1887 St Joseph Boulevard

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report (Rev #1)

Prepared for:

Sobeys Capital Inc.
1020 64 Avenue NE
Calgary, AB, T2E 7V8

Prepared by:

CGH TRANSPORTATION
6 Plaza Court
Ottawa, ON K2H 7W1

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1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, prior to the June 2023 updates. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required including the Design Review component and the Network Impact Component. This study has been prepared to support a zoning bylaw amendment application.

2 Existing and Planned Conditions

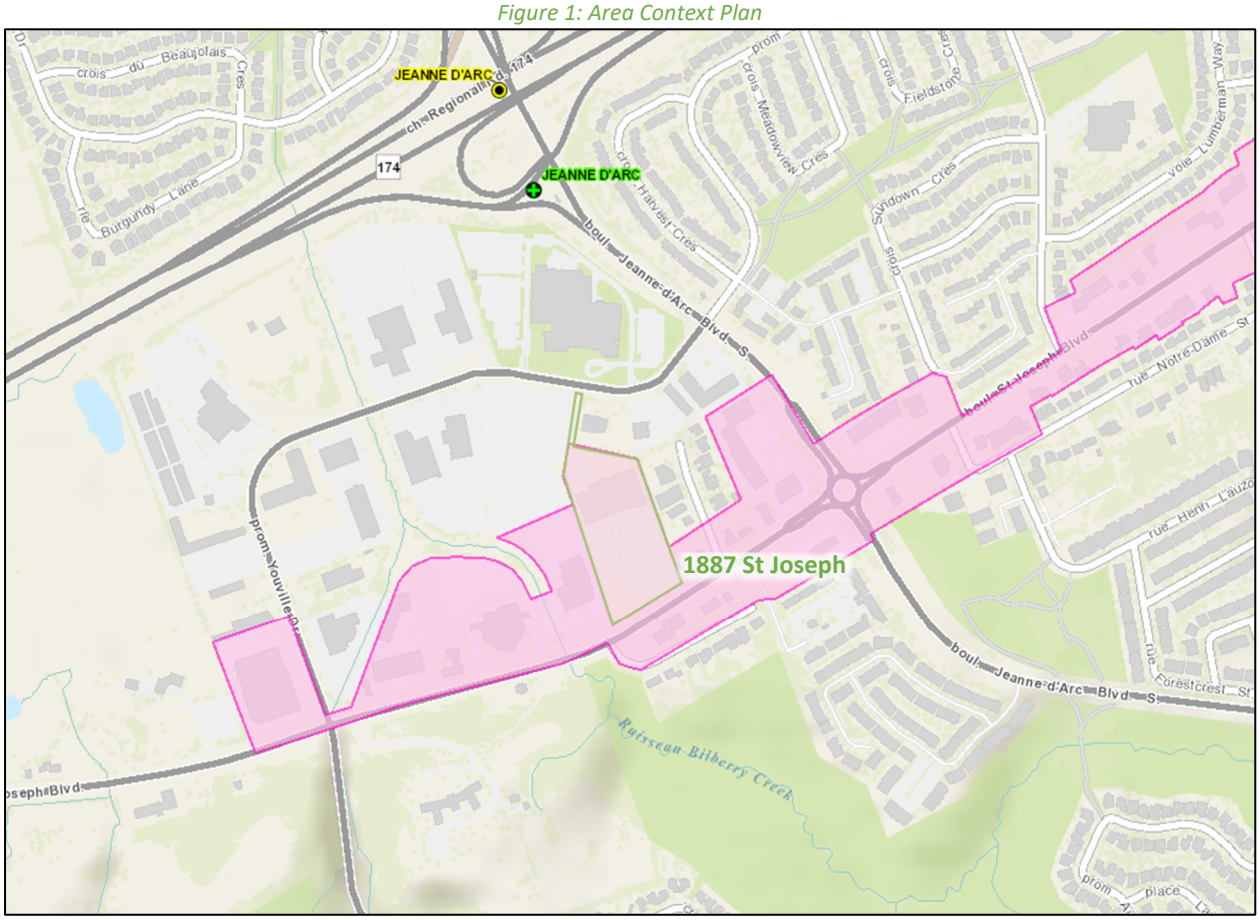
2.1 Proposed Development

The existing site located at 1887 St. Joseph Boulevard is zoned as an Arterial Mainstreet Third Density Subzone (AM3) and includes an existing commercial and retail with surface parking with a single access extending to St. Joseph Boulevard and Youville Drive. The development concept proposes the redevelopment of the site into seven buildings with a total of 1,076 residential units and ground floor retail along St. Joseph Boulevard. A total of 495 parking spaces for residents, 95 parking spaces for visitors, 12 parking spaces for retail, 760 interior bike parking, and 44 exterior bike parking spaces will be provided.

Although not included as part of the re-zoning, a potential new local road is considered by the City, to connect Youville Drive and St. Joseph Boulevard. Similarly, the City is also considering a new public road from Marenger Street to the new local road. Within the Concept, the new local will be considered for access in the future and the Marenger Street connection is only included as a private connection for active modes.

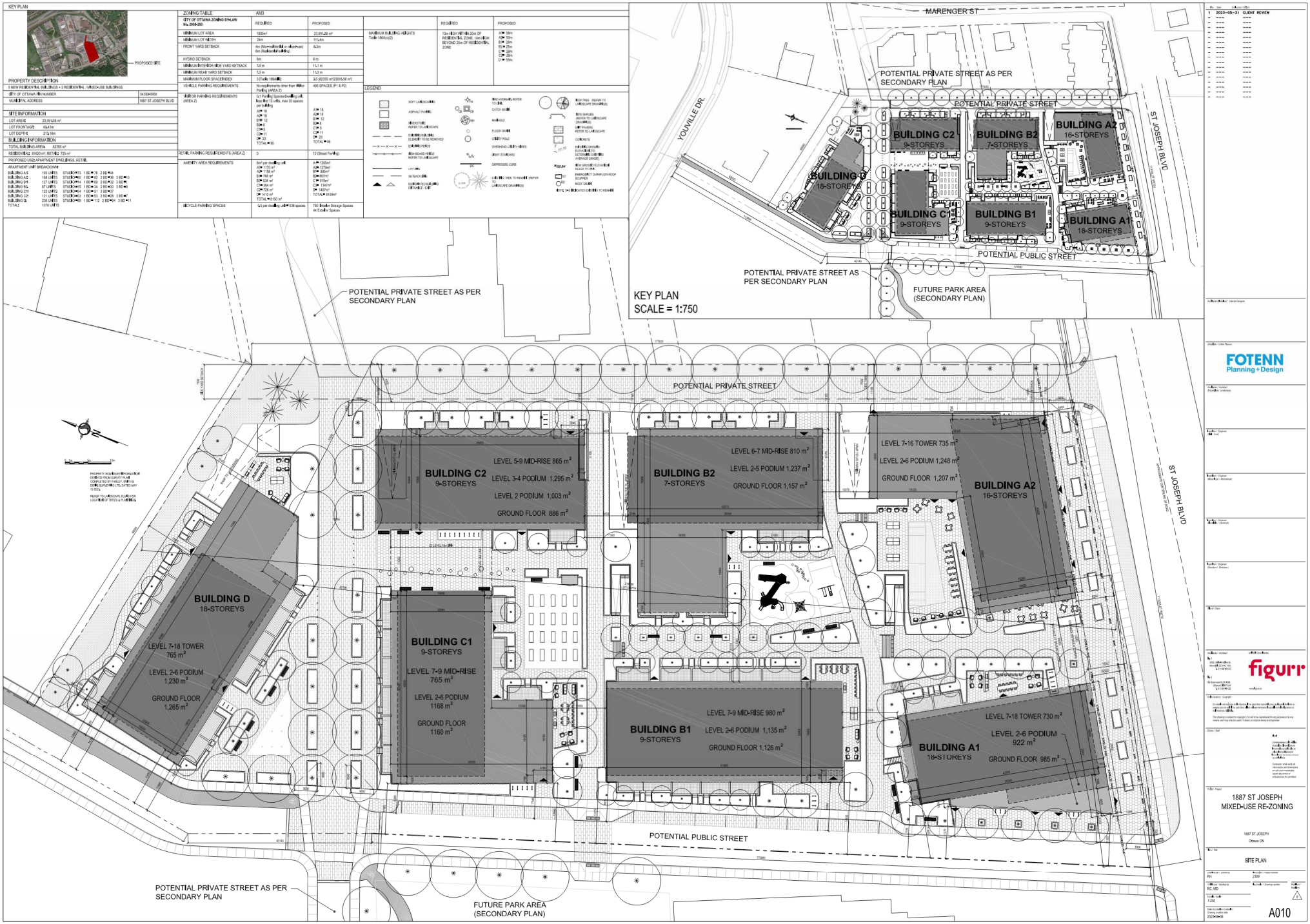
The anticipated build-out year is 2040. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 9, 2023

Figure 2: Concept Plan



2.2 Existing Conditions

2.2.1 Area Road Network

Jeanne D'Arc Boulevard: Jeanne D'Arc Boulevard is a City of Ottawa arterial road with a four-lane urban cross-section including sidewalks on both sides of the road. The posted speed limit is 60 km/h and the city protected right-of-way is 37.5 metres in the study area. Jeanne D'Arc Boulevard is a designated truck route, with restricted loads south of St Joseph Boulevard.

St. Joseph Boulevard: St Joseph Boulevard is a City of Ottawa arterial road with a four-lane urban cross-section and sidewalks are present on the north side of the road. Bike lanes are present west of Youville Drive and Forest Valley Drive. The posted speed limit is 60km/h. Within the study area, the city protected right-of-way is 32.0 metres. St Joseph Boulevard is a designated truck route.

Youville Drive: Youville Drive is a City of Ottawa collector road with a two-lane urban cross-section. Sidewalks are present on the east side of the road. The unposted speed limit is assumed to be 50 km/h and the Orleans Corridor Secondary Plan protected right-of-way is 24.0 metres. St Joseph Boulevard is a designated truck route.

Forest Valley Drive: Forest Valley Drive is a City of Ottawa collector road with a two-lane urban cross-section with a sidewalk present on the east side of the road. The posted speed limit is 40 km/h and the city protected right-of-way is 26 metres.

Grey Nuns Drive: Grey Nuns Drive is a City of Ottawa local road with a two-lane rural cross-section and sidewalks are present on the north/east side of the roadway. The posted speed limit is 40 km/h and the existing right-of-way is generally 20 metres.

Chants-d'Oiseaux Way: Chants-d'Oiseaux Way (formally Notre Dame Street West) is a City of Ottawa local road with a two-lane rural cross-section that serves eight (8) residential driveways. The speed limit is unposted, and the existing right-of-way is 20 metres.

2.2.2 Existing Intersections

The existing signalized area intersections within one kilometre of the site have been summarized below:

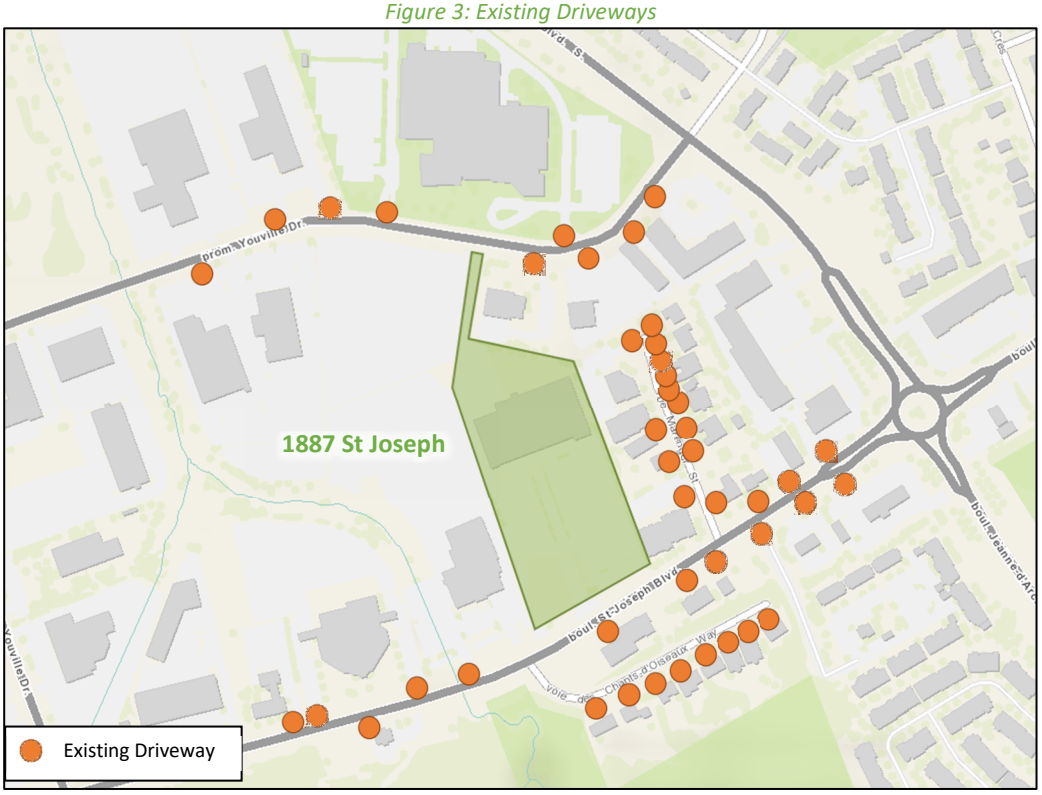
Jeanne d'Arc Boulevard at Hwy 174 North	The intersection of Jeanne d'Arc Boulevard at Hwy 174 North is a signalized intersection. The northbound approach consists of two through lanes and a channelized right-turn. The southbound approach consists of two through lanes and a right-turn lane. The westbound approach consists of a left-turn lane and a shared left/right-turn lane. Left turns on the northbound approach and the through movement on the westbound approach are restricted at the intersection for all vehicles except for buses. Once the intersection is re-instated, the channelized right-turn lane on the northbound approach will be modified to provide a minimum radius free flow ramp with yield controlled, raised pedestrian and bicycle crossing, per the Stage 2 LRT project details.
Jeanne d'Arc Boulevard at Hwy 174 South	The intersection of Jeanne d'Arc Boulevard at Hwy 174 South is a signalized intersection. The northbound approach consists of a through lane and a shared through/right-turn lane, and the southbound approach consists of a through lane and a shared through/right-turn lane. The eastbound approach consists of a dual

	left-turn lane, a transit only lane and a channelized right-turn lane. Southbound left-turns are restricted. Once the intersection is re-instated, an auxiliary right turn lane will be provided on the northbound approach, per the Stage 2 LRT project details.
Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive	The intersection of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive is a signalized intersection. The northbound and southbound approaches consist of an auxiliary left-turn lane, a through lane and a shared through/right-turn lane. The eastbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. The westbound approach consists of a shared all-movement lane. No turn restrictions were noted.
Jeanne d'Arc Boulevard at St. Joseph Boulevard	The intersection of Jeanne d'Arc Boulevard at St. Joseph Boulevard is a four-legged roundabout intersection. The northbound and southbound approaches each consist of two lanes allowing all movements. The eastbound and westbound approaches each consist of two lanes permitting left-turn and through movements and channelized right-turn lanes. Pedestrian crossovers are implemented at all approaches. No turn restrictions were noted.
St. Joseph Boulevard at Youville Drive and Forest Valley Drive	The intersection of St. Joseph Boulevard at Youville Drive and Forest Valley Drive is a signalized intersection. The northbound approach consists of two left-turn lanes and a shared through/right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and a shared through/channelized right-turn. The eastbound and westbound approaches consist of an auxiliary left-turn lane, two through lanes, and an auxiliary channelized right-turn lane. The westbound approach also includes a bike lane. No turn restrictions were noted.
St. Joseph Boulevard at Grey Nuns Drive	The intersection of St. Joseph Boulevard at Grey Nuns Drive is a signalized intersection. The southbound approach consists of a left-turn lane and shared through/right-turn lane. The eastbound approach consists of a left-turn lane and two through lanes, and the westbound approach consists of a through lane and a shared through/right-turn lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the study area, some driveways to surface parking are present along St. Joseph Boulevard and Youville Drive. On St. Joseph Boulevard, there are driveways that connect to the Myers Orleans Chevrolet Buick GMC, the Community Pentecostal Church, Mr. Lube and Tires and residential land uses. Further, on Youville Drive, two driveways connect to Orleans Mitsubishi and Performance Mazda. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 9, 2023

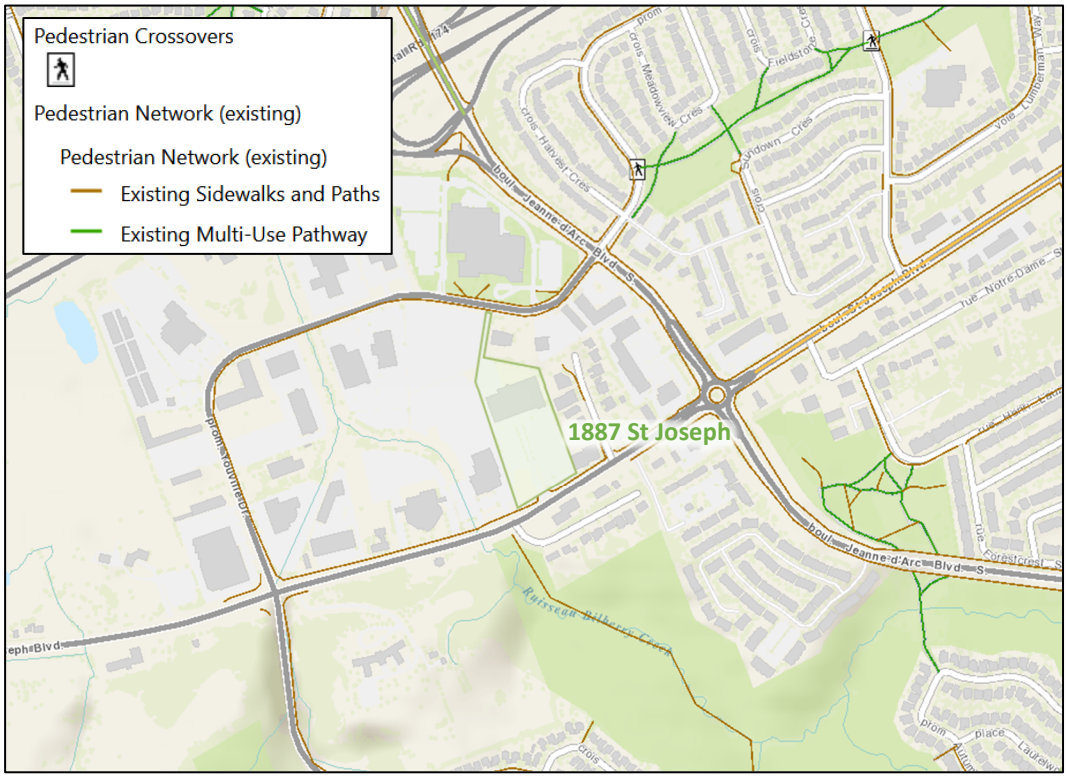
2.2.4 Cycling and Pedestrian Facilities

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

Sidewalks are provided along both sides of Jeanne D'Arc Boulevard and on the north side of Grey Nuns Drive. East of Jeanne D'Arc Boulevard, sidewalks are provided on both sides of St. Joseph Boulevard. Between Jeanne D'Arc Boulevard and Youville Drive, sidewalks are provided on the north side of St. Joseph Boulevard. These sidewalks connect to the east side of Youville Drive and Forest Valley Drive.

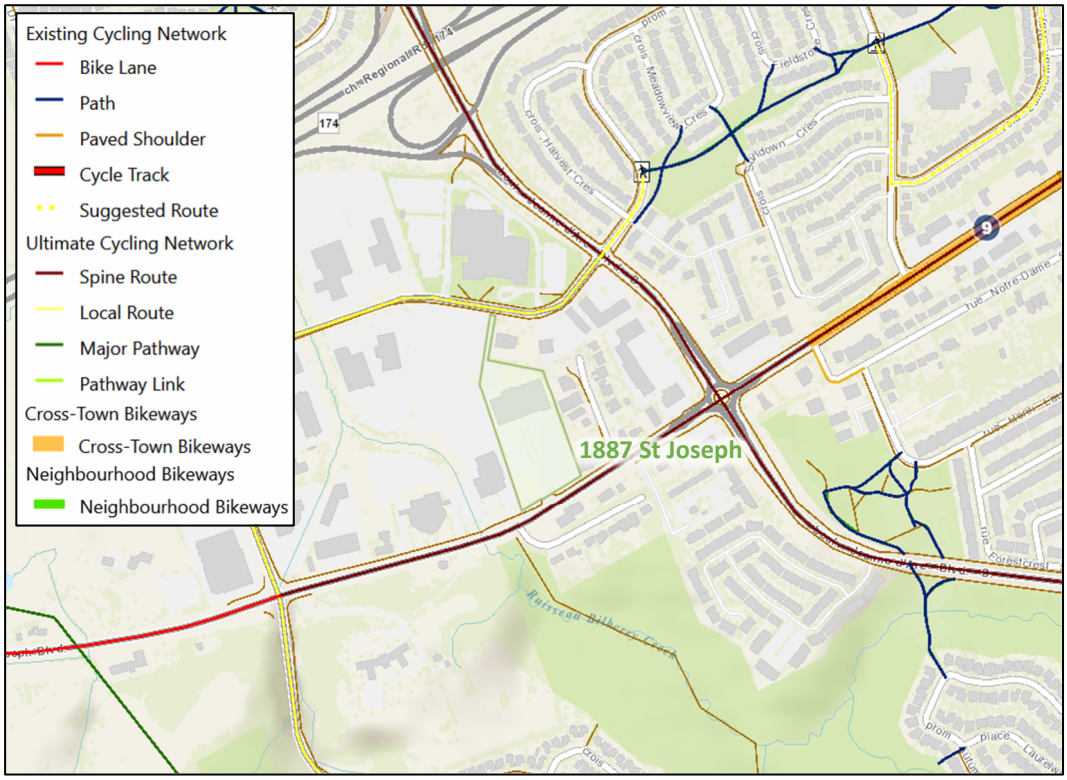
Cycling facilities include unidirectional bike lanes on St. Joseph Boulevard, west of Youville Drive. Both east and west of Jeanne D'Arc Boulevard on St. Joseph Boulevard are spine routes as well as Jeanne D'Arc Boulevard. Youville Drive is a local route. St Joseph Boulevard is designated as a cross-town bikeway to the east of Notre Dame Street.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 9, 2023

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 9, 2023

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

Figure 6: Existing Pedestrian Volumes

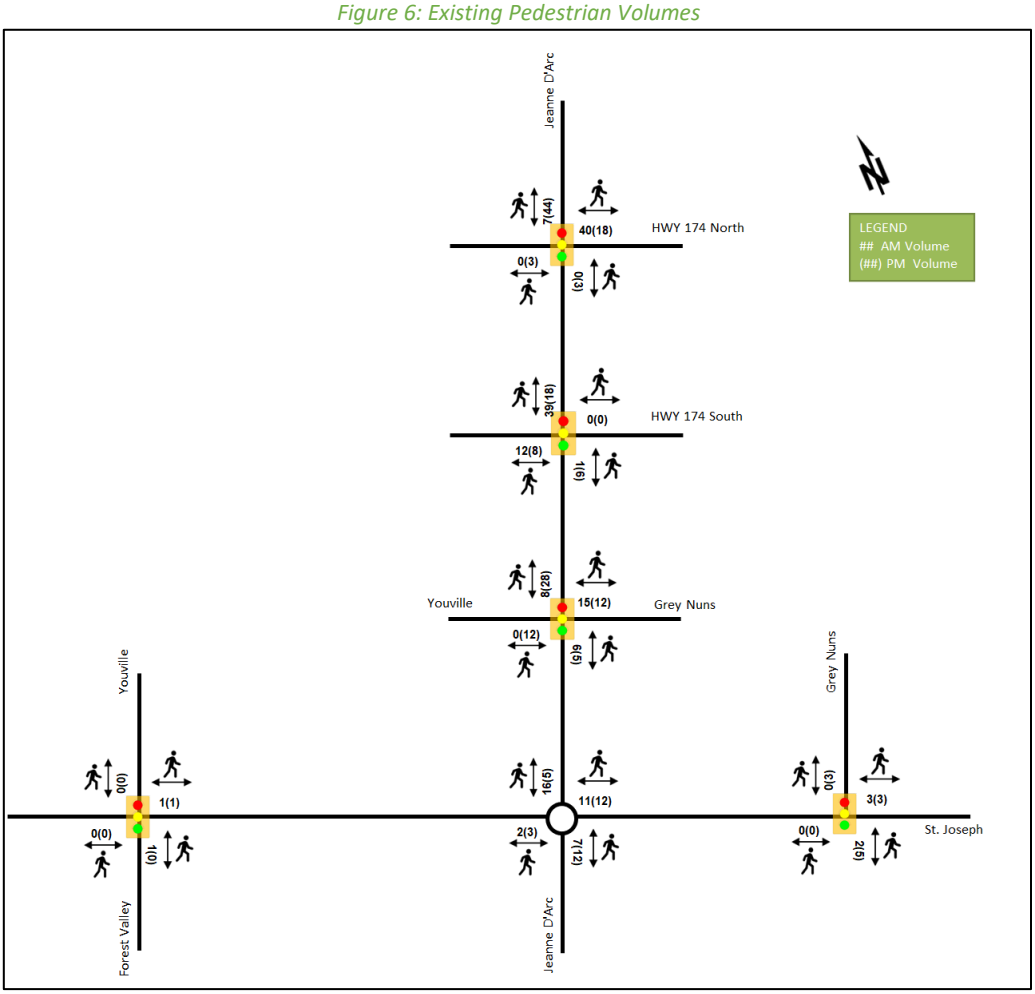
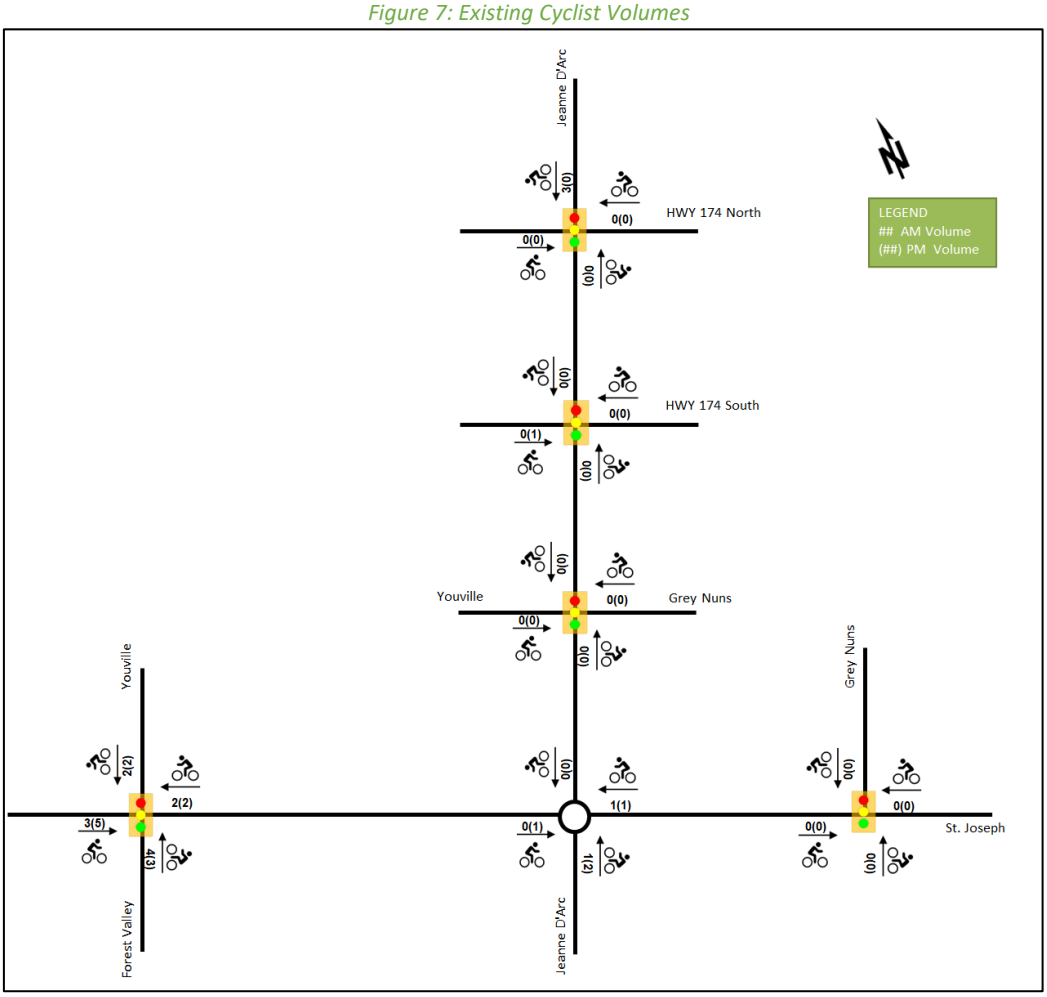


Figure 7: Existing Cyclist Volumes



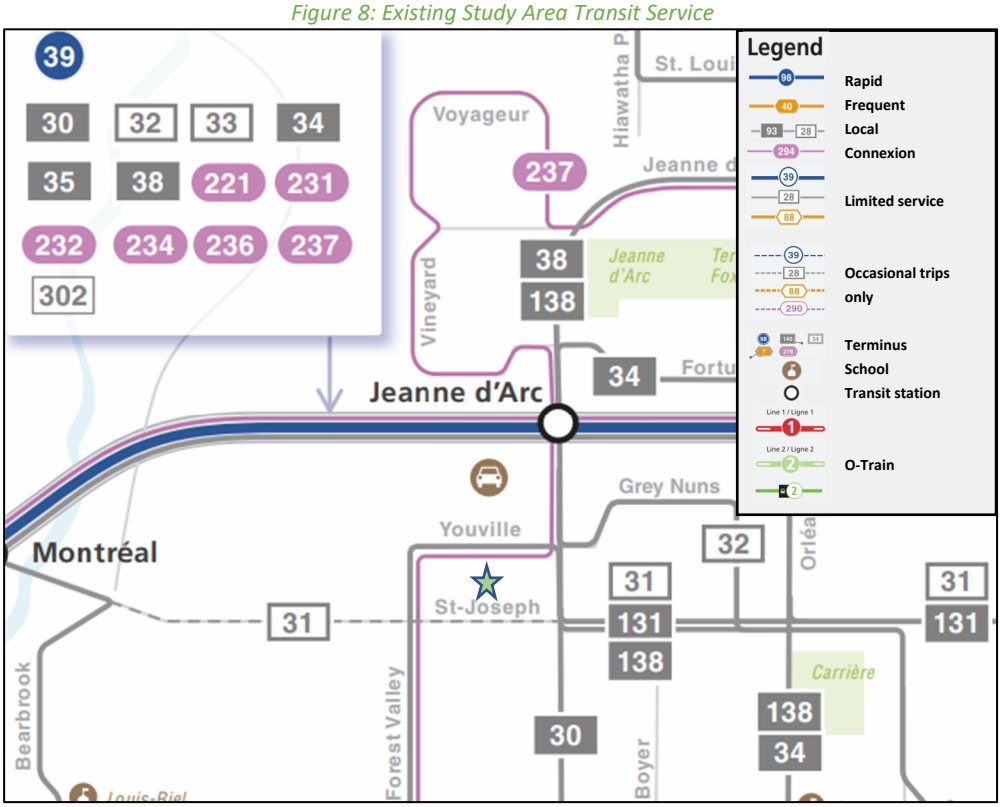
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from May 10, 2023 and is included for general information purposes and context to the surrounding area.

Within the study area, the routes #30, #31, #32, #39, #131, #138, and #231 stop within proximity of the proposed site. The frequency of these routes within proximity of the proposed site based on May 10, 2023 service levels are:

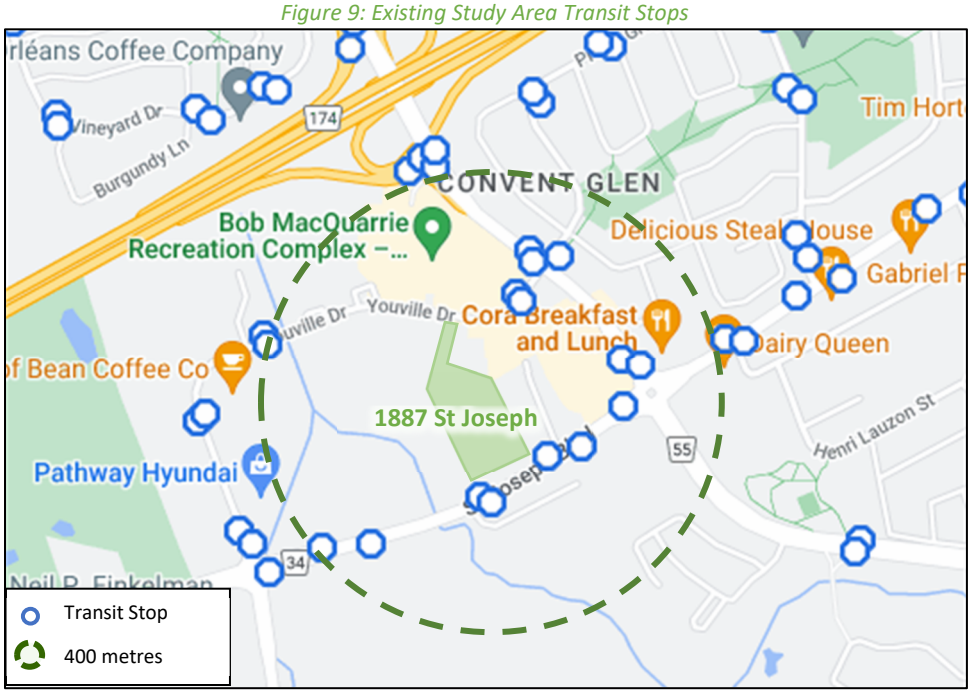
- Route # 30 – 30-minute service from 12 AM to 3 PM, 15-minute service from 3 PM to 7 PM
- Route # 31 – 30-minute service at 7 AM, hourly service at 12 PM, 4 PM and 5 PM
- Route # 32 – 30-minute service from 5 AM to 8 AM
- Route # 39 – 20-minute service from 6 AM to 7:30 AM, 15-minute service from 7:30 AM to 3:30 PM, 10-minute service from 3:30 PM to 7 PM, 15-minute service from 7 PM to 9:30 PM, 30-minute service from 9:30 PM to 6 AM
- Route # 131 – 30-minute service all day
- Route # 138 – 30-minute service in the peak period/direction, one-hour service all day
- Route # 231 – Four buses in the peak period/direction per day

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: May 9, 2023

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: May 9, 2023

2.2.6 Existing Area Traffic Management Measures

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

2.2.7 Existing Peak Hour Travel Demand

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

Table 1: Intersection Count Date

Intersection	Count Date
Jeanne d'Arc Boulevard at Hwy 174 North	Thursday, January 31, 2019
Jeanne d'Arc Boulevard at Hwy 174 South	Wednesday, March 04, 2020
Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive	Thursday, January 17, 2019
Jeanne d'Arc Boulevard at St. Joseph Boulevard	Wednesday, July 06, 2022
St. Joseph Boulevard at Youville Drive and Forest Valley Drive	Wednesday, July 06, 2022
St. Joseph Boulevard at Grey Nuns Drive	Thursday, January 17, 2019

Figure 10 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. Detailed turning movement count data is included in Appendix B and the Synchro and Sidra worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

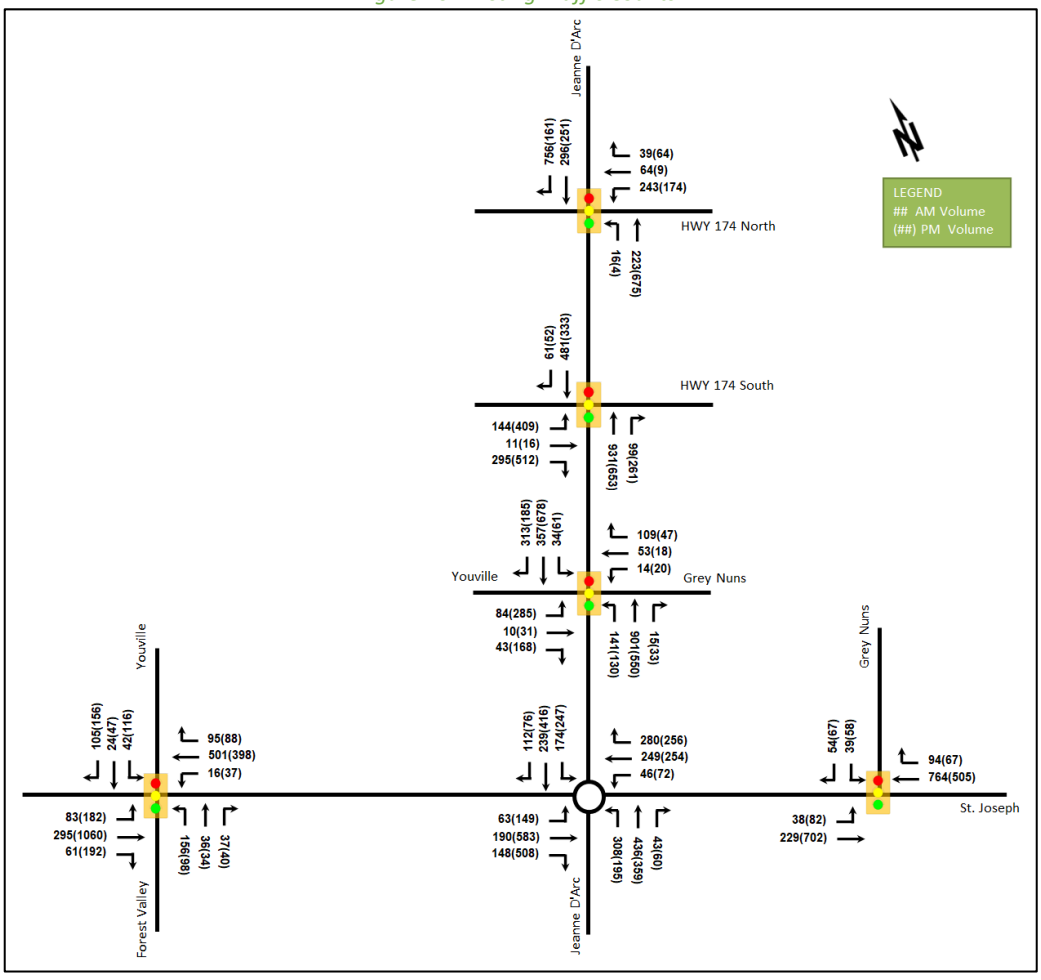


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Jeanne d'Arc Boulevard at Hwy 174 North ***Signalized***	WBL	A	0.45	23.3	35.7	A	0.45	28.1	26.8
	WBL/R	A	0.59	25.6	36.1	A	0.40	15.1	17.3
	NBL/T	A	0.17	7.7	11.5	A	0.39	9.3	46.1
	NBR	-	-	-	-	-	-	-	-
	SBT	A	0.19	10.1	20.2	A	0.14	7.2	17.2
	SBR	C	0.80	11.7	#109.0	A	0.21	2.4	9.1
	Overall	**B**	**0.67**	**13.5**	-	**A**	**0.41**	**10.4**	-
Jeanne d'Arc Boulevard at Hwy 174 South ***Signalized***	EBL	A	0.25	22.8	13.2	A	0.41	17.1	25.8
	EBT	A	0.07	19.5	4.3	A	0.06	11.4	4.2
	EBR	C	0.72	17.6	30.7	D	0.85	23.2	62.5
	NBT/R	A	0.56	10.1	79.7	B	0.65	17.9	#96.0
	SBT	A	0.29	4.4	30.7	A	0.27	9.8	23.5
	Overall	**A**	**0.56**	**10.6**	-	**C**	**0.71**	**17.5**	-
Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive ***Signalized***	EBL	A	0.58	42.3	22.4	C	0.79	44.3	77.0
	EBT/R	A	0.19	10.5	8.6	A	0.38	6.9	18.5
	WB	A	0.52	17.2	23.9	A	0.20	11.8	14.9
	NBL	A	0.38	9.6	22.4	A	0.52	19.1	24.7
	NBT/R	A	0.55	16.1	#113.7	A	0.44	21.5	67.8
	SBL	A	0.11	8.1	7.1	A	0.18	12.9	13.2
	SBT/R	A	0.47	10.5	48.8	C	0.73	28.6	#118.8
	Overall	**A**	**0.58**	**14.7**	-	**C**	**0.73**	**25.2**	-
Jeanne d'Arc Boulevard at St. Joseph Boulevard ***Roundabout***	EB	A	0.18	5.5	3.8	A	0.66	7.9	23.8
	WB	A	0.28	5.9	6.1	A	0.29	6.0	6.3
	NB	A	0.56	8.9	19.0	B	0.68	13.8	22.4
	SB	A	0.42	8.8	11.4	A	0.56	9.2	18.8
	Overall	**A**	**0.56**	**7.5**	-	**A**	**0.68**	**9.0**	-
St. Joseph Boulevard at Youville Drive and Forest Valley Drive ***Signalized***	EBL	A	0.34	22.6	21.7	A	0.54	21.8	36.2
	EBT	A	0.23	20.2	32.4	C	0.73	23.7	116.7
	EBR	A	0.10	2.0	4.4	A	0.26	2.9	11.2
	WBL	A	0.05	25.6	7.8	A	0.38	35.2	16.6
	WBT	A	0.48	30.0	66.4	A	0.35	23.4	44.4
	WBR	A	0.17	1.9	4.1	A	0.15	0.6	0.7
	NBL	A	0.52	52.7	28.0	A	0.41	48.8	18.5
	NBT/R	A	0.58	46.8	33.4	C	0.72	59.3	#33.1
	SBL	A	0.37	55.6	21.0	D	0.90	98.5	#58.8
	SBT/R	A	0.27	10.0	19.5	A	0.43	13.4	31.2
	Overall	**A**	**0.36**	**26.7**	-	**B**	**0.67**	**26.1**	-
St. Joseph Boulevard at Grey Nuns Drive ***Signalized***	EBL	A	0.10	3.4	4.1	A	0.16	4.6	12.1
	EBT	A	0.10	2.6	7.4	A	0.29	3.9	38.4
	WBT/R	A	0.36	3.4	29.8	A	0.24	3.5	29.0
	SBL	A	0.24	39.9	16.5	A	0.32	43.0	21.6
	SBR	A	0.27	13.7	10.9	A	0.30	12.0	11.2
	Overall	**A**	**0.36**	**4.9**	-	**A**	**0.31**	**5.7**	-

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

During both the AM and PM peak hours, the study area intersections operate well.

During the AM peak hour, the southbound right-turn movement at Jeanne d'Arc Boulevard at Hwy 174 North intersection and the northbound shared through/right-turn movement at Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive may be subject to extended queues.

During the PM peak hour, the northbound shared through/right-turn movement at Jeanne d'Arc Boulevard at Hwy 174 South intersection, the southbound shared through/right-turn movement at Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive, and the northbound shared through/right-turn and southbound left-turn movements at St. Joseph Boulevard at Youville Drive and Forest Valley Drive intersection may be subject to extended queues. High delays may be exhibited on the southbound left-turn movements at St. Joseph Boulevard at Youville Drive and Forest Valley Drive intersection.

2.2.8 Collision Analysis

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

Table 3: Study Area Collision Summary, 2016-2020

		Number	%
Total Collisions		24	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	5	21%
	Property Damage Only	19	79%
Initial Impact Type	**Approaching**	1	4%
	Angle	7	29%
	Rear end	2	8%
	Sideswipe	7	29%
	Turning Movement	5	21%
	SMV Other	2	8%
Road Surface Condition	**Dry**	17	71%
	Wet	3	13%
	Loose Snow	2	8%
	Slush	2	8%
Pedestrian Involved		0	0%
Cyclists Involved		1	4%

Figure 11: Study Area Collision Records – Representation of 2015-2019

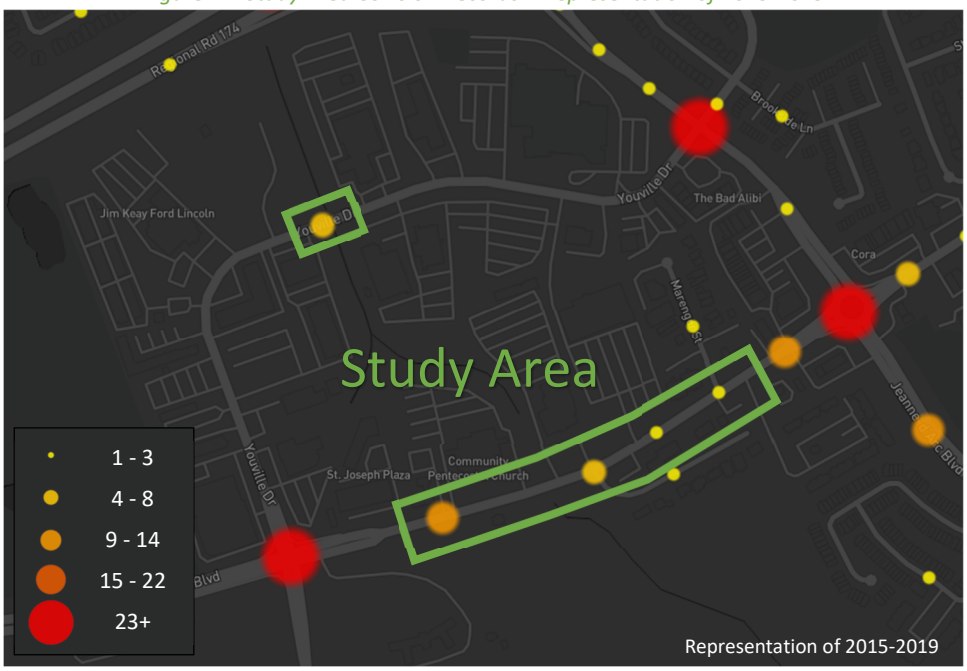


Table 4: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**24**	**100%**
St. Joseph Blvd btwn Youville Dr & Chants d'Oiseaux Way	9	38%
Youville Dr btwn St. Joseph Blvd & Jeanne D'arc Blvd S	7	29%
Chants d'Oiseaux Way @ St. Joseph Blvd	4	17%
St. Joseph Blvd btwn Chants d'Oiseaux Way & Marenger St	2	8%
Marenger St @ St. Joseph Blvd	2	8%

Note: Chants d'Oiseaux Way is noted as Notre Dame Street W within the collision reports.

Within the study area, the intersection of St. Joseph Boulevard between Youville Drive and Chants d'Oiseaux Way is noted to have experienced higher collisions than other locations. Table 5 summarizes the collision types and conditions for the intersection.

Table 5: St. Joseph Boulevard Between Youville Dr & Chants d'Oiseaux Way Collision Summary

		Number	%
Total Collisions		9	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	1	11%
	Property Damage Only	8	89%
	Angle	4	44%
	Rear end	1	11%
	Sideswipe	3	33%
	Turning Movement	1	11%
Road Surface Condition	**Dry**	6	67%
	Wet	2	22%
	Loose Snow	1	11%
Pedestrian Involved		0	0%
Cyclists Involved		1	11%

It is noted that the intersection had a total of nine collisions during the 2016-2020 time period, with 8 involving property damage only and the remaining 1 having non-fatal injuries. The collision types are most represented by angle collisions with four collisions, followed by three sideswipe collisions, one rear end collision and a turning movement collision. General congestion and through movements may be contributing factors to the sideswipe and angle collisions. Weather conditions do not affect collisions at this location. No further examination is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

2.3.1.1 Transportation Master Plan (TMP)

Within the Transportation Master Plan (TMP), the Rapid Transit and Transit Priority (RTTP) Network's Network Concept diagram shows an isolated measures transit priority corridor on Orleans Boulevard between Regional Road 174 and Jeanne D'Arc Boulevard and a continuous measures transit priority corridor on Jeanne D'Arc Boulevard between Regional Road 174 and Innes Road.

2.3.1.2 Stage 2 LRT East Extension - Jeanne d'Arc Station

The future Jeanne d'Arc LRT station will be located within 800 metres from the site, and it is anticipated to be completed by 2025. A multi-use pathway is planned to be along Jeanne d'Arc Boulevard bridge between Fortune Drive and Hwy 174 eastbound on-ramp. At the intersection of Jeanne d'Arc Boulevard at Hwy 174 North, raised pedestrian and bicycle crossing is planned to be provided on the east side. At the intersection of Jeanne d'Arc Boulevard at Hwy 174 South, bicycle crossings are planned to be provided on the east and south sides, and an addition of 60-metre vehicle right turn lane will be provided on the northbound approach.

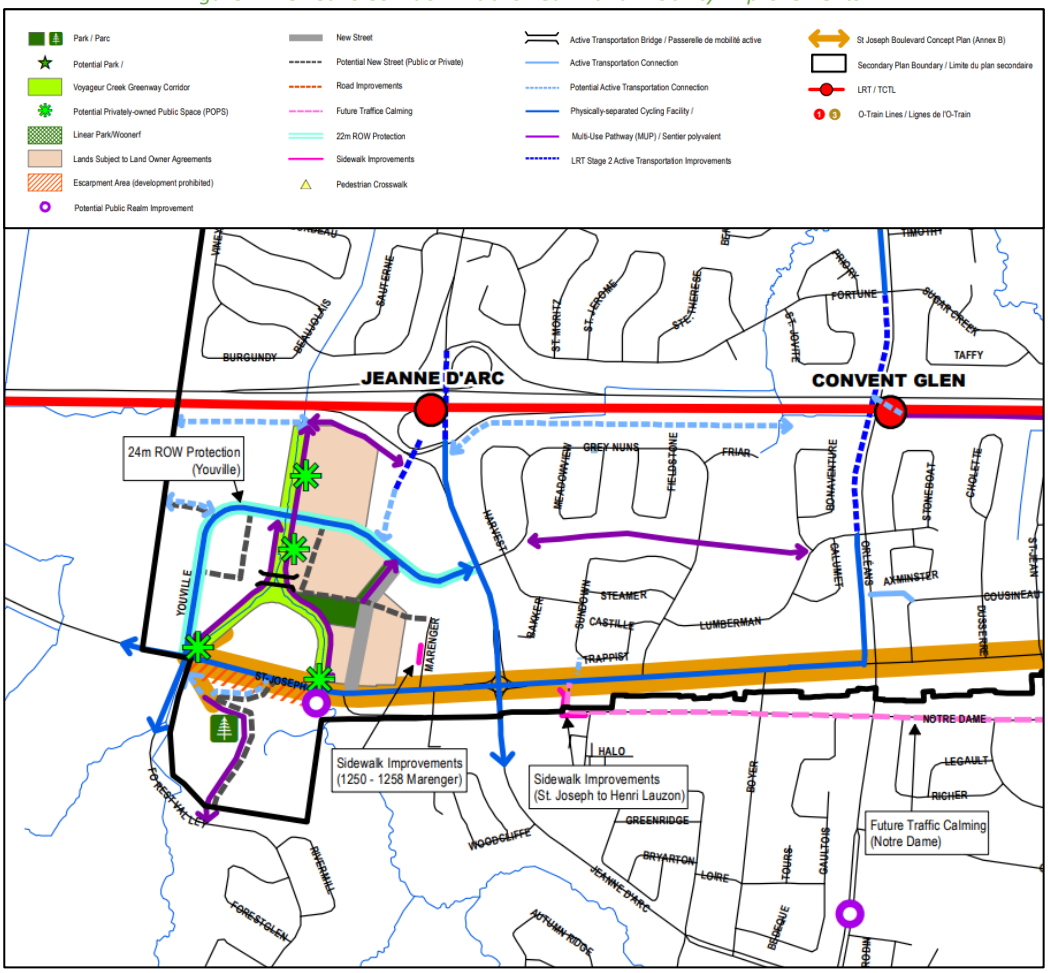
2.3.1.3 Orleans Corridor Secondary Plan

The Orleans Corridor Secondary Plan identifies Youville Drive designated as a Neighbourhood Collector Road, including separated cycle-tracks to and from the O-Train Station and a 24-metre protected right-of-way along Youville Drive. A new north-south public street is planned to be constructed to connect Youville Drive to St. Joseph Boulevard, which will be along the western property line of the site. Potential active transportation connections along Jeanne d'Arc Boulevard and multi-use pathways connecting Jeanne d'Arc Boulevard and St. Joseph Boulevard are also included in the public realm and mobility improvements.

Figure 12 illustrates the public realm and mobility improvements along Orléans Corridor.

The St. Joseph Boulevard Concept Plan in the Orleans Corridor Secondary Plan is to transform the road right-of-way into a pedestrian-oriented mainstreet, including a reduction in vehicle travel lanes from four to three in order to accommodate cycling facilities and bus transit improvements and opportunities for on-street parking on St. Joseph Boulevard. Since none of the improvements is confirmed, these will not be included in the analysis. Conceptually, these improvements would all be supportive of redevelopment along St Joseph Boulevard. The St. Joseph Boulevard Concept Plan is included in Appendix E.

Figure 12: Orléans Corridor - Public Realm and Mobility Improvements



2.3.2 Other Study Area Developments

1400 – 1410 Youville Drive

The proposed development application includes a site plan application for one mixed-use building containing an auto-body repair shop (1,824 m^2) and office space (291 m^2) with a total GFA of 2,023 m^2. The development build out year is 2023 and based on each land use, the development is predicted to generate 42 AM and 47 PM peak hour trips. No trip reductions were applied for the existing land-use replacement. (McIntosh Perry, 2023)

1994 St. Joseph Boulevard

The proposed development application includes a site plan application for a physiotherapist office building with a total GFA of 718 m^2. The development was forecasted to be completed in 2021, although it has not been constructed. Based on the land use, the development is predicted to generate 22 AM and 27 PM peak hour trips. (Stantec, 2021)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Jeanne D'Arc Boulevard at:
  - Boulevard at Hwy 174 North

  - Boulevard at Hwy 174 South
  - Youville Drive / Grey Nuns Drive
  - St. Joseph Boulevard
- St. Joseph Boulevard at:
  - Youville Drive and Forest Valley Drive
  - Grey Nuns Drive

Site accesses will be included for informational purposes only, which include:

- Private driveway access on St. Joseph Boulevard

The boundary road will be St. Joseph Boulevard and no screenlines are present within proximity to the site.

3.2 Time Periods

As the proposed development is mixed-use development composed of residential and commercial units, the weekday AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2040 for the entire site and this single horizon will be reviewed in support of the OPA/ZBA. Future TIAs will be required for the individual phases, subject to sale of the site and applications by others.

4 Exemption Review

Table 6 summarizes the exemptions for this TIA.

Table 6: Exemption Review

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

4.1 TIA Stepped Process

The submission of this TIA has been prepared as a single submission due to a number of factors, primarily due to the minimal risk associated with the zoning bylaw amendment. The application is in line with the City's policy and visioning for the area and the TIA will be confirming the City's planning work can function from a transportation perspective.

5 Development-Generated Travel Demand

5.1 Mode Shares

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

Table 7: TRANS Trip Generation Manual Recommended Mode Shares – Orleans

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	54%	61%	77%	71%
Auto Passenger	7%	13%	14%	20%
Transit	29%	21%	3%	2%
Cycling	0%	0%	0%	1%
Walking	10%	6%	6%	5%
Total	**100%**	**100%**	**100%**	**100%**

It is noted that the future Jeanne d'Arc LRT station will be located within 800 metres from the site, and completion is anticipated by the end of 2024. A 15% shift to transit mode from the auto mode for residential land use and a 10% percent shift to transit mode from the auto mode for commercial land use are proposed. The modified mode share targets are summarized in Table 8.

Table 8: Proposed Development Mode Shares

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	39%	46%	67%	61%
Auto Passenger	7%	13%	14%	20%
Transit	44%	36%	13%	12%
Cycling	0%	0%	0%	1%
Walking	10%	6%	6%	5%
Total	**100%**	**100%**	**100%**	**100%**

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial components from the ITE Trip Generation Manual 11th Edition (2021) using the City-prescribed conversion factor of 1.28. Table 9 summarizes the person trip rates for the proposed residential land uses for each peak period and the person trip rates for the non-residential land uses by peak hour.

Table 9: Trip Generation Person Trip Rates

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

Using the above person trip rates, the total person trip generation has been estimated. Table 10 summarizes the total person trip generation for the residential land uses and for the non-residential land uses.

Table 10: Total Person Trip Generation

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	1,076	267	594	861	561	407	968
Land Use	**GFA**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Strip Retail Plaza (<40k)	7,912 sq. ft	14	9	24	34	35	67

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail and office components for mixed-use developments. The rates summarized in Table 11 represent the percentage of trips to/from retail and office use based on the residential component.

Table 11: Internal Capture Rates

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

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

Using the above mode share targets, the internal capture and pass-by rates, and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 12 summarizes the residential trip generation and the non-residential trip generation by mode and peak hour.

Table 12: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**39%**	50	111	161	**46%**	114	82	196
	Auto Passenger	**7%**	9	20	29	**13%**	32	23	55
	Transit	**44%**	64	144	208	**36%**	95	69	164
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**10%**	16	34	50	**6%**	18	12	30
	Total	**100%**	**139**	**309**	**448**	**100%**	**259**	**186**	**445**
Strip Retail	Auto Driver	**67%**	3	0	3	**61%**	7	5	12
	Auto Passenger	**14%**	2	1	3	**20%**	6	6	12
	Transit	**13%**	2	1	3	**12%**	4	3	7

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
	Cycling	**0%**	0	0	0	**1%**	0	0	0
	Walking	**6%**	1	0	1	**5%**	2	1	3
	Internal Capture	*varies*	*-2*	*-1*	*-3*	*varies*	*-2*	*-6*	*-8*
	Pass-by	*40%*	*-5*	*-5*	*-10*	*40%*	*-13*	*-13*	*-26*
	Total	**100%**	**8**	**2**	**10**	**100%**	**19**	**15**	**34**
Total	Auto Driver	-	53	111	164	-	121	87	208
	Auto Passenger	-	11	21	32	-	38	29	67
	Transit	-	66	145	211	-	99	72	171
	Cycling	-	0	0	0	-	0	0	0
	Walking	-	17	34	51	-	20	13	33
	Internal Capture	*varies*	*-2*	*-1*	*-3*	*varies*	*-2*	*-6*	*-8*
	Pass-by	*varies*	*-5*	*-5*	*-10*	*varies*	*-13*	*-13*	*-26*
	Total	**100%**	**147**	**311**	**458**	**100%**	**278**	**201**	**479**

As shown above, a total of 164 AM and 208 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Orleans Table 13 below summarizes the distributions.

Table 13: OD Survey Distribution – Orleans

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

5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 14 summarizes the proportional assignment to the study area roadways. Figure 13 illustrates the new site-generated volumes, and Figure 14 illustrates the pass-by volumes.

Table 14: Trip Assignment

To/From	Via
North	5% Jeanne D'Arc (N)
South	10% St. Joseph (W) 20% Jeanne D'Arc (S)
East	5% HWY 174 (E) 20% St. Joseph (E)
West	30% HWY 174 (W) 10% St. Joseph (W)
Total	**100%**

Figure 13: New Site Generation Auto Volumes

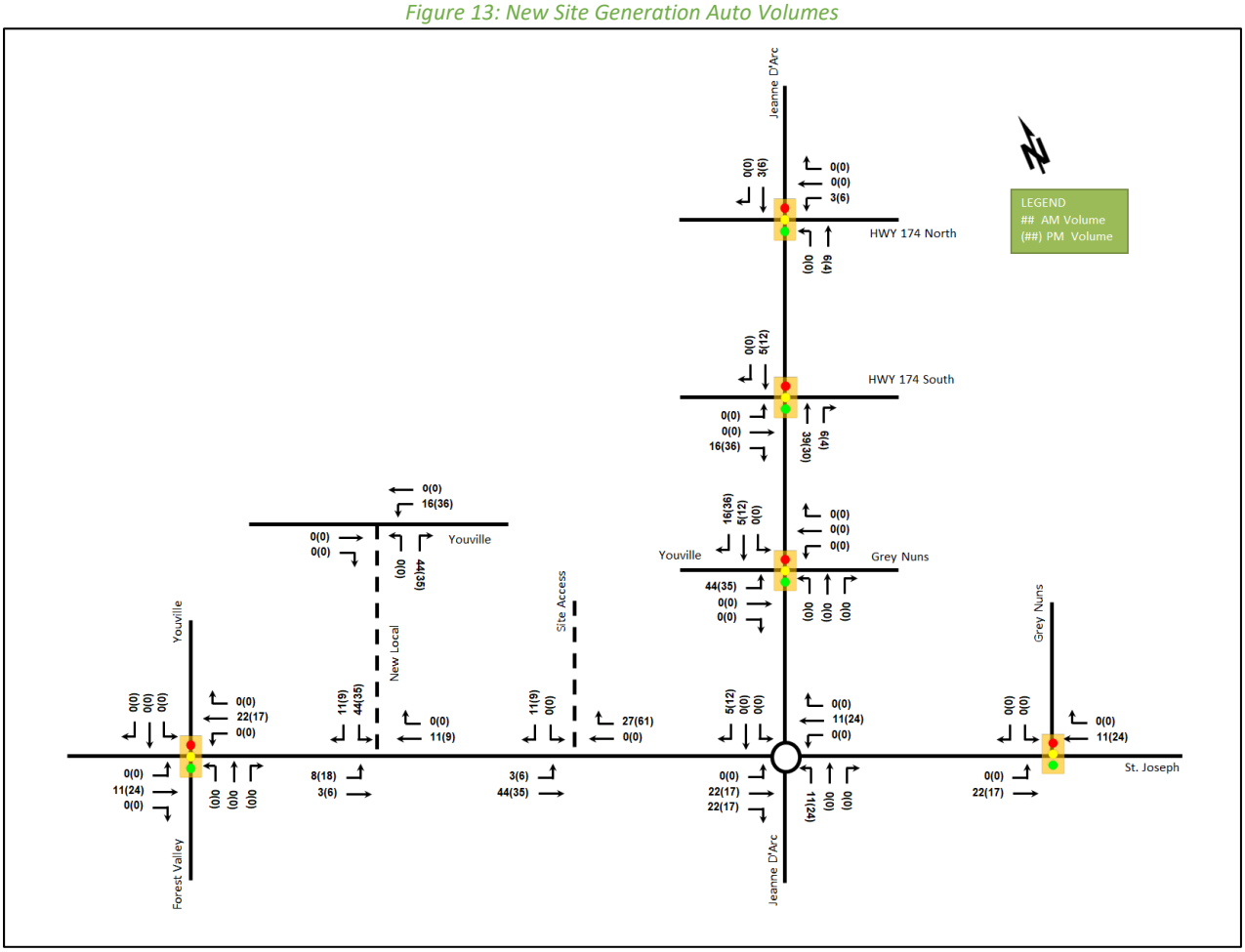
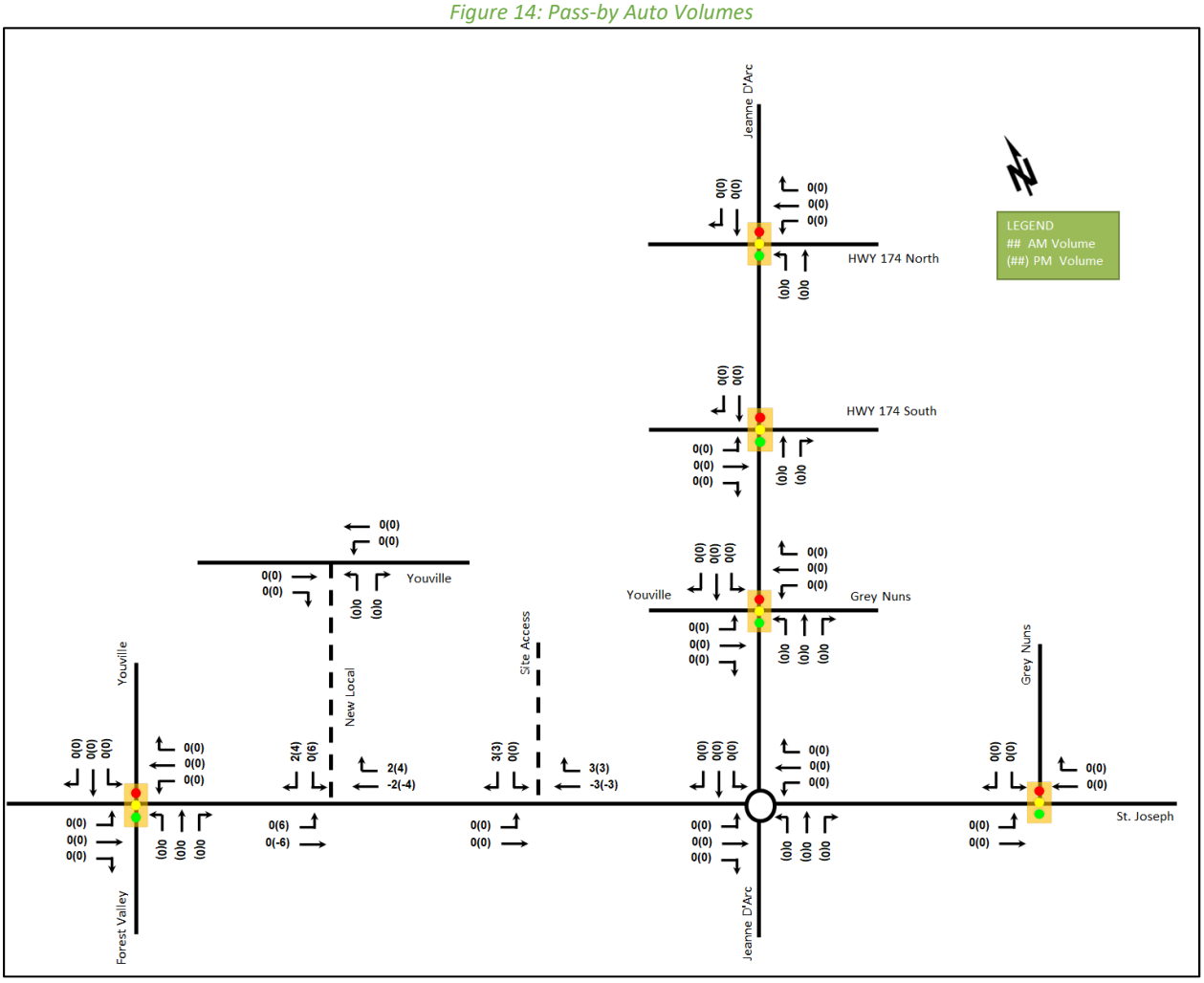


Figure 14: Pass-by Auto Volumes



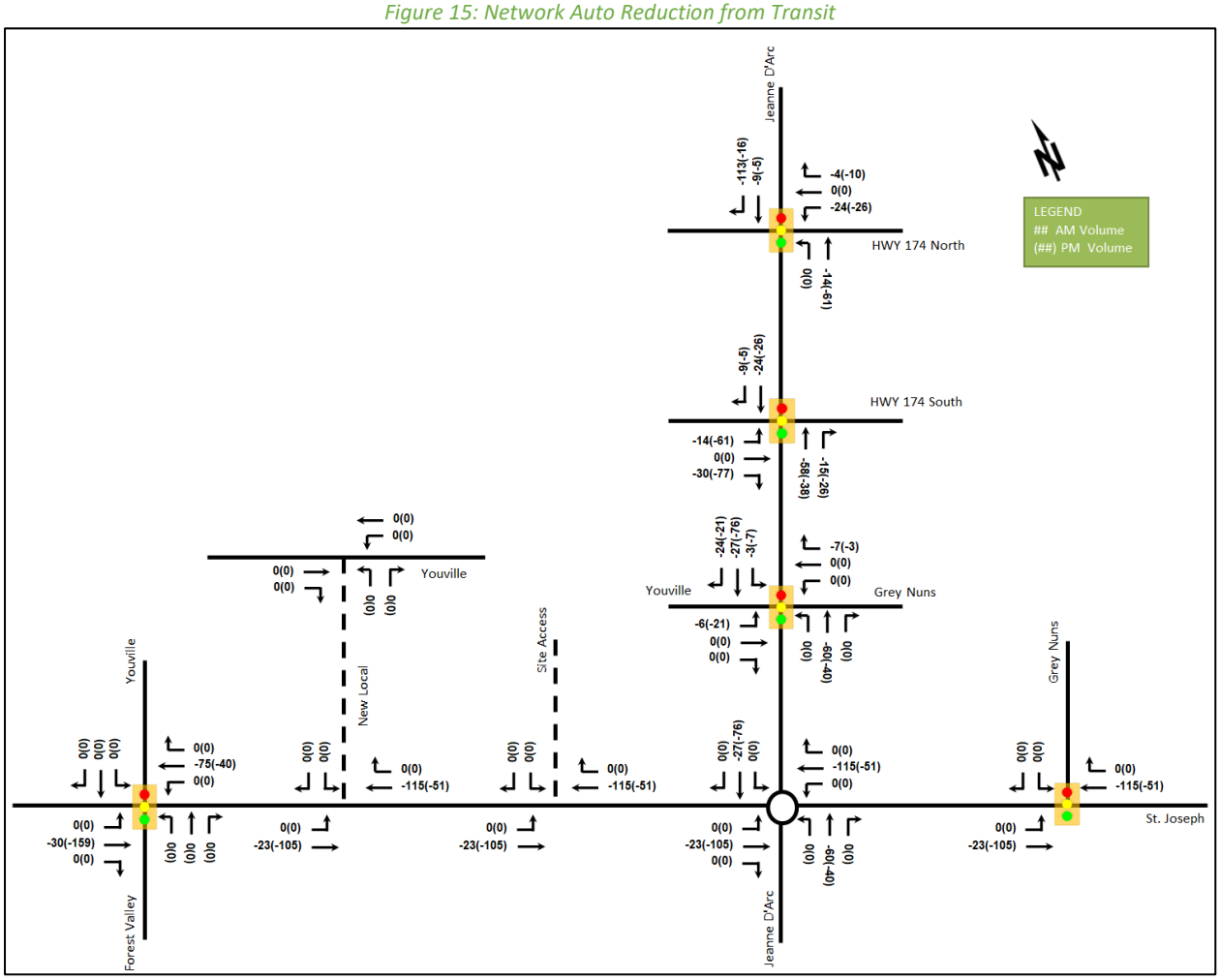
6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Jeanne d'Arc station Light Rail Transit (LRT) project is the only confirmed project within the study horizons and has been included. Given the transit improvements for Orleans, a network reduction of 15% in the peak direction and 10% in the off-peak direction will be applied to east and west travel. This will be reflected along St Joseph Boulevard and from the Highway 174 Ramp intersections back through the network.

The reduction percentage will be applied to the existing volumes and included in the future 2040 horizons. The background growth percentage will be applied as normal. Figure 15 illustrates the network reduction.

Figure 15: Network Auto Reduction from Transit



6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The background TRANS model growth rates are summarized in Table 15 and the TRANS model plots are provided in Appendix F.

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

Street	TRANS Rate	
	Eastbound	**Westbound**
Highway 174 EB	-0.76%	1.00%
Highway 174 WB	-0.94%	-1.29%
St Joseph Blvd	-0.39%	0.28%
Youville Dr	-2.68%	0.29%
Grey Nuns Dr	-0.48%	-1.23%
	Northbound	**Southbound**
Jeanne D'Arc Blvd	0.46%	-0.33%
Youville Dr	0.63%	0.43%
Forest Valley Dr	0.29%	-1.44%
Grey Nuns Dr	0.22%	-0.38%

Given the TRANS growth rates are minimal or negative for the study area, a nominal 0.5% will be applied to all major movements for future horizons. Grey Nuns Drive is assumed to have no growth.

6.3 Other Developments

The background developments explicitly considered in the background conditions (Section 6.2) include 1994 St Joseph Boulevard. The 1400-1410 Youville Drive is anticipated to produce minimal new trips per the TIA and once the existing land use is factored in, the change in trips is negligible. This site will not be included in the background developments. The background development volumes within the study area have been provided in Appendix G.

7 Demand Rationalization

7.1 2040 Future Background Operations

Figure 16 illustrates the 2040 background volumes and Table 16 summarizes the 2040 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The synchro and Sidra worksheets for the 2040 future background horizon are provided in Appendix H.

Figure 16: 2040 Future Background Volumes

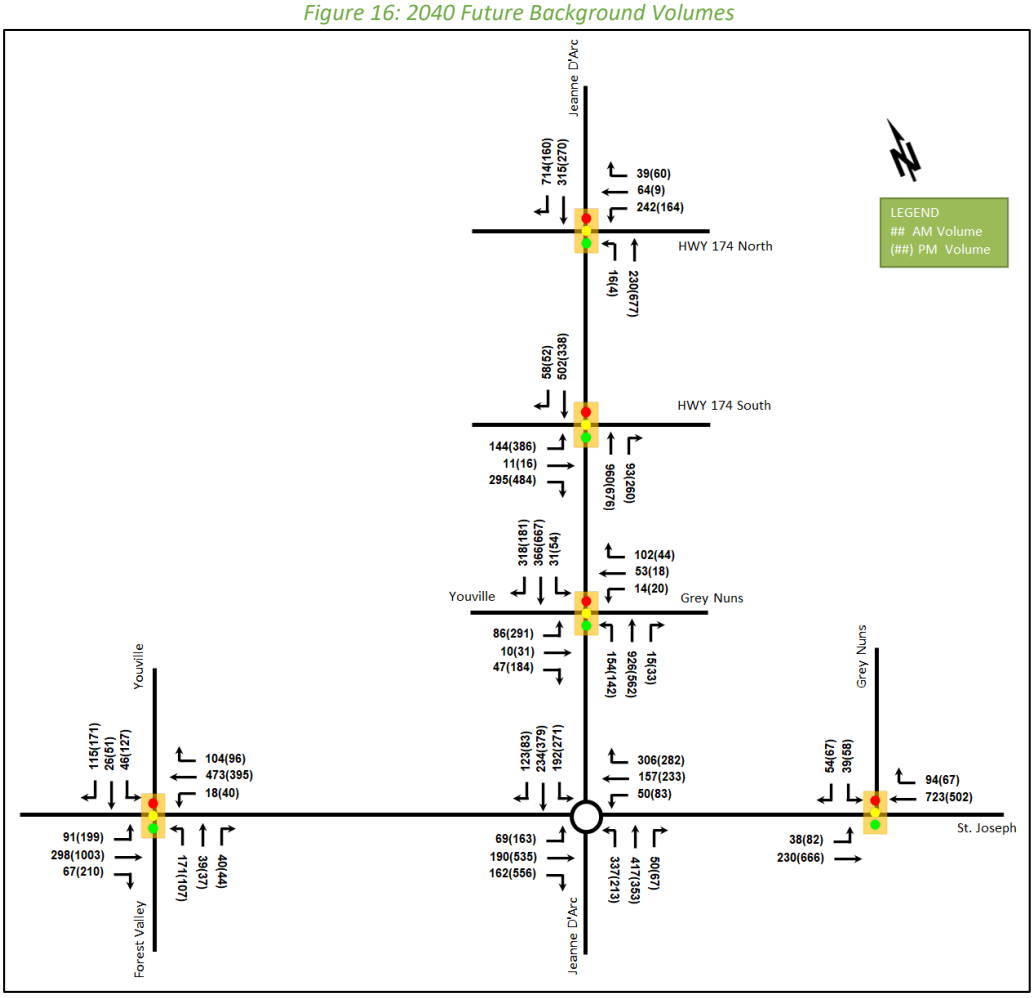


Table 16: 2040 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Jeanne d'Arc Boulevard at Hwy 174 North ***Signalized***	WBL	A	0.37	20.4	32.5	A	0.29	20.4	23.2
	WBL/R	A	0.47	20.7	31.8	A	0.28	11.1	15.4
	NBL/T	A	0.17	7.1	7.7	A	0.36	8.6	29.8
	NBR	-	-	-	-	-	-	-	-
	SBT	A	0.19	10.9	19.3	A	0.13	9.3	16.7
	SBR	C	0.76	11.7	**#79.0**	A	0.20	2.9	8.7
	Overall	**A**	**0.59**	**12.7**	-	**A**	**0.36**	**9.3**	-
Jeanne d'Arc Boulevard at Hwy 174 South ***Signalized***	EBL	A	0.21	20.7	12.2	A	0.40	19.3	22.9
	EBT	A	0.05	17.5	4.0	A	0.06	13.3	4.0
	EBR	B	0.64	14.5	28.1	C	0.80	20.3	46.8
	NBT	A	0.49	10.3	62.5	A	0.39	12.6	51.8
	NBR	A	0.10	2.9	6.3	A	0.30	3.2	13.2
	SBT/R	A	0.28	5.3	28.3	A	0.22	7.4	20.3
	Overall	**A**	**0.48**	**10.0**	-	**A**	**0.51**	**13.5**	-
Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive ***Signalized***	EBL	A	0.34	25.4	20.2	D	0.83	50.3	72.3
	EBT/R	A	0.14	8.4	8.3	A	0.38	7.1	17.9
	WB	A	0.37	11.3	20.2	A	0.18	12.6	13.9
	NBL	A	0.40	12.7	22.0	A	0.45	15.7	24.5
	NBT/R	A	0.54	17.8	**#93.3**	A	0.39	19.8	61.4
	SBL	A	0.10	10.7	6.2	A	0.13	12.0	11.0
	SBT/R	A	0.49	12.7	42.7	B	0.63	24.8	93.0
	Overall	**A**	**0.52**	**15.2**	-	**B**	**0.68**	**23.7**	-
Jeanne d'Arc Boulevard at St. Joseph Boulevard ***Roundabout***	EB	A	0.17	5.5	34	A	0.54	6.8	164
	WB	A	0.17	5.3	3.4	A	0.24	5.8	5.1
	NB	A	0.51	8.6	15.8	B	0.58	11.8	17.3
	SB	A	0.37	8.0	9.1	A	0.49	8.6	14.5
	Overall	**A**	**0.51**	**7.1**	-	**A**	**0.58**	**8.0**	-
St. Joseph Boulevard at Youville Drive and Forest Valley Drive ***Signalized***	EBL	A	0.30	21.6	21.6	A	0.50	20.6	35.7
	EBT	A	0.21	19.9	29.6	B	0.62	21.0	92.6
	EBR	A	0.10	2.0	4.3	A	0.26	2.9	11.2
	WBL	A	0.05	25.6	7.8	A	0.25	26.9	14.0
	WBT	A	0.40	28.8	55.9	A	0.32	22.9	39.6
	WBR	A	0.17	1.8	3.6	A	0.15	0.5	0.5
	NBL	A	0.51	52.7	27.6	A	0.40	48.8	18.2
	NBT/R	A	0.57	47.1	32.8	C	0.71	57.8	**#32.3**
	SBL	A	0.37	55.4	20.5	D	0.88	**95.8**	**#57.5**
	SBT/R	A	0.27	10.0	19.2	A	0.42	13.0	30.2
	Overall	**A**	**0.33**	**26.1**	-	**A**	**0.60**	**24.6**	-
St. Joseph Boulevard at Grey Nuns Drive ***Signalized***	EBL	A	0.08	3.1	3.5	A	0.14	4.4	10.7
	EBT	A	0.09	2.5	6.6	A	0.25	3.7	31.8
	WBT/R	A	0.31	3.1	23.7	A	0.22	3.4	25.4
	SBL	A	0.22	39.7	15.5	A	0.29	42.4	20.0
	SBR	A	0.25	14.0	10.2	A	0.29	12.3	10.7
	Overall	**A**	**0.31**	**4.7**	-	**A**	**0.27**	**5.6**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00

Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both peak hours, the study area intersections will operate similar to the existing condition. No additional capacity issues have been noted.

7.2 2040 Future Total Operations

Figure 17 illustrates the 2040 total volumes and Table 17 summarizes the 2040 total intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The synchro and Sidra worksheets for the 2040 total horizon are provided in Appendix I.

Figure 17: 2040 Future Total Volumes

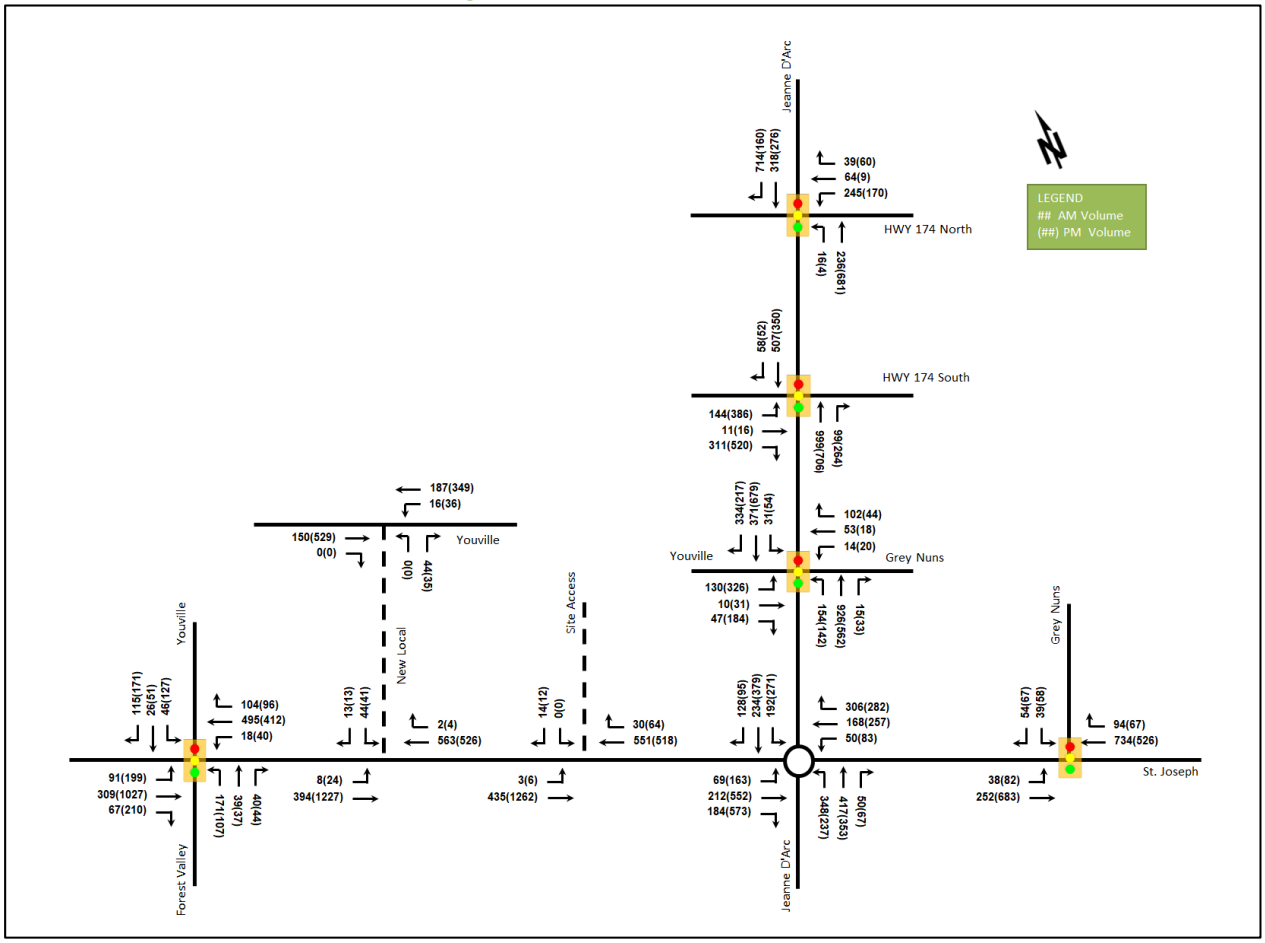


Table 17: 2040 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Jeanne d'Arc Boulevard at Hwy 174 North ***Signalized***	WBL	A	0.37	20.4	32.5	A	0.30	20.5	23.5
	WBL/R	A	0.48	20.9	32.4	A	0.29	11.4	16.2
	NBL/T	A	0.17	7.1	8.1	A	0.36	9.0	33.7
	NBR	-	-	-	-	-	-	-	-
	SBT	A	0.19	10.9	19.4	A	0.14	9.4	17.1
	SBR	C	0.76	11.7	**#79.0**	A	0.20	2.9	8.7
	Overall	**A**	**0.59**	**12.7**	-	**A**	**0.37**	**9.6**	-
Jeanne d'Arc Boulevard at Hwy 174 South ***Signalized***	EBL	A	0.20	20.5	12.2	A	0.37	17.6	22.0
	EBT	A	0.05	17.5	4.0	A	0.06	12.1	3.9
	EBR	B	0.67	16.3	31.6	D	0.83	22.4	53.7
	NBT	A	0.51	10.7	66.0	A	0.42	14.2	56.3
	NBR	A	0.11	2.8	6.5	A	0.31	3.5	13.8
	SBT/R	A	0.28	5.4	28.5	A	0.24	8.4	21.3
	Overall	**A**	**0.51**	**10.4**	-	**A**	**0.56**	**14.4**	-
Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive ***Signalized***	EBL	A	0.58	35.8	29.7	D	0.86	52.0	**#85.9**
	EBT/R	A	0.16	8.8	8.3	A	0.36	6.7	17.9
	WB	A	0.40	12.5	20.2	A	0.17	11.9	13.8
	NBL	A	0.39	11.5	22.0	A	0.50	18.4	24.5
	NBT/R	A	0.51	16.4	**#93.3**	A	0.41	21.2	61.4
	SBL	A	0.09	9.7	6.2	A	0.14	12.9	11.0
	SBT/R	A	0.48	11.6	43.9	B	0.70	27.6	**#100.4**
	Overall	**A**	**0.58**	**15.1**	-	**C**	**0.74**	**26.0**	-
Jeanne d'Arc Boulevard at St. Joseph Boulevard ***Roundabout***	EB	A	0.18	5.4	3.7	A	0.56	6.9	18.0
	WB	A	0.18	5.4	3.6	A	0.29	5.9	5.6
	NB	A	0.53	8.9	17.0	B	0.61	12.6	19.0
	SB	A	0.38	8.2	9.6	A	0.52	9.2	16.0
	Overall	**A**	**0.53**	**7.3**	-	**A**	**0.61**	**8.4**	-
St. Joseph Boulevard at Youville Drive and Forest Valley Drive ***Signalized***	EBL	A	0.31	21.8	21.6	A	0.51	20.9	35.7
	EBT	A	0.22	20.0	30.7	B	0.64	21.3	95.8
	EBR	A	0.10	2.0	4.3	A	0.26	2.9	11.2
	WBL	A	0.05	25.6	7.8	A	0.27	27.6	14.2
	WBT	A	0.42	29.1	58.6	A	0.33	23.1	41.3
	WBR	A	0.17	1.8	3.6	A	0.15	0.5	0.5
	NBL	A	0.51	52.7	27.6	A	0.40	48.8	18.2
	NBT/R	A	0.57	47.1	32.8	C	0.71	57.8	**#32.3**
	SBL	A	0.37	55.4	20.5	D	0.88	**95.8**	**#57.5**
	SBT/R	A	0.27	10.0	19.2	A	0.42	13.0	30.2
	Overall	**A**	**0.34**	**26.3**	-	**B**	**0.61**	**24.7**	-
St. Joseph Boulevard at Grey Nuns Drive ***Signalized***	EBL	A	0.08	3.1	3.6	A	0.14	4.4	10.7
	EBT	A	0.10	2.5	7.2	A	0.25	3.7	32.8
	WBT/R	A	0.31	3.1	24.1	A	0.23	3.4	26.7
	SBL	A	0.22	39.7	15.5	A	0.29	42.4	20.0
	SBR	A	0.25	14.0	10.2	A	0.29	12.3	10.7
	Overall	**A**	**0.32**	**4.7**	-	**A**	**0.27**	**5.6**	-

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

During both peak hours, the study area intersections will operate similar to the 2040 future background condition. No additional capacity issues have been noted.

During the PM peak hour, the eastbound left-turn movement at Jeanne d'Arc Boulevard at Youville Drive and Grey Nuns Drive may start to experience extended queues.

7.3 2040 Future Total Operations – Sensitivity Without New Local Road

The City requested a sensitivity analysis of the site buildout without the new local road. While this is not typically required as part of a rezoning application, the analysis is presenting below. As area network intersections operate well and have residual capacity (predominantly LOS A) to accommodate the trip reallocation, only the site access intersection was analyzed.

The intersection of St. Joseph Boulevard at Site Access is assumed to be a stop-controlled intersection on the minor approach of the site access. Figure 17 illustrates the 2040 future total site access intersection volumes without the new local road and Table 17 summarizes the 2040 future total site access intersection operations without the new local road. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 methodology was used for unsignalized intersection operation. The synchro worksheets are provided in Appendix J.

Figure 18: 2040 Future Total Access Volumes

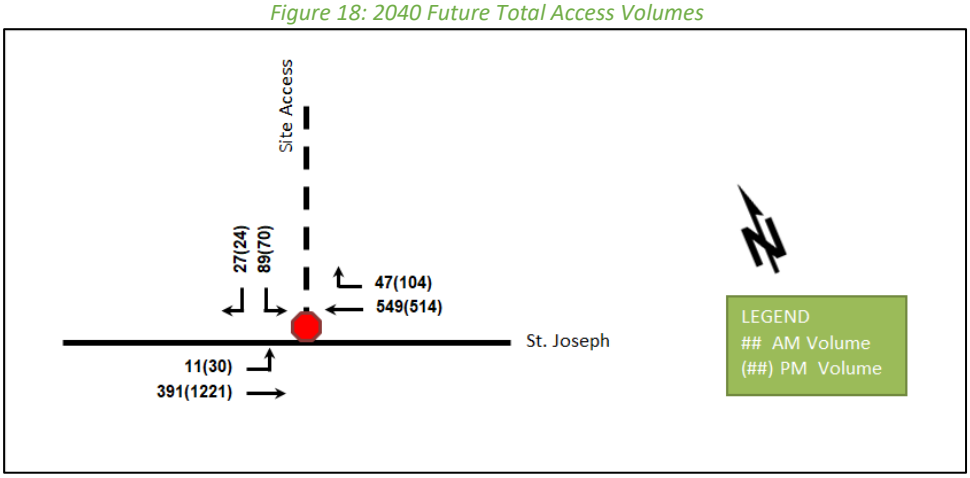


Table 18: 2040 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
St. Joseph Boulevard at Site Access *Unsignalized*	EBL/T	A	0.01	8.7	0.0	A	0.03	8.9	0.8
	WBT/R	-	-	-	-	-	-	-	-
	SBL/R	C	0.25	15.3	7.5	C	0.28	19.8	8.3
	Overall	**A**	**-**	**1.7**	**-**	**A**	**-**	**1.3**	**-**

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

During both peak hours, the intersection of St. Joseph Boulevard at Site Access will operate well without the new local road.

Signal warrant analysis was performed for the intersection of St. Joseph Boulevard at Site Access for the 2040 future total condition. The intersection does not meet the signal warrant and is assumed to be a stop-controlled intersection. Signal warrant calculation sheets are provided in Appendix K.

The left-turn warrants are met on the eastbound movement for the intersection of St. Joseph Boulevard at Site Access for the 2040 future total condition. The left-turn warrant calculation sheets are provided in Appendix L. As previously noted, this analysis is more appropriately undertaken as part of a site plan application. While it is noted that in 2040 the warrants will likely be met, it is recommended that as part of the site plan TIA the warrant analysis be revisited.

7.4 Modal Share Sensitivity and Demand Rationalization Conclusions

7.4.1 Network Rationalization

During both peak hours, the study area intersections operate well. Since the future Jeanne d'Arc LRT station will be completed by the end of 2024, it is expected that auto trips will transition to transit from the surrounding area. An auto reduction has been assumed for the study area.

7.4.2 Development Rationalization

During both peak hours, the study area intersections operate well, and no demand rationalization is required for this TIA.

8 Transportation Demand Management

8.1 Context for TDM

The subject site has been assumed to rely predominantly on auto driver and transit mode shares due to the conversion of the Jeanne d'Arc LRT station. The convenience of the transit station should provide the opportunity to reach the forecast transit mode share.

The infrastructure TDM checklist is provided in Appendix M.

8.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto and transit travel, and those assumptions have been carried through the analysis. The district mode shares have been increased for transit along with a network reduction for auto modes due to the LRT opening.

8.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists for the residential and mixed-use land uses. The checklist is provided in Appendix M. The key TDM measures are recommended to be considered as the development proceeds through various site plans and include:

- Display local area maps with walking/cycling access routes and key destinations at major entrances
- Display relevant transit schedules and route maps at entrances
- Provide online links to OC Transpo and STO information
- Provide a dedicated ridematching portal at OttawaRideMatch.com
- Provide a multimodal travel option information package to new/relocating employees, students, and new residents
- Unbundle parking costs from lease rates at multi-tenant sites, purchase or rental costs
- Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit

9 Transit

9.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 19 summarizes the transit trip generation.

Table 19: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	varies	66	145	211	99	72	171

The proposed development is anticipated to generate an additional 211 AM and 171 PM peak hour two-way transit trips. From the trip distribution found in section 5.3, these values can be further broken down. Table 20 summarizes forecasted site-generated transit ridership trips by direction and the equivalent bus loads.

Table 20: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Service Type	Approximate Equivalent Peak Hour/Direction Bus Loads
	In	Out	In	Out		
North	3	7	5	3	Bus	Negligible
South	20	44	30	22	Bus	A standard bus
East	17	36	25	18	Bus, LRT	Half of a standard bus
West	26	58	39	29	Bus, LRT	A standard bus

9.2 Transit Priority

Examining the study area intersection delays, negligible impacts are noted on the transit movements at the study area intersections. No change in transit LOS is noted throughout the study area. No specific transit priority measures were considered as part of this development.

10 Network Concept

The background and forecasted operations will not be over capacity and do not indicate any change to the area road network are required to support this site. It is noted that as the City's land use vision for the area proceeds, this will need to be reviewed continuously to ensure it aligns with the transportation network.

11 Network Intersection Design

11.1 Network Intersection Control

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

11.2 Network Intersection Design

11.2.1 2040 Future Total Network Intersection Operations

The operations are noted in Section 7.2 and no mitigation of conditions is required for the subject site traffic.

11.2.2 Network Intersection MMLOS

The physically separated cycling facilities are expected to be along Jeanne d'Arc Boulevard, Youville Drive, and Forest Valley Drive, which are included in the Orleans Corridor Secondary Plan, and these will be considered in the future conditions in the MMLOS analysis. Table 21 summarizes the MMLOS analysis for the network intersections. The intersection analysis for the intersections of Jeanne d'Arc Boulevard at Hwy 174 North, Jeanne d'Arc Boulevard at Hwy 174 South, and Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive are based on the policy area of "Within 600m of a rapid transit station", and the intersections of St. Joseph Boulevard at Youville

Drive and Forest Valley Drive and St. Joseph Boulevard at Grey Nuns Drive are based on the land-use of "Arterial Main Street". The MMLOS worksheets have been provided in Appendix N.

Table 21: Study Area Intersection MMLOS Analysis

Intersection	Scenario	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Jeanne d'Arc Boulevard at Hwy 174 North	Existing	F	A	N/A	N/A	D	D	D	D	B	E
	Future	F	A	N/A	N/A	D	D	D	D	A	E
Jeanne d'Arc Boulevard at Hwy 174 South	Existing	F	A	N/A	N/A	C	D	E	D	C	E
	Future	F	A	N/A	N/A	C	D	E	D	A	E
Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive	Existing	F	A	F	B	E	D	N/A	N/A	C	E
	Future	F	A	D	B	E	D	N/A	N/A	C	E
St. Joseph Boulevard at Youville Drive and Forest Valley Drive	Existing	F	C	F	C	N/A	N/A	N/A	N/A	B	D
	Future	F	C	A	C	N/A	N/A	N/A	N/A	B	D
St. Joseph Boulevard at Grey Nuns Drive	Existing	E	C	F	B	N/A	N/A	N/A	N/A	A	D
	Future	E	C	F	B	N/A	N/A	N/A	N/A	A	D

The pedestrian LOS targets will not be met at the study area intersections. As typical for arterial roads, the crossing distance does not permit the targets to be met. To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings at the intersections of Jeanne d'Arc Boulevard at Hwy 174 North, Jeanne d'Arc Boulevard at Hwy 174 South, and Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive would need to be reduced to two lane-widths, and the maximum crossing distance on all pedestrian crossings at the intersections of St. Joseph Boulevard at Youville Drive and Forest Valley Drive and St. Joseph Boulevard at Grey Nuns Drive would need to be reduced to three lane-widths.

In addition to the geometric changes required to meet the PLOS targets for pedestrian exposure to traffic at signalized intersections (PETSI), the pedestrian delay LOS would require all five intersections to have significant reductions in the cycle length and a balancing of phase times to reach an average delay of less than 10 seconds. These values are not likely to be able to be met with the required do not walk, amber, and all-red values. Generally, changes required to optimize pedestrian delay result in failure of auto and transit LOS and unnecessarily burden the pedestrian LOS. No signal timing changes are recommended on this basis.

The bicycle LOS targets are not met at the intersections of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive, St. Joseph Boulevard at Youville Drive and Forest Valley Drive, and St. Joseph Boulevard at Grey Nuns Drive. The bicycle LOS targets will be met at the intersections of St. Joseph Boulevard at Youville Drive and Forest Valley Drive once the physically separated cycling facilities are built along Jeanne d'Arc Boulevard, Youville Drive, and Forest Valley Drive. To meet the bicycle LOS targets at the intersections of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive and St. Joseph Boulevard at Grey Nuns Drive intersections, two-stage left turns or left-turn boxes will need to be provided on all approaches.

The transit LOS targets will not be met at the intersection of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive, and the average signal delay would need to be below or equal to 30 seconds on all approaches.

The truck LOS targets will not be met at the intersection of Jeanne d'Arc Boulevard at Hwy 174 South, and effective corner radius would need to be larger than 15 metes or at least two receiving lanes would be needed on departure from intersection.

The City of Ottawa will be responsible for exploring options to address the area PLOS, BLOS, TLOS, and TrLOS deficiencies.

11.2.3 Recommended Design Elements

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

12 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The development concept proposes the redevelopment of the site into seven buildings with a total of 1,076 residential units and ground floor retail along St. Joseph Boulevard
- A total of 495 parking spaces for residents, 95 parking spaces for visitors, 12 parking spaces for retail, 760 interior bike parking, and 44 exterior bike parking spaces will be provided
- Although not included as part of the re-zoning, a potential new local road is considered by the City, to connect Youville Drive and St. Joseph Boulevard
- The anticipated build-out year is 2040
- The Trip Generation, location, and safety triggers were met for the TIA Screening

Existing Conditions

- Jeanne D'Arc Boulevard and St Joseph Boulevard are arterial roads, and Youville Drive and Forest Valley Drive are collector roads in the study area
- Sidewalks are provided along both sides of Jeanne D'Arc Boulevard and on the north side of Grey Nuns Drive
- East of Jeanne D'Arc Boulevard, sidewalks are provided on both sides of St. Joseph Boulevard. Between Jeanne D'Arc Boulevard and Youville Drive, sidewalks are provided on the north side of St. Joseph Boulevard
- Unidirectional bike lanes are provided on St. Joseph Boulevard, west of Youville Drive
- Both east and west of Jeanne D'Arc Boulevard on St. Joseph Boulevard are spine routes as well as Jeanne D'Arc Boulevard
- St Joseph Boulevard is designated as a cross-town bikeway to the east of Notre Dame Street
- Within the study area, the intersection of St. Joseph Boulevard between Youville Drive and Chants d'Oiseaux Way is noted to have experienced higher collisions than other locations (9 of 17)
- General congestion and through movements may be contributing factors to the sideswipe and angle collisions at the intersection of St. Joseph Boulevard between Youville Drive and Chants d'Oiseaux Way
- No further collision examination is required as part of this study.

Development Generated Travel Demand

- A total of 164 AM and 208 PM new peak hour two-way vehicle trips are projected as a result of the proposed development

- Of the forecasted trips, 5 % are anticipated to travel north, 30% to the south, 25% to the east, and 40 % to the west
- A 15% shift to transit mode from the auto mode for residential land use and a 10% shift to transit mode from the auto mode for commercial land use are proposed because of the conversion of the future Place d'Orleans LRT station

Background Conditions

- The Jeanne d'Arc station Light Rail Transit (LRT) project is the only confirmed project within the study horizons and has been included
- Given the TRANS growth rates are minimal or negative for the study area, a nominal 0.5% will be applied to all major movements for the future horizons
- Grey Nuns Drive is assumed to have no growth
- The study area intersections at the 2040 background condition will operate similar to the existing condition

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Display local area maps with walking/cycling access routes and key destinations at major entrances
    - Display relevant transit schedules and route maps at entrances
    - Provide online links to OC Transpo and STO information
    - Provide a dedicated ridematching portal at OttawaRideMatch.com
    - Provide a multimodal travel option information package to new/relocating employees, students, and new residents
    - Unbundle parking costs from lease rates at multi-tenant sites, purchase or rental costs
    - Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit

Transit

- The forecasted transit trips will include 211 two-way trips during the AM peak and 171 two-way trips during the PM peak
- Peak hour increases in transit ridership resulting from the site equate to a standard bus load southerly and westerly of the site, half of a standard bus load easterly of the site, and negligible impact northerly of the site
- Negligible impacts are noted on the transit movements at the study area intersections
- No specific transit priority measures were considered as part of this development

Network Concept

- The background and forecasted operations will not be over capacity and do not indicate any change to the area road network are required to support this site

Network Intersection Design

- Generally, the network intersections will operate similar to the background condition
- A sensitivity analysis was done for intersection of St. Joseph Boulevard at Site Access without the new local road in 2040 future total conditions, and the intersection will operate well during both peak hours

- Without the new local road, the intersection of St. Joseph Boulevard at Site Access does not meet the signal warrant or the 2040 future total conditions
- The left-turn warrants are met on the eastbound movement for the intersection of St. Joseph Boulevard at Site Access for the 2040 future total condition
- As this sensitivity analysis is more appropriately undertaken as part of a site plan application, it is recommended that as part of the site plan TIA the warrant analysis be revisited
- It is expected that auto trips will transition to transit from the surrounding area since the future Jeanne d'Arc LRT station will be completed by the end of 2024
- No change to the existing signalized control is recommended for the network intersections
- The pedestrian LOS targets will not be met at the study area intersections, and the maximum crossing distance on all pedestrian crossings are required to be reduced to two lane-widths
- The bicycle LOS targets are not met at the intersections of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive, St. Joseph Boulevard at Youville Drive and Forest Valley Drive, and St. Joseph Boulevard at Grey Nuns Drive
- The bicycle LOS targets will be met at the intersections of St. Joseph Boulevard at Youville Drive and Forest Valley Drive once the physically separated cycling facilities are built along Jeanne d'Arc Boulevard, Youville Drive, and Forest Valley Drive
- The bicycle LOS targets will be met at the intersections of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive and St. Joseph Boulevard at Grey Nuns Drive intersections if two-stage left turns or left-turn boxes provided on all approaches
- The transit LOS targets will not be met at the intersection of Jeanne d'Arc Boulevard at Youville Drive / Grey Nuns Drive, and the average signal delay would need to be below or equal to 30 seconds on all approaches
- The truck LOS targets will not be met at the intersection of Jeanne d'Arc Boulevard at Hwy 174 South, and effective corner radius would need to be larger than 15 metes or at least two receiving lanes would need on departure from intersection
- The City of Ottawa will be responsible for exploring options to address the area PLOS, BLOS, TLOS, and TrLOS deficiencies

13 Conclusion

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

Prepared By:

Yu-Chu Chen, EIT
Transportation Engineering-Intern

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 09-May-23
Project Number: 2023-035
Project Reference: 1887 St Joseph

1.1 Description of Proposed Development	
Municipal Address	1887 St. Joseph Boulevard
Description of Location	Existing commercial/retail, with surface parking lot. Single access on St Joseph. Silver of property extends to Youville.
Land Use Classification	Predominantly Arterial Mainstreet Subzone 3 (AM3), Sliver extending to Youville is zoned as Light Industrial Subzone 2 (IL2)
Development Size	Three high-rise towers and four mid-rise buildings, estimated total of 1,100 residential units, ground floor retail along St Joseph and underground parking.
Accesses	Single Access to St Joseph, with Secondary Plan consideration for new local between St Joseph and Youville, and private right-of-way connection to Marenger
Phase of Development	Potentially 3-5 Phases (not considered individually for rezoning)
Buildout Year	2040
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	1100	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	Yes
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?	Yes
Location Trigger	Yes

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

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d 'infrastructure et Viabilité des collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

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

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer

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

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa / K2H 7W1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com

Appendix B

Turning Movement Counts

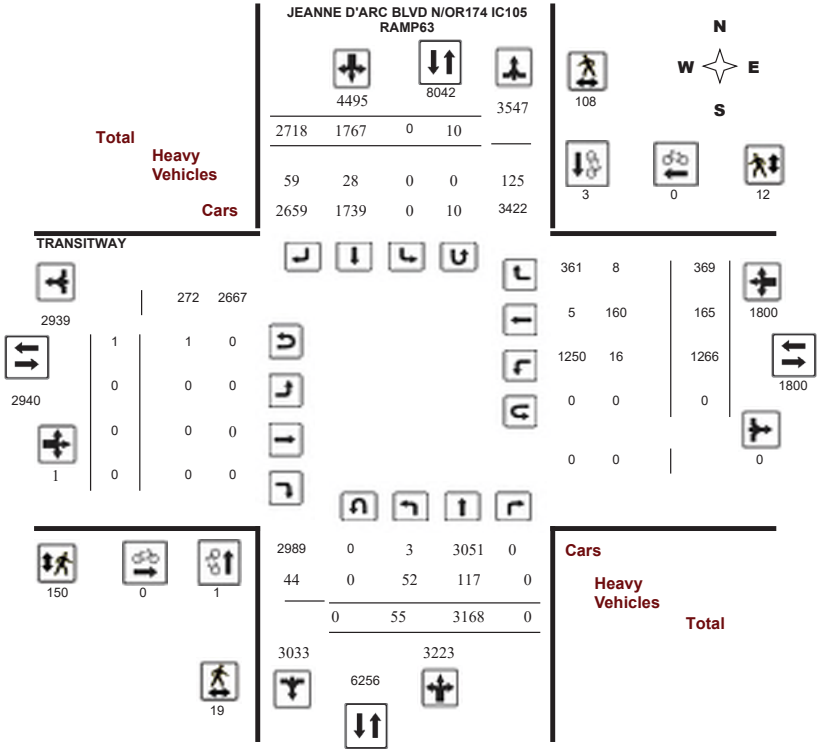
Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019
Start Time: 07:00
WO No: 38328
Device: Miovision

Full Study Diagram



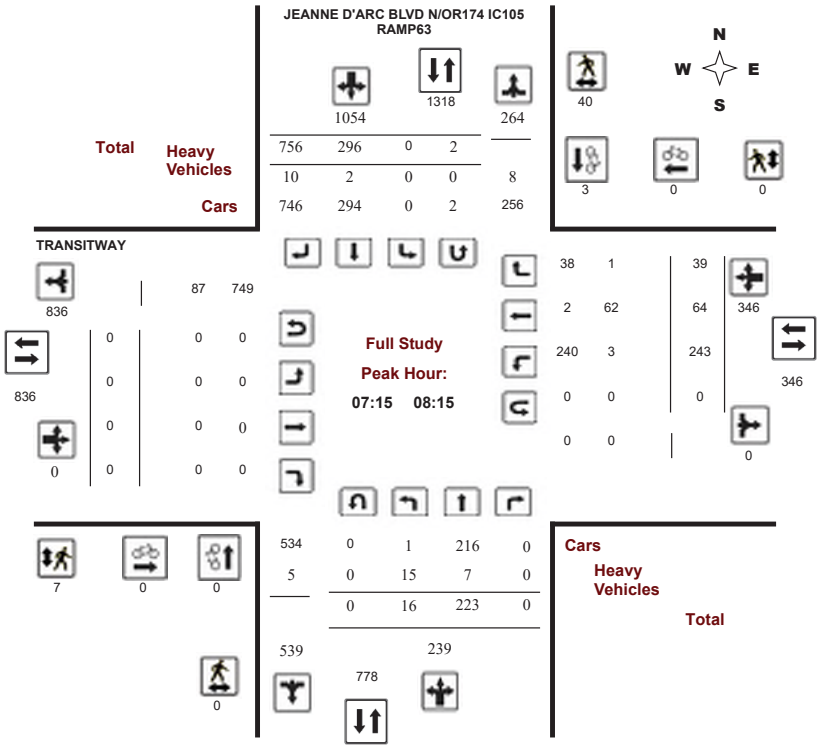
Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019
Start Time: 07:00
WO No: 38328
Device: Miovision

Full Study Peak Hour Diagram



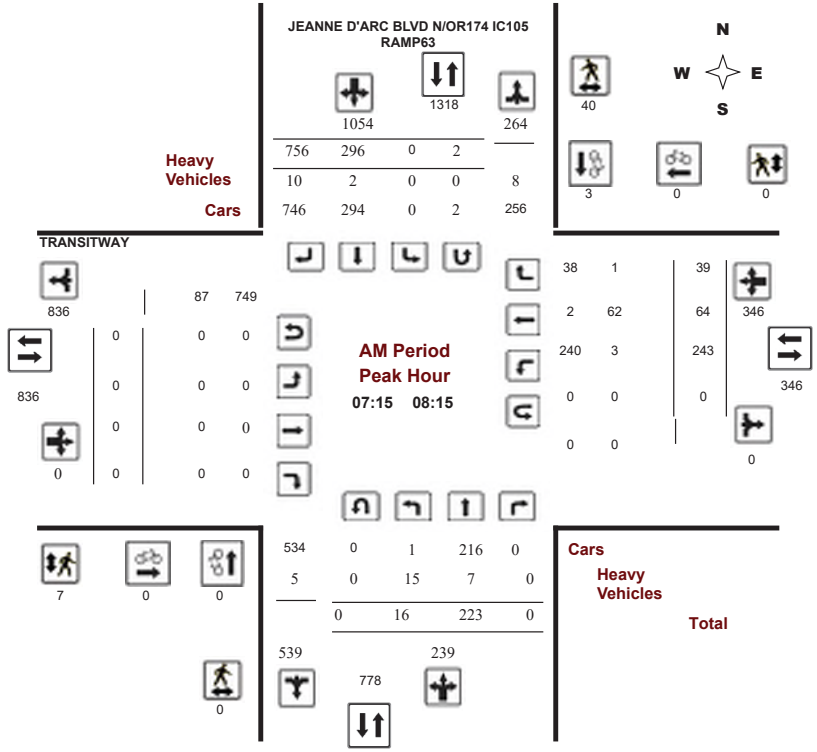
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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



Comments

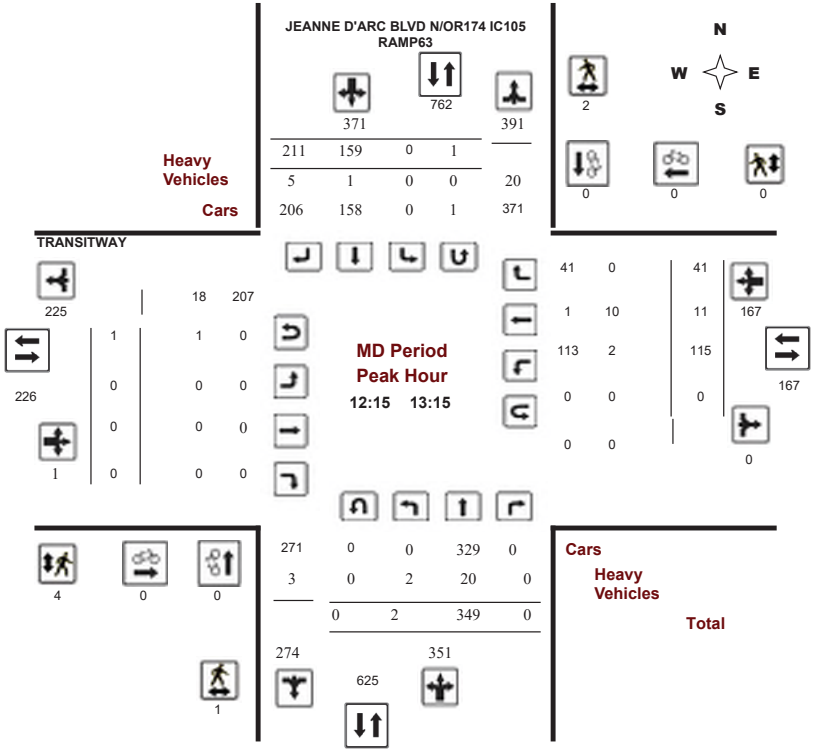
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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



Comments

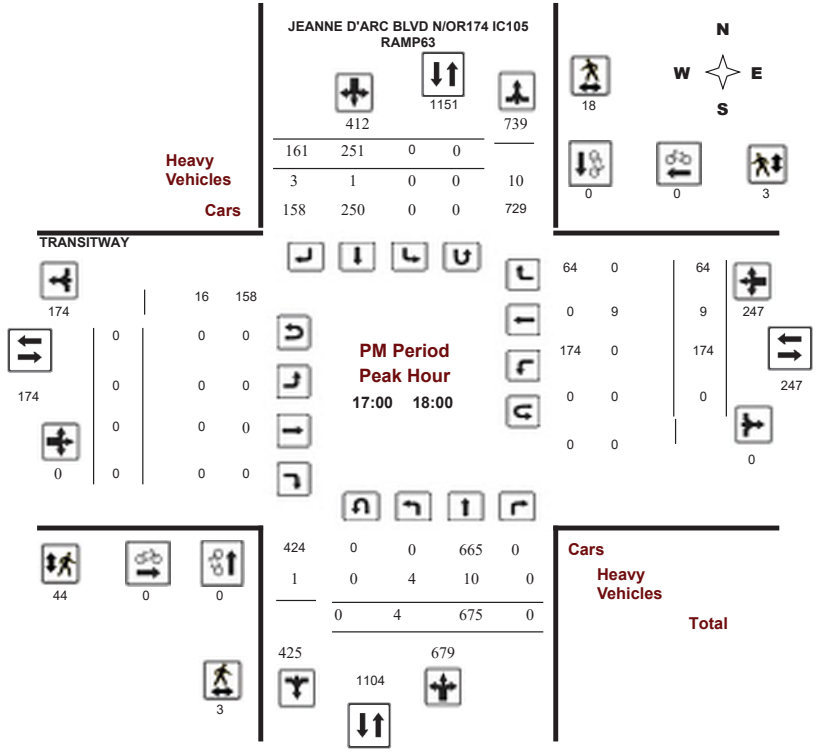
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, January 31, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 10

Eastbound: 1 Westbound: 0

AADT Factor 1.00

	JEANNE D'ARC BLVD N/OR174 IC105 RAMP63								TRANSITWAY								
	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	18	179	0	**197**	0	288	813	**1101**	**1298**	0	0	0	**0**	239	59	35	**333**	**333**	**1631**
08:00 09:00	12	292	0	**304**	0	278	519	**797**	**1101**	0	0	0	**0**	176	32	34	**242**	**242**	**1343**
09:00 10:00	3	239	0	**242**	0	243	341	**584**	**826**	0	0	0	**0**	158	16	36	**210**	**210**	**1036**
11:30 12:30	3	317	0	**320**	0	158	240	**398**	**718**	0	0	0	**0**	108	11	40	**159**	**159**	**877**
12:30 13:30	2	319	0	**321**	0	146	194	**340**	**661**	0	0	0	**0**	114	12	44	**170**	**170**	**831**
15:00 16:00	3	577	0	**580**	0	211	263	**474**	**1054**	0	0	0	**0**	137	15	53	**205**	**205**	**1259**
16:00 17:00	10	570	0	**580**	0	192	187	**379**	**959**	0	0	0	**0**	160	11	63	**234**	**234**	**1193**
17:00 18:00	4	675	0	**679**	0	251	161	**412**	**1091**	0	0	0	**0**	174	9	64	**247**	**247**	**1338**
Sub Total	55	3168	0	**3223**	0	1767	2718	**4485**	**7708**	0	0	0	**0**	1266	165	369	**1800**	**1800**	**9508**
U Turns				**0**				**10**	**10**				**1**				**0**	**1**	**11**
Total	55	3168	0	**3223**	0	1767	2718	**4495**	**7718**	0	0	0	**1**	1266	165	369	**1800**	**1801**	**9519**
EQ 12Hr	76	4404	0	**4480**	0	2456	3778	**6248**	**10728**	0	0	0	**1**	1760	229	513	**2502**	**2503**	**13231**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	76	4404	0	**4480**	0	3218	4949	**6248**	**10728**	0	0	0	**1**	1760	229	513	**2502**	**2503**	**13231**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	100	5769	0	**5869**	0	4216	6483	**8185**	**14054**	0	0	0	**1**	2306	300	672	**3278**	**3279**	**17333**
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 N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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

Full Study 15 Minute Increments

		JEANNE D'ARC BLVD N/OR174 IC105 RAMP63									TRANSITWAY									
		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	6	32	0	38	0	63	205	268	306	0	0	0	0	58	10	2	70	70	376
07:15	07:30	4	38	0	42	0	87	214	302	344	0	0	0	0	53	19	4	76	76	420
07:30	07:45	5	54	0	59	0	78	220	299	358	0	0	0	0	72	16	13	101	101	459
07:45	08:00	3	55	0	58	0	60	174	234	292	0	0	0	0	56	14	16	86	86	378
08:00	08:15	4	76	0	80	0	71	148	219	299	0	0	0	0	62	15	6	83	83	382
08:15	08:30	2	70	0	72	0	84	163	249	321	0	0	0	0	40	8	7	55	55	376
08:30	08:45	3	62	0	65	0	67	122	189	254	0	0	0	0	33	3	7	43	43	297
08:45	09:00	3	84	0	87	0	56	86	142	229	0	0	0	0	41	6	14	61	61	290
09:00	09:15	0	83	0	83	0	80	100	180	263	0	0	0	0	47	7	16	70	70	333
09:15	09:30	1	63	0	64	0	65	96	162	226	0	0	0	0	37	2	10	49	49	275
09:30	09:45	2	39	0	41	0	45	74	119	160	0	0	0	0	34	4	3	41	41	201
09:45	10:00	0	54	0	54	0	53	71	124	178	0	0	0	0	40	3	7	50	50	228
11:30	11:45	0	71	0	71	0	36	69	105	176	0	0	0	0	34	2	12	48	48	224
11:45	12:00	2	74	0	76	0	29	51	81	157	0	0	0	0	25	4	9	38	38	195
12:00	12:15	0	69	0	69	0	47	57	104	173	0	0	0	0	20	3	14	37	37	210
12:15	12:30	1	103	0	104	0	46	63	109	213	0	0	0	0	29	2	5	36	36	249
12:30	12:45	0	81	0	81	0	33	50	83	164	0	0	0	0	26	4	15	45	45	209
12:45	13:00	1	78	0	79	0	31	51	82	161	0	0	0	0	29	2	9	40	40	201
13:00	13:15	0	87	0	87	0	49	47	97	184	0	0	0	1	31	3	12	46	47	231
13:15	13:30	1	73	0	74	0	33	46	79	153	0	0	0	0	28	3	8	39	39	192
15:00	15:15	0	139	0	139	0	48	58	106	245	0	0	0	0	35	3	15	53	53	298
15:15	15:30	1	155	0	156	0	45	68	113	269	0	0	0	0	35	2	12	49	49	318
15:30	15:45	2	147	0	149	0	44	61	105	254	0	0	0	0	27	5	14	46	46	300
15:45	16:00	0	136	0	136	0	74	76	150	286	0	0	0	0	40	5	12	57	57	343
16:00	16:15	5	130	0	135	0	48	62	110	245	0	0	0	0	45	2	21	68	68	313
16:15	16:30	3	116	0	119	0	56	39	95	214	0	0	0	0	42	2	15	59	59	273
16:30	16:45	1	162	0	163	0	49	48	97	260	0	0	0	0	28	5	15	48	48	308
16:45	17:00	1	162	0	163	0	39	38	80	243	0	0	0	0	45	2	12	59	59	302
17:00	17:15	1	156	0	157	0	46	43	89	246	0	0	0	0	34	3	19	56	56	302
17:15	17:30	0	192	0	192	0	59	36	95	287	0	0	0	0	44	2	14	60	60	347
17:30	17:45	1	182	0	183	0	70	43	113	296	0	0	0	0	41	2	16	59	59	355
17:45	18:00	2	145	0	147	0	76	39	115	262	0	0	0	0	55	2	15	72	72	334
Total:		55	3168	0	3223	0	1767	2718	4495	7718	0	0	0	1	1266	165	369	1800	1801	9,519

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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

Full Study Cyclist Volume

		JEANNE D'ARC BLVD N/OR174 IC105 RAMP63			TRANSITWAY			
Time Period		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	3	3	0	0	0	3
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	1	0	1	0	0	0	1
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		1	3	4	0	0	0	4

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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

Full Study Pedestrian Volume

Time Period	JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 NB Approach (E or W Crossing)	JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 SB Approach (E or W Crossing)	JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 Total	TRANSITWAY EB Approach (N or S Crossing)	TRANSITWAY WB Approach (N or S Crossing)	TRANSITWAY Total	Grand Total
07:00 07:15	1	2	**3**	2	0	**2**	**5**
07:15 07:30	0	6	**6**	3	0	**3**	**9**
07:30 07:45	0	10	**10**	2	0	**2**	**12**
07:45 08:00	0	5	**5**	1	0	**1**	**6**
08:00 08:15	0	19	**19**	1	0	**1**	**20**
08:15 08:30	0	8	**8**	0	0	**0**	**8**
08:30 08:45	0	3	**3**	0	0	**0**	**3**
08:45 09:00	0	5	**5**	0	0	**0**	**5**
09:00 09:15	2	6	**8**	5	0	**5**	**13**
09:15 09:30	0	5	**5**	6	0	**6**	**11**
09:30 09:45	2	1	**3**	8	1	**9**	**12**
09:45 10:00	0	1	**1**	0	0	**0**	**1**
11:30 11:45	0	0	**0**	0	1	**1**	**1**
11:45 12:00	2	4	**6**	3	1	**4**	**10**
12:00 12:15	0	0	**0**	5	0	**5**	**5**
12:15 12:30	0	0	**0**	2	0	**2**	**2**
12:30 12:45	0	0	**0**	1	0	**1**	**1**
12:45 13:00	0	0	**0**	1	0	**1**	**1**
13:00 13:15	1	2	**3**	0	0	**0**	**3**
13:15 13:30	0	1	**1**	5	0	**5**	**6**
15:00 15:15	0	0	**0**	8	0	**8**	**8**
15:15 15:30	1	0	**1**	3	0	**3**	**4**
15:30 15:45	0	3	**3**	9	0	**9**	**12**
15:45 16:00	0	1	**1**	6	0	**6**	**7**
16:00 16:15	5	3	**8**	15	3	**18**	**26**
16:15 16:30	2	1	**3**	12	0	**12**	**15**
16:30 16:45	0	2	**2**	4	0	**4**	**6**
16:45 17:00	0	2	**2**	4	3	**7**	**9**
17:00 17:15	1	2	**3**	10	1	**11**	**14**
17:15 17:30	0	5	**5**	11	1	**12**	**17**
17:30 17:45	2	5	**7**	14	0	**14**	**21**
17:45 18:00	0	6	**6**	9	1	**10**	**16**
Total	19	108	**127**	150	12	**162**	**289**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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

Full Study Heavy Vehicles

Time Period		JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 Northbound LT	ST	RT	N TOT	Southbound LT	ST	RT	S TOT	STR TOT	TRANSITWAY Eastbound LT	ST	RT	E TOT	Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	5	6	0	**14**	0	1	0	**7**	**21**	0	0	0	**15**	2	10	0	**12**	**27**	**24**
07:15	07:30	3	2	0	**5**	0	0	4	**6**	**11**	0	0	0	**24**	0	17	0	**17**	**41**	**26**
07:30	07:45	5	3	0	**10**	0	1	1	**5**	**15**	0	0	0	**22**	1	16	0	**17**	**39**	**27**
07:45	08:00	3	0	0	**5**	0	0	2	**3**	**8**	0	0	0	**19**	2	14	1	**17**	**36**	**22**
08:00	08:15	4	2	0	**7**	0	1	3	**6**	**13**	0	0	0	**22**	0	15	0	**15**	**37**	**25**
08:15	08:30	2	5	0	**9**	0	1	3	**10**	**19**	0	0	0	**13**	1	8	1	**10**	**23**	**21**
08:30	08:45	2	5	0	**9**	0	1	0	**6**	**15**	0	0	0	**5**	1	3	0	**4**	**9**	**12**
08:45	09:00	3	4	0	**7**	0	0	0	**4**	**11**	0	0	0	**9**	0	6	0	**6**	**15**	**13**
09:00	09:15	0	5	0	**9**	0	4	3	**12**	**21**	0	0	0	**8**	0	5	0	**5**	**13**	**17**
09:15	09:30	1	4	0	**8**	0	3	2	**9**	**17**	0	0	0	**5**	0	2	0	**2**	**7**	**12**
09:30	09:45	2	7	0	**9**	0	0	1	**8**	**17**	0	0	0	**7**	0	4	0	**4**	**11**	**14**
09:45	10:00	0	8	0	**8**	0	0	3	**11**	**19**	0	0	0	**6**	0	3	0	**3**	**9**	**14**
11:30	11:45	0	5	0	**5**	0	0	3	**8**	**13**	0	0	0	**5**	0	2	0	**2**	**7**	**10**
11:45	12:00	2	4	0	**6**	0	0	4	**8**	**14**	0	0	0	**10**	0	4	0	**4**	**14**	**14**
12:00	12:15	0	6	0	**6**	0	0	5	**12**	**18**	0	0	0	**8**	0	3	1	**4**	**12**	**15**
12:15	12:30	1	5	0	**6**	0	0	2	**7**	**13**	0	0	0	**5**	0	2	0	**2**	**7**	**10**
12:30	12:45	0	5	0	**6**	0	1	1	**7**	**13**	0	0	0	**5**	0	4	0	**4**	**9**	**11**
12:45	13:00	1	4	0	**5**	0	0	1	**5**	**10**	0	0	0	**4**	0	2	0	**2**	**6**	**8**
13:00	13:15	0	6	0	**8**	0	0	1	**7**	**15**	0	0	0	**5**	2	2	0	**4**	**9**	**12**
13:15	13:30	1	1	0	**4**	0	1	5	**7**	**11**	0	0	0	**9**	1	3	0	**4**	**13**	**12**
15:00	15:15	0	3	0	**5**	0	2	0	**6**	**11**	0	0	0	**3**	0	3	1	**4**	**7**	**9**
15:15	15:30	1	2	0	**5**	0	0	4	**7**	**12**	0	0	0	**7**	2	2	1	**5**	**12**	**12**
15:30	15:45	2	4	0	**9**	0	2	2	**10**	**19**	0	0	0	**9**	1	5	2	**8**	**17**	**18**
15:45	16:00	0	4	0	**7**	0	3	3	**11**	**18**	0	0	0	**8**	0	5	1	**6**	**14**	**16**
16:00	16:15	5	3	0	**11**	0	2	3	**8**	**19**	0	0	0	**10**	1	2	0	**3**	**13**	**16**
16:15	16:30	3	1	0	**8**	0	3	0	**4**	**12**	0	0	0	**5**	1	2	0	**3**	**8**	**10**
16:30	16:45	1	1	0	**3**	0	1	0	**2**	**5**	0	0	0	**6**	0	5	0	**5**	**11**	**8**
16:45	17:00	1	2	0	**4**	0	0	0	**2**	**6**	0	0	0	**3**	1	2	0	**3**	**6**	**6**
17:00	17:15	1	1	0	**2**	0	0	2	**3**	**5**	0	0	0	**6**	0	3	0	**3**	**9**	**7**
17:15	17:30	0	4	0	**4**	0	0	1	**5**	**9**	0	0	0	**3**	0	2	0	**2**	**5**	**7**
17:30	17:45	1	2	0	**3**	0	0	0	**2**	**5**	0	0	0	**3**	0	2	0	**2**	**5**	**5**
17:45	18:00	2	3	0	**6**	0	1	0	**4**	**10**	0	0	0	**4**	0	2	0	**2**	**6**	**8**
Total:	None	52	117	0	**213**	0	28	59	**212**	**425**	0	0	0	**273**	16	160	8	**184**	**457**	**441**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 @ TRANS

Survey Date: Thursday, January 31, 2019 **WO No:** 38328

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

Full Study 15 Minute U-Turn Total

Time Period		JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 Northbound U-Turn Total	JEANNE D'ARC BLVD N/OR174 IC105 RAMP63 Southbound U-Turn Total	TRANSITWAY Eastbound U-Turn Total	TRANSITWAY Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	1	0	0	1
07:30	07:45	0	1	0	0	1
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	2	0	0	2
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	1	0	0	1
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	1	0	0	1
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	1	1	0	2
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	3	0	0	3
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	10	1	0	11

Transportation Services - Traffic Services

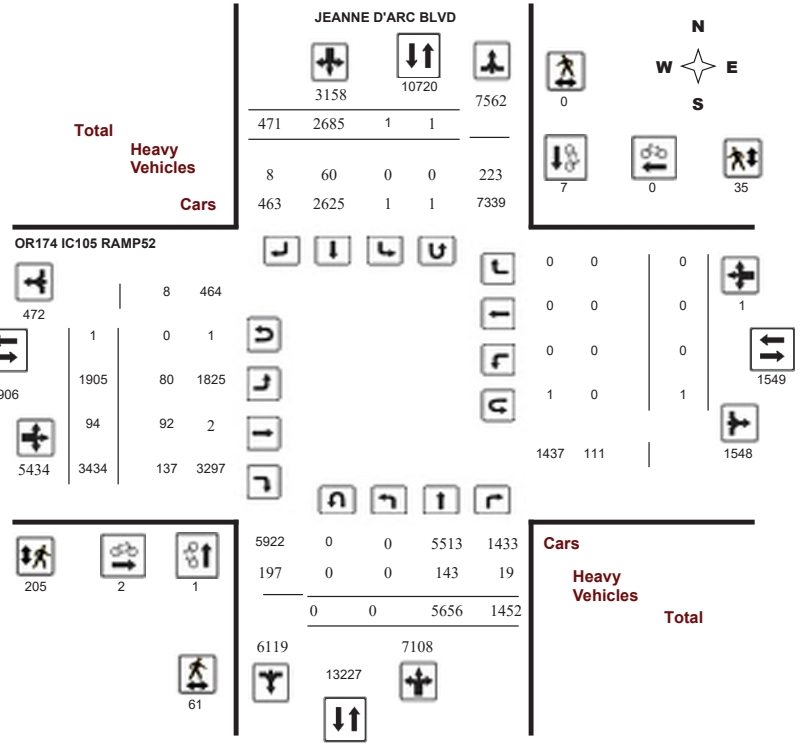
Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study Diagram



5469208 - WED JAN 08, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

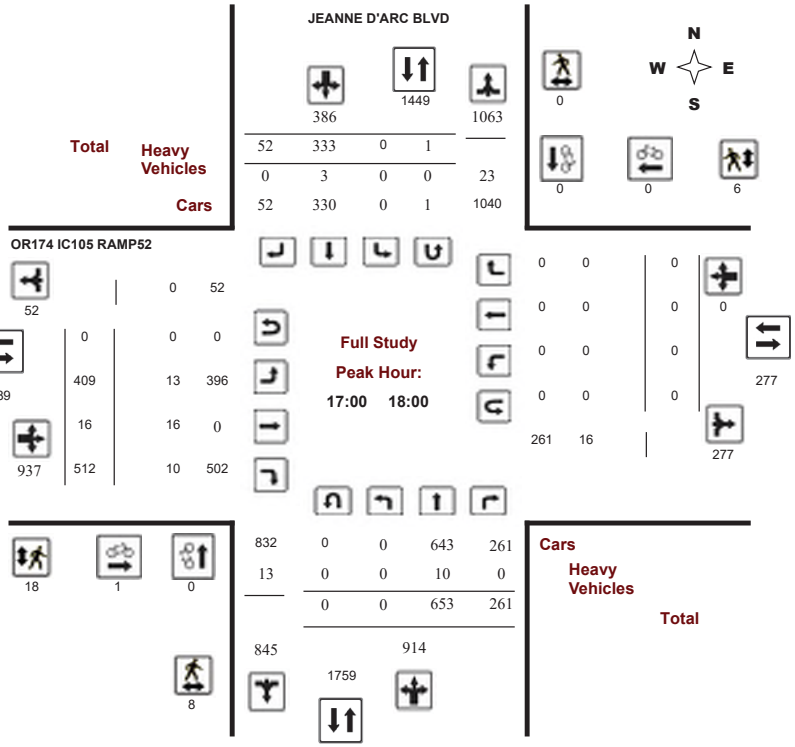
Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study Peak Hour Diagram



5469208 - WED JAN 08, 2020 - 8HRS - LORETTA

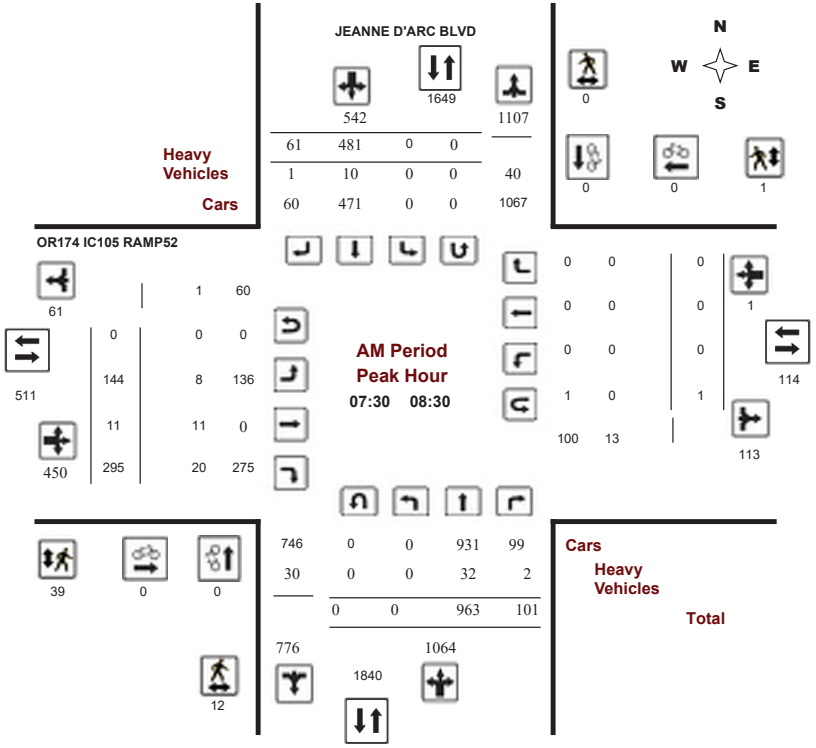
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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



Comments 5469208 - WED JAN 08, 2020 - 8HRS - LORETTA

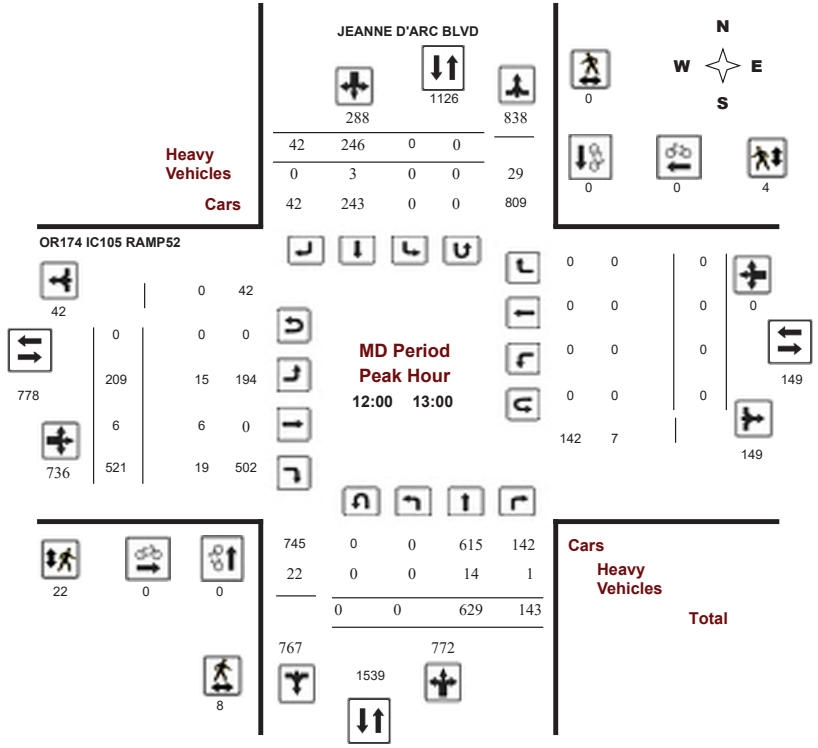
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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



Comments 5469208 - WED JAN 08, 2020 - 8HRS - LORETTA

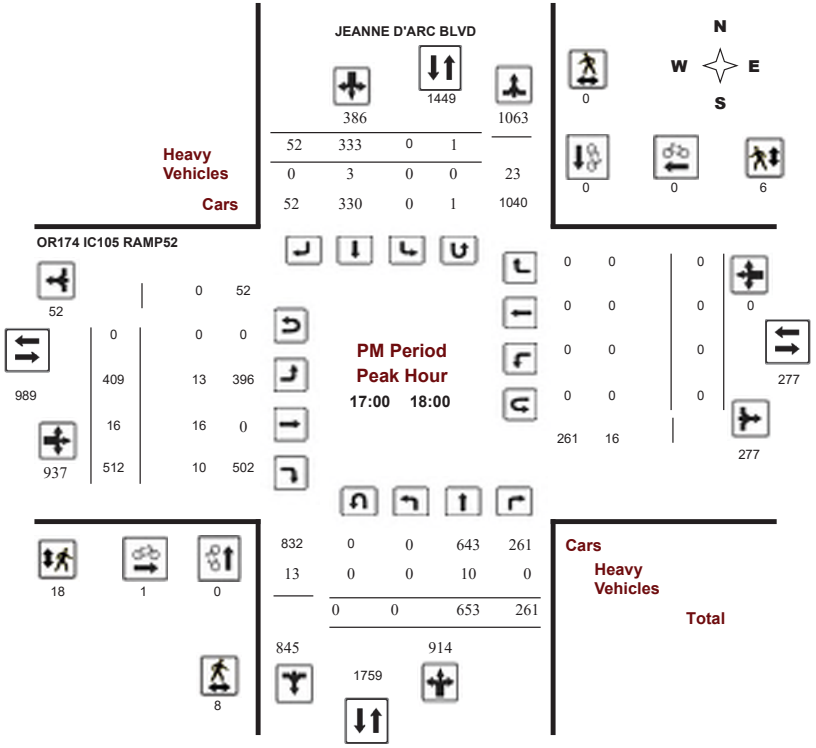
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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



Comments 5469208 - WED JAN 08, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, March 04, 2020

Total Observed U-Turns

Northbound: 0 Southbound: 1

Eastbound: 1 Westbound: 1

AADT Factor 1.00

	JEANNE D'ARC BLVD								OR174 IC105 RAMP52									
	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	0	951	79	**1030**	1	456	54	**511**	**1541**	97	12	255	**364**	0	0	0	**0**	**364**	**1905**
08:00 09:00	0	826	101	**927**	0	492	62	**554**	**1481**	156	10	351	**517**	0	0	0	**0**	**517**	**1998**
09:00 10:00	0	685	120	**805**	0	318	66	**384**	**1189**	119	7	370	**496**	0	0	0	**0**	**496**	**1685**
11:30 12:30	0	632	159	**791**	0	231	45	**276**	**1067**	192	6	513	**711**	0	0	0	**0**	**711**	**1778**
12:30 13:30	0	588	148	**736**	0	249	51	**300**	**1036**	228	6	488	**722**	0	0	0	**0**	**722**	**1758**
15:00 16:00	0	674	246	**920**	0	278	63	**341**	**1261**	342	17	552	**911**	0	0	0	**0**	**911**	**2172**
16:00 17:00	0	647	338	**985**	0	328	78	**406**	**1391**	362	20	393	**775**	0	0	0	**0**	**775**	**2166**
17:00 18:00	0	653	261	**914**	0	333	52	**385**	**1299**	409	16	512	**937**	0	0	0	**0**	**937**	**2236**
Sub Total	0	5656	1452	**7108**	1	2685	471	**3157**	**10265**	1905	94	3434	**5433**	0	0	0	**0**	**5433**	**15698**
U Turns				**0**				**1**	**1**				**1**				**1**	**2**	**3**
Total	0	5656	1452	**7108**	1	2685	471	**3158**	**10266**	1905	94	3434	**5434**	0	0	0	**1**	**5435**	**15701**
EQ 12Hr	0	7862	2018	**9880**	1	3732	655	**4390**	**14270**	2648	131	4773	**7553**	0	0	0	**1**	**7555**	**21824**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	0	7862	2018	**9880**	1	4889	858	**4390**	**14270**	2648	131	4773	**7553**	0	0	0	**1**	**7555**	**21824**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	0	10299	2644	**12943**	1	6405	1124	**5751**	**18694**	3469	172	6253	**9894**	0	0	0	**1**	**9897**	**28589**
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 @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study 15 Minute Increments

		JEANNE D'ARC BLVD									OR174 IC105 RAMP52									
		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	198	15	213	0	109	11	120	333	11	4	51	66	0	0	0	0	66	399
07:15	07:30	0	236	11	247	1	116	10	127	374	23	2	71	96	0	0	0	0	96	470
07:30	07:45	0	280	31	311	0	130	14	144	455	30	3	66	99	0	0	0	0	99	554
07:45	08:00	0	237	22	259	0	101	19	120	379	33	3	67	103	0	0	0	0	103	482
08:00	08:15	0	249	20	269	0	133	11	144	413	38	2	82	122	0	0	0	0	122	535
08:15	08:30	0	197	28	225	0	117	17	134	359	43	3	80	126	0	0	0	1	127	486
08:30	08:45	0	196	21	217	0	127	17	144	361	35	1	84	120	0	0	0	0	120	481
08:45	09:00	0	184	32	216	0	115	17	132	348	40	4	105	150	0	0	0	0	150	498
09:00	09:15	0	180	35	215	0	110	14	124	339	32	1	88	121	0	0	0	0	121	460
09:15	09:30	0	189	32	221	0	81	16	97	318	34	2	100	136	0	0	0	0	136	454
09:30	09:45	0	174	26	200	0	70	20	90	290	25	2	84	111	0	0	0	0	111	401
09:45	10:00	0	142	27	169	0	57	16	73	242	28	2	98	128	0	0	0	0	128	370
11:30	11:45	0	190	53	243	0	52	13	65	308	46	1	124	171	0	0	0	0	171	479
11:45	12:00	0	139	36	175	0	59	16	75	250	54	2	132	188	0	0	0	0	188	438
12:00	12:15	0	141	44	185	0	58	6	64	249	43	1	133	177	0	0	0	0	177	426
12:15	12:30	0	162	26	188	0	62	10	72	260	49	2	124	175	0	0	0	0	175	435
12:30	12:45	0	148	34	182	0	57	16	73	255	57	1	133	191	0	0	0	0	191	446
12:45	13:00	0	178	39	217	0	69	10	79	296	60	2	131	193	0	0	0	0	193	489
13:00	13:15	0	141	41	182	0	55	11	66	248	51	1	112	164	0	0	0	0	164	412
13:15	13:30	0	121	34	155	0	68	14	82	237	60	2	112	174	0	0	0	0	174	411
15:00	15:15	0	171	64	235	0	64	17	81	316	96	1	176	273	0	0	0	0	273	589
15:15	15:30	0	161	56	217	0	56	10	66	283	83	4	132	219	0	0	0	0	219	502
15:30	15:45	0	174	58	232	0	64	15	79	311	91	4	117	212	0	0	0	0	212	523
15:45	16:00	0	168	68	236	0	94	21	115	351	72	8	127	207	0	0	0	0	207	558
16:00	16:15	0	171	102	273	0	82	29	111	384	86	4	109	199	0	0	0	0	199	583
16:15	16:30	0	162	78	240	0	86	17	103	343	85	5	84	174	0	0	0	0	174	517
16:30	16:45	0	154	91	245	0	86	16	102	347	100	5	99	204	0	0	0	0	204	551
16:45	17:00	0	160	67	227	0	74	16	90	317	91	6	101	198	0	0	0	0	198	515
17:00	17:15	0	160	86	246	0	69	10	79	325	100	2	117	219	0	0	0	0	219	544
17:15	17:30	0	168	66	234	0	81	14	95	329	95	4	106	205	0	0	0	0	205	534
17:30	17:45	0	162	58	220	0	85	13	98	318	109	5	147	261	0	0	0	0	261	579
17:45	18:00	0	163	51	214	0	98	15	114	328	105	5	142	252	0	0	0	0	252	580
Total:		0	5656	1452	7108	1	2685	471	3158	10266	1905	94	3434	5434	0	0	0	1	5435	15,701

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study Cyclist Volume

Time Period		JEANNE D'ARC BLVD			OR174 IC105 RAMP52			
		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	1	0	1	1	0	1	2
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	2	2	0	0	0	2
13:15	13:30	0	5	5	0	0	0	5
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	1	0	1	1
17:45	18:00	0	0	0	0	0	0	0
Total		1	7	**8**	2	0	2	10

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study Pedestrian Volume

Time Period		JEANNE D'ARC BLVD			OR174 IC105 RAMP52			
		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	2	0	**2**	6	1	**7**	**9**
07:15	07:30	2	0	**2**	16	0	**16**	**18**
07:30	07:45	5	0	**5**	6	1	**7**	**12**
07:45	08:00	0	0	**0**	14	0	**14**	**14**
08:00	08:15	5	0	**5**	10	0	**10**	**15**
08:15	08:30	2	0	**2**	9	0	**9**	**11**
08:30	08:45	0	0	**0**	5	0	**5**	**5**
08:45	09:00	4	0	**4**	10	0	**10**	**14**
09:00	09:15	3	0	**3**	3	2	**5**	**8**
09:15	09:30	0	0	**0**	4	2	**6**	**6**
09:30	09:45	0	0	**0**	5	0	**5**	**5**
09:45	10:00	1	0	**1**	5	0	**5**	**6**
11:30	11:45	1	0	**1**	1	0	**1**	**2**
11:45	12:00	1	0	**1**	2	1	**3**	**4**
12:00	12:15	4	0	**4**	7	0	**7**	**11**
12:15	12:30	4	0	**4**	5	2	**7**	**11**
12:30	12:45	0	0	**0**	4	0	**4**	**4**
12:45	13:00	0	0	**0**	6	2	**8**	**8**
13:00	13:15	1	0	**1**	5	0	**5**	**6**
13:15	13:30	1	0	**1**	2	1	**3**	**4**
15:00	15:15	0	0	**0**	5	0	**5**	**5**
15:15	15:30	0	0	**0**	7	4	**11**	**11**
15:30	15:45	1	0	**1**	8	0	**8**	**9**
15:45	16:00	6	0	**6**	10	2	**12**	**18**
16:00	16:15	2	0	**2**	6	10	**16**	**18**
16:15	16:30	7	0	**7**	9	1	**10**	**17**
16:30	16:45	0	0	**0**	8	0	**8**	**8**
16:45	17:00	1	0	**1**	9	0	**9**	**10**
17:00	17:15	2	0	**2**	4	0	**4**	**6**
17:15	17:30	1	0	**1**	6	0	**6**	**7**
17:30	17:45	3	0	**3**	3	4	**7**	**10**
17:45	18:00	2	0	**2**	5	2	**7**	**9**
Total	.....	61	0	**61**	205	35	**240**	**301**

5469208 - WED JAN 08, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study Heavy Vehicles

JEANNE D'ARC BLVD **OR174 IC105 RAMP52**

Time Period		Northbound				Southbound					Eastbound				Westbound					Grand Total
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	
07:00	07:15	0	6	1	**11**	0	0	1	**8**	**19**	1	4	4	**10**	0	0	0	**5**	**15**	**17**
07:15	07:30	0	4	0	**9**	0	3	0	**8**	**17**	1	2	2	**5**	0	0	0	**2**	**7**	**12**
07:30	07:45	0	11	0	**15**	0	1	1	**15**	**30**	2	3	3	**9**	0	0	0	**3**	**12**	**21**
07:45	08:00	0	7	0	**17**	0	5	0	**13**	**30**	1	3	5	**9**	0	0	0	**3**	**12**	**21**
08:00	08:15	0	9	0	**13**	0	1	0	**14**	**27**	4	2	3	**9**	0	0	0	**2**	**11**	**19**
08:15	08:30	0	5	2	**19**	0	3	0	**9**	**28**	1	3	9	**13**	0	0	0	**5**	**18**	**23**
08:30	08:45	0	5	0	**9**	0	1	0	**11**	**20**	5	1	3	**9**	0	0	0	**1**	**10**	**15**
08:45	09:00	0	7	0	**14**	0	2	2	**13**	**27**	2	4	5	**13**	0	0	0	**4**	**17**	**22**
09:00	09:15	0	5	2	**17**	0	6	0	**12**	**29**	1	1	4	**6**	0	0	0	**3**	**9**	**19**
09:15	09:30	0	5	1	**22**	0	5	1	**14**	**36**	3	2	11	**17**	0	0	0	**3**	**20**	**28**
09:30	09:45	0	4	0	**11**	0	2	0	**8**	**19**	2	1	5	**8**	0	0	0	**1**	**9**	**14**
09:45	10:00	0	5	0	**13**	0	2	0	**8**	**21**	1	2	6	**9**	0	0	0	**2**	**11**	**16**
11:30	11:45	0	6	3	**16**	0	1	0	**9**	**25**	2	1	6	**9**	0	0	0	**4**	**13**	**19**
11:45	12:00	0	4	2	**11**	0	1	0	**9**	**20**	4	2	4	**10**	0	0	0	**4**	**14**	**17**
12:00	12:15	0	4	0	**10**	0	0	0	**5**	**15**	1	1	6	**8**	0	0	0	**1**	**9**	**12**
12:15	12:30	0	5	0	**11**	0	3	0	**12**	**23**	4	2	3	**9**	0	0	0	**2**	**11**	**17**
12:30	12:45	0	4	1	**8**	0	0	0	**8**	**16**	4	1	3	**8**	0	0	0	**2**	**10**	**13**
12:45	13:00	0	1	0	**8**	0	0	0	**7**	**15**	6	2	7	**15**	0	0	0	**2**	**17**	**16**
13:00	13:15	0	6	0	**10**	0	0	0	**9**	**19**	3	1	4	**8**	0	0	0	**1**	**9**	**14**
13:15	13:30	0	2	1	**6**	0	1	1	**5**	**11**	1	2	2	**6**	0	0	0	**3**	**9**	**10**
15:00	15:15	0	2	1	**15**	0	4	0	**9**	**24**	3	1	8	**12**	0	0	0	**2**	**14**	**19**
15:15	15:30	0	4	1	**9**	0	2	0	**7**	**16**	1	4	2	**7**	0	0	0	**5**	**12**	**14**
15:30	15:45	0	5	0	**10**	0	1	1	**10**	**20**	3	4	4	**12**	0	0	0	**4**	**16**	**18**
15:45	16:00	0	2	1	**12**	0	4	0	**7**	**19**	1	7	5	**13**	0	0	0	**8**	**21**	**20**
16:00	16:15	0	4	2	**13**	0	3	0	**10**	**23**	3	4	4	**11**	0	0	0	**6**	**17**	**20**
16:15	16:30	0	6	1	**12**	0	3	1	**11**	**23**	1	5	2	**9**	0	0	0	**6**	**15**	**19**
16:30	16:45	0	1	0	**5**	0	1	0	**6**	**11**	4	5	3	**12**	0	0	0	**5**	**17**	**14**
16:45	17:00	0	4	0	**10**	0	2	0	**8**	**18**	2	6	4	**12**	0	0	0	**6**	**18**	**18**
17:00	17:15	0	4	0	**7**	0	0	0	**8**	**15**	4	2	3	**9**	0	0	0	**2**	**11**	**13**
17:15	17:30	0	2	0	**6**	0	2	0	**6**	**12**	2	4	2	**8**	0	0	0	**4**	**12**	**12**
17:30	17:45	0	4	0	**8**	0	0	0	**8**	**16**	4	5	4	**13**	0	0	0	**5**	**18**	**17**
17:45	18:00	0	0	0	**2**	0	1	0	**4**	**6**	3	5	1	**9**	0	0	0	**5**	**14**	**10**
Total:	None	0	143	19	**359**	0	60	8	**291**	**650**	80	92	137	**317**	0	0	0	**111**	**428**	**539**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

JEANNE D'ARC BLVD @ OR174 IC105 RAMP52

Survey Date: Wednesday, March 04, 2020 **WO No:** 39267

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

Full Study 15 Minute U-Turn Total

JEANNE D'ARC BLVD **OR174 IC105 RAMP52**

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

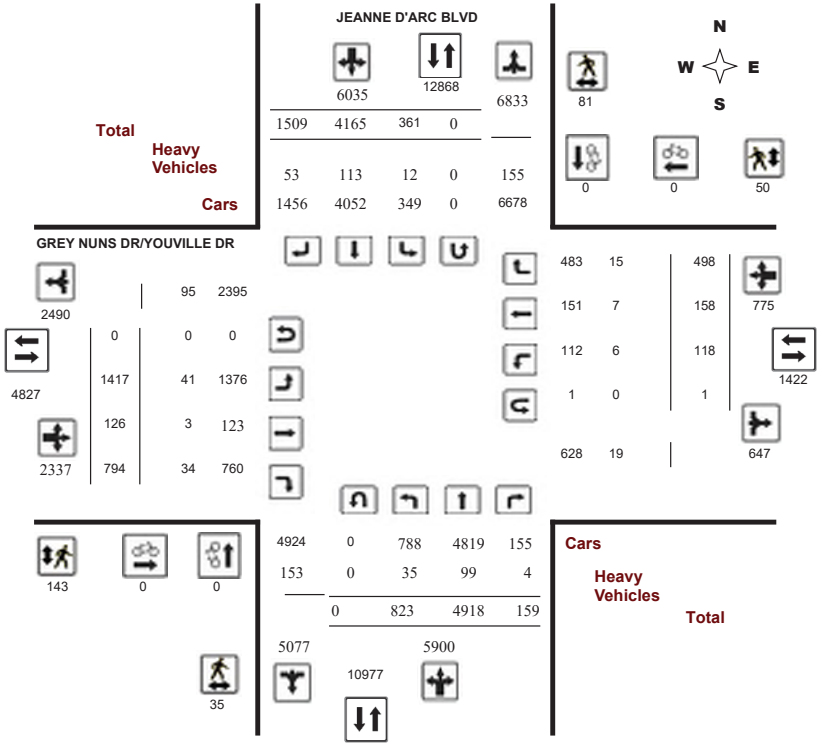
Transportation Services - Traffic Services

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



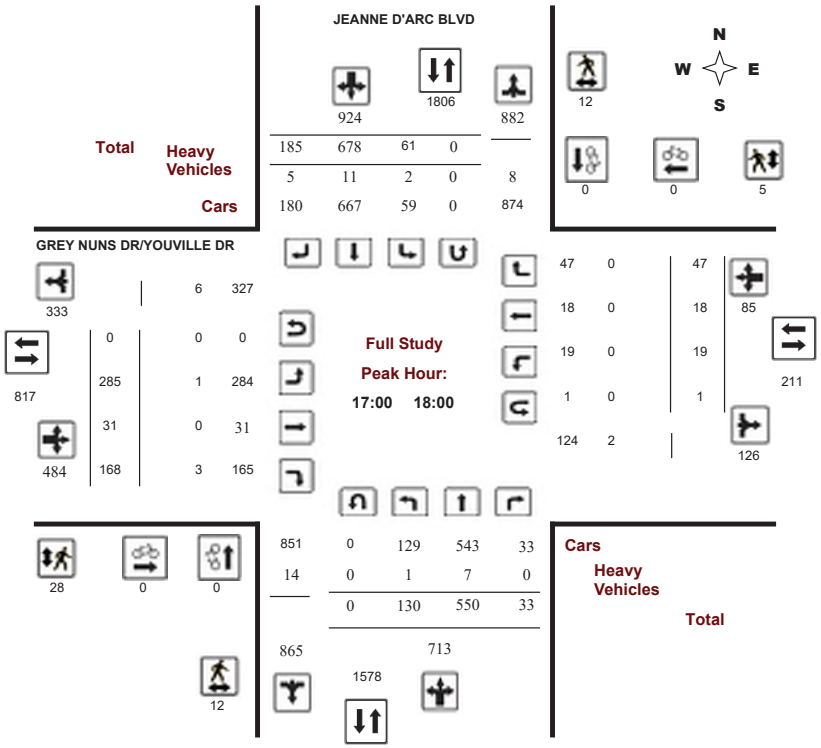
Transportation Services - Traffic Services

Turning Movement Count - Study Results

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

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

Full Study Peak Hour Diagram



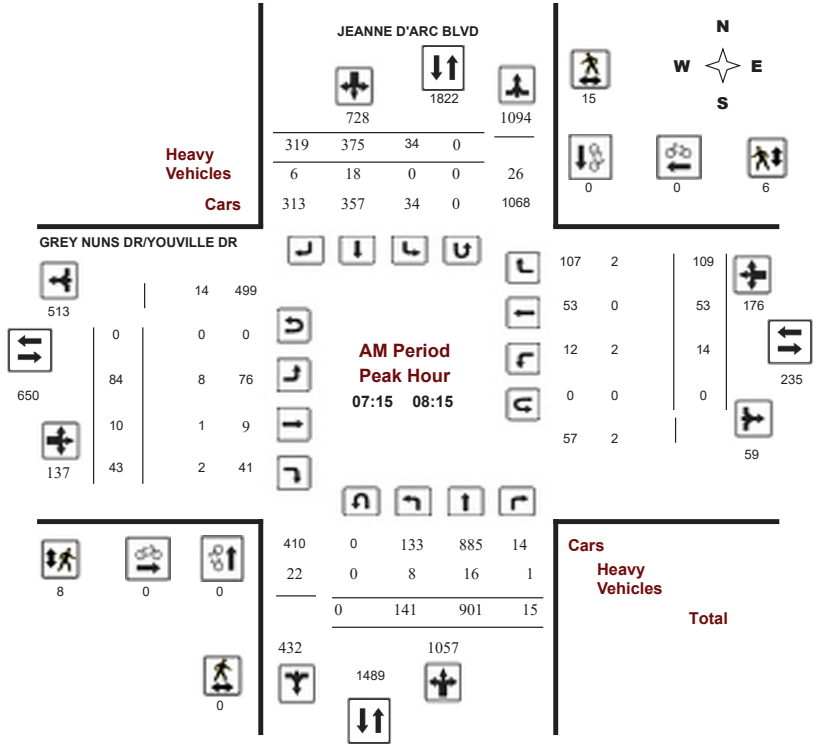
Transportation Services - Traffic Services

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

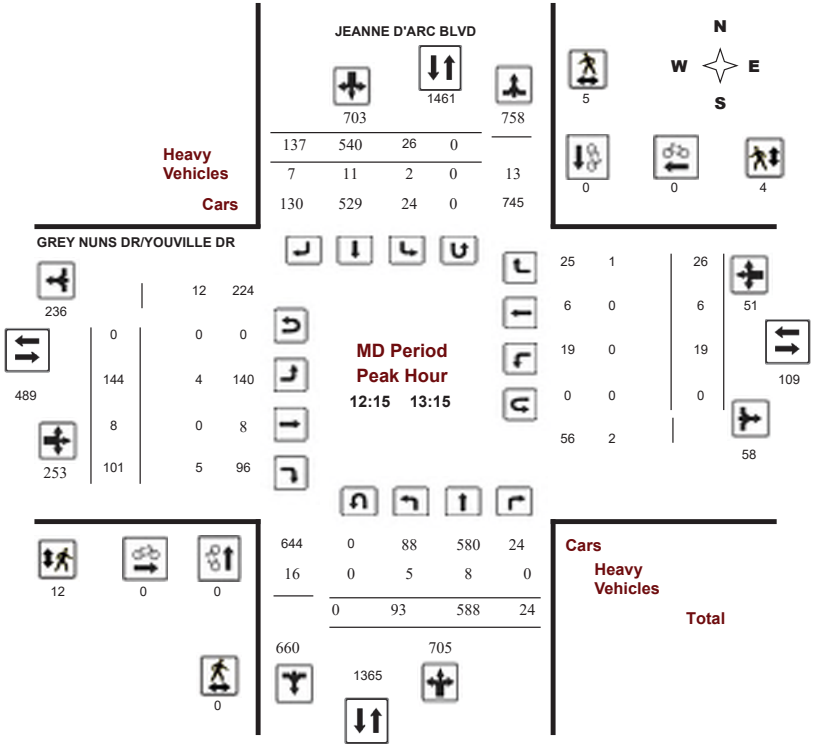
Transportation Services - Traffic Services

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

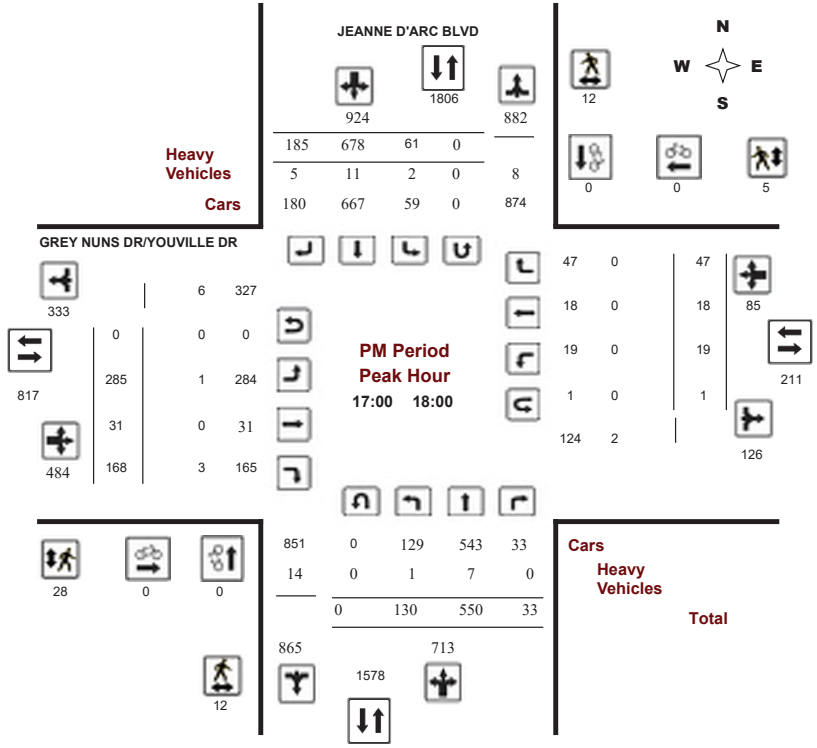
Transportation Services - Traffic Services

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

Time Period		JEANNE D'ARC BLVD			GREY NUNS DR/YOUVILLE DR			
		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

		JEANNE D'ARC BLVD	JEANNE D'ARC BLVD	GREY NUNS DR/YOUVILLE DR	GREY NUNS DR/YOUVILLE DR	
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	0	0	0	0	**0**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	0	0	**0**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	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

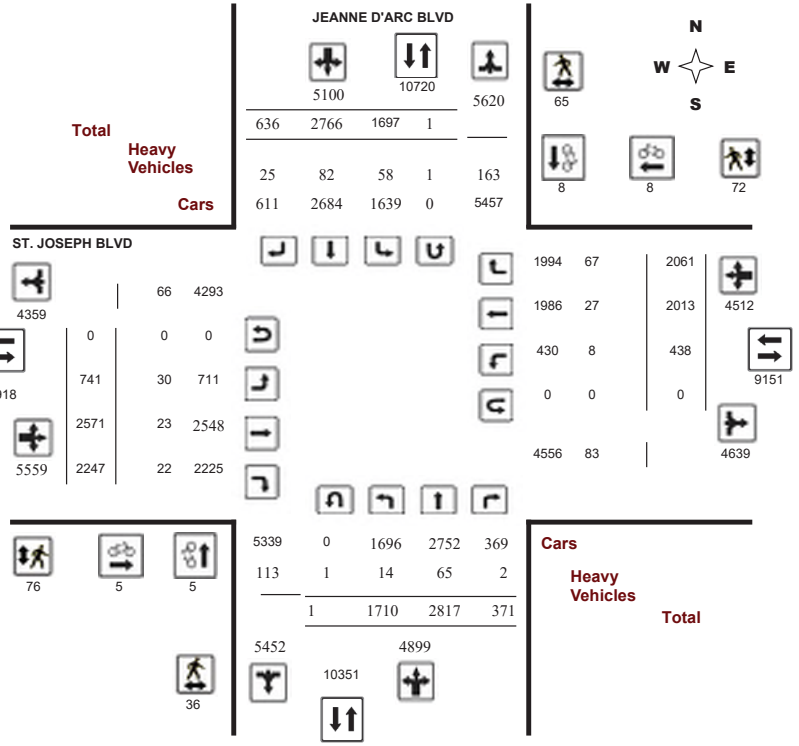
Turning Movement Count - Study Results

ST. JOSEPH BLVD @ 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

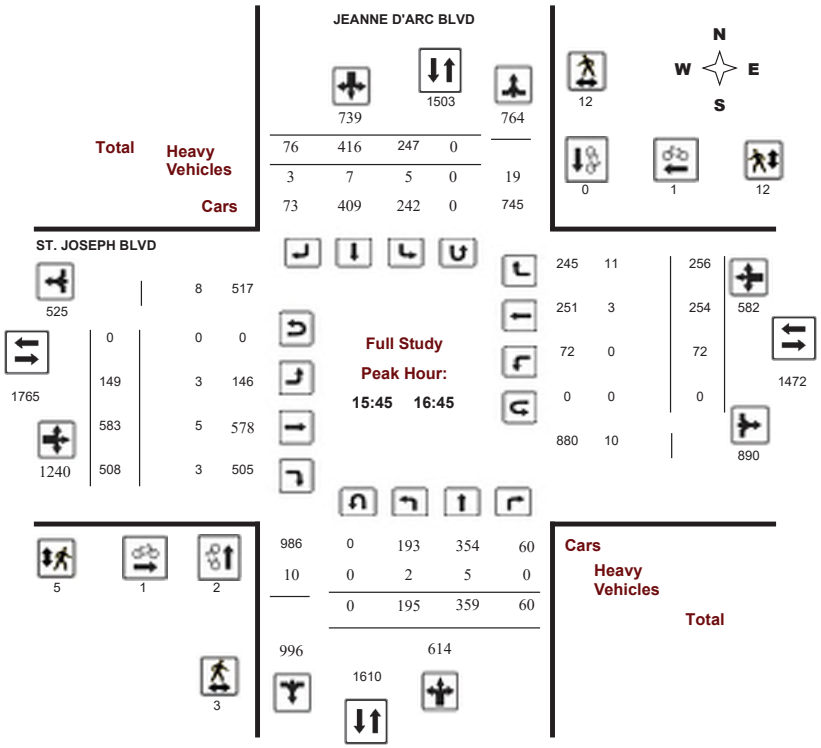
Turning Movement Count - Study Results

ST. JOSEPH BLVD @ JEANNE D'ARC BLVD

Survey Date: Wednesday, July 06, 2022
Start Time: 07:00

WO No: 40427
Device: Miovision

Full Study Peak Hour Diagram



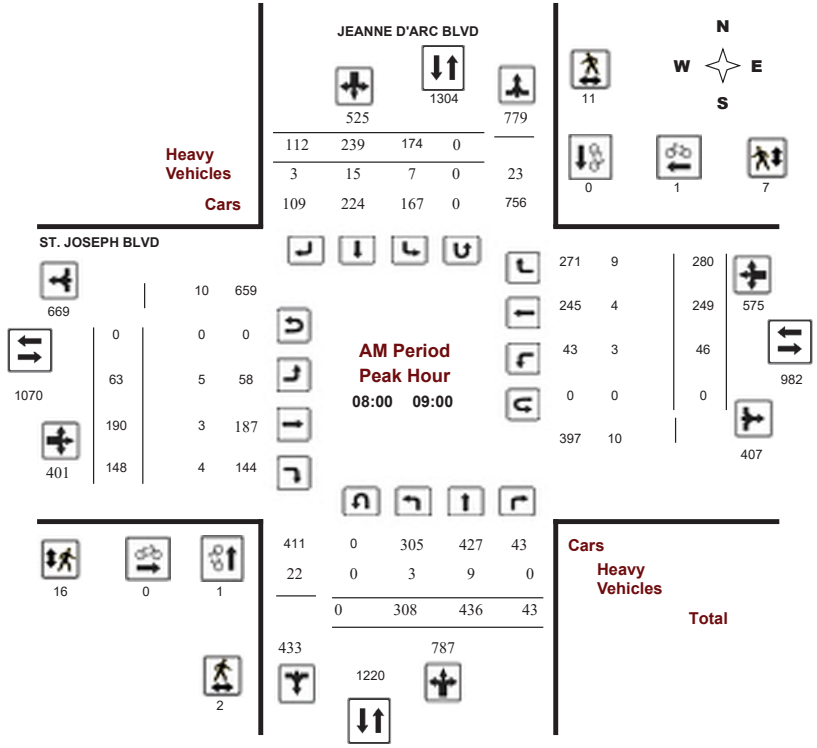
Transportation Services - Traffic Services

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

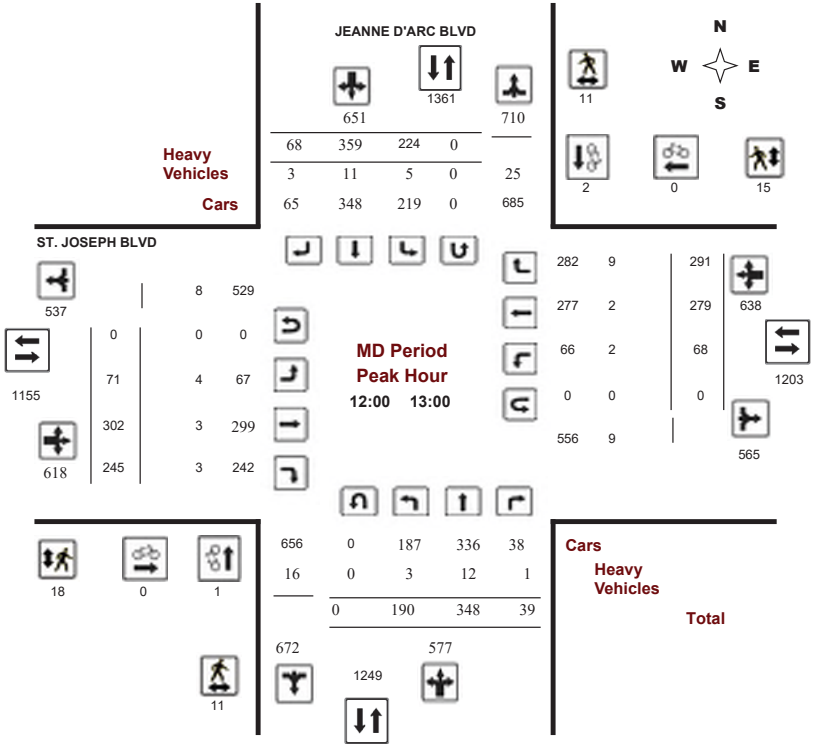
Transportation Services - Traffic Services

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

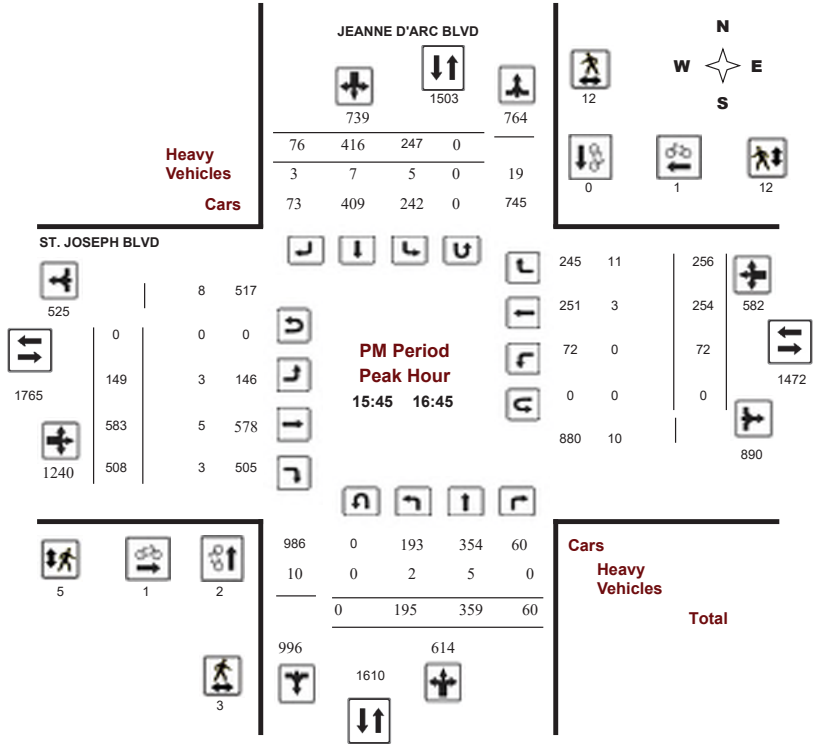
Transportation Services - Traffic Services

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 Northbound	JEANNE D'ARC BLVD Southbound	JEANNE D'ARC BLVD Street Total	ST. JOSEPH BLVD Eastbound	ST. JOSEPH BLVD Westbound	ST. JOSEPH BLVD 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

Time Period	JEANNE D'ARC BLVD NB Approach (E or W Crossing)	JEANNE D'ARC BLVD SB Approach (E or W Crossing)	JEANNE D'ARC BLVD Total	ST. JOSEPH BLVD EB Approach (N or S Crossing)	ST. JOSEPH BLVD WB Approach (N or S Crossing)	ST. JOSEPH BLVD 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

		JEANNE D'ARC BLVD	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	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

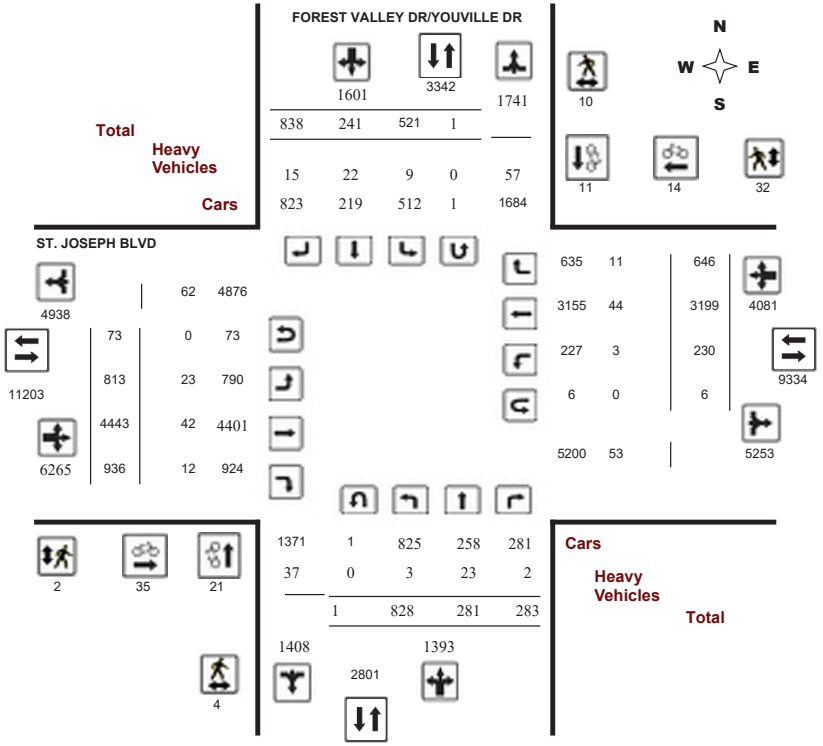
Turning Movement Count - Study Results

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 Diagram



Transportation Services - Traffic Services

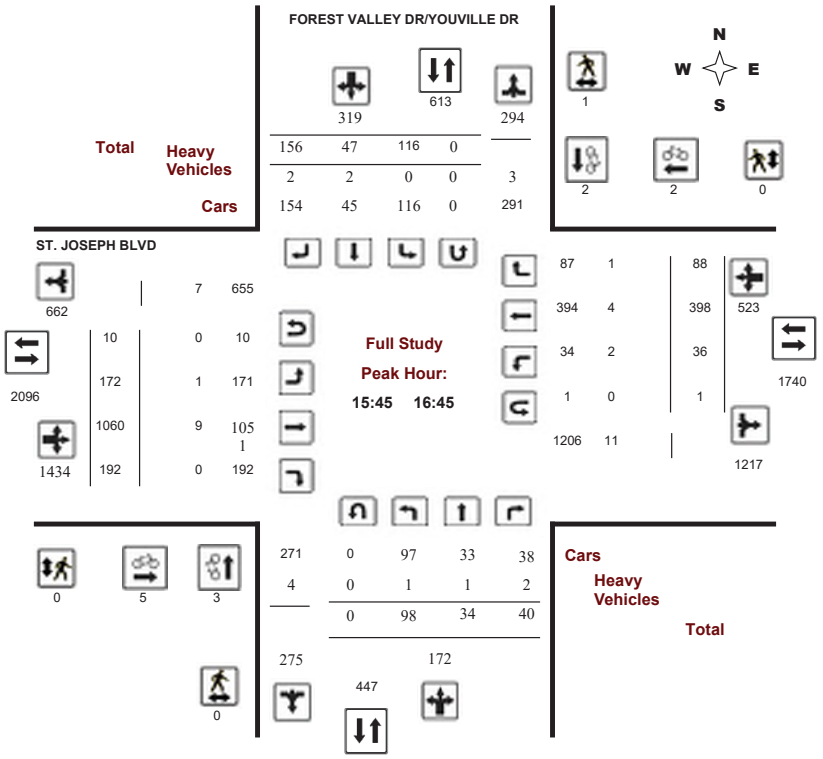
Turning Movement Count - Study Results

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 Peak Hour Diagram



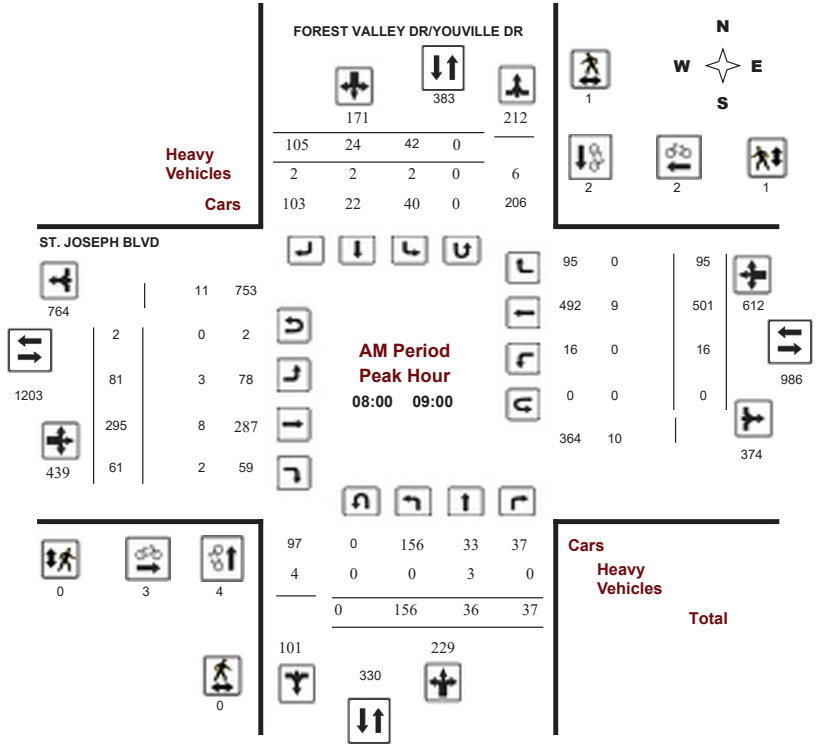
Transportation Services - Traffic Services

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

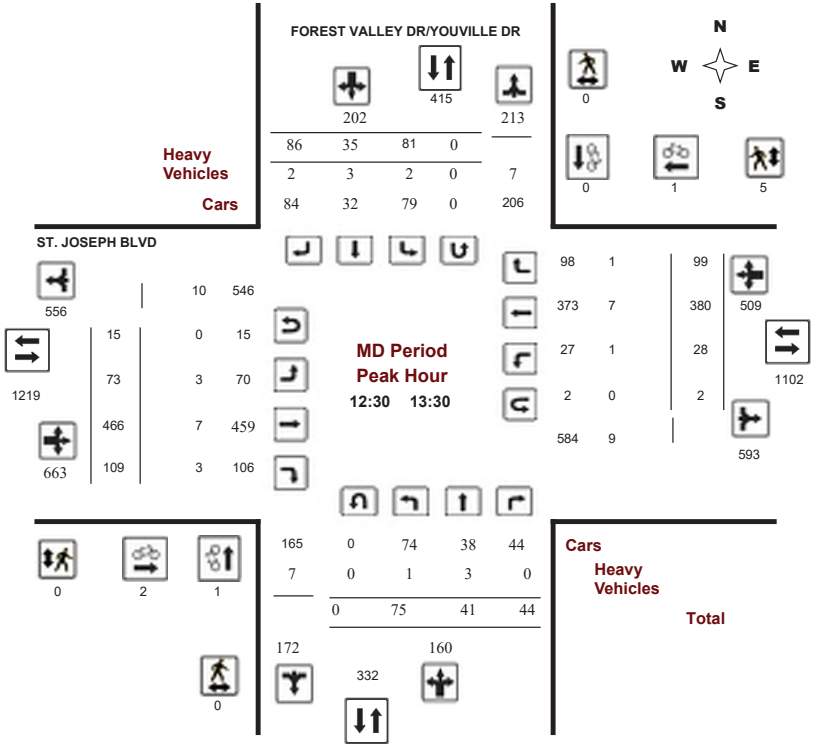
Transportation Services - Traffic Services

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

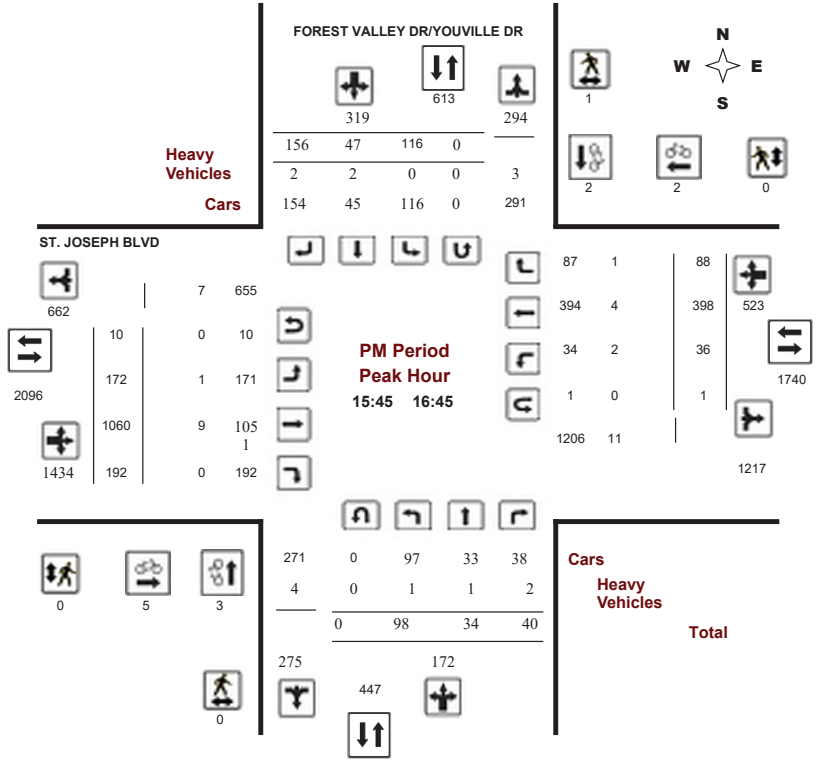
Transportation Services - Traffic Services

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



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

Time Period		FOREST VALLEY DR/YOUVILLE DR			ST. JOSEPH BLVD			
		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				Grand Total
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	
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**

Transportation Services - Traffic Services

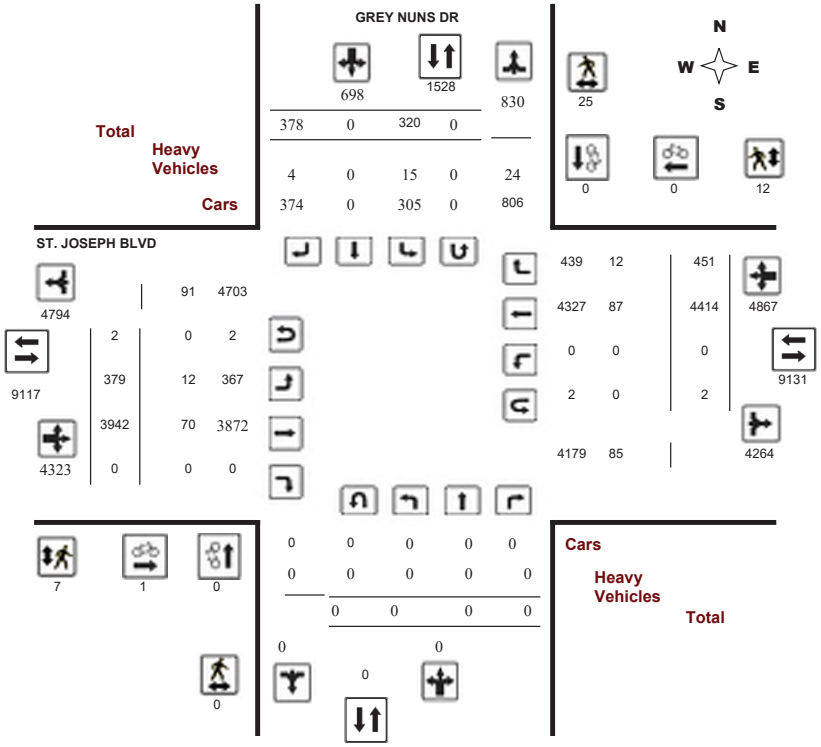
Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study Diagram



Transportation Services - Traffic Services

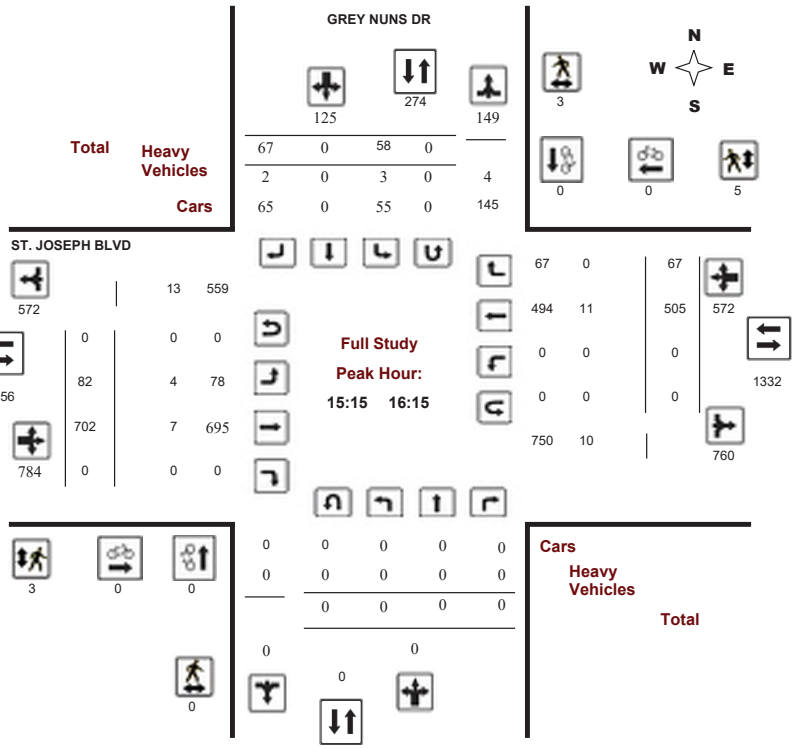
Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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: 2 Westbound: 2

AADT Factor 1.00

	GREY NUNS 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	0	0	0	**0**	32	0	47	**79**	**79**	26	168	0	**194**	0	778	71	**849**	**1043**	**1122**
08:00 09:00	0	0	0	**0**	37	0	53	**90**	**90**	63	302	0	**365**	0	647	96	**743**	**1108**	**1198**
09:00 10:00	0	0	0	**0**	36	0	67	**103**	**103**	35	359	0	**394**	0	536	43	**579**	**973**	**1076**
11:30 12:30	0	0	0	**0**	22	0	21	**43**	**43**	17	434	0	**451**	0	536	39	**575**	**1026**	**1069**
12:30 13:30	0	0	0	**0**	28	0	21	**49**	**49**	21	471	0	**492**	0	550	29	**579**	**1071**	**1120**
15:00 16:00	0	0	0	**0**	69	0	57	**126**	**126**	70	694	0	**764**	0	501	72	**573**	**1337**	**1463**
16:00 17:00	0	0	0	**0**	46	0	60	**106**	**106**	69	766	0	**835**	0	440	53	**493**	**1328**	**1434**
17:00 18:00	0	0	0	**0**	50	0	52	**102**	**102**	78	748	0	**826**	0	426	48	**474**	**1300**	**1402**
Sub Total	0	0	0	**0**	320	0	378	**698**	**698**	379	3942	0	**4321**	0	4414	451	**4865**	**9186**	**9884**
U Turns				**0**				**0**	**0**				**2**				**2**	**4**	**4**
Total	0	0	0	**0**	320	0	378	**698**	**698**	379	3942	0	**4323**	0	4414	451	**4867**	**9190**	**9888**
EQ 12Hr	0	0	0	**0**	445	0	525	**970**	**970**	527	5479	0	**6009**	0	6135	627	**6765**	**12774**	**13744**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	0	0	0	**0**	419	0	495	**914**	**970**	496	5164	0	**5663**	0	5782	591	**6376**	**12774**	**13744**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1**						
AVG 24Hr	0	0	0	**0**	549	0	649	**1198**	**1198**	650	6765	0	**7419**	0	7575	774	**8352**	**15771**	**16969**

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

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

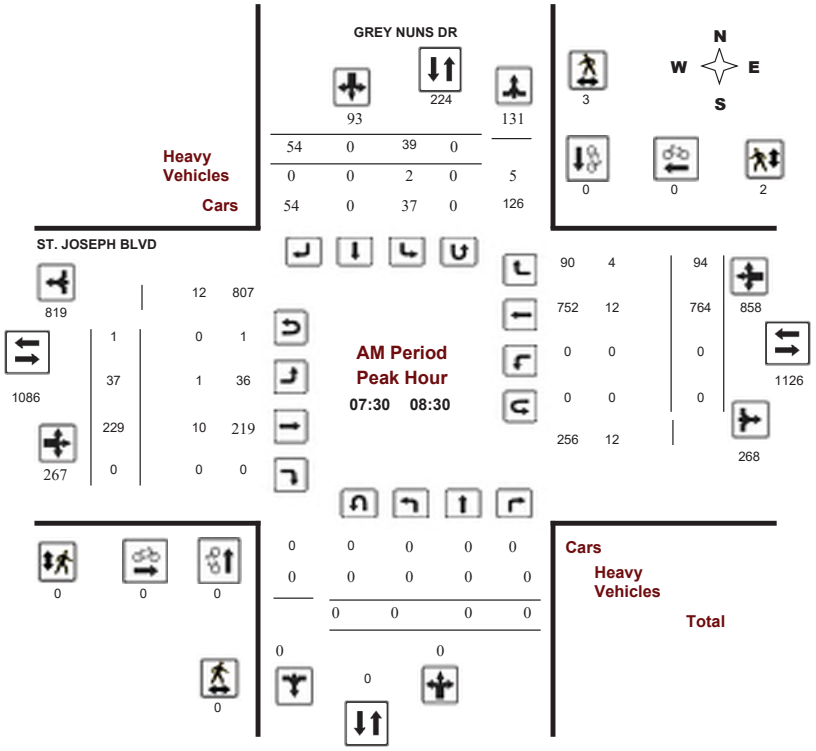
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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



Comments

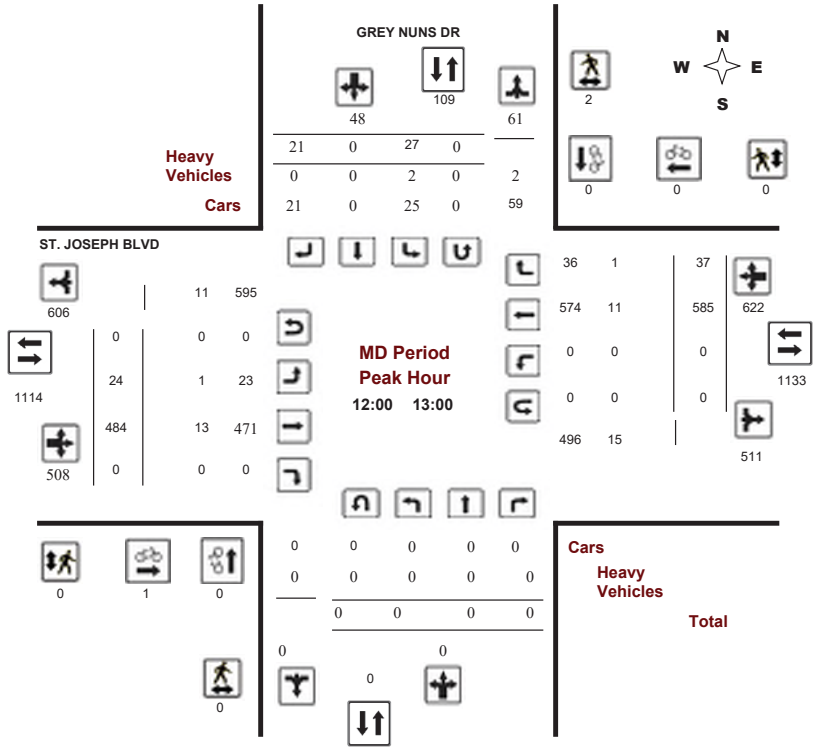
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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



Comments

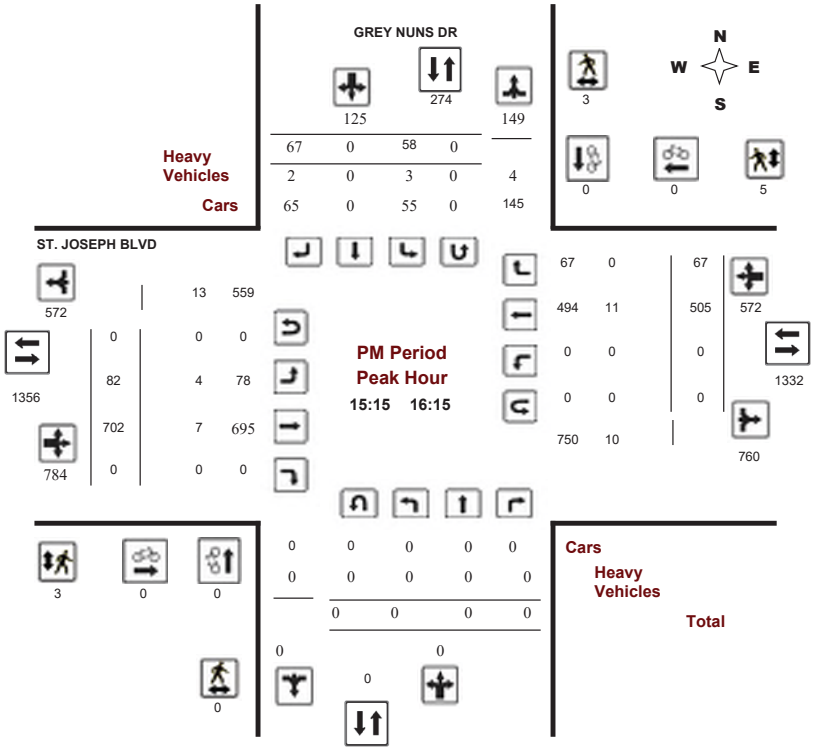
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study 15 Minute Increments

		GREY NUNS DR									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	0	0	0	5	0	12	17	0	7	38	0	45	0	212	16	228	0	290
07:15	07:30	0	0	0	0	7	0	9	16	0	11	28	0	39	0	176	16	192	0	247
07:30	07:45	0	0	0	0	13	0	12	25	1	1	52	0	53	0	196	14	210	1	288
07:45	08:00	0	0	0	0	7	0	14	21	0	7	50	0	57	0	194	25	219	0	297
08:00	08:15	0	0	0	0	8	0	11	19	0	11	62	0	73	0	184	29	213	0	305
08:15	08:30	0	0	0	0	11	0	17	28	1	18	65	0	84	0	190	26	216	1	328
08:30	08:45	0	0	0	0	7	0	13	20	0	11	87	0	98	0	146	16	162	0	280
08:45	09:00	0	0	0	0	11	0	12	23	1	23	88	0	111	0	127	25	152	1	286
09:00	09:15	0	0	0	0	16	0	37	53	3	20	82	0	102	0	123	25	148	3	303
09:15	09:30	0	0	0	0	12	0	17	29	0	5	83	0	88	0	95	7	102	0	219
09:30	09:45	0	0	0	0	6	0	6	12	1	4	88	0	92	0	136	2	138	1	242
09:45	10:00	0	0	0	0	2	0	7	9	0	6	106	0	112	0	182	9	191	0	312
11:30	11:45	0	0	0	0	4	0	6	10	0	4	89	0	93	0	127	7	134	0	237
11:45	12:00	0	0	0	0	7	0	3	10	1	4	118	0	122	0	117	11	128	1	260
12:00	12:15	0	0	0	0	7	0	4	11	0	4	110	0	114	0	146	9	155	0	280
12:15	12:30	0	0	0	0	4	0	8	12	0	5	117	0	122	0	146	12	158	0	292
12:30	12:45	0	0	0	0	10	0	2	12	2	4	133	0	137	0	147	10	157	2	306
12:45	13:00	0	0	0	0	6	0	7	13	0	11	124	0	135	0	146	6	152	0	300
13:00	13:15	0	0	0	0	4	0	7	11	0	5	116	0	121	0	134	4	138	0	270
13:15	13:30	0	0	0	0	8	0	5	13	0	1	98	0	99	0	123	9	133	0	245
15:00	15:15	0	0	0	0	20	0	7	27	1	7	168	0	175	0	122	16	138	1	340
15:15	15:30	0	0	0	0	6	0	12	18	0	22	169	0	191	0	145	18	163	0	372
15:30	15:45	0	0	0	0	12	0	10	22	1	19	173	0	192	0	129	27	156	1	370
15:45	16:00	0	0	0	0	31	0	28	59	3	22	184	0	206	0	105	11	116	3	381
16:00	16:15	0	0	0	0	9	0	17	26	1	19	176	0	195	0	126	11	137	1	358
16:15	16:30	0	0	0	0	13	0	18	31	0	16	199	0	215	0	105	8	114	0	360
16:30	16:45	0	0	0	0	10	0	12	22	1	11	196	0	207	0	109	15	124	1	353
16:45	17:00	0	0	0	0	14	0	13	27	0	23	195	0	218	0	100	19	119	0	364
17:00	17:15	0	0	0	0	12	0	14	26	1	16	195	0	211	0	104	9	113	1	350
17:15	17:30	0	0	0	0	10	0	16	26	0	22	199	0	221	0	102	11	113	0	360
17:30	17:45	0	0	0	0	13	0	8	21	1	22	181	0	204	0	108	13	121	1	346
17:45	18:00	0	0	0	0	15	0	14	29	0	18	173	0	191	0	112	15	127	0	347
Total:		0	0	0	0	320	0	378	698	19	379	3942	0	4323	0	4414	451	4867	19	9,888

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study Cyclist Volume

		GREY NUNS DR			ST. JOSEPH BLVD			
Time Period		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	1	0	1	1
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**	1	0	1	1

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study Pedestrian Volume

	GREY NUNS 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	2	**2**	0	0	**0**	**2**
07:15 07:30	0	0	**0**	0	0	**0**	**0**
07:30 07:45	0	0	**0**	0	1	**1**	**1**
07:45 08:00	0	3	**3**	0	1	**1**	**4**
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	1	**1**	1	0	**1**	**2**
08:45 09:00	0	1	**1**	0	1	**1**	**2**
09:00 09:15	0	1	**1**	0	0	**0**	**1**
09:15 09:30	0	2	**2**	0	1	**1**	**3**
09:30 09:45	0	0	**0**	1	0	**1**	**1**
09:45 10:00	0	1	**1**	0	1	**1**	**2**
11:30 11:45	0	0	**0**	0	0	**0**	**0**
11:45 12:00	0	0	**0**	0	1	**1**	**1**
12:00 12:15	0	0	**0**	0	0	**0**	**0**
12:15 12:30	0	1	**1**	0	0	**0**	**1**
12:30 12:45	0	1	**1**	0	0	**0**	**1**
12:45 13:00	0	0	**0**	0	0	**0**	**0**
13:00 13:15	0	1	**1**	1	0	**1**	**2**
13:15 13:30	0	0	**0**	0	0	**0**	**0**
15:00 15:15	0	2	**2**	0	0	**0**	**2**
15:15 15:30	0	0	**0**	1	1	**2**	**2**
15:30 15:45	0	0	**0**	1	2	**3**	**3**
15:45 16:00	0	2	**2**	1	2	**3**	**5**
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**	1	0	**1**	**1**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
17:00 17:15	0	2	**2**	0	0	**0**	**2**
17:15 17:30	0	4	**4**	0	0	**0**	**4**
17:30 17:45	0	0	**0**	0	1	**1**	**1**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	25	**25**	7	12	**19**	**44**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study Heavy Vehicles

		GREY NUNS DR									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	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	3	1	**4**	**5**	**5**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	1	0	0	**1**	0	3	0	**3**	**4**	**4**
07:30	07:45	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	3	1	**4**	**7**	**8**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	6	0	**6**	**7**	**7**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	1	1	**2**	**7**	**7**
08:15	08:30	0	0	0	**0**	1	0	0	**1**	**1**	1	1	0	**2**	0	2	2	**4**	**6**	**7**
08:30	08:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	2	1	**3**	**6**	**6**
08:45	09:00	0	0	0	**0**	0	0	1	**1**	**1**	2	3	0	**5**	0	3	0	**3**	**8**	**9**
09:00	09:15	0	0	0	**0**	2	0	1	**3**	**3**	0	4	0	**4**	0	8	3	**11**	**15**	**18**
09:15	09:30	0	0	0	**0**	0	0	0	**0**	**0**	1	6	0	**7**	0	2	0	**2**	**9**	**9**
09:30	09:45	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	2	0	**2**	**5**	**6**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	3	1	**4**	**6**	**6**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	3	0	**3**	**6**	**6**
11:45	12:00	0	0	0	**0**	1	0	0	**1**	**1**	0	2	0	**2**	0	1	1	**2**	**4**	**5**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	4	0	**4**	**9**	**9**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	2	1	**3**	**7**	**7**
12:30	12:45	0	0	0	**0**	2	0	0	**2**	**2**	0	4	0	**4**	0	4	0	**4**	**8**	**10**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	1	0	0	**1**	0	1	0	**1**	**2**	**2**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	4	0	**4**	**7**	**7**
15:00	15:15	0	0	0	**0**	1	0	0	**1**	**1**	0	4	0	**4**	0	2	0	**2**	**6**	**7**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	3	1	0	**4**	0	2	0	**2**	**6**	**6**
15:30	15:45	0	0	0	**0**	1	0	0	**1**	**1**	1	2	0	**3**	0	3	0	**3**	**6**	**7**
15:45	16:00	0	0	0	**0**	1	0	2	**3**	**3**	0	0	0	**0**	0	2	0	**2**	**2**	**5**
16:00	16:15	0	0	0	**0**	1	0	0	**1**	**1**	0	4	0	**4**	0	4	0	**4**	**8**	**9**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
16:30	16:45	0	0	0	**0**	1	0	0	**1**	**1**	0	2	0	**2**	0	5	0	**5**	**7**	**8**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	2	0	**2**	**3**	**3**
17:00	17:15	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**1**	0	2	0	**2**	**3**	**4**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	1	0	**1**	**3**	**3**
17:30	17:45	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**1**	0	2	0	**2**	**3**	**4**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
Total:	None	0	0	0	**0**	15	0	4	**19**	**19**	12	70	0	**82**	0	87	12	**99**	**181**	**200**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREY NUNS DR @ ST. JOSEPH BLVD

Survey Date: Thursday, January 17, 2019 **WO No:** 38290

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

Full Study 15 Minute U-Turn Total

Time Period		GREY NUNS DR Northbound U-Turn Total	GREY NUNS DR 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	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	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	1	1
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	1	1
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	1	0	1
17:45	18:00	0	0	0	0	0
Total		0	0	2	2	4

Appendix C

Synchro and Sidra Intersection Worksheets – Existing Conditions

CGH TRANSPORTATION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	243	64	39	16	223	0	0	296	756
Future Volume (vph)	0	0	0	243	64	39	16	223	0	0	296	756
Satd. Flow (prot)	0	0	0	1575	1153	0	0	3089	1745	0	3316	1483
Flt Permitted				0.950	0.980			0.922				
Satd. Flow (perm)	0	0	0	1575	1153	0	0	2855	1745	0	3316	1429
Satd. Flow (RTOR)					23							623
Lane Group Flow (vph)	0	0	0	192	192	0	0	266	0	0	329	840
Turn Type				Perm	NA		Perm	NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2		2			6
Detector Phase				8	8		2	2	2		6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		10.0	10.0	10.0		10.0	10.0
Minimum Split (s)				30.8	30.8		24.8	24.8	24.8		24.8	24.8
Total Split (s)				31.0	31.0		39.0	39.0	39.0		39.0	39.0
Total Split (%)				44.3%	44.3%		55.7%	55.7%	55.7%		55.7%	55.7%
Yellow Time (s)				3.3	3.3		3.7	3.7	3.7		3.7	3.7
All-Red Time (s)				3.5	3.5		3.1	3.1	3.1		3.1	3.1
Lost Time Adjust (s)				0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)				6.8	6.8			6.8	6.8		6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None	None		C-Max	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				18.9	18.9			37.5			37.5	37.5
Actuated g/C Ratio				0.27	0.27			0.54			0.54	0.54
v/c Ratio				0.45	0.59			0.17			0.19	0.80
Control Delay				23.3	25.6			7.7			10.1	11.7
Queue Delay				0.0	0.0			0.0			0.0	0.0
Total Delay				23.3	25.6			7.7			10.1	11.7
LOS				C	C			A			B	B
Approach Delay					24.4			7.7			11.2	
Approach LOS					C			A			B	
Queue Length 50th (m)				19.4	17.6			5.7			12.8	17.1
Queue Length 95th (m)				35.7	36.1			11.5			20.2	#109.0
Internal Link Dist (m)		112.0			81.4			201.4			159.3	
Turn Bay Length (m)												37.0
Base Capacity (vph)				544	413			1528			1775	1054
Starvation Cap Reductn				0	0			0			0	0
Spillback Cap Reductn				0	0			0			0	0
Storage Cap Reductn				0	0			0			0	0
Reduced v/c Ratio				0.35	0.46			0.17			0.19	0.80

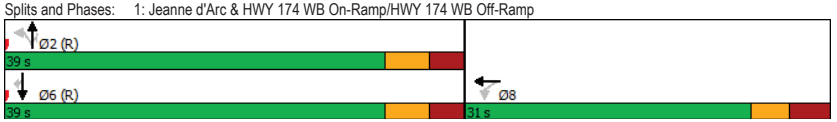
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 64 (91%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 93.0%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Jeanne d'Arc & HWY 174 WB On-Ramp/HWY 174 WB Off-Ramp

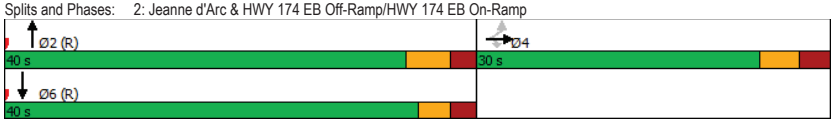


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	11	295	0	0	0	0	931	99	0	481	61
Future Volume (vph)	144	11	295	0	0	0	0	931	99	0	481	61
Satd. Flow (prot)	3095	890	1414	0	0	0	0	3234	0	0	3231	0
Flt Permitted	0.950											
Satd. Flow (perm)	3095	890	1383	0	0	0	0	3234	0	0	3231	0
Satd. Flow (RTOR)			220					22			28	
Lane Group Flow (vph)	160	12	328	0	0	0	0	1144	0	0	602	0
Turn Type	Perm	NA	Perm					NA			NA	
Protected Phases		4						2			6	
Permitted Phases	4		4									
Detector Phase	4	4	4					2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0			10.0	
Minimum Split (s)	30.0	30.0	30.0					29.0			28.0	
Total Split (s)	30.0	30.0	30.0					40.0			40.0	
Total Split (%)	42.9%	42.9%	42.9%					57.1%			57.1%	
Yellow Time (s)	3.3	3.3	3.3					3.7			2.7	
All-Red Time (s)	2.7	2.7	2.7					2.3			2.3	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None					C-Max			C-Max	
Act Effct Green (s)	14.3	14.3	14.3					43.7			44.7	
Actuated g/C Ratio	0.20	0.20	0.20					0.62			0.64	
v/c Ratio	0.25	0.07	0.72					0.56			0.29	
Control Delay	22.8	19.5	17.6					10.1			4.4	
Queue Delay	0.0	0.0	0.0					0.0			0.0	
Total Delay	22.8	19.5	17.6					10.1			4.4	
LOS	C	B	B					B			A	
Approach Delay		19.3						10.1			4.4	
Approach LOS		B						B			A	
Queue Length 50th (m)	9.5	1.3	12.9					34.2			3.3	
Queue Length 95th (m)	13.2	4.3	30.7					79.7			30.7	
Internal Link Dist (m)		230.2			87.9			279.3			201.4	
Turn Bay Length (m)	80.0		83.0									
Base Capacity (vph)	1061	305	618					2025			2071	
Starvation Cap Reductn	0	0	0					0			0	
Spillback Cap Reductn	0	0	0					0			0	
Storage Cap Reductn	0	0	0					0			0	
Reduced v/c Ratio	0.15	0.04	0.53					0.56			0.29	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 60 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72
Intersection Signal Delay: 10.6 — Intersection LOS: B
Intersection Capacity Utilization 52.7% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Jeanne d'Arc & HWY 174 EB Off-Ramp/HWY 174 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	10	43	14	53	109	141	901	15	34	357	313
Future Volume (vph)	84	10	43	14	53	109	141	901	15	34	357	313
Satd. Flow (prot)	1537	1475	0	0	1554	0	1595	3301	0	1658	2986	0
Flt Permitted	0.535				0.971		0.285			0.239		
Satd. Flow (perm)	857	1475	0	0	1515	0	477	3301	0	416	2986	0
Satd. Flow (RTOR)		48			111			2			289	
Lane Group Flow (vph)	93	59	0	0	196	0	157	1018	0	38	745	0
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%	
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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	15.0	15.0			15.0		50.6	45.2		44.9	38.8	
Actuated g/C Ratio	0.19	0.19			0.19		0.63	0.56		0.56	0.48	
v/c Ratio	0.58	0.19			0.52		0.38	0.55		0.11	0.47	
Control Delay	42.3	10.5			17.2		9.6	16.1		8.1	10.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	42.3	10.5			17.2		9.6	16.1		8.1	10.5	
LOS	D	B			B		A	B		A	B	
Approach Delay		29.9			17.2			15.2			10.4	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	13.5	1.4			11.7		7.0	50.2		1.6	19.7	
Queue Length 95th (m)	22.4	8.6			23.9		22.4	#113.7		7.1	48.8	
Internal Link Dist (m)		90.2			86.9			276.0			279.3	
Turn Bay Length (m)	33.0						175.0			71.0		
Base Capacity (vph)	295	540			595		432	1866		389	1595	
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	0.32	0.11			0.33		0.36	0.55		0.10	0.47	

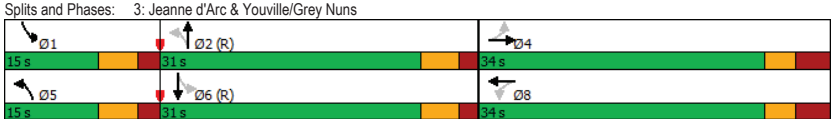
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 75.7%	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: 3: Jeanne d'Arc & Youville/Grey Nuns

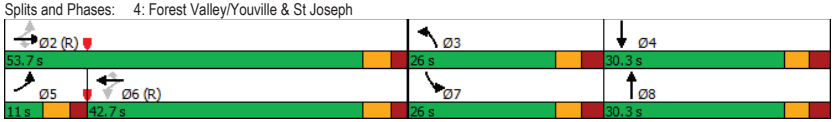


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	295	61	16	501	95	156	36	37	42	24	105
Future Volume (vph)	83	295	61	16	501	95	156	36	37	42	24	105
Satd. Flow (prot)	1626	3283	1469	1658	3316	1483	3017	1431	0	1610	1498	0
Flt Permitted	0.294			0.554			0.950	0.959		0.950		
Satd. Flow (perm)	503	3283	1436	967	3316	1447	3017	1384	0	1609	1498	0
Satd. Flow (RTOR)			95			155		29			117	
Lane Group Flow (vph)	92	328	68	18	557	106	156	98	0	47	144	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	6	6	6	3	8		7	4	
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	
Minimum Split (s)	11.0	27.0	27.0	27.0	27.0	27.0	11.3	30.3		11.3	30.3	
Total Split (s)	11.0	53.7	53.7	42.7	42.7	42.7	26.0	30.3		26.0	30.3	
Total Split (%)	10.0%	48.8%	48.8%	38.8%	38.8%	38.8%	23.6%	27.5%		23.6%	27.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	47.7	47.7	47.7	38.9	38.9	38.9	11.0	11.0		8.6	32.7	
Actuated g/C Ratio	0.43	0.43	0.43	0.35	0.35	0.35	0.10	0.10		0.08	0.30	
v/c Ratio	0.34	0.23	0.10	0.05	0.48	0.17	0.52	0.58		0.37	0.27	
Control Delay	22.6	20.2	2.0	25.6	30.0	1.9	52.7	46.8		55.6	10.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	22.6	20.2	2.0	25.6	30.0	1.9	52.7	46.8		55.6	10.0	
LOS	C	C	A	C	C	A	D	D		E	B	
Approach Delay		18.1			25.5			50.4			21.3	
Approach LOS		B			C			D			C	
Queue Length 50th (m)	11.6	22.7	0.0	2.6	50.0	0.0	17.7	15.6		9.8	4.1	
Queue Length 95th (m)	21.7	32.4	4.4	7.8	66.4	4.1	28.0	33.4		21.0	19.5	
Internal Link Dist (m)		136.0			487.0			161.0			157.2	
Turn Bay Length (m)	105.0		122.0	105.0		53.0	58.0			53.0		
Base Capacity (vph)	269	1423	676	341	1172	612	540	169		288	527	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.34	0.23	0.10	0.05	0.48	0.17	0.29	0.58		0.16	0.27	

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58
Intersection Signal Delay: 26.7 — Intersection LOS: C
Intersection Capacity Utilization 71.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 4: Forest Valley/Youville & St Joseph



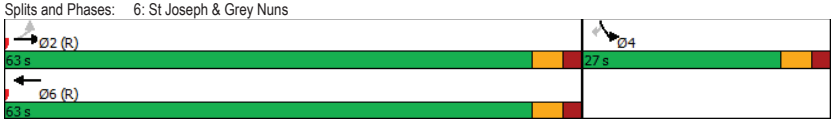
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	229	764	94	39	54
Future Volume (vph)	38	229	764	94	39	54
Satd. Flow (prot)	1642	3252	3247	0	1610	1483
Flt Permitted	0.292				0.950	
Satd. Flow (perm)	504	3252	3247	0	1606	1483
Satd. Flow (RTOR)			29			60
Lane Group Flow (vph)	42	254	953	0	43	60
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	22.5	22.5	40.5		26.5	26.5
Total Split (s)	63.0	63.0	63.0		27.0	27.0
Total Split (%)	70.0%	70.0%	70.0%		30.0%	30.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.2	2.2	2.2		2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	73.1	73.1	73.1		10.1	10.1
Actuated g/C Ratio	0.81	0.81	0.81		0.11	0.11
v/c Ratio	0.10	0.10	0.36		0.24	0.27
Control Delay	3.4	2.6	3.4		39.9	13.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.4	2.6	3.4		39.9	13.7
LOS	A	A	A		D	B
Approach Delay		2.7	3.4		24.7	
Approach LOS		A	A		C	
Queue Length 50th (m)	1.5	4.5	21.5		6.9	0.0
Queue Length 95th (m)	4.1	7.4	29.8		16.5	10.9
Internal Link Dist (m)		318.4	111.1		67.9	
Turn Bay Length (m)	53.0				21.0	
Base Capacity (vph)	409	2640	2641		384	399
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.10	0.10	0.36		0.11	0.15

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 4.9	Intersection LOS: A
Intersection Capacity Utilization 50.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph & Grey Nuns



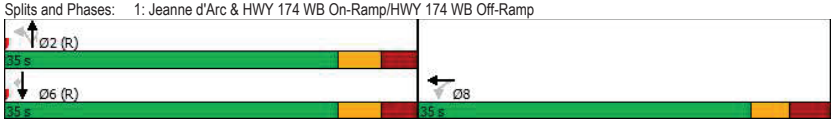
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	174	9	64	4	675	0	0	251	161
Future Volume (vph)	0	0	0	174	9	64	4	675	0	0	251	161
Satd. Flow (prot)	0	0	0	1575	1375	0	0	3299	1745	0	3316	1483
Flt Permitted				0.950	0.981			0.954				
Satd. Flow (perm)	0	0	0	1571	1374	0	0	3146	1745	0	3316	1322
Satd. Flow (RTOR)					71							179
Lane Group Flow (vph)	0	0	0	141	133	0	0	754	0	0	279	179
Turn Type				Perm	NA		Perm	NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2		2			6
Detector Phase				8	8		2	2	2		6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		10.0	10.0	10.0		10.0	10.0
Minimum Split (s)				30.8	30.8		24.8	24.8	24.8		24.8	24.8
Total Split (s)				35.0	35.0		35.0	35.0	35.0		35.0	35.0
Total Split (%)				50.0%	50.0%		50.0%	50.0%	50.0%		50.0%	50.0%
Yellow Time (s)				3.3	3.3		3.7	3.7	3.7		3.7	3.7
All-Red Time (s)				3.5	3.5		3.1	3.1	3.1		3.1	3.1
Lost Time Adjust (s)				0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)				6.8	6.8			6.8	6.8		6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None	None		C-Max	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				13.9	13.9			42.5			42.5	42.5
Actuated g/C Ratio				0.20	0.20			0.61			0.61	0.61
v/c Ratio				0.45	0.40			0.39			0.14	0.21
Control Delay				28.1	15.1			9.3			7.2	2.4
Queue Delay				0.0	0.0			0.0			0.0	0.0
Total Delay				28.1	15.1			9.3			7.2	2.4
LOS				C	B			A			A	A
Approach Delay					21.8			9.3			5.3	
Approach LOS					C			A			A	
Queue Length 50th (m)				18.0	7.5			23.2			6.5	0.0
Queue Length 95th (m)				26.8	17.3			46.1			17.2	9.1
Internal Link Dist (m)		112.0			81.4			201.4			159.3	
Turn Bay Length (m)												37.0
Base Capacity (vph)				632	595			1912			2015	873
Starvation Cap Reductn				0	0			0			0	0
Spillback Cap Reductn				0	0			0			0	0
Storage Cap Reductn				0	0			0			0	0
Reduced v/c Ratio				0.22	0.22			0.39			0.14	0.21

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 20 (29%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 64.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Jeanne d'Arc & HWY 174 WB On-Ramp/HWY 174 WB Off-Ramp

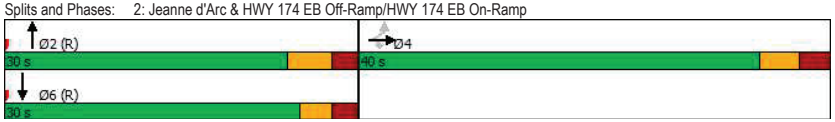


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	409	16	512	0	0	0	0	653	261	0	333	52
Future Volume (vph)	409	16	512	0	0	0	0	653	261	0	333	52
Satd. Flow (prot)	3185	890	1483	0	0	0	0	3147	0	0	3229	0
Flt Permitted	0.950											
Satd. Flow (perm)	3185	890	1455	0	0	0	0	3147	0	0	3229	0
Satd. Flow (RTOR)			248					93			28	
Lane Group Flow (vph)	454	18	569	0	0	0	0	1016	0	0	428	0
Turn Type	Perm	NA	Perm					NA			NA	
Protected Phases		4						2			6	
Permitted Phases	4		4									
Detector Phase	4	4	4					2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0			10.0	
Minimum Split (s)	30.0	30.0	30.0					29.0			28.0	
Total Split (s)	40.0	40.0	40.0					30.0			30.0	
Total Split (%)	57.1%	57.1%	57.1%					42.9%			42.9%	
Yellow Time (s)	3.3	3.3	3.3					3.7			2.7	
All-Red Time (s)	2.7	2.7	2.7					2.3			2.3	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0					6.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None					C-Max			C-Max	
Act Effct Green (s)	24.5	24.5	24.5					33.5			34.5	
Actuated g/C Ratio	0.35	0.35	0.35					0.48			0.49	
v/c Ratio	0.41	0.06	0.85					0.65			0.27	
Control Delay	17.1	11.4	23.2					17.9			9.8	
Queue Delay	0.0	0.0	0.0					0.0			0.0	
Total Delay	17.1	11.4	23.2					17.9			9.8	
LOS	B	B	C					B			A	
Approach Delay		20.3						17.9			9.8	
Approach LOS		C						B			A	
Queue Length 50th (m)	21.9	1.5	37.2					47.6			16.0	
Queue Length 95th (m)	25.8	4.2	62.5					#96.0			23.5	
Internal Link Dist (m)		230.2			87.9			279.3			201.4	
Turn Bay Length (m)	80.0		83.0									
Base Capacity (vph)	1547	432	834					1555			1606	
Starvation Cap Reductn	0	0	0					0			0	
Spillback Cap Reductn	0	0	0					0			0	
Storage Cap Reductn	0	0	0					0			0	
Reduced v/c Ratio	0.29	0.04	0.68					0.65			0.27	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 20 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85
Intersection Signal Delay: 17.5 — Intersection LOS: B
Intersection Capacity Utilization 62.6% — ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Jeanne d'Arc & HWY 174 EB Off-Ramp/HWY 174 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	285	31	168	20	18	47	130	550	33	61	678	185
Future Volume (vph)	285	31	168	20	18	47	130	550	33	61	678	185
Satd. Flow (prot)	1658	1492	0	0	1573	0	1658	3280	0	1642	3146	0
Flt Permitted	0.751				0.901		0.165			0.362		
Satd. Flow (perm)	1296	1492	0	0	1432	0	285	3280	0	623	3146	0
Satd. Flow (RTOR)		187			52			7			39	
Lane Group Flow (vph)	317	221	0	0	94	0	144	648	0	68	959	0
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%	
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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	29.3	29.3			29.3		49.9	42.5		46.1	38.9	
Actuated g/C Ratio	0.31	0.31			0.31		0.53	0.45		0.49	0.41	
v/c Ratio	0.79	0.38			0.20		0.52	0.44		0.18	0.73	
Control Delay	44.3	6.9			11.8		19.1	21.5		12.9	28.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	44.3	6.9			11.8		19.1	21.5		12.9	28.6	
LOS	D	A			B		B	C		B	C	
Approach Delay		28.9			11.8			21.1			27.6	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	51.8	4.3			5.3		12.3	44.3		5.6	76.6	
Queue Length 95th (m)	77.0	18.5			14.9		24.7	67.8		13.2	#118.8	
Internal Link Dist (m)		90.2			86.9			276.0			279.3	
Turn Bay Length (m)	33.0						175.0			71.0		
Base Capacity (vph)	485	676			569		286	1472		411	1310	
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	0.65	0.33			0.17		0.50	0.44		0.17	0.73	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
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: 0.79

Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 73.9%	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: 3: Jeanne d'Arc & Youville/Grey Nuns

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
Satd. Flow (prot)	1658	3316	1483	1610	3316	1483	3017	1431	0	1658	1521	0
Flt Permitted	0.386			0.170			0.950	0.967		0.950		
Satd. Flow (perm)	673	3316	1448	288	3316	1447	3017	1392	0	1658	1521	0
Satd. Flow (RTOR)			213			170		35			158	
Lane Group Flow (vph)	202	1178	213	41	442	98	98	93	0	129	225	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	6	6	6	3	8		7	4	
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	
Minimum Split (s)	11.0	27.0	27.0	27.0	27.0	27.0	11.3	30.3		11.3	30.3	
Total Split (s)	11.0	54.7	54.7	43.7	43.7	43.7	15.0	30.3		15.0	30.3	
Total Split (%)	11.0%	54.7%	54.7%	43.7%	43.7%	43.7%	15.0%	30.3%		15.0%	30.3%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	48.7	48.7	48.7	37.7	37.7	37.7	8.0	6.7		8.7	27.2	
Actuated g/C Ratio	0.49	0.49	0.49	0.38	0.38	0.38	0.08	0.07		0.09	0.27	
v/c Ratio	0.54	0.73	0.26	0.38	0.35	0.15	0.41	0.72		0.90	0.43	
Control Delay	21.8	23.7	2.9	35.2	23.4	0.6	48.8	59.3		98.5	13.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.8	23.7	2.9	35.2	23.4	0.6	48.8	59.3		98.5	13.4	
LOS	C	C	A	D	C	A	D	E		F	B	
Approach Delay		20.7			20.4			53.9			44.4	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	22.0	91.9	0.0	5.7	31.8	0.0	10.0	11.9		25.2	10.3	
Queue Length 95th (m)	36.2	116.7	11.2	16.6	44.4	0.7	18.5	#33.1		#58.8	31.2	
Internal Link Dist (m)		144.9			487.0			161.0			157.2	
Turn Bay Length (m)	105.0		122.0	105.0		53.0	58.0			53.0		
Base Capacity (vph)	377	1614	814	108	1250	651	262	129		144	529	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.54	0.73	0.26	0.38	0.35	0.15	0.37	0.72		0.90	0.43	

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90
Intersection Signal Delay: 26.1 — Intersection LOS: C
Intersection Capacity Utilization 80.8% — ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Forest Valley/Youville & St Joseph

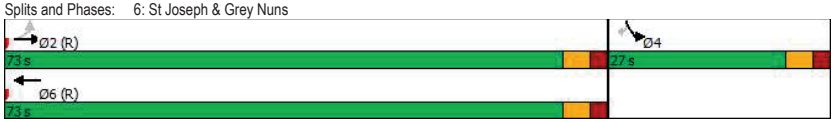
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	82	702	505	67	58	67
Future Volume (vph)	82	702	505	67	58	67
Satd. Flow (prot)	1610	3316	3250	0	1610	1469
Flt Permitted	0.411				0.950	
Satd. Flow (perm)	696	3316	3250	0	1599	1445
Satd. Flow (RTOR)			32			74
Lane Group Flow (vph)	91	780	635	0	64	74
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	22.5	22.5	40.5		26.5	26.5
Total Split (s)	73.0	73.0	73.0		27.0	27.0
Total Split (%)	73.0%	73.0%	73.0%		27.0%	27.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.2	2.2	2.2		2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	80.8	80.8	80.8		12.4	12.4
Actuated g/C Ratio	0.81	0.81	0.81		0.12	0.12
v/c Ratio	0.16	0.29	0.24		0.32	0.30
Control Delay	4.6	3.9	3.5		43.0	12.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	4.6	3.9	3.5		43.0	12.0
LOS	A	A	A		D	B
Approach Delay		4.0	3.5		26.4	
Approach LOS		A	A		C	
Queue Length 50th (m)	3.3	17.0	12.3		11.8	0.0
Queue Length 95th (m)	12.1	38.4	29.0		21.6	11.2
Internal Link Dist (m)		318.4	111.1		67.9	
Turn Bay Length (m)	53.0				21.0	
Base Capacity (vph)	562	2679	2633		346	368
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.16	0.29	0.24		0.18	0.20

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 5.7	Intersection LOS: A
Intersection Capacity Utilization 60.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph & Grey Nuns



MOVEMENT SUMMARY

Site: 5 [St Joseph-Jeanne d'Arc AM Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

1887 St Joseph
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	342	2.0	342	2.0	0.556	12.3	LOS B	2.7	19.0	0.58	0.87	0.69	52.4
2	T1	All MCs	484	2.0	484	2.0	0.556	6.6	LOS A	2.7	19.0	0.56	0.73	0.66	54.6
3	R2	All MCs	48	2.0	48	2.0	0.556	6.6	LOS A	2.5	18.1	0.56	0.69	0.66	53.5
Approach			874	2.0	874	2.0	0.556	8.9	LOS A	2.7	19.0	0.57	0.78	0.68	53.7
East: RoadName															
4	L2	All MCs	51	2.0	51	2.0	0.282	13.1	LOS B	0.9	6.1	0.57	0.79	0.60	53.8
5	T1	All MCs	277	2.0	277	2.0	0.282	7.3	LOS A	0.9	6.1	0.56	0.74	0.59	54.6
6	R2	All MCs	311	2.0	311	2.0	0.164	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	56.6
Approach			639	2.0	639	2.0	0.282	5.9	LOS A	0.9	6.1	0.29	0.59	0.30	55.5
North: RoadName															
7	L2	All MCs	193	2.0	193	2.0	0.429	12.7	LOS B	1.6	11.4	0.57	0.85	0.66	52.7
8	T1	All MCs	266	2.0	266	2.0	0.429	7.0	LOS A	1.6	11.4	0.55	0.77	0.64	54.2
9	R2	All MCs	124	2.0	124	2.0	0.429	6.9	LOS A	1.5	10.9	0.54	0.73	0.63	53.6
Approach			583	2.0	583	2.0	0.429	8.8	LOS A	1.6	11.4	0.56	0.79	0.64	53.6
West: RoadName															
10	L2	All MCs	70	2.0	70	2.0	0.183	11.0	LOS B	0.5	3.8	0.42	0.69	0.42	54.3
11	T1	All MCs	211	2.0	211	2.0	0.183	5.4	LOS A	0.5	3.8	0.41	0.58	0.41	55.3
12	R2	All MCs	164	2.0	164	2.0	0.087	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	56.6
Approach			446	2.0	446	2.0	0.183	5.5	LOS A	0.5	3.8	0.26	0.54	0.26	55.6
All Vehicles			2542	2.0	2542	2.0	0.556	7.5	LOS A	2.7	19.0	0.44	0.69	0.50	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 5 [St Joseph-Jeanne d'Arc PM Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

1887 St Joseph
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	217	2.0	217	2.0	0.676	18.0	LOS B	3.1	22.4	0.79	1.03	1.21	49.2
2	T1	All MCs	399	2.0	399	2.0	0.676	11.9	LOS B	3.1	22.4	0.78	0.98	1.17	51.0
3	R2	All MCs	67	2.0	67	2.0	0.676	11.7	LOS B	3.1	21.8	0.78	0.97	1.16	50.3
Approach			682	2.0	682	2.0	0.676	13.8	LOS B	3.1	22.4	0.79	1.00	1.18	50.3
East: RoadName															
4	L2	All MCs	80	2.0	80	2.0	0.288	12.5	LOS B	0.9	6.3	0.54	0.78	0.56	53.7
5	T1	All MCs	282	2.0	282	2.0	0.288	6.8	LOS A	0.9	6.3	0.52	0.70	0.54	54.7
6	R2	All MCs	284	2.0	284	2.0	0.150	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	56.6
Approach			647	2.0	647	2.0	0.288	6.0	LOS A	0.9	6.3	0.29	0.59	0.30	55.4
North: RoadName															
7	L2	All MCs	274	2.0	274	2.0	0.562	13.1	LOS B	2.6	18.8	0.62	0.89	0.77	52.4
8	T1	All MCs	462	2.0	462	2.0	0.562	7.3	LOS A	2.6	18.8	0.60	0.80	0.74	54.2
9	R2	All MCs	84	2.0	84	2.0	0.562	7.3	LOS A	2.5	18.0	0.59	0.77	0.73	53.3
Approach			821	2.0	821	2.0	0.562	9.2	LOS A	2.6	18.8	0.60	0.83	0.75	53.5
West: RoadName															
10	L2	All MCs	166	2.0	166	2.0	0.661	15.7	LOS B	3.3	23.8	0.71	0.96	1.03	51.6
11	T1	All MCs	648	2.0	648	2.0	0.661	9.8	LOS A	3.3	23.8	0.70	0.92	1.00	52.6
12	R2	All MCs	564	2.0	564	2.0	0.297	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	56.5
Approach			1378	2.0	1378	2.0	0.661	7.9	LOS A	3.3	23.8	0.42	0.72	0.59	54.0
All Vehicles			3528	2.0	3528	2.0	0.676	9.0	LOS A	3.3	23.8	0.51	0.77	0.69	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
6/1/2016	2016	12:25	ST. JOSEPH BLVD btwn NOTRE DAME ST W & MARENGER ST (__3ZA2BR)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	2	0	0	0
10/17/2017	2017	10:45	MARENGER ST @ ST. JOSEPH BLVD (0003640)	01 - Clear	01 - Daylight	02 - Stop sign	00 - Unknown	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
6/19/2018	2018	11:45	MARENGER ST @ ST. JOSEPH BLVD (0003640)	01 - Clear	01 - Daylight	02 - Stop sign	00 - Unknown	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
7/17/2018	2018	17:46	ST. JOSEPH BLVD btwn NOTRE DAME ST W & MARENGER ST (__3ZA2BR)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
7/21/2016	2016	17:21	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
11/18/2017	2017	18:51	NOTRE DAME ST W @ ST. JOSEPH BLVD (0003639)	02 - Rain	07 - Dark	02 - Stop sign	00 - Unknown	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
11/1/2018	2018	12:46	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
12/20/2018	2018	9:57	NOTRE DAME ST W @ ST. JOSEPH BLVD (0003639)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	04 - Sideswipe	01 - Dry	4	0	0	0
2/6/2018	2018	8:58	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	03 - Loose snow	2	0	0	0
12/26/2019	2019	11:26	NOTRE DAME ST W @ ST. JOSEPH BLVD (0003639)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
1/8/2019	2019	10:04	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2/26/2019	2019	6:50	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	03 - Dawn	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
3/27/2019	2019	8:50	NOTRE DAME ST W @ ST. JOSEPH BLVD (0003639)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
6/27/2019	2019	16:27	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	2	0	1	0
2/18/2020	2020	6:52	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	03 - Dawn	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
3/5/2020	2020	13:00	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	02 - Wet	2	0	0	0
7/11/2020	2020	11:25	ST. JOSEPH BLVD btwn YOUVILLE DR & NOTRE DAME ST W (__3ZA2BN)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
11/29/2016	2016	17:18	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	05 - Dusk	10 - No control	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	2	0	0	0
9/11/2018	2018	8:27	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2/6/2019	2019	14:44	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	03 - Loose snow	2	0	0	0
8/12/2019	2019	11:45	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	2	0	0	0
2/12/2020	2020	10:30	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	04 - Slush	1	0	0	0
8/21/2020	2020	21:10	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	0
12/28/2020	2020	7:25	YOUVILLE DR btwn ST. JOSEPH BLVD & JEANNE D'ARC BLVD S (__3ZA6DC)	01 - Clear	03 - Dawn	10 - No control	0	03 - P.D. only	01 - Approaching	04 - Slush	2	0	0	0

Appendix E

St. Joseph Boulevard Concept Plan

CGH TRANSPORTATION

Legend

- Potential Street Tree in Existing ROW
- Potential Street Tree in Future ROW
- Existing Tree
- Existing ROW Improvement Area
- Future ROW Improvement Area
- Bus Stop Place-Making Area (Behind Sidewalk)
- Future Public Park
- Property Lines
- Official Plan Protection Limits

St. Joseph Boulevard Study
Streetscape Opportunity Zones

March 2022

Ottawa

PARSONS

Appendix F

TRANS Plot

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

St. Joseph

2011 Model - Basecase

N/A

User Initials: MANS
Plot Prepared: May 11, 2023
EMME Scenario: 21713

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

St. Joseph

2031 Model - Basecase

N/A

User Initials: MANS
Plot Prepared: May 11, 2023
EMME Scenario: 21717

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

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

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

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

Appendix G

Background Volumes

CGH TRANSPORTATION

7.4 Trip Assignment

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

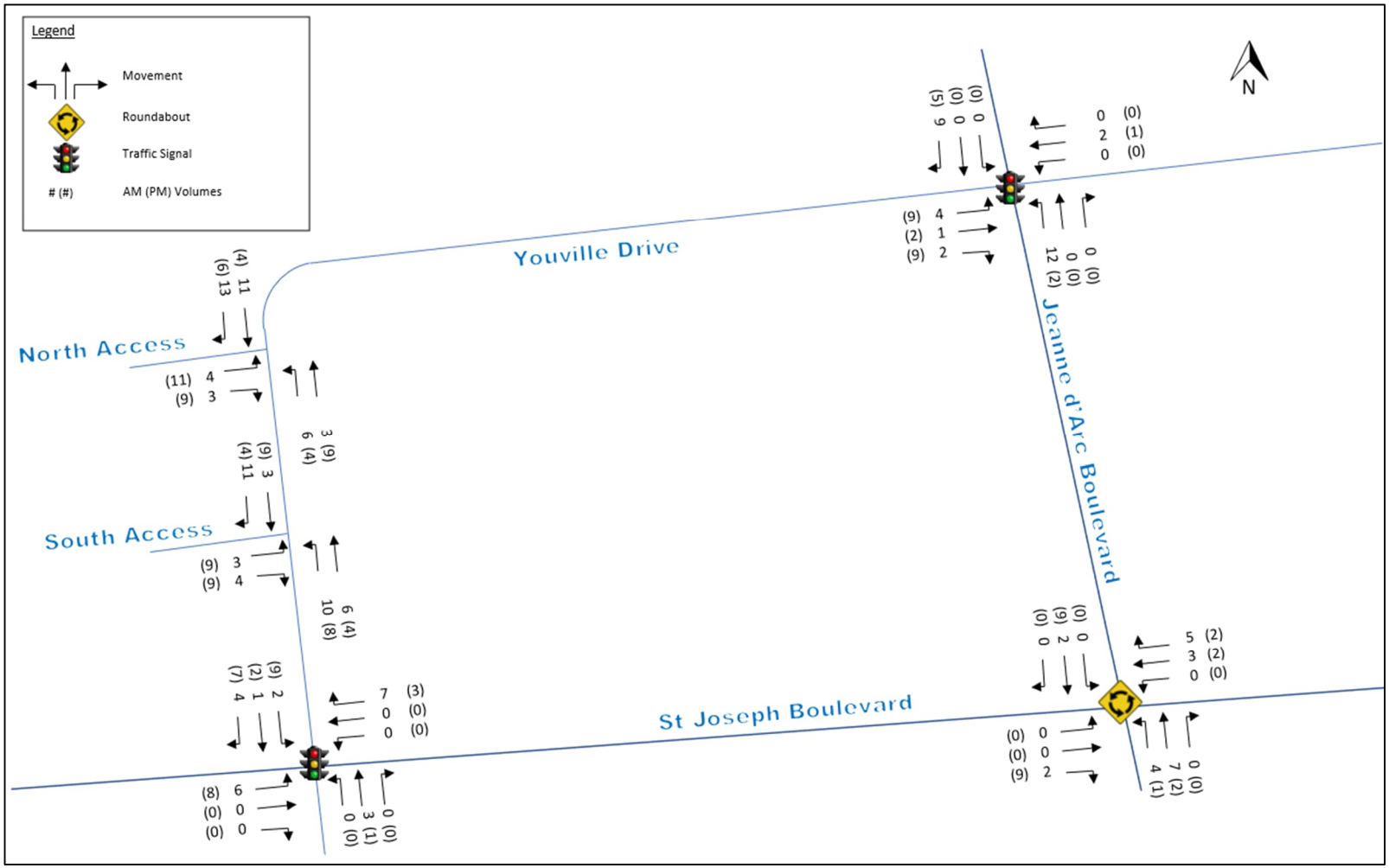
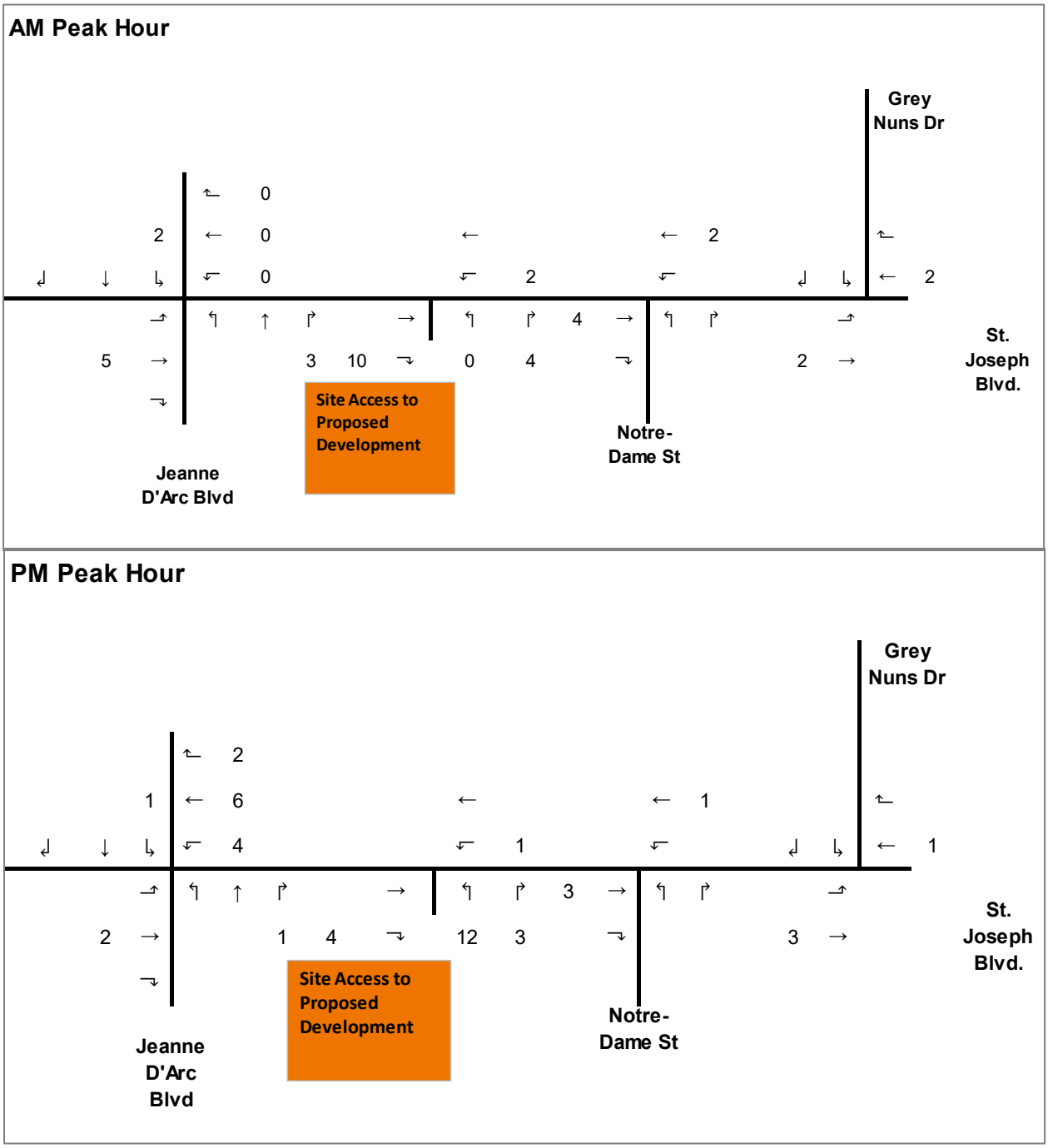


Figure 7.1 Proposed Development Trip Assignment

Figure 12 - Site Generated Traffic Volumes



Appendix H

Synchro and Sidra Intersection Worksheets – 2040 Future Background Conditions

CGH TRANSPORTATION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	242	64	39	16	230	0	0	315	714
Future Volume (vph)	0	0	0	242	64	39	16	230	0	0	315	714
Satd. Flow (prot)	0	0	0	1575	1142	0	0	3096	1745	0	3316	1483
Flt Permitted				0.950	0.981			0.925				
Satd. Flow (perm)	0	0	0	1568	1140	0	0	2869	1745	0	3316	1408
Satd. Flow (RTOR)					23							475
Lane Group Flow (vph)	0	0	0	174	171	0	0	246	0	0	315	714
Turn Type				Perm	NA		Perm	NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2		2			6
Detector Phase				8	8		2	2	2		6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		10.0	10.0	10.0		10.0	10.0
Minimum Split (s)				30.8	30.8		24.8	24.8	24.8		24.8	24.8
Total Split (s)				31.0	31.0		39.0	39.0	39.0		39.0	39.0
Total Split (%)				44.3%	44.3%		55.7%	55.7%	55.7%		55.7%	55.7%
Yellow Time (s)				3.3	3.3		3.7	3.7	3.7		3.7	3.7
All-Red Time (s)				3.5	3.5		3.1	3.1	3.1		3.1	3.1
Lost Time Adjust (s)				0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)				6.8	6.8			6.8	6.8		6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None	None		C-Max	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				21.2	21.2			35.2			35.2	35.2
Actuated g/C Ratio				0.30	0.30			0.50			0.50	0.50
v/c Ratio				0.37	0.47			0.17			0.19	0.76
Control Delay				20.4	20.7			7.1			10.9	11.7
Queue Delay				0.0	0.0			0.0			0.0	0.0
Total Delay				20.4	20.7			7.1			10.9	11.7
LOS				C	C			A			B	B
Approach Delay					20.5			7.1			11.5	
Approach LOS					C			A			B	
Queue Length 50th (m)				17.4	15.1			5.2			12.2	20.3
Queue Length 95th (m)				32.5	31.8			7.7			19.3	#79.0
Internal Link Dist (m)		112.0			81.4			201.4			159.3	
Turn Bay Length (m)												37.0
Base Capacity (vph)				542	409			1442			1667	943
Starvation Cap Reductn				0	0			0			0	0
Spillback Cap Reductn				0	0			0			0	0
Storage Cap Reductn				0	0			0			0	0
Reduced v/c Ratio				0.32	0.42			0.17			0.19	0.76

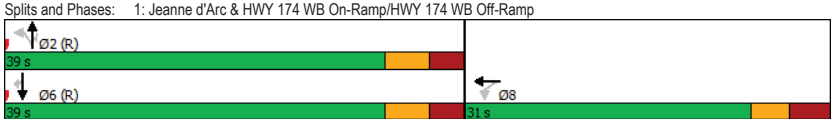
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 64 (91%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 98.6%	ICU Level of Service F
Analysis Period (min) 15	

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

Splits and Phases: 1: Jeanne d'Arc & HWY 174 WB On-Ramp/HWY 174 WB Off-Ramp



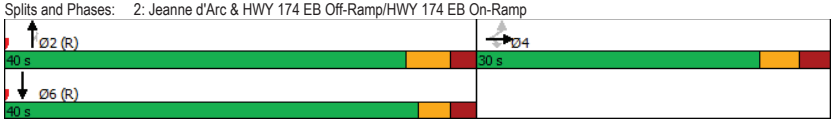
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	11	295	0	0	0	0	960	93	0	502	58
Future Volume (vph)	144	11	295	0	0	0	0	960	93	0	502	58
Satd. Flow (prot)	3095	890	1414	0	0	0	0	3283	1483	0	3217	0
Flt Permitted	0.950											
Satd. Flow (perm)	3095	890	1368	0	0	0	0	3283	1449	0	3217	0
Satd. Flow (RTOR)			195						93		25	
Lane Group Flow (vph)	144	11	295	0	0	0	0	960	93	0	560	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Detector Phase	4	4	4					2	2		6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0	10.0		10.0	
Minimum Split (s)	30.0	30.0	30.0					29.0	29.0		28.0	
Total Split (s)	30.0	30.0	30.0					40.0	40.0		40.0	
Total Split (%)	42.9%	42.9%	42.9%					57.1%	57.1%		57.1%	
Yellow Time (s)	3.3	3.3	3.3					3.7	3.7		2.7	
All-Red Time (s)	2.7	2.7	2.7					2.3	2.3		2.3	
Lost Time Adjust (s)	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		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None					C-Max	C-Max		C-Max	
Act Effct Green (s)	15.9	15.9	15.9					42.1	42.1		43.1	
Actuated g/C Ratio	0.23	0.23	0.23					0.60	0.60		0.62	
v/c Ratio	0.21	0.05	0.64					0.49	0.10		0.28	
Control Delay	20.7	17.5	14.5					10.3	2.9		5.3	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	20.7	17.5	14.5					10.3	2.9		5.3	
LOS	C	B	B					B	A		A	
Approach Delay		16.6						9.7			5.3	
Approach LOS		B						A			A	
Queue Length 50th (m)	8.6	1.2	12.0					26.2	0.0		3.2	
Queue Length 95th (m)	12.2	4.0	28.1					62.5	6.3		28.3	
Internal Link Dist (m)		230.2			87.9			279.3			201.4	
Turn Bay Length (m)	80.0		83.0						60.0			
Base Capacity (vph)	1061	305	597					1976	909		1992	
Starvation Cap Reductn	0	0	0					0	0		0	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.14	0.04	0.49					0.49	0.10		0.28	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 60 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 10.0	Intersection LOS: A
Intersection Capacity Utilization 52.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Jeanne d'Arc & HWY 174 EB Off-Ramp/HWY 174 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	10	47	14	53	102	154	926	15	31	366	318
Future Volume (vph)	86	10	47	14	53	102	154	926	15	31	366	318
Satd. Flow (prot)	1537	1453	0	0	1546	0	1595	3304	0	1658	2961	0
Flt Permitted	0.638				0.976		0.275			0.266		
Satd. Flow (perm)	1012	1453	0	0	1514	0	457	3304	0	462	2961	0
Satd. Flow (RTOR)		47			102			2			286	
Lane Group Flow (vph)	86	57	0	0	169	0	154	941	0	31	684	0
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%	
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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	20.2	20.2			20.2		46.2	42.4		39.4	33.2	
Actuated g/C Ratio	0.25	0.25			0.25		0.58	0.53		0.49	0.42	
v/c Ratio	0.34	0.14			0.37		0.40	0.54		0.10	0.49	
Control Delay	25.4	8.4			11.3		12.7	17.8		10.7	12.7	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	25.4	8.4			11.3		12.7	17.8		10.7	12.7	
LOS	C	A			B		B	B		B	B	
Approach Delay		18.6			11.3			17.1			12.6	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	9.3	1.0			7.0		12.0	48.3		2.2	25.5	
Queue Length 95th (m)	20.2	8.3			20.2		22.0	#93.3		6.2	42.7	
Internal Link Dist (m)		90.2			86.9			276.0			279.3	
Turn Bay Length (m)	33.0						175.0			71.0		
Base Capacity (vph)	349	532			589		398	1752		379	1397	
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	0.25	0.11			0.29		0.39	0.54		0.08	0.49	

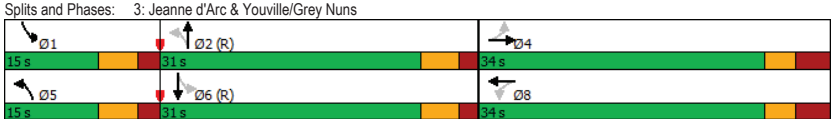
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 80.4%	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: 3: Jeanne d'Arc & Youville/Grey Nuns



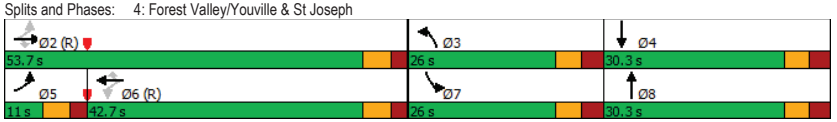
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	298	67	18	473	104	171	39	40	46	26	115
Future Volume (vph)	91	298	67	18	473	104	171	39	40	46	26	115
Satd. Flow (prot)	1626	3283	1469	1658	3316	1483	3017	1430	0	1610	1498	0
Flt Permitted	0.347			0.570			0.950	0.958		0.950		
Satd. Flow (perm)	593	3283	1432	995	3316	1438	3017	1382	0	1607	1498	0
Satd. Flow (RTOR)			95			155		28			115	
Lane Group Flow (vph)	91	298	67	18	473	104	154	96	0	46	141	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	6	6	6	3	8		7	4	
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	
Minimum Split (s)	11.0	27.0	27.0	27.0	27.0	27.0	11.3	30.3		11.3	30.3	
Total Split (s)	11.0	53.7	53.7	42.7	42.7	42.7	26.0	30.3		26.0	30.3	
Total Split (%)	10.0%	48.8%	48.8%	38.8%	38.8%	38.8%	23.6%	27.5%		23.6%	27.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	47.7	47.7	47.7	38.9	38.9	38.9	10.9	10.9		8.6	32.8	
Actuated g/C Ratio	0.43	0.43	0.43	0.35	0.35	0.35	0.10	0.10		0.08	0.30	
v/c Ratio	0.30	0.21	0.10	0.05	0.40	0.17	0.51	0.57		0.37	0.27	
Control Delay	21.6	19.9	2.0	25.6	28.8	1.8	52.7	47.1		55.4	10.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.6	19.9	2.0	25.6	28.8	1.8	52.7	47.1		55.4	10.0	
LOS	C	B	A	C	C	A	D	D		E	A	
Approach Delay		17.6			24.0			50.5			21.2	
Approach LOS		B			C			D			C	
Queue Length 50th (m)	11.5	20.5	0.0	2.6	41.2	0.0	17.5	15.3		9.5	4.0	
Queue Length 95th (m)	21.6	29.6	4.3	7.8	55.9	3.6	27.6	32.8		20.5	19.2	
Internal Link Dist (m)		146.7			487.0			161.0			157.2	
Turn Bay Length (m)	105.0		122.0	105.0		53.0	58.0			53.0		
Base Capacity (vph)	304	1423	674	351	1172	609	540	167		288	526	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.30	0.21	0.10	0.05	0.40	0.17	0.29	0.57		0.16	0.27	

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Forest Valley/Youville & St Joseph



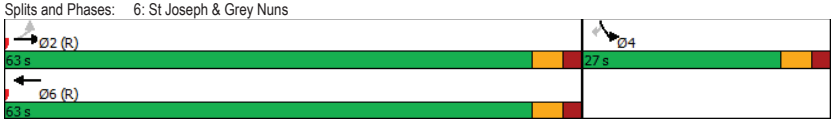
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	230	723	94	39	54
Future Volume (vph)	38	230	723	94	39	54
Satd. Flow (prot)	1642	3252	3240	0	1610	1483
Flt Permitted	0.341				0.950	
Satd. Flow (perm)	588	3252	3240	0	1602	1483
Satd. Flow (RTOR)			31			54
Lane Group Flow (vph)	38	230	817	0	39	54
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	22.5	22.5	40.5		26.5	26.5
Total Split (s)	63.0	63.0	63.0		27.0	27.0
Total Split (%)	70.0%	70.0%	70.0%		30.0%	30.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.2	2.2	2.2		2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	73.1	73.1	73.1		10.1	10.1
Actuated g/C Ratio	0.81	0.81	0.81		0.11	0.11
v/c Ratio	0.08	0.09	0.31		0.22	0.25
Control Delay	3.1	2.5	3.1		39.7	14.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.1	2.5	3.1		39.7	14.0
LOS	A	A	A		D	B
Approach Delay		2.6	3.1		24.8	
Approach LOS		A	A		C	
Queue Length 50th (m)	1.3	4.1	17.3		6.3	0.0
Queue Length 95th (m)	3.5	6.6	23.7		15.5	10.2
Internal Link Dist (m)		318.4	111.1		67.9	
Turn Bay Length (m)	53.0				21.0	
Base Capacity (vph)	477	2643	2639		384	395
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.08	0.09	0.31		0.10	0.14

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.31

Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 50.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph & Grey Nuns



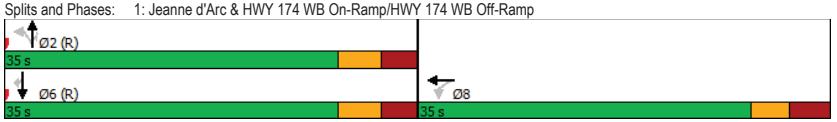
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	164	9	60	4	677	0	0	270	160
Future Volume (vph)	0	0	0	164	9	60	4	677	0	0	270	160
Satd. Flow (prot)	0	0	0	1575	1358	0	0	3297	1745	0	3316	1483
Flt Permitted				0.950	0.981			0.953				
Satd. Flow (perm)	0	0	0	1567	1355	0	0	3140	1745	0	3316	1190
Satd. Flow (RTOR)					60							160
Lane Group Flow (vph)	0	0	0	120	113	0	0	681	0	0	270	160
Turn Type				Perm	NA		Perm	NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2		2			6
Detector Phase				8	8		2	2	2		6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		10.0	10.0	10.0		10.0	10.0
Minimum Split (s)				30.8	30.8		24.8	24.8	24.8		24.8	24.8
Total Split (s)				35.0	35.0		35.0	35.0	35.0		35.0	35.0
Total Split (%)				50.0%	50.0%		50.0%	50.0%	50.0%		50.0%	50.0%
Yellow Time (s)				3.3	3.3		3.7	3.7	3.7		3.7	3.7
All-Red Time (s)				3.5	3.5		3.1	3.1	3.1		3.1	3.1
Lost Time Adjust (s)				0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)				6.8	6.8			6.8	6.8		6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None	None		C-Max	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				18.4	18.4			42.7			42.7	42.7
Actuated g/C Ratio				0.26	0.26			0.61			0.61	0.61
v/c Ratio				0.29	0.28			0.36			0.13	0.20
Control Delay				20.4	11.1			8.6			9.3	2.9
Queue Delay				0.0	0.0			0.0			0.0	0.0
Total Delay				20.4	11.1			8.6			9.3	2.9
LOS				C	B			A			A	A
Approach Delay					15.9			8.6			6.9	
Approach LOS					B			A			A	
Queue Length 50th (m)				11.5	4.9			23.7			10.3	0.0
Queue Length 95th (m)				23.2	15.4			29.8			16.7	8.7
Internal Link Dist (m)		112.0			81.4			201.4			159.3	
Turn Bay Length (m)												
Base Capacity (vph)				631	581			1916			2023	788
Starvation Cap Reductn				0	0			0			0	0
Spillback Cap Reductn				0	0			0			0	0
Storage Cap Reductn				0	0			0			0	0
Reduced v/c Ratio				0.19	0.19			0.36			0.13	0.20

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 20 (29%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Jeanne d'Arc & HWY 174 WB On-Ramp/HWY 174 WB Off-Ramp



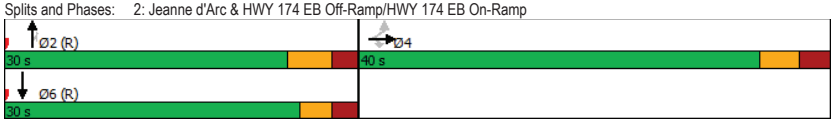
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	386	16	484	0	0	0	0	676	260	0	338	52
Future Volume (vph)	386	16	484	0	0	0	0	676	260	0	338	52
Satd. Flow (prot)	3185	890	1483	0	0	0	0	3316	1483	0	3217	0
Flt Permitted	0.950											
Satd. Flow (perm)	3185	890	1445	0	0	0	0	3316	1427	0	3217	0
Satd. Flow (RTOR)			244						260		27	
Lane Group Flow (vph)	386	16	484	0	0	0	0	676	260	0	390	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Detector Phase	4	4	4					2	2		6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0	10.0		10.0	
Minimum Split (s)	30.0	30.0	30.0					29.0	29.0		28.0	
Total Split (s)	40.0	40.0	40.0					30.0	30.0		30.0	
Total Split (%)	57.1%	57.1%	57.1%					42.9%	42.9%		42.9%	
Yellow Time (s)	3.3	3.3	3.3					3.7	3.7		2.7	
All-Red Time (s)	2.7	2.7	2.7					2.3	2.3		2.3	
Lost Time Adjust (s)	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		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None					C-Max	C-Max		C-Max	
Act Effct Green (s)	21.0	21.0	21.0					37.0	37.0		38.0	
Actuated g/C Ratio	0.30	0.30	0.30					0.53	0.53		0.54	
v/c Ratio	0.40	0.06	0.80					0.39	0.30		0.22	
Control Delay	19.3	13.3	20.3					12.6	3.2		7.4	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	19.3	13.3	20.3					12.6	3.2		7.4	
LOS	B	B	C					B	A		A	
Approach Delay		19.8						10.0			7.4	
Approach LOS		B						B			A	
Queue Length 50th (m)	20.8	1.5	28.5					25.0	0.0		11.5	
Queue Length 95th (m)	22.9	4.0	46.8					51.8	13.2		20.3	
Internal Link Dist (m)		230.2			87.9			279.3			201.4	
Turn Bay Length (m)	80.0		83.0						60.0			
Base Capacity (vph)	1547	432	827					1753	877		1759	
Starvation Cap Reductn	0	0	0					0	0		0	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.25	0.04	0.59					0.39	0.30		0.22	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 20 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 61.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Jeanne d'Arc & HWY 174 EB Off-Ramp/HWY 174 EB On-Ramp

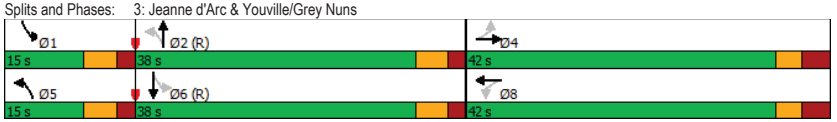


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	291	31	184	20	18	44	142	562	33	54	667	181
Future Volume (vph)	291	31	184	20	18	44	142	562	33	54	667	181
Satd. Flow (prot)	1658	1474	0	0	1568	0	1658	3281	0	1642	3102	0
Flt Permitted	0.704				0.900		0.217			0.403		
Satd. Flow (perm)	1201	1474	0	0	1422	0	369	3281	0	691	3102	0
Satd. Flow (RTOR)		184			44			7			39	
Lane Group Flow (vph)	291	215	0	0	82	0	142	595	0	54	848	0
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%	
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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	27.8	27.8			27.8		51.7	44.4		47.3	40.4	
Actuated g/C Ratio	0.29	0.29			0.29		0.54	0.47		0.50	0.43	
v/c Ratio	0.83	0.38			0.18		0.45	0.39		0.13	0.63	
Control Delay	50.3	7.1			12.6		15.7	19.8		12.0	24.8	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	50.3	7.1			12.6		15.7	19.8		12.0	24.8	
LOS	D	A			B		B	B		B	C	
Approach Delay		32.0			12.6			19.0			24.0	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	49.0	4.1			5.0		11.5	37.8		4.1	61.5	
Queue Length 95th (m)	72.3	17.9			13.9		24.5	61.4		11.0	93.0	
Internal Link Dist (m)		90.2			86.9			276.0			279.3	
Turn Bay Length (m)	33.0						175.0			71.0		
Base Capacity (vph)	450	667			560		331	1536		450	1341	
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	0.65	0.32			0.15		0.43	0.39		0.12	0.63	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
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: 0.83
Intersection Signal Delay: 23.7 — Intersection LOS: C
Intersection Capacity Utilization 74.8% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Jeanne d'Arc & Youville/Grey Nuns



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1003	210	40	395	96	107	37	44	127	51	171
Future Volume (vph)	199	1003	210	40	395	96	107	37	44	127	51	171
Satd. Flow (prot)	1658	3316	1483	1610	3316	1483	3017	1429	0	1658	1519	0
Flt Permitted	0.417			0.248			0.950	0.967		0.950		
Satd. Flow (perm)	726	3316	1445	420	3316	1439	3017	1390	0	1658	1519	0
Satd. Flow (RTOR)			210			170		36			159	
Lane Group Flow (vph)	199	1003	210	40	395	96	96	92	0	127	222	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	6	6	6	3	8		7	4	
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	
Minimum Split (s)	11.0	27.0	27.0	27.0	27.0	27.0	11.3	30.3		11.3	30.3	
Total Split (s)	11.0	54.7	54.7	43.7	43.7	43.7	15.0	30.3		15.0	30.3	
Total Split (%)	11.0%	54.7%	54.7%	43.7%	43.7%	43.7%	15.0%	30.3%		15.0%	30.3%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	48.7	48.7	48.7	37.7	37.7	37.7	7.9	6.7		8.7	27.3	
Actuated g/C Ratio	0.49	0.49	0.49	0.38	0.38	0.38	0.08	0.07		0.09	0.27	
v/c Ratio	0.50	0.62	0.26	0.25	0.32	0.15	0.40	0.71		0.88	0.42	
Control Delay	20.6	21.0	2.9	26.9	22.9	0.5	48.8	57.8		95.8	13.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.6	21.0	2.9	26.9	22.9	0.5	48.8	57.8		95.8	13.0	
LOS	C	C	A	C	C	A	D	E		F	B	
Approach Delay		18.2			19.2			53.2			43.1	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	21.6	72.3	0.0	5.3	28.0	0.0	9.8	11.5		24.8	9.7	
Queue Length 95th (m)	35.7	92.6	11.2	14.0	39.6	0.5	18.2	#32.3		#57.5	30.2	
Internal Link Dist (m)		146.1			487.0			161.0			157.2	
Turn Bay Length (m)	105.0		122.0	105.0		53.0	58.0			53.0		
Base Capacity (vph)	400	1614	811	158	1250	648	262	129		144	530	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.50	0.62	0.26	0.25	0.32	0.15	0.37	0.71		0.88	0.42	

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88
Intersection Signal Delay: 24.6 — Intersection LOS: C
Intersection Capacity Utilization 80.4% — 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: 4: Forest Valley/Youville & St Joseph

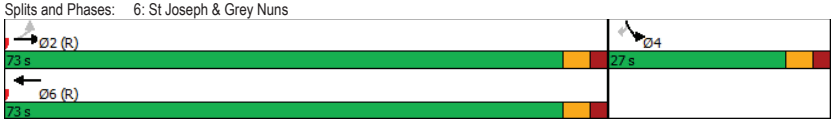
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	82	666	502	67	58	67
Future Volume (vph)	82	666	502	67	58	67
Satd. Flow (prot)	1610	3316	3244	0	1610	1469
Flt Permitted	0.438				0.950	
Satd. Flow (perm)	740	3316	3244	0	1587	1439
Satd. Flow (RTOR)			32			67
Lane Group Flow (vph)	82	666	569	0	58	67
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	22.5	22.5	40.5		26.5	26.5
Total Split (s)	73.0	73.0	73.0		27.0	27.0
Total Split (%)	73.0%	73.0%	73.0%		27.0%	27.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.2	2.2	2.2		2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	80.9	80.9	80.9		12.3	12.3
Actuated g/C Ratio	0.81	0.81	0.81		0.12	0.12
v/c Ratio	0.14	0.25	0.22		0.29	0.29
Control Delay	4.4	3.7	3.4		42.4	12.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	4.4	3.7	3.4		42.4	12.3
LOS	A	A	A		D	B
Approach Delay		3.8	3.4		26.3	
Approach LOS		A	A		C	
Queue Length 50th (m)	2.9	13.8	10.7		10.7	0.0
Queue Length 95th (m)	10.7	31.8	25.4		20.0	10.7
Internal Link Dist (m)		318.4	111.1		67.9	
Turn Bay Length (m)	53.0				21.0	
Base Capacity (vph)	598	2683	2631		346	361
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.14	0.25	0.22		0.17	0.19

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph & Grey Nuns



MOVEMENT SUMMARY

Site: 5 [St Joseph-Jeanne d'Arc AM FB2040 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

1887 St Joseph
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	337	2.0	337	2.0	0.509	11.9	LOS B	2.2	15.8	0.54	0.85	0.62	52.6
2	T1	All MCs	417	2.0	417	2.0	0.509	6.2	LOS A	2.2	15.8	0.52	0.67	0.59	55.0
3	R2	All MCs	50	2.0	50	2.0	0.509	6.2	LOS A	2.1	15.0	0.51	0.64	0.59	53.7
Approach			804	2.0	804	2.0	0.509	8.6	LOS A	2.2	15.8	0.53	0.74	0.60	53.8
East: RoadName															
4	L2	All MCs	50	2.0	50	2.0	0.170	12.3	LOS B	0.5	3.4	0.51	0.77	0.51	53.6
5	T1	All MCs	157	2.0	157	2.0	0.170	6.6	LOS A	0.5	3.4	0.49	0.68	0.49	54.8
6	R2	All MCs	306	2.0	306	2.0	0.161	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	56.6
Approach			513	2.0	513	2.0	0.170	5.3	LOS A	0.5	3.4	0.20	0.54	0.20	55.7
North: RoadName															
7	L2	All MCs	192	2.0	192	2.0	0.371	11.6	LOS B	1.3	9.1	0.50	0.79	0.54	53.2
8	T1	All MCs	234	2.0	234	2.0	0.371	6.0	LOS A	1.3	9.1	0.49	0.70	0.52	54.8
9	R2	All MCs	123	2.0	123	2.0	0.371	6.0	LOS A	1.2	8.7	0.48	0.65	0.51	54.1
Approach			549	2.0	549	2.0	0.371	8.0	LOS A	1.3	9.1	0.49	0.72	0.52	54.0
West: RoadName															
10	L2	All MCs	69	2.0	69	2.0	0.167	10.8	LOS B	0.5	3.4	0.40	0.68	0.40	54.3
11	T1	All MCs	190	2.0	190	2.0	0.167	5.2	LOS A	0.5	3.4	0.39	0.56	0.39	55.4
12	R2	All MCs	162	2.0	162	2.0	0.085	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	56.6
Approach			421	2.0	421	2.0	0.167	5.5	LOS A	0.5	3.4	0.24	0.53	0.24	55.7
All Vehicles			2287	2.0	2287	2.0	0.509	7.1	LOS A	2.2	15.8	0.39	0.65	0.43	54.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 5 [St Joseph-Jeanne d'Arc PM FB2040 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.0.3.9771

Reprocess the Site in this Version to see the selected Movement Class results. All results may be affected by reprocessing compared with Version 9.0 results.

1887 St Joseph
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	213	2.0	213	2.0	0.575	15.8	LOS B	2.4	17.3	0.72	0.96	0.98	50.5
2	T1	All MCs	353	2.0	353	2.0	0.575	9.8	LOS A	2.4	17.3	0.70	0.90	0.95	52.5
3	R2	All MCs	67	2.0	67	2.0	0.575	9.7	LOS A	2.3	16.7	0.70	0.88	0.94	51.7
Approach			633	2.0	633	2.0	0.575	11.8	LOS B	2.4	17.3	0.71	0.92	0.96	51.7
East: RoadName															
4	L2	All MCs	83	2.0	83	2.0	0.243	12.0	LOS B	0.7	5.1	0.51	0.76	0.51	53.6
5	T1	All MCs	233	2.0	233	2.0	0.243	6.4	LOS A	0.7	5.1	0.49	0.66	0.49	54.8
6	R2	All MCs	282	2.0	282	2.0	0.149	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	56.6
Approach			598	2.0	598	2.0	0.243	5.8	LOS A	0.7	5.1	0.26	0.56	0.26	55.5
North: RoadName															
7	L2	All MCs	271	2.0	271	2.0	0.490	12.2	LOS B	2.0	14.5	0.56	0.84	0.65	52.7
8	T1	All MCs	379	2.0	379	2.0	0.490	6.5	LOS A	2.0	14.5	0.54	0.72	0.62	54.6
9	R2	All MCs	83	2.0	83	2.0	0.490	6.5	LOS A	1.9	13.9	0.53	0.69	0.62	53.7
Approach			733	2.0	733	2.0	0.490	8.6	LOS A	2.0	14.5	0.54	0.76	0.63	53.8
West: RoadName															
10	L2	All MCs	163	2.0	163	2.0	0.538	13.8	LOS B	2.3	16.4	0.63	0.88	0.81	52.7
11	T1	All MCs	535	2.0	535	2.0	0.538	8.0	LOS A	2.3	16.4	0.62	0.83	0.79	53.9
12	R2	All MCs	556	2.0	556	2.0	0.293	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	56.5
Approach			1254	2.0	1254	2.0	0.538	6.8	LOS A	2.3	16.4	0.35	0.66	0.44	54.8
All Vehicles			3218	2.0	3218	2.0	0.575	8.0	LOS A	2.4	17.3	0.45	0.72	0.55	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix I

Synchro and Sidra Intersection Worksheets – 2040 Future Total Conditions

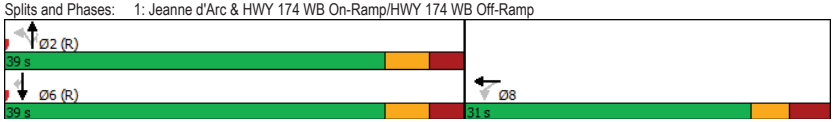
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	245	64	39	16	236	0	0	318	714
Future Volume (vph)	0	0	0	245	64	39	16	236	0	0	318	714
Satd. Flow (prot)	0	0	0	1575	1146	0	0	3100	1745	0	3316	1483
Flt Permitted				0.950	0.980			0.926				
Satd. Flow (perm)	0	0	0	1568	1144	0	0	2876	1745	0	3316	1408
Satd. Flow (RTOR)					23							475
Lane Group Flow (vph)	0	0	0	174	174	0	0	252	0	0	318	714
Turn Type				Perm	NA		Perm	NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2		2			6
Detector Phase				8	8		2	2	2		6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		10.0	10.0	10.0		10.0	10.0
Minimum Split (s)				30.8	30.8		24.8	24.8	24.8		24.8	24.8
Total Split (s)				31.0	31.0		39.0	39.0	39.0		39.0	39.0
Total Split (%)				44.3%	44.3%		55.7%	55.7%	55.7%		55.7%	55.7%
Yellow Time (s)				3.3	3.3		3.7	3.7	3.7		3.7	3.7
All-Red Time (s)				3.5	3.5		3.1	3.1	3.1		3.1	3.1
Lost Time Adjust (s)				0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)				6.8	6.8			6.8	6.8		6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None	None		C-Max	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				21.2	21.2			35.2			35.2	35.2
Actuated g/C Ratio				0.30	0.30			0.50			0.50	0.50
v/c Ratio				0.37	0.48			0.17			0.19	0.76
Control Delay				20.4	20.9			7.1			10.9	11.7
Queue Delay				0.0	0.0			0.0			0.0	0.0
Total Delay				20.4	20.9			7.1			10.9	11.7
LOS				C	C			A			B	B
Approach Delay					20.6			7.1			11.5	
Approach LOS					C			A			B	
Queue Length 50th (m)				17.4	15.4			5.2			12.3	20.3
Queue Length 95th (m)				32.5	32.4			8.1			19.4	#79.0
Internal Link Dist (m)		112.0			81.4			201.4			159.3	
Turn Bay Length (m)												
Base Capacity (vph)				542	410			1446			1667	943
Starvation Cap Reductn				0	0			0			0	0
Spillback Cap Reductn				0	0			0			0	0
Storage Cap Reductn				0	0			0			0	0
Reduced v/c Ratio				0.32	0.42			0.17			0.19	0.76

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 64 (91%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76
Intersection Signal Delay: 12.7 — Intersection LOS: B
Intersection Capacity Utilization 98.6% — ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Jeanne d'Arc & HWY 174 WB On-Ramp/HWY 174 WB Off-Ramp



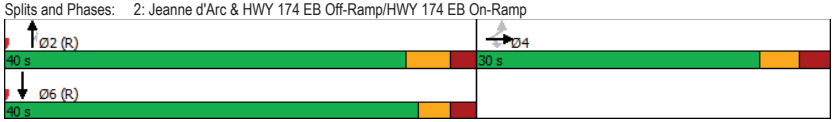
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	11	311	0	0	0	0	999	99	0	507	58
Future Volume (vph)	144	11	311	0	0	0	0	999	99	0	507	58
Satd. Flow (prot)	3095	890	1414	0	0	0	0	3283	1483	0	3220	0
Flt Permitted	0.950											
Satd. Flow (perm)	3095	890	1368	0	0	0	0	3283	1449	0	3220	0
Satd. Flow (RTOR)			192						99		25	
Lane Group Flow (vph)	144	11	311	0	0	0	0	999	99	0	565	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Detector Phase	4	4	4					2	2		6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0	10.0		10.0	
Minimum Split (s)	30.0	30.0	30.0					29.0	29.0		28.0	
Total Split (s)	30.0	30.0	30.0					40.0	40.0		40.0	
Total Split (%)	42.9%	42.9%	42.9%					57.1%	57.1%		57.1%	
Yellow Time (s)	3.3	3.3	3.3					3.7	3.7		2.7	
All-Red Time (s)	2.7	2.7	2.7					2.3	2.3		2.3	
Lost Time Adjust (s)	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		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None					C-Max	C-Max		C-Max	
Act Effct Green (s)	16.1	16.1	16.1					41.9	41.9		42.9	
Actuated g/C Ratio	0.23	0.23	0.23					0.60	0.60		0.61	
v/c Ratio	0.20	0.05	0.67					0.51	0.11		0.28	
Control Delay	20.5	17.5	16.3					10.7	2.8		5.4	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	20.5	17.5	16.3					10.7	2.8		5.4	
LOS	C	B	B					B	A		A	
Approach Delay		17.6						10.0			5.4	
Approach LOS		B						A			A	
Queue Length 50th (m)	8.5	1.2	14.2					29.3	0.0		3.3	
Queue Length 95th (m)	12.2	4.0	31.6					66.0	6.5		28.5	
Internal Link Dist (m)		230.2			87.9			279.3			201.4	
Turn Bay Length (m)	80.0		83.0						60.0			
Base Capacity (vph)	1061	305	595					1966	907		1983	
Starvation Cap Reductn	0	0	0					0	0		0	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.14	0.04	0.52					0.51	0.11		0.28	

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 60 (86%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67
Intersection Signal Delay: 10.4 — Intersection LOS: B
Intersection Capacity Utilization 53.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Jeanne d'Arc & HWY 174 EB Off-Ramp/HWY 174 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	10	47	14	53	102	154	926	15	31	371	334
Future Volume (vph)	130	10	47	14	53	102	154	926	15	31	371	334
Satd. Flow (prot)	1537	1453	0	0	1546	0	1595	3304	0	1658	2957	0
Flt Permitted	0.625				0.975		0.279			0.273		
Satd. Flow (perm)	991	1453	0	0	1512	0	464	3304	0	475	2957	0
Satd. Flow (RTOR)		47			102			2			297	
Lane Group Flow (vph)	130	57	0	0	169	0	154	941	0	31	705	0
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%	
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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	18.2	18.2			18.2		48.2	44.4		41.6	35.4	
Actuated g/C Ratio	0.23	0.23			0.23		0.60	0.56		0.52	0.44	
v/c Ratio	0.58	0.16			0.40		0.39	0.51		0.09	0.48	
Control Delay	35.8	8.8			12.5		11.5	16.4		9.7	11.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	35.8	8.8			12.5		11.5	16.4		9.7	11.6	
LOS	D	A			B		B	B		A	B	
Approach Delay		27.6			12.5			15.7			11.5	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	18.6	1.3			8.7		7.7	31.0		1.4	18.7	
Queue Length 95th (m)	29.7	8.3			20.2		22.0	#93.3		6.2	43.9	
Internal Link Dist (m)		90.2			86.9			276.0			279.3	
Turn Bay Length (m)	33.0						175.0			71.0		
Base Capacity (vph)	341	532			588		411	1833		398	1474	
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	0.38	0.11			0.29		0.37	0.51		0.08	0.48	

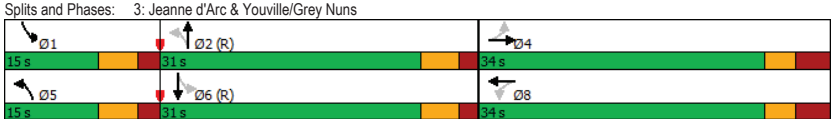
Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 15.1	Intersection LOS: B
Intersection Capacity Utilization 81.5%	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: 3: Jeanne d'Arc & Youville/Grey Nuns



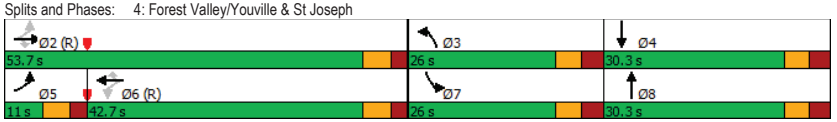
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	309	67	18	495	104	171	39	40	46	26	115
Future Volume (vph)	91	309	67	18	495	104	171	39	40	46	26	115
Satd. Flow (prot)	1626	3283	1469	1658	3316	1483	3017	1430	0	1610	1498	0
Flt Permitted	0.333			0.564			0.950	0.958		0.950		
Satd. Flow (perm)	569	3283	1432	984	3316	1438	3017	1382	0	1607	1498	0
Satd. Flow (RTOR)			95			155		28			115	
Lane Group Flow (vph)	91	309	67	18	495	104	154	96	0	46	141	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	6	6	6	3	8		7	4	
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	
Minimum Split (s)	11.0	27.0	27.0	27.0	27.0	27.0	11.3	30.3		11.3	30.3	
Total Split (s)	11.0	53.7	53.7	42.7	42.7	42.7	26.0	30.3		26.0	30.3	
Total Split (%)	10.0%	48.8%	48.8%	38.8%	38.8%	38.8%	23.6%	27.5%		23.6%	27.5%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	47.7	47.7	47.7	38.9	38.9	38.9	10.9	10.9		8.6	32.8	
Actuated g/C Ratio	0.43	0.43	0.43	0.35	0.35	0.35	0.10	0.10		0.08	0.30	
v/c Ratio	0.31	0.22	0.10	0.05	0.42	0.17	0.51	0.57		0.37	0.27	
Control Delay	21.8	20.0	2.0	25.6	29.1	1.8	52.7	47.1		55.4	10.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	21.8	20.0	2.0	25.6	29.1	1.8	52.7	47.1		55.4	10.0	
LOS	C	B	A	C	C	A	D	D		E	A	
Approach Delay		17.8			24.4			50.5			21.2	
Approach LOS		B			C			D			C	
Queue Length 50th (m)	11.5	21.3	0.0	2.6	43.5	0.0	17.5	15.3		9.5	4.0	
Queue Length 95th (m)	21.6	30.7	4.3	7.8	58.6	3.6	27.6	32.8		20.5	19.2	
Internal Link Dist (m)		145.9			487.0			161.0			157.2	
Turn Bay Length (m)	105.0		122.0	105.0		53.0	58.0			53.0		
Base Capacity (vph)	294	1423	674	348	1172	609	540	167		288	526	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.31	0.22	0.10	0.05	0.42	0.17	0.29	0.57		0.16	0.27	

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 26.3	Intersection LOS: C
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Forest Valley/Youville & St Joseph



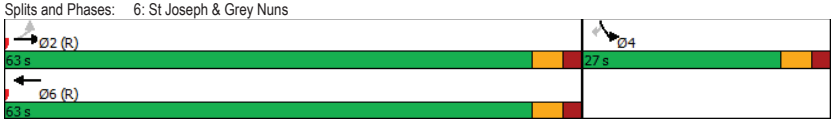
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	252	734	94	39	54
Future Volume (vph)	38	252	734	94	39	54
Satd. Flow (prot)	1642	3252	3241	0	1610	1483
Flt Permitted	0.337				0.950	
Satd. Flow (perm)	581	3252	3241	0	1602	1483
Satd. Flow (RTOR)			30			54
Lane Group Flow (vph)	38	252	828	0	39	54
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	22.5	22.5	40.5		26.5	26.5
Total Split (s)	63.0	63.0	63.0		27.0	27.0
Total Split (%)	70.0%	70.0%	70.0%		30.0%	30.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.2	2.2	2.2		2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	73.1	73.1	73.1		10.1	10.1
Actuated g/C Ratio	0.81	0.81	0.81		0.11	0.11
v/c Ratio	0.08	0.10	0.31		0.22	0.25
Control Delay	3.1	2.5	3.1		39.7	14.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.1	2.5	3.1		39.7	14.0
LOS	A	A	A		D	B
Approach Delay		2.6	3.1		24.8	
Approach LOS		A	A		C	
Queue Length 50th (m)	1.3	4.5	17.6		6.3	0.0
Queue Length 95th (m)	3.6	7.2	24.1		15.5	10.2
Internal Link Dist (m)		318.4	111.1		67.9	
Turn Bay Length (m)	53.0				21.0	
Base Capacity (vph)	472	2643	2639		384	395
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.08	0.10	0.31		0.10	0.14

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.31

Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 50.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph & Grey Nuns



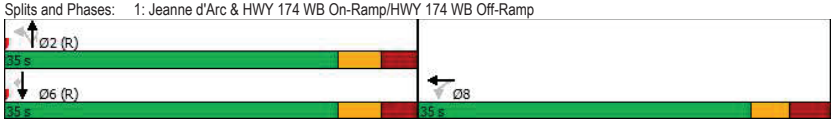
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	9	60	4	681	0	0	276	160
Future Volume (vph)	0	0	0	170	9	60	4	681	0	0	276	160
Satd. Flow (prot)	0	0	0	1575	1366	0	0	3297	1745	0	3316	1483
Flt Permitted				0.950	0.980			0.953				
Satd. Flow (perm)	0	0	0	1567	1363	0	0	3140	1745	0	3316	1190
Satd. Flow (RTOR)					60							160
Lane Group Flow (vph)	0	0	0	122	117	0	0	685	0	0	276	160
Turn Type				Perm	NA		Perm	NA	Perm		NA	Perm
Protected Phases					8			2			6	
Permitted Phases				8			2		2			6
Detector Phase				8	8		2	2	2		6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		10.0	10.0	10.0		10.0	10.0
Minimum Split (s)				30.8	30.8		24.8	24.8	24.8		24.8	24.8
Total Split (s)				35.0	35.0		35.0	35.0	35.0		35.0	35.0
Total Split (%)				50.0%	50.0%		50.0%	50.0%	50.0%		50.0%	50.0%
Yellow Time (s)				3.3	3.3		3.7	3.7	3.7		3.7	3.7
All-Red Time (s)				3.5	3.5		3.1	3.1	3.1		3.1	3.1
Lost Time Adjust (s)				0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)				6.8	6.8			6.8	6.8		6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None	None		C-Max	C-Max	C-Max		C-Max	C-Max
Act Effct Green (s)				18.4	18.4			42.7			42.7	42.7
Actuated g/C Ratio				0.26	0.26			0.61			0.61	0.61
v/c Ratio				0.30	0.29			0.36			0.14	0.20
Control Delay				20.5	11.4			9.0			9.4	2.9
Queue Delay				0.0	0.0			0.0			0.0	0.0
Total Delay				20.5	11.4			9.0			9.4	2.9
LOS				C	B			A			A	A
Approach Delay					16.0			9.0			7.0	
Approach LOS					B			A			A	
Queue Length 50th (m)				11.7	5.2			23.4			10.5	0.0
Queue Length 95th (m)				23.5	16.2			33.7			17.1	8.7
Internal Link Dist (m)		112.0			81.4			201.4			159.3	
Turn Bay Length (m)												
Base Capacity (vph)				631	584			1916			2023	788
Starvation Cap Reductn				0	0			0			0	0
Spillback Cap Reductn				0	0			0			0	0
Storage Cap Reductn				0	0			0			0	0
Reduced v/c Ratio				0.19	0.20			0.36			0.14	0.20

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 20 (29%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 69.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Jeanne d'Arc & HWY 174 WB On-Ramp/HWY 174 WB Off-Ramp



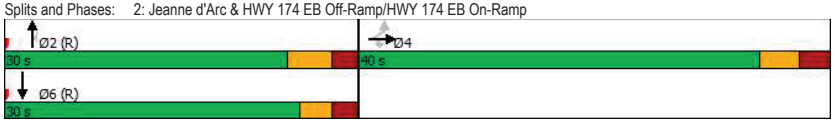
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	386	16	520	0	0	0	0	706	264	0	350	52
Future Volume (vph)	386	16	520	0	0	0	0	706	264	0	350	52
Satd. Flow (prot)	3185	890	1483	0	0	0	0	3316	1483	0	3222	0
Flt Permitted	0.950											
Satd. Flow (perm)	3185	890	1445	0	0	0	0	3316	1427	0	3222	0
Satd. Flow (RTOR)			233						264		26	
Lane Group Flow (vph)	386	16	520	0	0	0	0	706	264	0	402	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Detector Phase	4	4	4					2	2		6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0	10.0		10.0	
Minimum Split (s)	30.0	30.0	30.0					29.0	29.0		28.0	
Total Split (s)	40.0	40.0	40.0					30.0	30.0		30.0	
Total Split (%)	57.1%	57.1%	57.1%					42.9%	42.9%		42.9%	
Yellow Time (s)	3.3	3.3	3.3					3.7	3.7		2.7	
All-Red Time (s)	2.7	2.7	2.7					2.3	2.3		2.3	
Lost Time Adjust (s)	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		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None					C-Max	C-Max		C-Max	
Act Effct Green (s)	22.8	22.8	22.8					35.2	35.2		36.2	
Actuated g/C Ratio	0.33	0.33	0.33					0.50	0.50		0.52	
v/c Ratio	0.37	0.06	0.83					0.42	0.31		0.24	
Control Delay	17.6	12.1	22.4					14.2	3.5		8.4	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	17.6	12.1	22.4					14.2	3.5		8.4	
LOS	B	B	C					B	A		A	
Approach Delay		20.2						11.3			8.4	
Approach LOS		C						B			A	
Queue Length 50th (m)	19.5	1.4	34.0					29.1	0.0		12.3	
Queue Length 95th (m)	22.0	3.9	53.7					56.3	13.8		21.3	
Internal Link Dist (m)		230.2			87.9			279.3			201.4	
Turn Bay Length (m)	80.0		83.0						60.0			
Base Capacity (vph)	1547	432	821					1667	848		1678	
Starvation Cap Reductn	0	0	0					0	0		0	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.25	0.04	0.63					0.42	0.31		0.24	

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 20 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83
Intersection Signal Delay: 14.4 — Intersection LOS: B
Intersection Capacity Utilization 63.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Jeanne d'Arc & HWY 174 EB Off-Ramp/HWY 174 EB On-Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	31	184	20	18	44	142	562	33	54	679	217
Future Volume (vph)	326	31	184	20	18	44	142	562	33	54	679	217
Satd. Flow (prot)	1658	1474	0	0	1568	0	1658	3281	0	1642	3075	0
Flt Permitted	0.704				0.902		0.187			0.393		
Satd. Flow (perm)	1201	1474	0	0	1426	0	319	3281	0	674	3075	0
Satd. Flow (RTOR)		184			44			7			49	
Lane Group Flow (vph)	326	215	0	0	82	0	142	595	0	54	896	0
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%	
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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	30.0	30.0			30.0		49.3	42.1		45.4	38.4	
Actuated g/C Ratio	0.32	0.32			0.32		0.52	0.44		0.48	0.40	
v/c Ratio	0.86	0.36			0.17		0.50	0.41		0.14	0.70	
Control Delay	52.0	6.7			11.9		18.4	21.2		12.9	27.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	52.0	6.7			11.9		18.4	21.2		12.9	27.6	
LOS	D	A			B		B	C		B	C	
Approach Delay		34.0			11.9			20.7			26.7	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	54.3	3.9			4.8		12.4	40.2		4.5	70.3	
Queue Length 95th (m)	#85.9	17.9			13.8		24.5	61.4		11.0	#100.4	
Internal Link Dist (m)		90.2			86.9			276.0			279.3	
Turn Bay Length (m)	33.0						175.0			71.0		
Base Capacity (vph)	450	667			561		296	1458		429	1272	
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	0.32			0.15		0.48	0.41		0.13	0.70	

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 95
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: 0.86
Intersection Signal Delay: 26.0 — Intersection LOS: C
Intersection Capacity Utilization 77.3% — ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Jeanne d'Arc & Youville/Grey Nuns

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1027	210	40	412	96	107	37	44	127	51	171
Future Volume (vph)	199	1027	210	40	412	96	107	37	44	127	51	171
Satd. Flow (prot)	1658	3316	1483	1610	3316	1483	3017	1429	0	1658	1519	0
Flt Permitted	0.406			0.236			0.950	0.967		0.950		
Satd. Flow (perm)	707	3316	1445	400	3316	1439	3017	1390	0	1658	1519	0
Satd. Flow (RTOR)			210			170		36			159	
Lane Group Flow (vph)	199	1027	210	40	412	96	96	92	0	127	222	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6						
Detector Phase	5	2	2	6	6	6	3	8		7	4	
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	
Minimum Split (s)	11.0	27.0	27.0	27.0	27.0	27.0	11.3	30.3		11.3	30.3	
Total Split (s)	11.0	54.7	54.7	43.7	43.7	43.7	15.0	30.3		15.0	30.3	
Total Split (%)	11.0%	54.7%	54.7%	43.7%	43.7%	43.7%	15.0%	30.3%		15.0%	30.3%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	Max		None	Max	
Act Effct Green (s)	48.7	48.7	48.7	37.7	37.7	37.7	7.9	6.7		8.7	27.3	
Actuated g/C Ratio	0.49	0.49	0.49	0.38	0.38	0.38	0.08	0.07		0.09	0.27	
v/c Ratio	0.51	0.64	0.26	0.27	0.33	0.15	0.40	0.71		0.88	0.42	
Control Delay	20.9	21.3	2.9	27.6	23.1	0.5	48.8	57.8		95.8	13.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.9	21.3	2.9	27.6	23.1	0.5	48.8	57.8		95.8	13.0	
LOS	C	C	A	C	C	A	D	E		F	B	
Approach Delay		18.6			19.5			53.2			43.1	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	21.6	74.8	0.0	5.3	29.4	0.0	9.8	11.5		24.8	9.7	
Queue Length 95th (m)	35.7	95.8	11.2	14.2	41.3	0.5	18.2	#32.3		#57.5	30.2	
Internal Link Dist (m)		128.6			487.0			161.0			157.2	
Turn Bay Length (m)	105.0		122.0	105.0		53.0	58.0			53.0		
Base Capacity (vph)	391	1614	811	150	1250	648	262	129		144	530	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.64	0.26	0.27	0.33	0.15	0.37	0.71		0.88	0.42	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88
Intersection Signal Delay: 24.7 — Intersection LOS: C
Intersection Capacity Utilization 81.1% — 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: 4: Forest Valley/Youville & St Joseph

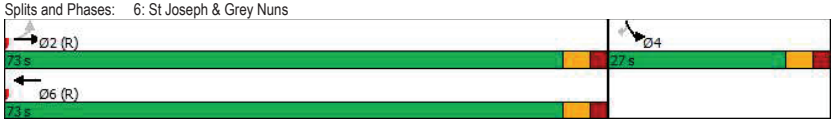
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	82	683	526	67	58	67
Future Volume (vph)	82	683	526	67	58	67
Satd. Flow (prot)	1610	3316	3248	0	1610	1469
Flt Permitted	0.428				0.950	
Satd. Flow (perm)	723	3316	3248	0	1587	1439
Satd. Flow (RTOR)			30			67
Lane Group Flow (vph)	82	683	593	0	58	67
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0
Minimum Split (s)	22.5	22.5	40.5		26.5	26.5
Total Split (s)	73.0	73.0	73.0		27.0	27.0
Total Split (%)	73.0%	73.0%	73.0%		27.0%	27.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	2.2	2.2	2.2		2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	80.9	80.9	80.9		12.3	12.3
Actuated g/C Ratio	0.81	0.81	0.81		0.12	0.12
v/c Ratio	0.14	0.25	0.23		0.29	0.29
Control Delay	4.4	3.7	3.4		42.4	12.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	4.4	3.7	3.4		42.4	12.3
LOS	A	A	A		D	B
Approach Delay		3.8	3.4		26.3	
Approach LOS		A	A		C	
Queue Length 50th (m)	2.9	14.3	11.3		10.7	0.0
Queue Length 95th (m)	10.7	32.8	26.7		20.0	10.7
Internal Link Dist (m)		318.4	111.1		67.9	
Turn Bay Length (m)	53.0				21.0	
Base Capacity (vph)	585	2683	2634		346	361
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.14	0.25	0.23		0.17	0.19

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: St Joseph & Grey Nuns



MOVEMENT SUMMARY

Site: 5 [St Joseph-Jeanne d'Arc AM FT2040 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

1887 St Joseph
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	348	2.0	348	2.0	0.527	12.2	LOS B	2.4	17.0	0.57	0.79	0.66	49.4
2	T1	All MCs	417	2.0	417	2.0	0.527	6.5	LOS A	2.4	17.0	0.55	0.67	0.64	52.8
3	R2	All MCs	50	2.0	50	2.0	0.527	6.5	LOS A	2.3	16.2	0.54	0.66	0.63	52.7
Approach			815	2.0	815	2.0	0.527	8.9	LOS A	2.4	17.0	0.55	0.72	0.65	51.3
East: RoadName															
4	L2	All MCs	50	2.0	50	2.0	0.182	12.5	LOS B	0.5	3.6	0.52	0.77	0.52	50.6
5	T1	All MCs	168	2.0	168	2.0	0.182	6.8	LOS A	0.5	3.6	0.50	0.69	0.50	52.7
6	R2	All MCs	306	2.0	306	2.0	0.161	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	55.7
Approach			524	2.0	524	2.0	0.182	5.4	LOS A	0.5	3.6	0.21	0.54	0.21	54.1
North: RoadName															
7	L2	All MCs	192	2.0	192	2.0	0.382	11.9	LOS B	1.3	9.6	0.52	0.77	0.57	50.1
8	T1	All MCs	234	2.0	234	2.0	0.382	6.3	LOS A	1.3	9.6	0.51	0.69	0.55	52.6
9	R2	All MCs	128	2.0	128	2.0	0.382	6.2	LOS A	1.3	9.2	0.50	0.65	0.54	53.1
Approach			554	2.0	554	2.0	0.382	8.2	LOS A	1.3	9.6	0.51	0.71	0.55	51.8
West: RoadName															
10	L2	All MCs	69	2.0	69	2.0	0.182	10.9	LOS B	0.5	3.7	0.41	0.65	0.41	51.3
11	T1	All MCs	212	2.0	212	2.0	0.182	5.3	LOS A	0.5	3.7	0.40	0.56	0.40	53.3
12	R2	All MCs	184	2.0	184	2.0	0.097	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	55.7
Approach			465	2.0	465	2.0	0.182	5.4	LOS A	0.5	3.7	0.24	0.52	0.24	53.9
All Vehicles			2358	2.0	2358	2.0	0.527	7.3	LOS A	2.4	17.0	0.41	0.64	0.45	52.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 5 [St Joseph-Jeanne d'Arc PM FT2040 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

1887 St Joseph
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	237	2.0	237	2.0	0.612	16.5	LOS B	2.7	19.0	0.74	0.98	1.05	47.3
2	T1	All MCs	353	2.0	353	2.0	0.612	10.4	LOS B	2.7	19.0	0.73	0.93	1.02	50.1
3	R2	All MCs	67	2.0	67	2.0	0.612	10.3	LOS B	2.6	18.5	0.72	0.91	1.01	50.5
Approach			657	2.0	657	2.0	0.612	12.6	LOS B	2.7	19.0	0.73	0.95	1.03	49.1
East: RoadName															
4	L2	All MCs	83	2.0	83	2.0	0.268	12.3	LOS B	0.8	5.6	0.53	0.76	0.53	50.6
5	T1	All MCs	257	2.0	257	2.0	0.268	6.6	LOS A	0.8	5.6	0.51	0.68	0.51	52.7
6	R2	All MCs	282	2.0	282	2.0	0.149	3.4	LOS A	0.0	0.0	0.00	0.42	0.00	55.7
Approach			622	2.0	622	2.0	0.268	5.9	LOS A	0.8	5.6	0.28	0.58	0.28	53.6
North: RoadName															
7	L2	All MCs	271	2.0	271	2.0	0.518	12.8	LOS B	2.2	16.0	0.59	0.82	0.72	49.5
8	T1	All MCs	379	2.0	379	2.0	0.518	7.1	LOS A	2.2	16.0	0.58	0.74	0.69	52.3
9	R2	All MCs	95	2.0	95	2.0	0.518	7.1	LOS A	2.2	15.3	0.57	0.71	0.68	52.6
Approach			745	2.0	745	2.0	0.518	9.2	LOS A	2.2	16.0	0.58	0.77	0.70	51.2
West: RoadName															
10	L2	All MCs	163	2.0	163	2.0	0.556	14.1	LOS B	2.4	17.3	0.65	0.87	0.84	49.6
11	T1	All MCs	552	2.0	552	2.0	0.556	8.3	LOS A	2.4	17.3	0.63	0.82	0.81	51.7
12	R2	All MCs	573	2.0	573	2.0	0.302	3.5	LOS A	0.0	0.0	0.00	0.42	0.00	55.6
Approach			1288	2.0	1288	2.0	0.556	6.9	LOS A	2.4	17.3	0.35	0.65	0.45	53.0
All Vehicles			3312	2.0	3312	2.0	0.612	8.4	LOS A	2.7	19.0	0.47	0.72	0.59	51.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix J

Synchro Intersection Worksheets – 2040 Future Total Conditions – Sensitivity Without New Local Road

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		⅄	
Traffic Vol, veh/h	11	391	549	47	89	27
Future Vol, veh/h	11	391	549	47	89	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	391	549	47	89	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	596	0	-	0	791	298
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	976	-	-	-	327	698
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	976	-	-	-	322	698
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	797	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	976	-	-	-	464
HCM Lane V/C Ratio	0.011	-	-	-	0.25
HCM Control Delay (s)	8.7	0.1	-	-	15.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		⅄	
Traffic Vol, veh/h	30	1221	514	104	70	24
Future Vol, veh/h	30	1221	514	104	70	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	1221	514	104	70	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	618	0	-	0	1237	309
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	671	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	958	-	-	-	168	687
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	470	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	958	-	-	-	152	687
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	470	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	958	-	-	-	336
HCM Lane V/C Ratio	0.031	-	-	-	0.28
HCM Control Delay (s)	8.9	0.4	-	-	19.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

Appendix K

Signal Warrant Calculation Sheets

CGH TRANSPORTATION

St. Joseph Boulevard @ Site Access
FT 2040

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	769	85%	46%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	79	46%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	717	80%	53%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	40	53%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Appendix L

Left-turn Warrant Calculation Sheets

70kph 5%

70kph 5%

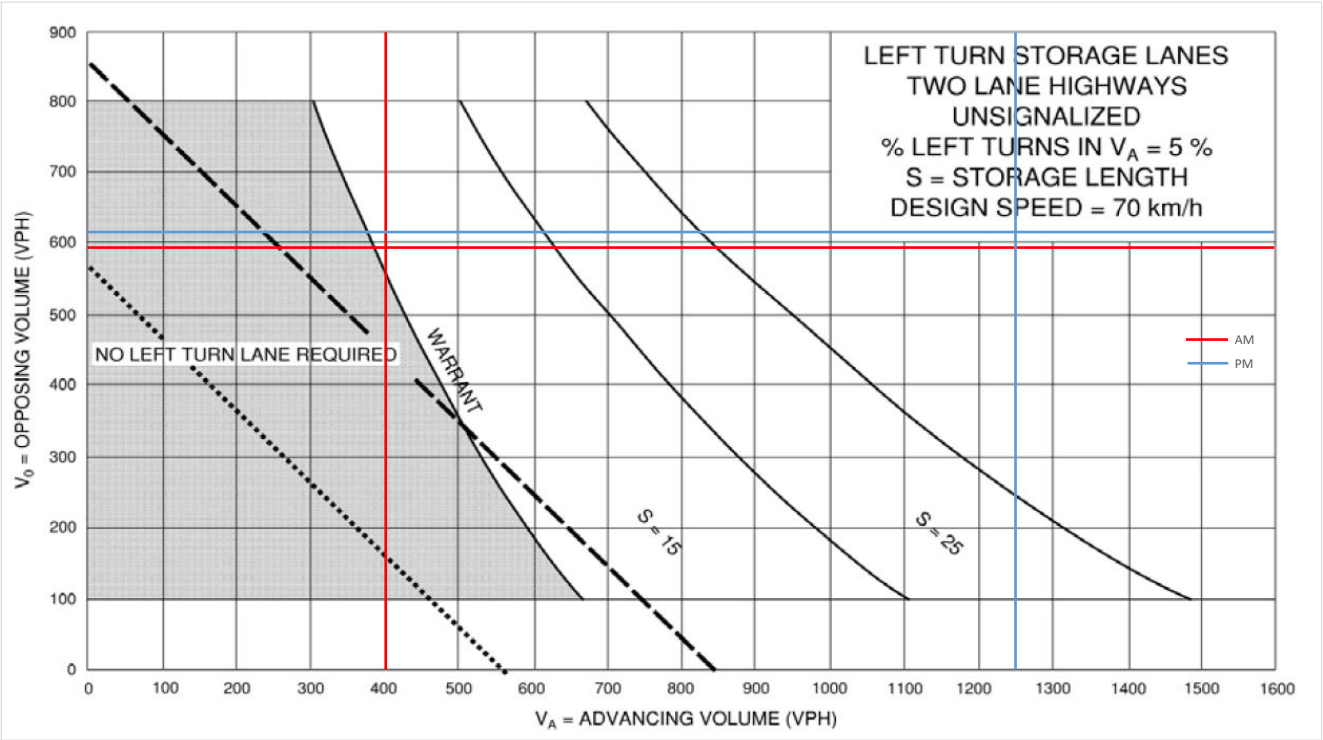
GO TO CUSTOM SHEET
Speed: 70kph %LT: 5%

Scenario:
FT2040

Eastbound Left

Design Speed
70 km/h

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	11	391	0	0	549	47	0	0	0	89	0	27	2.7%	402	596
PM	30	1221	0	0	514	104	0	0	0	70	0	24	2.4%	1251	618


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN V_A = 5 %
S = STORAGE LENGTH
DESIGN SPEED = 70 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S = 15
S = 25
AM
PM
V_0 = OPPOSING VOLUME (VPH)
V_A = ADVANCING VOLUME (VPH)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

Appendix M

TDM Checklist

CGH TRANSPORTATION

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

Legend

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

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

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

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

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

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

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

Legend

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

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

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

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Version 1.0 (30 June 2017)

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

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

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	☐

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

Legend

BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

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

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

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

Appendix N

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Intersections Form

Consultant	CGH Transportation Inc.	Project	2023-035
Scenario	Existing/Future	Date	10/3/2023
Comments			

Mode	INTERSECTIONS	Jeanne d'Arc Boulevard at Hwy 174 North (Existing)				Jeanne d'Arc Boulevard at Hwy 174 North (Future)			
Pedestrian	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	7	5	4	5	7	5	4	5
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.
	Conflicting Right Turns	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No
	Right Turn Channel	No Channel	Conventional with Receiving Lane	No Channel	No Right Turn	No Channel	Conventional with Receiving Lane	No Channel	No Right Turn
	Corner Radius	>25m	>25m	>25m	No Right Turn	>25m	>25m	15-25m	No Right Turn
	Crosswalk Type	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
	PETSI Score	12	46	61	58	12	46	62	58
	Ped. Exposure to Traffic LoS	F	D	C	D	F	D	C	D
	Cycle Length	70	70	70		70	70	70	
	Effective Walk Time	18	18	7		18	18	7	
	Average Pedestrian Delay	19	19	28		19	19	28	
	Pedestrian Delay LoS	B	B	C	-	B	B	C	-
	Level of Service	F	D	C	D	F	D	C	D
	Level of Service	F				F			
Bicycle	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach								
	Right Turn Lane Configuration								
	Right Turning Speed								
	Cyclist relative to RT motorists	-	-	-	-	-	-	-	-
	Separated or Mixed Traffic	-	-	-	-	-	-	-	-
	Left Turn Approach								
	Operating Speed								
	Left Turning Cyclist	-	-	-	-	-	-	-	-
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Transit	Average Signal Delay	≤ 10 sec	≤ 10 sec	≤ 30 sec	≤ 10 sec	≤ 20 sec	≤ 10 sec	≤ 30 sec	≤ 10 sec
	Level of Service	B	B	D	B	C	B	D	B
	Level of Service	D				D			
Truck	Effective Corner Radius	> 15 m		< 10 m		> 15 m		< 10 m	
	Number of Receiving Lanes on Departure from Intersection	1		≥ 2		1		≥ 2	
	Level of Service	C	-	D	-	C	-	D	-
	Level of Service	D				D			
Auto	Volume to Capacity Ratio	0.61 - 0.70				0.0 - 0.60			
	Level of Service	B				A			

Mode	INTERSECTIONS	Jeanne d'Arc Boulevard at Hwy 174 South (Existing)				Jeanne d'Arc Boulevard at Hwy 174 South (Future)			
Pedestrian	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes		10+	4	10+		10+	4	10+
	Median		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns		No left turn / Prohib.	No left turn / Prohib.	No left turn / Prohib.		No left turn / Prohib.	No left turn / Prohib.	No left turn / Prohib.
	Conflicting Right Turns		Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?		RTOR allowed	RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?		No	No	No		No	No	No
	Right Turn Channel		No Channel	No Channel	Conventional with Receiving Lane		No Channel	No Channel	Conventional with Receiving Lane
	Corner Radius		10-15m	5-10m	>25m		10-15m	5-10m	>25m
	Crosswalk Type		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings
	PETSI Score		-34	65	-36		-34	65	-36
	Ped. Exposure to Traffic LoS	-	F	C	F	-	F	C	F
	Cycle Length		70	70	70		70	70	70
	Effective Walk Time		8	8	7		8	8	7
	Average Pedestrian Delay		27	27	28		27	27	28
	Pedestrian Delay LoS	-	C	C	C	-	C	C	C
	Level of Service	-	F	C	F	-	F	C	F
	Level of Service	F				F			
Bicycle	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach								
	Right Turn Lane Configuration								
	Right Turning Speed								
	Cyclist relative to RT motorists	-	-	-	-	-	-	-	-
	Separated or Mixed Traffic	-	-	-	-	-	-	-	-
	Left Turn Approach								
	Operating Speed								
	Left Turning Cyclist	-	-	-	-	-	-	-	-
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Transit	Average Signal Delay	≤ 10 sec	≤ 20 sec		≤ 20 sec	≤ 10 sec	≤ 20 sec		≤ 10 sec
	Level of Service	B	C	-	C	B	C	-	B
	Level of Service	C				C			
Truck	Effective Corner Radius	> 15 m	10 - 15 m		> 15 m	> 15 m	10 - 15 m		> 15 m
	Number of Receiving Lanes on Departure from Intersection	1	1		≥ 2	1	1		≥ 2
	Level of Service	C	E	-	A	C	E	-	A
	Level of Service	E				E			
Auto	Volume to Capacity Ratio	0.71 - 0.80				0.0 - 0.60			
	Level of Service	C				A			

Mode	INTERSECTIONS	Jeanne d'Arc Boulevard at Youville Drive & Grey Nuns Drive (Exsiting)				Jeanne d'Arc Boulevard at Youville Drive & Grey Nuns Drive (Future)			
Pedestrian	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	7	7	5	5	7	7	5	5
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	4	4	37	37	4	4	37	37
	Ped. Exposure to Traffic LoS	F	F	E	E	F	F	E	E
	Cycle Length	80	80	80	80	80	80	80	80
	Effective Walk Time	11	11	8	8	11	11	8	8
	Average Pedestrian Delay	30	30	32	32	30	30	32	32
	Pedestrian Delay LoS	D	D	D	D	D	D	D	D
	Level of Service	F	F	E	E	F	F	E	E
	Level of Service	F				F			
Bicycle	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration								
	Right Turning Speed								
	Cyclist relative to RT motorists	#N/A	#N/A	#N/A	#N/A	Not Applicable	Not Applicable	#N/A	Not Applicable
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Separated	Separated	Mixed Traffic	Separated
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	No lane crossed	2-stage, LT box	2-stage, LT box	One lane crossed	2-stage, LT box
	Operating Speed	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 50 to < 60 km/h
	Left Turning Cyclist	F	F	D	C	A	A	D	A
	Level of Service	F	F	D	C	A	A	D	C
	Level of Service	F				D			
Transit	Average Signal Delay	≤ 40 sec	≤ 30 sec	≤ 20 sec	≤ 10 sec	≤ 40 sec	≤ 30 sec	≤ 20 sec	≤ 10 sec
	Level of Service	E	D	C	B	E	D	C	B
	Level of Service	E				E			
Truck	Effective Corner Radius								
	Number of Receiving Lanes on Departure from Intersection								
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Auto	Volume to Capacity Ratio	0.71 - 0.80				0.71 - 0.80			
	Level of Service	C				C			

Mode	INTERSECTIONS	St. Joseph Boulevard at Youville Drive and Forest Valley Drive (Existing)				St. Joseph Boulevard at Youville Drive and Forest Valley Drive (Future)			
Pedestrian	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	10+	10+	10+	10+	10+	10+	10+	10+
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Protected/ Permissive	Permissive	Protected	Protected	Protected/ Permissive	Permissive	Protected	Protected
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No
	Right Turn Channel	Conventional with Receiving Lane	No Channel	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conventional with Receiving Lane	No Channel	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane
	Corner Radius	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m	15-25m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	-46	-47	-35	-35	-46	-47	-35	-35
	Ped. Exposure to Traffic LoS	F	F	F	F	F	F	F	F
	Cycle Length	100	100	100	100	100	100	100	100
	Effective Walk Time	7	7	24	35	7	7	24	35
	Average Pedestrian Delay	43	43	29	21	43	43	29	21
	Pedestrian Delay LoS	E	E	C	C	E	E	C	C
	Level of Service	F	F	F	F	F	F	F	F
	Level of Service	F				F			
Bicycle	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration			> 50 m					
	Right Turning Speed			≤ 25 km/h					
	Cyclist relative to RT motorists	#N/A	#N/A	F	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Separated	Separated	Separated	Separated	Separated
	Left Turn Approach	One lane crossed	One lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box
	Operating Speed	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	E	D	F	F	A	A	A	A
	Level of Service	E	D	F	F	A	A	A	A
	Level of Service	F				A			
Transit	Average Signal Delay								
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Truck	Effective Corner Radius								
	Number of Receiving Lanes on Departure from Intersection								
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Auto	Volume to Capacity Ratio	0.61 - 0.70				0.61 - 0.70			
	Level of Service	B				B			

Mode	INTERSECTIONS	St. Joseph Boulevard at Grey Nuns Drive (Existing)				St. Joseph Boulevard at Grey Nuns Drive (Future)			
Pedestrian	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	5		5	5	5		5	5
	Median	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive		Permissive	No left turn / Prohib.	Permissive		Permissive	No left turn / Prohib.
	Conflicting Right Turns	Permissive or yield control		No right turn	Permissive or yield control	Permissive or yield control		No right turn	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed		RTOR prohibited	RTOR allowed	RTOR allowed		RTOR prohibited	RTOR allowed
	Ped Signal Leading Interval?	No		No	No	No		No	No
	Right Turn Channel	No Channel		No Channel	No Right Turn	No Channel		No Channel	No Right Turn
	Corner Radius	5-10m		5-10m	No Right Turn	5-10m		5-10m	No Right Turn
	Crosswalk Type	Std transverse markings		Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings	Std transverse markings
	PETSI Score	38		46	55	38		46	55
	Ped. Exposure to Traffic LoS	E	-	D	D	E	-	D	D
	Cycle Length	100		90	90	100		90	90
	Effective Walk Time	8		47	58	8		47	58
	Average Pedestrian Delay	42		10	6	42		10	6
	Pedestrian Delay LoS	E	-	B	A	E	-	B	A
	Level of Service	E	-	D	D	E	-	D	D
	Level of Service	E				E			
Bicycle	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Mixed Traffic		Mixed Traffic	Mixed Traffic	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration								
	Right Turning Speed								
	Cyclist relative to RT motorists	#N/A	-	#N/A	#N/A	#N/A	-	Not Applicable	Not Applicable
	Separated or Mixed Traffic	Mixed Traffic	-	Mixed Traffic	Mixed Traffic	Mixed Traffic	-	Separated	Separated
	Left Turn Approach	One lane crossed			≥ 2 lanes crossed	One lane crossed			≥ 2 lanes crossed
	Operating Speed	> 40 to ≤ 50 km/h			≥ 60 km/h	> 40 to ≤ 50 km/h			≥ 60 km/h
	Left Turning Cyclist	D	-	-	F	D	-	-	F
	Level of Service	D	-	-	F	D	-	-	F
	Level of Service	F				F			
Transit	Average Signal Delay								
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Truck	Effective Corner Radius								
	Number of Receiving Lanes on Departure from Intersection								
	Level of Service	-	-	-	-	-	-	-	-
	Level of Service	-				-			
Auto	Volume to Capacity Ratio	0.0 - 0.60				0.0 - 0.60			
	Level of Service	A				A			