0	1		0	0	0		**1**	**6**
17:45	18:00	0	4	0		0	2	1		**7**	0	0	0		0	0	0		**0**	**7**
Total:	None	35	99	4	**0**	12	113	53	**0**	**316**	41	3	34	**0**	6	7	15	**0**	**106**	**422**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ GREY NUNS DR/YOUVILLE DR

Survey Date: Thursday, January 17, 2019 **WO No:** 38291

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

Full Study 15 Minute U-Turn Total

Time Period		JEANNE D'ARC BLVD		GREY NUNS DR/YOUVILLE DR		
		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	1	**1**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		0	0	0	1	**1**

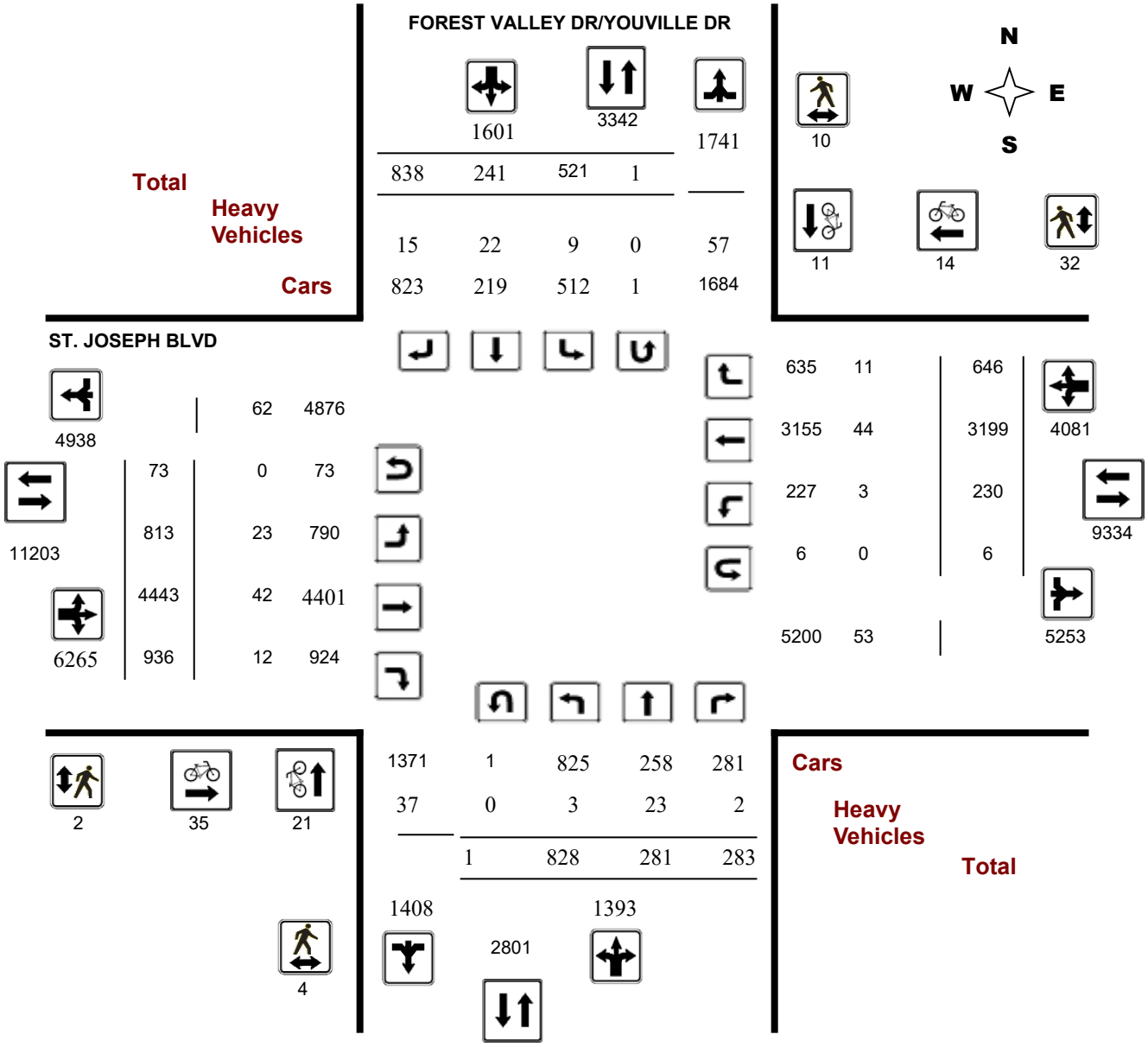
Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022
Start Time: 07:00
WO No: 40426
Device: Miovision

Full Study Diagram



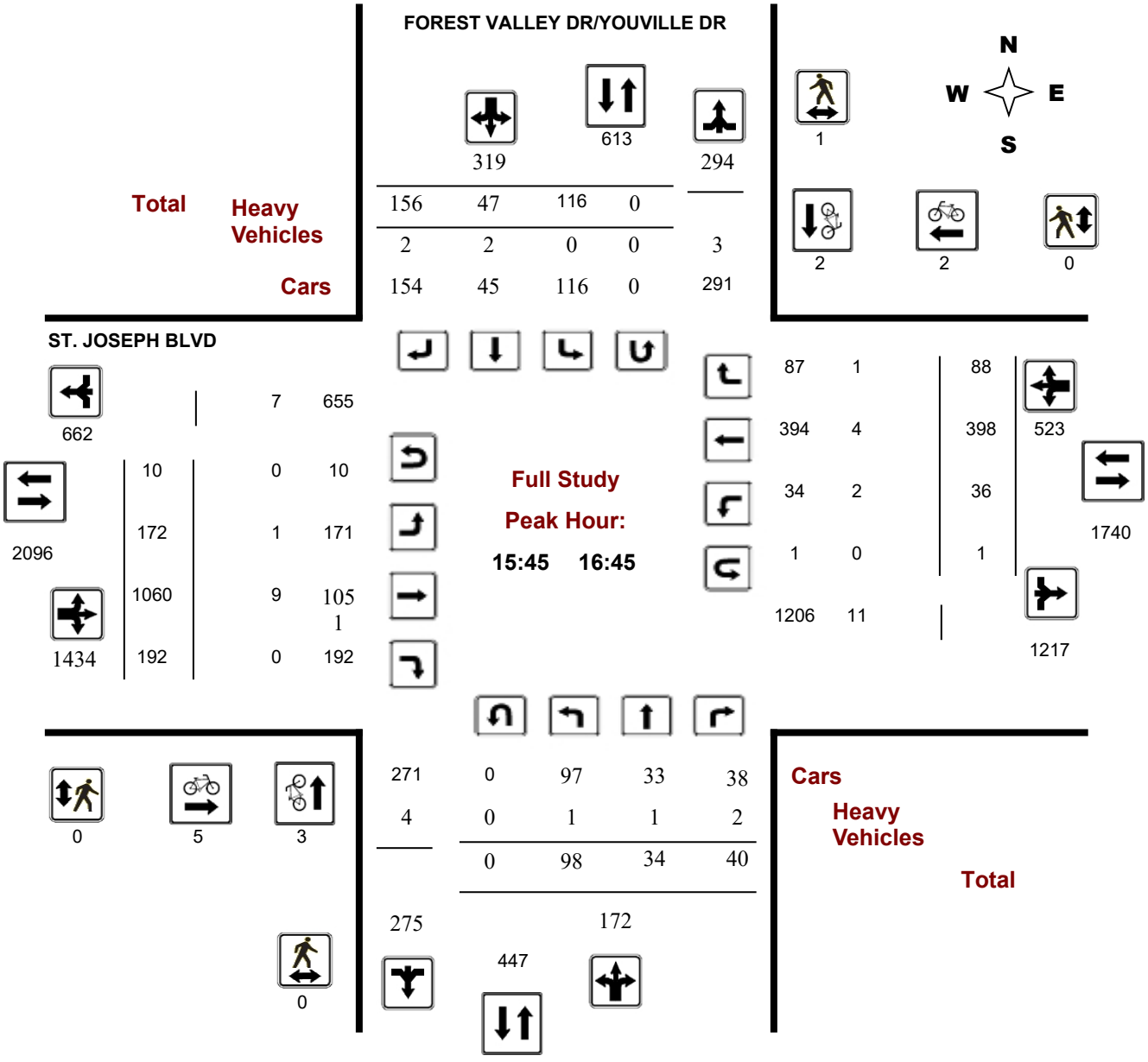
Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022
Start Time: 07:00
WO No: 40426
Device: Miovision

Full Study Peak Hour Diagram



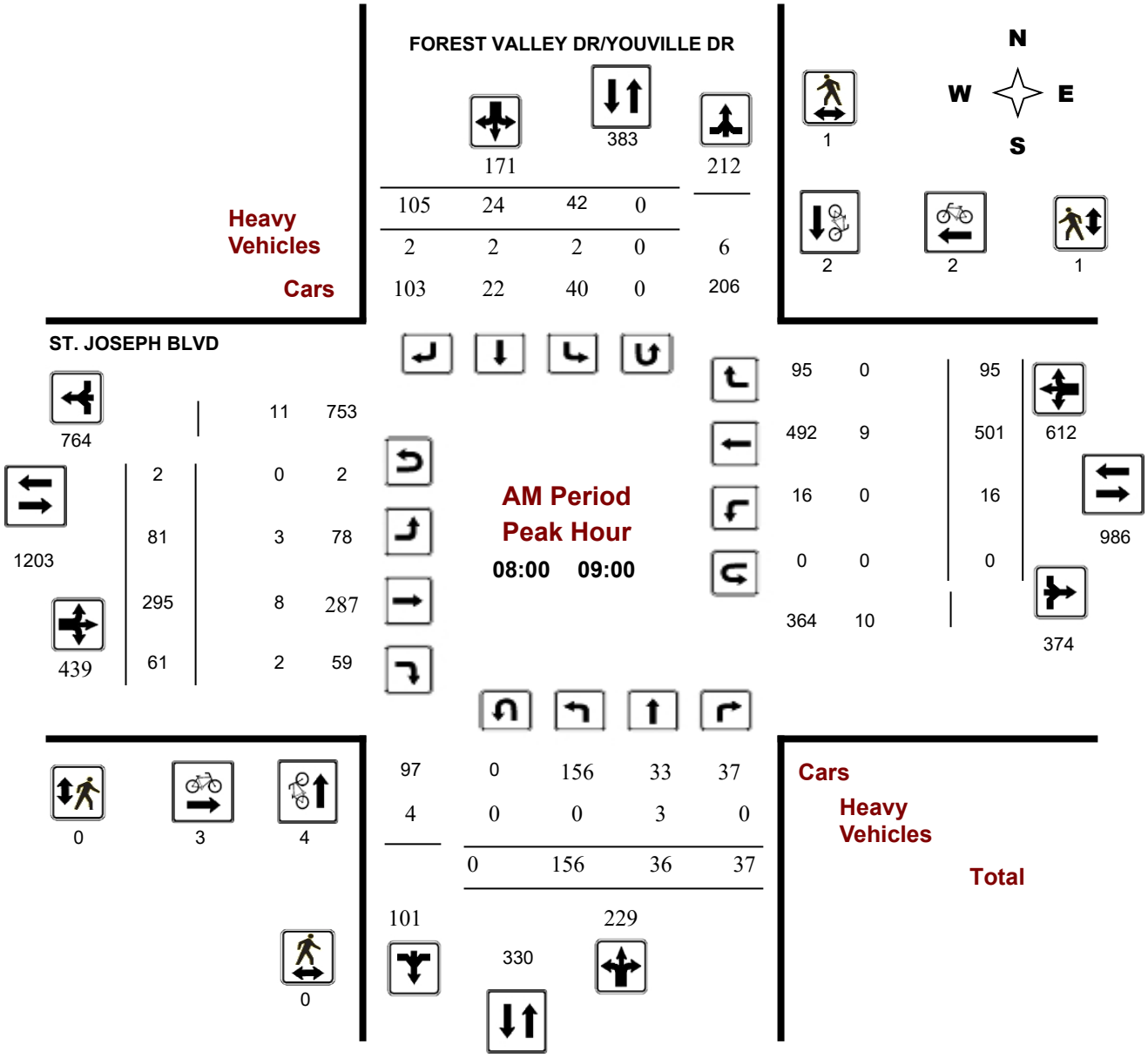
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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



Comments

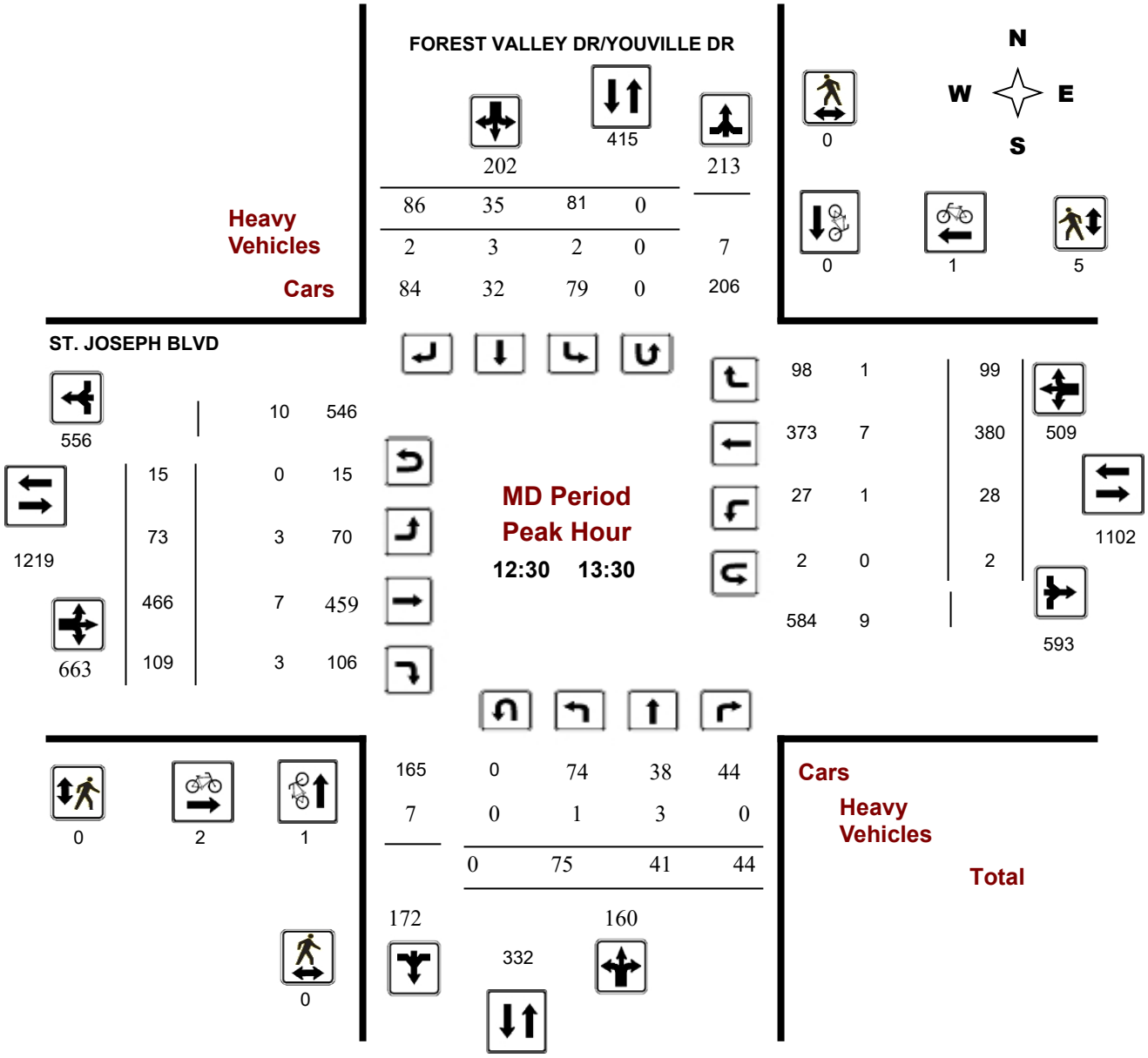
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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



Comments

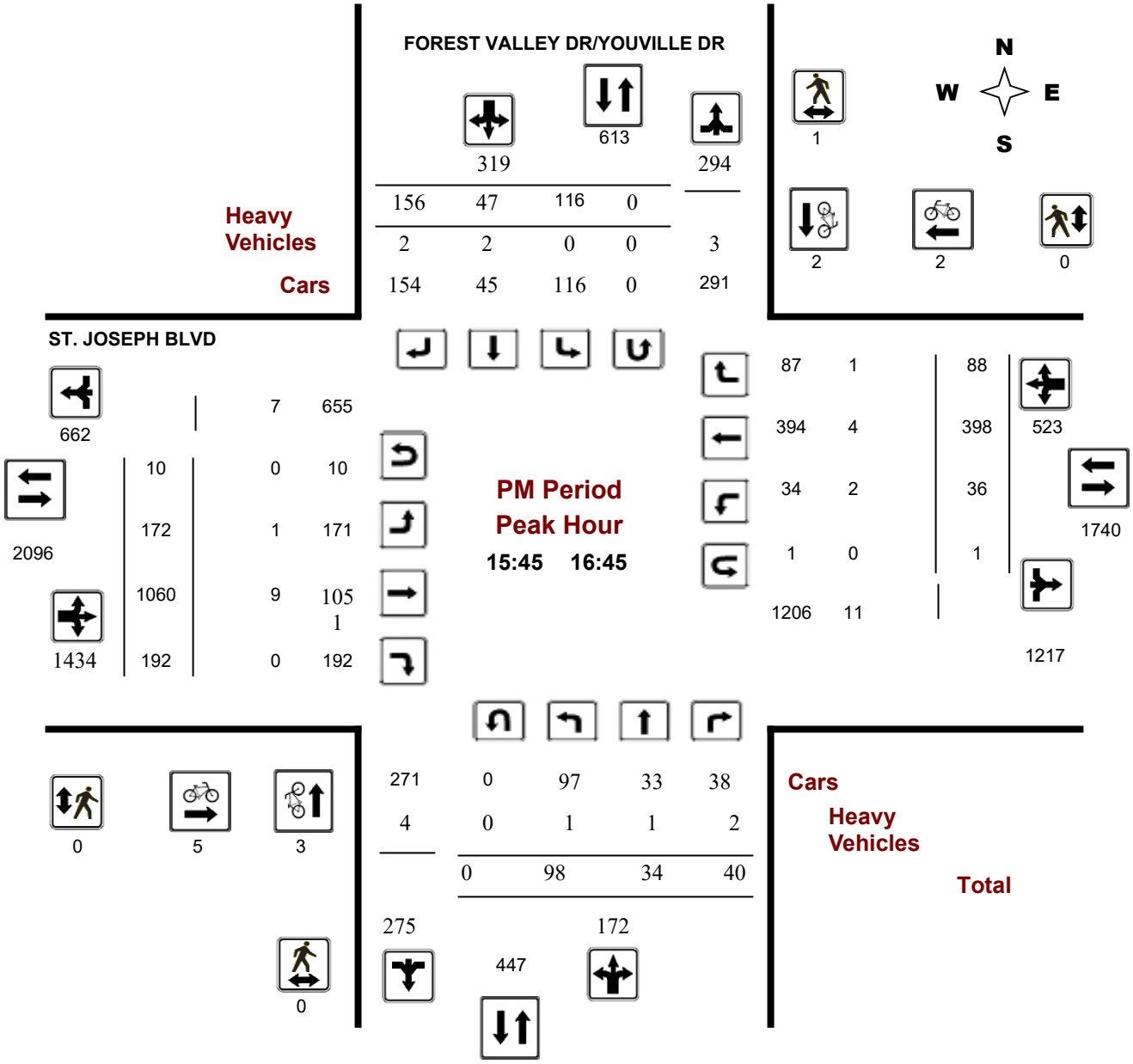
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 06, 2022

Total Observed U-Turns

Northbound: 1 Southbound: 1

Eastbound: 73 Westbound: 6

AADT Factor

.90

	FOREST VALLEY DR/YOUVILLE DR									ST. JOSEPH BLVD									
	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	122	34	25	**181**	18	13	69	**100**	**281**	72	180	45	**297**	14	439	74	**527**	**824**	**1105**
08:00 09:00	156	36	37	**229**	42	24	105	**171**	**400**	81	295	61	**437**	16	501	95	**612**	**1049**	**1449**
09:00 10:00	95	39	36	**170**	46	23	100	**169**	**339**	81	350	70	**501**	23	356	73	**452**	**953**	**1292**
11:30 12:30	96	28	28	**152**	69	21	90	**180**	**332**	80	441	94	**615**	33	353	89	**475**	**1090**	**1422**
12:30 13:30	75	41	44	**160**	81	35	86	**202**	**362**	73	466	109	**648**	28	380	99	**507**	**1155**	**1517**
15:00 16:00	95	29	23	**147**	75	35	116	**226**	**373**	128	788	162	**1078**	30	387	95	**512**	**1590**	**1963**
16:00 17:00	92	31	46	**169**	118	44	162	**324**	**493**	169	1054	207	**1430**	41	403	68	**512**	**1942**	**2435**
17:00 18:00	97	43	44	**184**	72	46	110	**228**	**412**	129	869	188	**1186**	45	380	53	**478**	**1664**	**2076**
Sub Total	828	281	283	**1392**	521	241	838	**1600**	**2992**	813	4443	936	**6192**	230	3199	646	**4075**	**10267**	**13259**
U Turns	1			**1**	1			**1**	**2**	**73**			**73**	6			**6**	**79**	**81**
Total	829	281	283	**1393**	522	241	838	**1601**	**2994**	886	4443	936	**6265**	236	3199	646	**4081**	**10346**	**13340**
EQ 12Hr	1152	391	393	**1936**	726	335	1165	**2226**	**4162**	1232	6176	1301	**8709**	328	4447	898	**5673**	**14382**	**18544**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1037	352	354	**1743**	653	302	1048	**2003**	**3746**	1109	5558	1171	**7838**	295	4002	808	**5105**	**12943**	**16689**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	1358	461	464	**2283**	855	396	1373	**2624**	**4907**	1453	7281	1534	**10268**	386	5243	1058	**6687**	**16955**	**21862**
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

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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

Full Study Cyclist Volume

Time Period		FOREST VALLEY DR/YOUVILLE DR			ST. JOSEPH BLVD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	3	0	**3**	0	0	**0**	**3**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	1	0	**1**	**1**
07:45	08:00	0	0	**0**	1	0	**1**	**1**
08:00	08:15	1	0	**1**	1	0	**1**	**2**
08:15	08:30	2	2	**4**	0	0	**0**	**4**
08:30	08:45	1	0	**1**	1	0	**1**	**2**
08:45	09:00	0	0	**0**	1	2	**3**	**3**
09:00	09:15	2	0	**2**	1	0	**1**	**3**
09:15	09:30	1	0	**1**	1	1	**2**	**3**
09:30	09:45	1	0	**1**	1	0	**1**	**2**
09:45	10:00	1	0	**1**	2	1	**3**	**4**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	2	0	**2**	**2**
12:00	12:15	1	1	**2**	3	1	**4**	**6**
12:15	12:30	1	2	**3**	2	0	**2**	**5**
12:30	12:45	0	0	**0**	0	1	**1**	**1**
12:45	13:00	0	0	**0**	2	0	**2**	**2**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	1	0	**1**	0	0	**0**	**1**
15:00	15:15	1	0	**1**	3	1	**4**	**5**
15:15	15:30	0	1	**1**	1	0	**1**	**2**
15:30	15:45	0	0	**0**	2	0	**2**	**2**
15:45	16:00	1	0	**1**	3	1	**4**	**5**
16:00	16:15	0	2	**2**	0	0	**0**	**2**
16:15	16:30	2	0	**2**	0	1	**1**	**3**
16:30	16:45	0	0	**0**	2	0	**2**	**2**
16:45	17:00	1	1	**2**	2	4	**6**	**8**
17:00	17:15	0	1	**1**	1	0	**1**	**2**
17:15	17:30	0	1	**1**	0	1	**1**	**2**
17:30	17:45	0	0	**0**	1	0	**1**	**1**
17:45	18:00	1	0	**1**	1	0	**1**	**2**
Total		21	11	**32**	35	14	**49**	**81**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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

Full Study Pedestrian Volume

FOREST VALLEY DR/YOUVILLE DR **ST. JOSEPH BLVD**

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	1	**1**	0	0	**0**	**1**
07:15 07:30	0	0	**0**	0	1	**1**	**1**
07:30 07:45	1	0	**1**	0	3	**3**	**4**
07:45 08:00	0	0	**0**	0	0	**0**	**0**
08:00 08:15	0	0	**0**	0	0	**0**	**0**
08:15 08:30	0	0	**0**	0	1	**1**	**1**
08:30 08:45	0	1	**1**	0	0	**0**	**1**
08:45 09:00	0	0	**0**	0	0	**0**	**0**
09:00 09:15	1	1	**2**	0	0	**0**	**2**
09:15 09:30	0	1	**1**	0	1	**1**	**2**
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	1	**1**	**1**
11:45 12:00	0	0	**0**	0	2	**2**	**2**
12:00 12:15	0	2	**2**	0	3	**3**	**5**
12:15 12:30	0	0	**0**	0	2	**2**	**2**
12:30 12:45	0	0	**0**	0	3	**3**	**3**
12:45 13:00	0	0	**0**	0	0	**0**	**0**
13:00 13:15	0	0	**0**	0	1	**1**	**1**
13:15 13:30	0	0	**0**	0	1	**1**	**1**
15:00 15:15	0	0	**0**	0	1	**1**	**1**
15:15 15:30	0	0	**0**	0	1	**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	1	**1**	0	0	**0**	**1**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	0	1	**1**	**1**
17:00 17:15	2	0	**2**	0	3	**3**	**5**
17:15 17:30	0	2	**2**	2	3	**5**	**7**
17:30 17:45	0	0	**0**	0	2	**2**	**2**
17:45 18:00	0	1	**1**	0	1	**1**	**2**
Total	4	10	**14**	2	32	**34**	**48**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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

Full Study Heavy Vehicles

FOREST VALLEY DR/YOUVILLE DR **ST. JOSEPH BLVD**

Time Period		Northbound				Southbound					Eastbound				Westbound					
		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	3	0		0	1	0		**4**	0	0	0		0	0	0		**0**	**4**
07:15	07:30	0	0	0		0	0	1		**1**	0	0	0		0	2	0		**2**	**3**
07:30	07:45	0	2	0		0	1	2		**5**	0	1	1		0	3	0		**5**	**10**
07:45	08:00	0	0	0		0	0	0		**0**	1	4	0		0	1	1		**7**	**7**
08:00	08:15	0	1	0		1	1	1		**4**	1	3	1		0	0	0		**5**	**9**
08:15	08:30	0	0	0		0	0	0		**0**	0	1	0		0	3	0		**4**	**4**
08:30	08:45	0	2	0		0	1	1		**4**	2	2	0		0	3	0		**7**	**11**
08:45	09:00	0	0	0		1	0	0		**1**	0	2	1		0	3	0		**6**	**7**
09:00	09:15	0	1	0		0	1	0		**2**	1	2	0		0	0	0		**3**	**5**
09:15	09:30	0	0	0		0	1	0		**1**	4	1	0		0	2	0		**7**	**8**
09:30	09:45	0	2	0		0	1	2		**5**	2	1	0		0	1	0		**4**	**9**
09:45	10:00	0	0	0		1	0	0		**1**	0	1	1		0	1	0		**3**	**4**
11:30	11:45	0	1	0		0	2	1		**4**	1	3	1		0	1	1		**7**	**11**
11:45	12:00	0	0	0		0	0	1		**1**	1	0	0		0	3	0		**4**	**5**
12:00	12:15	0	1	0		1	1	0		**3**	0	1	1		0	0	1		**3**	**6**
12:15	12:30	0	0	0		0	0	0		**0**	0	1	1		0	1	0		**3**	**3**
12:30	12:45	0	1	0		0	1	1		**3**	0	0	1		0	1	0		**2**	**5**
12:45	13:00	1	1	0		0	0	1		**3**	1	2	0		0	2	0		**5**	**8**
13:00	13:15	0	1	0		1	1	0		**3**	1	3	2		1	2	0		**9**	**12**
13:15	13:30	0	0	0		1	1	0		**2**	1	2	0		0	2	1		**6**	**8**
15:00	15:15	0	1	0		0	1	0		**2**	0	0	0		0	2	3		**5**	**7**
15:15	15:30	0	0	0		2	1	1		**4**	1	0	1		0	0	1		**3**	**7**
15:30	15:45	1	1	0		0	2	0		**4**	2	0	0		0	0	0		**2**	**6**
15:45	16:00	1	0	0		0	0	1		**2**	0	3	0		1	0	0		**4**	**6**
16:00	16:15	0	1	1		0	0	0		**2**	0	3	0		0	3	0		**6**	**8**
16:15	16:30	0	0	0		0	0	1		**1**	0	2	0		0	1	0		**3**	**4**
16:30	16:45	0	0	1		0	2	0		**3**	1	1	0		1	0	1		**4**	**7**
16:45	17:00	0	1	0		0	0	1		**2**	1	2	0		0	2	0		**5**	**7**
17:00	17:15	0	1	0		0	1	0		**2**	0	0	0		0	0	0		**0**	**2**
17:15	17:30	0	0	0		0	0	0		**0**	0	1	0		0	2	2		**5**	**5**
17:30	17:45	0	2	0		1	2	0		**5**	2	0	0		0	2	0		**4**	**9**
17:45	18:00	0	0	0		0	0	0		**0**	0	0	1		0	1	0		**2**	**2**
Total:	None	3	23	2	**0**	9	22	15	**0**	**74**	23	42	12	**0**	3	44	11	**0**	**135**	**209**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD @ FOREST VALLEY DR/YOUVILLE DR

Survey Date: Wednesday, July 06, 2022 **WO No:** 40426

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

Full Study 15 Minute U-Turn Total

FOREST VALLEY DR/YOUVILLE DR **ST. JOSEPH BLVD**

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	3	0	**3**
07:15	07:30	0	0	1	0	**1**
07:30	07:45	0	0	1	0	**1**
07:45	08:00	0	0	2	0	**2**
08:00	08:15	0	0	1	0	**1**
08:15	08:30	0	0	1	0	**1**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	1	0	**1**
09:15	09:30	0	0	2	0	**2**
09:30	09:45	0	0	1	0	**1**
09:45	10:00	0	0	1	1	**2**
11:30	11:45	0	0	2	0	**2**
11:45	12:00	0	1	5	1	**7**
12:00	12:15	1	0	2	0	**3**
12:15	12:30	0	0	2	0	**2**
12:30	12:45	0	0	4	0	**4**
12:45	13:00	0	0	2	0	**2**
13:00	13:15	0	0	5	1	**6**
13:15	13:30	0	0	4	1	**5**
15:00	15:15	0	0	1	0	**1**
15:15	15:30	0	0	2	0	**2**
15:30	15:45	0	0	2	0	**2**
15:45	16:00	0	0	1	0	**1**
16:00	16:15	0	0	3	0	**3**
16:15	16:30	0	0	2	0	**2**
16:30	16:45	0	0	4	1	**5**
16:45	17:00	0	0	2	0	**2**
17:00	17:15	0	0	1	0	**1**
17:15	17:30	0	0	4	0	**4**
17:30	17:45	0	0	7	0	**7**
17:45	18:00	0	0	4	1	**5**
Total		1	1	73	6	**81**

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

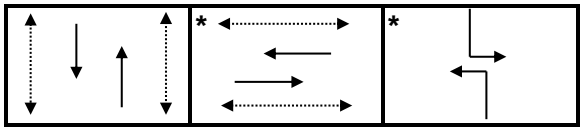
Intersection:	***Main:*** Jeanne D'Arc	***Side:***	Youville
Controller:	**ATC3**	**TSD:**	**5620**
Author:	Arib Ahmad	**Date:**	27-Jun-2022

Existing Timing Plans†

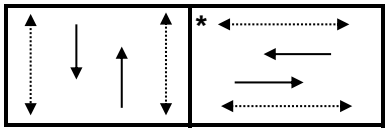
	Plan				**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	***Walk***	***DW***	***A+R***
Cycle	80	80	95	70			
Offset	80	80	95	X			
NB Thru	31	31	38	36	7	14	3.7+2.1
SB Thru	31	31	38	36	7	14	3.7+2.1
EB Thru	34	34	42	34	7	20	3.0+3.4
WB Thru	34	34	42	34	7	20	3.0+3.4
NB Left	15	15	15	-	-	-	3.7+2.2
SB Left	15	15	15	-	-	-	3.7+2.2

Phasing Sequence‡

Plan: 1,2,3



Plan: 4



Schedule

Weekday

Time	Plan
0:10	4
6:30	1
9:00	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:10	4
7:00	2
20:00	4

Sunday

Time	Plan
0:10	4
7:00	2
19:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $61.16 ($54.12 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

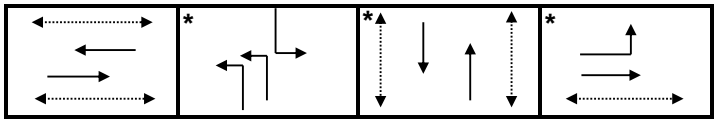
Intersection:	***Main:***	St Joseph	***Side:***	Youville / Forest Valley
Controller:	**ATC3**		**TSD:**	**5814**
Author:	Arib Ahmad		**Date:**	27-Jun-2022

Existing Timing Plans†

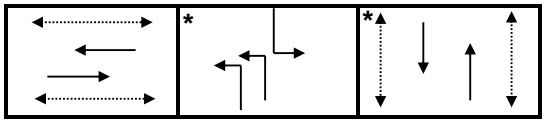
	Plan				**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	***Walk***	***DW***	***A+R***
Cycle	110	100	100	80			
Offset	110	X	100	X			
EB Thru	54	42	55	35	7	14	3.7+2.3
WB Thru	43	42	44	35	7	14	3.7+2.3
NB Left (fp)	26	17	15	15	-	-	3.3+3.0
SB Left (fp)	26	17	15	15	-	-	3.3+3.0
NB Thru	30	30	30	30	7	17	3.3+3.0
SB Thru	30	30	30	30	7	17	3.3+3.0
EB Left	11	11	11	-	-	-	3.7+2.3

Phasing Sequence‡

Plan: 1,2,3



Plan: 4



Note: 1) if the NS ped phase is not actuated, the NS movements will be terminated after 20s

Schedule

Weekday

Time	Plan
0:10	4
6:30	1
9:00	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:10	4
7:00	2
20:00	4

Sunday

Time	Plan
0:10	4
7:00	2
19:00	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

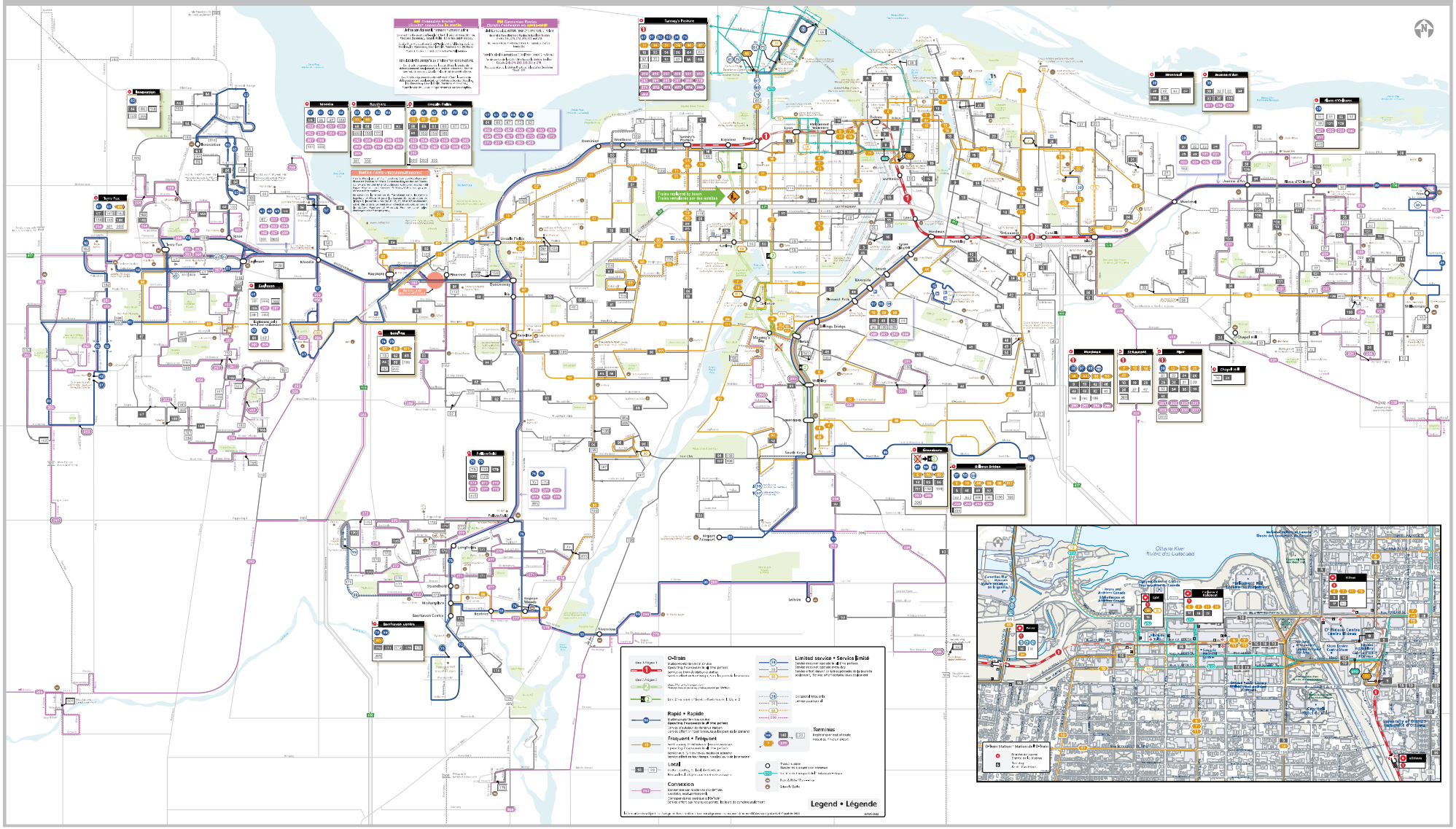
Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $61.16 ($54.12 + HST)

Transit Map Carte du réseau



Orleans

Demographic Characteristics

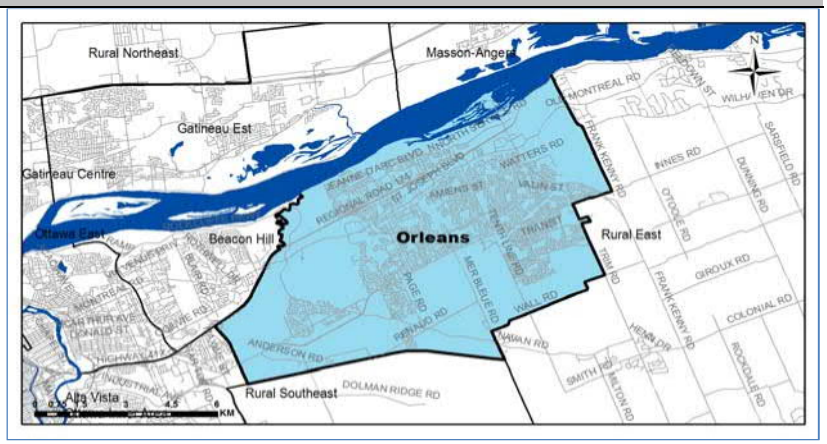
Population	117,440	Actively Travelled	95,100
Employed Population	57,400	Number of Vehicles	70,160
Households	42,950	Area (km^2)	88.6

Occupation

Status (age 5+)	Male	Female	Total
Full Time Employed	27,630	24,540	52,170
Part Time Employed	2,040	3,200	5,240
Student	14,100	14,710	28,800
Retiree	8,240	9,820	18,060
Unemployed	890	790	1,670
Homemaker	110	2,990	3,090
Other	630	1,030	1,660
Total:	53,630	57,060	110,690

Traveller Characteristics	Male	Female	Total
Transit Pass Holders	11,690	13,440	25,130
Licensed Drivers	41,780	42,490	84,270
Telecommuters	270	260	530
Trips made by residents	147,960	163,290	311,250

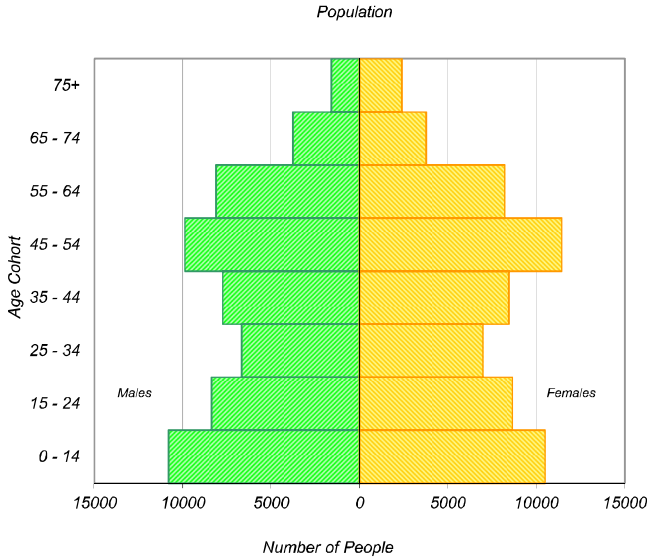
Selected Indicators	
Daily Trips per Person (age 5+)	2.81
Vehicles per Person	0.60
Number of Persons per Household	2.73
Daily Trips per Household	7.25
Vehicles per Household	1.63
Workers per Household	1.34
Population Density (Pop/km2)	1330

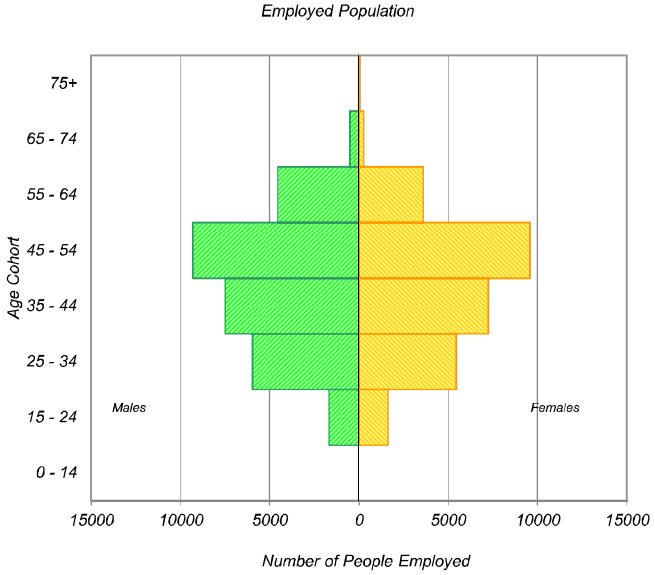


Household Size		
1 person	6,490	15%
2 persons	14,600	34%
3 persons	8,630	20%
4 persons	9,090	21%
5+ persons	4,130	10%
Total:	42,950	100%

Households by Vehicle Availability		
0 vehicles	1,390	3%
1 vehicle	18,250	42%
2 vehicles	19,080	44%
3 vehicles	3,330	8%
4+ vehicles	890	2%
Total:	42,950	100%

Households by Dwelling Type		
Single-detached	25,970	60%
Semi-detached	3,250	8%
Townhouse	10,730	25%
Apartment/Condo	3,010	7%
Total:	42,950	100%



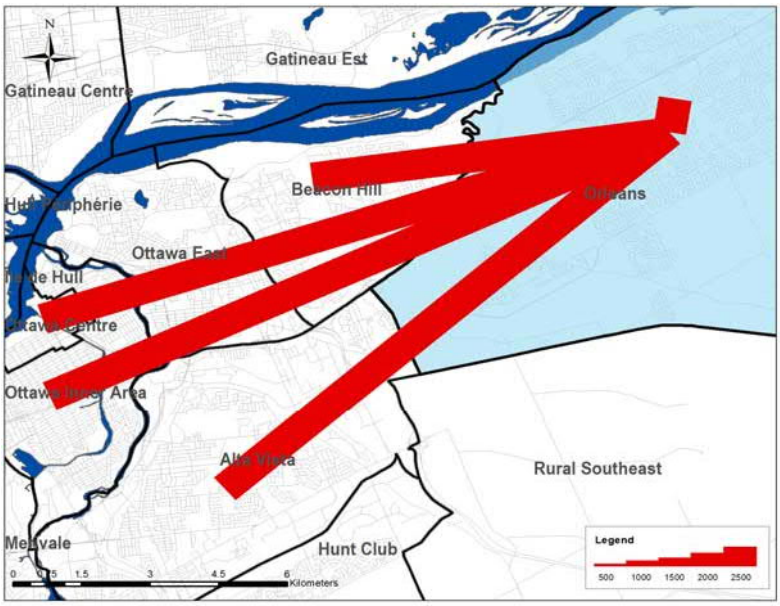


* In 2005 data was only collected for household members aged 11$^+$ therefore these results cannot be compared to the 2011 data.

Travel Patterns

Top Five Destinations of Trips from Orleans

AM Peak Period



Summary of Trips to and from Orleans

AM Peak Period (6:30 - 8:59) Districts	Destinations of Trips From District	% Total	Origins of Trips To District	% Total
Ottawa Centre	7,330	11%	130	0%
Ottawa Inner Area	4,800	7%	630	2%
Ottawa East	2,840	4%	600	2%
Beacon Hill	4,180	6%	760	2%
Alta Vista	5,890	9%	1,050	3%
Hunt Club	950	1%	630	2%
Merivale	1,940	3%	460	1%
Ottawa West	1,460	2%	220	1%
Bayshore / Cedarview	1,210	2%	310	1%
Orléans	29,900	46%	29,900	78%
Rural East	1,000	2%	1,970	5%
Rural Southeast	70	0%	290	1%
South Gloucester / Leitrim	170	0%	50	0%
South Nepean	200	0%	330	1%
Rural Southwest	70	0%	70	0%
Kanata / Stittsvile	500	1%	290	1%
Rural West	70	0%	0	0%
Île de Hull	1,530	2%	80	0%
Hull Périphérie	460	1%	200	1%
Plateau	10	0%	80	0%
Aylmer	60	0%	90	0%
Rural Northwest	50	0%	40	0%
Pointe Gatineau	200	0%	70	0%
Gatineau Est	40	0%	60	0%
Rural Northeast	10	0%	20	0%
Buckingham / Masson-Angers	0	0%	30	0%
Ontario Sub-Total:	62,580	96%	37,690	98%
Québec Sub-Total:	2,360	4%	670	2%
Total:	64,940	100%	38,360	100%

Trips by Trip Purpose

24 Hours	From District		To District		Within District	
Work or related	38,220	40%	7,250	8%	9,470	6%
School	9,890	10%	2,120	2%	15,080	10%
Shopping	7,210	8%	7,770	8%	23,480	16%
Leisure	8,640	9%	6,050	6%	15,650	10%
Medical	2,450	3%	1,950	2%	2,610	2%
Pick-up / drive passenger	6,060	6%	5,730	6%	12,910	9%
Return Home	18,630	20%	60,820	64%	65,050	43%
Other	3,880	4%	2,890	3%	6,970	5%
Total:	94,980	100%	94,580	100%	151,220	100%

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Work or related	25,310	72%	3,910	46%	4,740	16%
School	5,870	17%	1,940	23%	13,930	47%
Shopping	240	1%	240	3%	840	3%
Leisure	470	1%	400	5%	1,190	4%
Medical	560	2%	310	4%	230	1%
Pick-up / drive passenger	1,780	5%	550	7%	4,540	15%
Return Home	210	1%	710	8%	2,160	7%
Other	630	2%	400	5%	2,280	8%
Total:	35,070	100%	8,460	100%	29,910	100%

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Work or related	970	8%	370	1%	660	2%
School	420	3%	10	0%	30	0%
Shopping	1,090	9%	1,910	5%	4,480	13%
Leisure	2,110	17%	1,300	4%	3,470	10%
Medical	250	2%	520	1%	470	1%
Pick-up / drive passenger	1,220	10%	2,850	8%	3,080	9%
Return Home	5,530	46%	26,920	77%	20,320	60%
Other	470	4%	870	3%	1,190	4%
Total:	12,060	100%	34,750	100%	33,700	100%

Peak Period (%)	Total:	% of 24 Hours	Within District (%)
24 Hours	340,780		44%
AM Peak Period	73,440	22%	41%
PM Peak Period	80,510	24%	42%

Trips by Primary Travel Mode

24 Hours	From District		To District		Within District	
Auto Driver	57,110	60%	57,360	61%	82,890	55%
Auto Passenger	14,260	15%	13,790	15%	30,320	20%
Transit	21,040	22%	20,690	22%	6,650	4%
Bicycle	400	0%	400	0%	1,600	1%
Walk	70	0%	30	0%	18,160	12%
Other	2,110	2%	2,320	2%	11,590	8%
Total:	94,990	100%	94,590	100%	151,210	100%

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Auto Driver	19,140	55%	5,160	61%	11,450	38%
Auto Passenger	2,970	8%	1,080	13%	5,840	20%
Transit	12,140	35%	870	10%	2,170	7%
Bicycle	230	1%	0	0%	490	2%
Walk	30	0%	10	0%	4,780	16%
Other	550	2%	1,340	16%	5,170	17%
Total:	35,060	100%	8,460	100%	29,900	100%

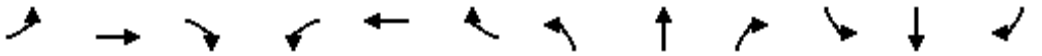
PM Peak (15:30 - 17:59)	From District		To District		Within District	
Auto Driver	7,680	64%	19,440	56%	18,250	54%
Auto Passenger	2,580	21%	3,680	11%	7,810	23%
Transit	1,420	12%	11,050	32%	1,130	3%
Bicycle	0	0%	230	1%	380	1%
Walk	0	0%	20	0%	3,660	11%
Other	380	3%	320	1%	2,460	7%
Total:	12,060	100%	34,740	100%	33,690	100%

Avg Vehicle Occupancy	From District	To District	Within District
24 Hours	1.25	1.24	1.37
AM Peak Period	1.16	1.21	1.51
PM Peak Period	1.34	1.19	1.43

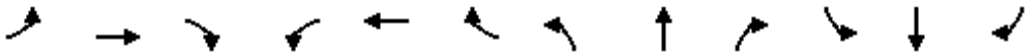
Transit Modal Split	From District	To District	Within District
24 Hours	23%	23%	6%
AM Peak Period	35%	12%	11%
PM Peak Period	12%	32%	4%

APPENDIX D – ANALYSIS OUTPUT REPORTS

McINTOSH PERRY



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	304	63	16	516	98	161	37	38	43	25	108
Future Volume (vph)	86	304	63	16	516	98	161	37	38	43	25	108
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99		1.00		0.98
Frt			0.850			0.850		0.924				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3320	1485	1710	3353	1530	3317	1588	0	1629	1667	1500
Flt Permitted	0.350			0.548			0.950			0.950		
Satd. Flow (perm)	605	3320	1452	986	3353	1492	3317	1588	0	1627	1667	1476
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			154		42				151
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			371.0	
Travel Time (s)		37.8			31.0			40.4			26.7	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)			3			2			2			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	3%	0%	2%	0%	0%	8%	0%	5%	8%	2%
Adj. Flow (vph)	96	338	70	18	573	109	179	41	42	48	28	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	338	70	18	573	109	179	83	0	48	28	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



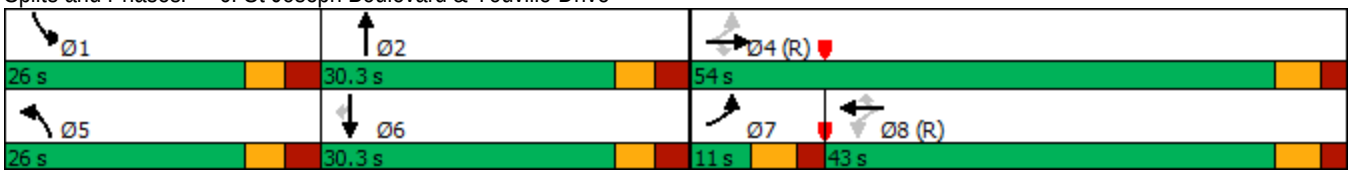
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (%)	10.0%	49.0%	49.0%	39.0%	39.0%	39.0%	23.6%	27.5%		23.6%	27.5%	27.5%
Maximum Green (s)	5.0	48.0	48.0	37.0	37.0	37.0	19.7	24.0		19.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	68.1	68.1	68.1	53.8	53.8	53.8	11.3	17.3		8.7	12.3	12.3
Actuated g/C Ratio	0.62	0.62	0.62	0.49	0.49	0.49	0.10	0.16		0.08	0.11	0.11
v/c Ratio	0.21	0.16	0.08	0.04	0.35	0.14	0.53	0.29		0.38	0.15	0.40
Control Delay	11.3	10.2	1.6	19.4	19.9	1.7	52.3	25.3		55.7	44.1	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.3	10.2	1.6	19.4	19.9	1.7	52.3	25.3		55.7	44.1	7.2
LOS	B	B	A	B	B	A	D	C		E	D	A
Approach Delay		9.2			17.0			43.8			24.3	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	7.7	14.9	0.0	2.0	38.6	0.0	20.1	8.6		10.5	6.0	0.0
Queue Length 95th (m)	20.3	30.3	4.3	8.1	70.8	4.8	30.8	21.1		22.3	13.4	9.5
Internal Link Dist (m)		606.3			493.0			425.3			347.0	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	451	2049	933	480	1635	806	592	379		290	362	439
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	0.16	0.08	0.04	0.35	0.14	0.30	0.22		0.17	0.08	0.27

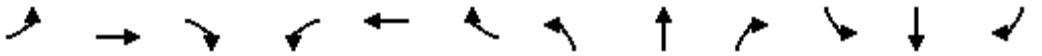
Intersection Summary

Area Type: Other
Cycle Length: 110.3
Actuated Cycle Length: 110.3
Offset: 110 (100%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.53

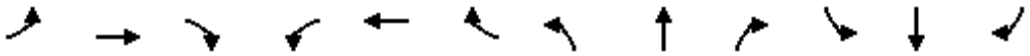
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 49.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	10	45	14	57	115	149	956	15	36	398	339
Future Volume (vph)	90	10	45	14	57	115	149	956	15	36	398	339
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99				0.98		1.00	1.00		1.00	0.98	
Frt		0.877			0.917			0.998			0.931	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1569	1491	0	0	1582	0	1613	3342	0	1710	3023	0
Flt Permitted	0.515				0.973		0.250			0.215		
Satd. Flow (perm)	843	1491	0	0	1545	0	423	3342	0	386	3023	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			111			2			281	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	15					15	8		6	6		8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	10%	5%	14%	0%	2%	6%	2%	7%	0%	5%	2%
Adj. Flow (vph)	100	11	50	16	63	128	166	1062	17	40	442	377
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	61	0	0	207	0	166	1079	0	40	819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	34.0	34.0		34.0	34.0		15.0	31.0		15.0	31.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		18.8%	38.8%		18.8%	38.8%	
Maximum Green (s)	27.6	27.6		27.6	27.6		9.1	25.2		9.1	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	15.3	15.3			15.3		50.3	44.9		44.5	38.3	
Actuated g/C Ratio	0.19	0.19			0.19		0.63	0.56		0.56	0.48	
v/c Ratio	0.62	0.19			0.54		0.43	0.58		0.13	0.51	
Control Delay	44.8	10.2			17.9		10.5	16.8		8.4	11.9	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	44.8	10.2			17.9		10.5	16.8		8.4	11.9	
LOS	D	B			B		B	B		A	B	
Approach Delay		31.7			17.9			16.0			11.7	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	15.3	1.5			13.9		8.0	58.4		1.8	26.3	
Queue Length 95th (m)	25.5	9.1			27.1		24.8	#130.1		7.8	60.9	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	290	547			605		405	1875		378	1594	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.34	0.11			0.34		0.41	0.58		0.11	0.51	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 15.7	Intersection LOS: B

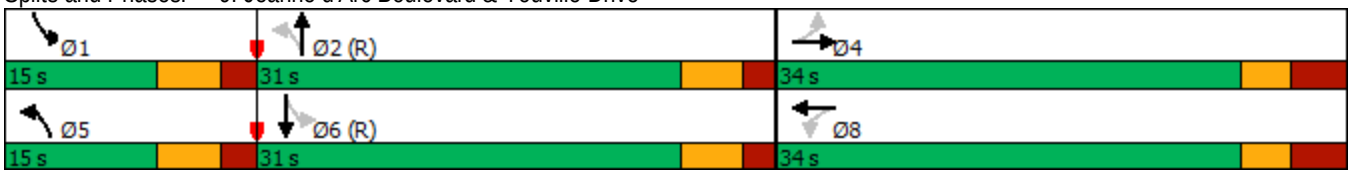
Intersection Capacity Utilization 77.7% ICU Level of Service D

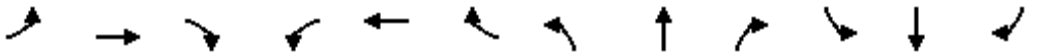
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

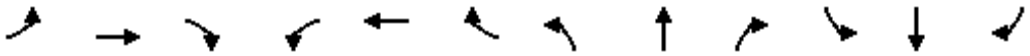
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	1092	198	38	410	91	101	35	41	120	48	161
Future Volume (vph)	188	1092	198	38	410	91	101	35	41	120	48	161
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99				0.99
Frt			0.850			0.850		0.919				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	3386	1530	1613	3386	1515	3285	1577	0	1710	1731	1515
Flt Permitted	0.405			0.219			0.950			0.950		
Satd. Flow (perm)	721	3386	1493	372	3386	1478	3285	1577	0	1710	1731	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220			162		46				179
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			371.0	
Travel Time (s)		37.8			31.0			40.4			26.7	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			2			2			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	6%	1%	1%	1%	3%	5%	0%	4%	1%
Adj. Flow (vph)	209	1213	220	42	456	101	112	39	46	133	53	179
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1213	220	42	456	101	112	85	0	133	53	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



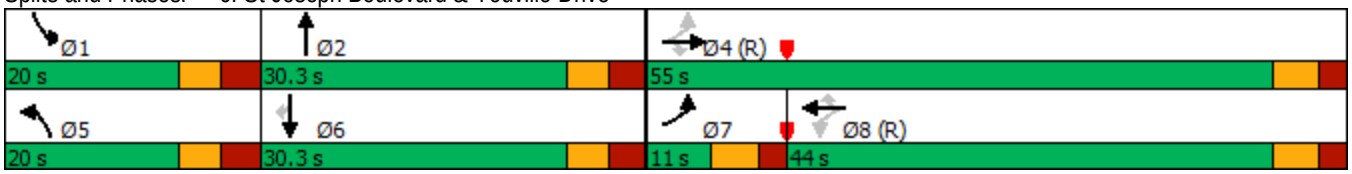
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	15.0	30.3		15.0	30.3	30.3
Total Split (s)	11.0	55.0	55.0	44.0	44.0	44.0	20.0	30.3		20.0	30.3	30.3
Total Split (%)	10.4%	52.2%	52.2%	41.8%	41.8%	41.8%	19.0%	28.8%		19.0%	28.8%	28.8%
Maximum Green (s)	5.0	49.0	49.0	38.0	38.0	38.0	13.7	24.0		13.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	61.8	61.8	61.8	46.4	46.4	46.4	8.9	12.8		12.1	16.0	16.0
Actuated g/C Ratio	0.59	0.59	0.59	0.44	0.44	0.44	0.08	0.12		0.11	0.15	0.15
v/c Ratio	0.41	0.61	0.23	0.26	0.31	0.14	0.40	0.37		0.68	0.20	0.47
Control Delay	15.3	17.0	2.6	27.0	20.9	1.0	49.6	25.3		62.1	38.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	15.3	17.0	2.6	27.0	20.9	1.0	49.6	25.3		62.1	38.9	9.7
LOS	B	B	A	C	C	A	D	C		E	D	A
Approach Delay		14.8			18.0			39.1			33.0	
Approach LOS		B			B			D			C	
Queue Length 50th (m)	19.1	79.6	0.0	5.6	32.9	0.0	12.0	7.9		27.5	10.3	0.0
Queue Length 95th (m)	43.0	139.3	12.9	17.2	51.7	2.2	20.6	20.0		48.0	19.3	17.0
Internal Link Dist (m)		606.3			493.0			425.3			347.0	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	509	1987	967	164	1493	742	427	394		222	402	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.41	0.61	0.23	0.26	0.31	0.14	0.26	0.22		0.60	0.13	0.37

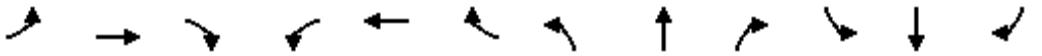
Intersection Summary

Area Type: Other
Cycle Length: 105.3
Actuated Cycle Length: 105.3
Offset: 100 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68

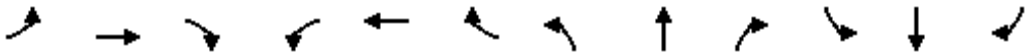
Intersection Signal Delay: 19.6	Intersection LOS: B
Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	33	178	22	50	49	138	584	35	65	719	197
Future Volume (vph)	303	33	178	22	50	49	138	584	35	65	719	197
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			0.99		0.99	1.00		1.00	0.98	
Frt		0.874			0.946			0.991			0.968	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1693	1515	0	0	1671	0	1693	3352	0	1644	3182	0
Flt Permitted	0.689				0.918		0.137			0.333		
Satd. Flow (perm)	1215	1515	0	0	1545	0	242	3352	0	574	3182	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		198			41			7			40	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	12		12	12		12	28		5	5		28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	1%	1%	0%	4%	2%	3%
Adj. Flow (vph)	337	37	198	24	56	54	153	649	39	72	799	219
Shared Lane Traffic (%)												
Lane Group Flow (vph)	337	235	0	0	134	0	153	688	0	72	1018	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

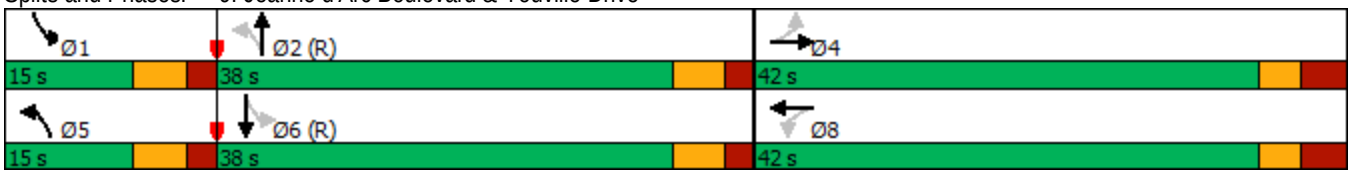


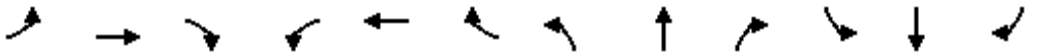
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		15.0	38.0		15.0	38.0	
Total Split (%)	44.2%	44.2%		44.2%	44.2%		15.8%	40.0%		15.8%	40.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		9.1	32.2		9.1	32.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	30.2	30.2			30.2		48.8	41.5		45.3	38.0	
Actuated g/C Ratio	0.32	0.32			0.32		0.51	0.44		0.48	0.40	
v/c Ratio	0.87	0.38			0.26		0.60	0.47		0.20	0.79	
Control Delay	53.3	6.8			16.2		24.4	22.5		13.5	31.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	53.3	6.8			16.2		24.4	22.5		13.5	31.1	
LOS	D	A			B		C	C		B	C	
Approach Delay		34.2			16.2			22.8			29.9	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	59.3	4.8			12.6		14.2	51.4		6.4	90.2	
Queue Length 95th (m)	#98.5	20.3			25.1		#34.6	76.1		14.5	#136.9	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	455	691			604		266	1469		386	1295	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.74	0.34			0.22		0.58	0.47		0.19	0.79	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 27.9	Intersection LOS: C

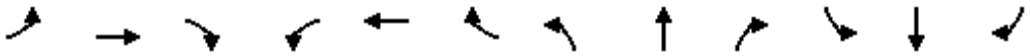
Intersection Capacity Utilization 78.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	327	68	18	556	105	173	40	41	47	27	117
Future Volume (vph)	92	327	68	18	556	105	173	40	41	47	27	117
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99		1.00		0.98
Frt			0.850			0.850		0.923				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3320	1485	1710	3353	1530	3317	1586	0	1629	1667	1500
Flt Permitted	0.325			0.535			0.950			0.950		
Satd. Flow (perm)	562	3320	1452	963	3353	1492	3317	1586	0	1627	1667	1476
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			154		44				151
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			371.0	
Travel Time (s)		37.8			31.0			40.4			26.7	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)			3			2			2			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	3%	0%	2%	0%	0%	8%	0%	5%	8%	2%
Adj. Flow (vph)	102	363	76	20	618	117	192	44	46	52	30	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	363	76	20	618	117	192	90	0	52	30	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



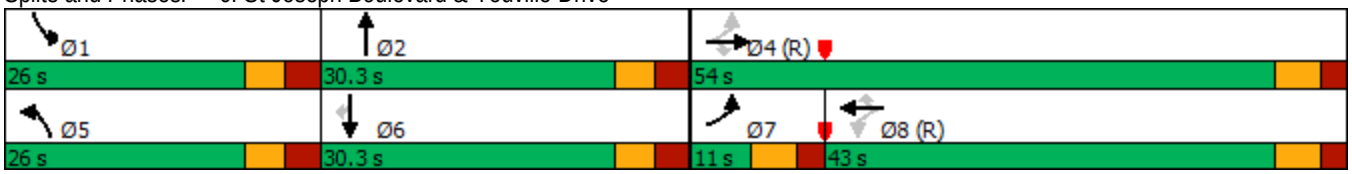
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (%)	10.0%	49.0%	49.0%	39.0%	39.0%	39.0%	23.6%	27.5%		23.6%	27.5%	27.5%
Maximum Green (s)	5.0	48.0	48.0	37.0	37.0	37.0	19.7	24.0		19.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	67.7	67.7	67.7	53.2	53.2	53.2	11.7	17.4		8.9	12.3	12.3
Actuated g/C Ratio	0.61	0.61	0.61	0.48	0.48	0.48	0.11	0.16		0.08	0.11	0.11
v/c Ratio	0.24	0.18	0.08	0.04	0.38	0.15	0.55	0.31		0.40	0.16	0.44
Control Delay	11.7	10.5	2.0	19.8	20.7	2.2	52.4	25.9		56.1	44.4	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.7	10.5	2.0	19.8	20.7	2.2	52.4	25.9		56.1	44.4	9.1
LOS	B	B	A	B	C	A	D	C		E	D	A
Approach Delay		9.5			17.8			43.9			25.6	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	8.3	16.3	0.0	2.2	42.8	0.0	21.5	9.6		11.4	6.4	0.0
Queue Length 95th (m)	21.6	32.7	5.3	8.9	77.8	6.6	32.5	22.6		23.6	14.1	11.9
Internal Link Dist (m)		606.3			493.0			425.3			347.0	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	428	2038	928	464	1617	799	592	381		290	362	439
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.24	0.18	0.08	0.04	0.38	0.15	0.32	0.24		0.18	0.08	0.30

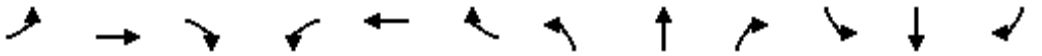
Intersection Summary

Area Type: Other
Cycle Length: 110.3
Actuated Cycle Length: 110.3
Offset: 110 (100%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55

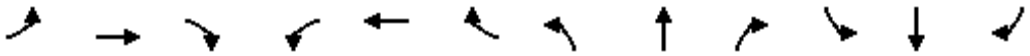
Intersection Signal Delay: 20.3	Intersection LOS: C
Intersection Capacity Utilization 50.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	11	49	16	61	124	161	1030	17	39	428	365
Future Volume (vph)	97	11	49	16	61	124	161	1030	17	39	428	365
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99				0.98		1.00	1.00			0.98	
Frt		0.877			0.917			0.998			0.931	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1569	1491	0	0	1581	0	1613	3342	0	1710	3023	0
Flt Permitted	0.490				0.971		0.216			0.184		
Satd. Flow (perm)	802	1491	0	0	1542	0	366	3342	0	331	3023	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54			110			2			281	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	15					15	8		6	6		8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	10%	5%	14%	0%	2%	6%	2%	7%	0%	5%	2%
Adj. Flow (vph)	108	12	54	18	68	138	179	1144	19	43	476	406
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	66	0	0	224	0	179	1163	0	43	882	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

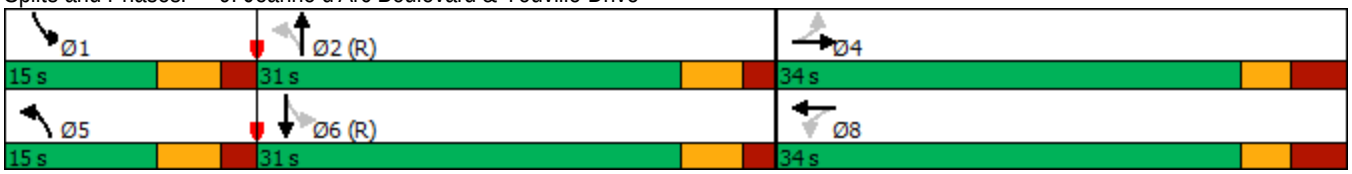


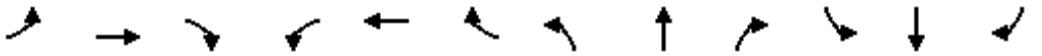
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	34.0	34.0		34.0	34.0		15.0	31.0		15.0	31.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		18.8%	38.8%		18.8%	38.8%	
Maximum Green (s)	27.6	27.6		27.6	27.6		9.1	25.2		9.1	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	15.9	15.9			15.9		50.0	44.2		43.5	37.2	
Actuated g/C Ratio	0.20	0.20			0.20		0.62	0.55		0.54	0.46	
v/c Ratio	0.68	0.19			0.57		0.49	0.63		0.15	0.57	
Control Delay	49.1	9.9			19.3		12.1	18.4		8.9	13.4	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	49.1	9.9			19.3		12.1	18.4		8.9	13.4	
LOS	D	A			B		B	B		A	B	
Approach Delay		34.3			19.3			17.5			13.2	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	16.6	1.6			16.4		9.2	67.4		2.0	32.4	
Queue Length 95th (m)	28.0	9.5			30.6		26.6	#147.0		8.2	69.0	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	276	549			604		377	1849		348	1556	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.39	0.12			0.37		0.47	0.63		0.12	0.57	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.3	Intersection LOS: B

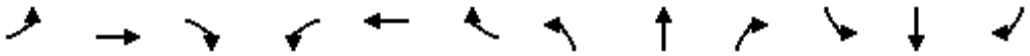
Intersection Capacity Utilization 80.5% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	1176	213	41	442	98	109	38	44	129	52	173
Future Volume (vph)	202	1176	213	41	442	98	109	38	44	129	52	173
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99				0.99
Frt			0.850			0.850		0.919				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	3386	1530	1613	3386	1515	3285	1577	0	1710	1731	1515
Flt Permitted	0.382			0.186			0.950			0.950		
Satd. Flow (perm)	680	3386	1493	316	3386	1478	3285	1577	0	1710	1731	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			237			162		49				192
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			371.0	
Travel Time (s)		37.8			31.0			40.4			26.7	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			2			2			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	6%	1%	1%	1%	3%	5%	0%	4%	1%
Adj. Flow (vph)	224	1307	237	46	491	109	121	42	49	143	58	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	1307	237	46	491	109	121	91	0	143	58	192
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



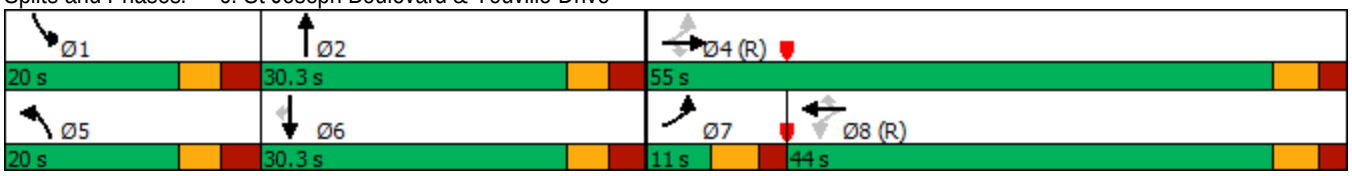
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	15.0	30.3		15.0	30.3	30.3
Total Split (s)	11.0	55.0	55.0	44.0	44.0	44.0	20.0	30.3		20.0	30.3	30.3
Total Split (%)	10.4%	52.2%	52.2%	41.8%	41.8%	41.8%	19.0%	28.8%		19.0%	28.8%	28.8%
Maximum Green (s)	5.0	49.0	49.0	38.0	38.0	38.0	13.7	24.0		13.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	61.5	61.5	61.5	45.7	45.7	45.7	9.2	12.8		12.4	16.0	16.0
Actuated g/C Ratio	0.58	0.58	0.58	0.43	0.43	0.43	0.09	0.12		0.12	0.15	0.15
v/c Ratio	0.46	0.66	0.24	0.34	0.33	0.15	0.42	0.39		0.71	0.22	0.49
Control Delay	16.5	18.3	2.6	31.6	21.6	1.4	49.5	25.6		64.4	39.5	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	16.5	18.3	2.6	31.6	21.6	1.4	49.5	25.6		64.4	39.5	9.8
LOS	B	B	A	C	C	A	D	C		E	D	A
Approach Delay		15.9			18.9			39.3			34.0	
Approach LOS		B			B			D			C	
Queue Length 50th (m)	20.8	90.4	0.0	6.5	36.4	0.0	12.9	8.6		29.7	11.3	0.0
Queue Length 95th (m)	46.0	156.5	13.3	20.0	55.9	3.6	21.8	21.0		#54.4	20.7	17.7
Internal Link Dist (m)		606.3			493.0			425.3			347.0	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	490	1976	970	137	1470	733	427	397		222	400	493
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.66	0.24	0.34	0.33	0.15	0.28	0.23		0.64	0.14	0.39

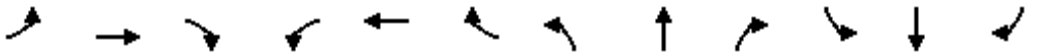
Intersection Summary	
Area Type:	Other
Cycle Length: 105.3	
Actuated Cycle Length: 105.3	
Offset: 100 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	

Intersection Signal Delay: 20.6	Intersection LOS: C
Intersection Capacity Utilization 72.1%	ICU Level of Service C
Analysis Period (min) 15	

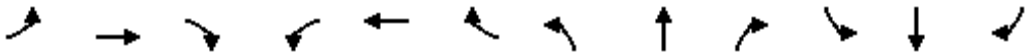
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: St Joseph Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	36	192	23	54	53	149	629	38	70	775	212
Future Volume (vph)	326	36	192	23	54	53	149	629	38	70	775	212
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			0.99			1.00		1.00	0.98	
Frt		0.874			0.945			0.991			0.968	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1693	1515	0	0	1669	0	1693	3352	0	1644	3180	0
Flt Permitted	0.674				0.914		0.100			0.296		
Satd. Flow (perm)	1189	1515	0	0	1537	0	178	3352	0	511	3180	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		213			42			7			38	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	12		12	12		12	28		5	5		28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	1%	1%	0%	4%	2%	3%
Adj. Flow (vph)	362	40	213	26	60	59	166	699	42	78	861	236
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	253	0	0	145	0	166	741	0	78	1097	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

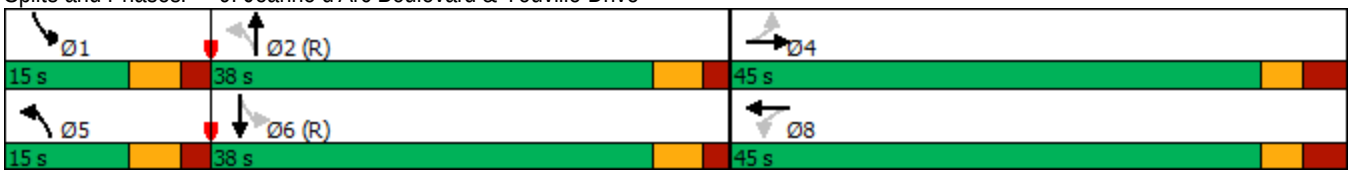


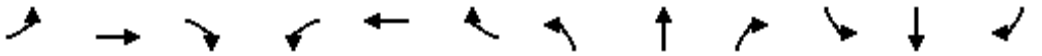
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	45.0	45.0		45.0	45.0		15.0	38.0		15.0	38.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		15.3%	38.8%		15.3%	38.8%	
Maximum Green (s)	38.6	38.6		38.6	38.6		9.1	32.2		9.1	32.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	33.4	33.4			33.4		48.8	41.1		44.8	37.2	
Actuated g/C Ratio	0.34	0.34			0.34		0.50	0.42		0.46	0.38	
v/c Ratio	0.89	0.39			0.26		0.72	0.53		0.24	0.89	
Control Delay	55.2	6.4			16.2		38.3	25.1		15.2	39.9	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	55.2	6.4			16.2		38.3	25.1		15.2	39.9	
LOS	E	A			B		D	C		B	D	
Approach Delay		35.1			16.2			27.5			38.3	
Approach LOS		D			B			C			D	
Queue Length 50th (m)	65.5	5.2			13.9		17.1	60.8		7.6	110.6	
Queue Length 95th (m)	#109.9	21.1			27.0		#53.5	86.7		16.4	#162.7	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	468	725			630		236	1410		346	1230	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.77	0.35			0.23		0.70	0.53		0.23	0.89	

Intersection Summary	
Area Type:	Other
Cycle Length: 98	
Actuated Cycle Length: 98	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 33.0	Intersection LOS: C

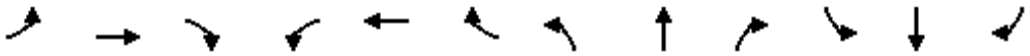
Intersection Capacity Utilization 83.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	295	61	16	501	95	156	36	37	42	24	105
Future Volume (vph)	81	295	61	16	501	95	156	36	37	42	24	105
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99		1.00		0.98
Frt			0.850			0.850		0.924				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3320	1485	1710	3353	1530	3317	1588	0	1629	1667	1500
Flt Permitted	0.363			0.554			0.950			0.950		
Satd. Flow (perm)	628	3320	1452	997	3353	1492	3317	1588	0	1627	1667	1476
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			154		41				151
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			371.0	
Travel Time (s)		37.8			31.0			40.4			26.7	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)			3			2			2			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	3%	0%	2%	0%	0%	8%	0%	5%	8%	2%
Adj. Flow (vph)	90	328	68	18	557	106	173	40	41	47	27	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	328	68	18	557	106	173	81	0	47	27	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



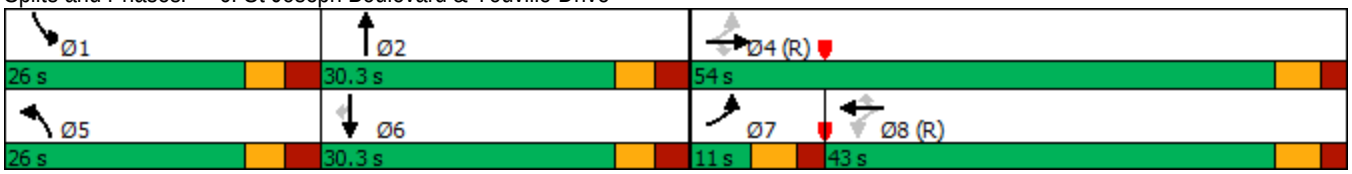
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (%)	10.0%	49.0%	49.0%	39.0%	39.0%	39.0%	23.6%	27.5%		23.6%	27.5%	27.5%
Maximum Green (s)	5.0	48.0	48.0	37.0	37.0	37.0	19.7	24.0		19.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	68.3	68.3	68.3	56.6	56.6	56.6	11.1	17.1		8.6	12.3	12.3
Actuated g/C Ratio	0.62	0.62	0.62	0.51	0.51	0.51	0.10	0.16		0.08	0.11	0.11
v/c Ratio	0.19	0.16	0.07	0.04	0.32	0.13	0.52	0.29		0.37	0.15	0.39
Control Delay	11.1	10.1	1.5	19.1	18.7	1.5	52.4	25.4		55.6	43.9	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.1	10.1	1.5	19.1	18.7	1.5	52.4	25.4		55.6	43.9	6.6
LOS	B	B	A	B	B	A	D	C		E	D	A
Approach Delay		9.1			16.0			43.8			24.0	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	7.1	14.3	0.0	1.9	37.0	0.0	19.4	8.4		10.3	5.8	0.0
Queue Length 95th (m)	19.3	29.4	4.0	8.0	68.1	4.3	30.0	20.7		21.9	13.0	8.7
Internal Link Dist (m)		606.3			493.0			425.3			347.0	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	463	2055	935	511	1719	840	592	378		290	362	439
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.19	0.16	0.07	0.04	0.32	0.13	0.29	0.21		0.16	0.07	0.27

Intersection Summary

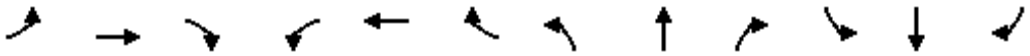
Area Type: Other
Cycle Length: 110.3
Actuated Cycle Length: 110.3
Offset: 110 (100%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52

Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph Boulevard & Youville Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	10	44	14	55	112	145	928	15	35	386	329
Future Volume (vph)	87	10	44	14	55	112	145	928	15	35	386	329
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99				0.98		1.00	1.00		1.00	0.98	
Frt		0.877			0.917			0.998			0.931	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1569	1490	0	0	1581	0	1613	3342	0	1710	3023	0
Flt Permitted	0.525				0.972		0.261			0.228		
Satd. Flow (perm)	859	1490	0	0	1543	0	442	3342	0	410	3023	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			111			2			283	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	15					15	8		6	6		8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	10%	5%	14%	0%	2%	6%	2%	7%	0%	5%	2%
Adj. Flow (vph)	97	11	49	16	61	124	161	1031	17	39	429	366
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	60	0	0	201	0	161	1048	0	39	795	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

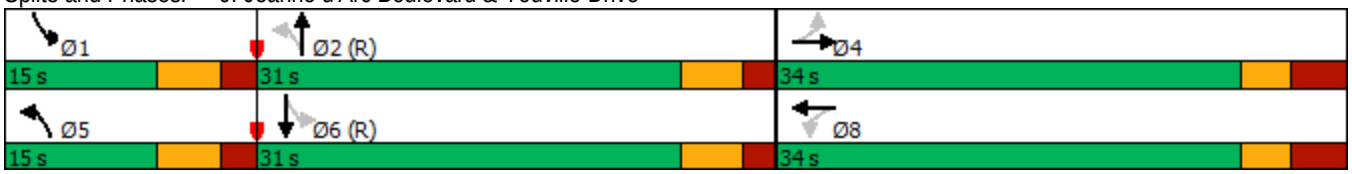


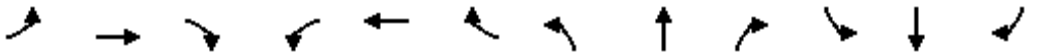
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	34.0	34.0		34.0	34.0		15.0	31.0		15.0	31.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		18.8%	38.8%		18.8%	38.8%	
Maximum Green (s)	27.6	27.6		27.6	27.6		9.1	25.2		9.1	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	15.1	15.1			15.1		50.5	45.1		44.8	38.6	
Actuated g/C Ratio	0.19	0.19			0.19		0.63	0.56		0.56	0.48	
v/c Ratio	0.60	0.19			0.53		0.40	0.56		0.12	0.50	
Control Delay	43.3	10.3			17.4		10.1	16.3		8.2	11.3	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	43.3	10.3			17.4		10.1	16.3		8.2	11.3	
LOS	D	B			B		B	B		A	B	
Approach Delay		30.7			17.4			15.5			11.2	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	14.8	1.5			13.0		7.6	55.2		1.7	24.3	
Queue Length 95th (m)	24.7	9.1			25.8		24.1	#124.3		7.6	57.6	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	296	546			605		415	1884		392	1605	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.33	0.11			0.33		0.39	0.56		0.10	0.50	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 15.2	Intersection LOS: B

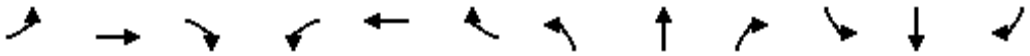
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	1060	192	37	398	88	98	34	40	116	47	156
Future Volume (vph)	182	1060	192	37	398	88	98	34	40	116	47	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99				0.99
Frt			0.850			0.850		0.920				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	3386	1530	1613	3386	1515	3285	1579	0	1710	1731	1515
Flt Permitted	0.417			0.239			0.950			0.950		
Satd. Flow (perm)	742	3386	1494	406	3386	1478	3285	1579	0	1710	1731	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213			170		44				173
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			371.0	
Travel Time (s)		37.8			31.0			40.4			26.7	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			2			2			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	6%	1%	1%	1%	3%	5%	0%	4%	1%
Adj. Flow (vph)	202	1178	213	41	442	98	109	38	44	129	52	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1178	213	41	442	98	109	82	0	129	52	173
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	15.0	30.3		15.0	30.3	30.3
Total Split (s)	11.0	55.0	55.0	44.0	44.0	44.0	15.0	30.3		15.0	30.3	30.3
Total Split (%)	11.0%	54.8%	54.8%	43.9%	43.9%	43.9%	15.0%	30.2%		15.0%	30.2%	30.2%
Maximum Green (s)	5.0	49.0	49.0	38.0	38.0	38.0	8.7	24.0		8.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	60.2	60.2	60.2	45.4	45.4	45.4	8.0	12.8		8.7	13.5	13.5
Actuated g/C Ratio	0.60	0.60	0.60	0.45	0.45	0.45	0.08	0.13		0.09	0.13	0.13
v/c Ratio	0.38	0.58	0.22	0.22	0.29	0.13	0.42	0.34		0.87	0.22	0.49
Control Delay	13.1	14.7	2.3	22.9	18.7	0.5	48.7	23.8		93.1	39.6	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	13.1	14.7	2.3	22.9	18.7	0.5	48.7	23.8		93.1	39.6	10.6
LOS	B	B	A	C	B	A	D	C		F	D	B
Approach Delay		12.8			16.0			38.0			44.9	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	16.0	66.2	0.0	4.8	28.4	0.0	11.0	7.3		26.5	10.1	0.0
Queue Length 95th (m)	38.0	121.1	11.7	15.3	46.4	0.8	19.8	18.5		#61.2	18.5	16.8
Internal Link Dist (m)		606.3			493.0			425.3			347.0	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	529	2032	981	183	1531	761	284	411		148	414	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.38	0.58	0.22	0.22	0.29	0.13	0.38	0.20		0.87	0.13	0.35

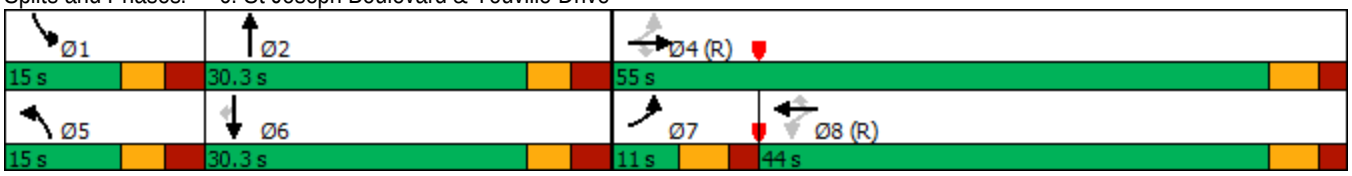
Intersection Summary

Area Type: Other
Cycle Length: 100.3
Actuated Cycle Length: 100.3
Offset: 100 (100%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87

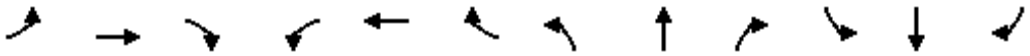
Intersection Signal Delay: 19.4	Intersection LOS: B
Intersection Capacity Utilization 68.0%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: St Joseph Boulevard & Youville Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	294	32	173	21	49	48	134	567	34	63	698	191
Future Volume (vph)	294	32	173	21	49	48	134	567	34	63	698	191
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			0.99		0.99	1.00		1.00	0.98	
Frt		0.874			0.945			0.991			0.968	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1693	1515	0	0	1669	0	1693	3352	0	1644	3182	0
Flt Permitted	0.693				0.920		0.153			0.349		
Satd. Flow (perm)	1222	1515	0	0	1547	0	270	3352	0	602	3182	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		192			42			7			39	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	12		12	12		12	28		5	5		28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	1%	1%	0%	4%	2%	3%
Adj. Flow (vph)	327	36	192	23	54	53	149	630	38	70	776	212
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	228	0	0	130	0	149	668	0	70	988	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		15.0	38.0		15.0	38.0	
Total Split (%)	44.2%	44.2%		44.2%	44.2%		15.8%	40.0%		15.8%	40.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		9.1	32.2		9.1	32.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	29.3	29.3			29.3		49.9	42.5		46.1	38.8	
Actuated g/C Ratio	0.31	0.31			0.31		0.53	0.45		0.49	0.41	
v/c Ratio	0.87	0.38			0.26		0.55	0.44		0.19	0.75	
Control Delay	53.4	6.9			16.2		20.4	21.6		13.0	29.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	53.4	6.9			16.2		20.4	21.6		13.0	29.1	
LOS	D	A			B		C	C		B	C	
Approach Delay		34.3			16.2			21.4			28.1	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	58.0	4.8			12.1		13.4	48.1		6.0	83.8	
Queue Length 95th (m)	#87.6	19.9			24.2		28.4	73.4		14.3	#130.1	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	457	687			605		284	1503		402	1322	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.72	0.33			0.21		0.52	0.44		0.17	0.75	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 26.7	Intersection LOS: C

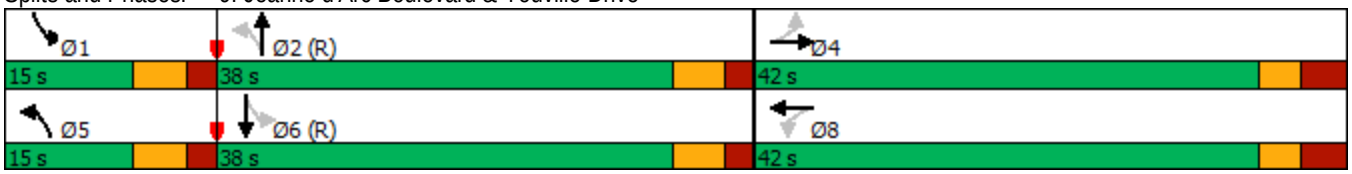
Intersection Capacity Utilization 76.8% ICU Level of Service D

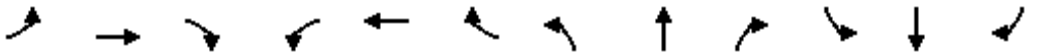
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

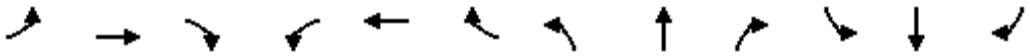
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	304	63	16	516	105	161	40	38	45	26	112
Future Volume (vph)	92	304	63	16	516	105	161	40	38	45	26	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99		1.00		0.98
Frt			0.850			0.850		0.927				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3320	1485	1710	3353	1530	3317	1591	0	1629	1667	1500
Flt Permitted	0.349			0.548			0.950			0.950		
Satd. Flow (perm)	604	3320	1452	986	3353	1492	3317	1591	0	1627	1667	1476
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			154		40				151
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			198.5	
Travel Time (s)		37.8			31.0			40.4			14.3	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)			3			2			2			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	3%	0%	2%	0%	0%	8%	0%	5%	8%	2%
Adj. Flow (vph)	102	338	70	18	573	117	179	44	42	50	29	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	338	70	18	573	117	179	86	0	50	29	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



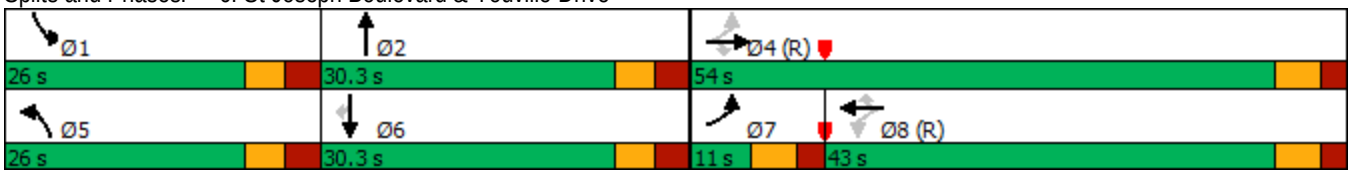
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (%)	10.0%	49.0%	49.0%	39.0%	39.0%	39.0%	23.6%	27.5%		23.6%	27.5%	27.5%
Maximum Green (s)	5.0	48.0	48.0	37.0	37.0	37.0	19.7	24.0		19.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	68.1	68.1	68.1	53.6	53.6	53.6	11.3	17.2		8.8	12.3	12.3
Actuated g/C Ratio	0.62	0.62	0.62	0.49	0.49	0.49	0.10	0.16		0.08	0.11	0.11
v/c Ratio	0.23	0.17	0.08	0.04	0.35	0.15	0.53	0.31		0.38	0.16	0.41
Control Delay	11.4	10.3	1.6	19.6	20.0	2.2	52.3	26.9		55.9	44.2	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.4	10.3	1.6	19.6	20.0	2.2	52.3	26.9		55.9	44.2	7.9
LOS	B	B	A	B	C	A	D	C		E	D	A
Approach Delay		9.3			17.1			44.1			24.9	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	8.2	14.9	0.0	2.0	38.8	0.0	20.1	9.7		11.0	6.2	0.0
Queue Length 95th (m)	21.5	30.4	4.4	8.2	71.4	6.6	30.8	22.4		22.7	13.8	10.5
Internal Link Dist (m)		606.3			493.0			425.3			174.5	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	452	2048	932	478	1628	803	592	378		290	362	439
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.23	0.17	0.08	0.04	0.35	0.15	0.30	0.23		0.17	0.08	0.28

Intersection Summary

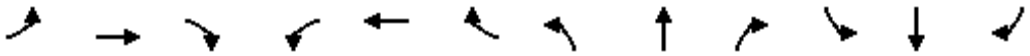
Area Type: Other
Cycle Length: 110.3
Actuated Cycle Length: 110.3
Offset: 110 (100%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.53

Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 49.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph Boulevard & Youville Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	11	47	14	59	115	161	956	15	36	398	349
Future Volume (vph)	94	11	47	14	59	115	161	956	15	36	398	349
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99				0.98		1.00	1.00		1.00	0.98	
Frt		0.878			0.918			0.998			0.930	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1569	1492	0	0	1584	0	1613	3342	0	1710	3020	0
Flt Permitted	0.513				0.973		0.240			0.215		
Satd. Flow (perm)	839	1492	0	0	1548	0	406	3342	0	386	3020	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			107			2			290	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	15					15	8		6	6		8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	10%	5%	14%	0%	2%	6%	2%	7%	0%	5%	2%
Adj. Flow (vph)	104	12	52	16	66	128	179	1062	17	40	442	388
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	64	0	0	210	0	179	1079	0	40	830	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	34.0	34.0		34.0	34.0		15.0	31.0		15.0	31.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		18.8%	38.8%		18.8%	38.8%	
Maximum Green (s)	27.6	27.6		27.6	27.6		9.1	25.2		9.1	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	15.6	15.6			15.6		50.3	44.6		43.9	37.7	
Actuated g/C Ratio	0.20	0.20			0.20		0.63	0.56		0.55	0.47	
v/c Ratio	0.64	0.19			0.54		0.46	0.58		0.13	0.53	
Control Delay	45.7	10.1			18.5		11.2	17.0		8.5	12.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	45.7	10.1			18.5		11.2	17.0		8.5	12.1	
LOS	D	B			B		B	B		A	B	
Approach Delay		32.2			18.5			16.2			12.0	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	15.9	1.6			14.8		8.9	59.1		1.8	27.4	
Queue Length 95th (m)	26.5	9.4			28.3		26.6	#130.1		7.8	61.3	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	289	548			604		398	1865		375	1575	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.36	0.12			0.35		0.45	0.58		0.11	0.53	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 16.0	Intersection LOS: B

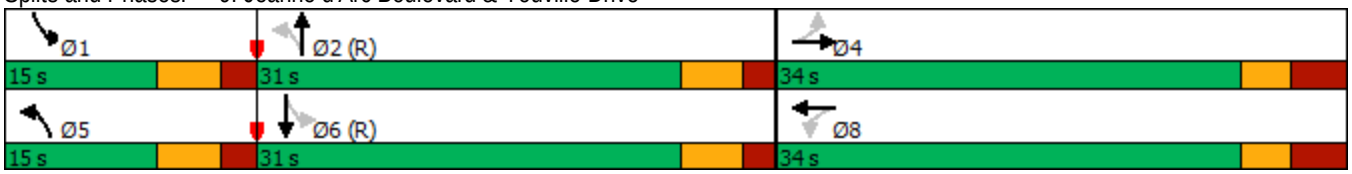
Intersection Capacity Utilization 78.4% ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	6	224	187	13
Future Vol, veh/h	4	3	6	224	187	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	7	249	208	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	478	215	222	0	-	0
Stage 1	215	-	-	-	-	-
Stage 2	263	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	546	825	1347	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	543	825	1347	-	-	-
Mov Cap-2 Maneuver	543	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1347	-	636	-	-
HCM Lane V/C Ratio	0.005	-	0.012	-	-
HCM Control Delay (s)	7.7	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

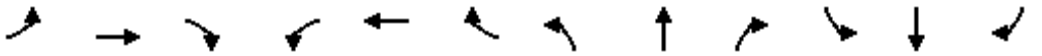
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	4	10	227	179	11
Future Vol, veh/h	3	4	10	227	179	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	11	252	199	12

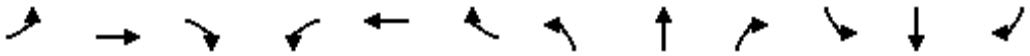
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	479	205	211	0	-	0
Stage 1	205	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	545	836	1360	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	540	836	1360	-	-	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1360	-	677	-	-
HCM Lane V/C Ratio	0.008	-	0.011	-	-
HCM Control Delay (s)	7.7	0	10.4	-	-
HCM Lane LOS	A	A	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)	195	1092	198	38	410	94	101	36	41	128	50	168
Future Volume (vph)	195	1092	198	38	410	94	101	36	41	128	50	168
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99				0.99
Frt			0.850			0.850		0.920				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	3386	1530	1613	3386	1515	3285	1579	0	1710	1731	1515
Flt Permitted	0.403			0.219			0.950			0.950		
Satd. Flow (perm)	717	3386	1493	372	3386	1478	3285	1579	0	1710	1731	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			220			162		46				187
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			198.5	
Travel Time (s)		37.8			31.0			40.4			14.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			2			2			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	6%	1%	1%	1%	3%	5%	0%	4%	1%
Adj. Flow (vph)	217	1213	220	42	456	104	112	40	46	142	56	187
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	1213	220	42	456	104	112	86	0	142	56	187
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



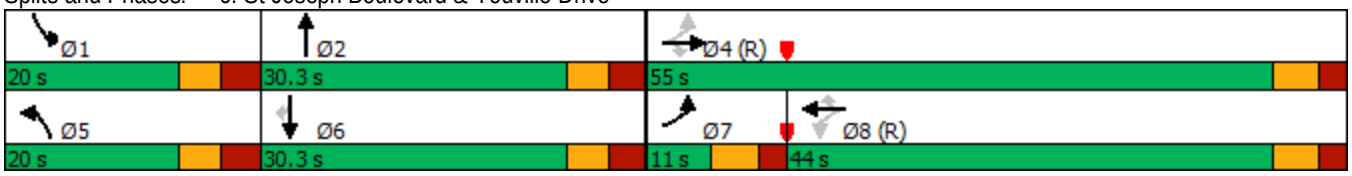
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	15.0	30.3		15.0	30.3	30.3
Total Split (s)	11.0	55.0	55.0	44.0	44.0	44.0	20.0	30.3		20.0	30.3	30.3
Total Split (%)	10.4%	52.2%	52.2%	41.8%	41.8%	41.8%	19.0%	28.8%		19.0%	28.8%	28.8%
Maximum Green (s)	5.0	49.0	49.0	38.0	38.0	38.0	13.7	24.0		13.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	61.5	61.5	61.5	46.0	46.0	46.0	8.9	12.8		12.4	16.2	16.2
Actuated g/C Ratio	0.58	0.58	0.58	0.44	0.44	0.44	0.08	0.12		0.12	0.15	0.15
v/c Ratio	0.43	0.61	0.23	0.26	0.31	0.14	0.40	0.37		0.71	0.21	0.48
Control Delay	15.8	17.1	2.6	27.3	21.2	1.2	49.6	25.6		64.0	39.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	15.8	17.1	2.6	27.3	21.2	1.2	49.6	25.6		64.0	39.0	9.6
LOS	B	B	A	C	C	A	D	C		E	D	A
Approach Delay		15.0			18.1			39.2			34.0	
Approach LOS		B			B			D			C	
Queue Length 50th (m)	20.1	80.3	0.0	5.7	33.3	0.0	12.0	8.1		29.5	10.9	0.0
Queue Length 95th (m)	44.6	139.3	12.9	17.2	51.7	2.8	20.6	20.2		#54.0	20.0	17.4
Internal Link Dist (m)		606.3			493.0			425.3			174.5	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	507	1978	963	162	1477	736	427	395		222	402	490
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.43	0.61	0.23	0.26	0.31	0.14	0.26	0.22		0.64	0.14	0.38

Intersection Summary	
Area Type:	Other
Cycle Length: 105.3	
Actuated Cycle Length: 105.3	
Offset: 100 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	

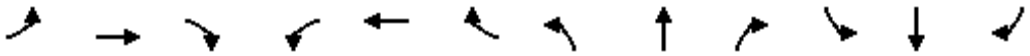
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 69.6%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: St Joseph Boulevard & Youville Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	312	35	187	22	51	49	142	584	35	65	719	202
Future Volume (vph)	312	35	187	22	51	49	142	584	35	65	719	202
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			0.99			1.00		1.00	0.98	
Frt		0.874			0.946			0.991			0.967	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1693	1515	0	0	1671	0	1693	3352	0	1644	3177	0
Flt Permitted	0.688				0.916		0.130			0.333		
Satd. Flow (perm)	1214	1515	0	0	1542	0	232	3352	0	574	3177	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		208			40			7			41	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	12		12	12		12	28		5	5		28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	1%	1%	0%	4%	2%	3%
Adj. Flow (vph)	347	39	208	24	57	54	158	649	39	72	799	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	247	0	0	135	0	158	688	0	72	1023	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

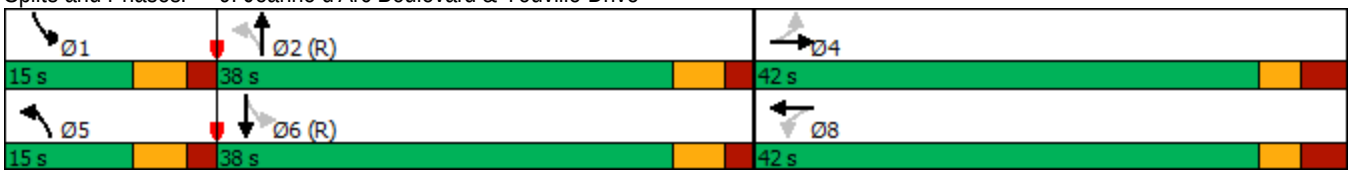


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		15.0	38.0		15.0	38.0	
Total Split (%)	44.2%	44.2%		44.2%	44.2%		15.8%	40.0%		15.8%	40.0%	
Maximum Green (s)	35.6	35.6		35.6	35.6		9.1	32.2		9.1	32.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	30.7	30.7			30.7		48.4	41.0		44.6	37.3	
Actuated g/C Ratio	0.32	0.32			0.32		0.51	0.43		0.47	0.39	
v/c Ratio	0.89	0.39			0.26		0.62	0.47		0.20	0.80	
Control Delay	54.5	6.7			16.3		26.4	22.8		13.6	32.3	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	54.5	6.7			16.3		26.4	22.8		13.6	32.3	
LOS	D	A			B		C	C		B	C	
Approach Delay		34.6			16.3			23.5			31.0	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	60.9	5.0			12.7		15.1	52.2		6.5	92.9	
Queue Length 95th (m)	#103.0	20.9			25.6		#38.9	76.1		14.5	#138.0	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	454	697			602		262	1450		382	1271	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.76	0.35			0.22		0.60	0.47		0.19	0.80	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 28.7	Intersection LOS: C

Intersection Capacity Utilization 79.4% 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: Jeanne d'Arc Boulevard & Youville Drive



Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	9	4	322	332	6
Future Vol, veh/h	11	9	4	322	332	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	10	4	358	369	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	739	373	376	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	385	673	1182	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	383	673	1182	-	-	-
Mov Cap-2 Maneuver	383	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1182	-	475	-	-
HCM Lane V/C Ratio	0.004	-	0.047	-	-
HCM Control Delay (s)	8.1	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

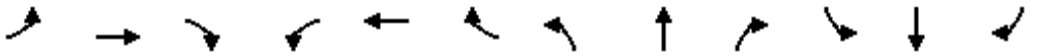
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	9	8	317	337	4
Future Vol, veh/h	9	9	8	317	337	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	9	352	374	4

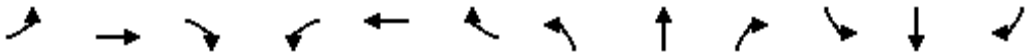
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	746	376	378	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	381	670	1180	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	378	670	1180	-	-	-
Mov Cap-2 Maneuver	378	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1180	-	483	-	-
HCM Lane V/C Ratio	0.008	-	0.041	-	-
HCM Control Delay (s)	8.1	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	327	68	18	556	113	173	43	41	49	28	121
Future Volume (vph)	98	327	68	18	556	113	173	43	41	49	28	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99		1.00		0.98
Frt			0.850			0.850		0.927				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1644	3320	1485	1710	3353	1530	3317	1591	0	1629	1667	1500
Flt Permitted	0.324			0.535			0.950			0.950		
Satd. Flow (perm)	560	3320	1452	963	3353	1492	3317	1591	0	1627	1667	1476
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			154		40				151
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			198.5	
Travel Time (s)		37.8			31.0			40.4			14.3	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)			3			2			2			4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	3%	3%	0%	2%	0%	0%	8%	0%	5%	8%	2%
Adj. Flow (vph)	109	363	76	20	618	126	192	48	46	54	31	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	363	76	20	618	126	192	94	0	54	31	134
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



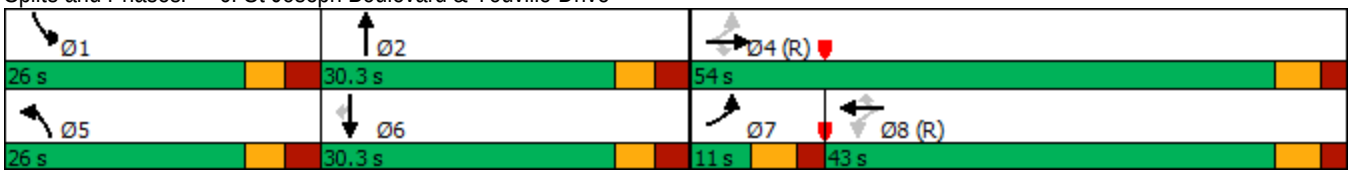
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	26.0	30.3		26.0	30.3	30.3
Total Split (%)	10.0%	49.0%	49.0%	39.0%	39.0%	39.0%	23.6%	27.5%		23.6%	27.5%	27.5%
Maximum Green (s)	5.0	48.0	48.0	37.0	37.0	37.0	19.7	24.0		19.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	67.7	67.7	67.7	53.0	53.0	53.0	11.7	17.3		9.0	12.3	12.3
Actuated g/C Ratio	0.61	0.61	0.61	0.48	0.48	0.48	0.11	0.16		0.08	0.11	0.11
v/c Ratio	0.25	0.18	0.08	0.04	0.38	0.16	0.55	0.33		0.41	0.17	0.45
Control Delay	11.9	10.5	2.0	19.9	20.8	2.7	52.4	28.4		56.2	44.5	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.9	10.5	2.0	19.9	20.8	2.7	52.4	28.4		56.2	44.5	9.9
LOS	B	B	A	B	C	A	D	C		E	D	A
Approach Delay		9.6			17.8			44.5			26.2	
Approach LOS		A			B			D			C	
Queue Length 50th (m)	8.9	16.3	0.0	2.2	43.1	0.0	21.5	11.4		11.8	6.6	0.0
Queue Length 95th (m)	22.9	32.9	5.3	8.9	78.2	8.4	32.5	24.7		24.3	14.4	13.1
Internal Link Dist (m)		606.3			493.0			425.3			174.5	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	428	2037	927	463	1611	797	592	379		290	362	439
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.25	0.18	0.08	0.04	0.38	0.16	0.32	0.25		0.19	0.09	0.31

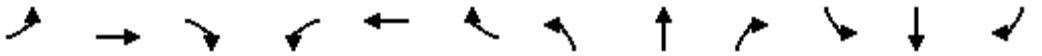
Intersection Summary

Area Type: Other
Cycle Length: 110.3
Actuated Cycle Length: 110.3
Offset: 110 (100%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55

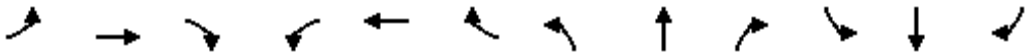
Intersection Signal Delay: 20.5	Intersection LOS: C
Intersection Capacity Utilization 50.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph Boulevard & Youville Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	12	51	16	63	124	173	1030	17	39	428	375
Future Volume (vph)	101	12	51	16	63	124	173	1030	17	39	428	375
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99				0.98		1.00	1.00			0.98	
Frt		0.878			0.918			0.998			0.930	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1569	1492	0	0	1584	0	1613	3342	0	1710	3020	0
Flt Permitted	0.489				0.971		0.207			0.185		
Satd. Flow (perm)	800	1492	0	0	1544	0	350	3342	0	333	3020	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57			108			2			288	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	15					15	8		6	6		8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	10%	5%	14%	0%	2%	6%	2%	7%	0%	5%	2%
Adj. Flow (vph)	112	13	57	18	70	138	192	1144	19	43	476	417
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	70	0	0	226	0	192	1163	0	43	893	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

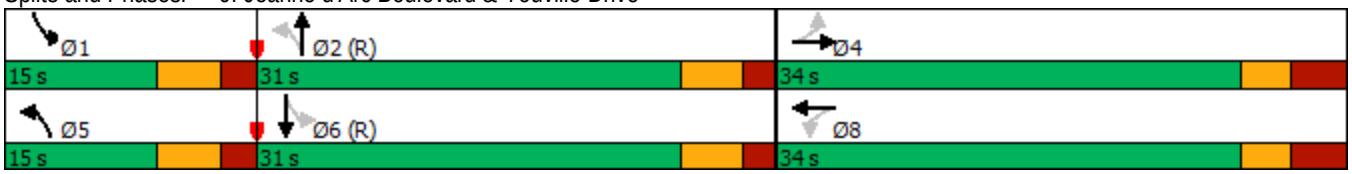


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	34.0	34.0		34.0	34.0		15.0	31.0		15.0	31.0	
Total Split (%)	42.5%	42.5%		42.5%	42.5%		18.8%	38.8%		18.8%	38.8%	
Maximum Green (s)	27.6	27.6		27.6	27.6		9.1	25.2		9.1	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	16.1	16.1			16.1		50.0	44.0		42.8	36.5	
Actuated g/C Ratio	0.20	0.20			0.20		0.62	0.55		0.54	0.46	
v/c Ratio	0.70	0.20			0.57		0.53	0.63		0.15	0.58	
Control Delay	50.1	9.8			19.5		13.2	18.6		9.1	13.8	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	50.1	9.8			19.5		13.2	18.6		9.1	13.8	
LOS	D	A			B		B	B		A	B	
Approach Delay		34.6			19.5			17.8			13.5	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	17.2	1.7			16.9		10.1	68.1		2.1	33.6	
Queue Length 95th (m)	29.0	9.9			31.4		29.1	#147.0		8.2	69.9	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	276	552			603		373	1839		346	1535	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.41	0.13			0.37		0.51	0.63		0.12	0.58	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 17.6	Intersection LOS: B

Intersection Capacity Utilization 81.4% 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: Jeanne d'Arc Boulevard & Youville Drive



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	6	241	202	13
Future Vol, veh/h	4	3	6	241	202	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	7	268	224	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	513	231	238	0	-	0
Stage 1	231	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	521	808	1329	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	518	808	1329	-	-	-
Mov Cap-2 Maneuver	518	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	766	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1329	-	612	-	-
HCM Lane V/C Ratio	0.005	-	0.013	-	-
HCM Control Delay (s)	7.7	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

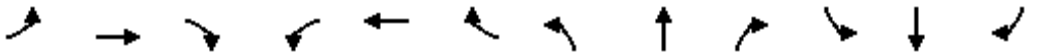
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	4	10	244	194	11
Future Vol, veh/h	3	4	10	244	194	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	11	271	216	12

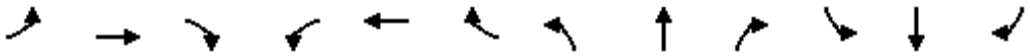
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	515	222	228	0	-	0
Stage 1	222	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	520	818	1340	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	515	818	1340	-	-	-
Mov Cap-2 Maneuver	515	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1340	-	653	-	-
HCM Lane V/C Ratio	0.008	-	0.012	-	-
HCM Control Delay (s)	7.7	0	10.6	-	-
HCM Lane LOS	A	A	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)	210	1176	213	41	442	101	109	39	44	138	54	180
Future Volume (vph)	210	1176	213	41	442	101	109	39	44	138	54	180
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	110.0		50.0	65.0		0.0	60.0		20.0
Storage Lanes	1		1	1		1	2		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98			0.98		0.99				0.99
Frt			0.850			0.850		0.920				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	3386	1530	1613	3386	1515	3285	1579	0	1710	1731	1515
Flt Permitted	0.379			0.187			0.950			0.950		
Satd. Flow (perm)	675	3386	1493	318	3386	1478	3285	1579	0	1710	1731	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			237			162		49				200
Link Speed (k/h)		60			60			40			50	
Link Distance (m)		630.3			517.0			449.3			198.5	
Travel Time (s)		37.8			31.0			40.4			14.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)			5			2			2			3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	6%	1%	1%	1%	3%	5%	0%	4%	1%
Adj. Flow (vph)	233	1307	237	46	491	112	121	43	49	153	60	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	1307	237	46	491	112	121	92	0	153	60	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.0	54.0	54.0	43.0	43.0	43.0	15.0	30.3		15.0	30.3	30.3
Total Split (s)	11.0	55.0	55.0	44.0	44.0	44.0	20.0	30.3		20.0	30.3	30.3
Total Split (%)	10.4%	52.2%	52.2%	41.8%	41.8%	41.8%	19.0%	28.8%		19.0%	28.8%	28.8%
Maximum Green (s)	5.0	49.0	49.0	38.0	38.0	38.0	13.7	24.0		13.7	24.0	24.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3	2.3	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.3	6.3		6.3	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Min		None	Min	Min
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0	14.0		17.0			17.0	17.0
Pedestrian Calls (#/hr)		0	0	1	1	1		1			0	0
Act Effct Green (s)	61.2	61.2	61.2	45.1	45.1	45.1	9.2	12.9		12.6	16.3	16.3
Actuated g/C Ratio	0.58	0.58	0.58	0.43	0.43	0.43	0.09	0.12		0.12	0.15	0.15
v/c Ratio	0.48	0.66	0.25	0.34	0.34	0.15	0.42	0.39		0.75	0.22	0.50
Control Delay	17.1	18.4	2.6	32.0	22.0	1.6	49.5	25.8		67.0	39.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	17.1	18.4	2.6	32.0	22.0	1.6	49.5	25.8		67.0	39.5	9.7
LOS	B	B	A	C	C	A	D	C		E	D	A
Approach Delay		16.1			19.2			39.3			35.2	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	21.8	90.4	0.0	6.5	36.6	0.0	12.9	8.8		32.0	11.7	0.0
Queue Length 95th (m)	47.9	156.5	13.3	19.9	55.9	4.3	21.8	21.2		#60.3	21.4	17.9
Internal Link Dist (m)		606.3			493.0			425.3			174.5	
Turn Bay Length (m)	100.0		100.0	110.0		50.0	65.0			60.0		20.0
Base Capacity (vph)	489	1967	966	136	1451	726	427	397		222	400	499
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.48	0.66	0.25	0.34	0.34	0.15	0.28	0.23		0.69	0.15	0.40

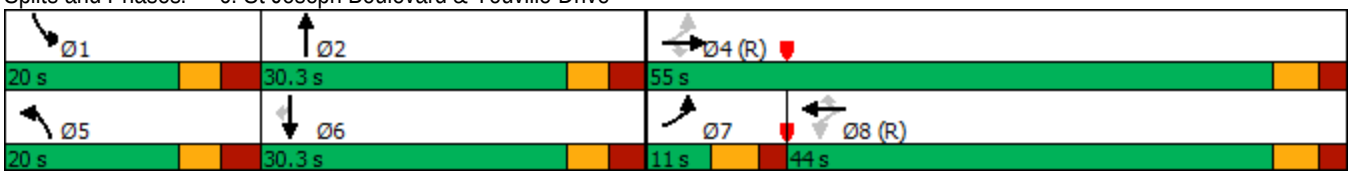
Intersection Summary

Area Type: Other
Cycle Length: 105.3
Actuated Cycle Length: 105.3
Offset: 100 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75

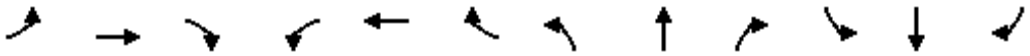
Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization 72.6%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: St Joseph Boulevard & Youville Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	37	201	23	55	53	153	629	38	70	775	217
Future Volume (vph)	336	37	201	23	55	53	153	629	38	70	775	217
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	0.0		0.0	170.0		0.0	75.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98			0.99			1.00		1.00	0.98	
Frt		0.873			0.945			0.991			0.967	
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1693	1513	0	0	1669	0	1693	3352	0	1644	3176	0
Flt Permitted	0.674				0.913		0.102			0.292		
Satd. Flow (perm)	1189	1513	0	0	1535	0	182	3352	0	504	3176	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		223			41			7			39	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		689.8			141.4			297.8			370.6	
Travel Time (s)		49.7			12.7			17.9			22.2	
Confl. Peds. (#/hr)	12		12	12		12	28		5	5		28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	1%	1%	0%	4%	2%	3%
Adj. Flow (vph)	373	41	223	26	61	59	170	699	42	78	861	241
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	264	0	0	146	0	170	741	0	78	1102	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

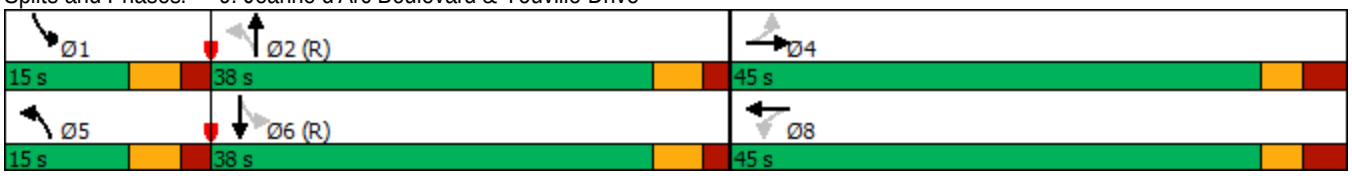


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	33.4	33.4		33.4	33.4		10.9	26.8		10.9	26.8	
Total Split (s)	45.0	45.0		45.0	45.0		15.0	38.0		15.0	38.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		15.3%	38.8%		15.3%	38.8%	
Maximum Green (s)	38.6	38.6		38.6	38.6		9.1	32.2		9.1	32.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.4	3.4		3.4	3.4		2.2	2.1		2.2	2.1	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4		5.9	5.8		5.9	5.8	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			14.0			14.0	
Pedestrian Calls (#/hr)	15	15		0	0			6			8	
Act Effct Green (s)	34.1	34.1			34.1		48.2	40.4		44.0	36.4	
Actuated g/C Ratio	0.35	0.35			0.35		0.49	0.41		0.45	0.37	
v/c Ratio	0.90	0.39			0.26		0.73	0.53		0.25	0.92	
Control Delay	56.1	6.3			16.2		39.0	25.6		15.5	42.8	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	56.1	6.3			16.2		39.0	25.6		15.5	42.8	
LOS	E	A			B		D	C		B	D	
Approach Delay		35.5			16.2			28.1			41.0	
Approach LOS		D			B			C			D	
Queue Length 50th (m)	67.2	5.2			13.9		17.9	62.1		7.8	~121.8	
Queue Length 95th (m)	#114.9	21.5			27.2		#55.0	86.7		16.4	#164.1	
Internal Link Dist (m)		665.8			117.4			273.8			346.6	
Turn Bay Length (m)	30.0						170.0			75.0		
Base Capacity (vph)	468	731			629		238	1387		339	1204	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.80	0.36			0.23		0.71	0.53		0.23	0.92	

Intersection Summary	
Area Type:	Other
Cycle Length: 98	
Actuated Cycle Length: 98	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 34.4	Intersection LOS: C

Intersection Capacity Utilization 83.6% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jeanne d'Arc Boulevard & Youville Drive



Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	9	4	347	358	6
Future Vol, veh/h	11	9	4	347	358	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	10	4	386	398	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	796	402	405	0	-	0
Stage 1	402	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	356	648	1154	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	355	648	1154	-	-	-
Mov Cap-2 Maneuver	355	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	681	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	446	-	-
HCM Lane V/C Ratio	0.004	-	0.05	-	-
HCM Control Delay (s)	8.1	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	9	8	342	363	4
Future Vol, veh/h	9	9	8	342	363	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	9	380	403	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	803	405	407	0	-	0
Stage 1	405	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	353	646	1152	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	349	646	1152	-	-	-
Mov Cap-2 Maneuver	349	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1152	-	453	-	-
HCM Lane V/C Ratio	0.008	-	0.044	-	-
HCM Control Delay (s)	8.1	0	13.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896

Filename: St Joseph @ Jeanne D'Arc.j9
Path: C:\Users\m.patenaude\Documents\Uville Drive Roundabout
Report generation date: 2022-07-21 1:17:27 PM

Summary of intersection performance

	AM								PM							
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
	Standard Roundabout - 2022															
Leg 1	0.3	1.0	1.72	0.23	A	2.37	A	93 % [Leg 4]	0.3	0.8	1.63	0.22	A	2.74	A	58 % [Leg 4]
Leg 2	0.4	1.3	2.62	0.29	A				0.7	2.9	2.89	0.39	A			
Leg 3	0.1	0.5	1.35	0.09	A				1.0	1.5	2.62	0.50	A			
Leg 4	0.7	2.7	3.01	0.42	A				0.7	3.0	3.83	0.42	A			

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Leg and intersection delays are averages for all movements, including movements with zero delay. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	2022-07-20
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	MCINTOSHPERRY1\m.patenaude
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	V/C Ratio Threshold	Average Delay threshold (s)	Queue threshold (PCE)
5.75	✓		✓	Delay	0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			881271661	29	6.07

Analysis Set Details

ID	Use Lane Simulation	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2022	PM	ONE HOUR	17:00	18:30	15	✓

2022, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.59	A

Intersection Network Options

Driving side	Lighting
Right	Normal/unknown

Legs

Legs

Leg	Name	Description
1	untitled	
2	untitled	
3	untitled	
4	untitled	

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	7.10	16.00	30.0	34.0	50.0	25.0	
2	8.00	8.00	0.0	30.0	50.0	22.0	
3	7.50	15.00	29.0	16.5	50.0	26.0	
4	7.00	8.00	19.0	25.0	50.0	26.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
1	0.992	3667
2	0.778	2531
3	0.956	3528
4	0.755	2437

The slope and intercept shown above include any corrections and adjustments.

Lane Simulation: Leg options

Leg	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	50.00
2	Evenly split	50.00
3	Evenly split	50.00
4	Evenly split	50.00

Lanes

Leg	Side	Lane level	Lane	Destination legs	Has limited storage	Storage (PCE)	Has bottleneck	Minimum capacity (PCE/hr)	Maximum capacity (PCE/hr)	Signalised
1	Entry	1	1	2	✓	7.00		0	99999	
			2	3	✓	99999.00		0	99999	
			3	1, 3, 4	✓	99999.00		0	99999	

		2	2	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	3, 4		Infinity		0	99999	
			2	1, 2, 4		Infinity		0	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	4	✓	7.00		0	99999	
			2	1, 4	✓	99999.00		0	99999	
			3	1, 2, 3	✓	99999.00		0	99999	
		2	3	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
4	Entry	1	1	1, 2		Infinity		0	99999	
			2	2, 3, 4		Infinity		0	99999	
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Leg	Side	Lane level	Lane	Final slope	Final intercept (PCE/hr)
1	Entry	1	1	0.331	1222
			2	0.331	1222
			3	0.331	1222
2	Entry	1	1	0.389	1265
			2	0.389	1265
3	Entry	1	1	0.319	1176
			2	0.319	1176
			3	0.319	1176
4	Entry	1	1	0.377	1218
			2	0.377	1218

Summary of Entry Lane allowed movements

Leg	Lane Level	Lane	Destination leg			
			1	2	3	4
1	1	1		✓		
		2			✓	
		3	✓		✓	✓
	2	2	✓	✓	✓	✓
2	1	1			✓	✓
		2	✓	✓		✓
3	1	1				✓
		2	✓			✓
		3	✓	✓	✓	
	2	3	✓	✓	✓	✓
4	1	1	✓	✓		
		2		✓	✓	✓

Traffic Demand

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCE Factor for a Truck (PCE)
✓	✓	Truck Percentages	2.00

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (PCE/hr)	Scaling Factor (%)
1		ONE HOUR	✓	582	100.000
2		ONE HOUR	✓	739	100.000
3		ONE HOUR	✓	1240	100.000
4		ONE HOUR	✓	614	100.000

Origin-Destination Data

Demand (PCE/hr)

	To				
		1	2	3	4
	1	0	256	254	72

From	2	247	0	76	416
	3	583	149	0	508
	4	60	359	195	0

Vehicle Mix

Truck Percentages

		To			
		1	2	3	4
From	1	0	4	1	0
	2	2	0	4	2
	3	1	2	0	1
	4	0	1	1	0

Results

Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)
1	4.74	1.2	7.0	A	541	812
2	5.09	1.7	6.0	A	668	1001
3	5.84	2.9	9.0	A	1146	1719
4	6.52	1.4	7.0	A	559	839

Main Results for each time segment

17:00 - 17:15

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Throughput (PCE/hr)	Average throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	441	110	559	441	435	671	0.0	0.4	4.020	A
2	529	132	406	528	550	595	0.0	0.7	3.822	A
3	950	238	534	957	938	401	0.0	0.9	4.381	A
4	468	117	766	465	459	725	0.0	0.7	4.515	A

17:15 - 17:30

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Throughput (PCE/hr)	Average throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	537	134	650	537	525	803	0.4	0.7	4.205	A
2	667	167	470	665	664	717	0.7	1.0	4.270	A
3	1107	277	667	1104	1108	469	0.9	1.8	4.699	A
4	566	142	889	564	557	882	0.7	0.8	4.997	A

17:30 - 17:45

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Throughput (PCE/hr)	Average throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	661	165	798	665	637	963	0.7	0.7	4.725	A
2	814	203	576	806	805	886	1.0	1.5	5.089	A
3	1370	343	826	1372	1384	555	1.8	2.1	5.555	A
4	681	170	1075	686	692	1123	0.8	1.0	6.402	A

17:45 - 18:00

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Throughput (PCE/hr)	Average throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	650	162	741	646	634	1022	0.7	1.2	4.737	A
2	817	204	548	809	814	839	1.5	1.7	4.970	A
3	1402	351	811	1400	1385	546	2.1	2.9	5.842	A
4	655	164	1109	653	657	1102	1.0	1.4	6.515	A

18:00 - 18:15

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Throughput (PCE/hr)	Average throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	529	132	649	528	533	773	1.2	0.9	4.255	A
2	670	167	487	671	663	691	1.7	0.7	4.222	A
3	1099	275	662	1099	1115	496	2.9	1.5	4.740	A
4	562	141	862	560	567	898	1.4	0.9	5.391	A

18:15 - 18:30

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Throughput (PCE/hr)	Average throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	431	108	495	434	451	662	0.9	0.3	4.149	A
2	509	127	382	506	538	548	0.7	0.8	3.983	A
3	948	237	510	944	943	377	1.5	1.4	4.266	A
4	422	106	734	424	450	720	0.9	0.6	4.498	A

Queue Variation Results for each time segment

17:00 - 17:15

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	0.41	0.00	0.00	2.00	2.00
2	0.66	0.00	0.00	2.00	2.00
3	0.90	0.00	0.06	2.05	4.00
4	0.72	0.00	0.00	1.78	3.00

17:15 - 17:30

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	0.66	0.00	0.11	0.94	3.00
2	1.03	0.00	0.28	2.37	4.00
3	1.83	0.00	0.93	4.05	6.00
4	0.83	0.00	0.00	2.10	4.00

17:30 - 17:45

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	0.66	0.00	0.00	1.70	3.00
2	1.52	0.00	0.30	5.00	5.00
3	2.10	0.00	1.35	3.70	6.00
4	0.97	0.00	0.21	2.05	4.00

17:45 - 18:00

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	1.17	0.00	0.25	3.05	7.00
2	1.72	0.00	0.75	4.10	6.00
3	2.93	0.00	2.10	6.10	9.00
4	1.45	0.00	0.50	3.10	7.00

18:00 - 18:15

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	0.90	0.00	0.00	2.05	6.00
2	0.66	0.00	0.00	1.53	3.00
3	1.48	0.00	0.64	5.00	5.00
4	0.93	0.00	0.17	1.82	5.00

18:15 - 18:30

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	0.34	0.00	0.00	0.82	3.00
2	0.83	0.00	0.23	1.10	4.00
3	1.45	0.00	0.57	2.70	6.00
4	0.62	0.00	0.00	1.37	3.00

Lane Results

Lane Level notation: Lane Level 1 is always closest to the intersection.

Lanes: Main Results for each time segment

17:00 - 17:15

Leg	Side	Lane level	Lane	Destination legs	Total Demand (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Average throughput (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	192	1037	0.185	195	192	0.0	0.2	4.549	A
			2	3	90	1037	0.087	89	93	0.0	0.1	3.612	A
			3	1, 3, 4	158	1037	0.152	158	151	0.0	0.1	3.618	A
		2	2	(1, 2, 3, 4)	441			441	437	0.0	0.0	0.000	A
	Exit	1	1		671			671	660	0.0	0.0	0.000	A
2	Entry	1	1	3, 4	212	1107	0.192	210	221	0.0	0.4	3.769	A
			2	1, 2, 4	317	1107	0.286	319	329	0.0	0.3	3.857	A
	Exit	1	1		595			595	581	0.0	0.0	0.000	A
3	Entry	1	1	4	223	1006	0.222	226	219	0.0	0.2	4.070	A
			2	1, 4	375	1006	0.373	378	376	0.0	0.3	4.381	A
			3	1, 2, 3	352	1006	0.350	355	343	0.0	0.4	4.581	A
		2	3	(1, 2, 3, 4)	950			950	942	0.0	0.0	0.000	A
	Exit	1	1		401			401	396	0.0	0.0	0.000	A
4	Entry	1	1	1, 2	187	929	0.202	187	185	0.0	0.3	4.288	A
			2	2, 3, 4	281	929	0.302	278	274	0.0	0.4	4.668	A
	Exit	1	1		725			725	746	0.0	0.0	0.000	A

17:15 - 17:30

Leg	Side	Lane level	Lane	Destination legs	Total Demand (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Average throughput (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	242	1007	0.240	245	235	0.2	0.1	4.591	A
			2	3	118	1007	0.117	118	122	0.1	0.2	3.873	A
			3	1, 3, 4	177	1007	0.175	175	167	0.1	0.3	3.928	A
		2	2	(1, 2, 3, 4)	537			537	526	0.0	0.0	0.000	A
	Exit	1	1		803			803	785	0.0	0.0	0.000	A
2	Entry	1	1	3, 4	266	1082	0.246	264	276	0.4	0.4	3.934	A
			2	1, 2, 4	400	1082	0.370	401	389	0.3	0.6	4.505	A
	Exit	1	1		717			717	702	0.0	0.0	0.000	A
3	Entry	1	1	4	274	964	0.284	272	275	0.2	0.5	4.363	A
			2	1, 4	430	964	0.446	429	430	0.3	0.7	4.708	A
			3	1, 2, 3	404	964	0.419	403	403	0.4	0.7	4.919	A
		2	3	(1, 2, 3, 4)	1107			1107	1112	0.0	0.0	0.000	A
	Exit	1	1		469			469	477	0.0	0.0	0.000	A
4	Entry	1	1	1, 2	239	883	0.271	239	233	0.3	0.4	4.645	A
			2	2, 3, 4	327	883	0.371	325	325	0.4	0.4	5.250	A
	Exit	1	1		882			882	890	0.0	0.0	0.000	A

17:30 - 17:45

Leg	Side	Lane level	Lane	Destination legs	Total Demand (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Average throughput (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	288	959	0.301	293	275	0.1	0.3	5.714	A
			2	3	156	959	0.163	155	152	0.2	0.2	3.837	A
			3	1, 3, 4	216	959	0.226	216	210	0.3	0.2	4.102	A
		2	2	(1, 2, 3, 4)	661			661	637	0.0	0.0	0.000	A
	Exit	1	1		963			963	977	0.0	0.0	0.000	A
2	Entry	1	1	3, 4	350	1041	0.336	348	341	0.4	0.6	4.572	A
			2	1, 2, 4	464	1041	0.445	458	463	0.6	0.9	5.467	A
	Exit	1	1		886			886	854	0.0	0.0	0.000	A
3	Entry	1	1	4	353	913	0.386	350	354	0.5	0.6	4.996	A
			2	1, 4	517	913	0.567	520	531	0.7	0.7	5.642	A
			3	1, 2, 3	501	913	0.548	502	499	0.7	0.8	5.859	A
		2	3	(1, 2, 3, 4)	1370			1370	1385	0.0	0.0	0.000	A
	Exit	1	1		555			555	581	0.0	0.0	0.000	A
4	Entry	1	1	1, 2	297	813	0.366	300	300	0.4	0.2	5.971	A
			2	2, 3, 4	384	813	0.472	386	391	0.4	0.7	6.731	A
	Exit	1	1		1123			1123	1106	0.0	0.0	0.000	A

17:45 - 18:00

Leg	Side	Lane level	Lane	Destination legs	Total Demand (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Average throughput (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
			1	2	290	977	0.297	291	275	0.3	0.5	5.643	A

1	Entry	1	2	3	149	977	0.153	147	152	0.2	0.3	3.820	A
			3	1, 3, 4	210	977	0.215	208	206	0.2	0.4	4.181	A
		2	2	(1, 2, 3, 4)	650			650	636	0.0	0.0	0.020	A
	Exit	1	1		1022			1022	1006	0.0	0.0	0.000	A
2	Entry	1	1	3, 4	336	1052	0.319	333	344	0.6	0.7	4.601	A
			2	1, 2, 4	481	1052	0.457	477	470	0.9	1.1	5.239	A
	Exit	1	1		839			839	821	0.0	0.0	0.000	A
3	Entry	1	1	4	352	918	0.383	351	349	0.6	0.8	5.272	A
			2	1, 4	554	918	0.604	556	541	0.7	0.9	5.748	A
			3	1, 2, 3	497	918	0.541	493	495	0.8	1.2	6.348	A
		2	3	(1, 2, 3, 4)	1402			1402	1389	0.0	0.0	0.000	A
	Exit	1	1		546			546	562	0.0	0.0	0.000	A
4	Entry	1	1	1, 2	293	800	0.366	292	286	0.2	0.6	5.764	A
			2	2, 3, 4	362	800	0.452	362	370	0.7	0.9	7.099	A
	Exit	1	1		1102			1102	1100	0.0	0.0	0.000	A

18:00 - 18:15

Leg	Side	Lane level	Lane	Destination legs	Total Demand (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Average throughput (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	233	1008	0.231	233	241	0.5	0.6	5.005	A
			2	3	126	1008	0.125	125	121	0.3	0.2	3.568	A
			3	1, 3, 4	170	1008	0.169	170	171	0.4	0.1	3.706	A
		2	2	(1, 2, 3, 4)	529			529	531	0.0	0.0	0.000	A
	Exit	1	1		773			773	790	0.0	0.0	0.000	A
2	Entry	1	1	3, 4	290	1076	0.269	289	283	0.7	0.2	3.802	A
			2	1, 2, 4	380	1076	0.353	382	380	1.1	0.4	4.535	A
	Exit	1	1		691			691	711	0.0	0.0	0.000	A
3	Entry	1	1	4	259	965	0.269	261	269	0.8	0.2	4.441	A
			2	1, 4	436	965	0.452	434	442	0.9	0.6	4.658	A
			3	1, 2, 3	405	965	0.419	404	404	1.2	0.7	5.028	A
		2	3	(1, 2, 3, 4)	1099			1099	1109	0.0	0.0	0.000	A
	Exit	1	1		496			496	480	0.0	0.0	0.000	A
4	Entry	1	1	1, 2	235	893	0.263	235	240	0.6	0.3	4.958	A
			2	2, 3, 4	327	893	0.367	325	327	0.9	0.6	5.709	A
	Exit	1	1		898			898	897	0.0	0.0	0.000	A

18:15 - 18:30

Leg	Side	Lane level	Lane	Destination legs	Total Demand (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Average throughput (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	186	1059	0.176	188	199	0.6	0.1	4.554	A
			2	3	104	1059	0.098	105	106	0.2	0.0	3.726	A
			3	1, 3, 4	141	1059	0.133	142	146	0.1	0.2	3.922	A
		2	2	(1, 2, 3, 4)	431			431	449	0.0	0.0	0.000	A
	Exit	1	1		662			662	664	0.0	0.0	0.000	A
2	Entry	1	1	3, 4	198	1117	0.177	197	222	0.2	0.3	3.841	A
			2	1, 2, 4	312	1117	0.279	308	316	0.4	0.5	4.083	A
	Exit	1	1		548			548	582	0.0	0.0	0.000	A
3	Entry	1	1	4	238	1014	0.234	238	222	0.2	0.1	4.082	A
			2	1, 4	357	1014	0.352	356	370	0.6	0.6	4.236	A
			3	1, 2, 3	354	1014	0.349	349	351	0.7	0.8	4.415	A
		2	3	(1, 2, 3, 4)	948			948	943	0.0	0.0	0.000	A
	Exit	1	1		377			377	397	0.0	0.0	0.000	A
4	Entry	1	1	1, 2	180	941	0.191	181	189	0.3	0.1	4.187	A
			2	2, 3, 4	243	941	0.258	242	261	0.6	0.5	4.725	A
	Exit	1	1		720			720	739	0.0	0.0	0.000	A

Lanes: Queue Variation Results for each time segment

17:00 - 17:15

Leg	Side	Lane level	Lane	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	Entry	1	1	0.17	0.00	0.00	0.37	2.00
			2	0.10	0.00	0.00	0.00	2.00
			3	0.14	0.00	0.00	1.00	1.00
		2	2	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
	Entry	1	1	0.38	0.00	0.00	0.87	2.00

2			2	0.28	0.00	0.00	0.68	2.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
3	Entry	1	1	0.21	0.00	0.00	0.53	2.00
			2	0.31	0.00	0.00	0.73	2.00
			3	0.38	0.00	0.00	0.87	2.00
		2	3	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
4	Entry	1	1	0.28	0.00	0.00	0.78	2.00
			2	0.45	0.00	0.00	1.05	3.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00

17:15 - 17:30

Leg	Side	Lane level	Lane	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	Entry	1	1	0.10	0.00	0.00	0.00	2.00
			2	0.24	0.00	0.00	1.00	1.00
			3	0.31	0.00	0.00	0.73	2.00
		2	2	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
2	Entry	1	1	0.45	0.00	0.00	2.00	2.00
			2	0.59	0.00	0.00	1.05	4.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
3	Entry	1	1	0.48	0.00	0.00	0.91	2.00
			2	0.66	0.00	0.11	0.94	3.00
			3	0.69	0.00	0.00	1.82	3.00
		2	3	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
4	Entry	1	1	0.38	0.00	0.00	2.00	2.00
			2	0.45	0.00	0.00	1.05	3.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00

17:30 - 17:45

Leg	Side	Lane level	Lane	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	Entry	1	1	0.28	0.00	0.00	0.68	2.00
			2	0.21	0.00	0.00	0.53	2.00
			3	0.17	0.00	0.00	1.00	1.00
		2	2	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
2	Entry	1	1	0.59	0.00	0.00	1.70	3.00
			2	0.93	0.00	0.00	2.05	4.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
3	Entry	1	1	0.62	0.00	0.00	2.00	2.00
			2	0.66	0.00	0.12	2.00	2.00
			3	0.83	0.00	0.00	1.85	3.00
		2	3	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
4	Entry	1	1	0.24	0.00	0.00	0.62	2.00
			2	0.72	0.00	0.05	1.53	3.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00

17:45 - 18:00

Leg	Side	Lane level	Lane	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	Entry	1	1	0.48	0.00	0.00	1.05	3.00
			2	0.31	0.00	0.00	0.68	3.00
			3	0.38	0.00	0.00	2.00	2.00
		2	2	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
2	Entry	1	1	0.66	0.00	0.05	2.00	2.00
			2	1.07	0.00	0.28	2.55	4.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
3	Entry	1	1	0.79	0.00	0.23	2.00	2.00
			2	0.90	0.00	0.06	1.82	4.00
			3	1.24	0.00	0.61	2.37	4.00
		2	3	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
4	Entry	1	1	0.59	0.00	0.00	0.92	4.00
			2	0.86	0.00	0.00	1.82	5.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00

18:00 - 18:15

Leg	Side	Lane level	Lane	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	Entry	1	1	0.59	0.00	0.00	1.10	5.00
			2	0.17	0.00	0.00	0.37	2.00
			3	0.14	0.00	0.00	1.00	1.00
		2	2	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
2	Entry	1	1	0.21	0.00	0.00	0.53	2.00
			2	0.45	0.00	0.00	0.90	2.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
3	Entry	1	1	0.21	0.00	0.00	1.00	1.00
			2	0.62	0.00	0.00	2.00	2.00
			3	0.66	0.00	0.00	1.55	3.00
		2	3	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
4	Entry	1	1	0.31	0.00	0.00	1.00	1.00
			2	0.62	0.00	0.00	1.37	5.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00

18:15 - 18:30

Leg	Side	Lane level	Lane	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)
1	Entry	1	1	0.14	0.00	0.00	1.00	1.00
			2	0.03	0.00	0.00	0.00	1.00
			3	0.17	0.00	0.00	0.37	2.00
		2	2	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
2	Entry	1	1	0.34	0.00	0.00	1.00	1.00
			2	0.48	0.00	0.00	0.90	3.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
3	Entry	1	1	0.14	0.00	0.00	1.00	1.00
			2	0.55	0.00	0.00	0.91	3.00
			3	0.76	0.00	0.13	1.55	3.00
		2	3	0.00	0.00	0.00	0.00	0.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00
4	Entry	1	1	0.10	0.00	0.00	1.00	1.00
			2	0.52	0.00	0.00	2.00	2.00
	Exit	1	1	0.00	0.00	0.00	0.00	0.00

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896

Filename: St Joseph @ Jeanne D'Arc.j9
Path: C:\Users\m.patenaude\Documents\Uville Drive Roundabout
Report generation date: 2022-08-17 5:12:08 PM

Summary of intersection performance

	AM								PM							
	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
	Standard Roundabout - 2022															
Leg 1	0.3	1.0	1.72	0.23	A	2.37	A	93 % [Leg 4]	0.3	0.8	1.63	0.22	A	2.74	A	58 % [Leg 4]
Leg 2	0.4	1.3	2.62	0.29	A				0.7	2.9	2.89	0.39	A			
Leg 3	0.1	0.5	1.35	0.09	A				1.0	1.5	2.62	0.50	A			
Leg 4	0.7	2.7	3.01	0.42	A				0.7	3.0	3.83	0.42	A			
	Standard Roundabout - 2024 Background Traffic															
Leg 1	0.3	1.2	1.78	0.24	A	2.42	A	83 % [Leg 4]	0.3	1.1	1.66	0.23	A	2.85	A	53 % [Leg 4]
Leg 2	0.4	1.6	2.68	0.30	A				0.7	2.8	2.98	0.40	A			
Leg 3	0.2	0.5	1.44	0.15	A				1.1	1.5	2.75	0.52	A			
Leg 4	0.8	2.2	3.18	0.45	A				0.8	2.9	4.03	0.44	A			
	Standard Roundabout - 2029 Background Traffic															
Leg 1	0.4	1.4	1.89	0.26	A	2.60	A	70 % [Leg 4]	0.3	1.3	1.75	0.25	A	3.20	A	42 % [Leg 4]
Leg 2	0.5	2.1	2.86	0.33	A				0.8	2.4	3.25	0.44	A			
Leg 3	0.2	0.5	1.48	0.16	A				1.3	1.7	3.15	0.57	A			
Leg 4	1.0	1.5	3.49	0.49	A				1.0	2.4	4.63	0.49	A			
	Standard Roundabout - 2024 Total Traffic															
Leg 1	0.3	1.3	1.80	0.24	A	2.44	A	81 % [Leg 4]	0.3	1.1	1.66	0.23	A	2.88	A	53 % [Leg 4]
Leg 2	0.4	1.6	2.70	0.30	A				0.7	2.8	3.01	0.41	A			
Leg 3	0.2	0.5	1.44	0.15	A				1.1	1.5	2.79	0.52	A			
Leg 4	0.8	2.1	3.22	0.45	A				0.8	2.9	4.04	0.44	A			
	Standard Roundabout - 2029 Total Traffic															
Leg 1	0.4	1.4	1.91	0.27	A	2.63	A	68 % [Leg 4]	0.3	1.3	1.75	0.25	A	3.24	A	42 % [Leg 4]
Leg 2	0.5	2.1	2.88	0.33	A				0.8	2.3	3.28	0.45	A			
Leg 3	0.2	0.5	1.49	0.16	A				1.4	1.8	3.21	0.57	A			
Leg 4	1.0	1.5	3.53	0.49	A				1.0	2.4	4.66	0.49	A			

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Leg and intersection delays are averages for all movements, including movements with zero delay. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	

Site number	
Date	2022-07-20
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	MCINTOSHPERRY1\m.patenaude
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCE	PCE	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	V/C Ratio Threshold	Average Delay threshold (s)	Queue threshold (PCE)
5.75	✓		✓	Delay	0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			0	0	0.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Standard Roundabout	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2029 Total Traffic	PM	ONE HOUR	17:00	18:30	15	✓

Standard Roundabout - 2029 Total Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.24	A

Intersection Network Options

Driving side	Lighting	Network residual capacity (%)	First leg reaching threshold
Right	Normal/unknown	42	Leg 4

Legs

Legs

Leg	Name	Description
1	untitled	
2	untitled	
3	untitled	
4	untitled	

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	7.10	16.00	30.0	34.0	50.0	25.0	
2	8.00	8.00	0.0	30.0	50.0	22.0	
3	7.50	15.00	29.0	16.5	50.0	26.0	
4	7.00	8.00	19.0	25.0	50.0	26.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
1	0.992	3667
2	0.778	2531
3	0.956	3528
4	0.755	2437

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCE Factor for a Truck (PCE)
✓	✓	Truck Percentages	2.00

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (PCE/hr)	Scaling Factor (%)
1		ONE HOUR	✓	650	100.000
2		ONE HOUR	✓	829	100.000
3		ONE HOUR	✓	1385	100.000
4		ONE HOUR	✓	685	100.000

Origin-Destination Data

Demand (PCE/hr)

		To			
		1	2	3	4
From	1	0	286	284	80
	2	274	0	84	471
	3	647	165	0	573
	4	67	401	217	0

Vehicle Mix

Truck Percentages

		To			
		1	2	3	4
From	1	0	4	1	0
	2	2	0	4	2
	3	1	2	0	1
	4	0	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)
1	0.25	1.75	0.3	1.3	A	596	895
2	0.45	3.28	0.8	2.3	A	761	1141
3	0.57	3.21	1.4	1.8	A	1271	1906
4	0.49	4.66	1.0	2.4	A	629	943

Main Results for each time segment

17:00 - 17:15

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	489	122	588	3084	0.159	489	742	0.0	0.2	1.416	A
2	624	156	436	2191	0.285	622	640	0.0	0.4	2.343	A
3	1043	261	620	2936	0.355	1040	439	0.0	0.6	1.919	A
4	516	129	816	1821	0.283	514	844	0.0	0.4	2.775	A

17:15 - 17:30

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	584	146	703	2970	0.197	584	887	0.2	0.2	1.541	A
2	745	186	522	2124	0.351	745	765	0.4	0.5	2.664	A
3	1245	311	741	2820	0.442	1244	526	0.6	0.8	2.309	A
4	616	154	976	1700	0.362	615	1010	0.4	0.6	3.345	A

17:30 - 17:45

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	716	179	860	2814	0.254	715	1086	0.2	0.3	1.752	A
2	913	228	639	2033	0.449	912	937	0.5	0.8	3.277	A
3	1525	381	907	2661	0.573	1523	643	0.8	1.3	3.192	A
4	754	189	1194	1535	0.491	753	1236	0.6	1.0	4.631	A

17:45 - 18:00

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	716	179	862	2812	0.254	716	1088	0.3	0.3	1.753	A
2	913	228	640	2033	0.449	913	938	0.8	0.8	3.283	A
3	1525	381	908	2660	0.573	1525	644	1.3	1.4	3.205	A
4	754	189	1196	1534	0.492	754	1238	1.0	1.0	4.656	A

18:00 - 18:15

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	584	146	706	2968	0.197	585	890	0.3	0.3	1.543	A
2	745	186	523	2124	0.351	746	767	0.8	0.6	2.674	A
3	1245	311	743	2819	0.442	1247	527	1.4	0.8	2.319	A
4	616	154	978	1699	0.363	617	1012	1.0	0.6	3.366	A

18:15 - 18:30

Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Circulating flow (PCE/hr)	Capacity (PCE/hr)	V/C Ratio	Throughput (PCE/hr)	Throughput (exit side) (PCE/hr)	Start queue (PCE)	End queue (PCE)	Delay (s)	Unsignalised level of service
1	489	122	590	3082	0.159	490	745	0.3	0.2	1.418	A
2	624	156	438	2190	0.285	625	642	0.6	0.4	2.350	A
3	1043	261	622	2934	0.355	1044	441	0.8	0.6	1.927	A
4	516	129	818	1819	0.284	516	847	0.6	0.4	2.789	A

Queue Variation Results for each time segment

17:00 - 17:15

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	0.19	0.00	0.00	0.19	0.19			N/A	N/A
2	0.41	0.00	0.00	0.41	0.41			N/A	N/A
3	0.55	0.55	1.01	1.42	1.47			N/A	N/A
4	0.40	0.00	0.00	0.40	0.40			N/A	N/A

17:15 - 17:30

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	0.25	0.00	0.00	0.25	0.25			N/A	N/A
2	0.55	0.06	0.68	1.36	1.45			N/A	N/A
3	0.80	0.06	0.69	1.31	1.79			N/A	N/A
4	0.57	0.07	0.71	1.35	1.43			N/A	N/A

17:30 - 17:45

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	0.35	0.03	0.26	0.46	0.49			N/A	N/A
2	0.83	0.03	0.26	0.83	0.83			N/A	N/A
3	1.35	0.03	0.26	1.35	1.35			N/A	N/A
4	0.96	0.03	0.26	0.96	0.96			N/A	N/A

17:45 - 18:00

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	0.35	0.03	0.33	1.09	1.32			N/A	N/A
2	0.83	0.03	0.28	0.83	2.30			N/A	N/A
3	1.35	0.03	0.27	1.35	1.35			N/A	N/A
4	0.97	0.03	0.28	0.97	2.40			N/A	N/A

18:00 - 18:15

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	0.25	0.00	0.00	0.25	0.25			N/A	N/A
2	0.56	0.56	1.02	1.43	1.48			N/A	N/A
3	0.80	0.56	1.01	1.42	1.47			N/A	N/A
4	0.58	0.55	1.01	1.41	1.46			N/A	N/A

18:15 - 18:30

Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
1	0.19	0.00	0.00	0.19	0.19			N/A	N/A
2	0.41	0.00	0.00	0.41	0.41			N/A	N/A
3	0.56	0.07	0.73	1.36	1.44			N/A	N/A
4	0.40	0.00	0.00	0.40	0.40			N/A	N/A

APPENDIX E – TDM CHECKLIST

McINTOSH PERRY

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 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: *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	☐