1296 &1400 Old Montreal Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

Prepared for:

Tamarack Corp.
3187 Albion Road South
Ottawa ON K1V 8Y3

Prepared by:

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

December 2021

PN: 2019-68

Table of Contents

List of Figures

Table of Tables

List of Appendices

1 Screening

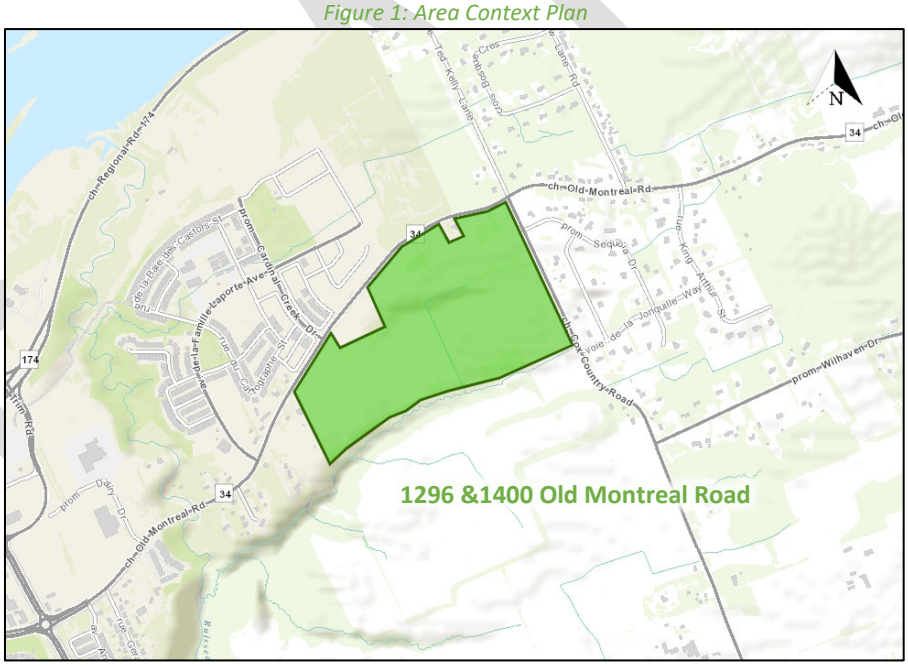
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for TIA Study PM. As shown in the Screening Form, a TIA is required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

2 Existing and Planned Conditions

2.1 Proposed Development

The proposed development, located at 1296 & 1400 Old Montreal Road, is currently a greenfield property and zoned primarily as Rural Countryside Zone (RU), with areas designated as Arterial Mainstreet Zone (AM), Rural Institutional Zone (RI) and Parks and Open Space Zone (O). The proposed development includes 454 townhome units, and 304 single detached units. The proposed access will be through two new collector roads access on Old Montreal Road and Cox Country Road. The anticipated full build-out and occupancy horizon is 2027 with construction occurring in five phases. The site is located within the Cardinal Creek Village Community Design Plans and intersects the Old Montreal Arterial Mainstreet design priority area. 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: November 11, 2021

Notes:

REV.	DESCRIPTION:	BY:	DATE:
01			

STATUS:

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

CLIENT: Tamarack (Cardinal Creek)

ARCHITECT:

SITE: Cardinal Creek Village

TITLE:

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS			
PROJECT NO: 2018-68	DRAWING NO:		REVISION:

2.2 Existing Conditions

2.2.1 Area Road Network

Old Montreal Road: Old Montreal Road is a City of Ottawa arterial road with paved shoulders. The roadway is two-lane urban cross-section east of Dairy Drive/ Aveia Private and rural cross-section to the west. The posted limit is 60 km/h west of Cardinal Creek Drive and 80 km/h east of Cardinal Creek Drive. The City-protected right-of-way is 37.5 metres. Old Montreal Road is a truck route.

St Joseph Boulevard: St Joseph Boulevard is a City of Ottawa arterial road with a four-lane urban cross-section including curbside bike lanes on both sides of the road within the study area. Sidewalks are provided on both sides. The posted limit is 60 km/h and the City-protected right-of-way is 37.5 metres within the study area. St Joseph Boulevard is a truck route.

Trim Road: Trim Road is a City of Ottawa arterial road with a four-lane urban cross-section including curbside bike lanes and Multi-Use Pathways on both sides of the road within the study area. The posted speed limit is 70 km/h posted speed limit and the City-protected right-of-way is 46.0 metre right of way within the study area. Trim Road is a truck route.

Cardinal Creek Drive: Cardinal Creek Drive is a City of Ottawa major collector road with a two-lane cross-section. The posted speed limit is 40 km/h, and the existing right-of-way is 26.0 metres.

Cox Country Road: Cox Country Road is a City of Ottawa collector road with a two-lane cross-section including paved shoulders and an 80 km/h posted speed limit along the eastern boundary of the site, and the existing right-of-way is 20.0 metres.

Wilhaven Drive: Wilhaven Drive is a City of Ottawa collector road with a two-lane cross-section including paved shoulders. The posted speed limit of 60 km/h, and the existing right-of-way is 20.0 metres.

Famille-Laporte Avenue: Famille-Laporte Avenue is a City of Ottawa collector road with a two-lane cross-section. The unposted speed limit is assumed to be 50 km/h, and the existing right-of-way is 24.0 metres.

Aveia Private: Aveia Private is a City of Ottawa local road with a two-lane cross-section. The unposted speed limit is assumed to be 50 km/h, and the existing right-of-way is 6.0 metres.

Dairy Drive: Dairy Drive is a City of Ottawa local road with a two-lane urban cross-section including paved shoulders and the unposted speed limit is assumed to be 50 km/h. The City-protected right-of-way is 20.0 metres.

Ted Kelly Lane: Ted Kelly Lane is a City of Ottawa local road with a two-lane urban cross-section including paved shoulders and the posted speed limit is 50 km/h. The existing right-of-way is 19.5 metres

2.2.2 Existing Intersections

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

Trim Road & Old Montreal Road/St Joseph Boulevard	The intersection of Trim Road and Old Montreal Road is a four-legged roundabout intersection. Pedestrian crossovers are implemented at all approaches. The northbound and southbound approaches each consist of a shared through/left-turn lane and a shared through/right-turn lane. The eastbound and westbound approaches each consist of a shared left-turn/through lane, a through lane, and an auxiliary right-turn bypass lane.

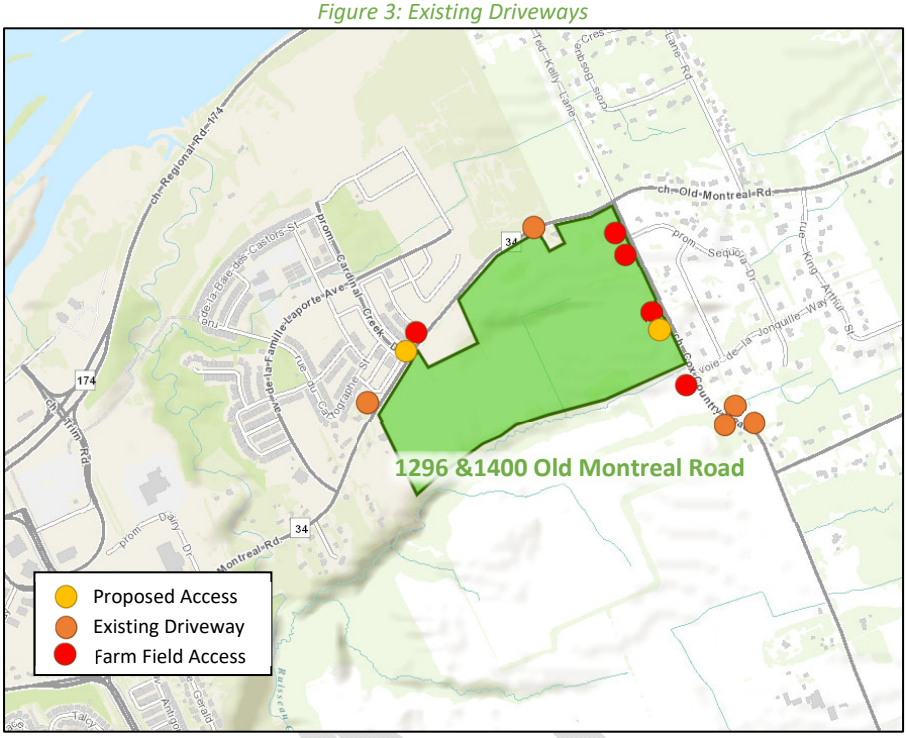
Aveia Private/Dairy Drive & Old Montreal Road	The intersection of Aveia Private/Dairy Drive and Old Montreal Road is an unsignalized intersection with two-way stop control on Aveia Private/Dairy Drive. The northbound approach consists of an all-movements lane. The southbound, eastbound, and westbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane. Bike lanes are provided on the eastbound and westbound approaches. No turn restrictions are noted.
Famille-Laporte Avenue & Old Montreal Road	The intersection of Famille-Laporte Avenue & Old Montreal Road is an unsignalized T-intersection with stop-control on Famille-Laporte Avenue. The eastbound approach consists of an auxiliary left-turn lane and through lane, the westbound approach consists of a shared through/right-turn lane, and the southbound approach consists of a shared left-turn/right-turn lane. No turn restrictions are noted.
Cardinal Creek Drive & Old Montreal Road	The intersection of Cardinal Creek Drive and Old Montreal Road is an unsignalized T-intersection with stop-control on Cardinal Creek Drive. The eastbound approach consists of a shared left-turn/through lane, the westbound approach consists of a shared through/right-turn lane and the southbound approach consists of a shared left-turn/right-turn lane. No turn restrictions are noted.
Ted Kelly Lane/ Cox Country Road & Old Montreal Road	The intersection of Ted Kelly Lane / Country Road and Old Montreal Road is an unsignalized intersection with two-way stop-control on Cox Country Road. All approaches each consist of an all-movements lane. No turn restrictions are noted.
Cox Country Road & Wilhaven Drive	The intersection of Cox Country Road and Wilhaven Drive is an unsignalized T-intersection with stop-control on Wilhaven Drive. The westbound approach consists of a shared left-turn/right-turn lane, the northbound approach consists of a shared through/right-turn lane, and the southbound approach consists of a shared left-turn/through lane. No turn restrictions are noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site accesses, two existing driveways to private residences on Old Montreal Road, there access on Cox Country Road, south of Jonquille Way. Also, one existing farm field access is provided along Old Montreal Road and four existing farm field accesses are provided along Cox Country Road.

None of the driveways would provide access to significant traffic generators and would therefore have no impact on this TIA. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: November 11, 2021

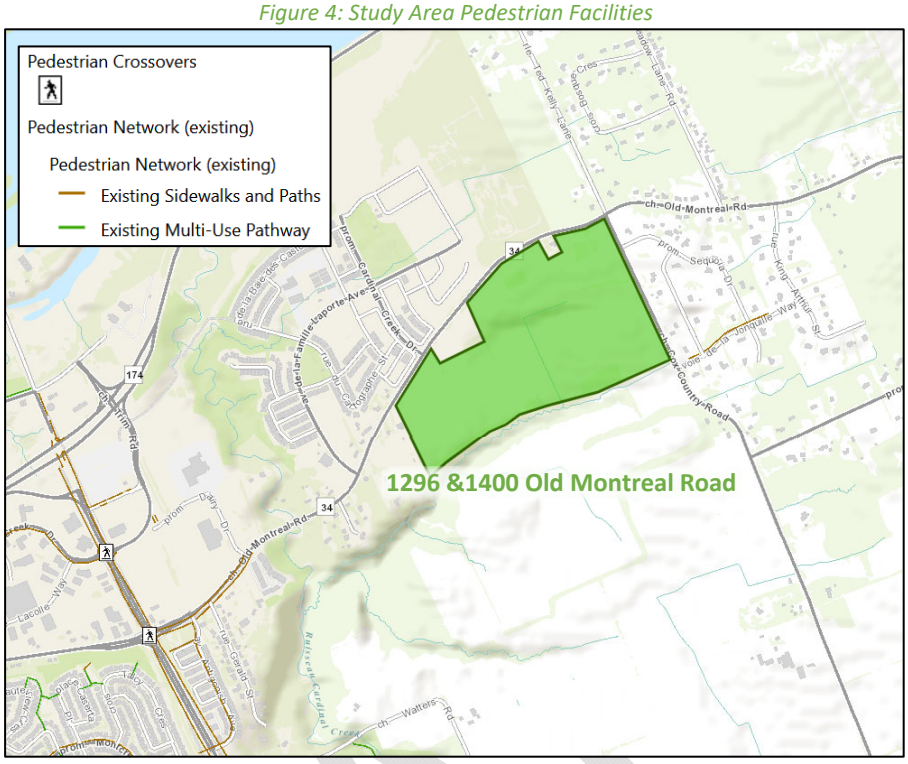
2.2.4 Cycling and Pedestrian Facilities

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

A sidewalk and multi-use pathway are provided along the north and south sides of Old Montreal Road, respectively, between Trim Road and Aveia Private/Dairy Drive. There are no additional existing pedestrian facilities within the study area.

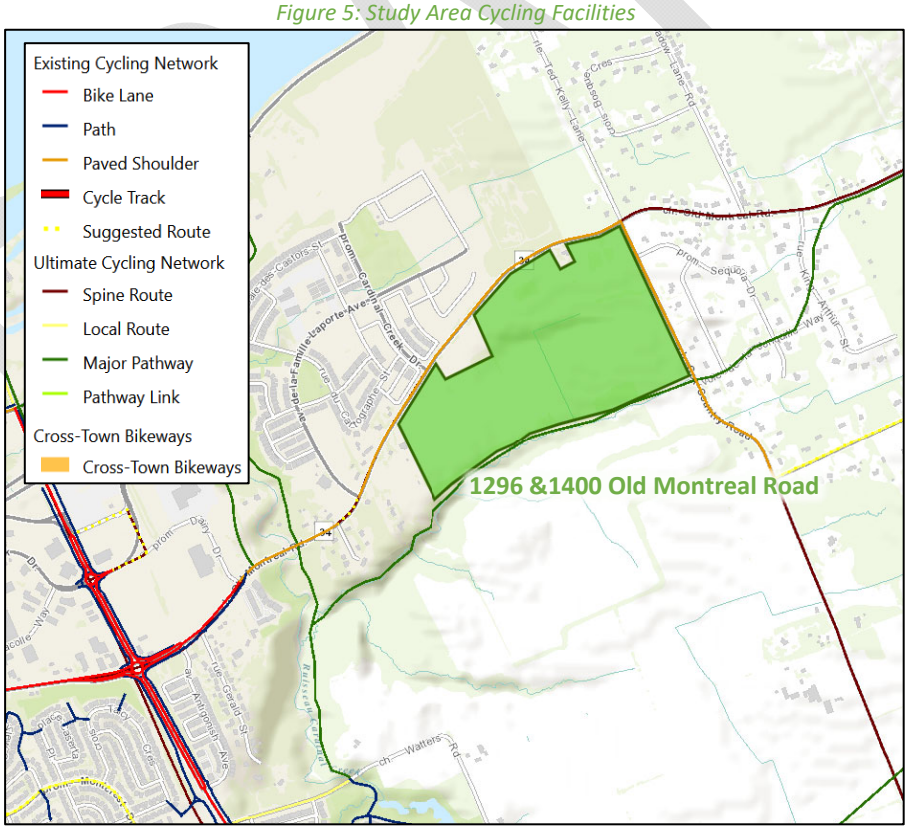
Cycling facilities include paved shoulders along Cox Country Road and Old Montreal Road between Dairy Drive/ Aveia Private and Cox Country Road. A bike lane is provided east of Dairy along Old Montreal Road. The Old Montreal Road and Cox Country Road are both designated as spine routes, and Wilhaven Drive is a local route.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: November 11, 2021

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: November 11, 2021

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. Only the intersections of Ted Kelly Lane/ Cox Country Road at Old Montreal Road, Trim Road at Old Montreal Road/St. Joseph Boulevard, Cox Country Road at Wilhaven Drive, and Aveia Private/Dairy Drive at Old Montreal Road had pedestrian and cyclist volumes available.

Figure 6: Existing Pedestrian Volumes

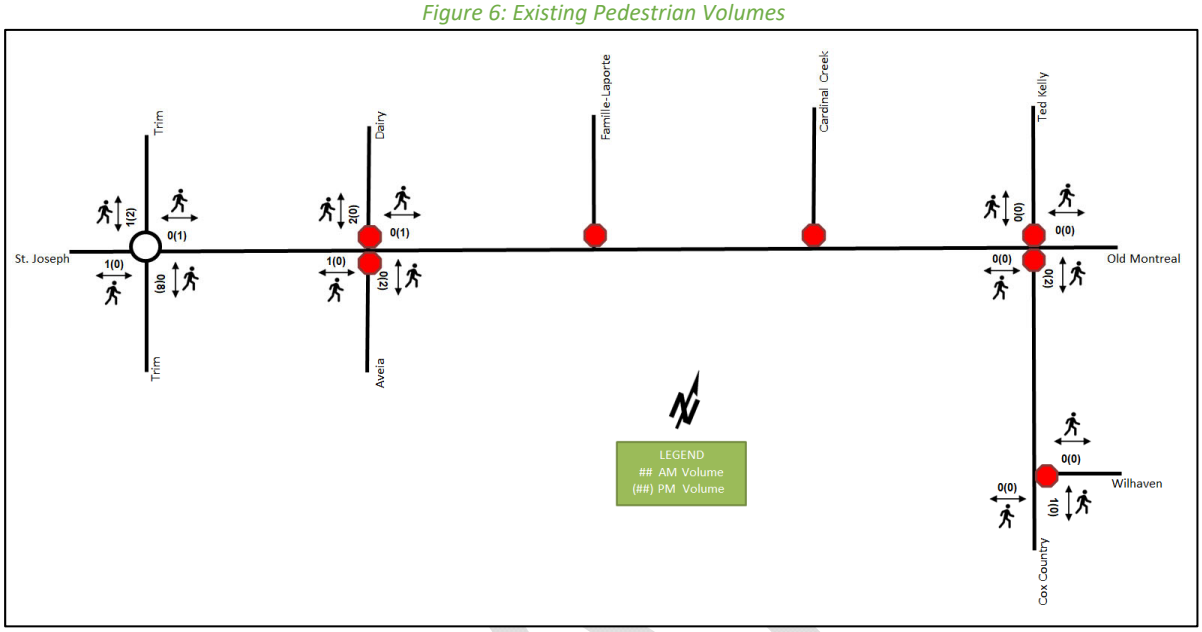
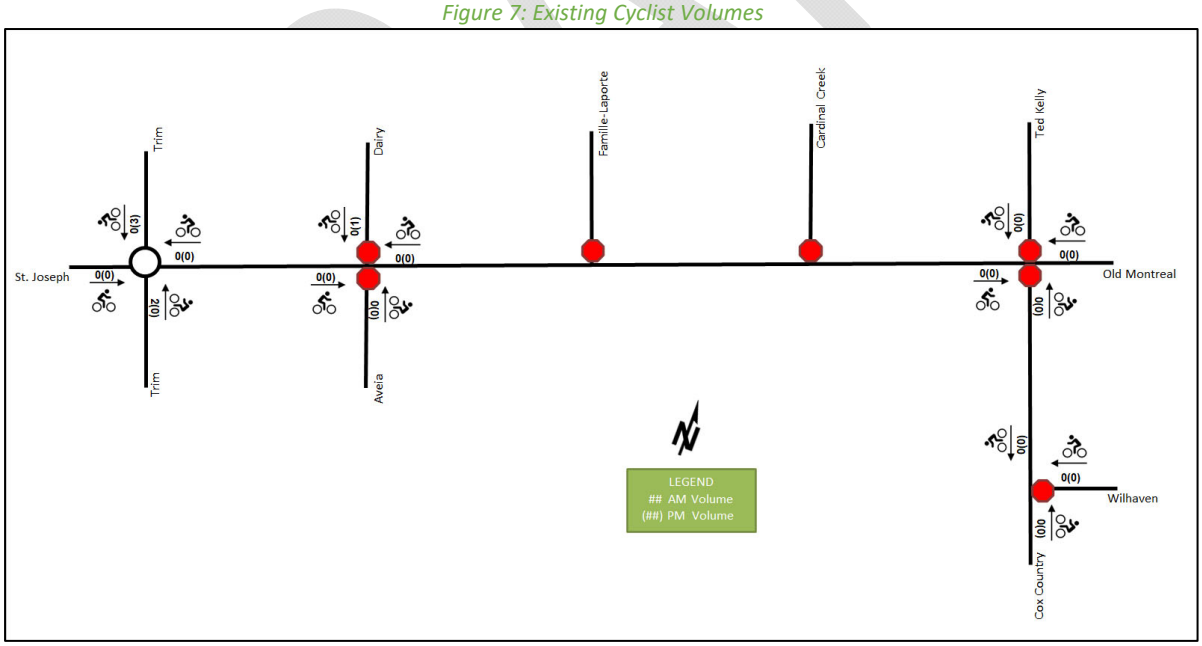


Figure 7: Existing Cyclist Volumes

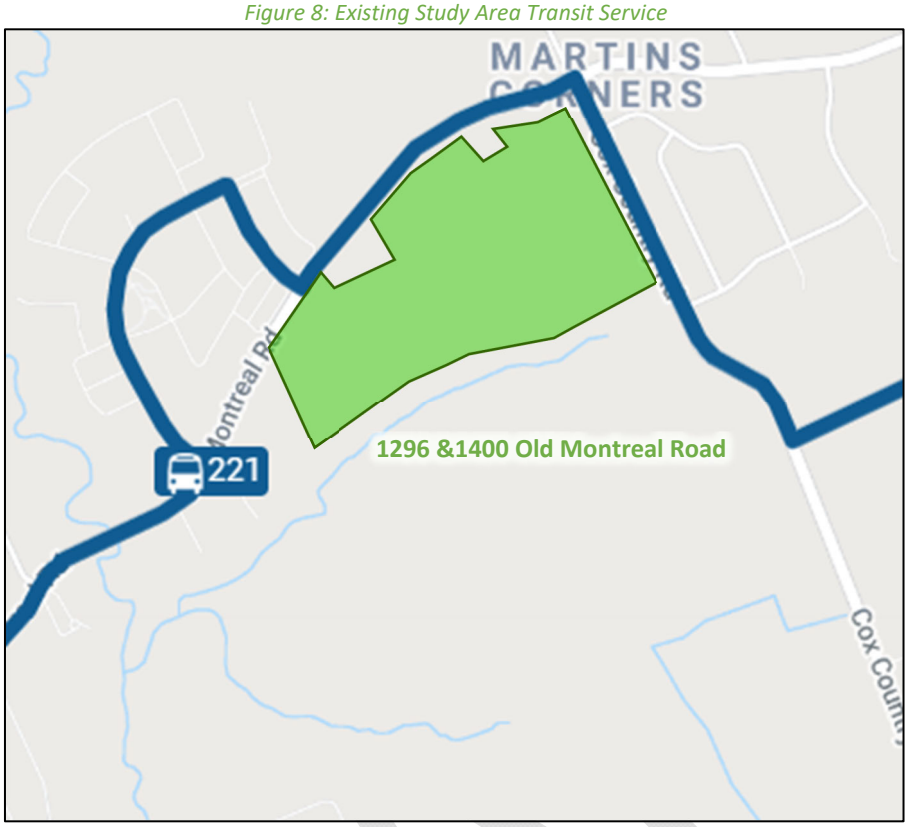


2.2.5 Existing Transit

Within the study area, route #221 travels along Old Montreal Road and Cox Country Road. The frequency of this route within proximity of the proposed site currently is two AM buses to Blair and two PM return buses.

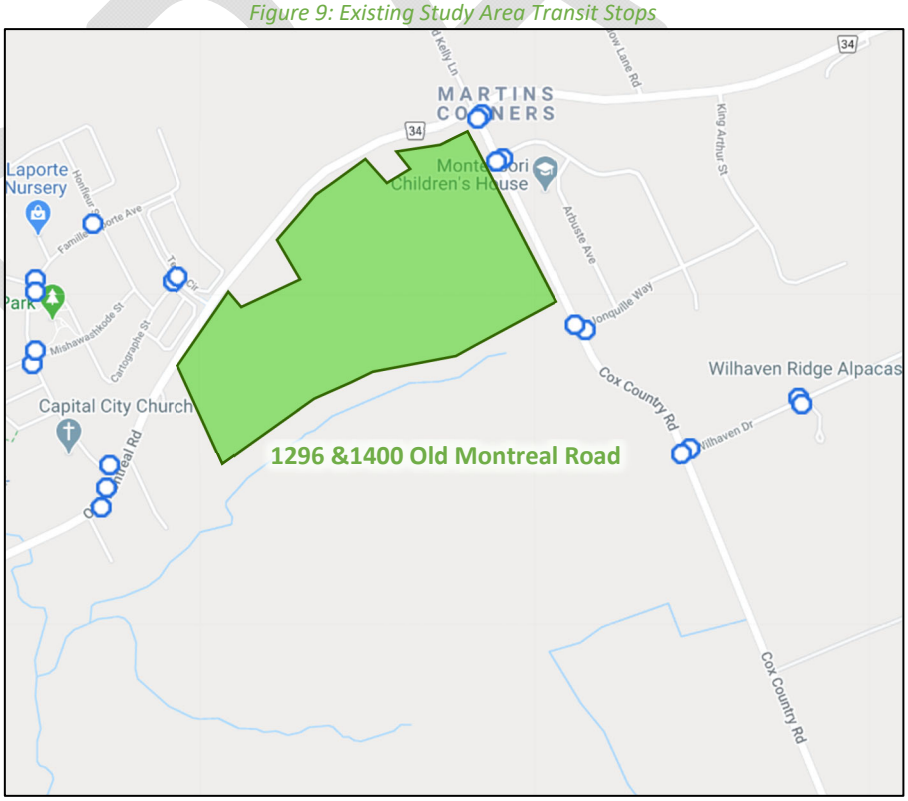
Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops.

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: November 11, 2021

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: November 11, 2021

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 existing Study Area intersections. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date	Sources
Trim Road & Old Montreal Road/ St. Joseph Boulevard	Wednesday, April 26, 2017	City of Ottawa
Aveia Private/Dairy Drive & Old Montreal Road	Wednesday, December 04, 2019	City of Ottawa
Cardinal Creek Drive & Old Montreal Road	Monday, 11 February 2019	The Traffic Specialist
Ted Kelly Lane/ Cox Country Road & Old Montreal Road	Wednesday, August 28, 2019	City of Ottawa
Cox Country Road & Wilhaven Drive	Wednesday, November 13, 2013	City of Ottawa

Figure 10 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. Synchro 11 has been used to model the unsignalized intersections and Sidra 8 to model the study area roundabout. HCM 2010 methodology was used for unsignalized intersection operations and Sidra methodology was used for roundabout intersection operations. 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

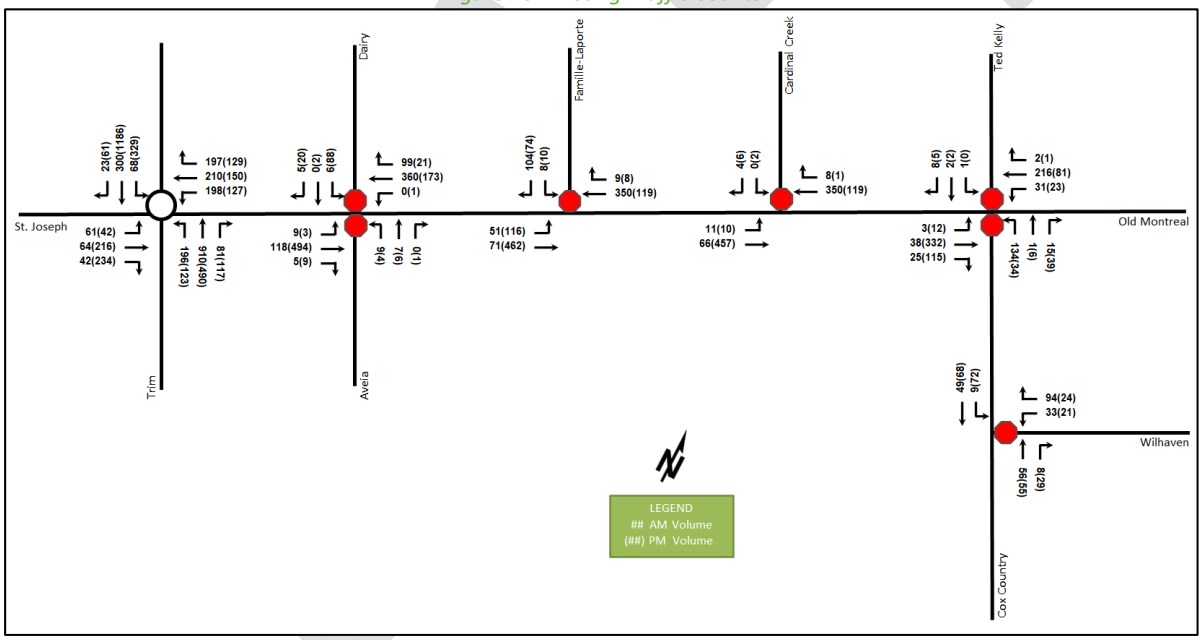


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Trim Road & Old Montreal Road/St. Joseph Boulevard *Roundabout*	EB	A	0.07	6.9	2.0	A	0.31	8.0	14.6
	WB	A	0.29	7.9	9.6	A	0.15	6.6	4.6
	NB	A	0.50	5.3	2.7	A	0.40	6.4	14.4
	SB	A	0.23	6.7	8.3	B	0.80	10.7	71.1
	Overall	**A**	**0.50**	**6.3**	**19.0**	**A**	**0.80**	**8.8**	**71.1**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Aveia Private/Dairy Drive & Old Montreal Road *Unsignalized*	EBL	A	0.01	8.4	0.0	A	0.00	8.0	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	-	0.0	0.0	A	0.00	8.6	0.0
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.05	14.8	0.8	C	0.04	16.4	0.8
	SBL	B	0.02	14.8	0.8	C	0.32	22.0	9.8
	SBT/R	B	0.01	11.0	0.0	B	0.03	10.2	0.8
	Overall	**A**	**-**	**0.7**	**-**	**A**	**-**	**2.8**	**-**
Famille-Laporte Avenue & Old Montreal Road *Unsignalized*	EBL	A	0.05	8.4	1.5	A	0.09	7.8	2.3
	EBT	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SB	B	0.20	12.2	5.3	B	0.13	10.8	3.0
	Overall	**A**	**-**	**3.0**	**-**	**A**	**-**	**2.3**	**-**
Cardinal Creek Drive & Old Montreal Road *Unsignalized*	EB	A	0.01	8.5	0.0	A	0.01	7.6	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.01	12.0	0.0	B	0.01	10.7	0.0
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**0.3**	**-**
Ted Kelly Lane/ Cox Country Road & Old Montreal Road *Unsignalized*	EB	A	0.00	7.7	0.0	A	0.01	7.4	0.0
	WB	A	0.02	7.4	0.8	A	0.02	8.5	0.8
	NB	B	0.28	13.6	9.0	B	0.18	14.2	5.3
	SB	B	0.02	10.2	0.8	B	0.01	10.5	0.0
	Overall	**A**	**-**	**5.0**	**-**	**A**	**-**	**2.3**	**-**
Cox Country Road & Wilhaven Drive *Unsignalized*	WB	A	0.15	9.5	3.8	A	0.06	9.9	1.5
	NB	-	-	-	-	-	-	-	-
	SBL	A	0.01	7.4	0.0	A	0.05	7.5	1.5
	Overall	**A**	**-**	**5.1**	**-**	**A**	**-**	**3.7**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 0.90
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersection operates well. No capacity issues are noted.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study are road network. Table 3 summarizes the collisions 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, 2015-2019

		Number	%
Total Collisions		**24**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	10	42%
	Property Damage Only	14	58%
Initial Impact Type	**Angled**	2	8%
	Approaching	5	21%
	Rear end	2	8%
	Sideswipe	1	4%
	SMV Other	13	54%
	Other	1	4%

		Number	%
Total Collisions		**24**	**100%**
Road Surface Condition	**Dry**	13	54%
	Wet	3	13%
	Loose Snow	3	13%
	Slush	1	4%
	Packed Snow	1	4%
	Ice	3	13%
Pedestrian Involved		0	0%
Cyclists Involved		1	4%

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

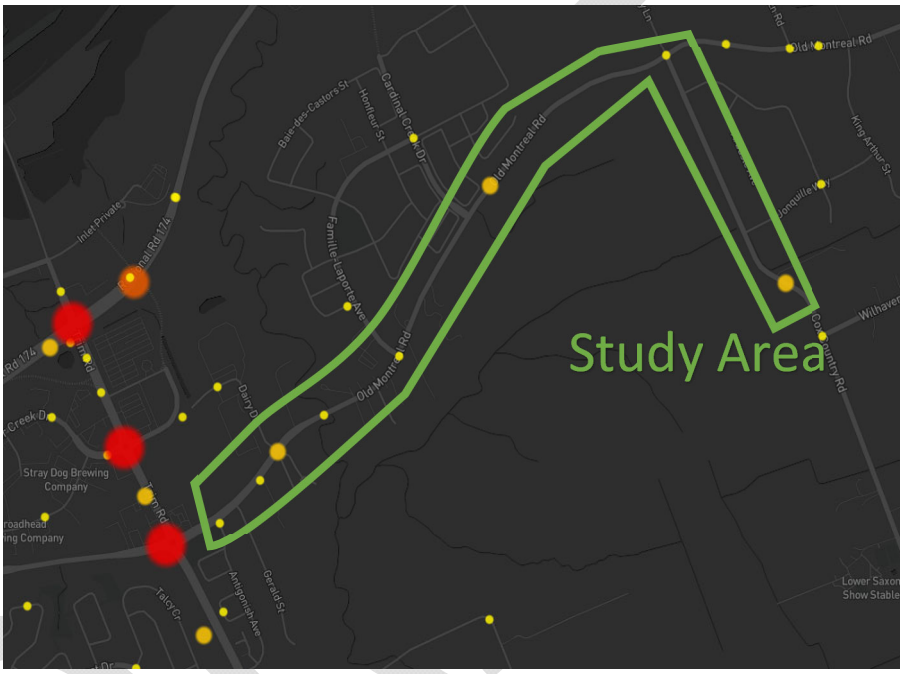


Table 4: Summary of Collision Locations, 2015-2019

	Number	%
Intersections / Segments	**24**	**100%**
Aveia Priv/ Dairy Dr at Old Montreal Rd	4	17%
Frank Kenny Rd Btwn Jonquille Way and Wilhaven	6	25%
Frank Kenny Rd /Ted Kelly Ln at Old Montreal Rd	2	8%
Old Montreal Rd Btwn Continuation of Old Montreal Rd and Grand-Ch-Ne, CO	1	4%
Old Montreal Rd Btwn Grand-Ch-Ne, Cour Du Crt & Ted Kelly Ln	7	29%
De La Famille-Laporte Ave @ Old Montreal Rd	2	8%
Old Montreal Rd Btwn Gerald Street & Continuation of Old Montreal Rd	1	4%
Antigonish Ave at Old Montreal Rd	1	4%

Within the study area, the segment of Old Montreal Road between Grand Chene Cour Du Court and Ted Kelly Lane is noted to have experienced slightly higher collisions than other intersections. Table 5 summarizes the collision types and conditions for the Old Montreal Road segments between Grand Chene Cour Du Court and Ted Kelly Lane.

Table 5: Old Montreal Road between Grand Chene Cour Du Court and Ted Kelly Lane Collision Summary

		Number	%
Total Collisions		**7**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	2	29%
	Property Damage Only	5	71%
Initial Impact Type	**Approaching**	1	14%
	SMV Other	6	86%
Road Surface Condition	**Dry**	2	29%
	Wet	1	14%
	Loose Snow	2	29%
	Slush	1	14%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The segment of Old Montreal Road between Grand Chene Cour Du Court and Ted Kelly Lane had a total of seven collisions during the 2015-2019 time period, with five involving property damage only and the remaining two having non-fatal injuries. The collision types are most represented by SMV other with six collisions followed by one approaching collision. Weather conditions do not affect collisions at this location.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

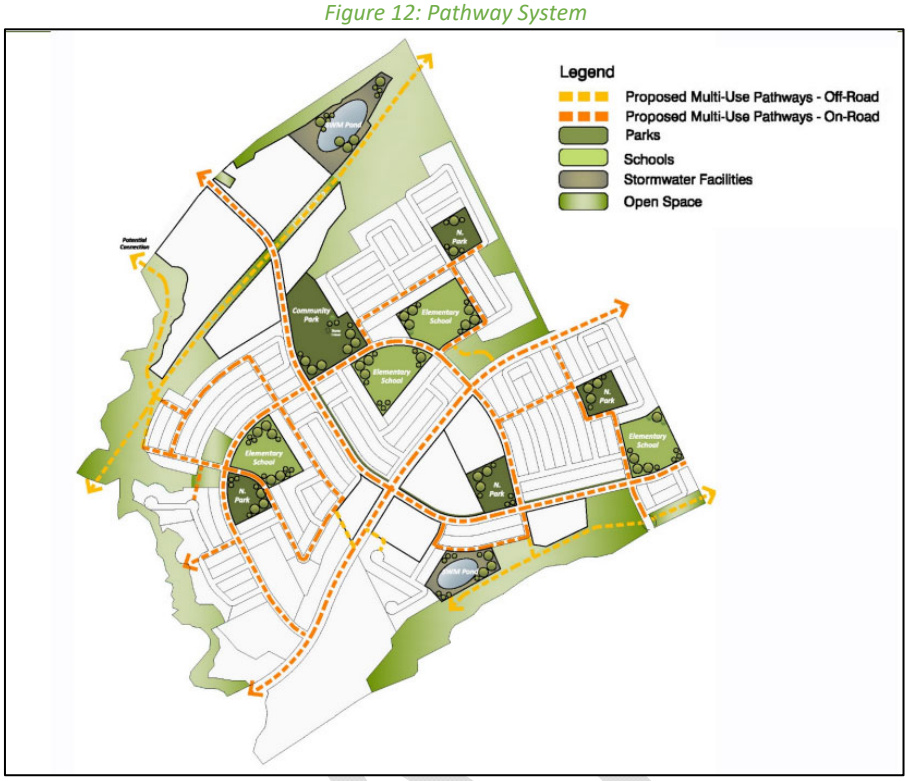
Within the Transportation Master Plan (TMP), the Road Network Concept shows the segment of Old Montreal Road between Trim Road and Cox Country Road as a widened arterial, however, it is not included in the Affordable Network. The Old Montreal Road is planned to be widened beyond the 2031 horizon and include the addition of bus lanes in either direction, sidewalks and cycletracks within a 37.5 metre right-of-way. No environmental assessment or design has been completed for this corridor.

The realignment of Trim Road has been completed at OR 174 as part of the Stage 2 LRT O-Train East Extension project. The roadway has been realigned to the east at the previous Dairy Drive Roundabout and Dairy Drive now ends in a cul-de-sac on the south side of Trim Road.

The TMP also notes a future bus rapid transit corridor along Old Montreal Road within the Transit Network Concept.

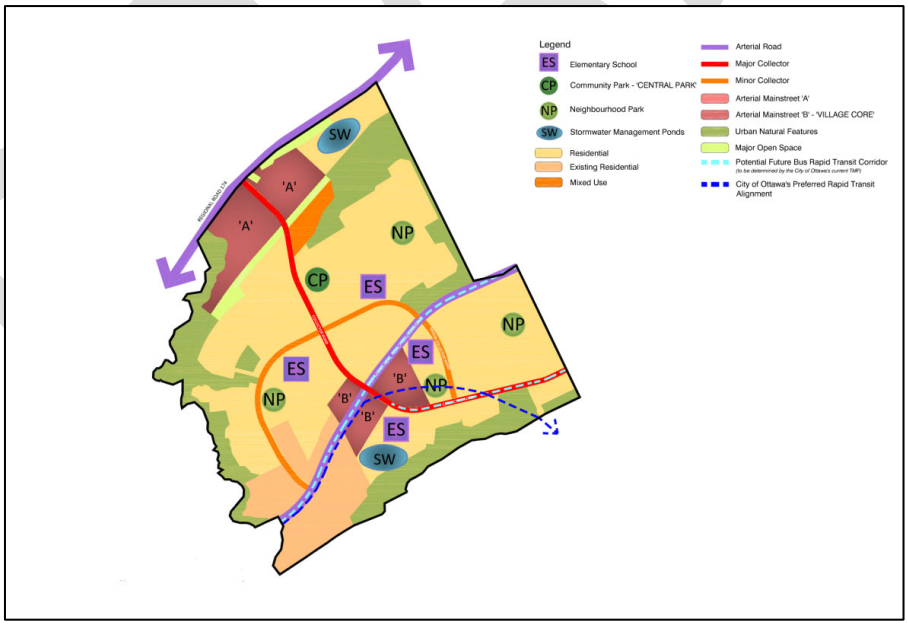
The Cardinal Creek Village Plan is planned to include multi-use pathways, cycling facilities and sidewalks that will facilitate pedestrian movement throughout the Cardinal Creek Village Community, and provide connections to adjacent communities. The Cardinal Creek Village Plan is also planned to include major collector roads, minor collector roads, and local roads, which will be consistent with the City of Ottawa Road Corridor Planning and Design Guidelines. Figure 12 illustrates the pathway system, and Figure 13 illustrates the land use plan.

Figure 12: Pathway System



Source: https://ottawa.ca/en/cardinal-creek-village-concept-plan Accessed: October 25, 2021

Figure 13: Land Use Plan



Source: https://ottawa.ca/en/cardinal-creek-village-concept-plan Accessed: October 25, 2021

2.3.2 Other Study Area Developments

1154, 1172, 1176, 1180, and 1208 Old Montreal Road

The proposed development application includes a plan of subdivision approval and a related zoning by-law amendment application to create and permit the development of 18 blocks and 2 public streets to accommodate a total of 380 residential apartments and 112 low-density units and a park block. The development is forecasted

to generate 217 two-way vehicle trips during the AM peak and 270 two-way vehicle trips during the PM peak. (IBI Group, 2021)

1508 Cox Country Road

This application includes a zoning by-law amendment to rezone the subject lands from Agriculture to Rural Countryside. No TIA is available as part of this application.

1730 Wilhaven Drive

The proposed development includes a plan of subdivision application to include a 21 lot rural estate subdivision for the development of single detached dwellings on private services. No TIA is available as part of this application.

1015 Dairy Drive

The proposed development application includes a plan of site plan application to include one building with a gross floor area of 112,000 ft^2. Phases 1 and 2 are expected to be completed by 2015, and Phases 3 to 7 by 2021. The development is forecasted to generate 67 two-way vehicle trips during the AM peak and 67 two-way vehicle trips during the PM peak. (D. J. Halpenny & Associates Ltd., 2013)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Old Montreal Road at:
  - Trim Road Cox
  - Aveia Private/Dairy Drive
  - Famille-Laporte Avenue
  - Cardinal Creek Drive
  - Country Road/Ted Kelly Lane
- Cox Country Road at:
  - Wilhaven Drive

The boundary roads will be Old Montreal Road and Cox Country Road and screenline SL46 is located along the Cox Country Road.

3.2 Time Periods

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

3.3 Horizon Years

The anticipated build-out year is 2027. As a result, the full build-out plus five years horizon year is 2032.

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

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	Single-Detached		Multi-Unit (Low-Rise)	
	AM	PM	AM	PM
Auto Driver	48%	54%	47%	51%
Auto Passenger	14%	17%	15%	19%
Transit	27%	22%	29%	24%
Cycling	1%	1%	1%	1%
Walking	9%	6%	9%	6%
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). Table 8 summarizes the person trip rates for the proposed residential land uses for each peak period.

Table 8: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Person Trip Rates
Single-Detached	210 (TRANS)	AM	2.05
		PM	2.48
Multi-Unit (Low-Rise)	220 (TRANS)	AM	1.35
		PM	1.58

Using the above person trip rates, the total person trip generation has been estimated. Table 9 summarizes the total person trip generation for the residential land uses.

Table 9: Total Residential Person Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Single-Detached	304	187	436	623	467	287	754
Multi-Unit (Low-Rise)	454	184	429	613	402	315	717

Using the above mode share targets for 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 10 summarizes the residential trip generation by mode.

Table 10: Residential Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Single-Detached	Auto Driver	**48%**	43	100	143	**54%**	111	68	179
	Auto Passenger	**14%**	12	29	42	**17%**	35	22	56
	Transit	**27%**	28	65	93	**22%**	48	30	78
	Cycling	**1%**	1	2	3	**1%**	2	1	3
	Walking	**9%**	10	23	32	**6%**	15	9	23
	Total	**100%**	**94**	**218**	**312**	**100%**	**205**	**126**	**332**
Multi-Unit (Low-Rise)	Auto Driver	**47%**	41	97	138	**51%**	90	71	161
	Auto Passenger	**15%**	13	31	44	**19%**	33	26	60
	Transit	**29%**	29	68	97	**24%**	45	36	81
	Cycling	**1%**	1	2	3	**1%**	2	1	3
	Walking	**9%**	10	23	32	**6%**	12	10	22
	Total	**100%**	**92**	**215**	**307**	**100%**	**177**	**139**	**315**
Total	Auto Driver	-	84	197	281	-	201	139	340
	Auto Passenger	-	25	60	86	-	68	48	116
	Transit	-	57	133	190	-	93	66	159
	Cycling	-	2	4	6	-	4	2	6
	Walking	-	20	46	64	-	27	19	45
	Total	-	**186**	**433**	**619**	-	**382**	**265**	**647**

As shown above, a total of 281 new AM and 340 new PM peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Orleans. Table 11 below summarizes the distributions.

Table 11: OD Survey Distribution – Orleans

To/From	Residential % of Trips
North	0%
South	15%
East	5%
West	80%
Total	**100%**

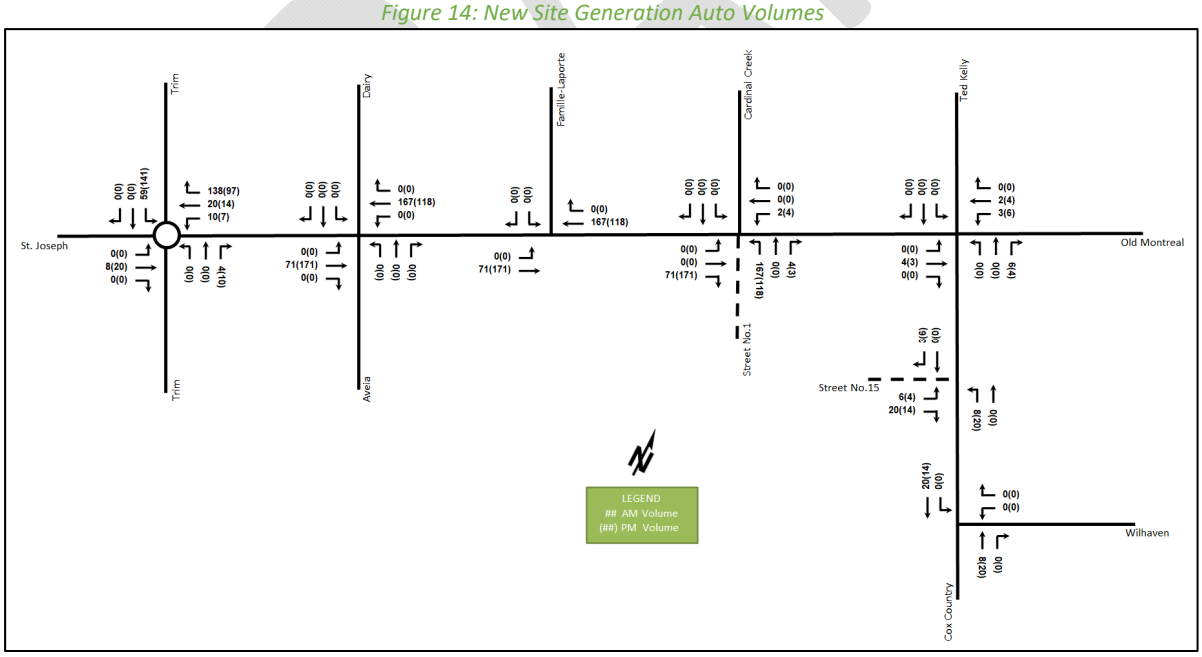
5.4 Trip Assignment

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 12 summarizes the proportional assignment to the study area roadways, and Figure 14 illustrates the new site generated volumes.

Table 12: Trip Assignment

To/From	Via
North	-
South	10% Cox Country Road (S), 5% Trim Road (S)
East	5% Old Montreal Road (E)
West	10% Old Montreal Road (W). 70% Trim Road (N)
Total	**100%**

Figure 14: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3 and have been incorporated into the road network analysis.

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 TRANS model plots are provided in Appendix E.

In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be negative in the eastbound direction and positive in the northbound, southbound, and westbound directions. When reviewing the existing volumes to the 2031 model horizon, it is noted that growth forecasted in the westbound direction and northbound have been exceeded.

The adjacent area transportation studies have used a 1.8 % traffic growth along Old Montreal Road. Resultantly, growth rates rounded to the nearest 0.25% will be peak-directionally applied to the appropriate roadway's mainline volumes and the appropriate major turning movements at the intersections. Table 13 summarizes the growth rates applied within the study area.

Table 13: TRANS Regional Model Projections – Study Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Old Montreal Road	-	2.00%	2.00%	-
St. Joseph Boulevard	-	2.00%	2.00%	-
	Northbound	**Southbound**	**Northbound**	**Southbound**
Trim Road	3.75%	-	-	3.75%

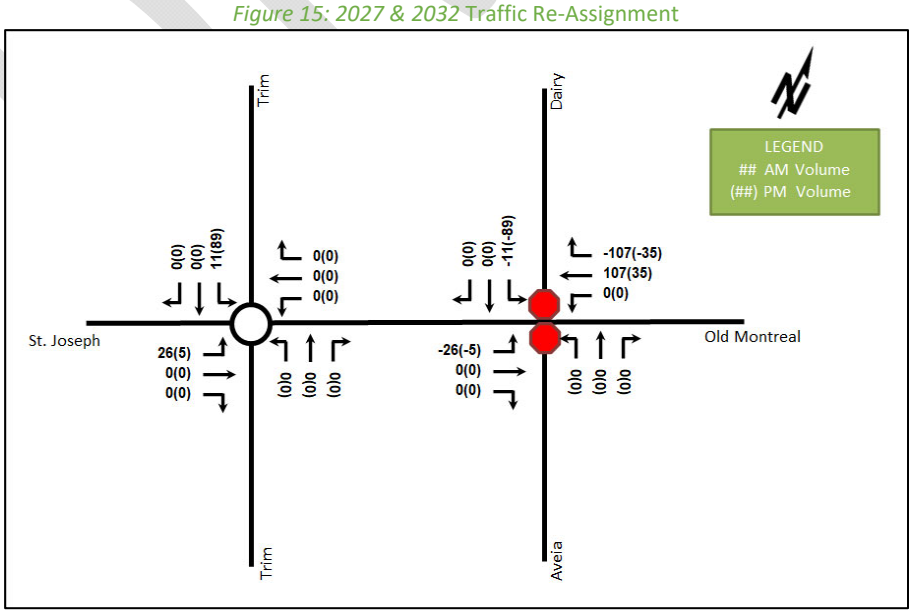
6.3 Other Developments

The background developments explicitly considered in the background conditions (Section 6.2) include:

- 1154, 1172, 1176, 1180, and 1208 Old Montreal Road
- 1015 Dairy Drive

The background volumes and other study area development volumes will be re-distributed in future horizons due to the network changes associated with the Realignment of Trim Road. Table 15 illustrates the 2027 and 2032 total reassigned volumes.

Figure 15: 2027 & 2032 Traffic Re-Assignment



7 Demand Rationalization

7.1 2027 Future Background Operations

Figure 16 illustrates the 2027 background volumes and Table 14 summarizes the 2027 background intersection operations. Synchro 11 has been used to model the unsignalized intersections and Sidra 8 to model the study area roundabout. HCM 2010 methodology was used for unsignalized intersection operations and Sidra methodology was used for roundabout intersection operations. The Synchro and Sidra worksheets for the 2027 future background horizon are provided in Appendix F.

Figure 16: 2027 Future Background Volumes

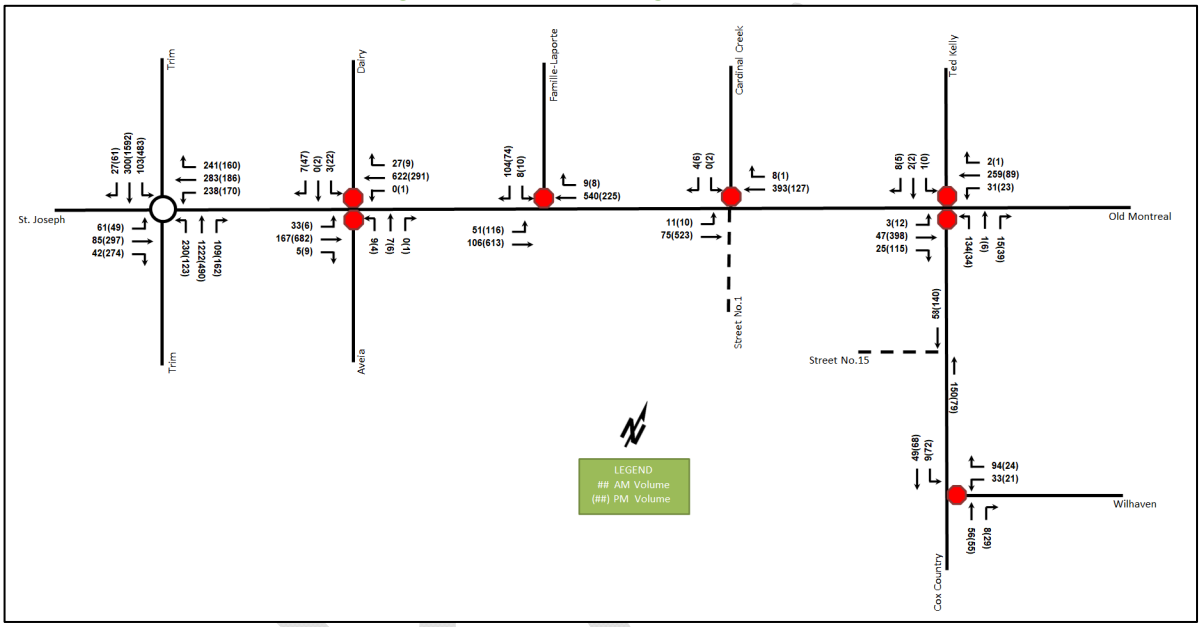


Table 14: 2027 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Trim Road & Old Montreal Road/St. Joseph Boulevard *Roundabout*	EB	A	0.06	6.7	2.0	A	0.46	13.4	26.6
	WB	A	0.36	8.5	13.1	A	0.17	6.7	5.7
	NB	A	0.60	5.5	26.0	A	0.44	7.2	18.1
	SB	A	0.24	7.3	8.9	E	1.00	29.1	219.6
	Overall	**A**	**0.60**	**6.6**	-	**E**	**1.00**	**19.6**	-
Aveia Private/Dairy Drive & Old Montreal Road *Unsignalized*	EBL	A	0.04	9.0	0.8	A	0.01	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	-	0.0	0.0	A	0.00	9.0	0.0
	WBT/R	-	-	-	-	-	-	-	-
	NB	C	0.06	19.5	1.5	C	0.05	21.1	0.8
	SBL	C	0.01	20.1	0.0	C	0.10	23.6	2.3
	SBT/R	B	0.02	12.7	0.0	B	0.07	10.8	1.5
	Overall	**A**	-	**0.9**	-	**A**	-	**1.3**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Famille-Laporte Avenue & Old Montreal Road *Unsignalized*	EBL	A	0.05	8.9	1.5	A	0.09	8.0	2.3
	EBT	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SB	B	0.22	14.0	6.0	B	0.14	11.8	3.8
	Overall	**A**	**-**	**2.5**	**-**	**A**	**-**	**1.9**	**-**
Cardinal Creek Drive & Old Montreal Road *Unsignalized*	EB	A	0.01	8.5	0.0	A	0.01	7.6	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.01	12.0	0.0	B	0.01	10.7	0.0
	Overall	**A**	**-**	**0.3**	**-**	**A**	**-**	**0.2**	**-**
Ted Kelly Lane/ Cox Country Road & Old Montreal Road *Unsignalized*	EB	A	0.00	7.8	0.0	A	0.01	7.4	0.0
	WB	A	0.02	7.4	0.8	A	0.02	8.5	0.8
	NB	B	0.26	13.5	7.5	B	0.17	14.2	4.5
	SB	B	0.02	10.3	0.0	B	0.01	10.5	0.0
	Overall	**A**	**-**	**4.5**	**-**	**A**	**-**	**2.1**	**-**
Cox Country Road & Wilhaven Drive *Unsignalized*	WB	A	0.13	9.4	3.8	A	0.06	9.7	1.5
	NB	-	-	-	-	-	-	-	-
	SB	A	0.01	7.4	0.0	A	0.05	7.5	0.8
	Overall	**A**	**-**	**5.1**	**-**	**A**	**-**	**3.7**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = volumes for the 95th %ile cycle exceed capacity

During both the AM and PM peak hours at the 2027 future background horizon, the study area intersections operate similarly to the existing conditions with the exception of the Trim Road roundabout. The southbound approached is approaching capacity and may experience long queues during the PM peak as the result of background growth along Trim Road. As a roundabout intersection, limited opportunity exists to change the intersection configuration and any operational improvements will need to be a result of network volume reductions within Orleans.

7.2 2032 Future Background Operations

Figure 17 illustrates the 2032 background volumes and Table 15 summarizes the 2032 background intersection operations. Synchro 11 has been used to model the unsignalized intersections and Sidra 8 to model the study area roundabout. HCM 2010 methodology was used for unsignalized intersection operations and Sidra methodology was used for roundabout intersection operations. The Synchro and Sidra worksheets for the 2032 future background horizon are provided in Appendix G.

Figure 17: 2032 Future Background Volumes

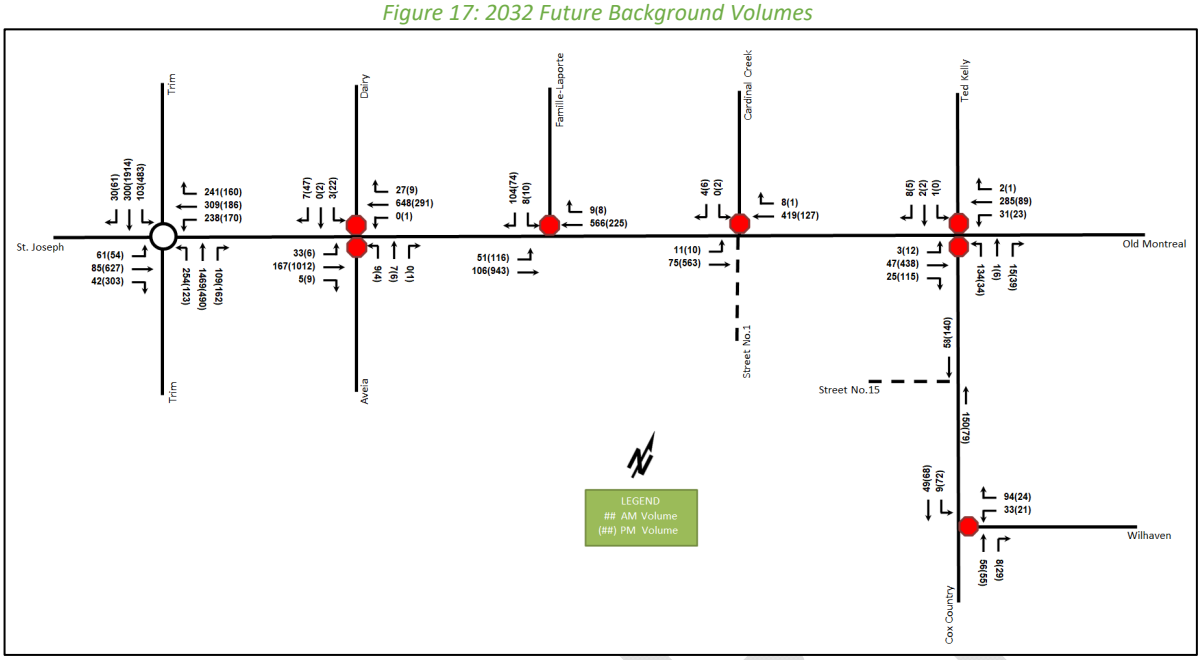


Table 15: 2032 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Trim Road & Old Montreal Road/St. Joseph Boulevard *Roundabout*	EB	A	0.06	6.7	2.0	D	0.86	29.0	78.0
	WB	A	0.43	9.7	17.0	A	0.18	6.7	5.9
	NB	B	0.70	6.0	39.7	A	0.50	8.2	22.0
	SB	A	0.26	7.5	9.6	**F**	**1.16**	**83.7**	**536.5**
	Overall	**B**	**0.70**	**7.1**	-	**F**	**1.16**	**51.6**	-
Aveia Private/Dairy Drive & Old Montreal Road *Unsignalized*	EBL	A	0.04	9.1	0.8	A	0.01	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	-	0.0	0.0	B	0.00	10.3	0.0
	WBT/R	-	-	-	-	-	-	-	-
	NB	C	0.06	20.1	1.5	D	0.08	32.3	1.5
	SBL	C	0.01	20.7	0.0	E	0.18	39.5	4.5
	SBT/R	B	0.02	12.9	0.0	B	0.08	11.2	2.3
	Overall	**A**	-	**0.9**	-	**A**	-	**1.3**	-
Famille-Laporte Avenue & Old Montreal Road *Unsignalized*	EBL	A	0.05	9.0	1.5	A	0.09	8.0	2.3
	EBT	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SB	B	0.23	14.5	6.8	B	0.16	13.3	4.5
	Overall	**A**	-	**2.5**	-	**A**	-	**1.5**	-
Cardinal Creek Drive & Old Montreal Road *Unsignalized*	EB	A	0.01	8.6	0.0	A	0.01	7.6	0.0
	WB	-	-	-	-	-	-	-	-
	SB	B	0.01	12.2	0.0	B	0.01	10.8	0.0
	Overall	**A**	-	**0.3**	-	**A**	-	**0.2**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Ted Kelly Lane/ Cox Country Road & Old Montreal Road ***Unsignalized***	EB	A	0.00	7.8	0.0	A	0.01	7.4	0.0
	WB	A	0.02	7.4	0.8	A	0.02	8.6	0.8
	NB	B	0.27	13.9	8.3	B	0.18	14.9	4.5
	SB	B	0.02	10.5	0.8	B	0.01	10.7	0.0
	Overall	**A**	**-**	**4.4**	**-**	**A**	**-**	**2.1**	**-**
Cox Country Road & Wilhaven Drive ***Unsignalized***	WB	A	0.13	9.4	3.8	A	0.06	9.7	1.5
	NB	-	-	-	-	-	-	-	-
	SB	A	0.01	7.4	0.0	A	0.05	7.5	1.5
	Overall	**A**	**-**	**5.1**	**-**	**A**	**-**	**3.7**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = volumes for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours at the 2032 future background horizon, the study area intersections operate similarly to the 2027 future background horizon. The Trim Road roundabout will become over capacity during the PM peak hour as the background growth pushes the southbound approach over capacity. High delays are noted with extended queueing to the north. As a roundabout intersection, limited opportunity exists to change the intersection configuration and any operational improvements will need to be a result of network volume reductions within Orleans.

7.3 Modal Share Sensitivity

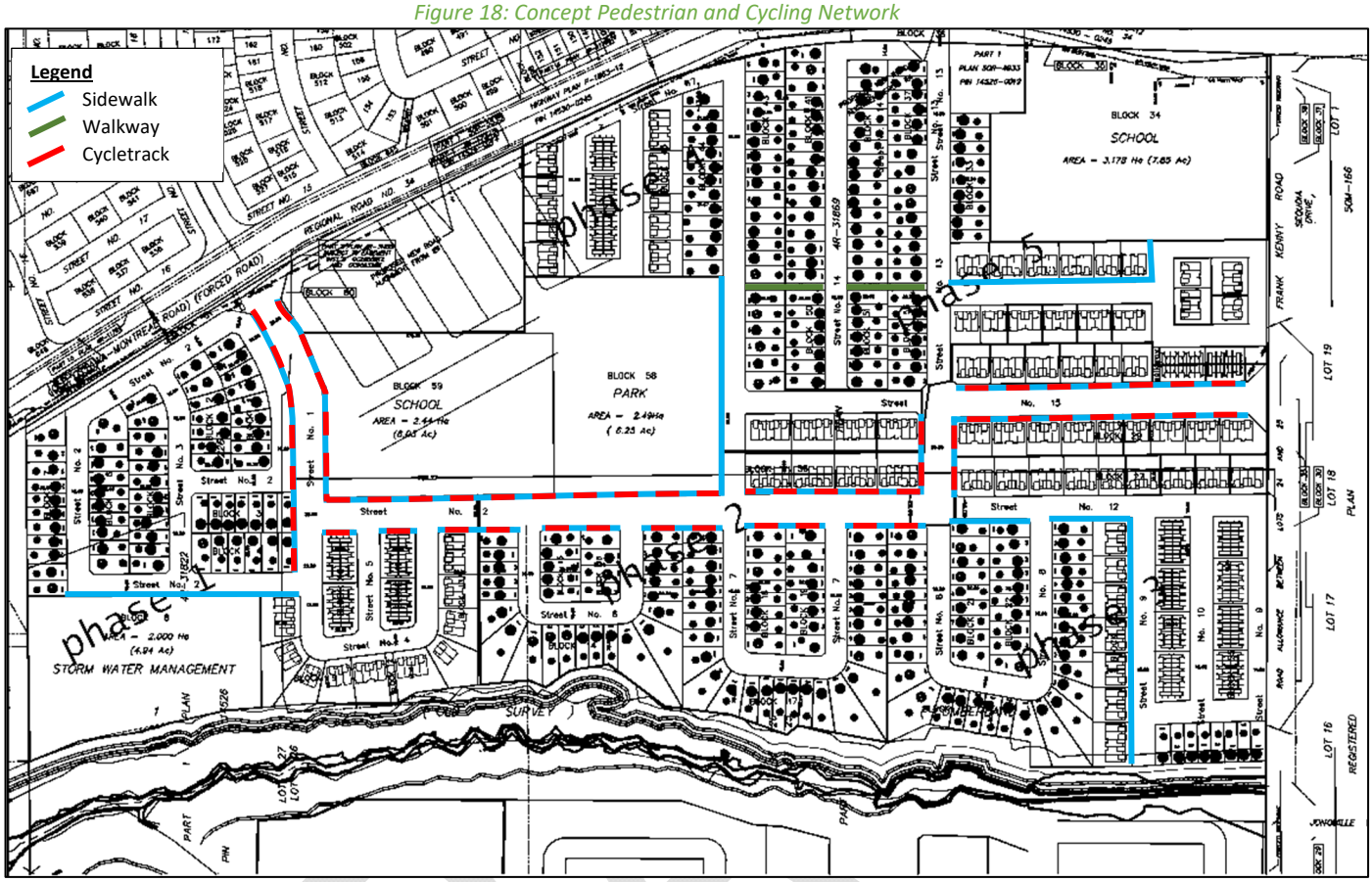
The Trim Road & Old Montreal Road/St. Joseph Boulevard roundabout is noted to be approaching capacity during the PM peak hour in the background conditions. The southbound approach is likely will experience operational issues and experience high delays and extended queueing as background traffic increases. A modal shift will be required to reduce auto dependency in this area and may be achieved by the Stage 2 LRT opening. The City should monitor the operations as volumes and development increase, in addition to the network changes completed as part of the Trim Road realignment. No adjustments to the rip generation and modal shares are recommended as a result of these conditions.

8 Development Design

8.1 Design for Sustainable Modes

The proposed development is a residential subdivision where each dwelling will include a driveway and garage. Bicycle parking is assumed to be within the individual units. Figure 18 illustrates the pedestrian concept network.

Figure 18: Concept Pedestrian and Cycling Network



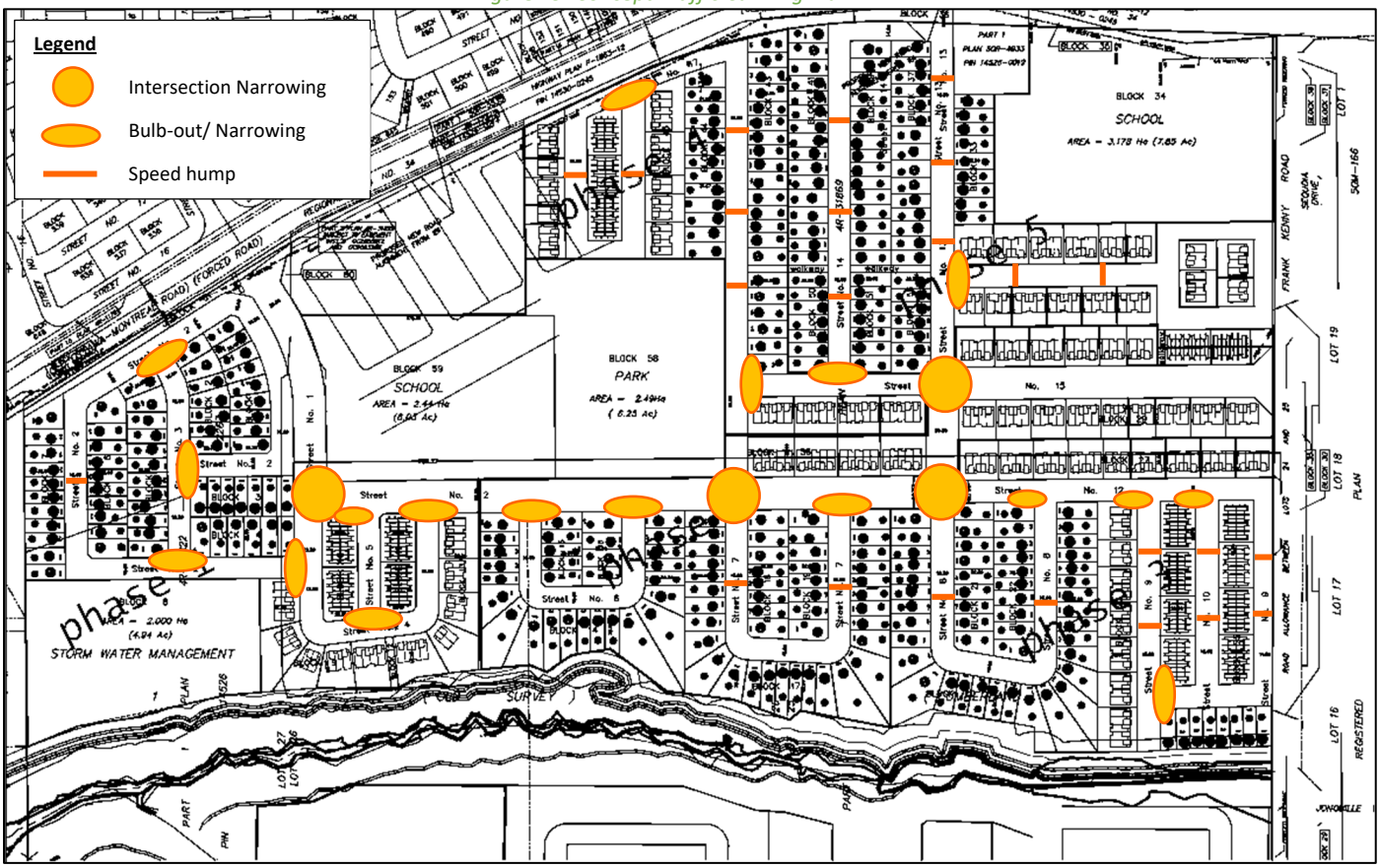
8.2 New Street Networks

The planned street network will include a mix of 14.8-metre and 18.0-metre local roadways, 22.0-metre and 26.0-metre collector road connections to adjacent road network. The local roads will provide the opportunity for parking on one side of the roadway. The subdivision is considered to be designed for 30 km/h roadways.

To support the pedestrian and cycling connectivity within the subdivision, Figure 19 illustrates the concept traffic calming plan. Traffic calming elements are recommended at the internal intersections, including bulb-outs to narrow each approach to the intersection (e.g. reduced crossing distance). On-street parking is undefined within these concepts. Once the road network pattern and lotting concepts are confirmed, the on-street parking can be outlined in the geometric roadway design. The location of speed humps is subject to minor changes and will need to be refined as part of the detailed engineering submission once the locations of the driveway, stormwater flows, surface ponding, and servicing elements, such as utilities and fire hydrants, have been established.

The internal road intersections are recommended to be stop-controlled on the minor approaches of all intersections.

Figure 19: Concept Traffic Calming Plan



9 Boundary Street Design

Table 16 summarizes the MMLOS analysis for the boundary streets of Old Montreal Road and Cox Country Road. The existing and future conditions for both streets will be the same and are considered in one row. The boundary street analysis is based on the policy area of "Within 300m of a school" in a Developing Community. The MMLOS worksheets have been provided in Appendix H.

Table 16: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Old Montreal Road (Existing)	F	A	F	C	N/A	N/A	B	D
Old Montreal Road (Future Widening)	D	A	A	C	A	A	C	D
Cox Country Road	F	A	F	B	N/A	N/A	N/A	N/A

The pedestrian LOS targets will not meet the area targets along boundary streets. To meet pedestrian LOS targets, all roadways will need 2 metre sidewalks, greater than 2 metres of boulevard space and speed reductions to less than 30 km/h.

The bicycle LOS targets will not be met along segment of Old Montreal Road in existing condition and require bike lanes and operating speeds to be between 50-70 km/h. The targets are expected to be met once Old Montreal Road is widened. The targets will not be met along the segment of Cox Country Road and the operating speed has to be reduced to less or equal to 50 km/h or bike lanes provided with operating speeds between 50-70 km/h to meet these targets.

10 Access Intersections Design

10.1 Location and Design of Access

The residential accesses will connect via new collector roads to Old Montreal Road and to Cox Country Road. The residential driveways will connect directly to the internal road network. Within the subdivision, no turn lanes are proposed for the internal intersections which will be controlled by minor stop control.

10.2 Intersection Control

The intersection of Cardinal Creek Drive/Street No.1 at Old Montreal Road and Cox Country Road at Street No.1 proposed to remain a minor stop-controlled intersection as it does not warrant signalization. The internal intersections within the subdivision are to be minor stop-controlled. Signal warrants are provided in Appendix I.

10.3 Access Intersection Design

10.3.1 2027 Future Total Access Intersection Operations

The 2027 future total intersection volumes are illustrated in Figure 20 and the access intersection operations are summarized below in Table 17. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix J.

Figure 20: 2027 Future Total Volumes

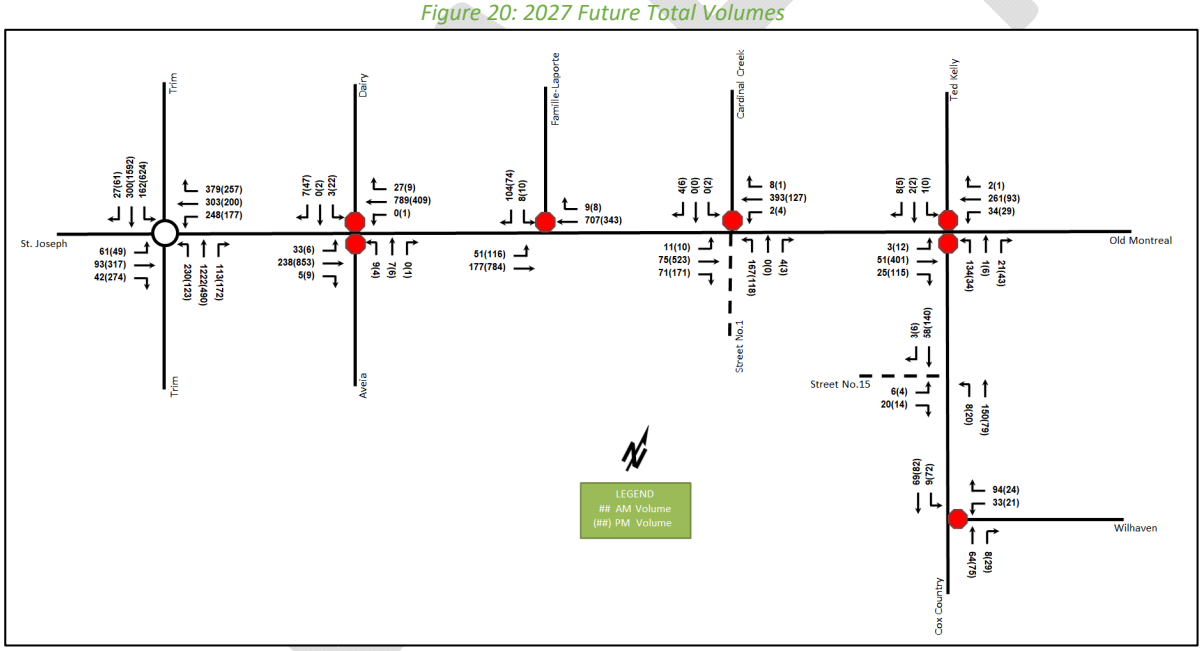


Table 17: 2027 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cardinal Creek Drive/ Street No.1 & Old Montreal Road ***Unsignalized***	EB	A	0.01	8.5	0.0	A	0.01	7.6	0.0
	WB	A	0.00	7.5	0.0	A	0.00	9.0	0.0
	NB	C	0.38	17.7	12.8	C	0.38	23.3	12.8
	SB	B	0.01	12.0	0.0	B	0.01	11.6	0.0
	Overall	**A**	-	**4.3**	-	**A**	-	**3.1**	-
Cox Country Road & Street No.15 ***Unsignalized***	EB	A	0.03	9.0	0.8	A	0.02	9.3	0.8
	NB	A	0.01	7.3	0.0	A	0.01	7.5	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	-	**1.2**	-	**A**	-	**1.2**	-

Notes: Saturation flow rate of 1800 veh/h/lane m = metered queue
PHF = 1.00 # = volumes for the 95th %ile cycle exceeds capacity

The 2027 future total access intersections operate satisfactorily.

10.3.2 2032 Future Total Access Intersection Operations

The 2032 future total intersection volumes are illustrated in Figure 21 and the access intersection operations are summarized below in Table 18. Synchro 11 has been used to model the unsignalized intersections and the HCM 2010 methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix K.

Figure 21: 2032 Future Total Volumes

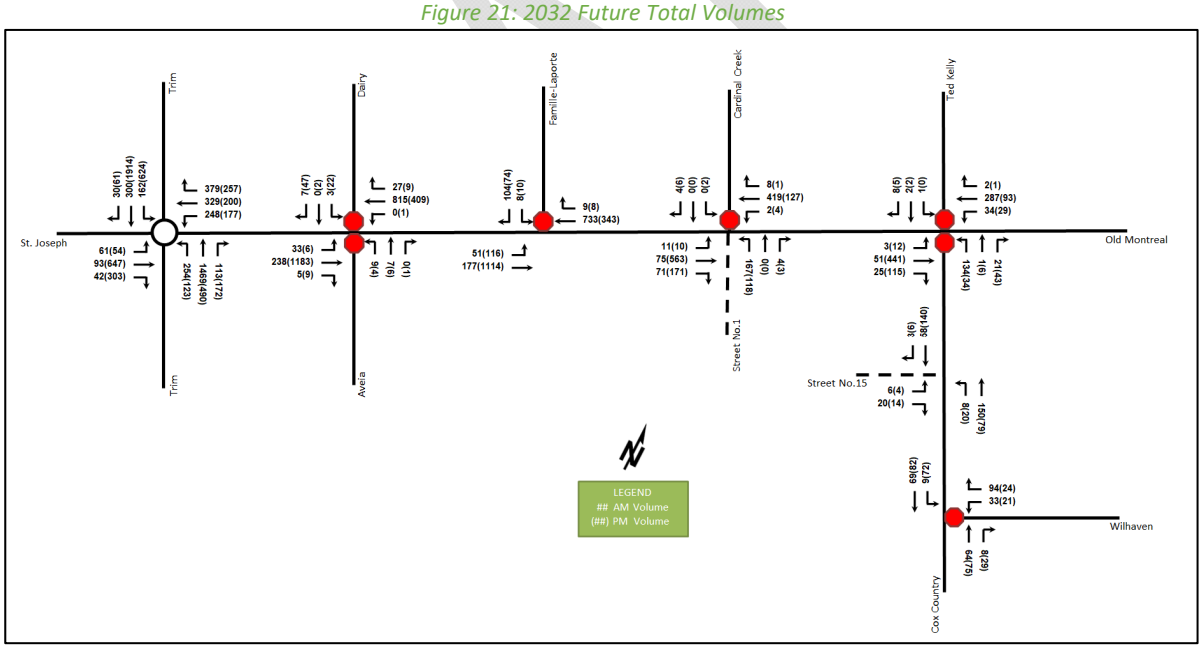


Table 18: 2032 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cardinal Creek Drive/ Street No.1 & Old Montreal Road ***Unsignalized***	EB	A	0.01	8.6	0.0	A	0.01	7.6	0.0
	WB	A	0.00	7.5	0.0	A	0.01	9.2	0.0
	NB	C	0.39	18.5	13.5	D	0.41	25.3	14.3
	SB	B	0.01	12.2	0.0	B	0.02	11.8	0.0
	Overall	**A**	-	**4.3**	-	**A**	-	**3.3**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cox Country Road & Street No.15 ***Unsignalized***	EB	A	0.03	9.0	0.8	A	0.02	9.3	0.8
	NB	A	0.01	7.3	0.0	A	0.01	7.5	0.0
	SB	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**1.2**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = volumes for the 95th %ile cycle exceeds capacity

The 2032 future total access intersections operate satisfactorily.

10.3.3 Access Intersection MMLOS

The access intersections are proposed to as minor stop-controlled intersections, therefore no access intersection MMLOS analysis has been conducted.

10.3.4 Recommended Design Elements

The design elements for the site intersections are consistent with the CDP.

11 Transportation Demand Management

11.1 Context for TDM

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

The subject site is within the Cardinal Creek Village Community Design Plans and intersects the Old Montreal Arterial Mainstreet design priority area. The total bedroom count within the development is subject to the final unit breakdown and layout selections by purchasers. No age restrictions are noted.

11.2 Need and Opportunity

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

11.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix L. The key TDM measures recommended include:

- Inclusion of a 1-year Presto card for first time new townhome purchase, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
- Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels
- Provide a multimodal travel option information package to new residents

12 Neighbourhood Traffic Management

Site traffic is proposed to access the arterial network via Cox Country Road. The TIA Guidelines propose a threshold of 300 vehicles per peak hour for the classification of collector roads, which per City guidance is to be interpreted as two-way volumes.

The existing volumes on Cox Country Road are 210 two-way vehicles in the AM peak hour and 204 two-way vehicles in the PM peak hour. Overall, the site is anticipated to generate approximately 37 and 44 two-way vehicle trips during the AM and PM peak hours, respectively, all of which will access Cox Country Road. These volumes are below the threshold of 2,500 vehicles per day or 300 vehicles during the peak hour, equivalent to 5 cars per minute in both directions total from the TIA guidelines, and thus no further discussion is required.

13 Transit

13.1 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 Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Transit	Varies	56	130	186	91	63	155

The proposed development is anticipated to generate an additional 186 AM peak hour transit trips and 155 PM peak hour transit trips. Of these trips, 130 outbound AM trips and 91 inbound PM trips are anticipated. From the trip distribution found in Section 5.2, these values can be further broken down.

Bus route #221 provides two buses in the peak hour/ direction. Overall, the forecasted new transit trips would result in the need for approximately three to four single capacity buses across each peak hour to service the entire route.

13.2 Transit Priority

No significant impacts are noted to the traffic movements that currently support transit movements in the study area. No transit priority is recommended as part of this study.

14 Network Concept

The subject development is consistent with the intended context set by the Cardinal Creek Village Plan. The background and forecasted site trips do not exceed the anticipated lane capacities on the boundary road network. No changes to the network concept are required to support this project.

15 Network Intersection Design

15.1 Network Intersection Control

No change is recommended for the network intersections.

15.2 Network Intersection Design

15.2.1 2027 Future Total Network Intersection Operations

The 2027 future total network intersection operations are summarized below in Table 20. Synchro 11 has been used to model the unsignalized intersections and Sidra 8 to model the study area roundabout. HCM 2010 methodology was used for unsignalized intersection operations and Sidra methodology was used for roundabout intersection operations. The Synchro and Sidra worksheets for the 2027 future total horizon have been provided in Appendix J.

Table 20: 2027 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Trim Road & Old Montreal Road/St. Joseph Boulevard *Roundabout*	EB	A	0.07	6.7	2.2	A	0.45	13.2	26.5
	WB	A	0.39	8.3	14.7	A	0.19	6.4	6.6
	NB	B	0.63	6.1	30.5	A	0.49	8.1	22.5
	SB	A	0.28	8.0	10.6	**F**	**1.08**	**55.3**	**364.8**
	Overall	**B**	**0.627**	**7.0**	**-**	**F**	**1.08**	**33.4**	**-**
Aveia Private/Dairy Drive & Old Montreal Road *Unsignalized*	EBL	A	0.04	9.6	0.8	A	0.01	8.7	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	-	0.0	0.0	A	0.00	9.6	0.0
	WBT/R	-	-	-	-	-	-	-	-
	NB	D	0.09	26.4	2.3	D	0.07	30.3	1.5
	SBL/T	D	0.02	27.4	0.8	E	0.16	36.8	4.5
	SBT/R	B	0.02	14.6	0.8	B	0.09	12.1	2.3
	Overall	**A**	**-**	**0.8**	**-**	**A**	**-**	**1.3**	**-**
Famille-Laporte Avenue & Old Montreal Road *Unsignalized*	EBL	A	0.06	9.5	1.5	A	0.10	8.3	2.3
	EBT	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SB	C	0.28	17.3	8.3	B	0.18	14.1	4.5
	Overall	**A**	**-**	**2.3**	**-**	**A**	**-**	**1.6**	**-**
Ted Kelly Lane/ Cox Country Road & Old Montreal Road *Unsignalized*	EB	A	0.00	7.8	0.0	A	0.01	7.4	0.0
	WB	A	0.02	7.4	0.8	A	0.03	8.5	0.8
	NB	B	0.27	13.6	8.3	B	0.18	14.5	4.5
	SB	B	0.02	10.3	0.0	B	0.01	10.7	0.0
	Overall	**A**	**-**	**4.7**	**-**	**A**	**-**	**2.2**	**-**
Cox Country Road & Wilhaven Drive *Unsignalized*	WB	A	0.14	9.4	3.8	A	0.06	9.9	1.5
	NB	-	-	-	-	-	-	-	-
	SB	A	0.01	7.4	0.0	A	0.05	7.6	1.5
	Overall	**A**	**-**	**4.6**	**-**	**A**	**-**	**3.2**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = volumes for the 95th %ile cycle exceeds capacity

The Trim Road roundabout will decrease in operations to be over capacity during the PM peak in the southbound direction. The delays and queuing will increase with the additional site traffic. As a roundabout intersection, limited opportunity exists to change the intersection configuration and any operational improvements will need to be a result of network volume reductions within Orleans.

No other operational issues are noted.

15.2.2 2032 Future Total Network Intersection Operations

The 2032 future total network intersection operations are summarized below in Table 21. Synchro 11 has been used to model the unsignalized intersections and Sidra 8 to model the study area roundabout. HCM 2010 methodology was used for unsignalized intersection operations and Sidra methodology was used for roundabout intersection operations. The Synchro and Sidra worksheets for the 2032 future total horizon have been provided in Appendix K.

Table 21: 2032 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Trim Road & Old Montreal Road/St. Joseph Boulevard *Roundabout*	EB	A	0.07	6.7	2.3	C	0.87	30.5	83.7
	WB	A	0.47	9.8	20.2	A	0.19	6.4	6.7
	NB	C	0.74	6.9	46.7	A	0.53	9.1	25.2
	SB	A	0.30	8.1	11.4	**F**	**1.24**	**118.4**	**725.4**
	Overall	**C**	**0.74**	**7.8**		**F**	**1.24**	**69.6**	**-**
Aveia Private/Dairy Drive & Old Montreal Road *Unsignalized*	EBL	A	0.04	9.7	0.8	A	0.01	8.7	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	-	0.0	0.0	B	0.00	11.2	0.0
	WBT/R	-	-	-	-	-	-	-	-
	NB	D	0.09	27.4	2.3	E	0.12	48.8	3.0
	SBL/T	D	0.02	28.4	0.8	**F**	**0.29**	**69.5**	**7.5**
	SBT/R	B	0.02	14.9	0.8	B	0.10	12.7	2.3
	Overall	**A**	**-**	**0.8**	**-**	**A**	**-**	**1.6**	**-**
Famille-Laporte Avenue & Old Montreal Road *Unsignalized*	EBL	A	0.06	9.6	1.5	A	0.10	8.3	2.3
	EBT	-	-	-	-	-	-	-	-
	WB	-	-	-	-	-	-	-	-
	SB	C	0.29	17.9	9.0	C	0.22	16.7	6.0
	Overall	**A**	**-**	**2.3**	**-**	**A**	**-**	**1.4**	**-**
Ted Kelly Lane/ Cox Country Road & Old Montreal Road *Unsignalized*	EB	A	0.00	7.8	0.0	A	0.01	7.4	0.0
	WB	A	0.02	7.4	0.8	A	0.03	8.7	0.8
	NB	B	0.28	14.1	9.0	C	0.19	15.2	5.3
	SB	B	0.02	10.5	0.8	B	0.01	10.8	0.0
	Overall	**A**	**-**	**4.6**	**-**	**A**	**-**	**2.2**	**-**
Cox Country Road & Wilhaven Drive *Unsignalized*	WB	A	0.14	9.4	3.8	A	0.06	9.9	1.5
	NB	-	-	-	-	-	-	-	-
	SB	A	0.01	7.4	0.0	A	0.05	7.6	1.5
	Overall	**A**	**-**	**4.6**	**-**	**A**	**-**	**3.2**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = volumes for the 95th %ile cycle exceeds capacity

The Trim Road roundabout will continue to decrease in operations during the PM peak in the southbound direction. The delays and queuing will increase with the additional growth form the future total 2027 horizon to the 2032 horizon. As a roundabout intersection, limited opportunity exists to change the intersection configuration and any operational improvements will need to be a result of network volume reductions within Orleans.

The Old Montreal Road and Aveia Private/Dairy Drive intersection on the southbound shared left-turn/through movements may expect high delays during the PM peak hour.

No other operational issues are noted.

15.2.3 Network Intersection MMLOS

No changes to the network intersection control are proposed as part of this study.

15.2.4 Recommended Design Elements

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

16 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed site includes 454 townhome units and 304 single detached units
- Two proposed new collector roads will be access on Old Montreal Road and Cox Country Road
- The anticipated full build-out and occupancy horizon is 2027 with construction occurring in five phases
- The trip generation and safety triggers were met for the TIA Screening

Existing Conditions

- Old Montreal Road, St Joseph Boulevard, Trim Road are arterial roads, Cardinal Creek Drive is a major collector road, and Cox Country Road, Wilhaven Drive, Famille-Laporte Avenue are collector roads in the study area
- A sidewalk and multi-use pathway are provided along the north and south sides of Old Montreal Road, respectively, between Trim Road and Aveia Private/Dairy Drive
- Paved shoulders are provided along Cox Country Road and Old Montreal Road between Dairy Drive/ Aveia Private and Cox Country Road, and a bike lane is provided east of Dairy along Old Montreal Road
- The Old Montreal Road and Cox Country Road are both designated as spine routes, and Wilhaven Drive is a local route
- There are a total of 24 collisions within the study area. The segment of Old Montreal Road between Grand Chene Cour Du Court and Ted Kelly Lane is noted to have experienced higher collisions than other intersections, which has 29% of the collisions within the study area
- During both the AM and PM peak hours, the study area intersection at existing conditions operates well

Development Generated Travel Demand

- The proposed development is forecasted to produce 619 two-way people trips during the AM peak hour and 647 two-way people trips during the PM peak hour
- Of the forecasted people trips, 281 two-way trips will be vehicle trips during the AM peak hour and 340 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted trips, 15% are anticipated to travel south, 5% to the east, and 80% to the west

Background Conditions

- The background developments were explicitly included in the background conditions, along with a total background growth of 2% per annum on existing Old Montreal Road and St. Joseph Boulevard mainline volumes, and a total background growth of 3.75% per annum on existing Trim Road mainline volumes
- The Trim Road roundabout is approaching capacity during the PM peak in the background conditions and the remaining study area intersections have no operational issues noted

Development Design

- A driveway and garage will be included in each dwelling
- Bicycle parking is assumed to be within the individual units
- Pedestrian connections, cycletracks, and walkways will be made to the storm water management, park, school, and creek

- The conceptual traffic calming elements are recommended at the future internal road intersections including intersection narrowing, bulb-outs, and speed humps

Boundary Street Design

- The boundary streets will not meet pedestrian MMLOS target, significant speed reductions to meet a los target of A
- Old Montreal Road and Cox Country Road will not meet bicycle MMLOS targets and require cycling facilities and speed reductions to meet the targets
- Once Old Montreal Road is widened, it is expected to meet the bicycle MMLOS targets

Access Intersections Design

- The residential accesses will connect via two new collector roads each to Old Montreal Road and Cox Country Road
- The site accesses will have stop-control on the minor approach as confirmed by a signal warrant
- No specific recommendations or design elements are required outside of typical site design
- The 2027 and 2032 future total access intersections operate satisfactorily

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Inclusion of a 1-year Presto card for first time new townhome purchase, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
    - Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels
    - Provide a multimodal travel option information package to new residents

NTM

- The volumes accessing Cox Country Road are below the threshold of 2,500 vehicles per day or 300 vehicles during the peak hour, and thus no further discussion is required

Transit

- 130 outbound AM trips and 91 inbound PM trips are anticipated from the development
- To meet forecasted transit use, approximately three to four single capacity buses would be required for peak hour service on local routes
- No decrease in transit level of service is noted by the impacts within the study area

Network Concept

- No changes to the network concept are required to support this project

Network Intersection Design

- Generally, the network intersections operating at the future total horizons will operate similarly to the future background conditions
- During PM peak hour, the southbound movement at the roundabout of Trim Road and Old Montreal Road/St. Joseph Boulevard is expected to be operate over theoretical capacity in 2027 and 2032 future total horizon

- During the PM peak hour, the southbound shared left-turn/through movement at Old Montreal Road and Aveia Private/Dairy Drive intersection is expected to experience high delays in 2027 and 2032 future total horizon
- As a roundabout intersection, limited opportunity exists to change the intersection configuration and any operational improvements will need to be a result of network volume reductions within Orleans

17 Next Steps

Following the circulation and review of the TIA, any comments received from City Staff will be documented within the context of the draft plan application and addressed in an updated Step 4 Strategy Report. Once remaining TIA Steps are completed and sign-off has been received from City Transportation Project Manager, a signed and stamped final report will be provided to City staff.

Appendix A

TIA Screening Form and PM Certification Form

13 Markham Avenue
Ottawa ON K2G 3Z1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 16-Nov-21
Project Number: 2019-68
Project Reference: CCV South Phase

1.1 Description of Proposed Development	
Municipal Address	1296 & 1400 Old Montreal Road
Description of Location	Ward 19, southwestcorner of the Old Montreal Road and Cox Country Road intersection
Land Use Classification	Rural Countryside (RU), Rural Institutional Zone (RI5), Parks and Open Space Zone (O1), Arterial Mainstreet Zone (AM)
Development Size	168 gallery townhome units, 286 townhome units, and 304 single detached units
Accesses	One access to Old Montreal Road and one access to Cox Country Road
Phase of Development	Five Phases
Buildout Year	2027
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	758	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?	Yes
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	Yes

Appendix B

Turning Movement Counts

Transportation Services - Traffic Services

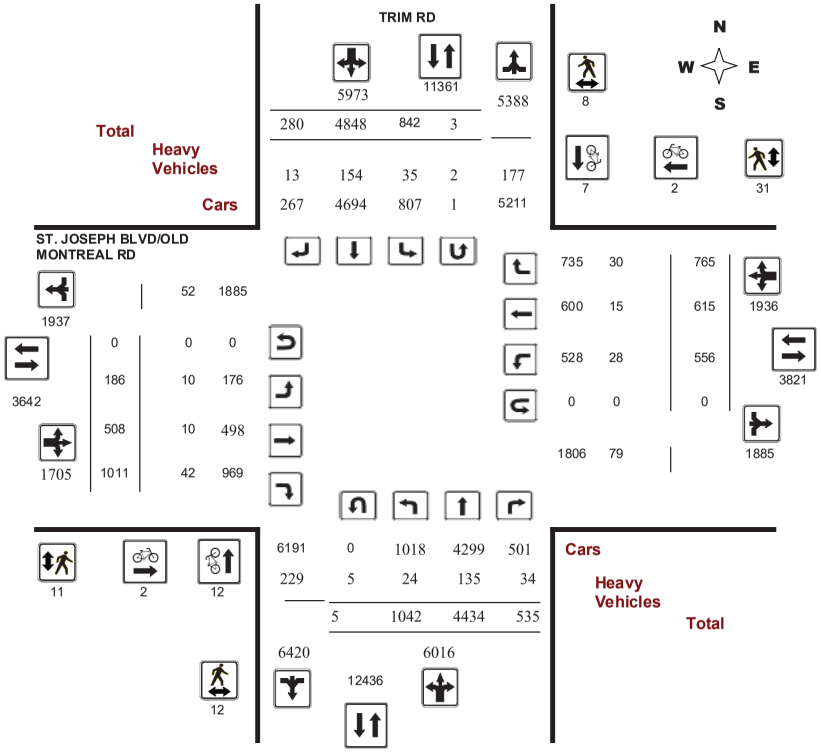
Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study Diagram



Transportation Services - Traffic Services

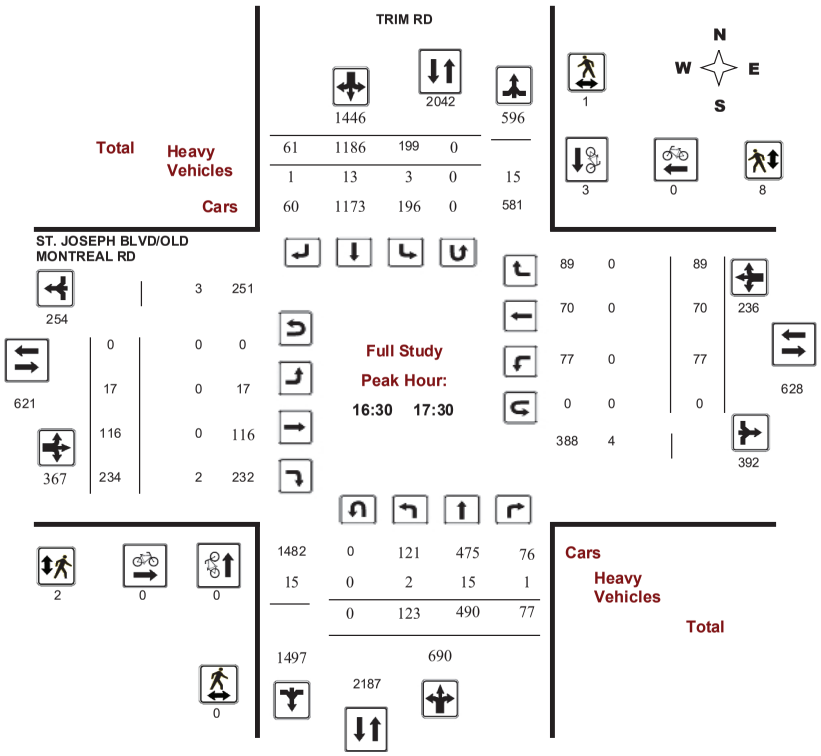
Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study Peak Hour Diagram



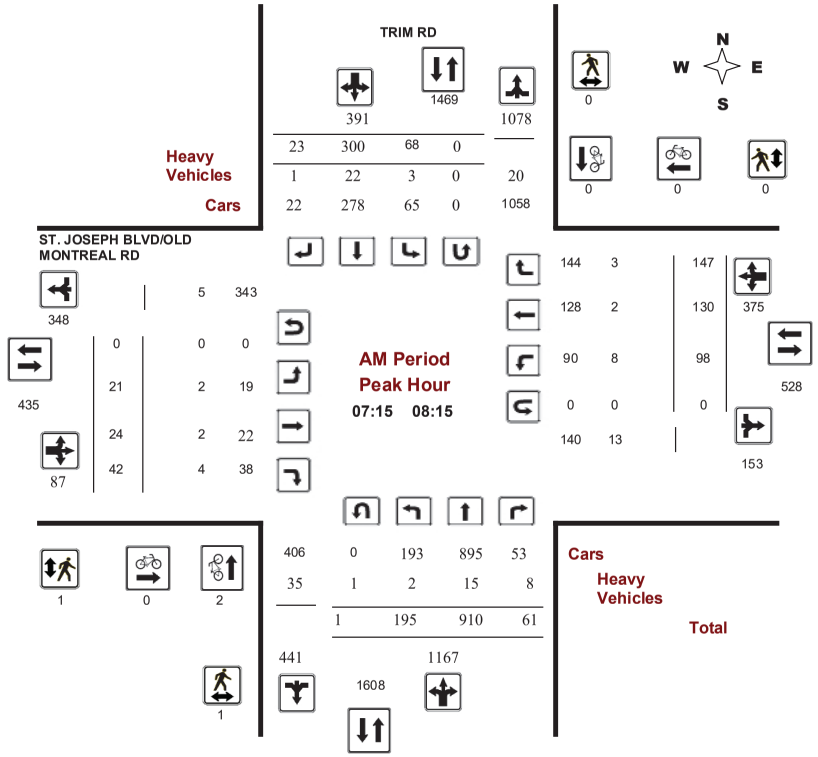
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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



Comments

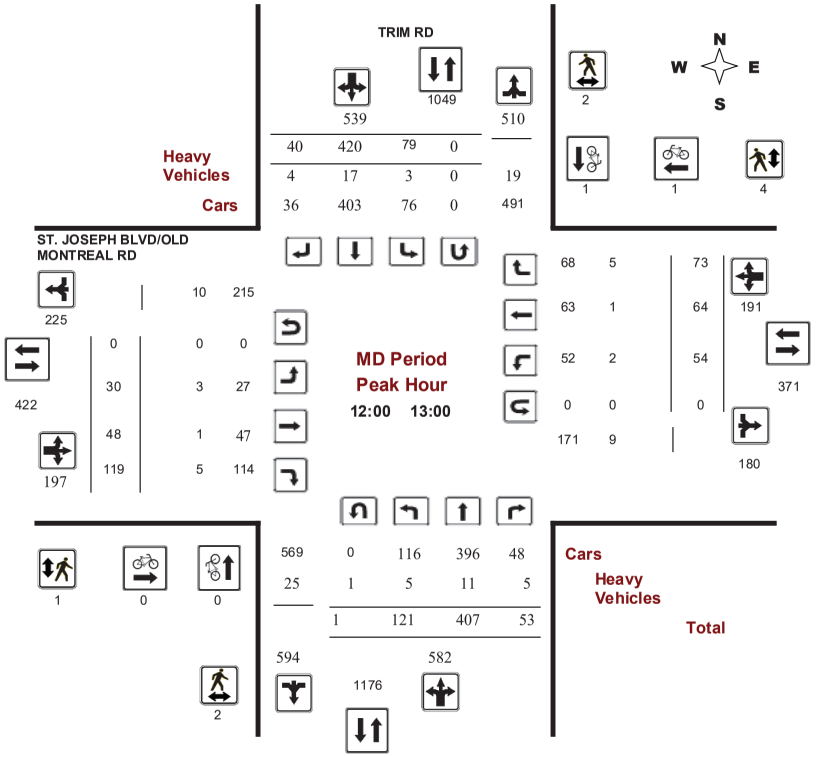
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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



Comments

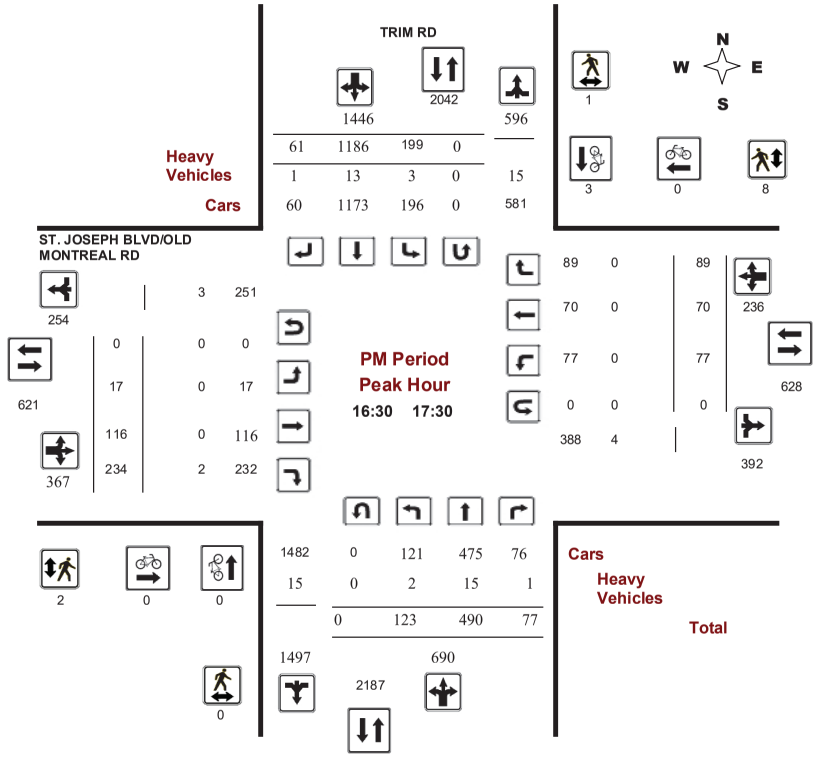
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, April 26, 2017

Total Observed U-Turns

Northbound: 5 Southbound: 3

Eastbound: 0 Westbound: 0

AADT Factor .90

	TRIM RD								ST. JOSEPH BLVD/OLD MONTREAL RD								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	173	923	46	**1142**	64	292	21	**377**	**1519**	28	14	42	**84**	90	151	158	**399**	**483**	**2002**
08:00 09:00	182	753	70	**1005**	54	300	33	**387**	**1392**	9	41	53	**103**	81	96	154	**331**	**434**	**1826**
09:00 10:00	125	535	45	**705**	56	290	28	**374**	**1079**	24	29	63	**116**	58	60	83	**201**	**317**	**1396**
11:30 12:30	115	429	44	**588**	77	368	33	**478**	**1066**	25	55	114	**194**	54	42	69	**165**	**359**	**1425**
12:30 13:30	112	392	61	**565**	94	430	41	**565**	**1130**	30	47	109	**186**	51	66	65	**182**	**368**	**1498**
15:00 16:00	93	417	92	**602**	131	909	34	**1074**	**1676**	26	89	163	**278**	72	69	85	**226**	**504**	**2180**
16:00 17:00	121	447	91	**659**	203	1098	43	**1344**	**2003**	24	117	236	**377**	81	64	81	**226**	**603**	**2606**
17:00 18:00	121	538	86	**745**	163	1161	47	**1371**	**2116**	20	116	231	**367**	69	67	70	**206**	**573**	**2689**
Sub Total	1042	4434	535	**6011**	842	4848	280	**5970**	**11981**	186	508	1011	**1705**	556	615	765	**1936**	**3641**	**15622**
U Turns	5			**5**	3			**3**	**8**	**0**			**0**	0			**0**	**0**	**8**
Total	1047	4434	535	**6016**	845	4848	280	**5973**	**11989**	186	508	1011	**1705**	556	615	765	**1936**	**3641**	**15630**
EQ 12Hr	1455	6163	744	**8362**	1175	6739	389	**8303**	**16665**	259	706	1405	**2370**	773	855	1063	**2691**	**5061**	**21726**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1310	5547	670	**7527**	1058	6065	350	**7473**	**15000**	233	635	1264	**2132**	696	770	957	**2423**	**4555**	**19555**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	1716	7267	878	**9861**	1386	7945	458	**9789**	**19650**	305	832	1656	**2793**	912	1009	1254	**3175**	**5968**	**25618**
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/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study 15 Minute Increments

		TRIM RD									ST. JOSEPH BLVD/OLD MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	24	231	6	261	11	62	3	76	**337**	8	0	10	18	13	44	49	106	**124**	**461**
07:15	07:30	53	238	14	305	6	63	5	74	**379**	2	5	11	18	17	39	39	95	**113**	**492**
07:30	07:45	44	234	11	289	30	85	6	121	**410**	9	5	7	21	34	44	36	114	**135**	**545**
07:45	08:00	53	220	15	288	18	82	7	107	**395**	9	4	14	27	26	24	34	84	**111**	**506**
08:00	08:15	46	218	21	285	14	70	5	89	**374**	1	10	10	21	21	23	38	82	**103**	**477**
08:15	08:30	56	178	17	251	17	80	12	109	**360**	0	12	12	24	28	17	35	80	**104**	**464**
08:30	08:45	37	194	14	245	12	78	7	97	**342**	7	11	12	30	16	31	33	80	**110**	**452**
08:45	09:00	43	163	18	224	12	72	9	93	**317**	1	8	19	28	16	25	48	89	**117**	**434**
09:00	09:15	30	170	8	208	10	73	10	93	**301**	3	7	16	26	21	16	17	54	**80**	**381**
09:15	09:30	29	138	12	179	20	73	6	99	**278**	8	4	12	24	11	10	18	39	**63**	**341**
09:30	09:45	35	118	16	169	14	68	8	90	**259**	8	9	12	29	12	21	26	59	**88**	**347**
09:45	10:00	32	109	9	150	12	76	4	92	**242**	5	9	23	37	14	13	22	49	**86**	**328**
11:30	11:45	33	125	12	170	18	93	6	117	**287**	4	12	27	43	11	7	15	33	**76**	**363**
11:45	12:00	25	97	9	131	24	80	8	112	**243**	9	10	24	43	11	10	12	33	**76**	**319**
12:00	12:15	24	107	14	145	19	102	12	133	**278**	7	14	35	56	21	10	20	51	**107**	**385**
12:15	12:30	34	100	9	143	16	93	7	116	**259**	5	19	28	52	11	15	22	48	**100**	**359**
12:30	12:45	33	107	11	151	20	123	10	153	**304**	11	5	29	45	10	22	12	44	**89**	**393**
12:45	13:00	31	93	19	143	24	102	11	137	**280**	7	10	27	44	12	17	19	48	**92**	**372**
13:00	13:15	25	111	18	154	21	99	13	133	**287**	4	13	32	49	17	13	15	45	**94**	**381**
13:15	13:30	23	81	13	117	30	106	7	143	**260**	8	19	21	48	12	14	19	45	**93**	**353**
15:00	15:15	19	105	26	150	21	196	9	226	**376**	3	20	31	54	17	15	24	56	**110**	**486**
15:15	15:30	17	95	18	130	36	217	10	263	**393**	9	8	45	62	12	20	23	55	**117**	**510**
15:30	15:45	25	102	27	154	36	250	7	293	**447**	13	24	38	75	19	18	20	57	**132**	**579**
15:45	16:00	33	115	21	169	38	246	8	292	**461**	1	37	49	87	24	16	18	58	**145**	**606**
16:00	16:15	26	103	28	157	50	255	7	312	**469**	8	27	69	104	15	16	19	50	**154**	**623**
16:15	16:30	34	113	24	171	48	245	7	300	**471**	7	38	59	104	25	14	17	56	**160**	**631**
16:30	16:45	32	118	20	170	52	294	10	356	**526**	3	36	58	97	22	11	21	54	**151**	**677**
16:45	17:00	30	113	19	162	53	304	19	376	**538**	6	16	50	72	19	23	24	66	**138**	**676**
17:00	17:15	33	128	21	182	49	295	14	358	**540**	8	37	68	113	17	21	23	61	**174**	**714**
17:15	17:30	28	131	17	176	45	293	18	356	**532**	0	27	58	85	19	15	21	55	**140**	**672**
17:30	17:45	26	136	26	188	35	279	5	319	**507**	12	28	60	100	16	14	16	46	**146**	**653**
17:45	18:00	34	143	22	199	34	294	10	338	**537**	0	24	45	69	17	17	10	44	**113**	**650**
Total:		1047	4434	535	6016	845	4848	280	5973	**11989**	186	508	1011	1705	556	615	765	1936	**11989**	**15,630**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study Cyclist Volume

		TRIM RD			ST. JOSEPH BLVD/OLD MONTREAL RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	1	0	**1**	0	0	**0**	**1**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	1	0	**1**	0	0	**0**	**1**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	1	0	**1**	0	0	**0**	**1**
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	1	**1**	**1**
09:00	09:15	1	0	**1**	0	0	**0**	**1**
09:15	09:30	1	0	**1**	1	0	**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	1	0	**1**	0	0	**0**	**1**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	1	**1**	0	0	**0**	**1**
12:45	13:00	0	0	**0**	0	1	**1**	**1**
13:00	13:15	0	1	**1**	0	0	**0**	**1**
13:15	13:30	1	0	**1**	0	0	**0**	**1**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	1	0	**1**	**1**
15:30	15:45	1	0	**1**	0	0	**0**	**1**
15:45	16:00	3	0	**3**	0	0	**0**	**3**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	1	2	**3**	0	0	**0**	**3**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	1	**1**	0	0	**0**	**1**
17:00	17:15	0	2	**2**	0	0	**0**	**2**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		12	7	**19**	2	2	**4**	**23**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study Pedestrian Volume

		TRIM RD			ST. JOSEPH BLVD/OLD MONTREAL RD			
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	0	**0**	0	0	**0**	**0**
07:15	07:30	1	0	**1**	0	0	**0**	**1**
07:30	07:45	0	0	**0**	1	0	**1**	**1**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	1	0	**1**	1	0	**1**	**2**
08:30	08:45	0	0	**0**	0	1	**1**	**1**
08:45	09:00	0	0	**0**	0	1	**1**	**1**
09:00	09:15	1	0	**1**	0	0	**0**	**1**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	2	**2**	**2**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	3	**3**	**3**
11:45	12:00	0	0	**0**	0	1	**1**	**1**
12:00	12:15	0	2	**2**	1	1	**2**	**4**
12:15	12:30	1	0	**1**	0	0	**0**	**1**
12:30	12:45	1	0	**1**	0	1	**1**	**2**
12:45	13:00	0	0	**0**	0	2	**2**	**2**
13:00	13:15	0	2	**2**	0	0	**0**	**2**
13:15	13:30	0	1	**1**	1	0	**1**	**2**
15:00	15:15	0	0	**0**	1	1	**2**	**2**
15:15	15:30	1	0	**1**	0	1	**1**	**2**
15:30	15:45	0	0	**0**	0	2	**2**	**2**
15:45	16:00	4	0	**4**	1	0	**1**	**5**
16:00	16:15	0	0	**0**	1	2	**3**	**3**
16:15	16:30	2	1	**3**	2	3	**5**	**8**
16:30	16:45	0	0	**0**	1	5	**6**	**6**
16:45	17:00	0	1	**1**	1	1	**2**	**3**
17:00	17:15	0	0	**0**	0	1	**1**	**1**
17:15	17:30	0	0	**0**	0	1	**1**	**1**
17:30	17:45	0	1	**1**	0	1	**1**	**2**
17:45	18:00	0	0	**0**	0	1	**1**	**1**
Total		12	8	**20**	11	31	**42**	**62**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study Heavy Vehicles

		TRIM RD									ST. JOSEPH BLVD/OLD MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	4	1	**6**	1	7	0	**8**	**14**	0	0	1	**1**	0	0	1	**1**	**2**	**16**
07:15	07:30	1	2	5	**8**	0	4	0	**4**	**12**	0	1	1	**2**	2	0	1	**3**	**5**	**17**
07:30	07:45	1	5	1	**7**	2	6	0	**8**	**15**	0	1	1	**2**	4	0	1	**5**	**7**	**23**
07:45	08:00	0	2	0	**2**	1	8	1	**10**	**12**	1	0	2	**3**	0	0	1	**1**	**4**	**16**
08:00	08:15	0	6	2	**8**	0	4	0	**4**	**12**	1	0	0	**1**	2	2	0	**4**	**5**	**17**
08:15	08:30	2	3	1	**6**	2	5	2	**9**	**15**	0	0	1	**1**	3	0	1	**4**	**5**	**20**
08:30	08:45	1	2	1	**4**	3	7	1	**11**	**15**	0	0	1	**1**	0	4	1	**5**	**6**	**21**
08:45	09:00	1	4	2	**7**	2	5	1	**8**	**15**	1	0	2	**3**	1	1	2	**4**	**7**	**23**
09:00	09:15	0	8	1	**9**	1	11	0	**12**	**21**	0	0	2	**2**	3	0	3	**6**	**8**	**29**
09:15	09:30	1	5	1	**7**	2	8	1	**11**	**18**	2	1	0	**3**	0	0	1	**1**	**4**	**22**
09:30	09:45	0	5	2	**7**	1	4	0	**5**	**12**	0	2	2	**4**	0	1	1	**2**	**6**	**18**
09:45	10:00	1	4	2	**7**	0	5	0	**5**	**12**	1	1	1	**3**	2	0	0	**2**	**5**	**18**
11:30	11:45	0	4	0	**4**	1	1	0	**2**	**6**	0	0	2	**2**	0	2	2	**4**	**6**	**12**
11:45	12:00	1	3	0	**4**	3	1	0	**4**	**8**	0	0	1	**1**	1	1	0	**2**	**3**	**11**
12:00	12:15	1	4	3	**8**	0	4	2	**6**	**14**	0	0	2	**2**	1	0	1	**2**	**4**	**19**
12:15	12:30	1	4	0	**5**	2	5	2	**9**	**14**	0	0	0	**0**	1	1	1	**3**	**3**	**17**
12:30	12:45	2	1	2	**5**	0	1	0	**1**	**6**	1	0	3	**4**	0	0	0	**0**	**4**	**10**
12:45	13:00	1	2	0	**3**	1	7	0	**8**	**11**	2	1	0	**3**	0	0	3	**3**	**6**	**17**
13:00	13:15	0	8	1	**9**	0	4	1	**5**	**14**	0	0	4	**4**	0	0	0	**0**	**4**	**19**
13:15	13:30	1	0	1	**2**	1	4	0	**5**	**7**	1	1	0	**2**	2	0	2	**4**	**6**	**13**
15:00	15:15	1	5	3	**9**	2	11	1	**14**	**23**	0	0	0	**0**	1	0	1	**2**	**2**	**25**
15:15	15:30	1	4	1	**6**	0	6	0	**6**	**12**	0	0	4	**4**	1	2	4	**7**	**11**	**23**
15:30	15:45	0	8	1	**9**	1	2	0	**3**	**12**	0	0	2	**2**	2	0	2	**4**	**6**	**18**
15:45	16:00	4	6	0	**10**	3	7	0	**10**	**20**	0	0	1	**1**	0	0	0	**0**	**1**	**22**
16:00	16:15	0	4	1	**5**	1	4	0	**5**	**10**	0	1	1	**2**	1	1	1	**3**	**5**	**15**
16:15	16:30	0	5	0	**5**	1	6	0	**7**	**12**	0	1	4	**5**	1	0	0	**1**	**6**	**19**
16:30	16:45	0	4	0	**4**	0	1	0	**1**	**5**	0	0	1	**1**	0	0	0	**0**	**1**	**6**
16:45	17:00	0	3	1	**4**	1	5	1	**7**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
17:00	17:15	1	3	0	**4**	1	2	0	**3**	**7**	0	0	1	**1**	0	0	0	**0**	**1**	**8**
17:15	17:30	1	5	0	**6**	1	5	0	**6**	**12**	0	0	0	**0**	0	0	0	**0**	**0**	**12**
17:30	17:45	0	5	1	**6**	0	0	0	**0**	**6**	0	0	1	**1**	0	0	0	**0**	**1**	**7**
17:45	18:00	0	7	0	**7**	1	4	0	**5**	**12**	0	0	1	**1**	0	0	0	**0**	**1**	**13**
Total:	None	24	135	34	**193**	35	154	13	**202**	**395**	10	10	42	**62**	28	15	30	**73**	**135**	**537**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ST. JOSEPH BLVD/OLD MONTREAL RD @ TRIM RD

Survey Date: Wednesday, April 26, 2017 **WO No:** 36103

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

Full Study 15 Minute U-Turn Total

Time Period		TRIM RD Northbound U-Turn Total	TRIM RD Southbound U-Turn Total	ST. JOSEPH BLVD/OLD MONTREAL RD Eastbound U-Turn Total	ST. JOSEPH BLVD/OLD MONTREAL RD Westbound U-Turn Total	Total
07:00	07:15	0	1	0	0	**1**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	1	0	0	0	**1**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	1	0	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	1	0	0	0	**1**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	1	0	0	0	**1**
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	0	0	**1**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	1	0	0	0	**1**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	1	0	0	0	**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	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		5	3	0	0	**8**

Transportation Services - Traffic Services

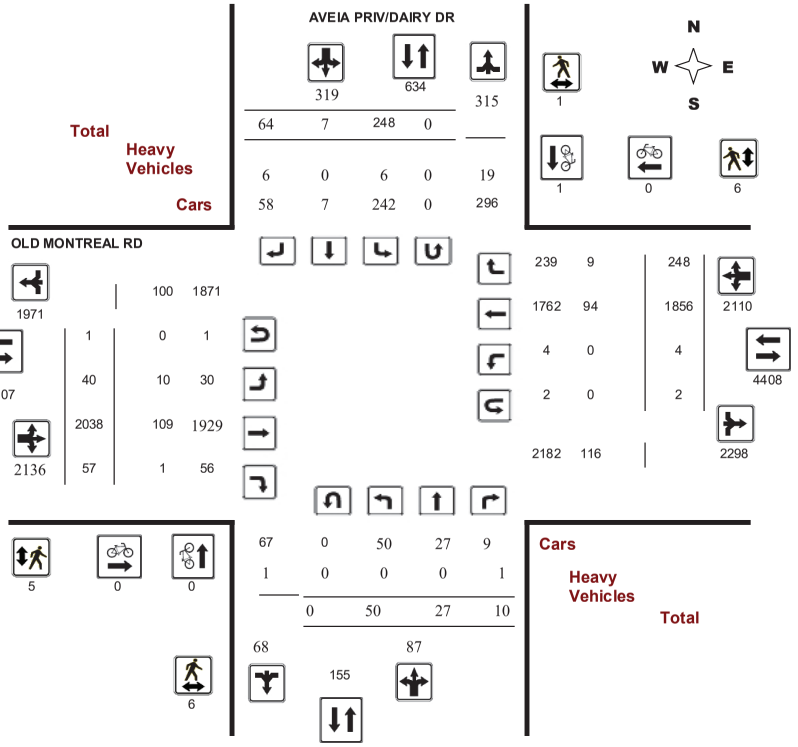
Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study Diagram



Transportation Services - Traffic Services

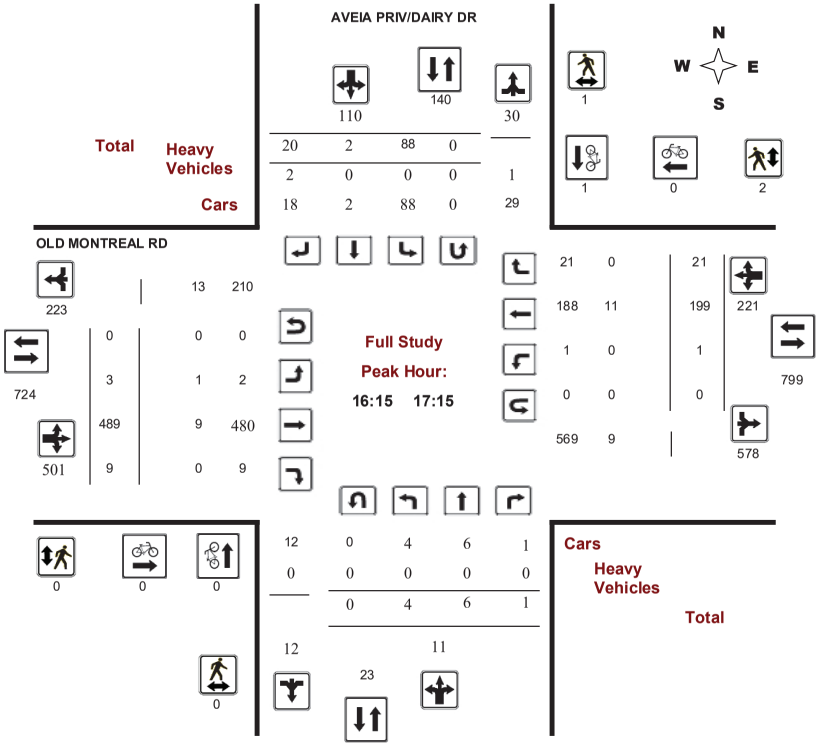
Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study Peak Hour Diagram



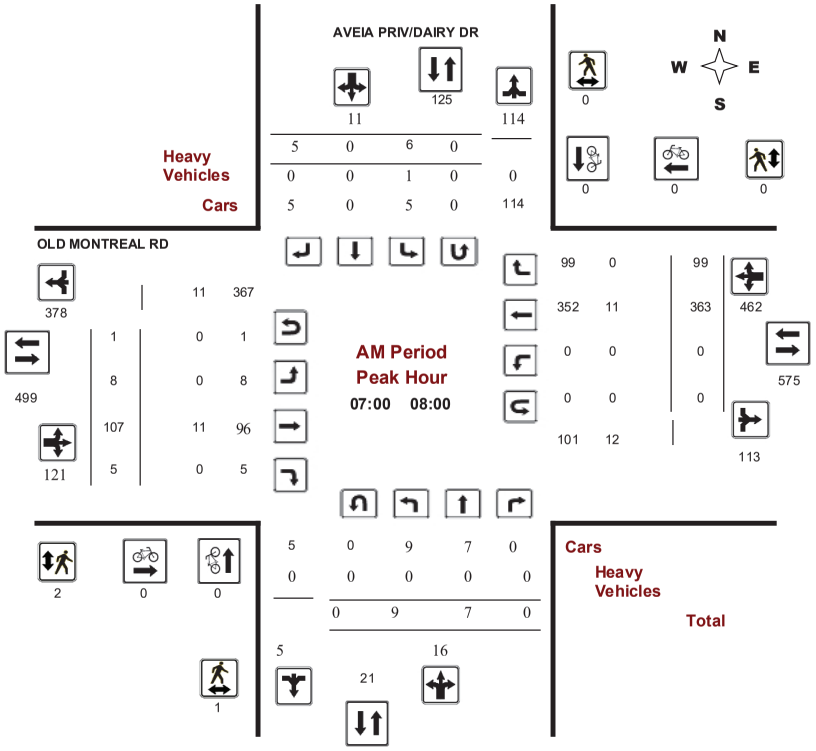
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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



Comments

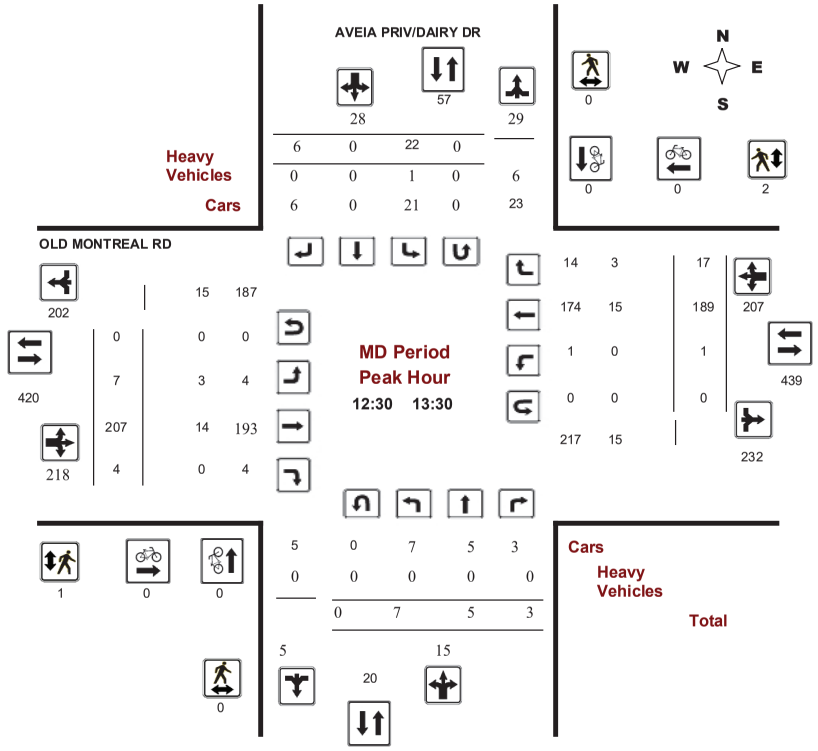
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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



Comments

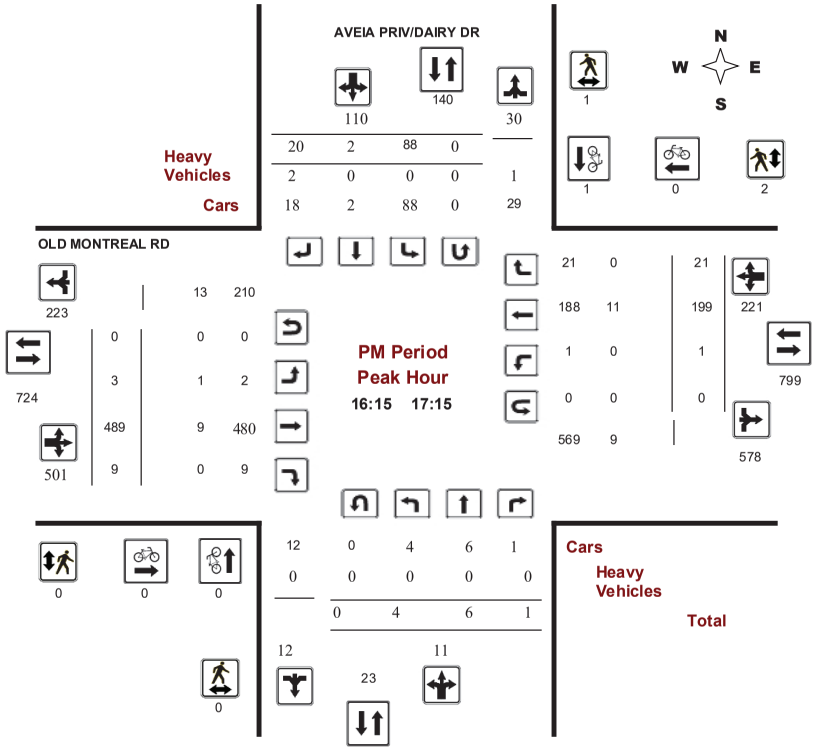
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 04, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 1 Westbound: 2

AADT Factor

1.00

	AVEIA PRIV/DAIRY DR									OLD MONTREAL RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	9	7	0	**16**	6	0	5	**11**	**27**	8	107	5	**120**	0	363	99	**462**	**582**	**609**
08:00 09:00	8	6	1	**15**	9	0	3	**12**	**27**	7	147	0	**154**	0	284	53	**337**	**491**	**518**
09:00 10:00	4	2	0	**6**	3	0	2	**5**	**11**	3	130	1	**134**	1	257	20	**278**	**412**	**423**
11:30 12:30	2	0	2	**4**	18	1	9	**28**	**32**	4	186	5	**195**	1	191	15	**207**	**402**	**434**
12:30 13:30	7	5	3	**15**	22	0	6	**28**	**43**	7	207	4	**218**	1	189	17	**207**	**425**	**468**
15:00 16:00	9	0	2	**11**	42	1	8	**51**	**62**	4	380	12	**396**	0	192	10	**202**	**598**	**660**
16:00 17:00	1	6	0	**7**	84	0	21	**105**	**112**	3	501	12	**516**	1	192	20	**213**	**729**	**841**
17:00 18:00	10	1	2	**13**	64	5	10	**79**	**92**	4	380	18	**402**	0	188	14	**202**	**604**	**696**
Sub Total	50	27	10	**87**	248	7	64	**319**	**406**	40	2038	57	**2135**	4	1856	248	**2108**	**4243**	**4649**
U Turns	0			**0**	0			**0**	**0**	**1**			**1**	2			**2**	**3**	**3**
Total	50	27	10	**87**	248	7	64	**319**	**406**	41	2038	57	**2136**	6	1856	248	**2110**	**4246**	**4652**
EQ 12Hr	70	38	14	**122**	345	10	89	**444**	**566**	57	2833	79	**2969**	8	2580	345	**2933**	**5902**	**6468**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	70	38	14	**122**	345	10	89	**444**	**566**	57	2833	79	**2969**	8	2580	345	**2933**	**5902**	**6468**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	92	50	18	**160**	452	13	117	**582**	**742**	75	3711	103	**3889**	10	3380	452	**3842**	**7731**	**8473**
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

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study 15 Minute Increments

		AVEIA PRIV/DAIRY DR									OLD MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	4	3	0	7	3	0	1	4	**11**	2	30	0	32	0	99	33	132	**164**	**175**
07:15	07:30	1	2	0	3	0	0	1	1	**4**	2	24	2	28	0	101	21	122	**150**	**154**
07:30	07:45	1	2	0	3	2	0	2	4	**7**	2	22	1	25	0	87	23	110	**135**	**142**
07:45	08:00	3	0	0	3	1	0	1	2	**5**	3	31	2	36	0	76	22	98	**134**	**139**
08:00	08:15	0	1	0	1	2	0	2	4	**5**	2	30	0	32	0	74	23	97	**129**	**134**
08:15	08:30	1	2	0	3	2	0	0	2	**5**	2	35	0	37	0	73	13	86	**123**	**128**
08:30	08:45	6	3	1	10	3	0	1	4	**14**	3	28	0	31	1	69	10	80	**111**	**125**
08:45	09:00	1	0	0	1	2	0	0	2	**3**	0	54	0	54	0	68	7	75	**129**	**132**
09:00	09:15	1	0	0	1	0	0	0	0	**1**	1	29	0	30	1	71	12	84	**114**	**115**
09:15	09:30	2	1	0	3	1	0	2	3	**6**	1	35	0	36	1	46	3	50	**86**	**92**
09:30	09:45	1	0	0	1	1	0	0	1	**2**	0	27	0	27	0	50	4	54	**81**	**83**
09:45	10:00	0	1	0	1	1	0	0	1	**2**	1	39	1	41	0	90	1	91	**132**	**134**
11:30	11:45	1	0	1	2	2	1	3	6	**8**	1	47	2	50	0	50	5	55	**105**	**113**
11:45	12:00	1	0	1	2	7	0	2	9	**11**	2	52	2	56	1	52	5	58	**114**	**125**
12:00	12:15	0	0	0	0	7	0	2	9	**9**	1	39	0	40	0	45	5	50	**90**	**99**
12:15	12:30	0	0	0	0	2	0	2	4	**4**	0	48	1	49	0	44	0	44	**93**	**97**
12:30	12:45	1	3	0	4	8	0	0	8	**12**	2	55	0	57	0	39	3	42	**99**	**111**
12:45	13:00	2	0	2	4	6	0	1	7	**11**	3	48	3	54	0	43	5	48	**102**	**113**
13:00	13:15	3	0	1	4	4	0	5	9	**13**	0	52	1	53	0	63	6	69	**122**	**135**
13:15	13:30	1	2	0	3	4	0	0	4	**7**	2	52	0	54	1	44	3	48	**102**	**109**
15:00	15:15	2	0	1	3	6	0	0	6	**9**	1	64	2	67	0	51	1	52	**119**	**128**
15:15	15:30	3	0	1	4	9	0	3	12	**16**	1	104	2	107	0	51	4	55	**162**	**178**
15:30	15:45	1	0	0	1	13	0	3	16	**17**	0	99	2	101	0	47	4	51	**152**	**169**
15:45	16:00	3	0	0	3	14	1	2	17	**20**	2	113	6	121	0	43	1	44	**165**	**185**
16:00	16:15	0	0	0	0	12	0	7	19	**19**	1	140	6	147	0	44	4	48	**195**	**214**
16:15	16:30	0	2	0	2	19	0	3	22	**24**	0	125	2	127	0	57	3	60	**187**	**211**
16:30	16:45	0	2	0	2	24	0	7	31	**33**	1	127	1	129	0	51	8	59	**188**	**221**
16:45	17:00	1	2	0	3	29	0	4	33	**36**	1	109	3	113	1	40	5	46	**159**	**195**
17:00	17:15	3	0	1	4	16	2	6	24	**28**	1	128	3	132	0	51	5	56	**188**	**216**
17:15	17:30	2	0	0	2	18	0	3	21	**23**	2	82	3	87	0	42	1	43	**130**	**153**
17:30	17:45	2	1	0	3	17	3	1	21	**24**	1	91	3	95	0	45	5	50	**145**	**169**
17:45	18:00	3	0	1	4	13	0	0	13	**17**	0	79	9	88	0	50	3	53	**141**	**158**
Total:		50	27	10	87	248	7	64	319	**406**	41	2038	57	2136	6	1856	248	2110	**406**	**4,652**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study Cyclist Volume

Time Period		AVEIA PRIV/DAIRY DR			OLD MONTREAL RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	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	1	**1**	0	0	**0**	**1**
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	1	**1**	0	0	**0**	**1**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study Pedestrian Volume

Time Period	AVEIA PRIV/DAIRY DR			OLD MONTREAL RD			
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	1	0	**1**	**1**
07:15 07:30	0	0	**0**	0	0	**0**	**0**
07:30 07:45	1	0	**1**	1	0	**1**	**2**
07:45 08:00	0	0	**0**	0	0	**0**	**0**
08:00 08:15	0	0	**0**	1	0	**1**	**1**
08:15 08:30	0	0	**0**	0	0	**0**	**0**
08:30 08:45	0	0	**0**	1	0	**1**	**1**
08:45 09:00	0	0	**0**	0	0	**0**	**0**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
09:15 09:30	0	0	**0**	0	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	1	0	**1**	0	0	**0**	**1**
12:15 12:30	0	0	**0**	0	0	**0**	**0**
12:30 12:45	0	0	**0**	0	0	**0**	**0**
12:45 13:00	0	0	**0**	0	0	**0**	**0**
13:00 13:15	0	0	**0**	1	2	**3**	**3**
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	2	0	**2**	0	1	**1**	**3**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	1	**1**	**1**
16:00 16:15	1	0	**1**	0	0	**0**	**1**
16:15 16:30	0	1	**1**	0	0	**0**	**1**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	0	2	**2**	**2**
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	6	1	**7**	5	6	**11**	**18**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 **WO No:** 39171

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

Full Study Heavy Vehicles

		AVEIA PRIV/DAIRY DR									OLD MONTREAL RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	2	0	**2**	**7**	**7**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	4	0	**4**	**8**	**8**
07:30	07:45	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	5	0	**5**	**5**	**6**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	0	0	**0**	**2**	**2**
08:00	08:15	0	0	0	**0**	1	0	0	**1**	**1**	0	7	0	**7**	0	4	0	**4**	**11**	**12**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	3	0	**3**	**5**	**5**
08:30	08:45	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	2	1	**3**	**6**	**6**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	1	0	**1**	**6**	**6**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	4	1	**5**	**7**	**7**
09:15	09:30	0	0	0	**0**	0	0	1	**1**	**1**	1	1	0	**2**	0	1	0	**1**	**3**	**4**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	0	0	**0**	**1**	**1**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	1	0	**1**	**6**	**6**
11:30	11:45	0	0	0	**0**	0	0	1	**1**	**1**	0	4	0	**4**	0	2	1	**3**	**7**	**8**
11:45	12:00	0	0	0	**0**	0	0	0	**0**	**0**	1	7	0	**8**	0	5	0	**5**	**13**	**13**
12:00	12:15	0	0	0	**0**	1	0	1	**2**	**2**	0	2	0	**2**	0	9	1	**10**	**12**	**14**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	8	0	**8**	0	4	0	**4**	**12**	**12**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	1	7	0	**8**	0	5	0	**5**	**13**	**13**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	3	2	**5**	**8**	**8**
13:00	13:15	0	0	0	**0**	1	0	0	**1**	**1**	0	4	0	**4**	0	5	1	**6**	**10**	**11**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	2	0	**2**	**4**	**4**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	1	7	0	**8**	0	5	0	**5**	**13**	**13**
15:15	15:30	0	0	1	**1**	0	0	0	**0**	**1**	0	6	1	**7**	0	5	2	**7**	**14**	**15**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	3	0	**3**	**7**	**7**
15:45	16:00	0	0	0	**0**	2	0	0	**2**	**2**	0	2	0	**2**	0	1	0	**1**	**3**	**5**
16:00	16:15	0	0	0	**0**	0	0	1	**1**	**1**	1	7	0	**8**	0	2	0	**2**	**10**	**11**
16:15	16:30	0	0	0	**0**	0	0	1	**1**	**1**	0	4	0	**4**	0	6	0	**6**	**10**	**11**
16:30	16:45	0	0	0	**0**	0	0	1	**1**	**1**	0	2	0	**2**	0	2	0	**2**	**4**	**5**
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**	0	0	0	**0**	**0**	1	2	0	**3**	0	1	0	**1**	**4**	**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**	0	0	0	**0**	**0**	0	2	0	**2**	0	4	0	**4**	**6**	**6**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
Total:	None	0	0	1	**1**	6	0	6	**12**	**13**	10	109	1	**120**	0	94	9	**103**	**223**	**236**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD

Survey Date: Wednesday, December 04, 2019 WO No: 39171

Start Time: 07:00 Device: Miovision

Full Study 15 Minute U-Turn Total

		AVEIA PRIV/DAIRY DR	OLD MONTREAL RD			
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	1	0	**1**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	1	**1**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	1	**1**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	0	0	0	0	**0**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	0	0	**0**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		0	0	1	2	**3**

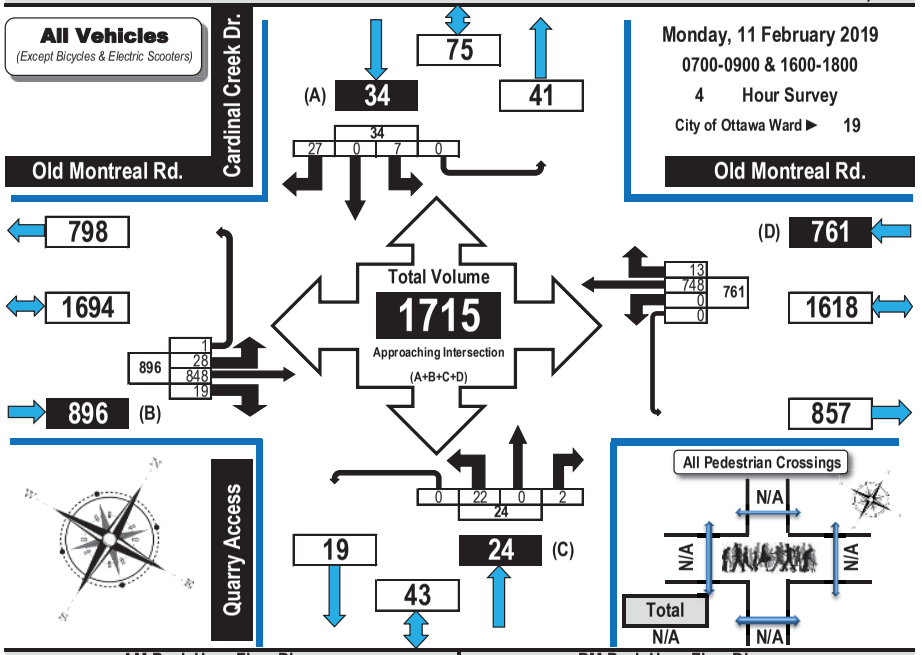
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

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

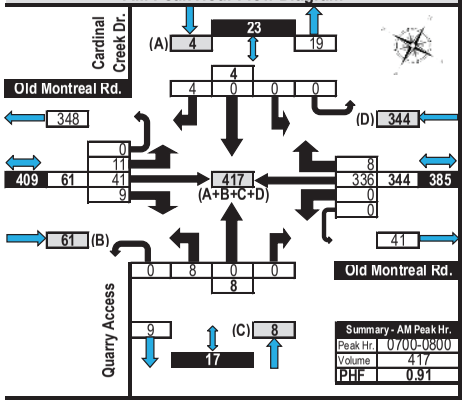
Cardinal Creek Drive & Old Montreal Road — **Cumberland, ON**

All Vehicles
(Except Bicycles & Electric Scooters)

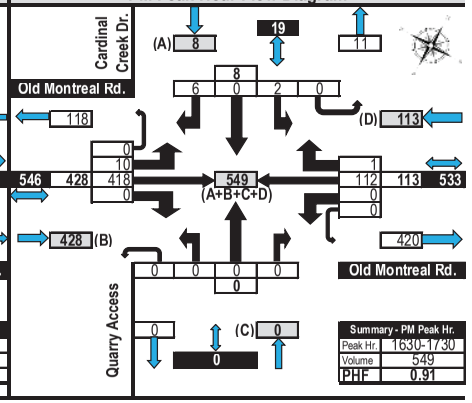
Monday, 11 February 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 19



AM Peak Hour Flow Diagram



PM Peak Hour Flow Diagram



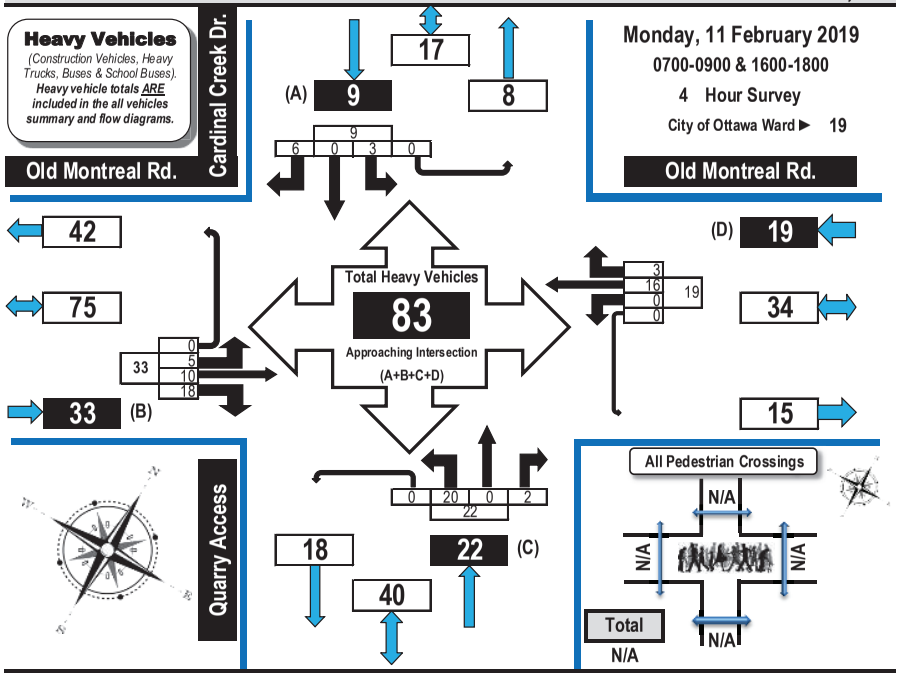
Turning Movement Count
Heavy Vehicle Summary Flow Diagram

Heavy Trucks, Buses, and School Buses

Cardinal Creek Drive & Old Montreal Road — **Cumberland, ON**

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

Monday, 11 February 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ► 19



	Old Montreal Rd. Eastbound					Old Montreal Rd. Westbound					Quarry Access Northbound					Cardinal Creek Dr. Southbound					
Time Period	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	LT	ST	RT	UT	S. Tot	G.Tot.
0700-0800	3	0	9	0	12	0	7	2	0	9	8	0	0	0	8	0	0	3	0	3	32
0800-0900	1	0	9	0	10	0	4	1	0	5	11	0	0	0	11	1	0	2	0	3	29
1600-1700	0	9	0	0	9	0	4	0	0	4	1	0	2	0	3	1	0	0	0	1	17
1700-1800	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	5
Totals	5	10	18	0	33	0	16	3	0	19	20	0	2	0	22	3	0	6	0	9	83

Comments:
The quarry access, northbound, is offset approximately 10 -15 m east of Cardinal Creek Drive. There are missing intersection warning signs (Wa-13), checkerboard sign southbound at Old Montreal Road (Wa-8LR) and keep right/object marker signs (Rb-25 & Wa-33L) on the median north of Old Montreal Road. The Cardinal Creek Village development is under construction and not fully occupied.

Turning Movement Count
Summary Report
AADT and Expansion Factors

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

Cardinal Creek Drive & Old Montreal Road — Cumberland, ON

Survey Date: Monday, 11 February 2019 **Start Time:** 0700 **AADT Factor:** 1.0
Weather AM: Clear & Sunny -15ºC **Survey Duration:** 4 Hrs. **Survey Hours:** 0700-0900 & 1600-1800
Weather PM: Clear & Sunny -8ºC **Surveyor(s):** Carmody

	Old Montreal Rd. Eastbound					Old Montreal Rd. Westbound						Quarry Access Northbound					Cardinal Creek Dr. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	11	41	9	0	61	0	336	8	0	344	405	8	0	0	0	8	0	0	4	0	4	12	417
0800-0900	2	46	10	0	58	0	204	1	0	205	263	12	0	0	0	12	3	0	10	0	13	25	288
1600-1700	7	425	0	1	433	0	97	2	0	99	532	2	0	2	0	4	2	0	7	0	9	13	545
1700-1800	8	336	0	0	344	0	111	2	0	113	457	0	0	0	0	0	2	0	6	0	8	8	465
Totals	28	848	19	1	896	0	748	13	0	761	1657	22	0	2	0	24	7	0	27	0	34	58	1715

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

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

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

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

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

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

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

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

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 0700h & 0900h

AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0700-0800	11	41	9	0	61	0	336	8	0	344	405	8	0	0	0	8	0	0	4	0	4	12	417

PM Peak Hour Factor ➡ 0.91 — Highest Hourly Vehicle Volume Between 1600h & 1800h

PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1630-1730	10	418	0	0	428	0	112	1	0	113	541	0	0	0	0	0	2	0	6	0	8	8	549

Comments:

The quarry access, northbound, is offset approximately 10 -15 m east of Cardinal Creek Drive. There are missing intersection warning signs (Wa-13), checkerboard sign southbound at Old Montreal Road (Wa-8LR) and keep right/object marker signs (Rb-25 & Wa-33L) on the median north of Old Montreal Road. The Cardinal Creek Village development is under construction and not fully occupied.

Notes:

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

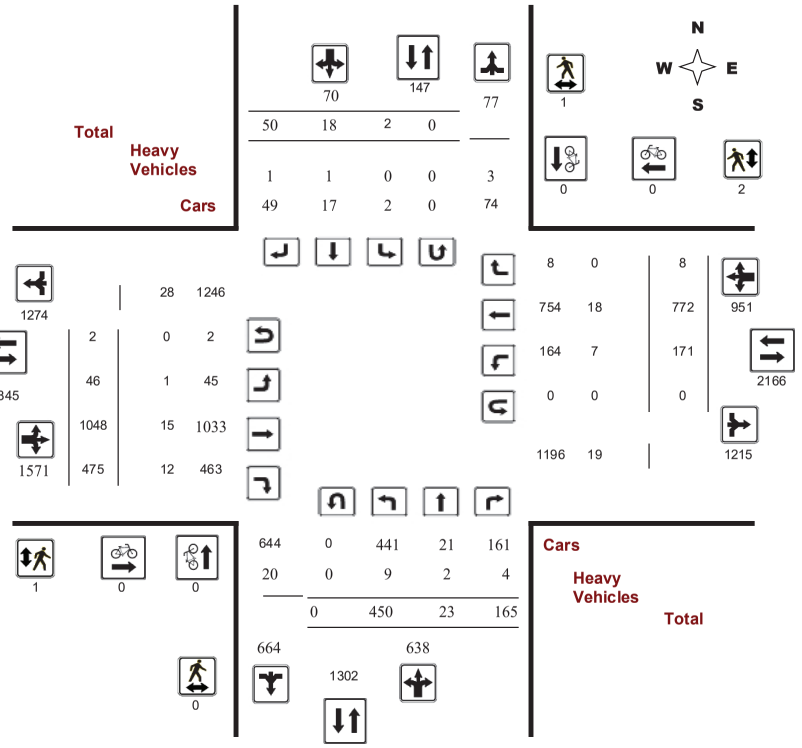
Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746
Start Time: 07:00 **Device:** Miovision

Full Study Diagram



Transportation Services - Traffic Services

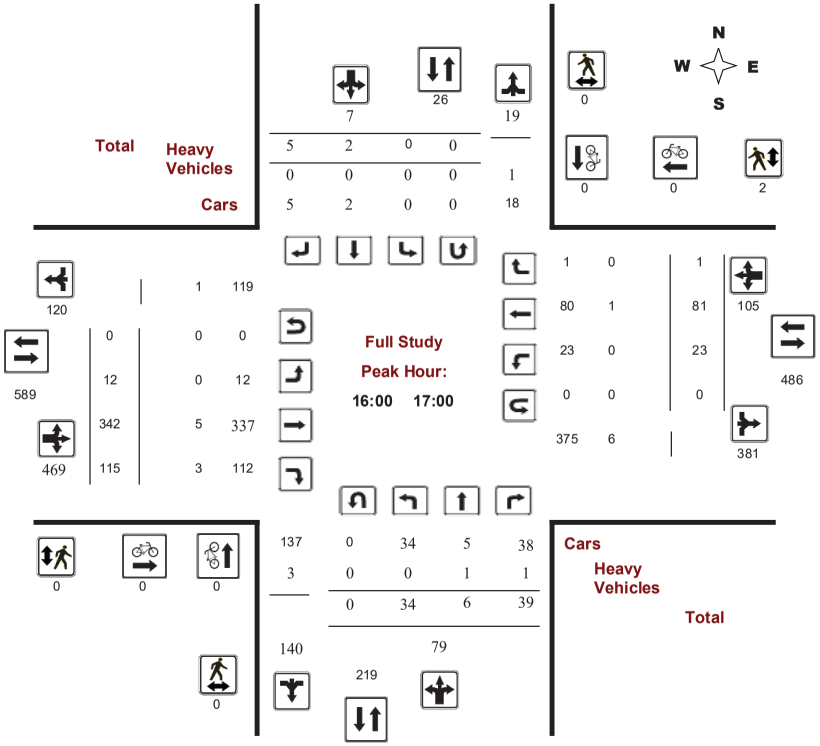
Turning Movement Count - Study Results

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study Peak Hour Diagram



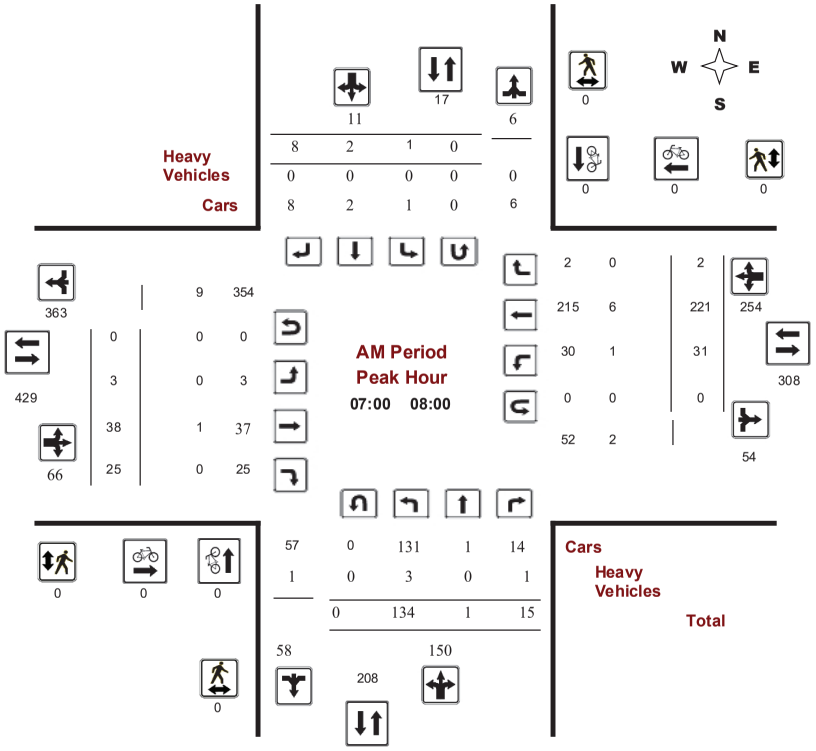
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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



Comments

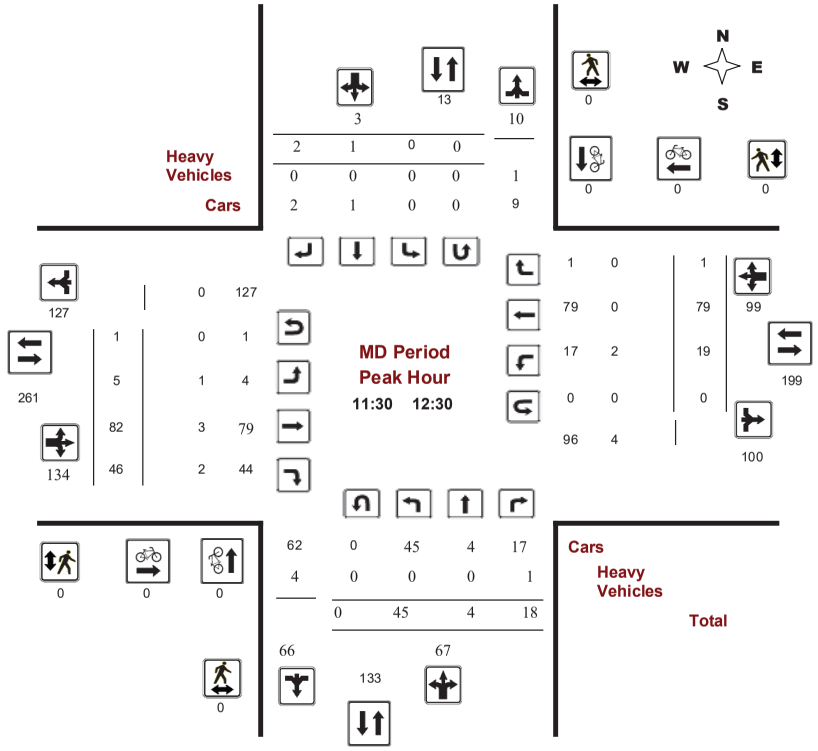
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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



Comments

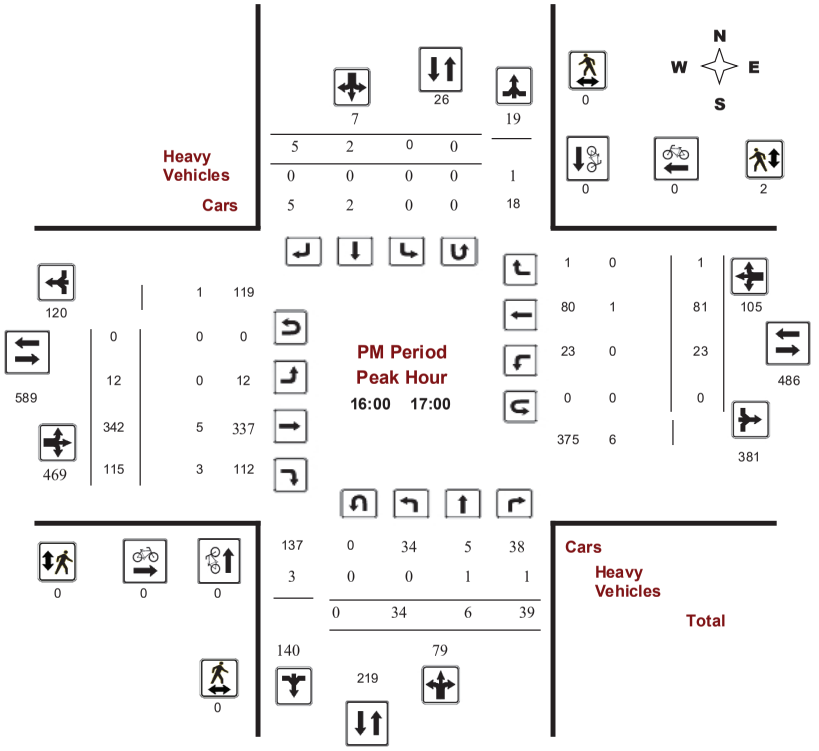
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, August 28, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 2 Westbound: 0

AADT Factor

.90

	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	134	1	15	**150**	1	2	8	**11**	**161**	3	38	25	**66**	31	221	2	**254**	**320**	**481**
08:00 09:00	72	1	10	**83**	1	3	6	**10**	**93**	0	55	28	**83**	21	124	1	**146**	**229**	**322**
09:00 10:00	47	7	10	**64**	0	2	12	**14**	**78**	4	47	25	**76**	23	83	1	**107**	**183**	**261**
11:30 12:30	45	4	18	**67**	0	1	2	**3**	**70**	5	82	46	**133**	19	79	1	**99**	**232**	**302**
12:30 13:30	39	0	21	**60**	0	1	5	**6**	**66**	4	55	42	**101**	18	62	1	**81**	**182**	**248**
15:00 16:00	39	2	28	**69**	0	3	4	**7**	**76**	5	198	95	**298**	19	49	1	**69**	**367**	**443**
16:00 17:00	34	6	39	**79**	0	2	5	**7**	**86**	12	342	115	**469**	23	81	1	**105**	**574**	**660**
17:00 18:00	40	2	24	**66**	0	4	8	**12**	**78**	13	231	99	**343**	17	73	0	**90**	**433**	**511**
Sub Total	450	23	165	**638**	2	18	50	**70**	**708**	46	1048	475	**1569**	171	772	8	**951**	**2520**	**3228**
U Turns	0			**0**	0			**0**	**0**	**2**			**2**	0			**0**	**2**	**2**
Total	450	23	165	**638**	2	18	50	**70**	**708**	48	1048	475	**1571**	171	772	8	**951**	**2522**	**3230**
EQ 12Hr	626	32	229	**887**	3	25	70	**98**	**985**	67	1457	660	**2184**	238	1073	11	**1322**	**3506**	**4491**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	563	29	206	**798**	3	22	63	**88**	**886**	60	1311	594	**1965**	214	966	10	**1190**	**3155**	**4041**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	738	38	270	**1046**	4	29	83	**116**	**1162**	79	1717	778	**2574**	280	1265	13	**1558**	**4132**	**5294**
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

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study 15 Minute Increments

		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	44	0	2	46	0	0	3	3	**49**	0	6	6	12	10	68	0	78	**90**	**139**
07:15	07:30	39	1	5	45	0	1	2	3	**48**	1	11	7	19	14	57	0	71	**90**	**138**
07:30	07:45	29	0	6	35	1	1	1	3	**38**	1	11	5	17	5	57	1	63	**80**	**118**
07:45	08:00	22	0	2	24	0	0	2	2	**26**	1	10	7	18	2	39	1	42	**60**	**86**
08:00	08:15	20	0	1	21	0	0	3	3	**24**	0	15	8	23	3	37	1	41	**64**	**88**
08:15	08:30	22	0	4	26	0	1	0	1	**27**	0	12	12	24	7	37	0	44	**68**	**95**
08:30	08:45	14	1	1	16	1	1	3	5	**21**	0	15	6	21	7	26	0	33	**54**	**75**
08:45	09:00	16	0	4	20	0	1	0	1	**21**	0	13	2	15	4	24	0	28	**43**	**64**
09:00	09:15	18	1	3	22	0	0	1	1	**23**	1	14	4	19	6	23	0	29	**48**	**71**
09:15	09:30	11	2	5	18	0	0	3	3	**21**	0	11	4	15	5	20	0	25	**40**	**61**
09:30	09:45	8	0	0	8	0	1	5	6	**14**	2	13	9	24	5	20	1	26	**50**	**64**
09:45	10:00	10	4	2	16	0	1	3	4	**20**	1	9	8	18	7	20	0	27	**45**	**65**
11:30	11:45	18	0	4	22	0	1	0	1	**23**	2	21	12	35	5	26	0	31	**66**	**89**
11:45	12:00	15	3	4	22	0	0	1	1	**23**	0	17	9	26	4	21	0	25	**51**	**74**
12:00	12:15	2	1	5	8	0	0	0	0	**8**	3	24	8	35	3	12	0	15	**50**	**58**
12:15	12:30	10	0	5	15	0	0	1	1	**16**	1	20	17	38	7	20	1	28	**66**	**82**
12:30	12:45	15	0	5	20	0	0	3	3	**23**	1	17	14	32	2	17	0	19	**51**	**74**
12:45	13:00	8	0	6	14	0	0	0	0	**14**	1	9	9	19	7	19	1	27	**46**	**60**
13:00	13:15	8	0	6	14	0	0	0	0	**14**	1	16	11	28	3	11	0	14	**42**	**56**
13:15	13:30	8	0	4	12	0	1	2	3	**15**	2	13	8	23	6	15	0	21	**44**	**59**
15:00	15:15	11	2	4	17	0	2	0	2	**19**	2	29	23	54	10	16	1	27	**81**	**100**
15:15	15:30	9	0	4	13	0	0	2	2	**15**	0	40	21	61	2	10	0	12	**73**	**88**
15:30	15:45	11	0	10	21	0	1	1	2	**23**	2	70	21	93	2	9	0	11	**104**	**127**
15:45	16:00	8	0	10	18	0	0	1	1	**19**	1	59	30	90	5	14	0	19	**109**	**128**
16:00	16:15	9	3	8	20	0	0	0	0	**20**	5	97	23	125	5	18	0	23	**148**	**168**
16:15	16:30	10	0	10	20	0	1	0	1	**21**	1	87	28	116	4	19	0	23	**139**	**160**
16:30	16:45	7	1	11	19	0	0	3	3	**22**	2	100	32	134	10	24	0	34	**168**	**190**
16:45	17:00	8	2	10	20	0	1	2	3	**23**	4	58	32	94	4	20	1	25	**119**	**142**
17:00	17:15	5	0	9	14	0	1	4	5	**19**	3	65	27	95	4	13	0	17	**112**	**131**
17:15	17:30	9	0	8	17	0	1	2	3	**20**	6	80	24	110	3	20	0	23	**133**	**153**
17:30	17:45	17	0	5	22	0	1	1	2	**24**	2	49	29	80	6	19	0	25	**105**	**129**
17:45	18:00	9	2	2	13	0	1	1	2	**15**	2	37	19	58	4	21	0	25	**83**	**98**
Total:		450	23	165	638	2	18	50	70	**708**	48	1048	475	1571	171	772	8	951	**708**	**3,230**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study Cyclist Volume

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**	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

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study Pedestrian Volume

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	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**	1	0	**1**	**1**
15:00 15:15	0	0	**0**	0	0	**0**	**0**
15:15 15:30	0	1	**1**	0	0	**0**	**1**
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	2	**2**	**2**
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	1	**1**	1	2	**3**	**4**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study Heavy Vehicles

Time Period		Northbound				Southbound					Eastbound				Westbound						
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	2	0	1	**3**	0	0	0	**0**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	1	2	0	**3**	**4**	**4**
07:30	07:45	1	0	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	2	0	**2**	**2**	**3**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	2	0	**2**	**2**	**2**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	1	**1**	0	1	0	**1**	**2**	**2**
08:15	08:30	1	0	0	**1**	0	0	0	**0**	**1**	0	1	2	**3**	0	0	0	**0**	**3**	**4**
08:30	08:45	1	0	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	1	0	0	**1**	**1**	**3**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	2	0	**2**	**3**	**3**
09:15	09:30	0	0	1	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
09:45	10:00	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	0	0	**0**	**2**	**2**
11:45	12:00	0	0	1	**1**	0	0	0	**0**	**1**	0	1	0	**1**	0	0	0	**0**	**1**	**2**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	1	0	0	**1**	**2**	**2**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	2	**2**	1	0	0	**1**	**3**	**3**
12:30	12:45	1	0	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	2	0	**2**	**2**	**3**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	0	0	**0**	**1**	**1**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	2	0	**3**	**3**	**3**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	2	**2**	1	0	0	**1**	**3**	**3**
15:15	15:30	0	0	0	**0**	0	0	1	**1**	**1**	0	0	1	**1**	1	1	0	**2**	**3**	**4**
15:30	15:45	2	0	0	**2**	0	0	0	**0**	**2**	0	1	0	**1**	0	0	0	**0**	**1**	**3**
15:45	16:00	1	0	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
16:00	16:15	0	1	0	**1**	0	0	0	**0**	**1**	0	2	0	**2**	0	0	0	**0**	**2**	**3**
16:15	16:30	0	0	1	**1**	0	0	0	**0**	**1**	0	2	0	**2**	0	0	0	**0**	**2**	**3**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	1	**2**	0	1	0	**1**	**3**	**3**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	2	**2**	0	0	0	**0**	**2**	**2**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	1	**3**	0	1	0	**1**	**4**	**4**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
Total:	None	9	2	4	**15**	0	1	1	**2**	**17**	1	15	12	**28**	7	18	0	**25**	**53**	**70**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R

Survey Date: Wednesday, August 28, 2019 **WO No:** 38746

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

Full Study 15 Minute U-Turn Total

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	1	0	**1**
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	1	0	**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	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		0	0	2	0	**2**

Transportation Services - Traffic Services

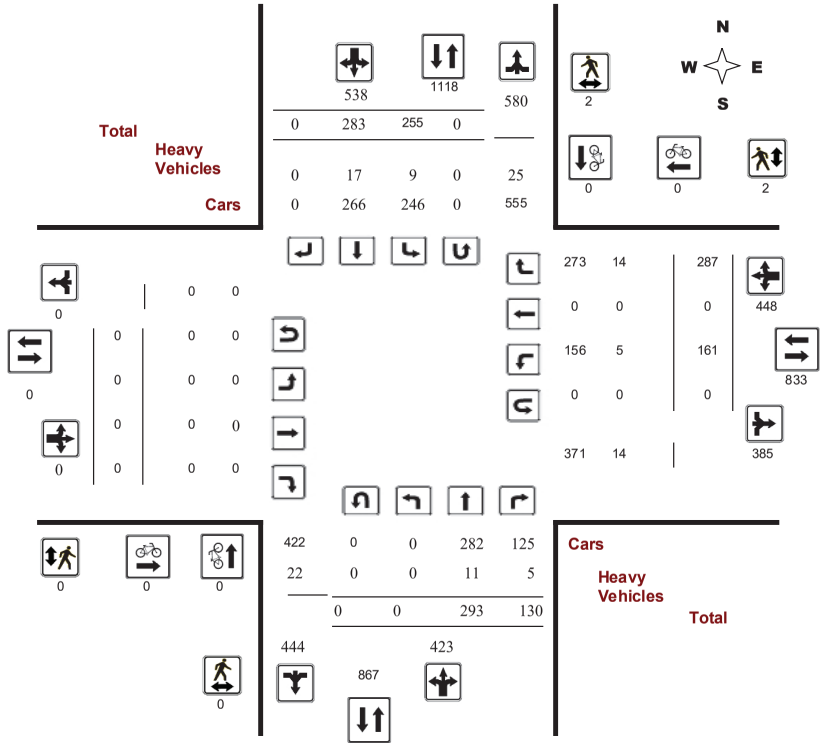
Turning Movement Count - Study Results

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study Diagram



Transportation Services - Traffic Services

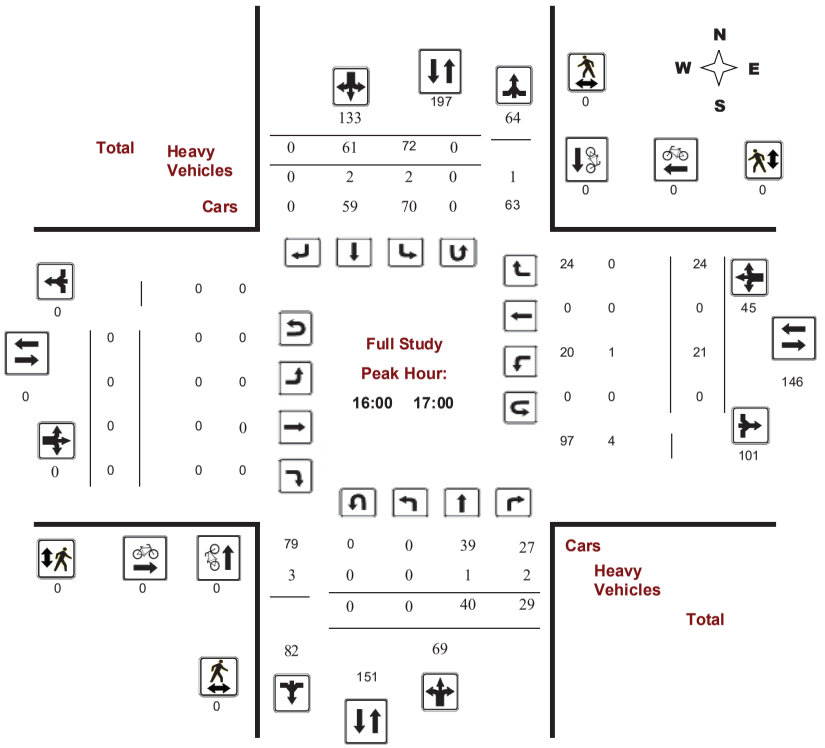
Turning Movement Count - Study Results

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study Peak Hour Diagram



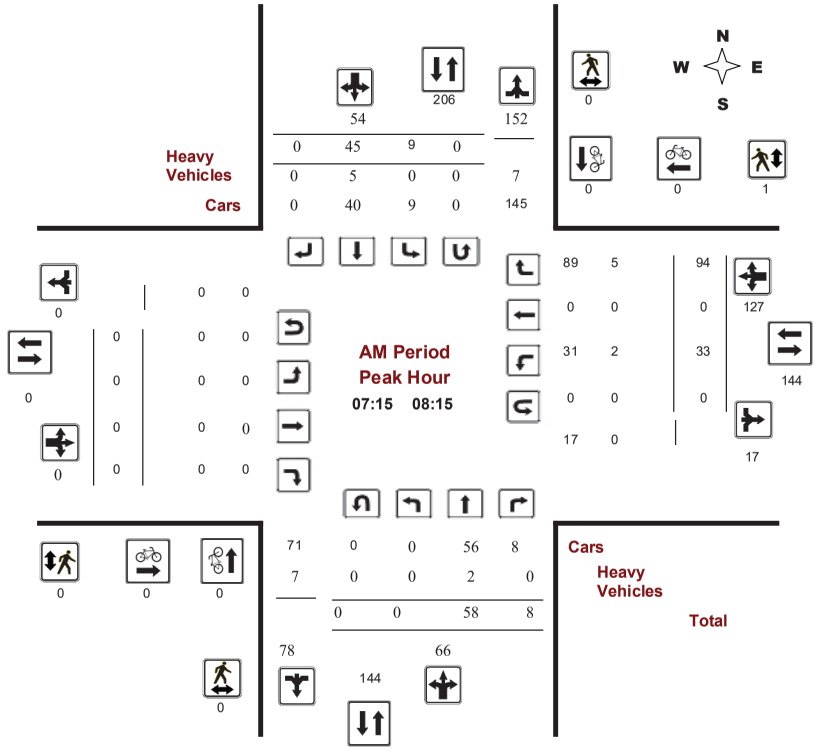
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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



Comments

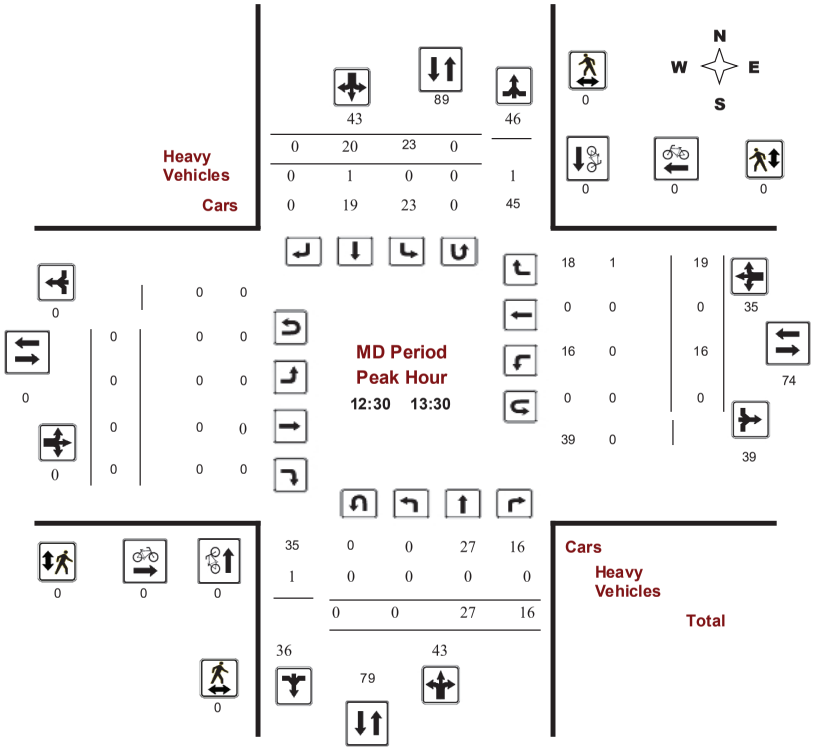
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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



Comments

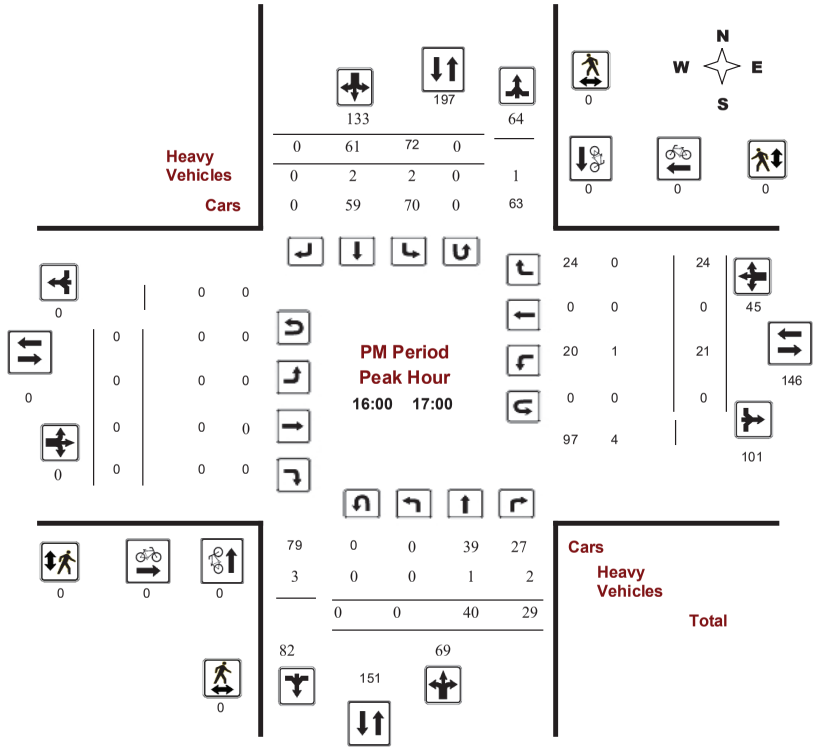
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, November 13, 2013

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

.90

	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	58	5	**63**	8	41	0	**49**	**112**	0	0	0	**0**	29	0	104	**133**	**133**	**245**
08:00 09:00	0	51	9	**60**	15	29	0	**44**	**104**	0	0	0	**0**	28	0	60	**88**	**88**	**192**
09:00 10:00	0	21	8	**29**	15	25	0	**40**	**69**	0	0	0	**0**	17	0	35	**52**	**52**	**121**
11:30 12:30	0	27	10	**37**	16	19	0	**35**	**72**	0	0	0	**0**	17	0	21	**38**	**38**	**110**
12:30 13:30	0	27	16	**43**	23	20	0	**43**	**86**	0	0	0	**0**	16	0	19	**35**	**35**	**121**
15:00 16:00	0	38	21	**59**	47	37	0	**84**	**143**	0	0	0	**0**	17	0	10	**27**	**27**	**170**
16:00 17:00	0	40	29	**69**	72	61	0	**133**	**202**	0	0	0	**0**	21	0	24	**45**	**45**	**247**
17:00 18:00	0	31	32	**63**	59	51	0	**110**	**173**	0	0	0	**0**	16	0	14	**30**	**30**	**203**
Sub Total	0	293	130	**423**	255	283	0	**538**	**961**	0	0	0	**0**	161	0	287	**448**	**448**	**1409**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	0			**0**	**0**	**0**
Total	0	293	130	**423**	255	283	0	**538**	**961**	0	0	0	**0**	161	0	287	**448**	**448**	**1409**
EQ 12Hr	0	407	181	**588**	354	393	0	**747**	**1335**	0	0	0	**0**	224	0	399	**623**	**623**	**1958**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	366	163	**529**	319	354	0	**673**	**1202**	0	0	0	**0**	202	0	359	**561**	**561**	**1763**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	0	479	214	**693**	418	464	0	**882**	**1575**	0	0	0	**0**	265	0	470	**735**	**735**	**2310**

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

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study 15 Minute Increments

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	9	0	9	3	5	0	8	**17**	0	0	0	0	7	0	28	35	**35**	**52**
07:15	07:30	0	16	1	17	2	7	0	9	**26**	0	0	0	0	6	0	29	35	**35**	**61**
07:30	07:45	0	18	0	18	0	20	0	20	**38**	0	0	0	0	10	0	27	37	**37**	**75**
07:45	08:00	0	15	4	19	3	9	0	12	**31**	0	0	0	0	6	0	20	26	**26**	**57**
08:00	08:15	0	9	3	12	4	9	0	13	**25**	0	0	0	0	11	0	18	29	**29**	**54**
08:15	08:30	0	15	1	16	3	8	0	11	**27**	0	0	0	0	3	0	12	15	**15**	**42**
08:30	08:45	0	9	2	11	5	4	0	9	**20**	0	0	0	0	8	0	16	24	**24**	**44**
08:45	09:00	0	18	3	21	3	8	0	11	**32**	0	0	0	0	6	0	14	20	**20**	**52**
09:00	09:15	0	11	1	12	7	10	0	17	**29**	0	0	0	0	3	0	15	18	**18**	**47**
09:15	09:30	0	6	3	9	5	4	0	9	**18**	0	0	0	0	6	0	9	15	**15**	**33**
09:30	09:45	0	1	4	5	2	6	0	8	**13**	0	0	0	0	3	0	5	8	**8**	**21**
09:45	10:00	0	3	0	3	1	5	0	6	**9**	0	0	0	0	5	0	6	11	**11**	**20**
11:30	11:45	0	7	1	8	5	6	0	11	**19**	0	0	0	0	8	0	5	13	**13**	**32**
11:45	12:00	0	8	3	11	5	4	0	9	**20**	0	0	0	0	4	0	5	9	**9**	**29**
12:00	12:15	0	6	3	9	4	6	0	10	**19**	0	0	0	0	3	0	5	8	**8**	**27**
12:15	12:30	0	6	3	9	2	3	0	5	**14**	0	0	0	0	2	0	6	8	**8**	**22**
12:30	12:45	0	9	3	12	8	5	0	13	**25**	0	0	0	0	3	0	5	8	**8**	**33**
12:45	13:00	0	5	3	8	6	7	0	13	**21**	0	0	0	0	3	0	5	8	**8**	**29**
13:00	13:15	0	8	5	13	5	5	0	10	**23**	0	0	0	0	5	0	6	11	**11**	**34**
13:15	13:30	0	5	5	10	4	3	0	7	**17**	0	0	0	0	5	0	3	8	**8**	**25**
15:00	15:15	0	4	3	7	11	5	0	16	**23**	0	0	0	0	3	0	1	4	**4**	**27**
15:15	15:30	0	8	5	13	12	8	0	20	**33**	0	0	0	0	2	0	5	7	**7**	**40**
15:30	15:45	0	15	4	19	10	14	0	24	**43**	0	0	0	0	6	0	0	6	**6**	**49**
15:45	16:00	0	11	9	20	14	10	0	24	**44**	0	0	0	0	6	0	4	10	**10**	**54**
16:00	16:15	0	9	8	17	17	15	0	32	**49**	0	0	0	0	7	0	5	12	**12**	**61**
16:15	16:30	0	10	8	18	11	13	0	24	**42**	0	0	0	0	5	0	10	15	**15**	**57**
16:30	16:45	0	12	6	18	21	20	0	41	**59**	0	0	0	0	2	0	5	7	**7**	**66**
16:45	17:00	0	9	7	16	23	13	0	36	**52**	0	0	0	0	7	0	4	11	**11**	**63**
17:00	17:15	0	8	9	17	20	16	0	36	**53**	0	0	0	0	4	0	2	6	**6**	**59**
17:15	17:30	0	3	10	13	15	12	0	27	**40**	0	0	0	0	4	0	5	9	**9**	**49**
17:30	17:45	0	13	8	21	14	13	0	27	**48**	0	0	0	0	3	0	4	7	**7**	**55**
17:45	18:00	0	7	5	12	10	10	0	20	**32**	0	0	0	0	5	0	3	8	**8**	**40**
Total:		0	293	130	423	255	283	0	538	**961**	0	0	0	0	161	0	287	448	**961**	**1,409**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study Cyclist Volume

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**	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

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study Pedestrian Volume

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	1	**1**	**3**
07:15 07:30	0	0	**0**	0	0	**0**	**0**
07:30 07:45	0	0	**0**	0	1	**1**	**1**
07:45 08:00	0	0	**0**	0	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	2	**2**	0	2	**2**	**4**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study Heavy Vehicles

		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	0	0	**0**	0	0	2	**2**	**2**	**2**
07:15	07:30	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	2	**2**	**2**	**3**
07:30	07:45	0	1	0	**1**	0	4	0	**4**	**5**	0	0	0	**0**	2	0	2	**4**	**4**	**9**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
08:00	08:15	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	1	**1**	**1**	**2**
08:15	08:30	0	1	1	**2**	1	0	0	**1**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
08:30	08:45	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	2	0	2	**4**	**4**	**5**
08:45	09:00	0	1	0	**1**	1	0	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
09:15	09:30	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
09:30	09:45	0	0	1	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	1	**1**	**1**	**2**
09:45	10:00	0	2	0	**2**	1	1	0	**2**	**4**	0	0	0	**0**	0	0	1	**1**	**1**	**5**
11:30	11:45	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	1	**1**	**1**	**2**
11:45	12:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
12:00	12:15	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
12:30	12:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
13:15	13:30	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	1	**1**	**1**	**2**
15:00	15:15	0	0	0	**0**	2	2	0	**4**	**4**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
15:15	15:30	0	0	1	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	1	**1**	**1**	**2**
15:30	15:45	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
15:45	16:00	0	1	0	**1**	0	2	0	**2**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
16:00	16:15	0	0	2	**2**	1	0	0	**1**	**3**	0	0	0	**0**	1	0	0	**1**	**1**	**4**
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**	0	2	0	**2**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
16:45	17:00	0	1	0	**1**	1	0	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:30	17:45	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
17:45	18:00	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
Total:	None	0	11	5	**16**	9	17	0	**26**	**42**	0	0	0	**0**	5	0	14	**19**	**19**	**61**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

FRANK KENNY RD @ WILHAVEN DR

Survey Date: Wednesday, November 13, 2013 **WO No:** 924

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

Full Study 15 Minute U-Turn Total

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

Appendix C

Synchro Intersection Worksheets – Existing Conditions

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal AM Existing]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	218	2.0	0.477	9.6	LOS A	2.4	16.9	0.28	0.50	0.28	55.9
2	T1	1011	2.0	0.477	3.9	LOS A	2.4	17.0	0.27	0.43	0.27	56.5
3	R2	57	2.0	0.477	4.1	LOS A	2.4	17.0	0.26	0.39	0.26	55.1
Approach		1286	2.0	0.477	4.9	LOS A	2.4	17.0	0.27	0.44	0.27	56.3
East: Old Montreal												
4	L2	109	2.0	0.130	12.1	LOS B	0.5	3.8	0.62	0.85	0.62	52.0
5	T1	144	2.0	0.115	5.4	LOS A	0.5	3.8	0.60	0.53	0.60	55.1
6	R2	163	2.0	0.128	5.3	LOS A	0.6	4.3	0.58	0.65	0.58	54.2
Approach		417	2.0	0.130	7.1	LOS A	0.6	4.3	0.60	0.66	0.60	53.9
North: Trim												
7	L2	64	2.0	0.206	11.0	LOS B	0.9	6.5	0.51	0.61	0.51	54.9
8	T1	333	2.0	0.206	5.1	LOS A	0.9	6.7	0.50	0.55	0.50	55.3
9	R2	26	2.0	0.206	5.1	LOS A	0.9	6.7	0.49	0.50	0.49	54.0
Approach		423	2.0	0.206	6.0	LOS A	0.9	6.7	0.50	0.55	0.50	55.2
West: St Joseph												
10	L2	23	2.0	0.022	10.3	LOS B	0.1	0.6	0.43	0.65	0.43	52.7
11	T1	24	2.0	0.018	4.3	LOS A	0.1	0.5	0.41	0.43	0.41	56.2
12	R2	47	20.0	0.036	4.6	LOS A	0.1	1.2	0.39	0.51	0.39	54.5
Approach		94	10.9	0.036	5.9	LOS A	0.1	1.2	0.41	0.53	0.41	54.4
All Vehicles		2220	2.4	0.477	5.6	LOS A	2.4	17.0	0.38	0.51	0.38	55.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: October 26, 2021 2:07:56 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	107	5	0	363	99	9	7	0	6	0	5
Future Vol, veh/h	9	107	5	0	363	99	9	7	0	6	0	5
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	10	2	2	3	2	2	2	2	17	2	2
Mvmt Flow	10	119	6	0	403	110	10	8	0	7	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	126	0	0	606	656	123	604	604	460
Stage 1	-	-	-	-	-	-	143	143	-	458	458	-
Stage 2	-	-	-	-	-	-	463	513	-	146	146	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.27	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.653	4.018	3.318
Pot Cap-1 Maneuver	1052	-	-	1460	-	-	409	385	928	389	412	601
Stage 1	-	-	-	-	-	-	860	779	-	555	567	-
Stage 2	-	-	-	-	-	-	579	536	-	822	776	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1052	-	-	1459	-	-	401	381	927	380	407	600
Mov Cap-2 Maneuver	-	-	-	-	-	-	401	381	-	380	407	-
Stage 1	-	-	-	-	-	-	851	770	-	549	567	-
Stage 2	-	-	-	-	-	-	573	536	-	806	767	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	14.6	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	392	1052	-	-	1459	-	-	380	600
HCM Lane V/C Ratio	0.045	0.01	-	-	-	-	-	0.018	0.009
HCM Control Delay (s)	14.6	8.5	-	-	0	-	-	14.6	11.1
HCM Lane LOS	B	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	60	366	17	8	104
Future Vol, veh/h	51	60	366	17	8	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	13	2	2	2	8
Mvmt Flow	57	67	407	19	9	116

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	426	0	-	0	598	417
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	181	-
Critical Hdwy	4.2	-	-	-	6.42	6.28
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.372
Pot Cap-1 Maneuver	1092	-	-	-	465	623
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	850	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1092	-	-	-	441	623
Mov Cap-2 Maneuver	-	-	-	-	441	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	850	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1092	-	-	-	605
HCM Lane V/C Ratio	0.052	-	-	-	0.206
HCM Control Delay (s)	8.5	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	51	355	8	9	30
Future Vol, veh/h	11	51	355	8	9	30
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	90	90	90	90	90	90
Heavy Vehicles, %	27	2	2	25	2	75
Mvmt Flow	12	57	394	9	10	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	403	0	-	0	480	399
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	81	-
Critical Hdwy	4.37	-	-	-	6.42	6.95
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.443	-	-	-	3.518	3.975
Pot Cap-1 Maneuver	1033	-	-	-	545	518
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	942	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1033	-	-	-	538	518
Mov Cap-2 Maneuver	-	-	-	-	538	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	942	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1033	-	-	-	522
HCM Lane V/C Ratio	0.012	-	-	-	0.083
HCM Control Delay (s)	8.5	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	38	25	31	221	2	134	1	15	1	2	8
Future Vol, veh/h	3	38	25	31	221	2	134	1	15	1	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	3	2	3	3	2	2	2	7	2	2	2
Mvmt Flow	3	42	28	34	246	2	149	1	17	1	2	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	248	0	0	70	0	0	383	378	56	386	391	247
Stage 1	-	-	-	-	-	-	62	62	-	315	315	-
Stage 2	-	-	-	-	-	-	321	316	-	71	76	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.27	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.363	3.518	4.018	3.318
Pot Cap-1 Maneuver	1318	-	-	1524	-	-	575	554	997	573	545	792
Stage 1	-	-	-	-	-	-	949	843	-	696	656	-
Stage 2	-	-	-	-	-	-	691	655	-	939	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1318	-	-	1524	-	-	555	538	997	551	530	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	555	538	-	551	530	-
Stage 1	-	-	-	-	-	-	947	841	-	695	639	-
Stage 2	-	-	-	-	-	-	663	638	-	920	830	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.9	13.7	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	581	1318	-	-	1524	-	-	701
HCM Lane V/C Ratio	0.287	0.003	-	-	0.023	-	-	0.017
HCM Control Delay (s)	13.7	7.7	0	-	7.4	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↓
Traffic Vol, veh/h	33	94	58	8	9	49
Future Vol, veh/h	33	94	58	8	9	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	5	3	2	2	11
Mvmt Flow	37	104	64	9	10	54

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	143	69	0	0	73	0
Stage 1	69	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.46	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	840	986	-	-	1527	-
Stage 1	944	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	834	986	-	-	1527	-
Mov Cap-2 Maneuver	834	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	932	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 941	1527	-
HCM Lane V/C Ratio	-	- 0.15	0.007	-
HCM Control Delay (s)	-	- 9.5	7.4	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.5	0	-

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal PM Existing]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	137	2.0	0.365	10.7	LOS B	1.6	11.4	0.50	0.61	0.50	54.9
2	T1	544	2.0	0.365	4.9	LOS A	1.7	11.8	0.49	0.55	0.49	55.3
3	R2	111	2.0	0.365	5.0	LOS A	1.7	11.8	0.49	0.50	0.49	54.1
Approach		792	2.0	0.365	5.9	LOS A	1.7	11.8	0.49	0.55	0.49	55.1
East: Old Montreal												
4	L2	86	2.0	0.071	10.3	LOS B	0.3	2.2	0.50	0.68	0.50	52.9
5	T1	78	2.0	0.071	5.1	LOS A	0.3	2.2	0.52	0.53	0.52	55.3
6	R2	99	2.0	0.073	4.5	LOS A	0.3	2.2	0.45	0.54	0.45	54.7
Approach		262	2.0	0.073	6.6	LOS A	0.3	2.2	0.48	0.58	0.48	54.2
North: Trim												
7	L2	289	2.0	0.728	12.8	LOS B	7.0	49.8	0.69	0.77	0.81	53.7
8	T1	1318	2.0	0.728	6.7	LOS A	7.0	49.8	0.67	0.72	0.78	54.3
9	R2	68	2.0	0.728	6.5	LOS A	6.9	49.4	0.66	0.68	0.75	53.2
Approach		1674	2.0	0.728	7.7	LOS A	7.0	49.8	0.68	0.73	0.78	54.1
West: St Joseph												
10	L2	19	2.0	0.132	13.4	LOS B	0.6	4.6	0.78	0.81	0.78	53.6
11	T1	168	2.0	0.132	6.9	LOS A	0.8	5.7	0.82	0.70	0.82	53.7
12	R2	260	2.0	0.270	6.3	LOS A	1.7	12.0	0.81	0.76	0.81	53.4
Approach		447	2.0	0.270	6.8	LOS A	1.7	12.0	0.81	0.74	0.81	53.5
All Vehicles		3176	2.0	0.728	7.1	LOS A	7.0	49.8	0.63	0.67	0.69	54.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: October 26, 2021 2:07:57 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	489	9	1	199	13	4	6	1	88	2	20
Future Vol, veh/h	3	489	9	1	199	13	4	6	1	88	2	20
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	33	2	2	2	6	2	2	2	2	2	2	10
Mvmt Flow	3	543	10	1	221	14	4	7	1	98	2	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	553	0	0	796	792	550	791	790	229
Stage 1	-	-	-	-	-	-	554	554	-	231	231	-
Stage 2	-	-	-	-	-	-	242	238	-	560	559	-
Critical Hdwy	4.43	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.497	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.39
Pot Cap-1 Maneuver	1169	-	-	1017	-	-	305	322	535	307	322	791
Stage 1	-	-	-	-	-	-	517	514	-	772	713	-
Stage 2	-	-	-	-	-	-	762	708	-	513	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1168	-	-	1017	-	-	294	320	534	300	320	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	294	320	-	300	320	-
Stage 1	-	-	-	-	-	-	515	512	-	770	712	-
Stage 2	-	-	-	-	-	-	738	707	-	503	509	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	16.7	20.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	321	1168	-	-	1017	-	-	300	697
HCM Lane V/C Ratio	0.038	0.003	-	-	0.001	-	-	0.326	0.035
HCM Control Delay (s)	16.7	8.1	-	-	8.5	-	-	22.7	10.4
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	1.4	0.1

Intersection						
Int Delay, s/veh	2.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	116	459	129	8	10	74
Future Vol, veh/h	116	459	129	8	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	2	2	2	2	3
Mvmt Flow	129	510	143	9	11	82

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	152	0	-	0	916	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	4.14	-	-	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.327
Pot Cap-1 Maneuver	1417	-	-	-	302	896
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	458	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1417	-	-	-	275	896
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	458	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1417	-	-	-	706
HCM Lane V/C Ratio	0.091	-	-	-	0.132
HCM Control Delay (s)	7.8	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	458	112	8	5	17
Future Vol, veh/h	10	458	112	8	5	17
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	90	90	90	90	90	90
Heavy Vehicles, %	10	2	2	2	50	17
Mvmt Flow	11	509	124	9	6	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	133	0	-	0	660	129
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	4.2	-	-	-	6.9	6.37
Critical Hdwy Stg 1	-	-	-	-	5.9	-
Critical Hdwy Stg 2	-	-	-	-	5.9	-
Follow-up Hdwy	2.29	-	-	-	3.95	3.453
Pot Cap-1 Maneuver	1404	-	-	-	362	882
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	504	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1404	-	-	-	358	882
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	504	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1404	-	-	-	662
HCM Lane V/C Ratio	0.008	-	-	-	0.037
HCM Control Delay (s)	7.6	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	342	115	23	81	1	34	6	39	0	2	5
Future Vol, veh/h	12	342	115	23	81	1	34	6	39	0	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	2	2	17	3	2	2	2
Mvmt Flow	13	380	128	26	90	1	38	7	43	0	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	91	0	0	508	0	0	617	613	446	640	677	91
Stage 1	-	-	-	-	-	-	470	470	-	143	143	-
Stage 2	-	-	-	-	-	-	147	143	-	497	534	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.67	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.153	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1504	-	-	1057	-	-	402	388	610	388	375	967
Stage 1	-	-	-	-	-	-	574	536	-	860	779	-
Stage 2	-	-	-	-	-	-	856	751	-	555	524	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1504	-	-	1057	-	-	386	373	609	345	361	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	386	373	-	345	361	-
Stage 1	-	-	-	-	-	-	567	530	-	850	759	-
Stage 2	-	-	-	-	-	-	827	731	-	502	518	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.9	14.4	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	470	1504	-	-	1057	-	-	654
HCM Lane V/C Ratio	0.187	0.009	-	-	0.024	-	-	0.012
HCM Control Delay (s)	14.4	7.4	0	-	8.5	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↓
Traffic Vol, veh/h	21	24	40	29	72	68
Future Vol, veh/h	21	24	40	29	72	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	2	3	7	3	3
Mvmt Flow	23	27	44	32	80	76

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	296	60	0	0	76	0
Stage 1	60	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	689	1005	-	-	1517	-
Stage 1	955	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	651	1005	-	-	1517	-
Mov Cap-2 Maneuver	651	-	-	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	752	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	3.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 802	1517	-
HCM Lane V/C Ratio	-	- 0.062	0.053	-
HCM Control Delay (s)	-	- 9.8	7.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.2	0.2	-

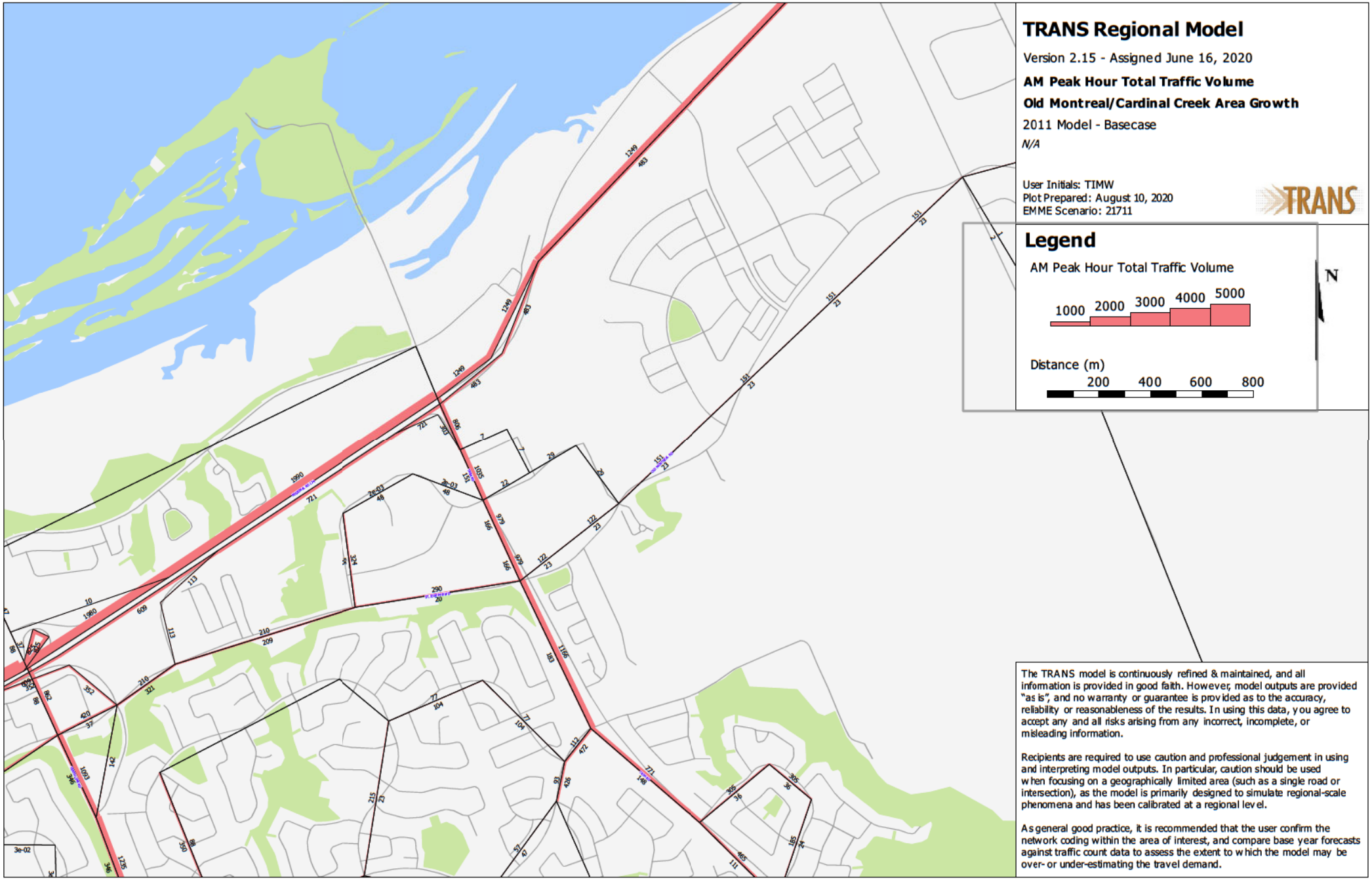
Appendix D

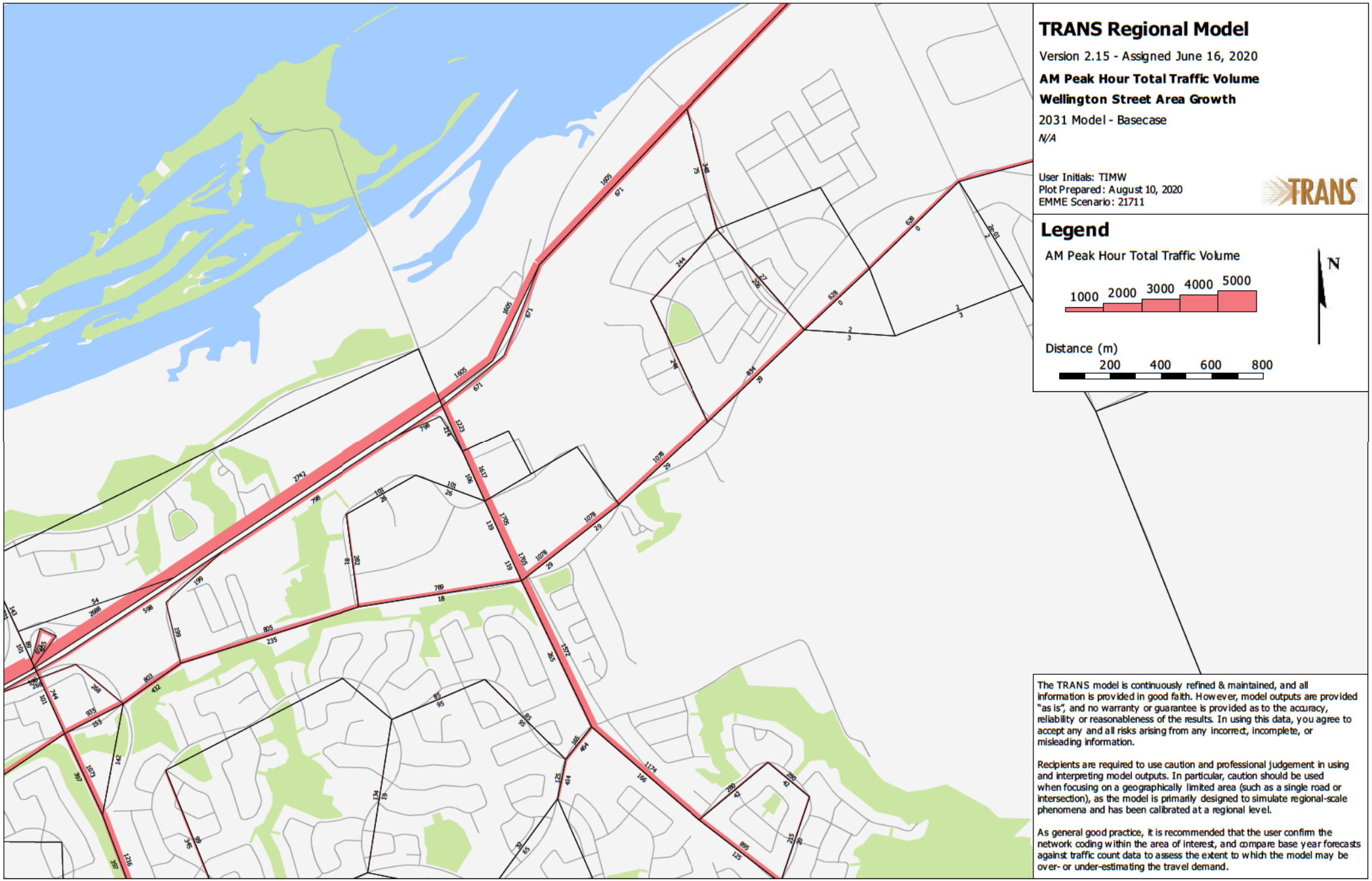
Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition
7/11/2015	2015	12:11	AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD	01 - Clear	01 - Daylight	0		02 - Non-fatal injury	07 - SMV other	01 - Dry
6/15/2018	2018	18:47	AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD (0014909)	01 - Clear	01 - Daylight	02 - Stop sign		02 - Non-fatal injury	02 - Angle	01 - Dry
11/22/2019	2019	17:02	AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD (0014909)	01 - Clear	07 - Dark	02 - Stop sign		03 - P.D. only	02 - Angle	01 - Dry
11/26/2019	2019	16:35	AVEIA PRIV/DAIRY DR @ OLD MONTREAL RD (0014909)	01 - Clear	05 - Dusk	01 - Traffic signal		03 - P.D. only	02 - Angle	01 - Dry
7/5/2015	2015	14:58	FRANK KENNY RD btwn JONQUILLE WAY & WILHAVEN DR	01 - Clear	01 - Daylight	10 - No control		02 - Non-fatal injury	01 - Approaching	01 - Dry
6/2/2016	2016	13:58	FRANK KENNY RD btwn JONQUILLE WAY & WILHAVEN DR	01 - Clear	01 - Daylight	10 - No control		02 - Non-fatal injury	07 - SMV other	02 - Wet
7/6/2017	2017	15:58	FRANK KENNY RD btwn JONQUILLE WAY & WILHAVEN DR	01 - Clear	01 - Daylight	10 - No control		02 - Non-fatal injury	07 - SMV other	01 - Dry
11/30/2017	2017	16:43	FRANK KENNY RD btwn JONQUILLE WAY & WILHAVEN DR	02 - Rain	05 - Dusk	10 - No control		02 - Non-fatal injury	07 - SMV other	06 - Ice
1/16/2019	2019	17:00	FRANK KENNY RD btwn JONQUILLE WAY & WILHAVEN DR (__3ZA5CI)	01 - Clear	05 - Dusk	10 - No control		03 - P.D. only	07 - SMV other	06 - Ice
12/21/2019	2019	0:00	FRANK KENNY RD btwn JONQUILLE WAY & WILHAVEN DR (__3ZA5CI)	01 - Clear	00 - Unknown	10 - No control		03 - P.D. only	07 - SMV other	06 - Ice
2/21/2019	2019	14:09	FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R (0003616)	01 - Clear	01 - Daylight	02 - Stop sign		02 - Non-fatal injury	02 - Angle	02 - Wet
7/18/2019	2019	6:11	FRANK KENNY RD/TED KELLY LANE @ OLD MONTREAL R (0003616)	01 - Clear	01 - Daylight	02 - Stop sign		02 - Non-fatal injury	07 - SMV other	01 - Dry
3/3/2015	2015	9:34	OLD MONTREAL RD btwn Continuation of OLD MONTREAL RD & GRAND-CH-NE, CO	01 - Clear	01 - Daylight	10 - No control		03 - P.D. only	03 - Rear end	01 - Dry
1/15/2015	2015	22:52	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE	03 - Snow	07 - Dark	10 - No control		03 - P.D. only	07 - SMV other	05 - Packed snow
8/12/2015	2015	18:27	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE	01 - Clear	01 - Daylight	10 - No control		03 - P.D. only	07 - SMV other	01 - Dry
12/3/2017	2017	0:52	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE	03 - Snow	07 - Dark	10 - No control		03 - P.D. only	07 - SMV other	02 - Wet
5/22/2018	2018	18:00	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE (__3ZA24E)	01 - Clear	01 - Daylight	10 - No control		02 - Non-fatal injury	07 - SMV other	01 - Dry
11/27/2018	2018	7:59	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE (__3ZA24E)	03 - Snow	01 - Daylight	10 - No control		03 - P.D. only	01 - Approaching	04 - Slush
12/8/2018	2018	19:00	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE (__3ZA24E)	03 - Snow	07 - Dark	10 - No control		03 - P.D. only	07 - SMV other	03 - Loose snow
3/30/2019	2019	12:34	OLD MONTREAL RD btwn GRAND-CH-NE, COUR DU CRT & TED KELLY LANE (__3ZA24E)	04 - Freezing Rain	01 - Daylight	10 - No control		02 - Non-fatal injury	07 - SMV other	03 - Loose snow
12/23/2017	2017	15:33	ANTIGONISH AVE @ OLD MONTREAL RD	03 - Snow	01 - Daylight	02 - Stop sign		03 - P.D. only	02 - Angle	03 - Loose snow
10/6/2017	2017	6:25	OLD MONTREAL RD btwn GERALD ST & Continuation of OLD MONTREAL RD	01 - Clear	03 - Dawn	10 - No control		03 - P.D. only	04 - Sideswipe	01 - Dry
6/16/2019	2019	10:30	DE LA FAMILLE-LAPORTE AVE @ OLD MONTREAL RD (0017105)	01 - Clear	01 - Daylight	02 - Stop sign		03 - P.D. only	99 - Other	01 - Dry
11/19/2019	2019	9:00	DE LA FAMILLE-LAPORTE AVE @ OLD MONTREAL RD (0017105)	01 - Clear	01 - Daylight	02 - Stop sign		03 - P.D. only	03 - Rear end	01 - Dry

Appendix E

TRANS Model Plots


TRANS Regional Model
Version 2.15 - Assigned June 16, 2020
AM Peak Hour Total Traffic Volume
Old Montreal/Cardinal Creek Area Growth
2011 Model - Basecase
N/A
User Initials: TIMW
Plot Prepared: August 10, 2020
EMME Scenario: 21711
TRANS
Legend
AM Peak Hour Total Traffic Volume
1000 2000 3000 4000 5000
Distance (m)
200 400 600 800
N
The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.
Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.
As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



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

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

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

Appendix F

Synchro Intersection Worksheets – 2027 Future Background Conditions

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal AM FB2027]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	230	2.0	0.599	10.4	LOS B	3.6	26.0	0.48	0.56	0.48	55.2
2	T1	1222	2.0	0.599	4.6	LOS A	3.6	26.0	0.46	0.50	0.47	55.5
3	R2	109	2.0	0.599	4.7	LOS A	3.6	25.6	0.45	0.46	0.45	54.2
Approach		1561	2.0	0.599	5.5	LOS A	3.6	26.0	0.47	0.51	0.47	55.4
East: Old Montreal												
4	L2	238	2.0	0.358	13.9	LOS B	1.8	13.1	0.77	0.94	0.84	50.9
5	T1	283	2.0	0.271	6.3	LOS A	1.6	11.2	0.77	0.62	0.77	54.2
6	R2	241	2.0	0.214	5.8	LOS A	1.2	8.3	0.70	0.70	0.70	53.8
Approach		762	2.0	0.358	8.5	LOS A	1.8	13.1	0.75	0.75	0.77	53.0
North: Trim												
7	L2	103	2.0	0.244	11.9	LOS B	1.2	8.4	0.64	0.75	0.64	53.6
8	T1	300	2.0	0.244	5.9	LOS A	1.2	8.9	0.64	0.63	0.64	54.5
9	R2	27	2.0	0.244	5.8	LOS A	1.2	8.9	0.63	0.58	0.63	53.3
Approach		430	2.0	0.244	7.3	LOS A	1.2	8.9	0.64	0.66	0.64	54.2
West: St Joseph												
10	L2	61	2.0	0.061	10.8	LOS B	0.3	1.8	0.50	0.71	0.50	52.6
11	T1	85	2.0	0.061	4.6	LOS A	0.3	2.0	0.48	0.46	0.48	55.7
12	R2	42	20.0	0.033	4.7	LOS A	0.1	1.1	0.43	0.53	0.43	54.3
Approach		188	6.0	0.061	6.7	LOS A	0.3	2.0	0.48	0.56	0.48	54.3
All Vehicles		2941	2.3	0.599	6.6	LOS A	3.6	26.0	0.57	0.59	0.57	54.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:12 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	167	5	0	622	27	9	7	0	3	0	7
Future Vol, veh/h	33	167	5	0	622	27	9	7	0	3	0	7
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	10	2	2	3	2	2	2	2	17	2	2
Mvmt Flow	33	167	5	0	622	27	9	7	0	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	649	0	0	173	0	0	878	886	171	875	875	638
Stage 1	-	-	-	-	-	-	237	237	-	636	636	-
Stage 2	-	-	-	-	-	-	641	649	-	239	239	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.27	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.653	4.018	3.318
Pot Cap-1 Maneuver	937	-	-	1404	-	-	268	284	873	254	288	477
Stage 1	-	-	-	-	-	-	766	709	-	442	472	-
Stage 2	-	-	-	-	-	-	463	466	-	732	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	937	-	-	1403	-	-	256	274	872	242	278	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	256	274	-	242	278	-
Stage 1	-	-	-	-	-	-	738	683	-	427	472	-
Stage 2	-	-	-	-	-	-	455	466	-	699	683	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0	19.5	14.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	264	937	-	-	1403	-	-	242	476
HCM Lane V/C Ratio	0.061	0.035	-	-	-	-	-	0.012	0.015
HCM Control Delay (s)	19.5	9	-	-	0	-	-	20.1	12.7
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	106	540	9	8	104
Future Vol, veh/h	51	106	540	9	8	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	13	2	2	2	8
Mvmt Flow	51	106	540	9	8	104

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	549	0	-	0	753	545
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	4.2	-	-	-	6.42	6.28
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.372
Pot Cap-1 Maneuver	982	-	-	-	377	527
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	827	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	982	-	-	-	357	527
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	827	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	982	-	-	-	510
HCM Lane V/C Ratio	0.052	-	-	-	0.22
HCM Control Delay (s)	8.9	-	-	-	14
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	75	393	8	0	4
Future Vol, veh/h	11	75	393	8	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	27	2	2	25	2	75
Mvmt Flow	11	75	393	8	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	401	0	-	0	494	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.37	-	-	-	6.42	6.95
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.443	-	-	-	3.518	3.975
Pot Cap-1 Maneuver	1034	-	-	-	535	520
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	529	520
Mov Cap-2 Maneuver	-	-	-	-	529	-
Stage 1	-	-	-	-	672	-
Stage 2	-	-	-	-	927	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	520
HCM Lane V/C Ratio	0.011	-	-	-	0.008
HCM Control Delay (s)	8.5	0	-	-	12
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	47	25	31	259	2	134	1	15	1	2	8
Future Vol, veh/h	3	47	25	31	259	2	134	1	15	1	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	3	2	3	3	2	2	2	7	2	2	2
Mvmt Flow	3	47	25	31	259	2	134	1	15	1	2	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	72	0	0	393	389	60	396	400	260
Stage 1	-	-	-	-	-	-	66	66	-	322	322	-
Stage 2	-	-	-	-	-	-	327	323	-	74	78	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.27	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.363	3.518	4.018	3.318
Pot Cap-1 Maneuver	1303	-	-	1522	-	-	566	546	992	564	538	779
Stage 1	-	-	-	-	-	-	945	840	-	690	651	-
Stage 2	-	-	-	-	-	-	686	650	-	935	830	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1303	-	-	1522	-	-	547	532	992	544	524	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	547	532	-	544	524	-
Stage 1	-	-	-	-	-	-	943	838	-	689	635	-
Stage 2	-	-	-	-	-	-	661	634	-	918	828	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	13.5	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	573	1303	-	-	1522	-	-	691
HCM Lane V/C Ratio	0.262	0.002	-	-	0.02	-	-	0.016
HCM Control Delay (s)	13.5	7.8	0	-	7.4	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↱
Traffic Vol, veh/h	33	94	56	8	9	49
Future Vol, veh/h	33	94	56	8	9	49
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	5	3	2	2	11
Mvmt Flow	33	94	56	8	9	49

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	128	61	0	0	65	0
Stage 1	61	-	-	-	-	-
Stage 2	67	-	-	-	-	-
Critical Hdwy	6.46	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	857	996	-	-	1537	-
Stage 1	952	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	851	995	-	-	1536	-
Mov Cap-2 Maneuver	851	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	940	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	953	1536	-
HCM Lane V/C Ratio	-	-	0.133	0.006	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal PM FB2027]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	123	2.0	0.435	12.3	LOS B	2.4	17.1	0.70	0.77	0.76	53.9
2	T1	490	2.0	0.435	6.3	LOS A	2.5	18.1	0.70	0.71	0.75	54.3
3	R2	162	2.0	0.435	6.2	LOS A	2.5	18.1	0.70	0.66	0.74	53.2
Approach		775	2.0	0.435	7.2	LOS A	2.5	18.1	0.70	0.71	0.75	54.0
East: Old Montreal												
4	L2	170	2.0	0.173	10.9	LOS B	0.8	5.7	0.57	0.77	0.57	52.2
5	T1	186	2.0	0.142	4.7	LOS A	0.7	5.0	0.54	0.46	0.54	55.5
6	R2	160	2.0	0.116	4.5	LOS A	0.5	3.8	0.47	0.54	0.47	54.6
Approach		516	2.0	0.173	6.7	LOS A	0.8	5.7	0.53	0.59	0.53	54.1
North: Trim												
7	L2	483	2.0	1.004	35.0	LOS F	28.8	205.4	1.00	1.66	2.62	40.9
8	T1	1592	2.0	1.004	27.4	LOS F	30.8	219.6	1.00	1.63	2.56	42.3
9	R2	61	2.0	1.004	26.6	LOS F	30.8	219.6	1.00	1.61	2.53	42.0
Approach		2136	2.0	1.004	29.1	LOS C	30.8	219.6	1.00	1.64	2.57	42.0
West: St Joseph												
10	L2	49	2.0	0.432	21.1	LOS C	2.6	18.5	0.94	1.02	1.09	48.5
11	T1	297	2.0	0.432	14.2	LOS B	3.5	25.1	0.98	1.04	1.11	49.8
12	R2	274	2.0	0.456	11.2	LOS B	3.7	26.6	1.00	1.04	1.12	50.6
Approach		620	2.0	0.456	13.4	LOS B	3.7	26.6	0.99	1.04	1.11	50.0
All Vehicles		4047	2.0	1.004	19.6	LOS B	30.8	219.6	0.88	1.23	1.74	46.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:12 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	682	9	1	291	9	4	6	1	22	2	47
Future Vol, veh/h	6	682	9	1	291	9	4	6	1	22	2	47
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	33	2	2	2	6	2	2	2	2	2	2	10
Mvmt Flow	6	682	9	1	291	9	4	6	1	22	2	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	301	0	0	691	0	0	1021	1002	689	1003	1002	297
Stage 1	-	-	-	-	-	-	699	699	-	299	299	-
Stage 2	-	-	-	-	-	-	322	303	-	704	703	-
Critical Hdwy	4.43	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.497	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.39
Pot Cap-1 Maneuver	1103	-	-	904	-	-	215	242	446	221	242	724
Stage 1	-	-	-	-	-	-	430	442	-	710	666	-
Stage 2	-	-	-	-	-	-	690	664	-	428	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1102	-	-	904	-	-	199	240	445	215	240	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	240	-	215	240	-
Stage 1	-	-	-	-	-	-	428	440	-	706	665	-
Stage 2	-	-	-	-	-	-	642	663	-	418	438	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	21.3	14.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	232	1102	-	-	904	-	-	215	668
HCM Lane V/C Ratio	0.047	0.005	-	-	0.001	-	-	0.102	0.073
HCM Control Delay (s)	21.3	8.3	-	-	9	-	-	23.6	10.8
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3	0.2

HCM 2010 TWSC
3: Old Montreal Rd & Famille-Laporte Ave 12/09/2021

Intersection						
Int Delay, s/veh	1.9					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	116	613	225	8	10	74
Future Vol, veh/h	116	613	225	8	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	2	2	2	2	3
Mvmt Flow	116	613	225	8	10	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	233	0	-	0	1074	229
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	845	-
Critical Hdwy	4.14	-	-	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.327
Pot Cap-1 Maneuver	1323	-	-	-	243	808
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	222	808
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1323	-	-	-	615
HCM Lane V/C Ratio	0.088	-	-	-	0.137
HCM Control Delay (s)	8	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

HCM 2010 TWSC
4: Old Montreal Rd & Cardinal Creek Dr 12/09/2021

Intersection						
Int Delay, s/veh	0.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	523	127	1	2	6
Future Vol, veh/h	10	523	127	1	2	6
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, %	10	2	2	2	50	17
Mvmt Flow	10	523	127	1	2	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	128	0	-	0	671	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.2	-	-	-	6.9	6.37
Critical Hdwy Stg 1	-	-	-	-	5.9	-
Critical Hdwy Stg 2	-	-	-	-	5.9	-
Follow-up Hdwy	2.29	-	-	-	3.95	3.453
Pot Cap-1 Maneuver	1410	-	-	-	356	883
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	352	883
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1410	-	-	-	641
HCM Lane V/C Ratio	0.007	-	-	-	0.012
HCM Control Delay (s)	7.6	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	398	115	23	89	1	34	6	39	0	2	5
Future Vol, veh/h	12	398	115	23	89	1	34	6	39	0	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	2	2	17	3	2	2	2
Mvmt Flow	12	398	115	23	89	1	34	6	39	0	2	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	513	0	0	619	616	458	640	673	90
Stage 1	-	-	-	-	-	-	480	480	-	136	136	-
Stage 2	-	-	-	-	-	-	139	136	-	504	537	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.67	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.153	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1505	-	-	1052	-	-	401	387	601	388	377	968
Stage 1	-	-	-	-	-	-	567	530	-	867	784	-
Stage 2	-	-	-	-	-	-	864	756	-	550	523	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1505	-	-	1052	-	-	387	374	600	348	364	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	387	374	-	348	364	-
Stage 1	-	-	-	-	-	-	561	524	-	857	766	-
Stage 2	-	-	-	-	-	-	838	739	-	502	517	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.7	14.2	10.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	468	1505	-	-	1052	-	-	657
HCM Lane V/C Ratio	0.169	0.008	-	-	0.022	-	-	0.011
HCM Control Delay (s)	14.2	7.4	0	-	8.5	0	-	10.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↱
Traffic Vol, veh/h	21	24	55	29	72	68
Future Vol, veh/h	21	24	55	29	72	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	2	3	7	3	3
Mvmt Flow	21	24	55	29	72	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	282	70	0	0	84	0
Stage 1	70	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	702	993	-	-	1506	-
Stage 1	945	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	667	993	-	-	1506	-
Mov Cap-2 Maneuver	667	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	3.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 809	1506	-
HCM Lane V/C Ratio	-	- 0.056	0.048	-
HCM Control Delay (s)	-	- 9.7	7.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.2	0.2	-

Appendix G

Synchro Intersection Worksheets – 2032 Future Background Conditions

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal AM FB2032]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	254	2.0	0.703	11.1	LOS B	5.6	39.7	0.56	0.62	0.60	54.8
2	T1	1469	2.0	0.703	5.2	LOS A	5.6	39.7	0.54	0.56	0.58	55.1
3	R2	109	2.0	0.703	5.2	LOS A	5.5	38.9	0.53	0.52	0.56	53.8
Approach		1832	2.0	0.703	6.0	LOS A	5.6	39.7	0.54	0.57	0.58	55.0
East: Old Montreal												
4	L2	238	2.0	0.427	15.8	LOS B	2.4	17.0	0.84	0.99	0.99	49.7
5	T1	309	2.0	0.352	7.5	LOS A	2.3	16.4	0.88	0.74	0.89	53.7
6	R2	241	2.0	0.249	6.6	LOS A	1.5	10.8	0.81	0.80	0.81	53.4
Approach		788	2.0	0.427	9.7	LOS A	2.4	17.0	0.85	0.83	0.90	52.3
North: Trim												
7	L2	103	2.0	0.258	12.1	LOS B	1.3	9.0	0.67	0.77	0.67	53.5
8	T1	300	2.0	0.258	6.0	LOS A	1.3	9.6	0.66	0.65	0.66	54.4
9	R2	30	2.0	0.258	5.9	LOS A	1.3	9.6	0.66	0.59	0.66	53.2
Approach		433	2.0	0.258	7.5	LOS A	1.3	9.6	0.66	0.67	0.66	54.1
West: St Joseph												
10	L2	61	2.0	0.062	10.8	LOS B	0.3	1.9	0.51	0.71	0.51	52.6
11	T1	85	2.0	0.062	4.6	LOS A	0.3	2.0	0.49	0.46	0.49	55.7
12	R2	42	20.0	0.033	4.7	LOS A	0.1	1.1	0.43	0.53	0.43	54.3
Approach		188	6.0	0.062	6.7	LOS A	0.3	2.0	0.48	0.56	0.48	54.3
All Vehicles		3241	2.2	0.703	7.1	LOS A	5.6	39.7	0.63	0.65	0.66	54.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:13 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	167	5	0	648	27	9	7	0	3	0	7
Future Vol, veh/h	33	167	5	0	648	27	9	7	0	3	0	7
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	10	2	2	3	2	2	2	2	17	2	2
Mvmt Flow	33	167	5	0	648	27	9	7	0	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	675	0	0	173	0	0	904	912	171	901	901	664
Stage 1	-	-	-	-	-	-	237	237	-	662	662	-
Stage 2	-	-	-	-	-	-	667	675	-	239	239	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.27	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.653	4.018	3.318
Pot Cap-1 Maneuver	916	-	-	1404	-	-	258	274	873	244	278	461
Stage 1	-	-	-	-	-	-	766	709	-	427	459	-
Stage 2	-	-	-	-	-	-	448	453	-	732	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	916	-	-	1403	-	-	246	264	872	233	268	460
Mov Cap-2 Maneuver	-	-	-	-	-	-	246	264	-	233	268	-
Stage 1	-	-	-	-	-	-	738	683	-	412	459	-
Stage 2	-	-	-	-	-	-	440	453	-	698	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0	20.1	15.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	254	916	-	-	1403	-	-	233	460
HCM Lane V/C Ratio	0.063	0.036	-	-	-	-	-	0.013	0.015
HCM Control Delay (s)	20.1	9.1	-	-	0	-	-	20.7	12.9
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	106	566	9	8	104
Future Vol, veh/h	51	106	566	9	8	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	13	2	2	2	8
Mvmt Flow	51	106	566	9	8	104

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	575	0	-	0	779	571
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	4.2	-	-	-	6.42	6.28
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.372
Pot Cap-1 Maneuver	960	-	-	-	364	509
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	827	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	960	-	-	-	345	509
Mov Cap-2 Maneuver	-	-	-	-	345	-
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	827	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	960	-	-	-	492
HCM Lane V/C Ratio	0.053	-	-	-	0.228
HCM Control Delay (s)	9	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	75	419	8	0	4
Future Vol, veh/h	11	75	419	8	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	27	2	2	25	2	75
Mvmt Flow	11	75	419	8	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	427	0	-	0	520	423
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	4.37	-	-	-	6.42	6.95
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.443	-	-	-	3.518	3.975
Pot Cap-1 Maneuver	1011	-	-	-	516	501
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1011	-	-	-	510	501
Mov Cap-2 Maneuver	-	-	-	-	510	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	927	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1011	-	-	-	501
HCM Lane V/C Ratio	0.011	-	-	-	0.008
HCM Control Delay (s)	8.6	0	-	-	12.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	47	25	31	285	2	134	1	15	1	2	8
Future Vol, veh/h	3	47	25	31	285	2	134	1	15	1	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	3	2	3	3	2	2	2	7	2	2	2
Mvmt Flow	3	47	25	31	285	2	134	1	15	1	2	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	287	0	0	72	0	0	419	415	60	422	426	286
Stage 1	-	-	-	-	-	-	66	66	-	348	348	-
Stage 2	-	-	-	-	-	-	353	349	-	74	78	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.27	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.363	3.518	4.018	3.318
Pot Cap-1 Maneuver	1275	-	-	1522	-	-	544	528	992	542	520	753
Stage 1	-	-	-	-	-	-	945	840	-	668	634	-
Stage 2	-	-	-	-	-	-	664	633	-	935	830	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1275	-	-	1522	-	-	526	514	992	522	506	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	514	-	522	506	-
Stage 1	-	-	-	-	-	-	943	838	-	667	619	-
Stage 2	-	-	-	-	-	-	639	618	-	918	828	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.7	13.9	10.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	552	1275	-	-	1522	-	-	667
HCM Lane V/C Ratio	0.272	0.002	-	-	0.02	-	-	0.016
HCM Control Delay (s)	13.9	7.8	0	-	7.4	0	-	10.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.1	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↱
Traffic Vol, veh/h	33	94	56	8	9	49
Future Vol, veh/h	33	94	56	8	9	49
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	5	3	2	2	11
Mvmt Flow	33	94	56	8	9	49

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	128	61	0	0	65	0
Stage 1	61	-	-	-	-	-
Stage 2	67	-	-	-	-	-
Critical Hdwy	6.46	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	857	996	-	-	1537	-
Stage 1	952	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	851	995	-	-	1536	-
Mov Cap-2 Maneuver	851	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	940	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	953	1536	-
HCM Lane V/C Ratio	-	-	0.133	0.006	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal PM FB2032]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	123	2.0	0.497	13.4	LOS B	2.8	20.2	0.77	0.87	0.90	53.3
2	T1	490	2.0	0.497	7.3	LOS A	3.1	22.0	0.77	0.82	0.89	53.8
3	R2	162	2.0	0.497	7.0	LOS A	3.1	22.0	0.77	0.78	0.89	52.8
Approach		775	2.0	0.497	8.2	LOS A	3.1	22.0	0.77	0.82	0.89	53.5
East: Old Montreal												
4	L2	170	2.0	0.175	10.9	LOS B	0.8	5.9	0.58	0.77	0.58	52.2
5	T1	186	2.0	0.144	4.7	LOS A	0.7	5.2	0.55	0.46	0.55	55.4
6	R2	160	2.0	0.117	4.5	LOS A	0.6	3.9	0.48	0.54	0.48	54.6
Approach		516	2.0	0.175	6.7	LOS A	0.8	5.9	0.54	0.59	0.54	54.0
North: Trim												
7	L2	483	2.0	1.155	89.2	LOS F	66.7	475.0	1.00	2.89	5.51	25.8
8	T1	1914	2.0	1.155	82.3	LOS F	75.3	536.5	1.00	2.96	5.59	26.1
9	R2	61	2.0	1.155	81.8	LOS F	75.3	536.5	1.00	3.00	5.64	25.9
Approach		2458	2.0	1.155	83.7	LOS F	75.3	536.5	1.00	2.95	5.58	26.0
West: St Joseph												
10	L2	54	2.0	0.856	41.0	LOS D	7.4	52.8	1.00	1.27	1.86	39.0
11	T1	627	2.0	0.856	35.8	LOS D	11.0	78.0	1.00	1.34	1.96	38.9
12	R2	303	2.0	0.523	13.0	LOS B	4.5	32.1	1.00	1.07	1.20	49.4
Approach		984	2.0	0.856	29.0	LOS C	11.0	78.0	1.00	1.25	1.72	41.5
All Vehicles		4733	2.0	1.155	51.6	LOS E	75.3	536.5	0.91	1.99	3.46	33.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:13 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1012	9	1	291	9	4	6	1	22	2	47
Future Vol, veh/h	6	1012	9	1	291	9	4	6	1	22	2	47
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	33	2	2	2	6	2	2	2	2	2	2	10
Mvmt Flow	6	1012	9	1	291	9	4	6	1	22	2	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	301	0	0	1021	0	0	1351	1332	1019	1333	1332	297
Stage 1	-	-	-	-	-	-	1029	1029	-	299	299	-
Stage 2	-	-	-	-	-	-	322	303	-	1034	1033	-
Critical Hdwy	4.43	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.497	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.39
Pot Cap-1 Maneuver	1103	-	-	680	-	-	127	154	288	131	154	724
Stage 1	-	-	-	-	-	-	282	311	-	710	666	-
Stage 2	-	-	-	-	-	-	690	664	-	280	310	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1102	-	-	680	-	-	117	153	288	126	153	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	153	-	126	153	-
Stage 1	-	-	-	-	-	-	281	309	-	706	665	-
Stage 2	-	-	-	-	-	-	642	663	-	272	308	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	32.3	20
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	143	1102	-	-	680	-	-	126	628
HCM Lane V/C Ratio	0.077	0.005	-	-	0.001	-	-	0.175	0.078
HCM Control Delay (s)	32.3	8.3	-	-	10.3	-	-	39.5	11.2
HCM Lane LOS	D	A	-	-	B	-	-	E	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.6	0.3

HCM 2010 TWSC
3: Old Montreal Rd & Famille-Laporte Ave 12/09/2021

Intersection						
Int Delay, s/veh	1.5					
Movement	**EBL**	**EBT**	**WBT**	**WBR**	**SBL**	**SBR**
Lane Configurations						
Traffic Vol, veh/h	116	943	225	8	10	74
Future Vol, veh/h	116	943	225	8	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	2	2	2	2	3
Mvmt Flow	116	943	225	8	10	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	233	0	-	0	1404	229
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	1175	-
Critical Hdwy	4.14	-	-	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.327
Pot Cap-1 Maneuver	1323	-	-	-	154	808
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	293	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	140	808
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	293	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1323	-	-	-	515
HCM Lane V/C Ratio	0.088	-	-	-	0.163
HCM Control Delay (s)	8	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6

HCM 2010 TWSC
4: Old Montreal Rd & Cardinal Creek Dr 12/09/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	**EBL**	**EBT**	**WBT**	**WBR**	**SBL**	**SBR**
Lane Configurations						
Traffic Vol, veh/h	10	563	127	1	2	6
Future Vol, veh/h	10	563	127	1	2	6
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, %	10	2	2	2	50	17
Mvmt Flow	10	563	127	1	2	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	128	0	-	0	711	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	583	-
Critical Hdwy	4.2	-	-	-	6.9	6.37
Critical Hdwy Stg 1	-	-	-	-	5.9	-
Critical Hdwy Stg 2	-	-	-	-	5.9	-
Follow-up Hdwy	2.29	-	-	-	3.95	3.453
Pot Cap-1 Maneuver	1410	-	-	-	336	883
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	475	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	333	883
Mov Cap-2 Maneuver	-	-	-	-	333	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	475	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1410	-	-	-	625
HCM Lane V/C Ratio	0.007	-	-	-	0.013
HCM Control Delay (s)	7.6	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	438	115	23	89	1	34	6	39	0	2	5
Future Vol, veh/h	12	438	115	23	89	1	34	6	39	0	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	2	2	17	3	2	2	2
Mvmt Flow	12	438	115	23	89	1	34	6	39	0	2	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	553	0	0	659	656	498	680	713	90
Stage 1	-	-	-	-	-	-	520	520	-	136	136	-
Stage 2	-	-	-	-	-	-	139	136	-	544	577	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.67	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.153	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1505	-	-	1017	-	-	377	367	570	365	357	968
Stage 1	-	-	-	-	-	-	539	508	-	867	784	-
Stage 2	-	-	-	-	-	-	864	756	-	523	502	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1505	-	-	1017	-	-	363	354	569	326	344	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	363	354	-	326	344	-
Stage 1	-	-	-	-	-	-	533	502	-	857	765	-
Stage 2	-	-	-	-	-	-	837	738	-	475	496	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.8	14.9	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	441	1505	-	-	1017	-	-	638
HCM Lane V/C Ratio	0.179	0.008	-	-	0.023	-	-	0.011
HCM Control Delay (s)	14.9	7.4	0	-	8.6	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↱
Traffic Vol, veh/h	21	24	55	29	72	68
Future Vol, veh/h	21	24	55	29	72	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	2	3	7	3	3
Mvmt Flow	21	24	55	29	72	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	282	70	0	0	84	0
Stage 1	70	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	702	993	-	-	1506	-
Stage 1	945	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	667	993	-	-	1506	-
Mov Cap-2 Maneuver	667	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	3.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	809	1506	-
HCM Lane V/C Ratio	-	-	0.056	0.048	-
HCM Control Delay (s)	-	-	9.7	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Appendix H

MMLOS Analysis

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc.**	**Project**	**1296 &1400 Old Montreal Road**
Scenario	**Existing/Future**	**Date**	**2021-11-16**
Comments			

SEGMENTS			Old Montreal Road (Existing)	Old Montreal Road (Future)	Cox Country Road
			1	1	2
Pedestrian	Sidewalk Width Boulevard Width		no sidewalk n/a	≥ 2 m > 2 m	no sidewalk n/a
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	≤ 3000
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no
	Exposure to Traffic PLoS	**-**	**F**	**D**	**F**
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		-	-	-
	Level of Service		**-**	**-**	**-**
Bicycle	Type of Cycling Facility		Mixed Traffic	Physically Separated	Mixed Traffic
	Number of Travel Lanes		≤ 2 (no centreline)		≤ 2 (no centreline)
	Operating Speed		≥ 60 km/h		≥ 60 km/h
	# of Lanes & Operating Speed LoS		**F**	-	**F**
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS	**F**	-	-	-
	Bike Lane Blockages				
	Blockage LoS		-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge		< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes		≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h		≤ 40 km/h
	Unsignalized Crossing - Lowest LoS		**A**	**A**	**A**
	Level of Service		**F**	**A**	**F**
Transit	Facility Type			Segregated ROW	
	Friction or Ratio Transit:Posted Speed	**A**			
	Level of Service		**-**	**A**	**-**
Truck	Truck Lane Width		≤ 3.3 m	≤ 3.5 m	
	Travel Lanes per Direction	**D**	1	1	
	Level of Service		**D**	**C**	**-**
Auto	**Level of Service**	**Not Applicable**			

Appendix I

Signal Warrants

Future Collector @ Old Montreal Rd
FT2027

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	425	89%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	76	63%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	349	73%	73%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	72	144%		

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

Future Collector @ Old Montreal Rd
FT2032

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	442	92%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	76	63%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	366	76%	76%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	72	144%		

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

Future Collector @ Old Montreal Rd
FT2027

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	127	26%	14%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	17	14%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	116	24%	22%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	11	22%		

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

Future Collector @ Old Montreal Rd
FT2032

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	127	26%	14%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	17	14%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	116	24%	22%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	11	22%		

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 J

Synchro Intersection Worksheets – 2027 Future Total Conditions

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal AM FT2027]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	230	2.0	0.627	11.1	LOS B	4.3	30.5	0.55	0.63	0.59	54.8
2	T1	1222	2.0	0.627	5.2	LOS A	4.3	30.5	0.54	0.57	0.57	55.1
3	R2	113	2.0	0.627	5.2	LOS A	4.3	30.3	0.53	0.53	0.56	53.8
Approach		1565	2.0	0.627	6.1	LOS A	4.3	30.5	0.54	0.58	0.57	55.0
East: Old Montreal												
4	L2	248	2.0	0.386	14.1	LOS B	2.1	14.7	0.79	0.96	0.88	50.8
5	T1	303	2.0	0.301	6.3	LOS A	1.8	12.9	0.80	0.62	0.80	54.1
6	R2	379	2.0	0.346	6.0	LOS A	2.0	14.6	0.76	0.72	0.76	53.6
Approach		930	2.0	0.386	8.3	LOS A	2.1	14.7	0.78	0.75	0.81	52.9
North: Trim												
7	L2	162	2.0	0.284	12.1	LOS B	1.4	10.0	0.67	0.82	0.67	52.9
8	T1	300	2.0	0.284	5.9	LOS A	1.5	10.6	0.66	0.63	0.66	54.4
9	R2	27	2.0	0.284	5.9	LOS A	1.5	10.6	0.66	0.59	0.66	53.2
Approach		489	2.0	0.284	8.0	LOS A	1.5	10.6	0.66	0.69	0.66	53.8
West: St Joseph												
10	L2	61	2.0	0.067	11.0	LOS B	0.3	2.1	0.53	0.72	0.53	52.7
11	T1	93	2.0	0.067	4.8	LOS A	0.3	2.2	0.52	0.48	0.52	55.4
12	R2	42	20.0	0.033	4.7	LOS A	0.1	1.1	0.43	0.54	0.43	54.3
Approach		196	5.9	0.067	6.7	LOS A	0.3	2.2	0.50	0.57	0.50	54.3
All Vehicles		3180	2.2	0.627	7.0	LOS A	4.3	30.5	0.63	0.65	0.65	54.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:14 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	238	5	0	789	27	9	7	0	3	0	7
Future Vol, veh/h	33	238	5	0	789	27	9	7	0	3	0	7
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	10	2	2	3	2	2	2	2	17	2	2
Mvmt Flow	33	238	5	0	789	27	9	7	0	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	816	0	0	244	0	0	1116	1124	242	1113	1113	805
Stage 1	-	-	-	-	-	-	308	308	-	803	803	-
Stage 2	-	-	-	-	-	-	808	816	-	310	310	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.27	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.653	4.018	3.318
Pot Cap-1 Maneuver	812	-	-	1322	-	-	185	205	797	174	208	382
Stage 1	-	-	-	-	-	-	702	660	-	356	396	-
Stage 2	-	-	-	-	-	-	375	391	-	669	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	812	-	-	1321	-	-	176	196	796	164	199	381
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	196	-	164	199	-
Stage 1	-	-	-	-	-	-	673	632	-	341	396	-
Stage 2	-	-	-	-	-	-	368	391	-	635	631	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0	26.4	18.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	184	812	-	-	1321	-	-	164	381
HCM Lane V/C Ratio	0.087	0.041	-	-	-	-	-	0.018	0.018
HCM Control Delay (s)	26.4	9.6	-	-	0	-	-	27.4	14.6
HCM Lane LOS	D	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	177	707	9	8	104
Future Vol, veh/h	51	177	707	9	8	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	13	2	2	2	8
Mvmt Flow	51	177	707	9	8	104

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	716	0	-	0	991	712
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	279	-
Critical Hdwy	4.2	-	-	-	6.42	6.28
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.372
Pot Cap-1 Maneuver	849	-	-	-	273	422
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	768	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	849	-	-	-	257	422
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	768	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	849	-	-	-	403
HCM Lane V/C Ratio	0.06	-	-	-	0.278
HCM Control Delay (s)	9.5	-	-	-	17.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	75	71	2	393	8	167	0	4	0	0	4
Future Vol, veh/h	11	75	71	2	393	8	167	0	4	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	27	2	2	2	2	25	2	2	2	2	2	75
Mvmt Flow	11	75	71	2	393	8	167	0	4	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	401	0	0	146	0	0	536	538	111	536	569	397
Stage 1	-	-	-	-	-	-	133	133	-	401	401	-
Stage 2	-	-	-	-	-	-	403	405	-	135	168	-
Critical Hdwy	4.37	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.95
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.443	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.975
Pot Cap-1 Maneuver	1034	-	-	1436	-	-	455	450	942	455	432	520
Stage 1	-	-	-	-	-	-	870	786	-	626	601	-
Stage 2	-	-	-	-	-	-	624	598	-	868	759	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1034	-	-	1436	-	-	447	444	942	448	426	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	447	444	-	448	426	-
Stage 1	-	-	-	-	-	-	860	777	-	618	600	-
Stage 2	-	-	-	-	-	-	618	597	-	854	750	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	17.7	12
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	453	1034	-	-	1436	-	-	520
HCM Lane V/C Ratio	0.377	0.011	-	-	0.001	-	-	0.008
HCM Control Delay (s)	17.7	8.5	0	-	7.5	0	-	12
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	51	25	34	261	2	134	1	21	1	2	8
Future Vol, veh/h	3	51	25	34	261	2	134	1	21	1	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	3	2	3	3	2	2	2	7	2	2	2
Mvmt Flow	3	51	25	34	261	2	134	1	21	1	2	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	263	0	0	76	0	0	405	401	64	411	412	262
Stage 1	-	-	-	-	-	-	70	70	-	330	330	-
Stage 2	-	-	-	-	-	-	335	331	-	81	82	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.27	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.363	3.518	4.018	3.318
Pot Cap-1 Maneuver	1301	-	-	1517	-	-	556	538	986	551	530	777
Stage 1	-	-	-	-	-	-	940	837	-	683	646	-
Stage 2	-	-	-	-	-	-	679	645	-	927	827	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1301	-	-	1517	-	-	537	523	986	527	515	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	537	523	-	527	515	-
Stage 1	-	-	-	-	-	-	938	835	-	682	629	-
Stage 2	-	-	-	-	-	-	652	628	-	904	825	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.9	13.6	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	572	1301	-	-	1517	-	-	684
HCM Lane V/C Ratio	0.273	0.002	-	-	0.022	-	-	0.016
HCM Control Delay (s)	13.6	7.8	0	-	7.4	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.1	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↱
Traffic Vol, veh/h	33	94	64	8	9	69
Future Vol, veh/h	33	94	64	8	9	69
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	5	3	2	2	11
Mvmt Flow	33	94	64	8	9	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	156	69	0	0	73	0
Stage 1	69	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.46	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	826	986	-	-	1527	-
Stage 1	944	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	820	985	-	-	1526	-
Mov Cap-2 Maneuver	820	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	936	1526	-
HCM Lane V/C Ratio	-	-	0.136	0.006	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	20	8	150	58	3
Future Vol, veh/h	6	20	8	150	58	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	20	8	150	58	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	226	60	61	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	762	1005	1542	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	757	1005	1542	-	-	-
Mov Cap-2 Maneuver	757	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1542	-	934	-	-
HCM Lane V/C Ratio	0.005	-	0.028	-	-
HCM Control Delay (s)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal PM FT2027]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	123	2.0	0.485	13.3	LOS B	2.9	20.9	0.77	0.85	0.88	53.4
2	T1	490	2.0	0.485	7.2	LOS A	3.2	22.5	0.77	0.81	0.87	53.9
3	R2	172	2.0	0.485	7.0	LOS A	3.2	22.5	0.77	0.77	0.86	52.8
Approach		785	2.0	0.485	8.1	LOS A	3.2	22.5	0.77	0.81	0.87	53.6
East: Old Montreal												
4	L2	177	2.0	0.182	10.9	LOS B	0.9	6.2	0.58	0.77	0.58	52.2
5	T1	200	2.0	0.155	4.7	LOS A	0.8	5.6	0.55	0.46	0.55	55.4
6	R2	257	2.0	0.188	4.5	LOS A	0.9	6.6	0.50	0.55	0.50	54.5
Approach		634	2.0	0.188	6.4	LOS A	0.9	6.6	0.54	0.58	0.54	54.1
North: Trim												
7	L2	624	2.0	1.083	60.6	LOS F	46.1	328.6	1.00	2.30	4.13	31.9
8	T1	1592	2.0	1.083	53.3	LOS F	51.2	364.8	1.00	2.32	4.15	32.7
9	R2	61	2.0	1.083	52.7	LOS F	51.2	364.8	1.00	2.33	4.15	32.5
Approach		2277	2.0	1.083	55.3	LOS E	51.2	364.8	1.00	2.31	4.14	32.5
West: St Joseph												
10	L2	49	2.0	0.452	21.3	LOS C	2.7	19.5	0.94	1.02	1.11	48.4
11	T1	317	2.0	0.452	14.5	LOS B	3.7	26.5	0.98	1.04	1.13	49.7
12	R2	274	2.0	0.430	10.2	LOS B	3.5	24.6	1.00	1.03	1.09	51.3
Approach		640	2.0	0.452	13.2	LOS B	3.7	26.5	0.99	1.04	1.11	50.2
All Vehicles		4336	2.0	1.083	33.4	LOS C	51.2	364.8	0.89	1.60	2.57	39.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:14 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection												
Int Delay, s/veh	1.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	853	9	1	409	9	4	6	1	22	2	47
Future Vol, veh/h	6	853	9	1	409	9	4	6	1	22	2	47
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	33	2	2	2	6	2	2	2	2	2	2	10
Mvmt Flow	6	853	9	1	409	9	4	6	1	22	2	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	419	0	0	862	0	0	1310	1291	860	1292	1291	415
Stage 1	-	-	-	-	-	-	870	870	-	417	417	-
Stage 2	-	-	-	-	-	-	440	421	-	875	874	-
Critical Hdwy	4.43	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.497	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.39
Pot Cap-1 Maneuver	992	-	-	780	-	-	136	163	356	140	163	621
Stage 1	-	-	-	-	-	-	346	369	-	613	591	-
Stage 2	-	-	-	-	-	-	596	589	-	344	367	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	991	-	-	780	-	-	124	162	355	135	162	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	162	-	135	162	-
Stage 1	-	-	-	-	-	-	344	367	-	609	590	-
Stage 2	-	-	-	-	-	-	548	588	-	335	365	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	30.3	19.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	153	991	-	-	780	-	-	135	557
HCM Lane V/C Ratio	0.072	0.006	-	-	0.001	-	-	0.163	0.088
HCM Control Delay (s)	30.3	8.7	-	-	9.6	-	-	36.8	12.1
HCM Lane LOS	D	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.6	0.3

Intersection						
Int Delay, s/veh	1.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	116	784	343	8	10	74
Future Vol, veh/h	116	784	343	8	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	2	2	2	2	3
Mvmt Flow	116	784	343	8	10	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	351	0	-	0	1363	347
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	1016	-
Critical Hdwy	4.14	-	-	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.327
Pot Cap-1 Maneuver	1197	-	-	-	163	694
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	350	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1197	-	-	-	147	694
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	350	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	1197	-	-	-	-	481
HCM Lane V/C Ratio	0.097	-	-	-	-	0.175
HCM Control Delay (s)	8.3	-	-	-	-	14.1
HCM Lane LOS	A	-	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	-	0.6

Intersection												
Int Delay, s/veh	3.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	523	171	4	127	1	118	0	3	2	0	6
Future Vol, veh/h	10	523	171	4	127	1	118	0	3	2	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	50	2	17
Mvmt Flow	10	523	171	4	127	1	118	0	3	2	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	694	0	0	768	765	609	766	850	128
Stage 1	-	-	-	-	-	-	629	629	-	136	136	-
Stage 2	-	-	-	-	-	-	139	136	-	630	714	-
Critical Hdwy	4.2	-	-	4.12	-	-	7.12	6.52	6.22	7.6	6.52	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.6	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.6	5.52	-
Follow-up Hdwy	2.29	-	-	2.218	-	-	3.518	4.018	3.318	3.95	4.018	3.453
Pot Cap-1 Maneuver	1410	-	-	901	-	-	319	333	495	267	298	883
Stage 1	-	-	-	-	-	-	470	475	-	765	784	-
Stage 2	-	-	-	-	-	-	864	784	-	398	435	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1410	-	-	901	-	-	313	327	495	262	293	883
Mov Cap-2 Maneuver	-	-	-	-	-	-	313	327	-	262	293	-
Stage 1	-	-	-	-	-	-	464	469	-	756	780	-
Stage 2	-	-	-	-	-	-	854	780	-	391	430	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	23.3	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	316	1410	-	-	901	-	-	554
HCM Lane V/C Ratio	0.383	0.007	-	-	0.004	-	-	0.014
HCM Control Delay (s)	23.3	7.6	0	-	9	0	-	11.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.7	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	2.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	401	115	29	93	1	34	6	43	0	2	5
Future Vol, veh/h	12	401	115	29	93	1	34	6	43	0	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	2	2	17	3	2	2	2
Mvmt Flow	12	401	115	29	93	1	34	6	43	0	2	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	94	0	0	516	0	0	638	635	461	661	692	94
Stage 1	-	-	-	-	-	-	483	483	-	152	152	-
Stage 2	-	-	-	-	-	-	155	152	-	509	540	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.67	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.153	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1500	-	-	1050	-	-	389	377	598	376	367	963
Stage 1	-	-	-	-	-	-	565	528	-	850	772	-
Stage 2	-	-	-	-	-	-	847	744	-	547	521	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1500	-	-	1050	-	-	374	362	597	334	352	963
Mov Cap-2 Maneuver	-	-	-	-	-	-	374	362	-	334	352	-
Stage 1	-	-	-	-	-	-	559	522	-	841	750	-
Stage 2	-	-	-	-	-	-	816	722	-	495	515	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2	14.5	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	462	1500	-	-	1050	-	-	644
HCM Lane V/C Ratio	0.18	0.008	-	-	0.028	-	-	0.011
HCM Control Delay (s)	14.5	7.4	0	-	8.5	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	24	75	29	72	82
Future Vol, veh/h	21	24	75	29	72	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	2	3	7	3	3
Mvmt Flow	21	24	75	29	72	82

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	316	90	0	0	104	0
Stage 1	90	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	671	968	-	-	1481	-
Stage 1	926	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	637	968	-	-	1481	-
Mov Cap-2 Maneuver	637	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	3.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	779	1481	-
HCM Lane V/C Ratio	-	-	0.058	0.049	-
HCM Control Delay (s)	-	-	9.9	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	14	20	79	140	6
Future Vol, veh/h	4	14	20	79	140	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	14	20	79	140	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	262	143	146	0	-	0
Stage 1	143	-	-	-	-	-
Stage 2	119	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	727	905	1436	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	716	905	1436	-	-	-
Mov Cap-2 Maneuver	716	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	906	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1436	-	855	-	-
HCM Lane V/C Ratio	0.014	-	0.021	-	-
HCM Control Delay (s)	7.5	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix K

Synchro Intersection Worksheets – 2032 Future Total Conditions

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal AM FT2032]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	254	2.0	0.737	12.0	LOS B	6.6	46.7	0.65	0.72	0.74	54.3
2	T1	1469	2.0	0.737	6.0	LOS A	6.6	46.7	0.63	0.66	0.72	54.6
3	R2	113	2.0	0.737	6.0	LOS A	6.5	46.6	0.62	0.62	0.69	53.4
Approach		1836	2.0	0.737	6.9	LOS A	6.6	46.7	0.63	0.67	0.72	54.5
East: Old Montreal												
4	L2	248	2.0	0.468	16.2	LOS B	2.7	19.5	0.86	1.01	1.04	49.4
5	T1	329	2.0	0.396	7.9	LOS A	2.8	19.7	0.91	0.80	0.98	53.6
6	R2	379	2.0	0.411	7.3	LOS A	2.8	20.2	0.87	0.90	0.93	53.2
Approach		956	2.0	0.468	9.8	LOS A	2.8	20.2	0.88	0.90	0.98	52.2
North: Trim												
7	L2	162	2.0	0.300	12.3	LOS B	1.5	10.8	0.69	0.84	0.69	52.7
8	T1	300	2.0	0.300	6.1	LOS A	1.6	11.4	0.69	0.65	0.69	54.3
9	R2	30	2.0	0.300	6.0	LOS A	1.6	11.4	0.69	0.60	0.69	53.1
Approach		492	2.0	0.300	8.1	LOS A	1.6	11.4	0.69	0.71	0.69	53.7
West: St Joseph												
10	L2	61	2.0	0.067	11.0	LOS B	0.3	2.1	0.54	0.72	0.54	52.7
11	T1	93	2.0	0.067	4.8	LOS A	0.3	2.3	0.52	0.48	0.52	55.4
12	R2	42	20.0	0.033	4.7	LOS A	0.1	1.1	0.44	0.54	0.44	54.3
Approach		196	5.9	0.067	6.7	LOS A	0.3	2.3	0.51	0.57	0.51	54.3
All Vehicles		3480	2.2	0.737	7.8	LOS A	6.6	46.7	0.70	0.73	0.77	53.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:15 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	238	5	0	815	27	9	7	0	3	0	7
Future Vol, veh/h	33	238	5	0	815	27	9	7	0	3	0	7
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	10	2	2	3	2	2	2	2	17	2	2
Mvmt Flow	33	238	5	0	815	27	9	7	0	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	842	0	0	244	0	0	1142	1150	242	1139	1139	831
Stage 1	-	-	-	-	-	-	308	308	-	829	829	-
Stage 2	-	-	-	-	-	-	834	842	-	310	310	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.27	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.27	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.653	4.018	3.318
Pot Cap-1 Maneuver	794	-	-	1322	-	-	177	198	797	167	201	370
Stage 1	-	-	-	-	-	-	702	660	-	344	385	-
Stage 2	-	-	-	-	-	-	362	380	-	669	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	794	-	-	1321	-	-	168	189	796	157	192	369
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	189	-	157	192	-
Stage 1	-	-	-	-	-	-	673	632	-	330	385	-
Stage 2	-	-	-	-	-	-	355	380	-	634	631	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0	27.4	19
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	177	794	-	-	1321	-	-	157	369
HCM Lane V/C Ratio	0.09	0.042	-	-	-	-	-	0.019	0.019
HCM Control Delay (s)	27.4	9.7	-	-	0	-	-	28.4	14.9
HCM Lane LOS	D	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	177	733	9	8	104
Future Vol, veh/h	51	177	733	9	8	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	13	2	2	2	8
Mvmt Flow	51	177	733	9	8	104

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	742	0	-	0	1017	738
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	279	-
Critical Hdwy	4.2	-	-	-	6.42	6.28
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.29	-	-	-	3.518	3.372
Pot Cap-1 Maneuver	830	-	-	-	263	408
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	768	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	830	-	-	-	247	408
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	768	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	830	-	-	-	390
HCM Lane V/C Ratio	0.061	-	-	-	0.287
HCM Control Delay (s)	9.6	-	-	-	17.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	75	71	2	419	8	167	0	4	0	0	4
Future Vol, veh/h	11	75	71	2	419	8	167	0	4	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	27	2	2	2	2	25	2	2	2	2	2	75
Mvmt Flow	11	75	71	2	419	8	167	0	4	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	427	0	0	146	0	0	562	564	111	562	595	423
Stage 1	-	-	-	-	-	-	133	133	-	427	427	-
Stage 2	-	-	-	-	-	-	429	431	-	135	168	-
Critical Hdwy	4.37	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.95
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.443	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.975
Pot Cap-1 Maneuver	1011	-	-	1436	-	-	438	435	942	438	417	501
Stage 1	-	-	-	-	-	-	870	786	-	606	585	-
Stage 2	-	-	-	-	-	-	604	583	-	868	759	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1011	-	-	1436	-	-	430	429	942	431	411	501
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	429	-	431	411	-
Stage 1	-	-	-	-	-	-	860	777	-	599	584	-
Stage 2	-	-	-	-	-	-	598	582	-	854	750	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.5	12.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	436	1011	-	-	1436	-	-	501
HCM Lane V/C Ratio	0.392	0.011	-	-	0.001	-	-	0.008
HCM Control Delay (s)	18.5	8.6	0	-	7.5	0	-	12.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.8	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	51	25	34	287	2	134	1	21	1	2	8
Future Vol, veh/h	3	51	25	34	287	2	134	1	21	1	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	3	2	3	3	2	2	2	7	2	2	2
Mvmt Flow	3	51	25	34	287	2	134	1	21	1	2	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	289	0	0	76	0	0	431	427	64	437	438	288
Stage 1	-	-	-	-	-	-	70	70	-	356	356	-
Stage 2	-	-	-	-	-	-	361	357	-	81	82	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.27	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.363	3.518	4.018	3.318
Pot Cap-1 Maneuver	1273	-	-	1517	-	-	535	520	986	530	512	751
Stage 1	-	-	-	-	-	-	940	837	-	661	629	-
Stage 2	-	-	-	-	-	-	657	628	-	927	827	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1273	-	-	1517	-	-	516	505	986	507	497	751
Mov Cap-2 Maneuver	-	-	-	-	-	-	516	505	-	507	497	-
Stage 1	-	-	-	-	-	-	938	835	-	660	612	-
Stage 2	-	-	-	-	-	-	630	611	-	904	825	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	14.1	10.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	551	1273	-	-	1517	-	-	661
HCM Lane V/C Ratio	0.283	0.002	-	-	0.022	-	-	0.017
HCM Control Delay (s)	14.1	7.8	0	-	7.4	0	-	10.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↑			↱
Traffic Vol, veh/h	33	94	64	8	9	69
Future Vol, veh/h	33	94	64	8	9	69
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	5	3	2	2	11
Mvmt Flow	33	94	64	8	9	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	156	69	0	0	73	0
Stage 1	69	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.46	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	826	986	-	-	1527	-
Stage 1	944	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	820	985	-	-	1526	-
Mov Cap-2 Maneuver	820	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	936	1526	-
HCM Lane V/C Ratio	-	-	0.136	0.006	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	20	8	150	58	3
Future Vol, veh/h	6	20	8	150	58	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	20	8	150	58	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	226	60	61	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	762	1005	1542	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	757	1005	1542	-	-	-
Mov Cap-2 Maneuver	757	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1542	-	934	-	-
HCM Lane V/C Ratio	0.005	-	0.028	-	-
HCM Control Delay (s)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

MOVEMENT SUMMARY

Site: 101 [Trim-Old Montreal PM FT2032]

Tamarak CCV South
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Trim												
1	L2	123	2.0	0.533	14.4	LOS B	3.2	22.7	0.80	0.95	0.98	52.9
2	T1	490	2.0	0.533	8.2	LOS A	3.5	25.2	0.81	0.91	0.97	53.5
3	R2	172	2.0	0.533	7.9	LOS A	3.5	25.2	0.81	0.87	0.97	52.6
Approach		785	2.0	0.533	9.1	LOS A	3.5	25.2	0.81	0.91	0.97	53.2
East: Old Montreal												
4	L2	177	2.0	0.183	10.9	LOS B	0.9	6.3	0.58	0.77	0.58	52.2
5	T1	200	2.0	0.156	4.7	LOS A	0.8	5.7	0.56	0.46	0.56	55.4
6	R2	257	2.0	0.189	4.5	LOS A	0.9	6.7	0.51	0.55	0.51	54.5
Approach		634	2.0	0.189	6.4	LOS A	0.9	6.7	0.55	0.58	0.55	54.1
North: Trim												
7	L2	624	2.0	1.236	123.5	LOS F	89.1	634.7	1.00	3.56	7.16	20.9
8	T1	1914	2.0	1.236	116.8	LOS F	101.9	725.4	1.00	3.70	7.34	21.1
9	R2	61	2.0	1.236	116.4	LOS F	101.9	725.4	1.00	3.76	7.41	20.9
Approach		2599	2.0	1.236	118.4	LOS F	101.9	725.4	1.00	3.67	7.30	21.0
West: St Joseph												
10	L2	54	2.0	0.878	43.3	LOS D	7.9	56.3	1.00	1.30	1.96	38.1
11	T1	647	2.0	0.878	38.1	LOS D	11.7	83.7	1.00	1.37	2.07	38.0
12	R2	303	2.0	0.497	11.8	LOS B	4.2	30.0	1.00	1.06	1.17	50.1
Approach		1004	2.0	0.878	30.5	LOS C	11.7	83.7	1.00	1.28	1.79	40.9
All Vehicles		5022	2.0	1.236	69.6	LOS E	101.9	725.4	0.91	2.37	4.35	28.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: December 10, 2021 4:51:15 PM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2019-68 Tamarack CCV South Phase\DATA\Sidra \2019-68 Sidra 2021-10-26.sip8

HCM 2010 TWSC
2: Aveia Private/Dairy Dr & Old Montreal Rd 12/09/2021

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1183	9	1	409	9	4	6	1	22	2	47
Future Vol, veh/h	6	1183	9	1	409	9	4	6	1	22	2	47
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	550	-	-	700	-	-	-	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	33	2	2	2	6	2	2	2	2	2	2	10
Mvmt Flow	6	1183	9	1	409	9	4	6	1	22	2	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	419	0	0	1192	0	0	1640	1621	1190	1622	1621	415
Stage 1	-	-	-	-	-	-	1200	1200	-	417	417	-
Stage 2	-	-	-	-	-	-	440	421	-	1205	1204	-
Critical Hdwy	4.43	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.497	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.39
Pot Cap-1 Maneuver	992	-	-	586	-	-	80	103	229	82	103	621
Stage 1	-	-	-	-	-	-	226	258	-	613	591	-
Stage 2	-	-	-	-	-	-	596	589	-	225	257	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	991	-	-	586	-	-	72	102	229	77	102	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	102	-	77	102	-
Stage 1	-	-	-	-	-	-	225	256	-	609	589	-
Stage 2	-	-	-	-	-	-	548	587	-	217	255	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	48.8	30.3
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	93	991	-	-	586	-	-	77	514
HCM Lane V/C Ratio	0.118	0.006	-	-	0.002	-	-	0.286	0.095
HCM Control Delay (s)	48.8	8.7	-	-	11.2	-	-	69.5	12.7
HCM Lane LOS	E	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	1	0.3

HCM 2010 TWSC
3: Old Montreal Rd & Famille-Laporte Ave 12/09/2021

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	116	1114	343	8	10	74
Future Vol, veh/h	116	1114	343	8	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1550	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	2	2	2	2	3
Mvmt Flow	116	1114	343	8	10	74

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	351	0	-	0	1693	347
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	1346	-
Critical Hdwy	4.14	-	-	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.327
Pot Cap-1 Maneuver	1197	-	-	-	102	694
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	242	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1197	-	-	-	92	694
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	242	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	1197	-	-	-	-	390
HCM Lane V/C Ratio	0.097	-	-	-	-	0.215
HCM Control Delay (s)	8.3	-	-	-	-	16.7
HCM Lane LOS	A	-	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	-	0.8

HCM 2010 TWSC
4: No.1/Cardinal Creek Dr & Old Montreal Rd 12/09/2021

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	563	171	4	127	1	118	0	3	2	0	6
Future Vol, veh/h	10	563	171	4	127	1	118	0	3	2	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	10	2	2	2	2	2	2	2	2	50	2	17
Mvmt Flow	10	563	171	4	127	1	118	0	3	2	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	734	0	0	808	805	649	806	890	128
Stage 1	-	-	-	-	-	-	669	669	-	136	136	-
Stage 2	-	-	-	-	-	-	139	136	-	670	754	-
Critical Hdwy	4.2	-	-	4.12	-	-	7.12	6.52	6.22	7.6	6.52	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.6	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.6	5.52	-
Follow-up Hdwy	2.29	-	-	2.218	-	-	3.518	4.018	3.318	3.95	4.018	3.453
Pot Cap-1 Maneuver	1410	-	-	871	-	-	299	316	470	250	282	883
Stage 1	-	-	-	-	-	-	447	456	-	765	784	-
Stage 2	-	-	-	-	-	-	864	784	-	377	417	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1410	-	-	871	-	-	293	311	470	245	277	883
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	311	-	245	277	-
Stage 1	-	-	-	-	-	-	442	451	-	756	780	-
Stage 2	-	-	-	-	-	-	854	780	-	370	412	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	25.3	11.8
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	296	1410	-	-	871	-	-	535
HCM Lane V/C Ratio	0.409	0.007	-	-	0.005	-	-	0.015
HCM Control Delay (s)	25.3	7.6	0	-	9.2	0	-	11.8
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.9	0	-	-	0	-	-	0

HCM 2010 TWSC
5: Cox Country Rd/Ted Kelly Ln & Old Montreal Rd 12/09/2021

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	441	115	29	93	1	34	6	43	0	2	5
Future Vol, veh/h	12	441	115	29	93	1	34	6	43	0	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	2	2	2	2	17	3	2	2	2
Mvmt Flow	12	441	115	29	93	1	34	6	43	0	2	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	94	0	0	556	0	0	678	675	501	701	732	94
Stage 1	-	-	-	-	-	-	523	523	-	152	152	-
Stage 2	-	-	-	-	-	-	155	152	-	549	580	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.67	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.67	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.153	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1500	-	-	1015	-	-	366	357	568	353	348	963
Stage 1	-	-	-	-	-	-	537	507	-	850	772	-
Stage 2	-	-	-	-	-	-	847	744	-	520	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1500	-	-	1015	-	-	351	342	567	311	333	963
Mov Cap-2 Maneuver	-	-	-	-	-	-	351	342	-	311	333	-
Stage 1	-	-	-	-	-	-	531	501	-	840	749	-
Stage 2	-	-	-	-	-	-	815	722	-	468	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2	15.2	10.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	436	1500	-	-	1015	-	-	625
HCM Lane V/C Ratio	0.19	0.008	-	-	0.029	-	-	0.011
HCM Control Delay (s)	15.2	7.4	0	-	8.7	0	-	10.8
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	24	75	29	72	82
Future Vol, veh/h	21	24	75	29	72	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	2	3	7	3	3
Mvmt Flow	21	24	75	29	72	82

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	316	90	0	0	104	0
Stage 1	90	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	671	968	-	-	1481	-
Stage 1	926	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	637	968	-	-	1481	-
Mov Cap-2 Maneuver	637	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	3.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	779	1481	-
HCM Lane V/C Ratio	-	-	0.058	0.049	-
HCM Control Delay (s)	-	-	9.9	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	14	20	79	140	6
Future Vol, veh/h	4	14	20	79	140	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	14	20	79	140	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	262	143	146	0	-	0
Stage 1	143	-	-	-	-	-
Stage 2	119	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	727	905	1436	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	716	905	1436	-	-	-
Mov Cap-2 Maneuver	716	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	906	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1436	-	855	-	-
HCM Lane V/C Ratio	0.014	-	0.021	-	-
HCM Control Delay (s)	7.5	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix L

TDM Checklist

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	☐