570 Winterset Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

Prepared for:

Minto Communities Canada
200-180 Kent Street
Ottawa, ON K1P 0B6

Prepared by:

CGH TRANSPORTATION

13 Markham Avenue
Ottawa, ON K2G 3Z1

December 2021

PN: 2021-098

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1 Screening

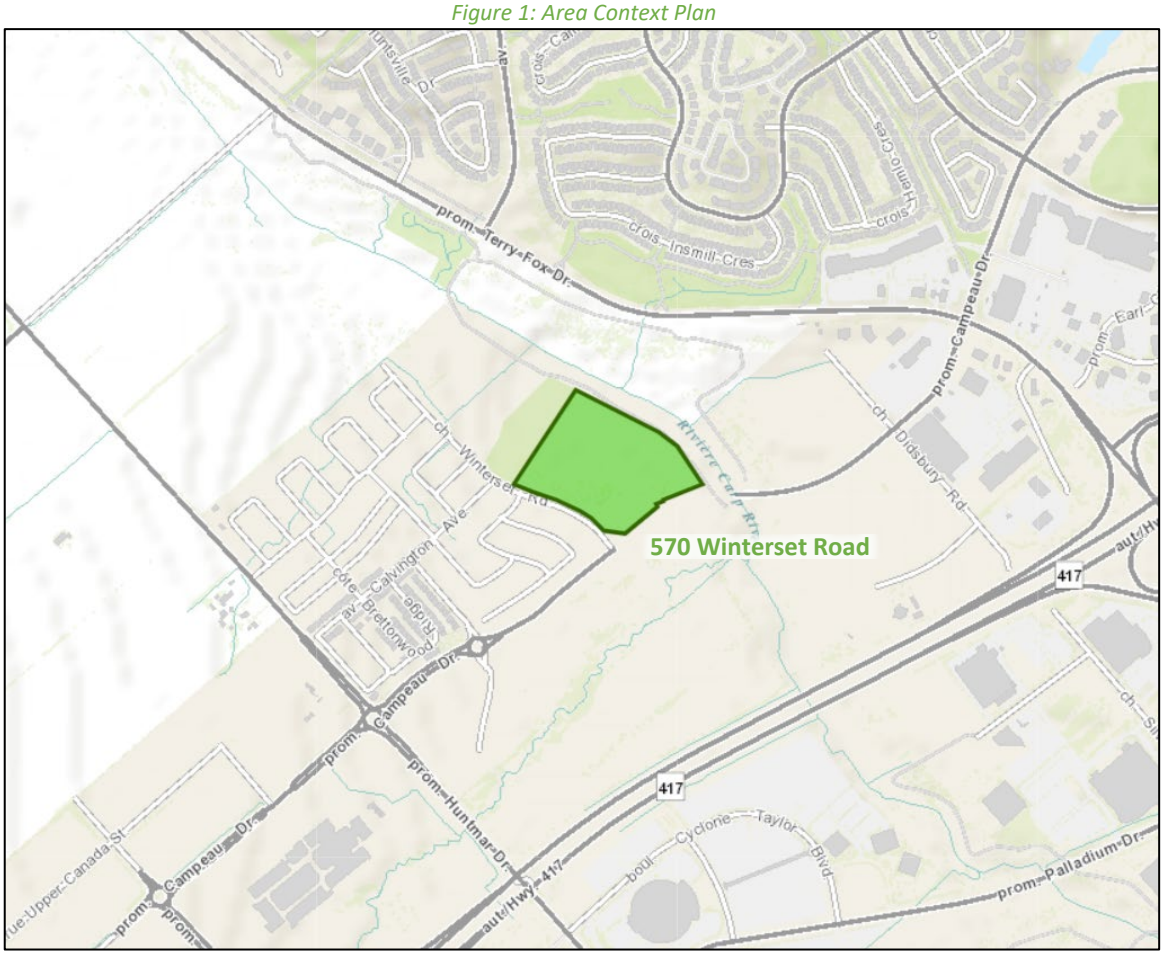
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is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

2 Existing and Planned Conditions

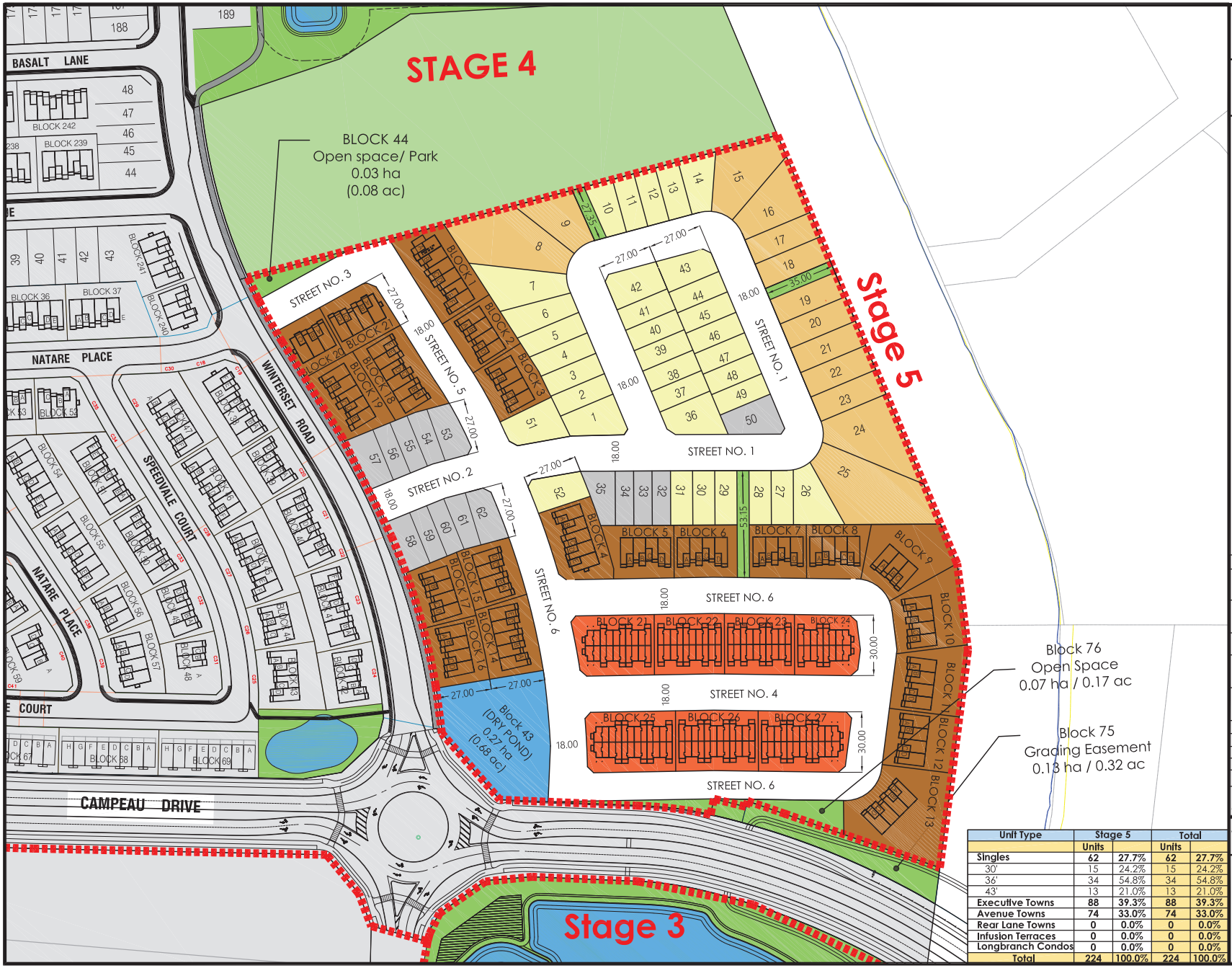
2.1 Proposed Development

The existing site, located at 570 Winterset Road, is zoned as Development Reserve Zone (DR[1932]). The proposed redevelopment consists of 62 single detached units and 162 townhome units. The concept plan includes two full-movements accesses on Winterset Road. The anticipated full build-out and occupancy horizon is 2025 with construction occurring in a single phase. The site is located within the Kanata West Secondary Plan and Community Design Plan areas. 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: September 27, 2021



Unit Type	Stage 5		Total	
	Units		Units	
Singles	**62**	**27.7%**	**62**	**27.7%**
30'	15	24.2%	15	24.2%
36'	34	54.8%	34	54.8%
43'	13	21.0%	13	21.0%
Executive Towns	**88**	**39.3%**	**88**	**39.3%**
Avenue Towns	**74**	**33.0%**	**74**	**33.0%**
Rear Lane Towns	**0**	**0.0%**	**0**	**0.0%**
Infusion Terraces	**0**	**0.0%**	**0**	**0.0%**
Longbranch Condos	**0**	**0.0%**	**0**	**0.0%**
Total	**224**	**100.0%**	**224**	**100.0%**

Title:

Concept Plan 13 Rev 4.4

Project:

Arcadia - Stage 5

Legend

- 30' Singles
- 36' Singles
- 43' Singles
- Executive Town Homes
- Avenue (B2B) Town Homes
- Condo Lands
- Rear Lane Town Homes
- Parkland
- Storm Water Management
- Open Space
- Stage Limits

No.	Description	Date	By
4.4	Relocated pathway block	8/20/2021	D.F.
4.3	Added a 53.88 m pathway block and adjusted the lotting around it	8/16/2021	D.F.
4.2	Updated Block 76 Grading Easement to match the legal 4M plan for Arcadia Stage 3	2/5/2021	M.S.
4.1	Add singles at the entrance of the P-Loop	1/27/2021	K.G.
4	Update Avenue block distribution, change Block 17-20 from Exec TH to singles	12/17/2020	K.G.
3	Update Block 8 & 9 to 3-unit block, remove 1 unit from Block 1 to meet zoning, re-lot singles.	12/10/2020	K.G.
2	Issued For Review	12/7/2020	M.S.
1	Issued For Review	12/2/2020	M.S.
0	Issued For Review	2020-11-19	B.A.

Revisions

minto Communities

Drawn By: M.S.
Checked By: C.S.

Minto Communities Inc
180 Kent Street,
Ottawa, ON
K1P 0B6

North

Scale: NTS

2.2 Existing Conditions

2.2.1 Area Road Network

Huntmar Drive: Huntmar Drive is a City of Ottawa arterial road with a two-lane cross-section north of Cyclone Taylor Boulevard, a divided four-lane urban cross-section between Cyclone Taylor Boulevard to Palladium Drive and transitioning to a rural two-lane cross-section south of Palladium Drive. Cycle tracks and sidewalks extend north of Campeau Drive on the east side of the roadway for 105 metres, to the south on both sides of the road for 115 metres and a sidewalk is provided on the east side of the roadway between Cyclone Taylor Boulevard and Palladium Drive. The posted speed limit is 70 km/h approximately north of Paine Avenue, 50 km/h to the south, and the City-protected right-of-way is 37.5 metres.

Campeau Drive: Campeau Drive is a City of Ottawa arterial road with a divided four-lane urban cross-section to the west and a two-lane urban cross-section to the east of Didsbury Road. Sidewalks and cycle tracks are present on the south side between Journeyman Street and Huntmar Drive, and on both sides between Huntmar Drive and Didsbury Road. A sidewalk is present on both sides of the road east of Didsbury Road. The posted speed limit is 60 km/h and the protected right-of-way is 41.0 metres to the west of Huntmar Drive, the City-protected right-of-way is 37.5 metres between Huntmar Drive and Didsbury Road, and the City-protected right-of-way is 40.0 metres east of Didsbury Road within the study area.

Terry Fox Drive: Terry Fox Drive is a City of Ottawa arterial road with a four-lane divided urban cross-section. Sidewalks are present on the east side of the roadway north of the Signature Centre signalized access, and on both sides to the south. Bike lanes are presented on both sides of the roadway north of Campeau Drive. The speed limit is 70km/h and the City-protected right-of-way is 44.5 metres. Terry Fox Drive is designated as a truck route.

Kanata Avenue: Kanata Avenue is a City of Ottawa major collector road with a two-lane urban cross-section. Sidewalks and bike lanes are present on both sides of the roadway. The speed limit is 60km/h and the City-protected right-of-way is 26.0 metres.

Country Glen Way: Country Glen Way is a City of Ottawa local road with a two-lane urban cross-section. Sidewalks are provided on both sides of the roadway. The posted speed limit is 40 km/h and the existing right-of-way is 20.0 metres.

Winterset Road: Winterset Road is a City of Ottawa local road with a two-lane cross-section, presently serving as a construction access. The unposted speed limit is assumed to be 50 km/h and the existing right-of-way is 22.0 metres.

Didsbury Road: Didsbury Road is a City of Ottawa local road with a two-lane urban cross-section. Sidewalks are present on the west side of the roadway. The unposted speed limit is assumed to be 50 km/h and the City-protected right-of-way is 26.0 metres.

2.2.2 Existing Intersections

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

Huntmar Drive at Campeau Drive	The intersection of Huntmar Drive at Campeau Drive is a four-legged roundabout intersection. The northbound consists of a left-turn lane, a shared left-turn/through lane, and a right-turn lane, and the southbound consists of a left-turn lane, a through lane, and a right-turn lane. The eastbound consists of a shared left-turn/through lane, a through lane, and an auxiliary right-turn bypass lane, and the westbound approach consists of a shared left-turn/through lane, a

	through lane, and a right-turn lane. Pedestrian crossovers are provided on each leg and a MUP circulates the roundabout. No turn restrictions were noted.
Country Glen Way at Campeau Drive	The intersection of Country Glen Way at Campeau Drive is a four-legged roundabout intersection. The northbound approach consists of a left-turn lane and a shared through/right-turn lane, and the southbound approach consists of a shared all-movement lane. The eastbound and westbound approaches each consists of a shared left-turn/through lane and a shared through/right-turn lane. Pedestrian crossovers are provided on each leg and a MUP circulates the roundabout. No turn restrictions were noted.
Winterset Road at Campeau Drive	The intersection of Winterset Road at Campeau Drive is a four-legged roundabout intersection. The northbound is currently closed until Donum Lane is constructed and will consist of a left-turn land and a shared through/right-turn lane. The southbound approach consists of a shared all movement lane. The eastbound and westbound approaches each consists of a shared left-turn/through lane and a shared through/right-turn lane. Pedestrian crossovers are provided on each leg and a MUP circulates the roundabout. No turn restrictions were noted.
Kanata Commons Road at Campeau Drive	The intersection of Kanata Commons Road at Campeau Drive is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, a through lane and an auxiliary right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, two through lanes, and an auxiliary right-turn lane, and the westbound approach consists of dual auxiliary left-turn lanes, two through lanes, and an auxiliary right-turn lane. No turn restrictions were noted.
Didsbury Road at Campeau Drive	The intersection of Didsbury Road at Campeau Drive is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane. The eastbound and westbound approaches each consist of an auxiliary left-turn lane, a through lane, and a shared through/right lane. No turn restrictions were noted.
Terry Fox Drive at Campeau Drive	The intersection of Terry Fox Drive at Campeau Drive is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary channelized right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary channelized right-turn lane, and the westbound approach consists of an auxiliary left-turn lane, a through lane, a bike lane, and an auxiliary channelized right-turn lane.

Terry Fox Drive at Signature Centre	The intersection of Terry Fox Drive at Signature Centre is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, a through lane, a shared through/right-turn land and a bike lane. The eastbound approach consists of a shared all-movement lane, and the westbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane.
Terry Fox Drive at Kanata Avenue	The intersection of Terry Fox Drive at Kanata Avenue is a signalized intersection. The northbound approach consists of two through lanes, a bike lane, and an auxiliary channelized right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, two through lanes, and a bike lane. The westbound approach consists of an auxiliary left-turn lane, a left-turn lane, a bike lane, and an auxiliary channelized right-turn lane.

2.2.3 Existing Driveways

Within 200 metres, driveways to 40 townhouse units are present on the west side of Winterset Road. None of the driveways within the area of consideration are significant traffic generators.

2.2.4 Cycling and Pedestrian Facilities

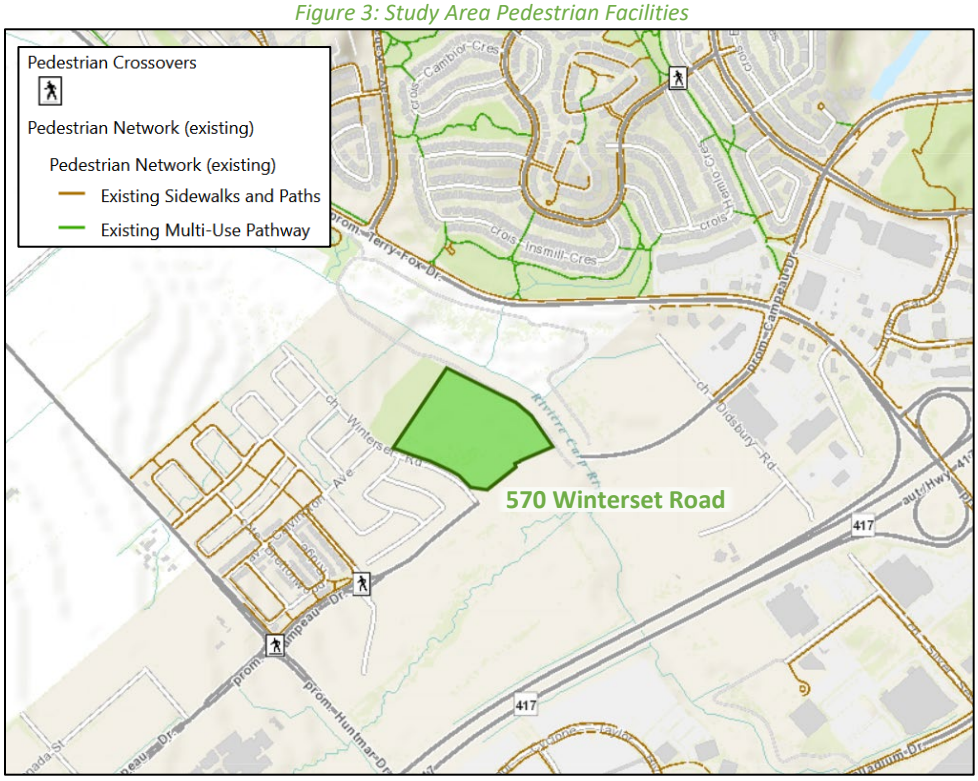
Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

Sidewalks are provided on the east side of Terry Fox Drive north of the Signature Centre signalized access and on both sides to the south. Sidewalks are provided or planned on both sides of Country Glen Way, Kanata Avenue, Campeau Drive, and Huntmar Drive. As the area is currently developing and roadways under construction/opening, some links are currently missing, such as the north side of Campeau Drive between Journeyman Street and Huntmar Drive or across the Highway 417 overpass on Huntmar Drive.

Bike lanes are presented on both sides of Kanata Avenue and Terry Fox Drive north of Campeau Drive. Cycletracks are present on Campeau Drive west of Didsbury Road.

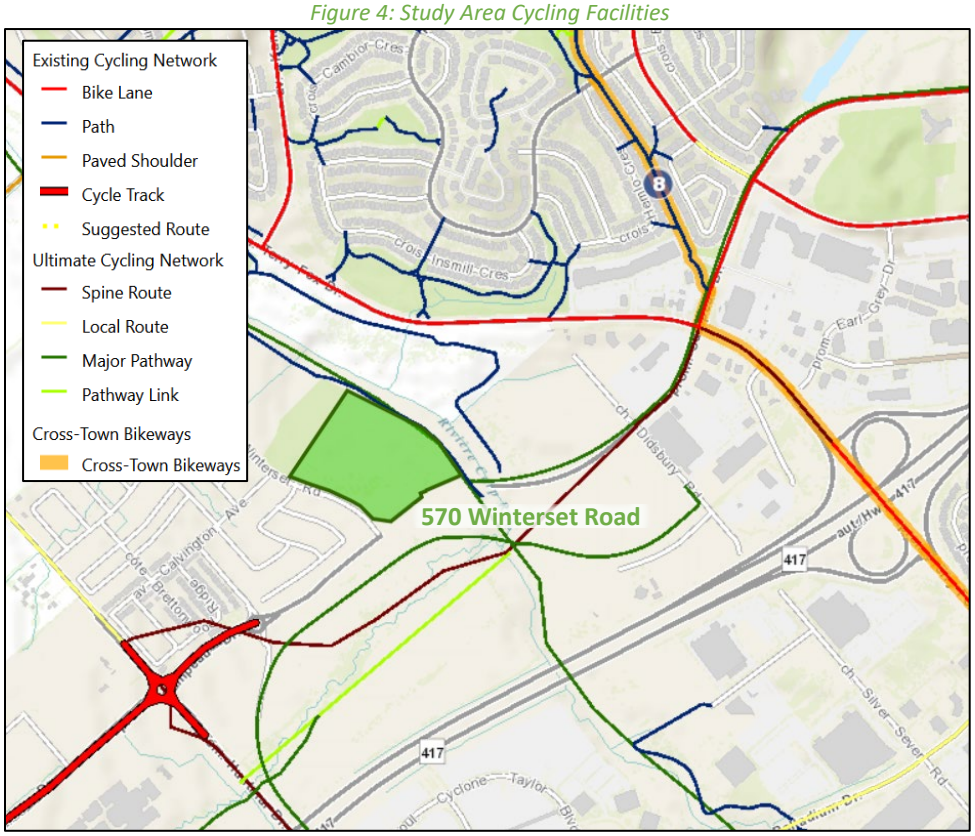
Huntmar Drive south of Campeau Drive, Campeau Drive east of Huntmar Drive, and Terry Fox Drive are spine routes. Huntmar Drive north of Campeau Drive are local routes. Pathways are present along Carp River north of Campeau Drive and between Terry Fox and Herlihey Way connecting to Campeau Drive. This latter pathway continuing to Campeau Drive continuing to Terry Fox Drive south of Campeau Drive forms part of a cross-town bikeway.

Figure 3: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: September 23, 2020

Figure 4: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: September 23, 2020

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 5 and Figure 6, respectively. Only the intersections of Terry Fox Drive at Campeau Drive, Terry Fox Drive at 329 N of Campeau Dr/Signature C, Terry Fox Drive at Kanata Avenue had pedestrian and cyclist volumes available.

Figure 5: Existing Pedestrian Volumes

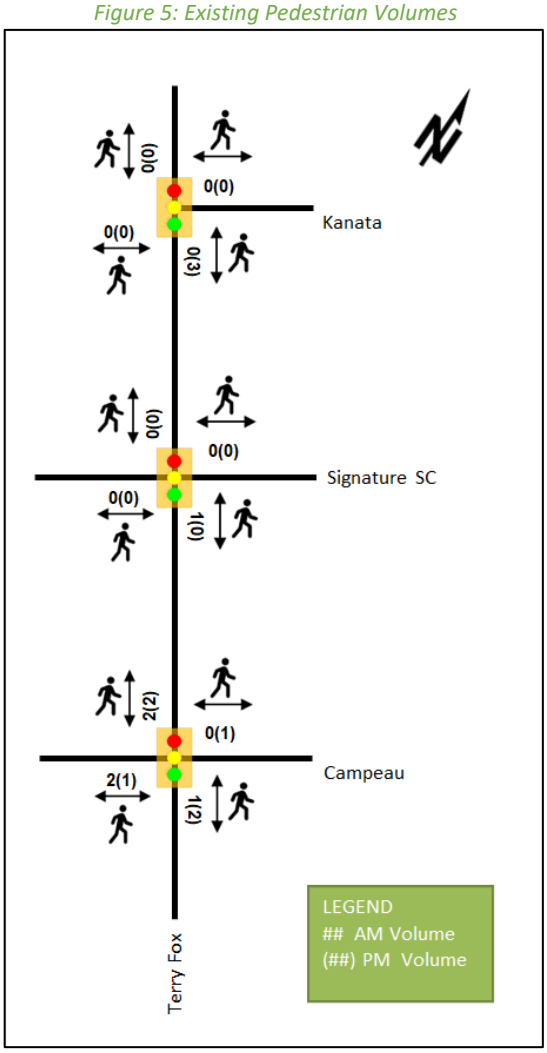
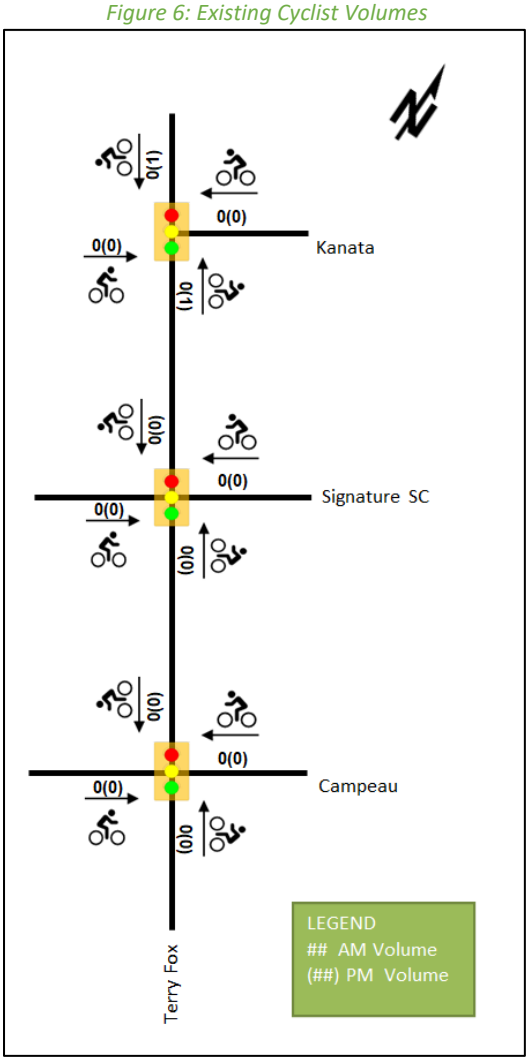


Figure 6: Existing Cyclist Volumes



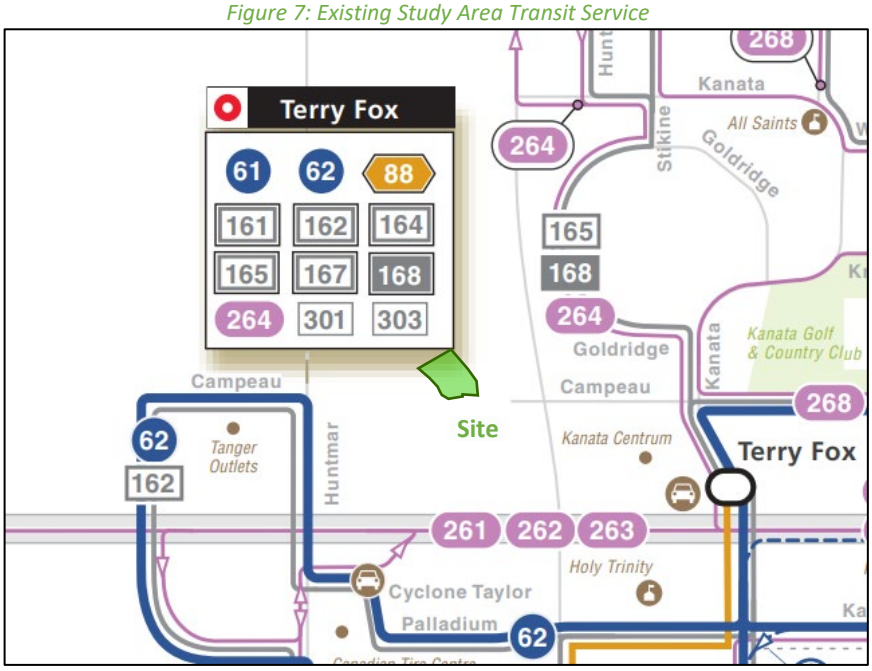
2.2.5 Existing Transit

Within the study area, routes #62 and #162 travels along Palladium Drive, Campeau Dive, and Huntmar Drive. Primary stops are located at Huntmar Drive at Campeau Dive. The frequency of these routes within proximity of the proposed site currently are:

- Route #62 – 30-minute service all-day
- Route # 162 – Three afternoon buses and four late evening buses per day

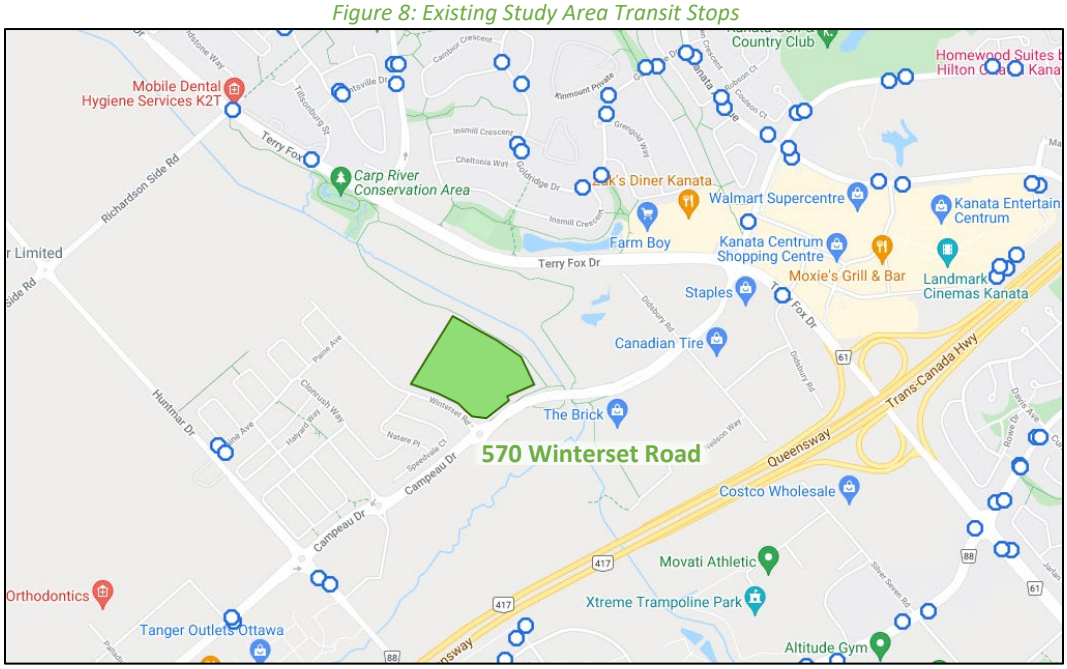
Figure 7 illustrates the transit system map in the study area and Figure 8 illustrates nearby transit stops.

Figure 7: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: September 23, 2020

Figure 8: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: September 23, 2020

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 and other sources for the existing study area key intersections. As the count dates are prior to the opening of Campeau Drive across the Carp River, the existing conditions assessed consider the conditions in 2020 and will model the new roadway connection in the

future background conditions. Currently, there is no data available at the intersection of Campeau Drive at Didsbury Road. Therefore, the Campeau Drive and Didsbury Road intersection was not included in the report, and it will be addressed in the adjacent site's future applications. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date	Source
Huntmar Drive at Campeau Dive	Tuesday, May 28, 2019	The Traffic Specialist
Terry Fox Drive at Kanata Avenue	Wednesday, April 11, 2018	City of Ottawa
Terry Fox Drive at Signature C	Wednesday, December 06, 2017	City of Ottawa
Terry Fox Drive at Campeau Drive	Tuesday, January 21, 2020	City of Ottawa
Country Glen Way at Campeau Drive	-	Transportation Brief – Addendum #2 Arcadia Subdivision – Stage 3 (J.L. Richards & Associates Limited, 2019)

Figure 9 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations The level of service for signalized intersections is based on HCM 2010 v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. Detailed turning movement count data is included in Appendix B and the Synchro and Sidra worksheets are provided in Appendix C.

Figure 9: Existing Traffic Counts

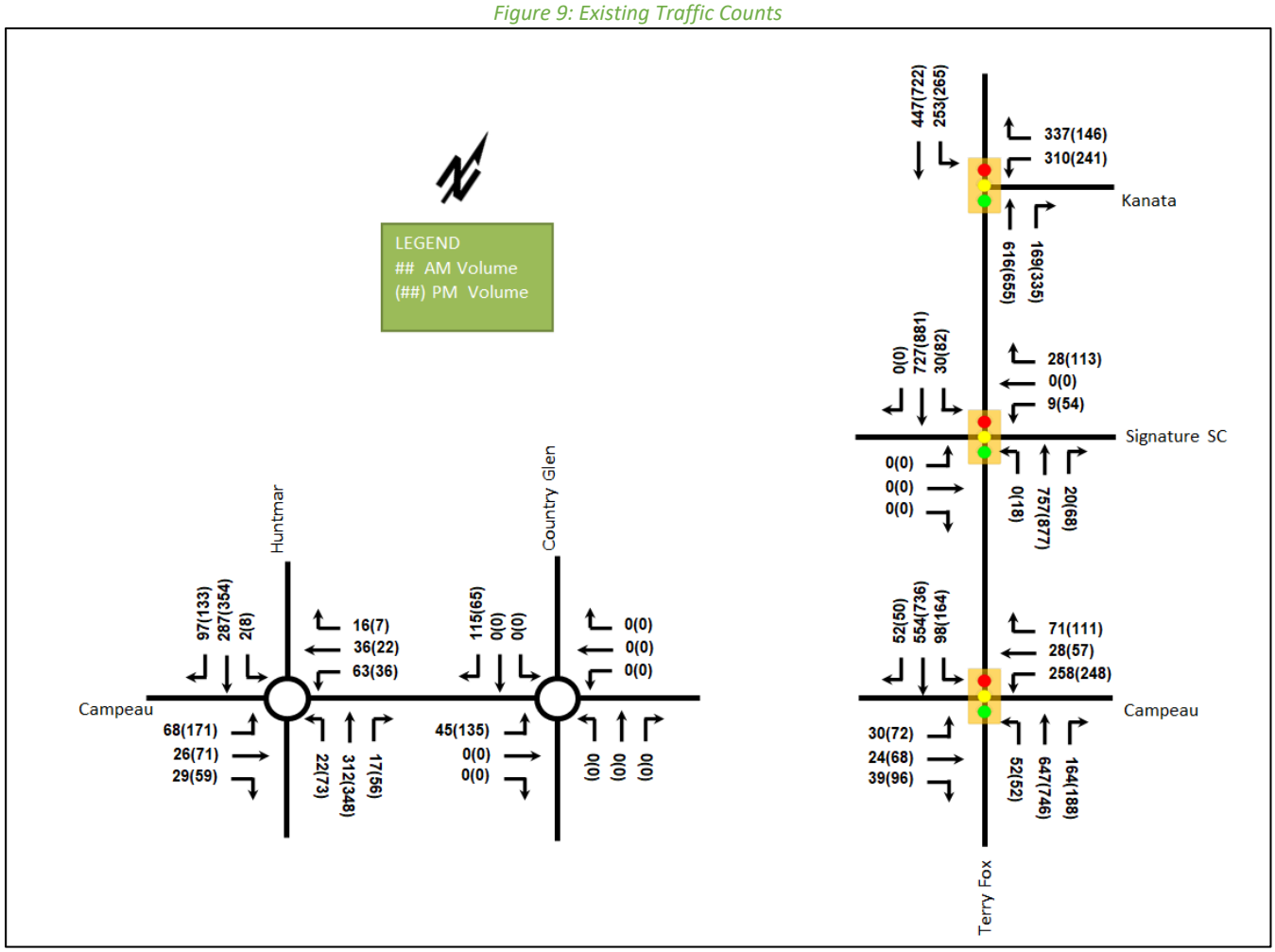


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Huntmar Drive at Campeau Dive ***Roundabout***	EB	A	0.09	7.8	1.6	A	0.23	8.2	4.8
	WB	A	0.09	8.0	1.6	A	0.06	8.7	1.0
	NB	A	0.33	2.4	8.1	A	0.42	3.7	10.9
	SB	A	0.16	2.3	3.3	A	0.20	2.5	4.4
	Overall	**A**	**0.34**	**3.7**	-	**A**	**0.42**	**4.5**	-
Terry Fox Drive at Kanata Avenue ***Signalized***	WBL	B	0.65	44.2	49.8	B	0.61	45.4	37.2
	WBR	B	0.68	11.1	26.9	A	0.48	11.1	17.0
	NBT	A	0.51	24.7	84.7	A	0.48	20.1	69.8
	NBR	A	0.27	4.7	14.8	A	0.43	3.6	16.0
	SBL	C	0.76	49.0	81.5	D	0.83	56.8	**#97.3**
	SBT	A	0.21	5.5	25.3	A	0.33	5.1	35.8
	Overall	**B**	**0.61**	**22.7**	-	**A**	**0.59**	**19.3**	-
Terry Fox Drive at Signature C ***Signalized***	EB	A	-	-	-	A	-	-	-
	WBL/T	A	0.04	33.6	6.2	A	0.17	35.1	22.1
	WBR	A	0.09	11.0	7.0	A	0.26	7.2	14.2
	NBL	A	-	-	-	A	0.08	5.4	m1.7
	NBT/R	A	0.41	13.4	48.0	A	0.51	6.0	27.2
	SBL	A	0.10	8.1	6.3	A	0.38	16.8	22.4
	SBT/R	A	0.38	9.5	49.4	A	0.48	13.1	75.6
	Overall	**A**	**0.31**	**11.6**	-	**A**	**0.41**	**10.2**	-
Terry Fox Drive at Campeau Drive ***Signalized***	EBL	A	0.09	25.5	10.7	A	0.24	34.0	25.1
	EBT	A	0.05	24.6	9.2	A	0.16	32.1	23.3
	EBR	A	0.09	0.4	0.0	A	0.23	6.5	11.8
	WBL	D	0.81	52.9	76.9	D	0.84	62.9	84.9
	WBT	A	0.06	24.9	10.1	A	0.14	31.4	20.1
	WBR	A	0.17	3.9	6.7	A	0.26	6.3	12.6
	NBL	A	0.14	13.0	13.2	A	0.16	12.4	12.5
	NBT	A	0.49	24.3	88.7	A	0.52	25.2	108.7
	NBR	A	0.24	4.5	14.5	A	0.26	4.3	15.5
	SBL	A	0.29	29.5	37.9	A	0.49	22.5	41.9
	SBT	A	0.39	43.4	93.4	A	0.46	16.1	52.7
	SBR	A	0.08	16.3	12.1	A	0.07	0.6	1.3
	Overall	**A**	**0.58**	**30.2**	-	**B**	**0.62**	**22.9**	-

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 0.90
m = metered queue
# = queue exceeds storage or mid-block length

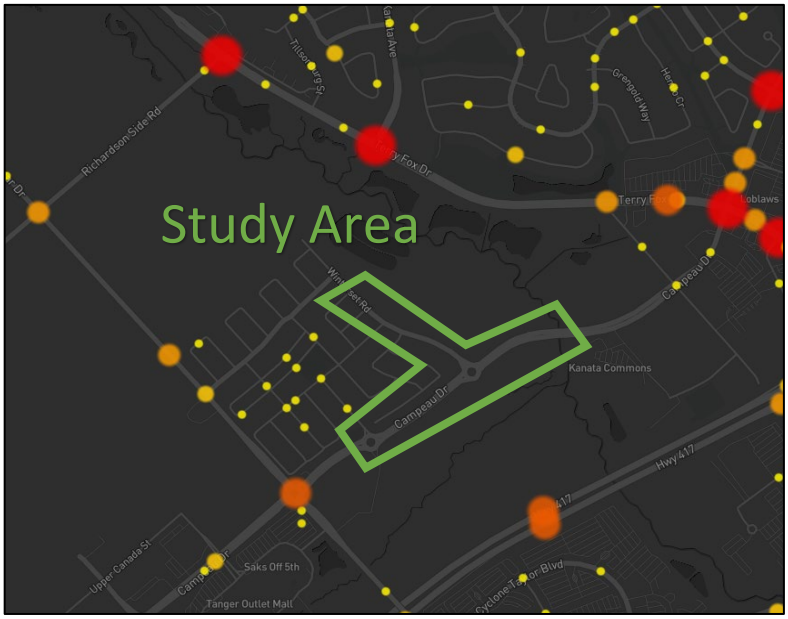
During both the AM and PM peak hours, the study area intersections operate well. No capacity issues are noted.

At the intersection of Kanata Avenue and Terry Fox Drive, the southbound left-turn movement may be subject to extended queues during PM peak hours.

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. Figure 10 illustrates the intersections and segments analyzed. There were no collisions within the study area from 2015 to 2019 and no further review of collisions is required.

Figure 10: Study Area Collision Records – Representation of 2015-2019



2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The Transportation Master Plan's Rapid Transit and Transit Priority Network identify Light Rail Transit to extend Light Rail Transit (LRT) from Moodie Drive to Kanata within the Ultimate Network Concept and this project is being studied within the Kanata LRT Planning and EA Study. The future Campeau Station along this extension is planned to be located on the southern subject site boundary. In addition, the Transportation Master Plan's Road Network identifies widening of Palladium Drive from HWY 417 to Campeau Drive, the extension of Kanata west to Abbott Street by phase two (2020 to 2025) and widening of Huntmar Drive from Campeau south to Maple Grove Road by phase three (2026 to 2031).

The Campeau Drive extension was completed and open in the fall of 2021, connecting Campeau Drive across the Carp River to Didsbury Road, including the roundabout at Winterset Road and signals at both Kanata Commons and Didsbury Road. While not within the study area, Palladium Drive has been realigned to the south of Highway 417 at a new roundabout intersection to form a portion of the planned Kanata North-South Arterial.

The Palladium Drive/Robert Grant Avenue at Derreen Avenue/Palladium Drive roundabout is currently under construction and is not anticipated to impact area travel patterns.

2.3.2 Other Study Area Developments

130 Huntmar Drive

The proposed development application includes a site plan for the construction of 90 Single family homes, 226 Townhomes, 426 Stacked townhomes, 30,000 ft^2 of retail, and a 2.409 Ha school. The development is anticipated to be built out in 2024 and is predicted to generate 435 new AM two-way peak-hour auto trips and 507 new PM two-way peak-hour auto trips.

195 Huntmar Drive

The proposed development application includes an official plan amendment for the construction of approximately 1,237 residential dwelling units, an assumed 65,000 ft^2 of retail land use and three car dealerships. The

development is anticipated to be built out in 2024 and is predicted to generate 650 new AM two-way peak-hour auto trips and 802 new PM two-way peak-hour auto trips.

319 Huntmar Drive

The proposed development application includes a site plan for the construction of four, nine-storey mid-rise apartment buildings with 424 units and an amenity building for the use of the residents. No TIA is available as part of this application.

333 Huntmar Drive

The proposed development application includes a site plan for the construction of 134 hotel rooms and approximately 30,000 ft^2 of restaurant type land uses. The development is anticipated to be built out in 2022. The development is predicted to generate 61 new AM two-way peak-hour auto trips and 309 new PM two-way peak-hour auto trips. (Parsons, 2014)

1300 &1360 Upper Canada Street

The proposed development application includes a site plan for the construction of approximately 10,985 square metres of warehouse space and 232 square metres of office space. No TIA is available as part of this application.

1400 Upper Canada Street

The proposed development application includes a site plan for the construction of 65,400 ft^2 of office space and warehouse area by phase one and expands to 76,400 ft^2 of office space and warehouse area by phase two. The anticipated build-out horizon is 2021 for phase one and 2026 for phase two. The development is predicted to generate new 178 AM two-way peak-hour auto trips and 122 new PM two-way peak-hour auto trips by phase one and 213 new AM two-way peak-hour auto trips and 150 new PM two-way peak-hour auto trips by phase two. (Parsons, 2020)

8800 Campeau Drive

The proposed development application includes a site plan for the construction of a 66,000 ft^2 office/warehouse space by phase one and expands to 77,800 ft^2 office/warehouse space by phase two. The assumed phase one horizon year is 2021 with the facility operating at only 25% of the ultimate capacity. The assumed phase two horizon year is 2026 but could take upwards of 20 years for this level of operation to materialize depending on market conditions. The development is predicted to generate 23 new AM and PM two-way peak-hour auto trips by phase one and 26 AM two-way peak-hour auto trips and 27 new PM two-way peak-hour auto trips by phase two. (Parsons, 2021)

340 Huntmar Drive

The proposed development application includes a site plan for the construction of a hotel with approximately 108 rooms. The anticipated full build-out and occupancy horizon is 2020, and the development is predicted to generate 44 new AM two-way peak-hour auto trips and 51 new PM two-way peak-hour auto trips. (Parsons, 2018)

800 Palladium Drive

The proposed development application includes a site plan for the construction of approximately 11,000 ft^2 commercial space, 80,000 ft^2 office space, and 5,000 ft^2 of restaurant space. The anticipated full build-out and occupancy horizon is 2019, and the development is predicted to generate 162 new AM two-way peak-hour auto trips and 156 new PM two-way peak-hour auto trips. (Stantec, 2019)

Arcadia community Stage 3&4

The proposed development application includes a site plan for the construction of 30 single family homes and 192 townhouse units for a total of 222 residential units by stage 3 and 156 single family homes and 70 townhouse

units for a total of 226 residential units by stage 4. The stage 3 anticipated build-out horizon is 2021 and stage 4 is 2022. The development is predicted to generate 199 new AM two-way peak-hour auto trips and 252 new PM two-way peak-hour auto trips by stages 3&4. (J.L. Richards & Associates Limited, 2019)

Arcadia community Stage 6

The proposed development application includes a zoning by-law amendment for the construction of 409 townhome units. The anticipated build-out horizon is 2025, and the development is predicted to generate 111 new AM two-way peak-hour auto trips and 136 new PM two-way peak-hour auto trips. (CGH Transportation, 2021)

8600 Campeau Drive

The proposed development application includes a site plan for the construction of a four-storey building housing with 120 hotel units. The anticipated build-out horizon is 2019. The development is predicted to generate 49 new AM two-way peak-hour auto trips, 56 new PM two-way peak-hour auto trips, and 68 new Saturday peak-hour auto trips. (IBI Group, 2018)

8700 Campeau Drive

The proposed development application includes a site plan for the construction of a five-storey office building with a gross floor area of 150,000 ft^2. The anticipated build-out horizon is 2021, and the development is predicted to generate 129 new AM two-way peak-hour auto trips and 129 new PM two-way peak-hour auto trips. (Parsons, 2019)

471 Terry Fox Drive

The proposed development application includes a Zoning By-law Amendment to allow the construction of 22,400 ft^2 of retail component. No TIA is available as part of this application.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Campeau Drive at:
  - Huntmar Drive
  - Country Glen Way
  - Winterset Road (Future Conditions)
  - Terry Fox Drive
- Terry Fox Drive at:
  - Signature Centre
  - Kanata Avenue
- Winterset Road at:
  - Site Access 1 (Future Conditions)
  - Site Access 2 (Future Conditions)

The boundary road will be Campeau Drive, Country Glen Way, and Donum Lane (future). Screen lines SL44 and SL53 are present within proximity to the site but will not be analyzed as part of this study.

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 2025. As a result, the full build-out plus five years horizon year is 2030.

4 Exemption Review

Table 3 summarizes the exemptions for this TIA.

Table 3: 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	Exempt

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Kanata/Stittsville have been summarized in Table 4.

Table 4: TRANS Trip Generation Manual Recommended Mode Shares – Kanata/Stittsville

Travel Mode	Single-Detached		Multi-Unit (Low-Rise)	
	AM	PM	AM	PM
Auto Driver	52%	56%	52%	58%
Auto Passenger	15%	19%	14%	17%
Transit	20%	14%	22%	17%
Cycling	1%	1%	0%	0%
Walking	12%	9%	11%	8%
Total	**100%**	**100%**	**100%**	**100%**

The completion of the Campeau Drive extension provides a direct connection to the Terry Fox BRT Station and would support the area transit mode shares. Depending on the service provided by OC Transpo, this may increase as the station is only 1.65 kilometres from the proposed subdivision. Once the Kanata LRT is extended to Donum Lane, beyond the study horizons of this study, the transit mode share is expected to increase above the current 14-22% currently documented in the Kanata/Stittsville area.

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 5 summarizes the person trip rates for the proposed residential land uses for each peak period.

Table 5: 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 6 summarizes the total person trip generation for the residential land uses.

Table 6: 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	62	38	89	127	95	59	154
Multi-Unit Low-Rise	162	66	153	219	143	113	256

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 7 summarizes the residential trip generation by mode.

Table 7: 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	**52%**	10	22	32	**56%**	23	15	38
	Auto Passenger	**15%**	3	6	9	**19%**	8	5	13
	Transit	**20%**	4	10	14	**14%**	6	4	9
	Cycling	**1%**	0	1	1	**1%**	0	0	0
	Walking	**12%**	3	6	9	**9%**	5	3	8
	Total	**100%**	**19**	**45**	**64**	**100%**	**42**	**26**	**68**
Multi-Unit (Low-Rise)	Auto Driver	**52%**	16	38	54	**58%**	37	29	66
	Auto Passenger	**14%**	4	10	14	**17%**	11	8	19
	Transit	**22%**	8	19	26	**17%**	11	9	20
	Cycling	**0%**	0	0	0	**0%**	0	0	0
	Walking	**11%**	4	10	14	**8%**	6	5	11
	Total	**100%**	**33**	**77**	**110**	**100%**	**63**	**50**	**113**

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Total	Auto Driver	-	26	60	86	-	60	44	104
	Auto Passenger	-	7	16	24	-	19	13	32
	Transit	-	11	29	40	-	17	13	30
	Cycling	-	0	1	1	-	0	0	0
	Walking	-	7	16	23	-	11	8	17
	Total	-	**52**	**122**	**174**	-	**105**	**76**	**181**

As shown above, a total of 86 new AM and 104 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Kanata/ Stittsville. Table 8 below summarizes the distributions.

Table 8: OD Survey Distribution – Kanata/ Stittsville

To/From	Residential % of Trips
North	15%
South	30%
East	50%
West	5%
Total	**100%**

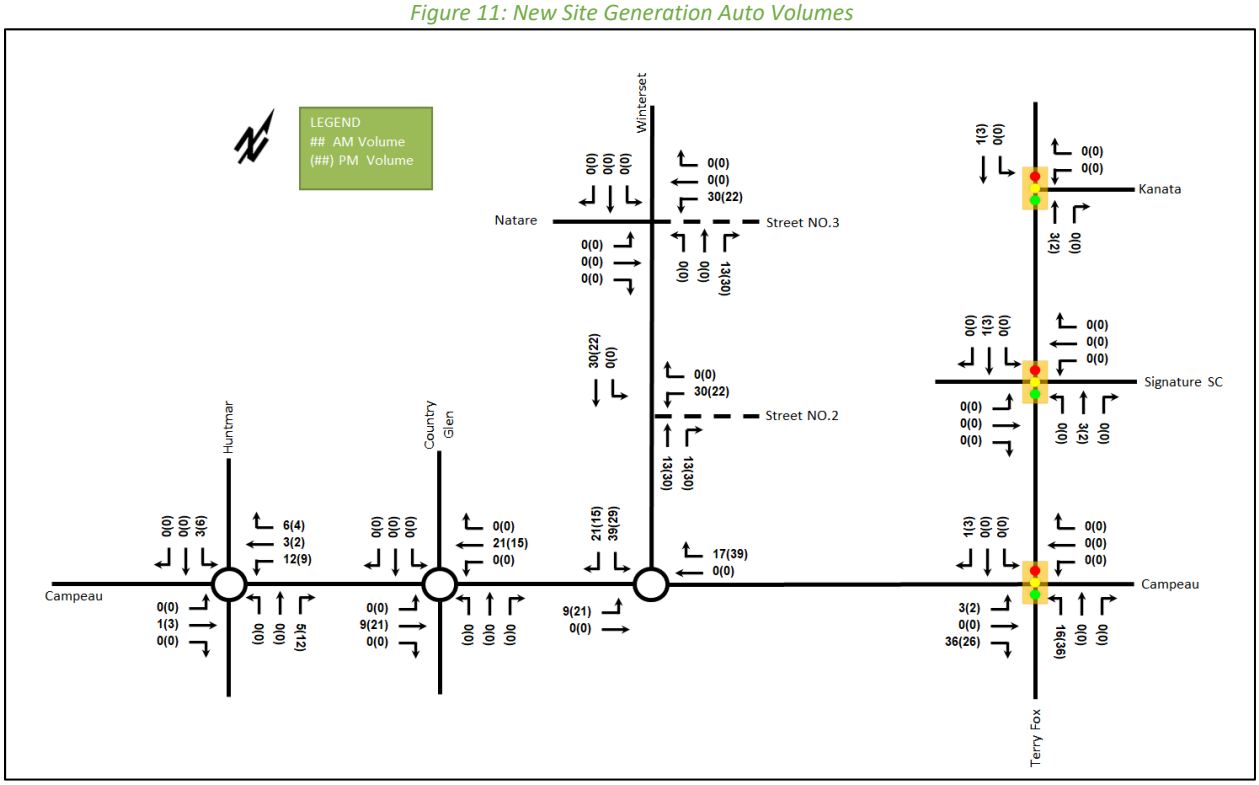
5.4 Trip Assignment

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 9 summarizes the proportional assignment to the study area roadways, and Figure 11 illustrates the new site generated volumes.

Table 9: Trip Assignment

To/From	Via
North	10% Huntmar Drive (N), 5% Terry Fox Drive(N)
South	10% Terry Fox Drive(S), 20% Huntmar Drive (S)
East	50% Terry Fox Drive(S)
West	5% Campeau Drive (W)
Total	**100%**

Figure 11: 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. The Campeau Drive extension was completed and opened in the fall of 2021. Therefore, volumes on Campeau Drive were re-distributed in future horizons based on the existing volumes and other area developments. These are summarized in Section 6.3.

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.

In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be positive in both east-west and north-south directions. When reviewing the existing volumes compared to the 2031 model horizon, it is noted that forecasted volumes on eastbound, westbound, and northbound movement in the study area have been exceeded.

Resultantly, growth rates derived from the two TRANS model horizons rounded to the nearest 0.25% will be peak-directionally applied to the appropriate roadway's mainline volumes and to the appropriate major turning movements at the intersections. Table 10 summarizes the growth rates applied within the study area.

Table 10: TRANS Regional Model Projections – Study Area Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	**Westbound**	**Eastbound**	**Westbound**
Campeau Drive	2.00%	2.00%	2.00%	2.00%
	Northbound	**Southbound**	**Northbound**	**Southbound**
Terry Fox Drive	1.75%	2.50%	2.50%	1.75%
Huntmar Drive	2.25%	2.00%	2.00%	2.25%

6.3 Other Developments

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

- 130 Huntmar Drive
- 195 Huntmar Drive
- 333 Huntmar Drive
- 1400 Upper Canada Street
- 8800 Campeau Drive
- 340 Huntmar Drive
- 800 Palladium Drive
- Arcadia community Stage 3&4
- Arcadia community Stage 6
- 8600 Campeau Drive
- 8700 Campeau Drive

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

The background volumes and other study area development volumes will be re-distributed in future horizons due to the network changes associated with the Campeau Drive extension. Figure 12 illustrates the 2025 total re-assigned volumes and Figure 13 illustrates the 2030 total re-assigned volumes.

Figure 12: 2025 Total Re-Assigned Volumes

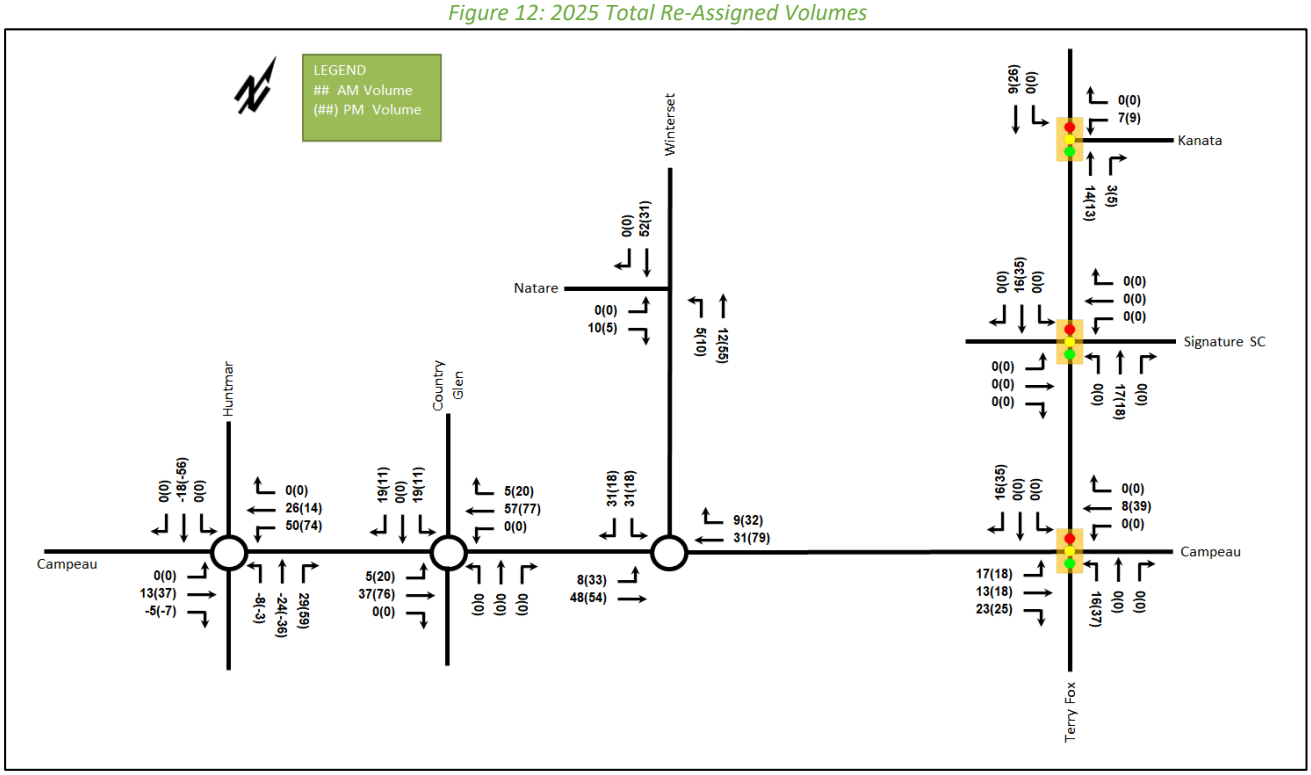
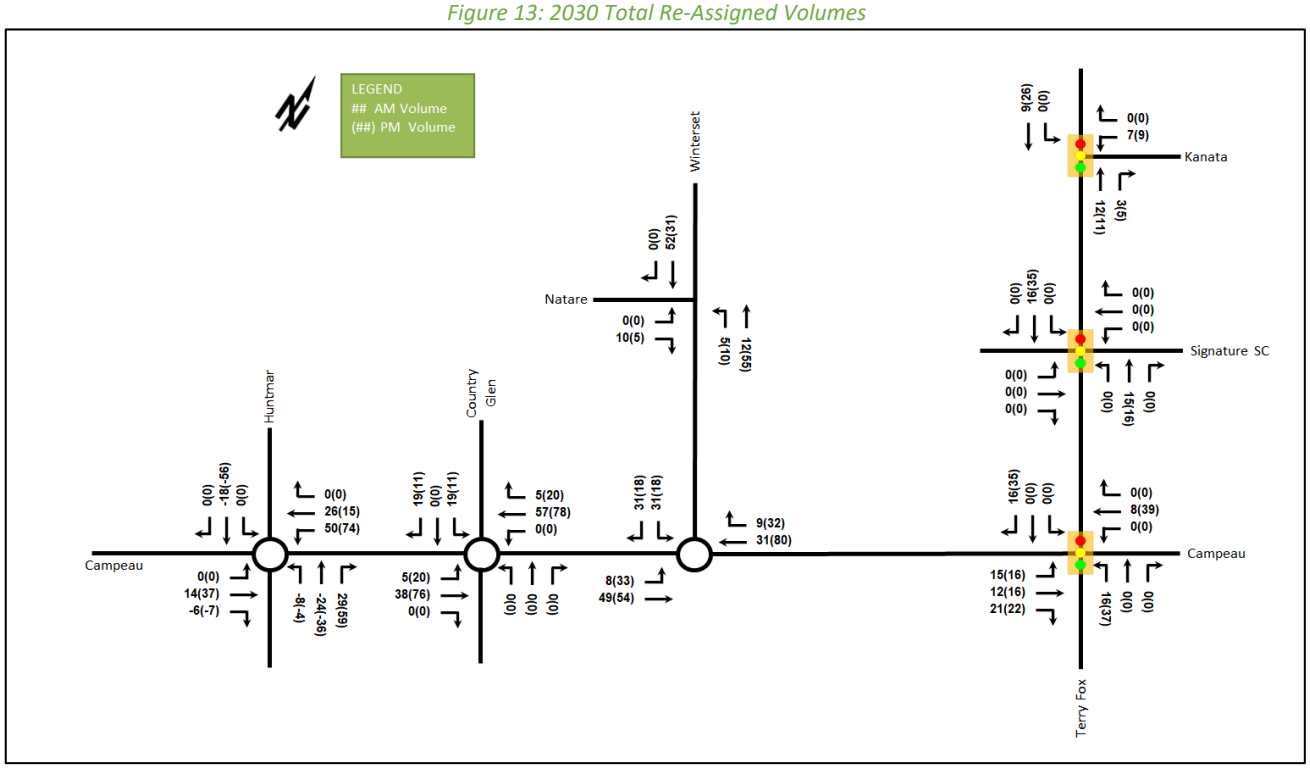


Figure 13: 2030 Total Re-Assigned Volumes



7 Demand Rationalization

7.1 2025 Future Background Operations

Since the Campeau Drive extension was completed in the fall of 2021, the intersections of Country Glen Way at Campeau Drive and Winterset Road at Campeau Drive are included in the future background conditions.

Figure 14 illustrates the 2025 background volumes and Table 11 summarizes the 2025 background intersection operations. The level of service for signalized intersections is based on HCM 2010 v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabouts. The Synchro and Sidra worksheets for the 2025 future background horizon are provided in Appendix E.

Figure 14: 2025 Future Background Volumes

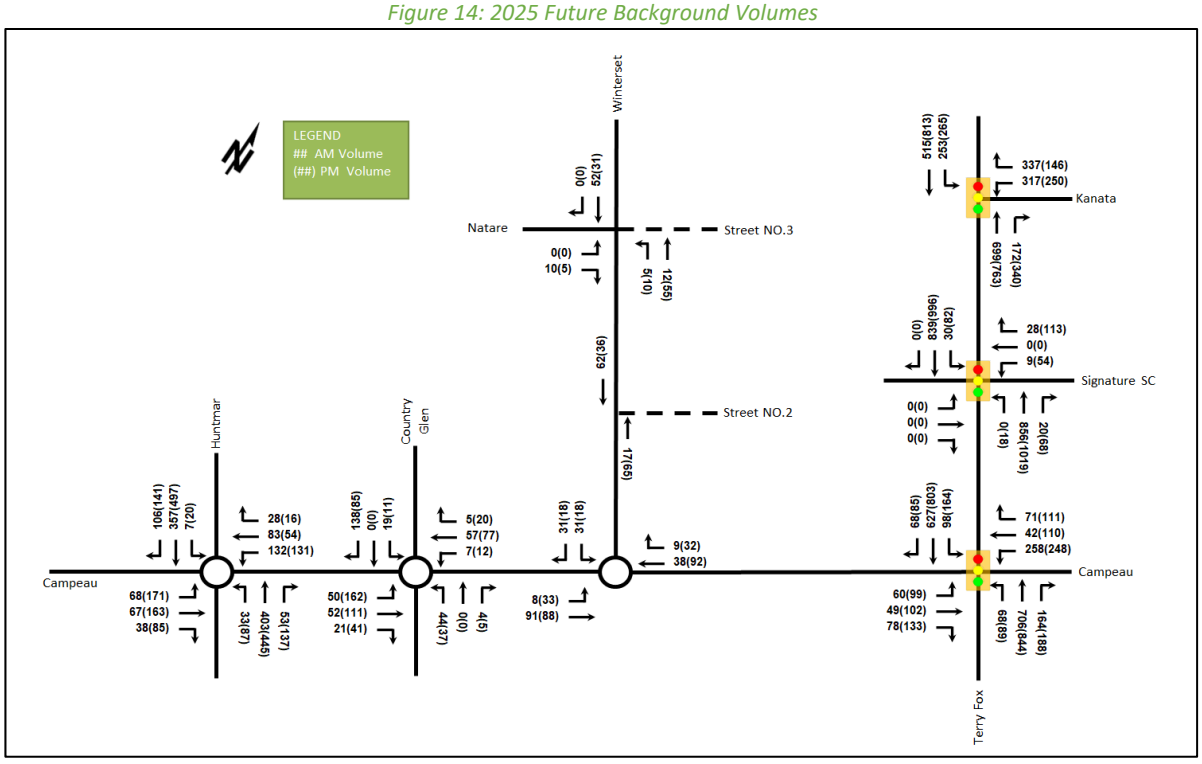


Table 11: 2025 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Huntmar Drive at Campeau Dive *Roundabout*	EB	A	0.09	7.2	1.7	A	0.24	8.1	5.1
	WB	A	0.17	8.2	3.3	A	0.19	9.6	3.7
	NB	A	0.40	2.7	10.4	A	0.52	4.3	15.8
	SB	A	0.20	2.8	4.2	A	0.28	3.0	6.6
	Overall	**A**	**0.40**	**4.3**	**10.4**	**A**	**0.52**	**5.2**	**15.8**
Country Glen Way at Campeau Dive *Roundabout*	EB	A	0.06	6.0	1.4	A	0.15	6.6	4.1
	WB	A	0.03	4.2	0.6	A	0.06	4.6	1.1
	NB	A	0.02	1.6	0.4	A	0.02	2.0	0.4
	SB	A	0.15	0.5	3.0	A	0.10	0.5	1.7
	Overall	**A**	**0.15**	**3.0**	**3.0**	**A**	**0.15**	**4.8**	**4.1**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Winterset Road at Campeau Dive *Roundabout*	EB	A	0.04	3.8	0.7	A	0.05	5.0	0.9
	WB	A	0.02	3.4	0.3	A	0.04	3.6	0.8
	SB	A	0.03	0.8	0.5	A	0.02	1.0	0.3
	Overall	**A**	**0.04**	**2.9**	**0.7**	**A**	**0.05**	**3.8**	**0.9**
Terry Fox Drive at Kanata Avenue *Signalized*	WBL	B	0.63	42.8	44.6	A	0.56	42.0	35.5
	WBR	B	0.66	11.2	24.8	A	0.44	11.1	16.5
	NBT	A	0.50	22.6	80.7	A	0.52	21.4	82.5
	NBR	A	0.24	4.4	13.5	A	0.41	4.0	17.0
	SBL	C	0.74	47.4	71.9	C	0.73	45.5	71.3
	SBT	A	0.22	5.2	24.8	A	0.34	5.1	35.8
	Overall	**A**	**0.59**	**21.2**	**-**	**A**	**0.59**	**17.9**	**-**
Terry Fox Drive at Signature C *Signalized*	EB	A	-	-	-	A	-	-	-
	WBL/T	A	0.04	33.4	5.6	A	0.15	34.9	20.3
	WBR	A	0.08	9.9	6.1	A	0.23	7.4	13.6
	NBL	A	-	-	-	A	0.07	5.1	m0.6
	NBT/R	A	0.42	14.0	100.8	A	0.53	15.8	130.7
	SBL	A	0.09	8.0	5.9	A	0.36	16.6	20.6
	SBT/R	A	0.39	9.7	51.8	A	0.48	13.3	77.3
	Overall	**A**	**0.32**	**11.9**	**-**	**A**	**0.42**	**14.7**	**-**
Terry Fox Drive at Campeau Drive *Signalized*	EBL	A	0.18	28.9	17.7	A	0.33	37.4	30.5
	EBT	A	0.10	27.2	14.8	A	0.23	34.6	29.7
	EBR	A	0.17	4.0	6.7	A	0.28	6.4	13.0
	WBL	C	0.79	54.0	70.9	D	0.82	62.3	76.3
	WBT	A	0.09	26.9	13.1	A	0.26	35.2	31.8
	WBR	A	0.16	3.1	5.2	A	0.25	6.6	12.0
	NBL	A	0.16	12.0	14.3	A	0.24	12.1	17.6
	NBT	A	0.46	22.5	85.6	A	0.51	23.7	109.8
	NBR	A	0.22	4.4	13.8	A	0.23	4.3	15.3
	SBL	A	0.25	26.8	34.0	A	0.44	27.1	52.3
	SBT	A	0.39	41.7	94.8	A	0.47	38.5	112.8
	SBR	A	0.09	18.0	15.2	A	0.11	17.7	19.1
	Overall	**A**	**0.55**	**28.9**	**-**	**A**	**0.59**	**29.2**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = queue exceeds storage or mid-block length

During both the AM and PM peak hours at the 2025 future background horizon, the study area intersections operate similarly to the existing conditions. No capacity issues are noted.

7.2 2030 Future Background Operations

Figure 15 illustrates the 2030 background volumes and Table 12 summarizes the 2030 background intersection operations. The level of service for signalized intersections is based on HCM 2010 v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabout. The Synchro and Sidra worksheets for the 2030 future background horizon are provided in Appendix F.

Figure 15: 2030 Future Background Volumes

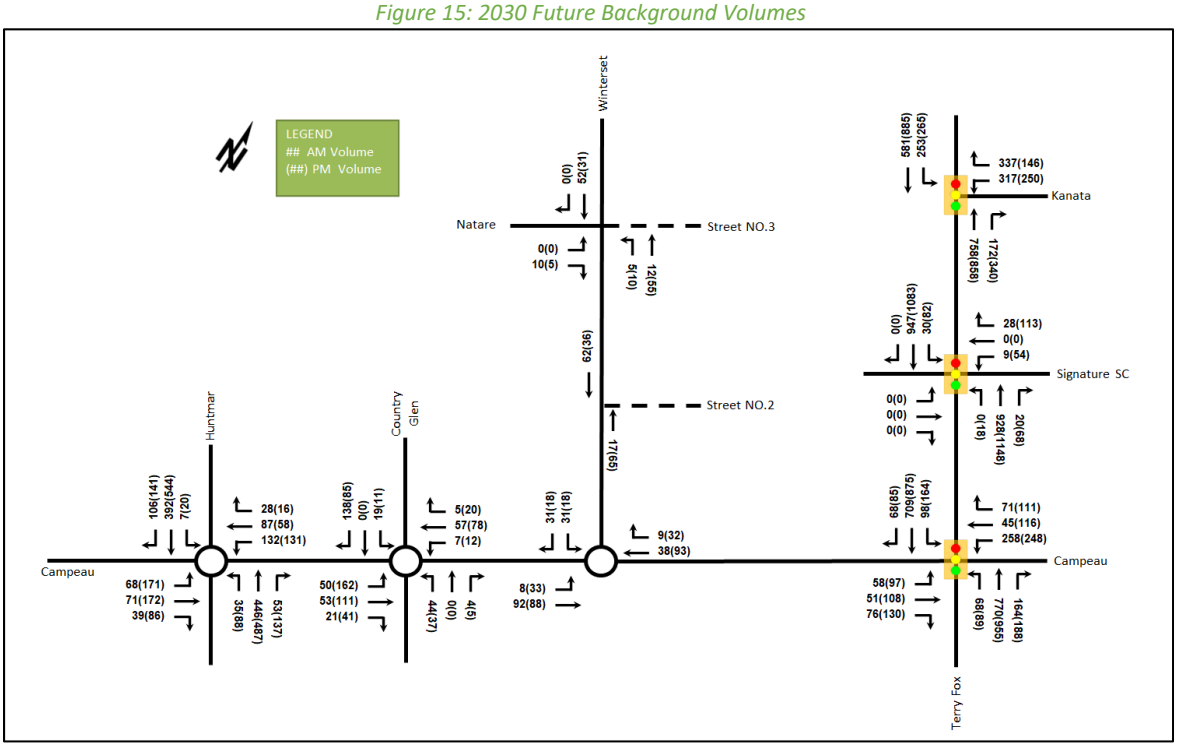


Table 12: 2030 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Huntmar Drive at Campeau Dive *Roundabout*	EB	A	0.09	7.2	1.8	A	0.26	8.2	5.5
	WB	A	0.18	8.4	3.4	A	0.20	9.8	3.9
	NB	A	0.45	2.7	12.3	A	0.57	4.5	19.3
	SB	A	0.22	2.8	4.7	A	0.31	3.0	7.4
	Overall	**A**	**0.45**	**4.2**	**12.3**	**A**	**0.57**	**5.3**	**19.3**
Country Glen Way at Campeau Dive *Roundabout*	EB	A	0.06	6.0	1.4	A	0.15	6.7	4.1
	WB	A	0.03	4.2	0.6	A	0.06	4.6	1.1
	NB	A	0.02	1.7	0.4	A	0.02	2.1	0.4
	SB	A	0.15	0.5	3.0	A	0.16	0.6	3.0
	Overall	**A**	**0.15**	**3.0**	**3.0**	**A**	**0.16**	**4.4**	**4.1**
Winterset Road at Campeau Dive *Roundabout*	EB	A	0.04	3.8	0.8	A	0.05	5.0	0.9
	WB	A	0.02	3.4	0.3	A	0.04	3.6	0.8
	SB	A	0.03	0.8	0.5	A	0.02	1.0	0.3
	Overall	**A**	**0.04**	**2.9**	**0.8**	**A**	**0.05**	**3.8**	**0.9**
Terry Fox Drive at Kanata Avenue *Signalized*	WBL	B	0.63	42.8	44.6	A	0.56	42.0	35.5
	WBR	B	0.66	11.2	24.8	A	0.44	11.1	16.5
	NBT	A	0.54	23.3	89.1	A	0.59	22.6	95.5
	NBR	A	0.24	4.4	13.5	A	0.41	4.0	17.0
	SBL	C	0.74	47.4	71.9	C	0.73	45.5	71.3
	SBT	A	0.25	5.4	28.3	A	0.37	5.3	39.8
	Overall	**A**	**0.61**	**21.0**	**-**	**B**	**0.62**	**18.1**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Terry Fox Drive at Signature C ***Signalized***	EB	A	-	-	-	A	-	-	-
	WBL/T	A	0.04	33.4	5.6	A	0.15	34.9	20.3
	WBR	A	0.08	9.9	6.1	A	0.24	10.9	17.3
	NBL	A	-	-	-	A	0.08	4.7	m0.4
	NBT/R	A	0.45	14.7	112.8	A	0.59	16.8	155.8
	SBL	A	0.10	8.2	6.0	A	0.44	20.9	24.2
	SBT/R	A	0.44	10.2	60.6	A	0.53	13.9	86.8
	Overall	**A**	**0.34**	**12.5**	**-**	**A**	**0.46**	**15.8**	**-**
Terry Fox Drive at Campeau Drive ***Signalized***	EBL	A	0.17	28.7	17.3	A	0.32	37.1	29.8
	EBT	A	0.11	27.3	15.1	A	0.24	34.8	31.2
	EBR	A	0.17	3.7	6.2	A	0.28	6.4	13.0
	WBL	C	0.80	54.1	70.9	D	0.82	62.4	76.2
	WBT	A	0.10	27.0	13.7	A	0.27	35.3	33.2
	WBR	A	0.16	3.1	5.2	A	0.25	6.6	12.0
	NBL	A	0.17	12.2	14.3	A	0.26	12.5	17.6
	NBT	A	0.50	23.3	95.3	A	0.58	25.7	130.5
	NBR	A	0.22	4.4	13.8	A	0.24	6.0	19.4
	SBL	A	0.27	26.8	34.3	A	0.49	28.9	53.8
	SBT	A	0.44	42.8	105.4	A	0.51	40.3	123.1
	SBR	A	0.09	17.6	15.4	A	0.11	18.0	19.6
	Overall	**A**	**0.58**	**29.7**	**-**	**B**	**0.64**	**30.6**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = queue exceeds storage or mid-block length

The intersections at the 2030 future background horizon are anticipated to operate similarly to the 2025 background conditions. No new capacity issues are forecasted.

7.3 Modal Share Sensitivity and Demand Rationalization Conclusions

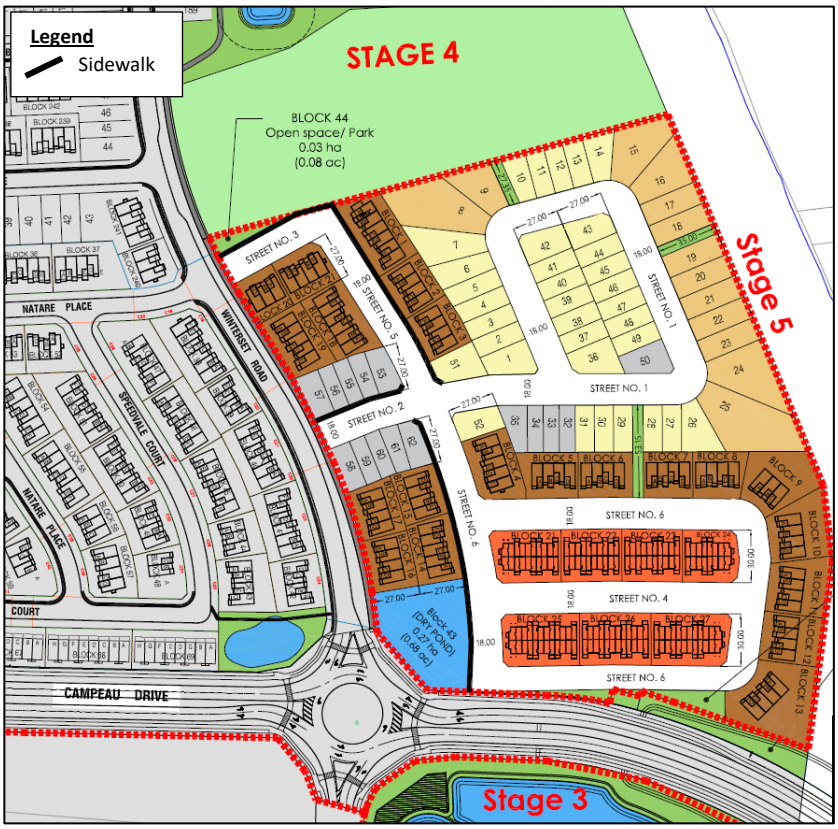
No capacity constraints are noted within the study area. As such, no rationalization of the modal share and projected volumes is required.

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 16 illustrates the pedestrian concept network with connections to adjacent pedestrian facilities.

Figure 16: Concept Pedestrian Network



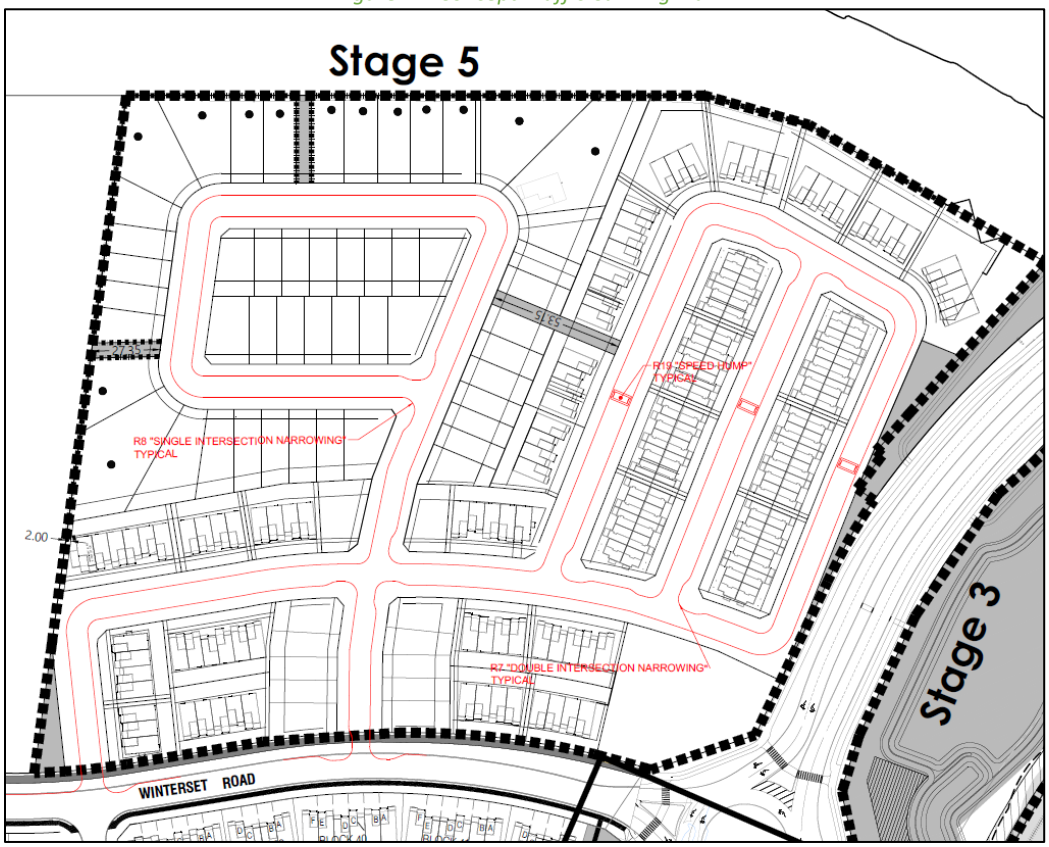
8.2 New Street Networks

The planned street network will include 18-metre local roadways. The local will provide parking on one side of the roadway. The local roads are proposed to be posted as 30 km/h.

To support the pedestrian and cycling connectivity within the subdivision, Figure 17 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). 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 17: Concept Traffic Calming Plan



9 Boundary Street Design

Table 13 summarizes the MMLOS analysis for the boundary streets of Campeau Drive and Winterset Road. The existing and future conditions for both streets will be the same and are considered in one row. The boundary Street of Campeau Drive analysis is based on the land use designation of "Mixed Use Centre" and "General Urban Area", and Winterset Road analysis is based on the land use designation of "General Urban Area". The MMLOS worksheets have been provided in Appendix G.

Table 13: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Campeau Drive	B	C	A	D	N/A	N/A	N/A	N/A
Winterset Road	A	C	D	D	N/A	N/A	N/A	N/A

The boundary streets meet the pedestrian and cycling MMLOS targets.

10 Access Intersections Design

10.1 Location and Design of Access

The residential accesses will connect to the adjacent road network via local roads connection to Winterset Road. Within the subdivision, no turn lanes are proposed for the internal intersections which will be controlled by minor stop control.

10.2 Intersection Control

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

10.3 Access Intersection Design

10.3.1 2025 Future Total Access Intersection Operations

The 2025 future total intersection volumes are illustrated in Figure 18 and the access intersection operations are summarized below in Table 14. Unsignalized intersections are based on HCM average delay. The Synchro worksheets have been provided in Appendix H.

Figure 18: 2025 Future Total Volumes

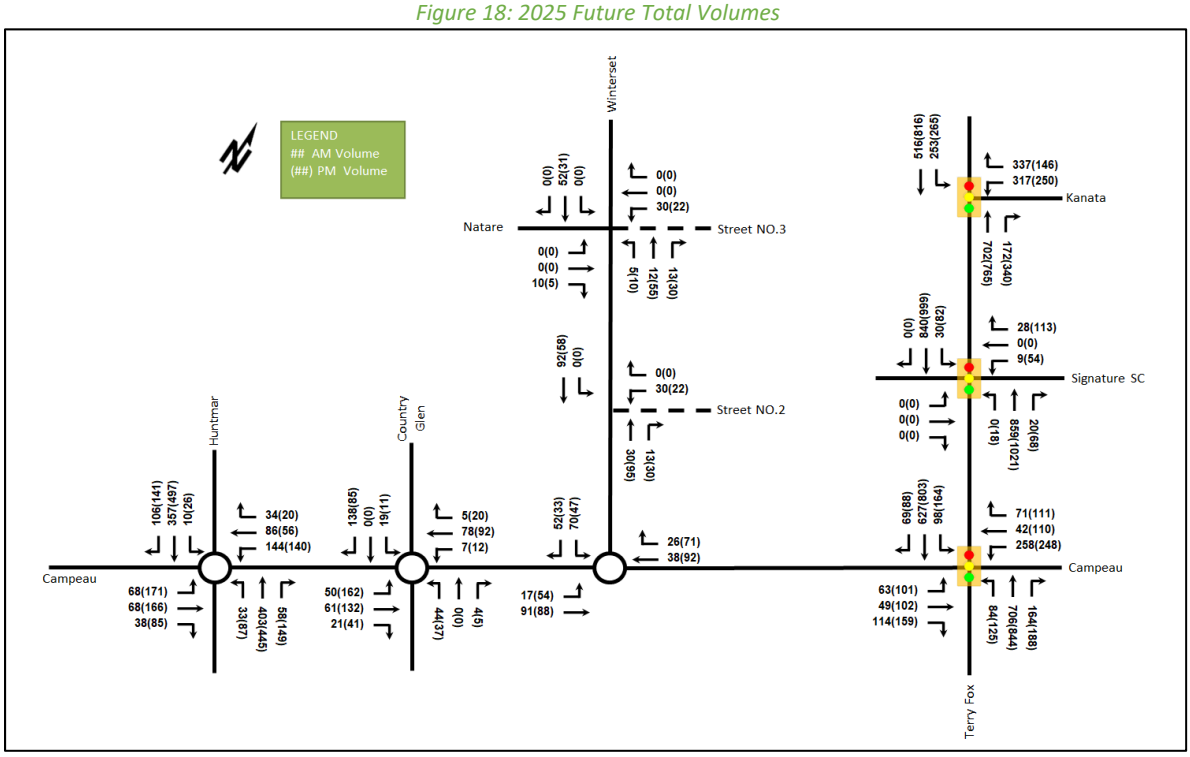


Table 14: 2025 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Winterset Road at No.2 Street *Unsignalized*	WB	A	0.04	9.3	0.8	A	0.03	9.5	0.8
	NB	-	-	-	-	-	-	-	-
	SB	A	-	0.0	0.0	A	-	0.0	0.0
	Overall	**A**	**-**	**1.7**	**-**	**A**	**-**	**1.0**	**-**
Winterset Road at No.3 Street *Unsignalized*	EB	A	0.01	8.6	0.0	A	0.01	8.5	0.0
	WB	A	0.03	9.2	0.8	A	0.03	9.4	0.8
	NB	A	0.00	7.3	0.0	A	0.01	7.3	0.0
	SB	A	-	0.0	0.0	A	-	0.0	0.0
	Overall	**A**	**-**	**3.3**	**-**	**A**	**-**	**2.1**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = queue exceeds storage or mid-block length

The 2025 future total access intersection operates satisfactorily.

10.3.2 2030 Future Total Access Intersection Operations

The 2030 future total intersection volumes are illustrated in Figure 19 and the access intersection operations are summarized below in Table 15. Unsignalized intersections are based on HCM average delay. The Synchro worksheets have been provided in Appendix I.

Figure 19: 2030 Future Total Volumes

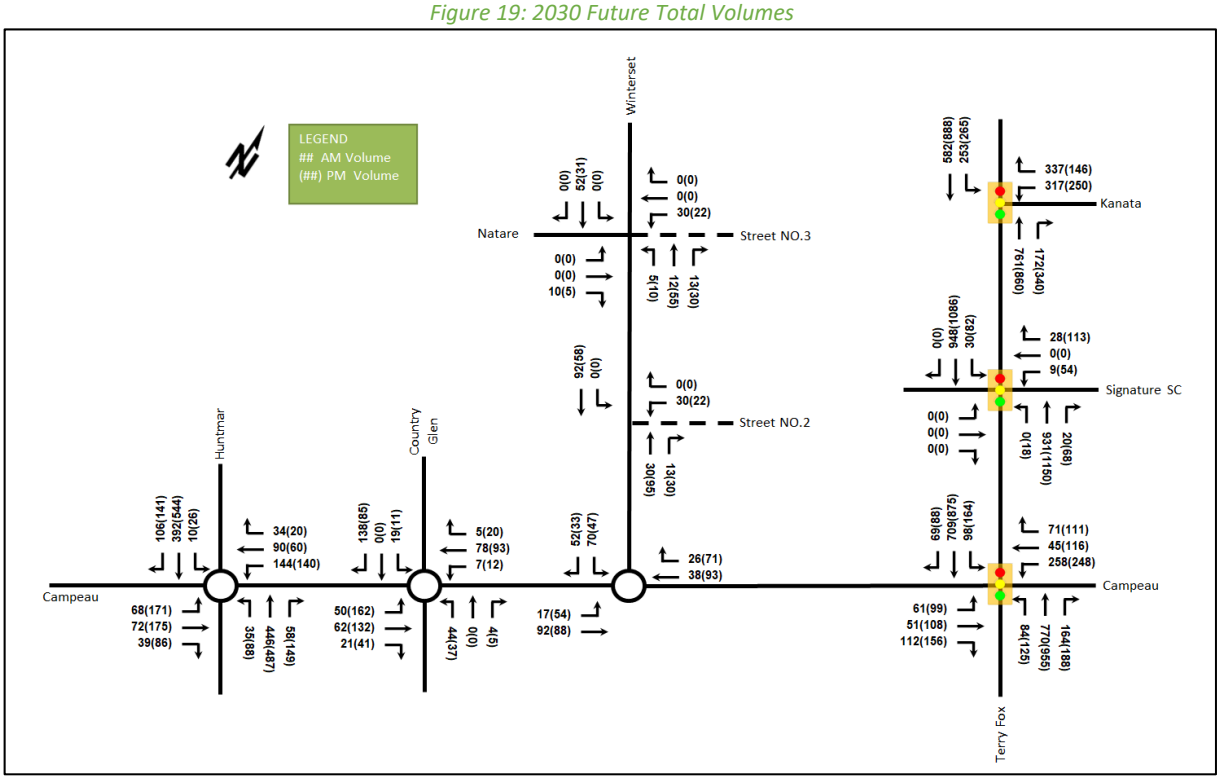


Table 15: 2030 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Winterset Road at No.2 Street *Unsignalized*	WB	A	0.04	9.3	0.8	A	0.03	9.5	0.8
	NB	-	-	-	-	-	-	-	-
	SB	A	-	0.0	0.0	A	-	0.0	0.0
	Overall	**A**	**-**	**1.7**	**-**	**A**	**-**	**1.0**	**-**
Winterset Road at No.3 Street *Unsignalized*	EB	A	0.01	8.6	0.0	A	0.01	8.5	0.0
	WB	A	0.03	9.2	0.8	A	0.03	9.4	0.8
	NB	A	0.00	7.3	0.0	A	0.01	7.3	0.0
	SB	A	-	0.0	0.0	A	-	0.0	0.0
	Overall	**A**	**-**	**3.3**	**-**	**A**	**-**	**2.1**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = queue exceeds storage or mid-block length

The 2030 future total access intersection operates satisfactorily.

10.3.3 Access Intersection MMLOS

The access intersection is unsignalized, and 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 and various EA study recommendations.

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 Kanata West Secondary Plan and Community Design Plan areas. 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 residual capacity, and as the unmodified district mode shares have been applied, risks to other network users from failing to meet mode share targets is 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 J. The key TDM measures recommended include:

- Provide a multimodal travel option information package to new residents

12 Neighbourhood Traffic Management

Site traffic is proposed to access the arterial network via Winterset Road. The TIA Guidelines propose a threshold of 120 vehicles per peak hour for the classification of local roads, equivalent to 2 cars per minute, which per City guidance is to be interpreted as two-way volumes.

2025 background volumes on Winterset Road are expected to be 79 two-way vehicles in the AM peak hour and 101 two-way vehicles in the PM peak hour. Overall, the site is anticipated to generate approximately 86 and 104 two-way vehicle trips during the AM and PM peak hours, respectively, accessing Winterset Road. While over the prescribed theoretical local road capacity, this volume increase is not considered a significant impact on Winterset Road or requires any traffic management.

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 16 summarizes the transit trip generation.

Table 16: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Transit	Varies	11	29	40	17	13	30

The proposed development is anticipated to generate an additional 40 AM peak hour transit trips and 30 PM peak hour transit trips. Of these trips, 29 outbound AM trips and 17 inbound PM trips are anticipated. From the trip distribution found in Section 5.2, these values can be further broken down.

Site-generated outbound AM trips break down to four trips to the north, nine trips to the south, 15 trips to the east, and one trip to the west. Site-generated inbound PM trips break down to three trips to the north, five trips to the south, eight trips to the east, and one trip to the west.

It is recommended that future transit service include the routing of at minimum a local route with half-hour service, and potentially include a Connexion route, along Campeau Drive connecting to Terry Fox Station. Such routes would service the many residential developments east of Huntmar Drive and provide connection to the developing retail areas west of Terry Fox Drive along Campeau Drive

13.2 Transit Priority

No transit priority is required explicitly for this study.

14 Network Concept

The subject development is in line with the intended context set by the Development Reserve zoning for the subject parcel. No future network changes are required to support the subject development, and the subject development will be making use of the existing infrastructure of the newly extended Campeau Drive.

15 Network Intersection Design

15.1 Network Intersection Control

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

15.2 Network Intersection Design

15.2.1 2025 Future Total Network Intersection Operations

The 2025 future total network intersection operations are summarized below in Table 17. The level of service for signalized intersections is based on HCM 2010 v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabout. The Synchro and Sidra worksheets have been provided in Appendix H.

Table 17: 2025 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)
Huntmar Drive at Campeau Dive *Roundabout*	EB	A	0.09	7.2	1.7	A	0.25	8.1	5.2
	WB	A	0.19	8.3	3.6	A	0.21	9.6	4.0
	NB	A	0.40	2.7	10.4	A	0.52	4.3	16.0
	SB	A	0.20	2.8	4.3	A	0.29	3.1	6.7
	Overall	**A**	**0.40**	**4.4**	**10.4**	**A**	**0.52**	**5.3**	**16.0**
Country Glen Way at Campeau Dive *Roundabout*	EB	A	0.05	6.1	1.3	A	0.15	6.8	4.1
	WB	A	0.04	4.0	0.8	A	0.07	4.5	1.2
	NB	A	0.02	1.6	0.4	A	0.02	2.0	0.4
	SB	A	0.16	0.4	3.0	A	0.10	0.6	1.8
	Overall	**A**	**0.16**	**3.0**	**3.0**	**A**	**0.15**	**4.8**	**4.1**
Winterset Road at Campeau Dive *Roundabout*	EB	A	0.05	4.4	0.8	A	0.06	5.7	1.1
	WB	A	0.02	3.7	0.4	A	0.07	3.8	1.2
	SB	A	0.07	1.0	1.1	A	0.05	1.1	0.8
	Overall	**A**	**0.07**	**2.8**	**1.1**	**A**	**0.07**	**3.9**	**1.2**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Terry Fox Drive at Kanata Avenue *Signalized*	WBL	B	0.63	42.8	44.6	A	0.56	42.0	35.5
	WBR	B	0.66	11.2	24.8	A	0.44	11.1	16.5
	NBT	A	0.50	22.6	81.3	A	0.53	21.4	82.8
	NBR	A	0.24	4.4	13.5	A	0.41	4.0	17.0
	SBL	C	0.74	47.4	71.9	C	0.73	45.5	71.3
	SBT	A	0.22	5.2	24.9	A	0.34	5.1	35.9
	Overall	**A**	**0.59**	**21.2**	**-**	**A**	**0.59**	**17.9**	**-**
Terry Fox Drive at Signature C *Signalized*	EB	A	-	-	-	A	-	-	-
	WBL/T	A	0.04	33.4	5.6	A	0.15	34.9	20.3
	WBR	A	0.08	9.9	6.1	A	0.23	7.4	13.6
	NBL	A	-	-	-	A	0.07	5.1	m0.7
	NBT/R	A	0.42	14.0	100.8	A	0.53	15.8	130.1
	SBL	A	0.09	8.0	5.9	A	0.36	16.7	20.7
	SBT/R	A	0.39	9.7	51.9	A	0.48	13.3	77.6
	Overall	**A**	**0.32**	**11.9**	**-**	**A**	**0.42**	**14.7**	**-**
Terry Fox Drive at Campeau Drive *Signalized*	EBL	A	0.19	29.1	18.4	A	0.34	37.5	31.1
	EBT	A	0.10	27.2	14.8	A	0.23	34.6	29.7
	EBR	A	0.24	5.9	11.2	A	0.33	6.3	14.3
	WBL	C	0.79	54.0	70.9	D	0.82	62.3	76.3
	WBT	A	0.09	26.9	13.1	A	0.26	35.2	31.8
	WBR	A	0.16	3.1	5.2	A	0.25	6.6	12.0
	NBL	A	0.19	12.1	16.9	A	0.33	12.8	23.4
	NBT	A	0.46	22.5	85.6	A	0.51	23.7	109.8
	NBR	A	0.22	4.4	13.8	A	0.23	4.3	15.3
	SBL	A	0.25	26.9	33.9	A	0.44	27.1	52.2
	SBT	A	0.39	42.2	94.8	A	0.47	39.6	113.1
	SBR	A	0.09	18.4	15.5	A	0.11	18.7	20.2
	Overall	**A**	**0.55**	**28.6**	**-**	**A**	**0.59**	**29.1**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = queue exceeds storage or mid-block length

The network intersection operations for the 2025 future total horizon are anticipated to operate similarly to the 2025 background condition.

15.2.2 2030 Future Total Network Intersection Operations

The 2030 future total network intersection operations are summarized below in Table 18. The level of service for signalized intersections is based on HCM 2010 v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Synchro 11 has been used to model the signalized intersections and Sidra 8 to model the study area roundabout. The Synchro and Sidra worksheets have been provided in Appendix I.

Table 18: 2030 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)
Huntmar Drive at Campeau Dive *Roundabout*	EB	A	0.09	7.3	1.8	A	0.26	8.3	5.6
	WB	A	0.19	8.4	3.7	A	0.21	9.8	4.2
	NB	A	0.45	2.7	12.3	A	0.57	4.6	19.5
	SB	A	0.22	2.9	4.8	A	0.32	3.1	7/6
	Overall	**A**	**0.45**	**4.3**	**12.3**	**A**	**0.57**	**5.4**	**19.5**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Country Glen Way at Campeau Dive *Roundabout*	EB	A	0.06	5.8	1.5	A	0.16	6.4	4.3
	WB	A	0.04	4.0	0.8	A	0.07	4.5	1.2
	NB	A	0.02	1.7	0.4	A	0.02	2.1	0.4
	SB	A	0.16	0.6	3.0	A	0.10	0.6	1.8
	Overall	**A**	**0.16**	**3.0**	**3.0**	**A**	**0.16**	**4.8**	**4.3**
Winterset Road at Campeau Dive *Roundabout*	EB	A	0.05	4.4	0.9	A	0.06	5.7	1.1
	WB	A	0.02	3.7	0.4	A	0.07	3.8	1.2
	SB	A	0.07	1.0	1.1	A	0.05	1.1	0.8
	Overall	**A**	**0.07**	**2.8**	**1.1**	**A**	**0.07**	**3.9**	**1.2**
Terry Fox Drive at Kanata Avenue *Signalized*	WBL	B	0.63	42.8	44.6	A	0.56	42.0	35.5
	WBR	B	0.66	11.2	24.8	A	0.44	11.1	16.5
	NBT	A	0.54	23.3	89.4	A	0.59	22.6	95.5
	NBR	A	0.24	4.4	13.5	A	0.41	4.0	17.0
	SBL	C	0.74	47.4	71.9	C	0.73	45.5	71.3
	SBT	A	0.25	5.4	28.3	A	0.37	5.3	40.0
	Overall	**B**	**0.61**	**21.1**	**-**	**B**	**0.62**	**18.1**	**-**
Terry Fox Drive at Signature C *Signalized*	EB	A	-	-	-	A	-	-	-
	WBL/T	A	0.04	33.4	5.6	A	0.15	34.9	20.3
	WBR	A	0.08	9.9	6.1	A	0.24	10.9	17.3
	NBL	A	-	-	-	A	0.08	4.7	m0.4
	NBT/R	A	0.45	14.7	112.8	A	0.59	16.8	155.8
	SBL	A	0.10	8.2	6.0	A	0.44	20.9	24.2
	SBT/R	A	0.44	10.2	60.8	A	0.53	13.9	87.2
	Overall	**A**	**0.34**	**12.4**	**-**	**A**	**0.46**	**15.8**	**-**
Terry Fox Drive at Campeau Drive *Signalized*	EBL	A	0.18	29.0	17.9	A	0.33	37.3	30.5
	EBT	A	0.11	27.3	15.1	A	0.24	34.8	31.2
	EBR	A	0.24	6.0	11.2	A	0.32	6.3	14.0
	WBL	C	0.80	54.1	70.9	D	0.82	62.4	76.2
	WBT	A	0.10	27.0	13.7	A	0.27	35.3	33.2
	WBR	A	0.16	3.1	5.2	A	0.25	6.6	12.0
	NBL	A	0.21	12.3	16.9	A	0.36	13.5	23.5
	NBT	A	0.50	23.3	95.3	A	0.58	25.7	130.5
	NBR	A	0.22	4.4	13.8	A	0.24	6.0	19.4
	SBL	A	0.27	26.8	34.3	A	0.49	28.9	53.7
	SBT	A	0.44	43.3	105.4	A	0.52	41.4	123.3
	SBR	A	0.09	18.1	15.6	A	0.11	18.9	20.7
	Overall	**A**	**0.58**	**29.5**	**-**	**B**	**0.64**	**30.5**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
PHF = 1.00
m = metered queue
# = queue exceeds storage or mid-block length

The network intersection operations for the 2030 future total horizon are anticipated to operate similarly to the 2030 background condition.

15.2.3 Network Intersection MMLOS

Table 19 summarizes the MMLOS analysis for the network intersections of Terry Fox Drive at Kanata Avenue, Terry Fox Drive at Signature C, and Terry Fox Drive at Campeau Drive. The existing and future conditions for both intersections will be the same and are considered in one row. The Terry Fox Drive at Campeau Drive intersection analysis is based on the land use designation of "Mixed Use Centre" and "General Urban Area", and other

intersections are based on the land use designation of "General Urban Area". The MMLOS worksheets have been provided in Appendix G.

Table 19: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Terry Fox Drive at Kanata Avenue	F	C	F	B	N/A	N/A	N/A	N/A	B	D
Terry Fox Drive at Signature C	F	C	F	C	N/A	N/A	N/A	N/A	A	D
Terry Fox Drive at Campeau Drive	F	C	F	A	N/A	N/A	N/A	N/A	B	D

The pedestrian LOS will not be met at the intersections throughout the study area. To meet pedestrian LOS targets, the maximum crossing distance on all pedestrian crossings would need to be reduced to three-lane widths.

The bicycle transit LOS will not be met at the intersection throughout the study area. To meet bicycle LOS at the intersections, the left-turn configurations would need to be two-stage or include turn boxes, and dedicated facilities would be required at the intersections.

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 62 single detached units and 162 townhome units
- Accesses are proposed onto Winterset Road via two full-movements accesses
- The development is proposed to be completed as a single phase by 2025
- The trip generation and safety triggers were met for the TIA Screening

Existing Conditions

- Huntmar Drive, Campeau Drive, and Terry Fox Drive are arterial roads, and Kanata Avenue is a major collector road in the study area
- Sidewalks are provided or planned on the east side of Terry Fox Drive, and on both sides of Country Glen Way, Campeau Drive and Huntmar Drive
- Bike lanes are presented on both sides of Kanata Avenue and Terry Fox Drive north of Campeau Drive
- Cycletracks are present on Campeau Drive and Huntmar Drive near Campeau Drive
- Huntmar Drive south of Campeau Drive, Campeau Drive east of Huntmar Drive, and Terry Fox Drive are spine routes. Huntmar Drive north of Campeau Drive is a local route. Pathways are present along Carp River north of Campeau Drive. Terry Fox Drive south of Campeau Drive is a cross-town bikeway.
- The high volumes roadways have produced a high number of collisions at the study area intersections, primarily at the Campeau Drive at Huntmar Drive intersection, which has 83% of the collisions within the study area
- No collision is within the study area from 2015 to 2019

Development Generated Travel Demand

- The proposed development is forecasted to produce 174 two-way people trips during the AM peak hour and 181 two-way people trips during the PM peak hour
- Of the forecasted people trips, 86 two-way trips will be vehicle trips during the AM peak hour and 104 two-way trips will be vehicle trips during the PM peak
- Of the forecasted trips, 15% are anticipated to travel north, 30% to the south, 50% to the east, and 5% to the west

Background Conditions

- The Campeau Drive extension was completed in the fall of 2021, and a resultant redistribution of area traffic will be applied to future horizons
- The background growth rates derived from the two TRANS model horizons and to the appropriate roadway's mainline volumes and to the appropriate major turning movements at the intersections
- The intersections at the 2030 future background condition are anticipated to operate similarly to the 2025 background conditions

Development Design

- The bike and auto parking areas are to be located at each dwelling unit
- Pedestrian connections will be made to Winterset Road
- The conceptual traffic calming elements are recommended at the future internal road intersections including bulb-outs and speed humps

Boundary Street Design

- Campeau Drive and Winterset Road meet the pedestrian and cycling MMLOS targets

Access Intersections Design

- The site will access Winterset Road via two full-movement accesses
- The site accesses will have stop-control on the minor approach
- The 2025 and 2030 future total access intersection operates satisfactorily

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Provide a multimodal travel option information package to new residents

NTM

- The site is anticipated to generate approximately 86 and 104 two-way vehicle trips during the AM and PM peak hours, respectively accessing Winterset Road, and this volume increase is not considered a significant impact on Winterset Road or require any traffic management

Transit

- 29 outbound AM trips and 17 inbound PM trips are anticipated from the development
- It is recommended that future transit service include the routing of at minimum a local route with half-hour service, and potentially include a Connexion route, along Campeau Drive connecting to Terry Fox Station to service area residential and commercial development

- No transit priority is required explicitly for this study

Network Concept

- No future network changes are required to support the subject development, and the subject development will be making use of the existing infrastructure of the newly extended Campeau Drive

Network Intersection Design

- Generally, the network intersections operating at the future total horizons will operate similarly to the future background conditions
- The pedestrian LOS will not be met at the intersections throughout the study area, which require crossing distances to be reduced to equal or less than three-lane widths
- The bicycle transit LOS will not be met at the intersections throughout the study area, which are limited by the lack of dedicated facilities and improved left-turn configurations

17 Conclusion

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

Prepared By:

Yu-Chu Chen, B.Eng.
Transportation Planner

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

13 Markham Avenue
Ottawa ON K2G 3Z1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 24-Sep-21
Project Number: 2021-098
Project Reference: Arcadia Stage 5

1.1 Description of Proposed Development	
Municipal Address	570 Winterset Road
Description of Location	Ward 4. Northeastcorner of the Winterset Road/Donum Lane and Campeau Drive roundabout
Land Use Classification	Development Reserve Zone (DR(1932))
Development Size	62 single detached units and 162 townhome units
Accesses	Two accesses onto Winterset Road
Phase of Development	Single Phase
Buildout Year	2025
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	224	Units
Trip Generation Trigger	Yes	

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

1.4. Safety Triggers	
Are posted speed limits on a boundary street 80 km/hr or greater?	No
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	Yes
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

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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

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

Dated at ___Ottawa_____ this __20__ day of _____September_____, 2018.
(City)

Name: _____Andrew Harte_____
(Please Print)

Professional Title: _____Professional Engineer_____

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

Office Contact Information (Please Print)
Address: 13 Markham Avenue
City / Postal Code: Ottawa / K2G 3Z1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com

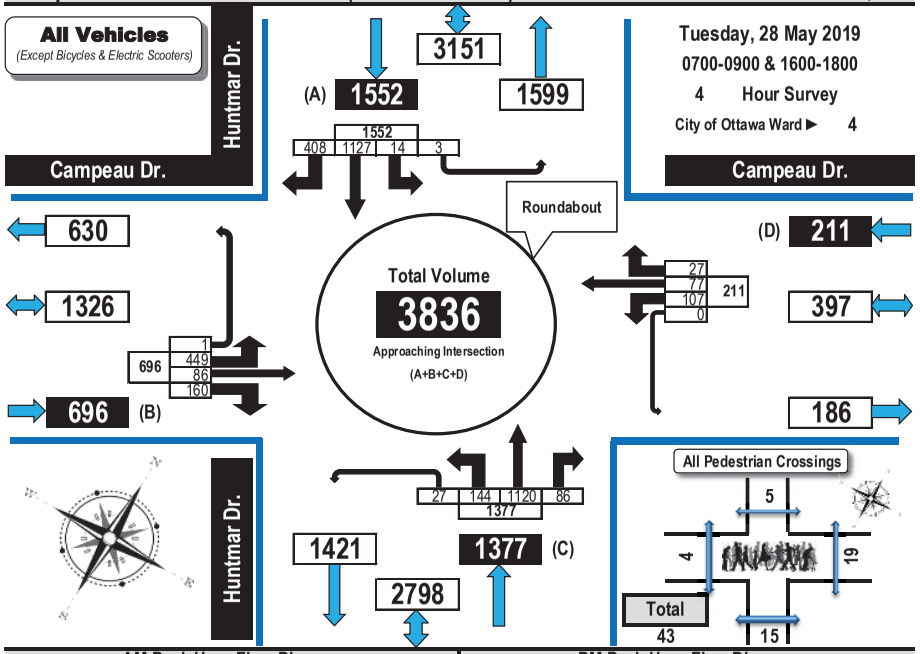
Appendix B

Turning Movement Counts

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

Campeau Drive & Huntmar Drive (ROUNDABOUT) — **Kanata, ON**



Printed on: 5/30/2019 | Prepared by: thetrafficspecialist@gmail.com | Flow Diagrams: AM PM Peak

Transportation Services - Traffic Services

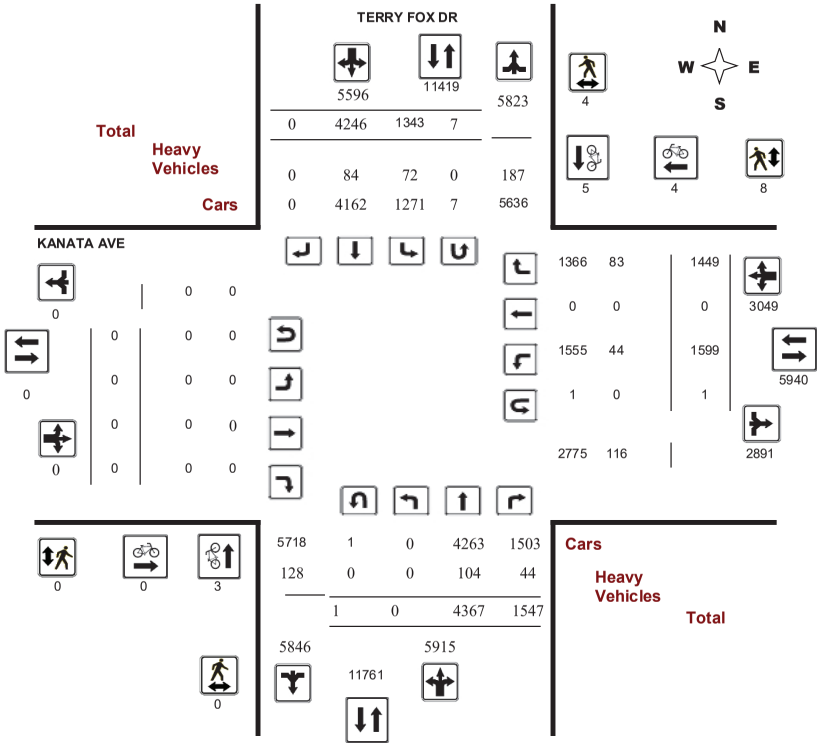
Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 | **WO No:** 37662

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

Full Study Diagram



September 1, 2021

Transportation Services - Traffic Services

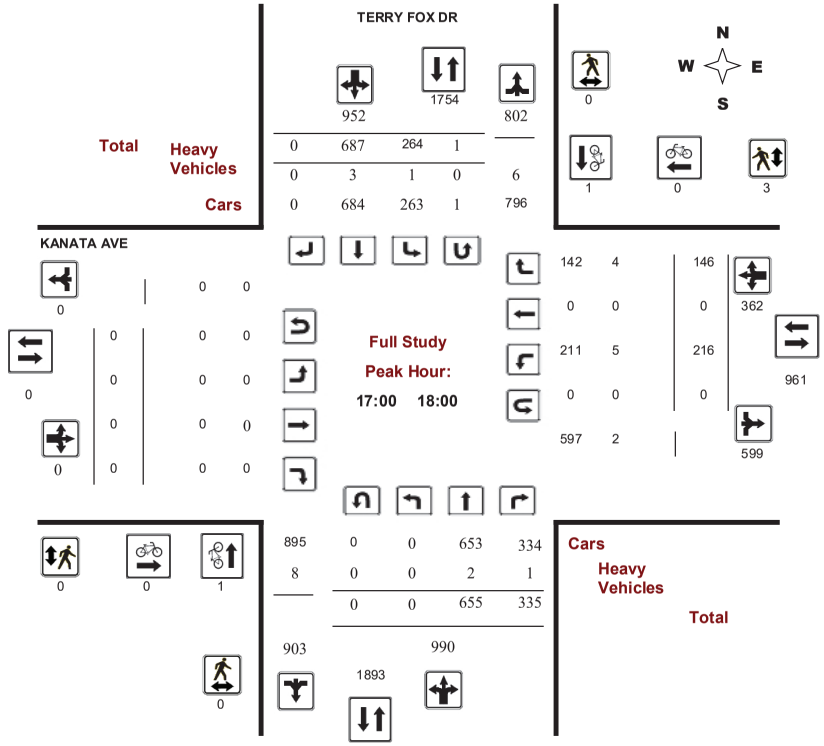
Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study Peak Hour Diagram



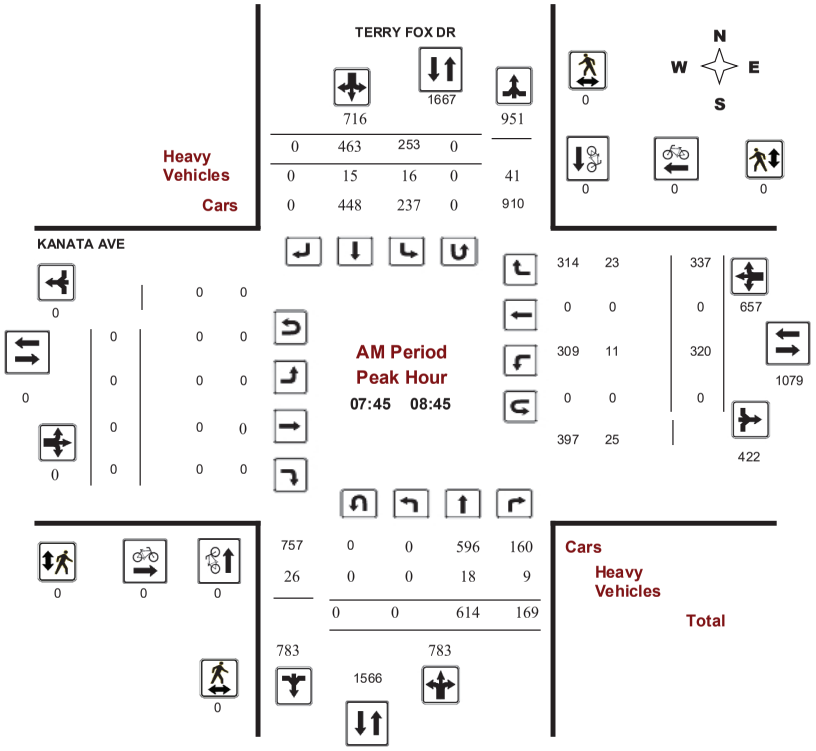
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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



Comments

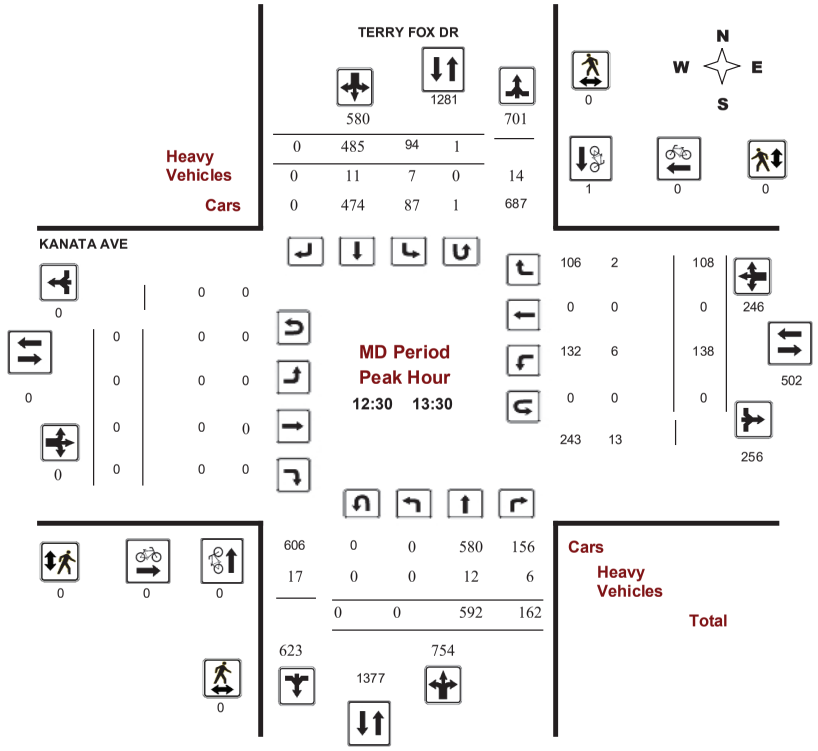
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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



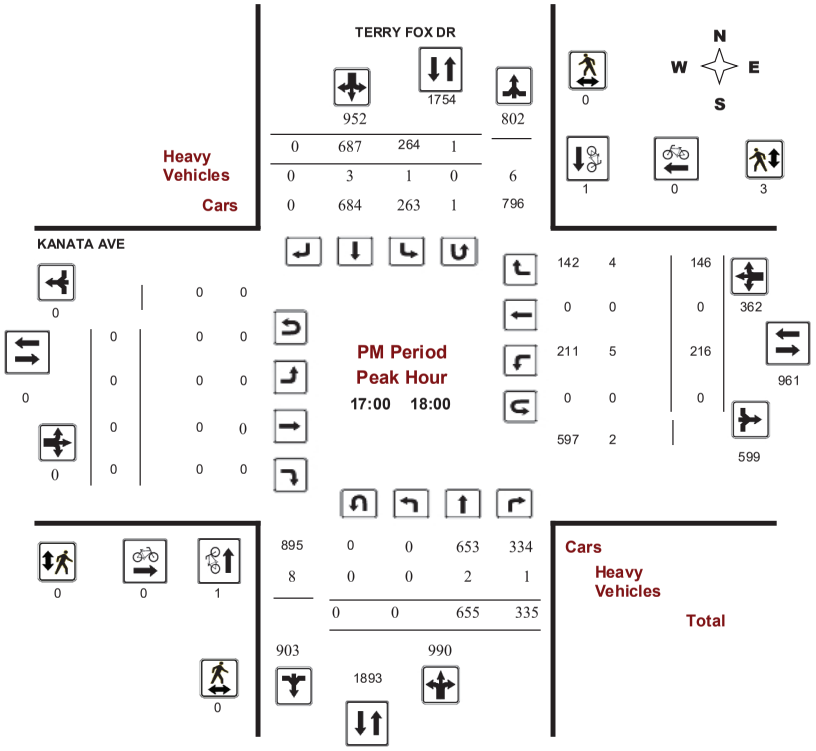
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, April 11, 2018

Total Observed U-Turns

Northbound: 1 Southbound: 7

Eastbound: 0 Westbound: 1

AADT Factor .90

	TERRY FOX DR									KANATA AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	365	123	**488**	218	410	0	**628**	**1116**	0	0	0	**0**	242	0	209	**451**	**451**	**1567**
08:00 09:00	0	641	166	**807**	220	463	0	**683**	**1490**	0	0	0	**0**	306	0	336	**642**	**642**	**2132**
09:00 10:00	0	462	92	**554**	93	444	0	**537**	**1091**	0	0	0	**0**	190	0	230	**420**	**420**	**1511**
11:30 12:30	0	469	141	**610**	106	557	0	**663**	**1273**	0	0	0	**0**	129	0	68	**197**	**197**	**1470**
12:30 13:30	0	592	162	**754**	94	485	0	**579**	**1333**	0	0	0	**0**	138	0	108	**246**	**246**	**1579**
15:00 16:00	0	575	234	**809**	136	477	0	**613**	**1422**	0	0	0	**0**	186	0	155	**341**	**341**	**1763**
16:00 17:00	0	608	294	**902**	212	723	0	**935**	**1837**	0	0	0	**0**	192	0	197	**389**	**389**	**2226**
17:00 18:00	0	655	335	**990**	264	687	0	**951**	**1941**	0	0	0	**0**	216	0	146	**362**	**362**	**2303**
Sub Total	0	4367	1547	**5914**	1343	4246	0	**5589**	**11503**	0	0	0	**0**	1599	0	1449	**3048**	**3048**	**14551**
U Turns	1			**1**	7			**7**	**8**	**0**			**0**	1			**1**	**1**	**9**
Total	1	4367	1547	**5915**	1350	4246	0	**5596**	**11511**	0	0	0	**0**	1600	0	1449	**3049**	**3049**	**14560**
EQ 12Hr	1	6070	2150	**8221**	1876	5902	0	**7778**	**15999**	0	0	0	**0**	2224	0	2014	**4238**	**4238**	**20237**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1	5463	1935	**7399**	1688	5312	0	**7000**	**14399**	0	0	0	**0**	2002	0	1813	**3815**	**3815**	**18214**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	1	7157	2535	**9693**	2211	6959	0	**9170**	**18863**	0	0	0	**0**	2623	0	2375	**4998**	**4998**	**23861**
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

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study 15 Minute Increments

		TERRY FOX DR									KANATA AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	62	24	86	28	96	0	124	**210**	0	0	0	0	49	0	22	71	**71**	**281**
07:15	07:30	0	62	27	89	27	91	0	118	**207**	0	0	0	0	59	0	31	90	**90**	**297**
07:30	07:45	0	116	41	157	73	105	0	178	**335**	0	0	0	0	62	0	51	113	**113**	**448**
07:45	08:00	0	125	31	156	91	118	0	209	**365**	0	0	0	0	72	0	105	177	**177**	**542**
08:00	08:15	0	151	52	203	90	114	0	204	**407**	0	0	0	0	88	0	84	172	**172**	**579**
08:15	08:30	0	156	36	192	33	110	0	143	**335**	0	0	0	0	95	0	67	162	**162**	**497**
08:30	08:45	0	182	50	232	39	121	0	160	**392**	0	0	0	0	65	0	81	146	**146**	**538**
08:45	09:00	0	152	28	180	58	118	0	176	**356**	0	0	0	0	58	0	104	162	**162**	**518**
09:00	09:15	0	139	20	159	35	125	0	160	**319**	0	0	0	0	75	0	95	170	**170**	**489**
09:15	09:30	0	132	27	159	26	105	0	131	**290**	0	0	0	0	46	0	52	98	**98**	**388**
09:30	09:45	0	86	25	111	24	117	0	141	**252**	0	0	0	0	32	0	40	72	**72**	**324**
09:45	10:00	0	105	20	125	10	97	0	107	**232**	0	0	0	0	37	0	43	80	**80**	**312**
11:30	11:45	0	99	40	139	23	128	0	151	**290**	0	0	0	0	31	0	14	45	**45**	**335**
11:45	12:00	0	122	33	155	29	155	0	184	**339**	0	0	0	0	32	0	21	53	**53**	**392**
12:00	12:15	0	105	30	135	33	162	0	195	**330**	0	0	0	0	38	0	16	54	**54**	**384**
12:15	12:30	0	143	38	181	21	112	0	133	**314**	0	0	0	0	28	0	17	45	**45**	**359**
12:30	12:45	0	150	41	191	27	122	0	149	**340**	0	0	0	0	33	0	23	56	**56**	**396**
12:45	13:00	0	138	42	180	29	122	0	151	**331**	0	0	0	0	31	0	28	59	**59**	**390**
13:00	13:15	0	169	40	209	24	139	0	163	**372**	0	0	0	0	28	0	24	52	**52**	**424**
13:15	13:30	0	135	39	174	15	102	0	117	**291**	0	0	0	0	46	0	33	79	**79**	**370**
15:00	15:15	0	143	49	192	25	110	0	135	**327**	0	0	0	0	46	0	22	68	**68**	**395**
15:15	15:30	0	140	71	211	42	118	0	160	**371**	0	0	0	0	43	0	28	71	**71**	**442**
15:30	15:45	0	143	48	191	28	114	0	142	**333**	0	0	0	0	62	0	45	107	**107**	**440**
15:45	16:00	0	149	66	215	42	135	0	177	**392**	0	0	0	0	36	0	60	96	**96**	**488**
16:00	16:15	0	168	65	233	40	183	0	223	**456**	0	0	0	0	45	0	37	82	**82**	**538**
16:15	16:30	0	148	75	223	57	195	0	252	**475**	0	0	0	0	49	0	46	95	**95**	**570**
16:30	16:45	1	159	74	234	52	160	0	212	**446**	0	0	0	0	49	0	65	114	**114**	**560**
16:45	17:00	0	133	80	213	64	185	0	249	**462**	0	0	0	0	49	0	49	98	**98**	**560**
17:00	17:15	0	175	65	240	62	170	0	232	**472**	0	0	0	0	52	0	46	98	**98**	**570**
17:15	17:30	0	162	90	252	64	201	0	265	**517**	0	0	0	0	43	0	39	82	**82**	**599**
17:30	17:45	0	169	83	252	62	155	0	217	**469**	0	0	0	0	66	0	25	91	**91**	**560**
17:45	18:00	0	149	97	246	77	161	0	238	**484**	0	0	0	0	55	0	36	91	**91**	**575**
Total:		1	4367	1547	5915	1350	4246	0	5596	**11511**	0	0	0	0	1600	0	1449	3049	**11511**	**14,560**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study Cyclist Volume

Time Period		TERRY FOX DR			KANATA AVE			
		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	1	2	**3**	0	1	**1**	**4**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	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	1	**1**	**1**
09:15	09:30	0	0	**0**	0	1	**1**	**1**
09:30	09:45	1	0	**1**	0	0	**0**	**1**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	1	**1**	**1**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	1	**1**	0	0	**0**	**1**
12:30	12:45	0	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	1	**1**	0	0	**0**	**1**
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	1	1	**2**	0	0	**0**	**2**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		3	5	**8**	0	4	**4**	**12**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study Pedestrian Volume

Time Period	TERRY FOX DR			KANATA AVE			
	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	2	**2**	0	0	**0**	**2**
09:30 09:45	0	1	**1**	0	1	**1**	**2**
09:45 10:00	0	0	**0**	0	0	**0**	**0**
11:30 11:45	0	0	**0**	0	0	**0**	**0**
11:45 12:00	0	0	**0**	0	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	1	**1**	**1**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	0	1	**1**	0	2	**2**	**3**
16:45 17:00	0	0	**0**	0	1	**1**	**1**
17:00 17:15	0	0	**0**	0	1	**1**	**1**
17:15 17:30	0	0	**0**	0	2	**2**	**2**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	4	**4**	0	8	**8**	**12**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study Heavy Vehicles

		TERRY FOX DR									KANATA AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	2	2	**4**	3	6	0	**9**	**13**	0	0	0	**0**	0	0	1	**1**	**1**	**14**
07:15	07:30	0	2	2	**4**	4	2	0	**6**	**10**	0	0	0	**0**	1	0	0	**1**	**1**	**11**
07:30	07:45	0	9	5	**14**	15	6	0	**21**	**35**	0	0	0	**0**	1	0	1	**2**	**2**	**37**
07:45	08:00	0	3	0	**3**	9	4	0	**13**	**16**	0	0	0	**0**	7	0	12	**19**	**19**	**35**
08:00	08:15	0	2	2	**4**	1	4	0	**5**	**9**	0	0	0	**0**	2	0	6	**8**	**8**	**17**
08:15	08:30	0	9	2	**11**	1	1	0	**2**	**13**	0	0	0	**0**	0	0	2	**2**	**2**	**15**
08:30	08:45	0	4	5	**9**	5	6	0	**11**	**20**	0	0	0	**0**	2	0	3	**5**	**5**	**25**
08:45	09:00	0	6	1	**7**	10	2	0	**12**	**19**	0	0	0	**0**	1	0	11	**12**	**12**	**31**
09:00	09:15	0	7	2	**9**	0	10	0	**10**	**19**	0	0	0	**0**	4	0	7	**11**	**11**	**30**
09:15	09:30	0	4	1	**5**	1	4	0	**5**	**10**	0	0	0	**0**	1	0	0	**1**	**1**	**11**
09:30	09:45	0	2	1	**3**	0	2	0	**2**	**5**	0	0	0	**0**	1	0	1	**2**	**2**	**7**
09:45	10:00	0	4	0	**4**	0	1	0	**1**	**5**	0	0	0	**0**	1	0	0	**1**	**1**	**6**
11:30	11:45	0	3	1	**4**	1	0	0	**1**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
11:45	12:00	0	7	1	**8**	0	1	0	**1**	**9**	0	0	0	**0**	1	0	2	**3**	**3**	**12**
12:00	12:15	0	3	0	**3**	1	2	0	**3**	**6**	0	0	0	**0**	0	0	1	**1**	**1**	**7**
12:15	12:30	0	4	0	**4**	0	2	0	**2**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
12:30	12:45	0	4	2	**6**	3	2	0	**5**	**11**	0	0	0	**0**	1	0	0	**1**	**1**	**12**
12:45	13:00	0	4	1	**5**	1	2	0	**3**	**8**	0	0	0	**0**	1	0	0	**1**	**1**	**9**
13:00	13:15	0	2	2	**4**	1	0	0	**1**	**5**	0	0	0	**0**	1	0	2	**3**	**3**	**8**
13:15	13:30	0	2	1	**3**	2	7	0	**9**	**12**	0	0	0	**0**	3	0	0	**3**	**3**	**15**
15:00	15:15	0	3	1	**4**	2	2	0	**4**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
15:15	15:30	0	5	2	**7**	3	3	0	**6**	**13**	0	0	0	**0**	3	0	2	**5**	**5**	**18**
15:30	15:45	0	1	1	**2**	3	3	0	**6**	**8**	0	0	0	**0**	0	0	10	**10**	**10**	**18**
15:45	16:00	0	2	0	**2**	0	1	0	**1**	**3**	0	0	0	**0**	0	0	7	**7**	**7**	**10**
16:00	16:15	0	2	3	**5**	3	1	0	**4**	**9**	0	0	0	**0**	4	0	5	**9**	**9**	**18**
16:15	16:30	0	1	1	**2**	0	6	0	**6**	**8**	0	0	0	**0**	1	0	3	**4**	**4**	**12**
16:30	16:45	0	4	2	**6**	0	0	0	**0**	**6**	0	0	0	**0**	2	0	3	**5**	**5**	**11**
16:45	17:00	0	1	2	**3**	2	1	0	**3**	**6**	0	0	0	**0**	1	0	0	**1**	**1**	**7**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	2	0	1	**3**	**3**	**3**
17:15	17:30	0	0	0	**0**	1	2	0	**3**	**3**	0	0	0	**0**	1	0	1	**2**	**2**	**5**
17:30	17:45	0	1	1	**2**	0	0	0	**0**	**2**	0	0	0	**0**	1	0	1	**2**	**2**	**4**
17:45	18:00	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	1	0	1	**2**	**2**	**4**
Total:	None	0	104	44	**148**	72	84	0	**156**	**304**	0	0	0	**0**	44	0	83	**127**	**127**	**431**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Wednesday, April 11, 2018 **WO No:** 37662

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

Full Study 15 Minute U-Turn Total

		TERRY FOX DR	KANATA AVE			
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	1	0	0	**1**
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	1	0	0	**1**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	1	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	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	1	0	0	**1**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	1	0	1	**2**
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	1	1	0	0	**2**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	1	0	0	**1**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		1	7	0	1	**9**

Transportation Services - Traffic Services

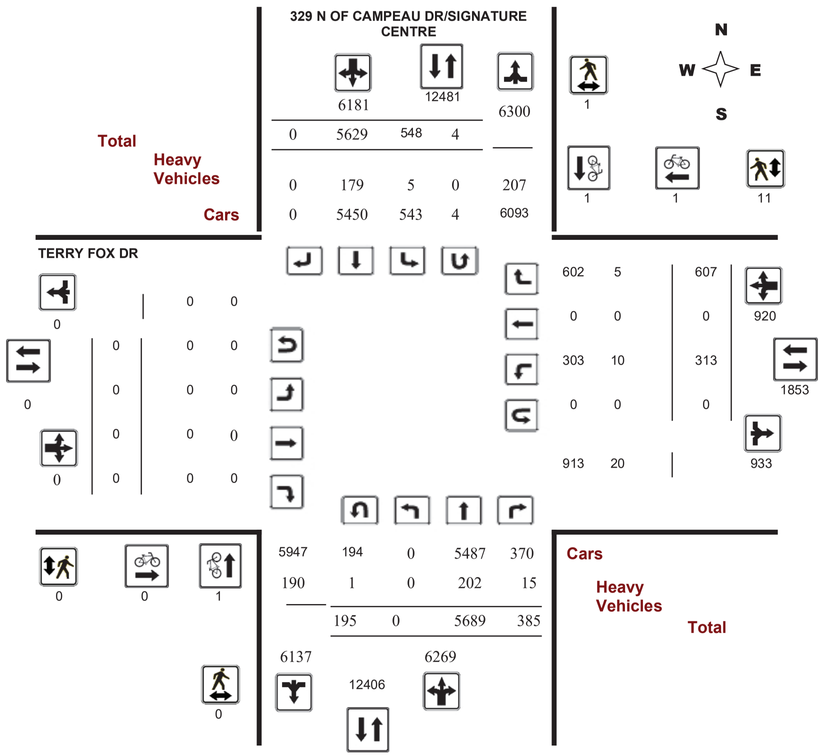
Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 | **WO No:** 37361

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

Full Study Diagram



Transportation Services - Traffic Services

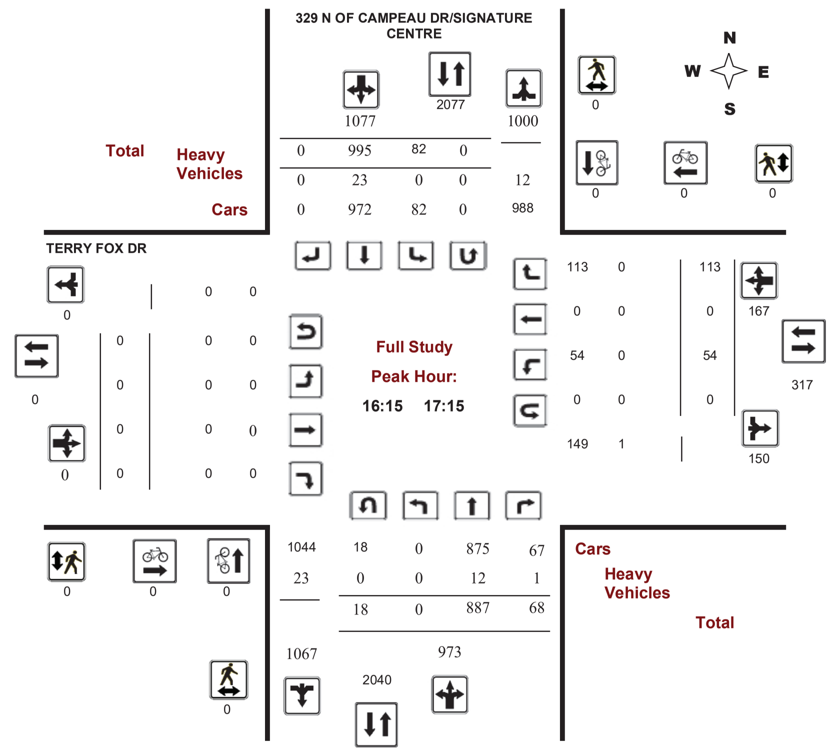
Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 | **WO No:** 37361

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

Full Study Peak Hour Diagram



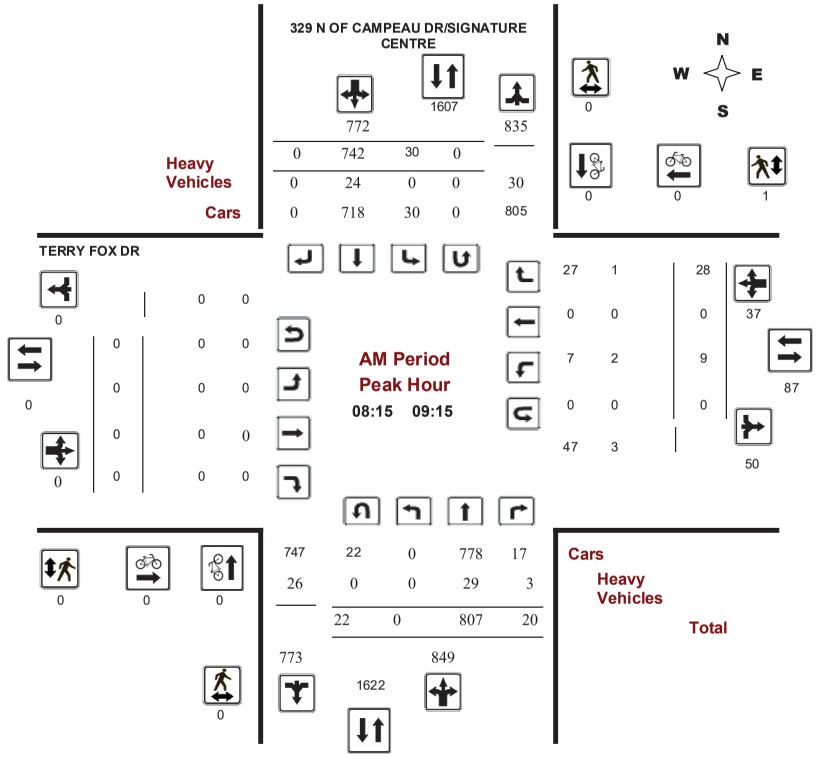
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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



Comments

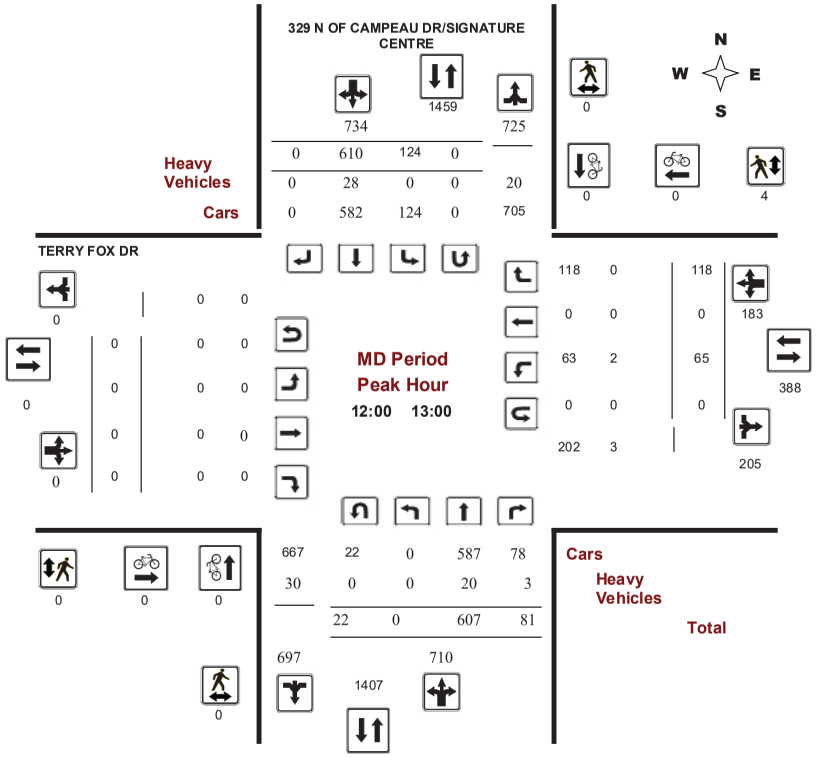
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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



Comments

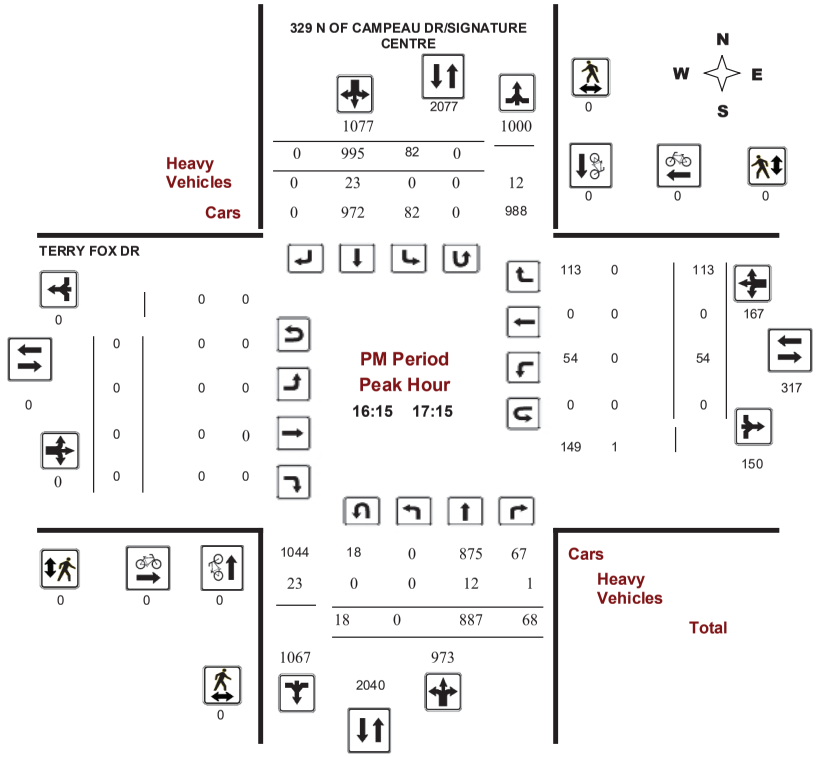
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 06, 2017

Total Observed U-Turns

Northbound: 195 Southbound: 4

Eastbound: 0 Westbound: 0

AADT Factor 1.00

	329 N OF CAMPEAU DR/SIGNATURE CENTRE								TERRY FOX DR								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	457	5	**462**	8	636	0	**644**	**1106**	0	0	0	**0**	1	0	0	**1**	**1**	**1107**
08:00 09:00	0	819	15	**834**	26	670	0	**696**	**1530**	0	0	0	**0**	6	0	23	**29**	**29**	**1559**
09:00 10:00	0	637	31	**668**	53	685	0	**738**	**1406**	0	0	0	**0**	23	0	24	**47**	**47**	**1453**
11:30 12:30	0	518	79	**597**	115	646	0	**761**	**1358**	0	0	0	**0**	59	0	111	**170**	**170**	**1528**
12:30 13:30	0	672	72	**744**	94	525	0	**619**	**1363**	0	0	0	**0**	62	0	119	**181**	**181**	**1544**
15:00 16:00	0	789	57	**846**	78	585	0	**663**	**1509**	0	0	0	**0**	61	0	107	**168**	**168**	**1677**
16:00 17:00	0	855	60	**915**	86	946	0	**1032**	**1947**	0	0	0	**0**	60	0	121	**181**	**181**	**2128**
17:00 18:00	0	942	66	**1008**	88	936	0	**1024**	**2032**	0	0	0	**0**	41	0	102	**143**	**143**	**2175**
Sub Total	0	5689	385	**6074**	548	5629	0	**6177**	**12251**	0	0	0	**0**	313	0	607	**920**	**920**	**13171**
U Turns	195			**195**	4			**4**	**199**	**0**			**0**	0			**0**	**0**	**199**
Total	195	5689	385	**6269**	552	5629	0	**6181**	**12450**	0	0	0	**0**	313	0	607	**920**	**920**	**13370**
EQ 12Hr	271	7908	535	**8714**	767	7824	0	**8591**	**17305**	0	0	0	**0**	435	0	844	**1279**	**1279**	**18584**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	271	7908	535	**8714**	767	7824	0	**8591**	**17305**	0	0	0	**0**	435	0	844	**1279**	**1279**	**18584**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	355	10359	701	**11415**	1005	10249	0	**11254**	**22669**	0	0	0	**0**	570	0	1106	**1676**	**1676**	**24345**
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

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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

Full Study 15 Minute Increments

		329 N OF CAMPEAU DR/SIGNATURE CENTRE									TERRY FOX DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	3	70	0	73	4	145	0	149	**222**	0	0	0	0	1	0	0	1	**1**	**223**
07:15	07:30	7	95	2	104	1	143	0	144	**248**	0	0	0	0	0	0	0	0	**0**	**248**
07:30	07:45	2	126	0	128	3	165	0	168	**296**	0	0	0	0	0	0	0	0	**0**	**296**
07:45	08:00	8	166	3	177	1	183	0	184	**361**	0	0	0	0	0	0	0	0	**0**	**361**
08:00	08:15	0	199	2	201	7	147	0	154	**355**	0	0	0	0	2	0	1	3	**3**	**358**
08:15	08:30	4	191	0	195	5	192	0	197	**392**	0	0	0	0	2	0	7	9	**9**	**401**
08:30	08:45	4	217	6	227	6	169	0	175	**402**	0	0	0	0	1	0	9	10	**10**	**412**
08:45	09:00	10	212	7	229	8	162	0	170	**399**	0	0	0	0	1	0	6	7	**7**	**406**
09:00	09:15	4	187	7	198	11	219	0	230	**428**	0	0	0	0	5	0	6	11	**11**	**439**
09:15	09:30	11	182	6	199	10	172	0	182	**381**	0	0	0	0	2	0	5	7	**7**	**388**
09:30	09:45	11	137	7	155	11	144	0	155	**310**	0	0	0	0	8	0	5	13	**13**	**323**
09:45	10:00	6	131	11	148	22	150	0	172	**320**	0	0	0	0	8	0	8	16	**16**	**336**
11:30	11:45	5	118	19	142	26	149	0	175	**317**	0	0	0	0	11	0	19	30	**30**	**347**
11:45	12:00	10	121	20	151	27	172	0	199	**350**	0	0	0	0	17	0	35	52	**52**	**402**
12:00	12:15	6	134	20	160	38	169	0	207	**367**	0	0	0	0	14	0	23	37	**37**	**404**
12:15	12:30	8	145	20	173	25	156	0	181	**354**	0	0	0	0	17	0	34	51	**51**	**405**
12:30	12:45	4	153	26	183	29	152	0	181	**364**	0	0	0	0	16	0	31	47	**47**	**411**
12:45	13:00	4	175	15	194	32	133	0	165	**359**	0	0	0	0	18	0	30	48	**48**	**407**
13:00	13:15	7	159	18	184	14	115	0	129	**313**	0	0	0	0	15	0	32	47	**47**	**360**
13:15	13:30	12	185	13	210	20	125	0	145	**355**	0	0	0	0	13	0	26	39	**39**	**394**
15:00	15:15	9	179	16	204	13	130	0	143	**347**	0	0	0	0	9	0	29	38	**38**	**385**
15:15	15:30	8	177	14	199	17	150	0	167	**366**	0	0	0	0	14	0	21	35	**35**	**401**
15:30	15:45	8	224	13	245	23	148	0	171	**416**	0	0	0	0	15	0	25	40	**40**	**456**
15:45	16:00	6	209	14	229	25	157	0	182	**411**	0	0	0	0	23	0	32	55	**55**	**466**
16:00	16:15	7	213	13	233	22	211	0	233	**466**	0	0	0	0	11	0	29	40	**40**	**506**
16:15	16:30	2	224	16	242	18	275	0	293	**535**	0	0	0	0	12	0	31	43	**43**	**578**
16:30	16:45	6	202	15	223	26	234	0	260	**483**	0	0	0	0	18	0	31	49	**49**	**532**
16:45	17:00	5	216	16	237	20	226	0	246	**483**	0	0	0	0	19	0	30	49	**49**	**532**
17:00	17:15	5	245	21	271	18	260	0	278	**549**	0	0	0	0	5	0	21	26	**26**	**575**
17:15	17:30	5	207	11	223	30	251	0	281	**504**	0	0	0	0	16	0	31	47	**47**	**551**
17:30	17:45	2	250	15	267	16	220	0	236	**503**	0	0	0	0	12	0	22	34	**34**	**537**
17:45	18:00	6	240	19	265	24	205	0	229	**494**	0	0	0	0	8	0	28	36	**36**	**530**
Total:		195	5689	385	6269	552	5629	0	6181	**12450**	0	0	0	0	313	0	607	920	**12450**	**13,370**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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

Full Study Cyclist Volume

		329 N OF CAMPEAU DR/SIGNATURE CENTRE			TERRY FOX DR			
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	1	1	**2**	0	0	**0**	**2**
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	1	**1**	**1**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		1	1	**2**	0	1	**1**	**3**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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

Full Study Pedestrian Volume

Time Period	329 N OF CAMPEAU DR/SIGNATURE CENTRE NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	TERRY FOX DR 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	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	1	**1**	**1**
09:15 09:30	0	0	**0**	0	1	**1**	**1**
09:30 09:45	0	0	**0**	0	2	**2**	**2**
09:45 10:00	0	0	**0**	0	1	**1**	**1**
11:30 11:45	0	0	**0**	0	0	**0**	**0**
11:45 12:00	0	0	**0**	0	0	**0**	**0**
12:00 12:15	0	0	**0**	0	0	**0**	**0**
12:15 12:30	0	0	**0**	0	2	**2**	**2**
12:30 12:45	0	0	**0**	0	2	**2**	**2**
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	1	**1**	0	0	**0**	**1**
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	1	**1**	**1**
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	11	**11**	**12**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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

Full Study Heavy Vehicles

Time Period		329 N OF CAMPEAU DR/SIGNATURE CENTRE Northbound LT	ST	RT	N TOT	Southbound LT	ST	RT	S TOT	STR TOT	TERRY FOX DR Eastbound LT	ST	RT	E TOT	Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	3	0	**3**	1	1	0	**2**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
07:15	07:30	0	9	1	**10**	0	6	0	**6**	**16**	0	0	0	**0**	0	0	0	**0**	**0**	**16**
07:30	07:45	0	12	0	**12**	0	14	0	**14**	**26**	0	0	0	**0**	0	0	0	**0**	**0**	**26**
07:45	08:00	0	15	1	**16**	0	6	0	**6**	**22**	0	0	0	**0**	0	0	0	**0**	**0**	**22**
08:00	08:15	0	13	0	**13**	0	4	0	**4**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
08:15	08:30	0	5	0	**5**	0	5	0	**5**	**10**	0	0	0	**0**	1	0	0	**1**	**1**	**11**
08:30	08:45	0	9	1	**10**	0	2	0	**2**	**12**	0	0	0	**0**	0	0	1	**1**	**1**	**13**
08:45	09:00	0	11	0	**11**	0	3	0	**3**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
09:00	09:15	0	4	2	**6**	0	14	0	**14**	**20**	0	0	0	**0**	1	0	0	**1**	**1**	**21**
09:15	09:30	0	7	1	**8**	0	5	0	**5**	**13**	0	0	0	**0**	0	0	1	**1**	**1**	**14**
09:30	09:45	0	5	1	**6**	0	7	0	**7**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
09:45	10:00	0	6	0	**6**	0	6	0	**6**	**12**	0	0	0	**0**	2	0	1	**3**	**3**	**15**
11:30	11:45	0	2	1	**3**	2	6	0	**8**	**11**	0	0	0	**0**	0	0	1	**1**	**1**	**12**
11:45	12:00	0	6	1	**7**	0	6	0	**6**	**13**	0	0	0	**0**	2	0	1	**3**	**3**	**16**
12:00	12:15	0	2	1	**3**	0	8	0	**8**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
12:15	12:30	0	9	0	**9**	0	6	0	**6**	**15**	0	0	0	**0**	1	0	0	**1**	**1**	**16**
12:30	12:45	0	5	2	**7**	0	6	0	**6**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
12:45	13:00	0	4	0	**4**	0	8	0	**8**	**12**	0	0	0	**0**	1	0	0	**1**	**1**	**13**
13:00	13:15	0	7	2	**9**	0	6	0	**6**	**15**	0	0	0	**0**	0	0	0	**0**	**0**	**15**
13:15	13:30	0	7	0	**7**	0	3	0	**3**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
15:00	15:15	0	12	0	**12**	1	5	0	**6**	**18**	0	0	0	**0**	0	0	0	**0**	**0**	**18**
15:15	15:30	0	11	0	**11**	0	5	0	**5**	**16**	0	0	0	**0**	1	0	0	**1**	**1**	**18**
15:30	15:45	0	11	0	**11**	0	4	0	**4**	**15**	0	0	0	**0**	0	0	0	**0**	**0**	**15**
15:45	16:00	0	6	0	**6**	0	4	0	**4**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
16:00	16:15	0	5	0	**5**	0	12	0	**12**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
16:15	16:30	0	7	0	**7**	0	8	0	**8**	**15**	0	0	0	**0**	0	0	0	**0**	**0**	**15**
16:30	16:45	0	4	0	**4**	0	4	0	**4**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
16:45	17:00	0	1	0	**1**	0	5	0	**5**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
17:00	17:15	0	0	1	**1**	0	6	0	**6**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
17:15	17:30	0	0	0	**0**	0	2	0	**2**	**2**	0	0	0	**0**	1	0	0	**1**	**1**	**3**
17:30	17:45	0	3	0	**3**	0	2	0	**2**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
17:45	18:00	0	1	0	**1**	1	0	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
Total:	None	0	202	15	**217**	5	179	0	**184**	**401**	0	0	0	**0**	10	0	5	**15**	**15**	**417**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

TERRY FOX DR @ 329 N OF CAMPEAU DR/SIGNATURE C

Survey Date: Wednesday, December 06, 2017 **WO No:** 37361

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

Full Study 15 Minute U-Turn Total

Time Period		329 N OF CAMPEAU DR/SIGNATURE CENTRE Northbound U-Turn Total	329 N OF CAMPEAU DR/SIGNATURE CENTRE Southbound U-Turn Total	TERRY FOX DR Eastbound U-Turn Total	TERRY FOX DR Westbound U-Turn Total	Total
07:00	07:15	3	0	0	0	**3**
07:15	07:30	7	0	0	0	**7**
07:30	07:45	2	1	0	0	**3**
07:45	08:00	8	0	0	0	**8**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	4	0	0	0	**4**
08:30	08:45	4	0	0	0	**4**
08:45	09:00	10	0	0	0	**10**
09:00	09:15	4	0	0	0	**4**
09:15	09:30	11	0	0	0	**11**
09:30	09:45	11	0	0	0	**11**
09:45	10:00	6	1	0	0	**7**
11:30	11:45	5	1	0	0	**6**
11:45	12:00	10	0	0	0	**10**
12:00	12:15	6	0	0	0	**6**
12:15	12:30	8	0	0	0	**8**
12:30	12:45	4	0	0	0	**4**
12:45	13:00	4	0	0	0	**4**
13:00	13:15	7	0	0	0	**7**
13:15	13:30	12	1	0	0	**13**
15:00	15:15	9	0	0	0	**9**
15:15	15:30	8	0	0	0	**8**
15:30	15:45	8	0	0	0	**8**
15:45	16:00	6	0	0	0	**6**
16:00	16:15	7	0	0	0	**7**
16:15	16:30	2	0	0	0	**2**
16:30	16:45	6	0	0	0	**6**
16:45	17:00	5	0	0	0	**5**
17:00	17:15	5	0	0	0	**5**
17:15	17:30	5	0	0	0	**5**
17:30	17:45	2	0	0	0	**2**
17:45	18:00	6	0	0	0	**6**
Total		195	4	0	0	**199**

Transportation Services - Traffic Services

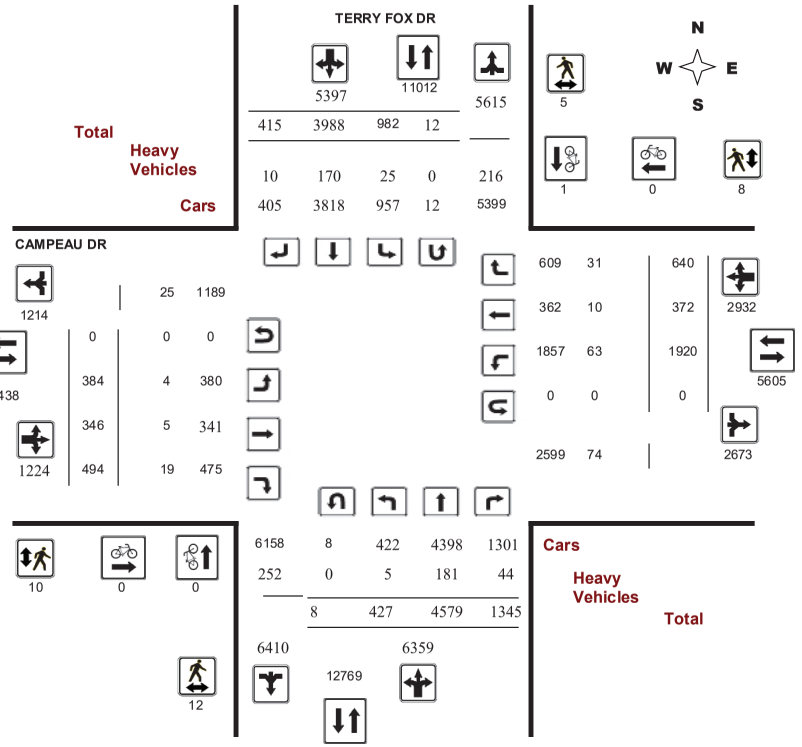
Turning Movement Count - Study Results

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study Diagram



5471861 - TUE JAN 21, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

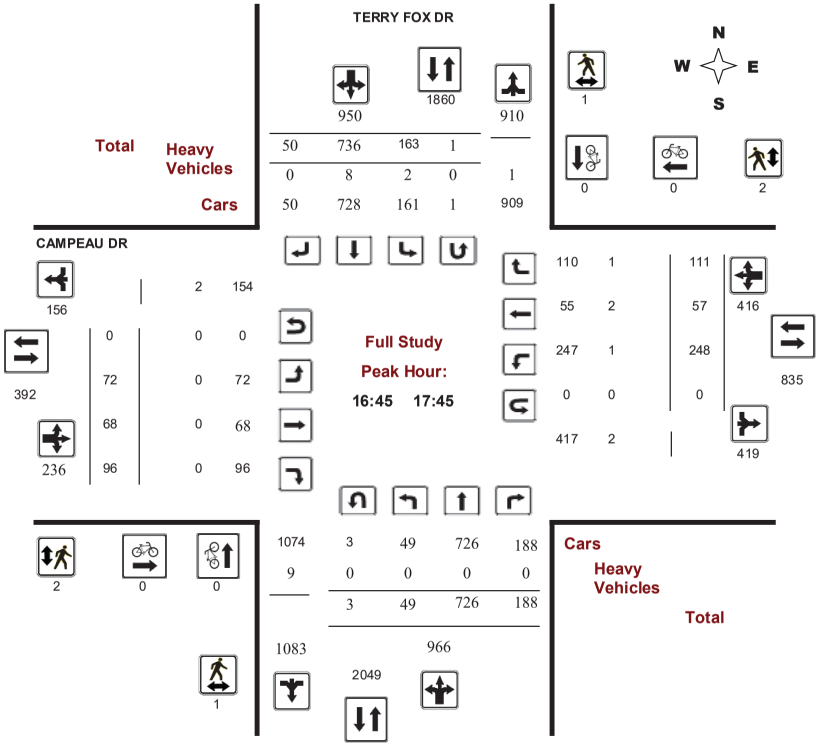
Turning Movement Count - Study Results

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study Peak Hour Diagram



5471861 - TUE JAN 21, 2020 - 8HRS - LORETTA

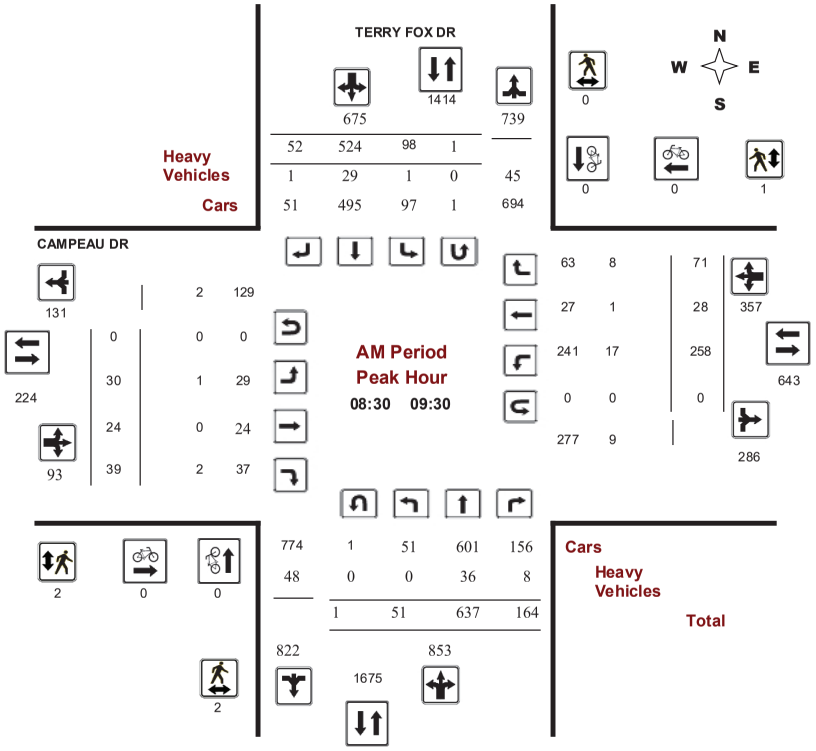
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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



Comments 5471861 - TUE JAN 21, 2020 - 8HRS - LORETTA

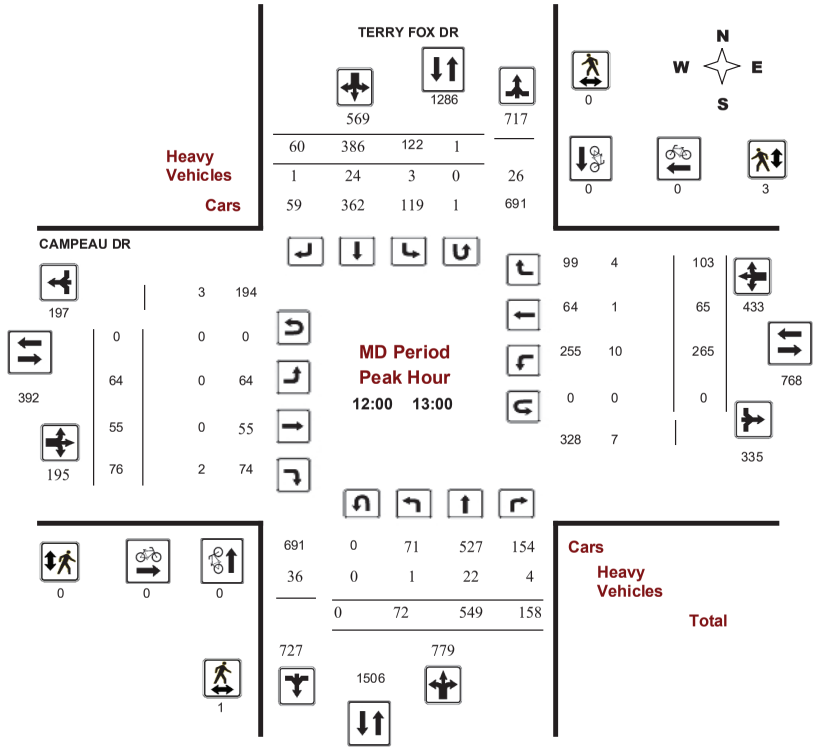
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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



Comments 5471861 - TUE JAN 21, 2020 - 8HRS - LORETTA

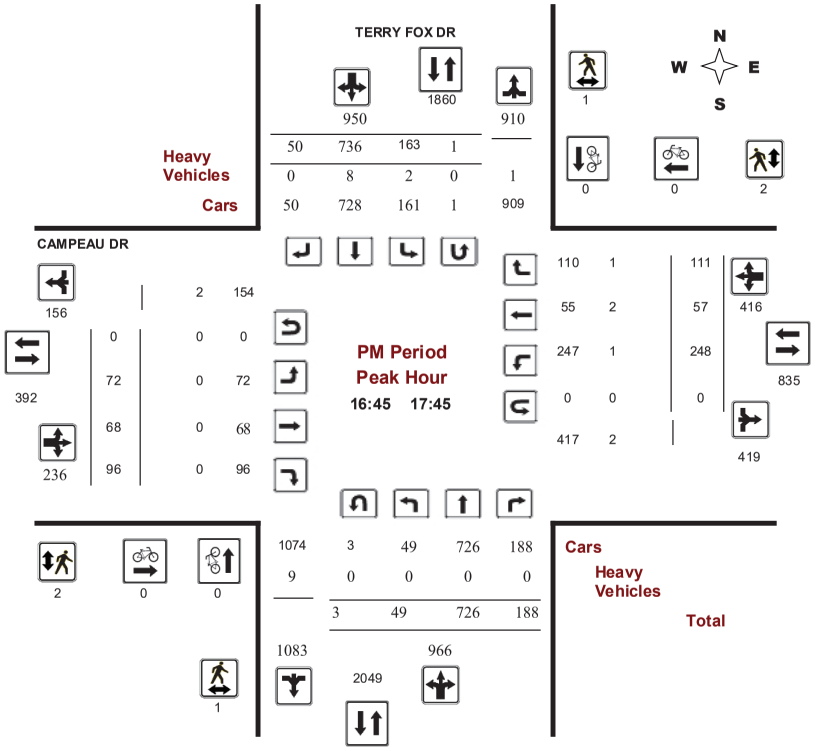
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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



Comments 5471861 - TUE JAN 21, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, January 21, 2020

Total Observed U-Turns

Northbound: 8 Southbound: 12

Eastbound: 0 Westbound: 0

AADT Factor 1.10

	TERRY FOX DR									CAMPEAU DR									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	32	367	185	**584**	106	419	21	**546**	**1130**	3	10	7	**20**	157	14	40	**211**	**231**	**1361**
08:00 09:00	50	632	200	**882**	123	519	37	**679**	**1561**	17	17	29	**63**	235	18	65	**318**	**381**	**1942**
09:00 10:00	45	524	133	**702**	94	450	55	**599**	**1301**	36	34	49	**119**	249	36	48	**333**	**452**	**1753**
11:30 12:30	61	522	143	**726**	133	403	62	**598**	**1324**	69	46	74	**189**	247	68	81	**396**	**585**	**1909**
12:30 13:30	78	497	156	**731**	120	386	64	**570**	**1301**	57	51	88	**196**	245	57	99	**401**	**597**	**1898**
15:00 16:00	64	600	162	**826**	111	443	58	**612**	**1438**	57	63	81	**201**	283	69	90	**442**	**643**	**2081**
16:00 17:00	52	645	160	**857**	147	661	70	**878**	**1735**	89	61	83	**233**	268	68	105	**441**	**674**	**2409**
17:00 18:00	45	792	206	**1043**	148	707	48	**903**	**1946**	56	64	83	**203**	236	42	112	**390**	**593**	**2539**
Sub Total	427	4579	1345	**6351**	982	3988	415	**5385**	**11736**	384	346	494	**1224**	1920	372	640	**2932**	**4156**	**15892**
U Turns	8			**8**	12			**12**	**20**	**0**			**0**	0			**0**	**0**	**20**
Total	435	4579	1345	**6359**	994	3988	415	**5397**	**11756**	384	346	494	**1224**	1920	372	640	**2932**	**4156**	**15912**
EQ 12Hr	605	6365	1870	**8840**	1382	5543	577	**7502**	**16342**	534	481	687	**1702**	2669	517	890	**4076**	**5778**	**22120**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	666	7002	2057	**9725**	1520	6097	635	**8252**	**17977**	587	529	756	**1872**	2936	569	979	**4484**	**6356**	**24333**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.10**					
AVG 24Hr	872	9173	2695	**12740**	1991	7987	832	**10810**	**23550**	769	693	990	**2452**	3846	745	1282	**5873**	**8325**	**31875**
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

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study 15 Minute Increments

		TERRY FOX DR									CAMPEAU DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	10	65	44	119	25	94	3	122	**241**	0	2	2	4	41	5	5	51	**55**	**296**
07:15	07:30	8	73	33	114	25	93	4	122	**236**	1	1	3	5	35	3	12	50	**55**	**291**
07:30	07:45	7	87	46	140	21	104	8	133	**273**	0	1	0	1	29	3	7	39	**40**	**313**
07:45	08:00	8	142	62	212	36	128	6	170	**382**	2	6	2	10	52	3	16	71	**81**	**463**
08:00	08:15	4	151	64	219	43	106	12	161	**380**	3	2	7	12	48	3	10	61	**73**	**453**
08:15	08:30	16	146	44	206	33	146	3	182	**388**	3	6	5	14	68	2	7	77	**91**	**479**
08:30	08:45	10	163	45	218	25	128	12	165	**383**	7	4	9	20	58	6	29	93	**113**	**496**
08:45	09:00	20	172	47	239	24	139	10	173	**412**	4	5	8	17	61	7	19	87	**104**	**516**
09:00	09:15	9	163	38	210	25	131	13	169	**379**	11	7	11	29	56	6	12	74	**103**	**482**
09:15	09:30	13	139	34	186	25	126	17	168	**354**	8	8	11	27	83	9	11	103	**130**	**484**
09:30	09:45	13	136	33	182	22	100	16	138	**320**	8	13	10	31	61	6	14	81	**112**	**432**
09:45	10:00	11	86	28	125	22	93	9	124	**249**	9	6	17	32	49	15	11	75	**107**	**356**
11:30	11:45	18	90	42	150	37	118	16	171	**321**	8	4	13	25	56	22	17	95	**120**	**441**
11:45	12:00	14	134	27	175	35	103	15	153	**328**	15	11	23	49	66	12	21	99	**148**	**476**
12:00	12:15	8	140	35	183	33	95	17	145	**328**	20	19	20	59	65	19	20	104	**163**	**491**
12:15	12:30	21	158	39	218	29	87	14	130	**348**	26	12	18	56	60	15	23	98	**154**	**502**
12:30	12:45	17	128	43	188	31	85	13	129	**317**	11	10	21	42	61	18	31	110	**152**	**469**
12:45	13:00	26	123	41	190	30	119	16	165	**355**	7	14	17	38	79	13	29	121	**159**	**514**
13:00	13:15	17	123	35	175	32	90	15	137	**312**	20	15	28	63	55	11	16	82	**145**	**457**
13:15	13:30	18	123	37	178	32	92	20	144	**322**	19	12	22	53	50	15	23	88	**141**	**463**
15:00	15:15	17	140	37	194	30	119	18	167	**361**	18	6	19	43	74	19	16	109	**152**	**513**
15:15	15:30	17	131	41	189	25	93	13	131	**320**	14	21	23	58	80	13	31	124	**182**	**502**
15:30	15:45	13	156	43	212	25	111	14	150	**362**	14	16	20	50	58	22	21	101	**151**	**513**
15:45	16:00	20	173	41	234	32	120	13	165	**399**	11	20	19	50	71	15	22	108	**158**	**557**
16:00	16:15	8	179	40	227	37	147	17	201	**428**	19	14	18	51	52	14	20	86	**137**	**565**
16:15	16:30	15	163	48	226	41	177	17	235	**461**	23	22	16	61	75	18	22	115	**176**	**637**
16:30	16:45	17	158	42	217	30	155	18	203	**420**	23	7	21	51	66	14	34	114	**165**	**585**
16:45	17:00	12	145	30	187	39	182	18	239	**426**	24	18	28	70	75	22	29	126	**196**	**622**
17:00	17:15	15	174	39	228	42	188	7	237	**465**	16	19	31	66	53	13	26	92	**158**	**623**
17:15	17:30	15	190	65	270	42	180	9	231	**501**	17	17	23	57	53	9	27	89	**146**	**647**
17:30	17:45	10	217	54	281	41	186	16	243	**524**	15	14	14	43	67	13	29	109	**152**	**676**
17:45	18:00	8	211	48	267	25	153	16	194	**461**	8	14	15	37	63	7	30	100	**137**	**598**
Total:		435	4579	1345	6359	994	3988	415	5397	**11756**	384	346	494	1224	1920	372	640	2932	**11756**	**15,912**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study Cyclist Volume

Time Period		TERRY FOX DR			CAMPEAU DR			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	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	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

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study Pedestrian Volume

Time Period		TERRY FOX DR			CAMPEAU DR			
		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	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	1	0	**1**	1	0	**1**	**2**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	1	**1**	**1**
08:45	09:00	1	0	**1**	0	0	**0**	**1**
09:00	09:15	0	0	**0**	1	0	**1**	**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	0	1	**1**	0	1	**1**	**2**
11:45	12:00	1	0	**1**	0	0	**0**	**1**
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	1	**1**	**1**
12:45	13:00	0	0	**0**	0	2	**2**	**2**
13:00	13:15	1	1	**2**	1	0	**1**	**3**
13:15	13:30	0	0	**0**	1	0	**1**	**1**
15:00	15:15	0	1	**1**	1	0	**1**	**2**
15:15	15:30	2	1	**3**	1	1	**2**	**5**
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	1	0	**1**	0	0	**0**	**1**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	1	1	**2**	1	1	**2**	**4**
17:15	17:30	0	0	**0**	0	1	**1**	**1**
17:30	17:45	0	0	**0**	1	0	**1**	**1**
17:45	18:00	2	0	**2**	1	0	**1**	**3**
Total		12	5	**17**	10	8	**18**	**35**

5471861 - TUE JAN 21, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study Heavy Vehicles

		TERRY FOX DR									CAMPEAU DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	10	5	**16**	2	1	0	**3**	**19**	0	0	0	**0**	1	0	0	**1**	**1**	**20**
07:15	07:30	0	8	2	**10**	3	1	0	**4**	**14**	0	0	0	**0**	1	0	0	**1**	**1**	**15**
07:30	07:45	0	9	2	**11**	2	8	0	**10**	**21**	0	0	0	**0**	1	0	0	**1**	**1**	**22**
07:45	08:00	0	10	1	**11**	2	11	0	**13**	**24**	0	1	0	**1**	3	1	0	**4**	**5**	**29**
08:00	08:15	0	4	7	**11**	2	0	1	**3**	**14**	0	0	2	**2**	1	0	0	**1**	**3**	**17**
08:15	08:30	0	9	1	**10**	0	1	0	**1**	**11**	0	1	1	**2**	3	0	2	**5**	**7**	**18**
08:30	08:45	0	13	3	**16**	0	7	0	**7**	**23**	0	0	0	**0**	5	0	4	**9**	**9**	**32**
08:45	09:00	0	9	3	**12**	1	8	0	**9**	**21**	0	0	1	**1**	6	0	2	**8**	**9**	**30**
09:00	09:15	0	3	1	**4**	0	7	1	**8**	**12**	1	0	0	**1**	2	0	1	**3**	**4**	**16**
09:15	09:30	0	11	1	**12**	0	7	0	**7**	**19**	0	0	1	**1**	4	1	1	**6**	**7**	**26**
09:30	09:45	0	4	3	**7**	1	5	0	**6**	**13**	0	2	0	**2**	1	0	0	**1**	**3**	**16**
09:45	10:00	0	9	0	**9**	0	5	0	**5**	**14**	0	0	0	**0**	4	1	1	**6**	**6**	**20**
11:30	11:45	0	5	2	**7**	3	13	0	**16**	**23**	0	0	3	**3**	3	1	2	**6**	**9**	**32**
11:45	12:00	1	5	1	**7**	1	5	0	**6**	**13**	0	0	2	**2**	1	0	1	**2**	**4**	**17**
12:00	12:15	0	7	0	**7**	1	4	0	**5**	**12**	0	0	0	**0**	1	0	0	**1**	**1**	**13**
12:15	12:30	0	5	3	**8**	0	7	0	**7**	**15**	0	0	0	**0**	1	1	1	**3**	**3**	**18**
12:30	12:45	1	5	0	**6**	0	6	1	**7**	**13**	0	0	1	**1**	2	0	3	**5**	**6**	**19**
12:45	13:00	0	5	1	**6**	2	7	0	**9**	**15**	0	0	1	**1**	6	0	0	**6**	**7**	**22**
13:00	13:15	1	7	2	**10**	0	6	0	**6**	**16**	0	0	0	**0**	1	0	0	**1**	**1**	**17**
13:15	13:30	0	7	0	**7**	0	4	2	**6**	**13**	0	0	0	**0**	3	0	1	**4**	**4**	**17**
15:00	15:15	0	8	2	**10**	1	7	3	**11**	**21**	0	0	2	**2**	3	1	1	**5**	**7**	**28**
15:15	15:30	1	5	1	**7**	1	11	1	**13**	**20**	0	0	4	**4**	6	0	7	**13**	**17**	**37**
15:30	15:45	0	7	0	**7**	0	4	0	**4**	**11**	1	1	0	**2**	1	0	0	**1**	**3**	**14**
15:45	16:00	0	4	3	**7**	1	5	0	**6**	**13**	0	0	0	**0**	1	1	0	**2**	**2**	**15**
16:00	16:15	0	6	0	**6**	0	5	0	**5**	**11**	1	0	0	**1**	0	0	1	**1**	**2**	**13**
16:15	16:30	0	3	0	**3**	0	11	1	**12**	**15**	0	0	0	**0**	1	1	0	**2**	**2**	**17**
16:30	16:45	0	2	0	**2**	0	5	0	**5**	**7**	1	0	0	**1**	0	0	2	**2**	**3**	**10**
16:45	17:00	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	1	**1**	**1**	**2**
17:00	17:15	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	1	0	0	**1**	**1**	**2**
17:15	17:30	0	0	0	**0**	1	3	0	**4**	**4**	0	0	0	**0**	0	2	0	**2**	**2**	**6**
17:30	17:45	0	0	0	**0**	1	3	0	**4**	**4**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
17:45	18:00	0	1	0	**1**	0	1	0	**1**	**2**	0	0	1	**1**	0	0	0	**0**	**1**	**3**
Total:	None	5	181	44	**230**	25	170	10	**205**	**435**	4	5	19	**28**	63	10	31	**104**	**132**	**567**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMPEAU DR @ TERRY FOX DR

Survey Date: Tuesday, January 21, 2020 **WO No:** 39361

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

Full Study 15 Minute U-Turn Total

		TERRY FOX DR		CAMPEAU DR		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	1	0	0	0	**1**
07:30	07:45	0	1	0	0	**1**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	1	0	0	**1**
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	1	0	0	0	**1**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	0	1	0	0	**1**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	2	0	0	**2**
13:15	13:30	0	3	0	0	**3**
15:00	15:15	1	0	0	0	**1**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	1	1	0	0	**2**
15:45	16:00	1	0	0	0	**1**
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	2	0	0	0	**2**
17:30	17:45	1	1	0	0	**2**
17:45	18:00	0	1	0	0	**1**
Total		8	12	0	0	**20**

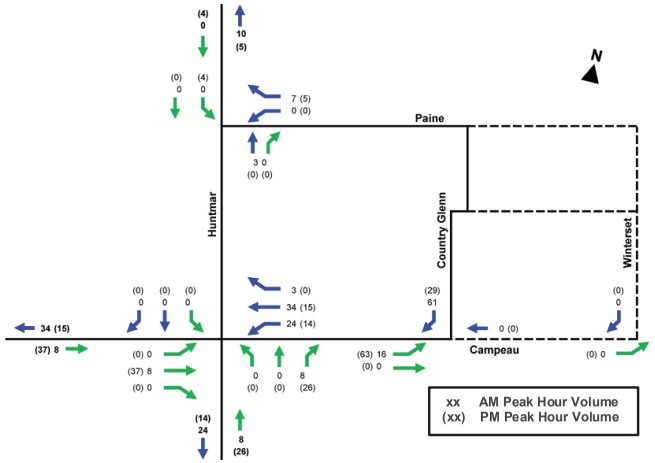


Figure 5: Site-Generated Traffic – Stage 3 Build-Out

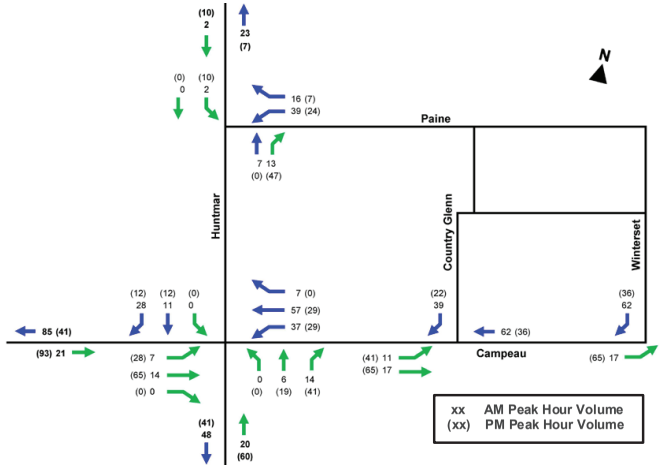


Figure 6: Site-Generated Traffic – Stage 3 and 4 Build-Out

Appendix C

Synchro and Sidra Intersection Worksheets – Existing Conditions

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau AM Existing]

Arcadia Stage 5
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: Huntmar												
1	L2	24	2.0	0.024	7.8	LOS A	0.1	0.4	0.16	0.57	0.16	50.5
2	T1	347	2.0	0.336	2.1	LOS A	1.1	8.1	0.21	0.24	0.21	50.3
3	R2	19	2.0	0.018	2.8	LOS A	0.0	0.3	0.16	0.36	0.16	51.8
Approach		390	2.0	0.336	2.4	LOS A	1.1	8.1	0.21	0.27	0.21	50.4
East: Campeau												
4	L2	70	2.0	0.086	10.6	LOS B	0.2	1.6	0.35	0.72	0.35	50.5
5	T1	40	2.0	0.050	4.6	LOS A	0.1	0.9	0.36	0.46	0.36	57.0
6	R2	18	2.0	0.022	5.0	LOS A	0.1	0.4	0.35	0.55	0.35	51.2
Approach		128	2.0	0.086	8.0	LOS A	0.2	1.6	0.35	0.62	0.35	52.4
North: Huntmar												
7	L2	2	2.0	0.159	7.9	LOS A	0.5	3.3	0.21	0.25	0.21	54.2
8	T1	319	2.0	0.159	2.1	LOS A	0.5	3.3	0.20	0.25	0.20	50.3
9	R2	108	2.0	0.107	2.9	LOS A	0.3	2.1	0.20	0.39	0.20	51.7
Approach		429	2.0	0.159	2.3	LOS A	0.5	3.3	0.20	0.28	0.20	50.6
West: Campeau												
10	L2	76	2.0	0.089	10.5	LOS B	0.2	1.6	0.33	0.71	0.33	50.5
11	T1	29	2.0	0.035	4.4	LOS A	0.1	0.6	0.33	0.44	0.33	57.2
12	R2	32	2.0	0.038	4.5	LOS A	0.1	0.7	0.31	0.52	0.31	51.6
Approach		137	2.0	0.089	7.8	LOS A	0.2	1.6	0.33	0.61	0.33	52.0
All Vehicles		1083	2.0	0.336	3.7	LOS A	1.1	8.1	0.24	0.36	0.24	50.9

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:43:01 AM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2021-098 Minto Arcadia Stage 5\DATA\Sidra \2021-048 Sidra 2021-09-24.sip8

Lanes, Volumes, Timings
4: Terry Fox & Kanata

09/29/2021

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	337	616	169	253	447
Future Volume (vph)	310	337	616	169	253	447
Satd. Flow (prot)	3185	1414	3283	1441	1595	3283
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3185	1414	3283	1441	1595	3283
Satd. Flow (RTOR)		374		188		
Lane Group Flow (vph)	344	374	684	188	281	497
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	16.0	16.0	39.5	39.5	22.2	67.8
Actuated g/C Ratio	0.17	0.17	0.41	0.41	0.23	0.70
v/c Ratio	0.65	0.68	0.51	0.27	0.76	0.21
Control Delay	44.2	11.1	24.7	4.7	49.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	11.1	24.7	4.7	49.0	5.5
LOS	D	B	C	A	D	A
Approach Delay	27.0		20.4			21.2
Approach LOS	C		C			C
Queue Length 50th (m)	30.6	0.0	47.6	0.0	48.0	14.1
Queue Length 95th (m)	49.8	26.9	84.7	14.8	81.5	25.3
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	865	656	1348	702	621	2832
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.57	0.51	0.27	0.45	0.18

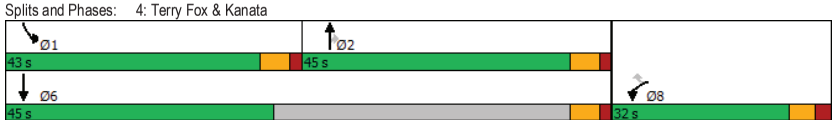
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 96.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76

Lanes, Volumes, Timings
4: Terry Fox & Kanata

09/29/2021

Intersection Signal Delay: 22.7 — Intersection LOS: C
Intersection Capacity Utilization 57.3% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata



Lanes, Volumes, Timings
5: Terry Fox & Signature SC

09/29/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	9	0	28	0	757	20	30	727	0
Future Volume (vph)	0	0	0	9	0	28	0	757	20	30	727	0
Satd. Flow (prot)	0	1745	0	0	1386	1455	1745	3228	0	1658	3283	0
Flt Permitted					0.757					0.298		
Satd. Flow (perm)	0	1745	0	0	1104	1455	1745	3228	0	520	3283	0
Satd. Flow (RTOR)						34		5				
Lane Group Flow (vph)	0	0	0	0	10	31	0	863	0	33	808	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	78.0	78.0		78.0	78.0	
Total Split (%)	29.1%	29.1%		29.1%	29.1%	29.1%	70.9%	70.9%		70.9%	70.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					25.4	25.4		71.6		71.6	71.6	
Actuated g/C Ratio					0.23	0.23		0.65		0.65	0.65	
v/c Ratio					0.04	0.09		0.41		0.10	0.38	
Control Delay					33.6	11.0		13.4		8.1	9.5	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					33.6	11.0		13.4		8.1	9.5	
LOS					C	B		B		A	A	
Approach Delay					16.5			13.4			9.5	
Approach LOS					B			B			A	
Queue Length 50th (m)					1.7	0.0		82.2		2.4	38.6	
Queue Length 95th (m)					6.2	7.0		48.0		6.3	49.4	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)										61.0		
Base Capacity (vph)					254	362		2102		338	2136	
Starvation Cap Reductn					0	0		0		0	0	
Spillback Cap Reductn					0	0		0		0	0	
Storage Cap Reductn					0	0		0		0	0	
Reduced v/c Ratio					0.04	0.09		0.41		0.10	0.38	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 45.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Terry Fox & Signature SC

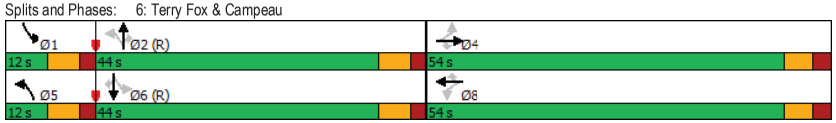
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	24	39	258	28	71	52	647	164	98	554	52
Future Volume (vph)	30	24	39	258	28	71	52	647	164	98	554	52
Satd. Flow (prot)	1642	1745	1441	1580	1712	1363	1658	3191	1441	1658	3191	1483
Flt Permitted	0.737			0.740			0.386			0.294		
Satd. Flow (perm)	1274	1745	1421	1229	1712	1363	673	3191	1410	513	3191	1449
Satd. Flow (RTOR)			97			97			182			97
Lane Group Flow (vph)	33	27	43	287	31	79	58	719	182	109	616	58
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	12.0	44.0	44.0	12.0	44.0	44.0
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	10.9%	40.0%	40.0%	10.9%	40.0%	40.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	31.8	31.8	31.8	31.8	31.8	31.8	57.8	50.5	50.5	61.4	54.1	54.1
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.53	0.46	0.46	0.56	0.49	0.49
v/c Ratio	0.09	0.05	0.09	0.81	0.06	0.17	0.14	0.49	0.24	0.29	0.39	0.08
Control Delay	25.5	24.6	0.4	52.9	24.9	3.9	13.0	24.3	4.5	29.5	43.4	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	24.6	0.4	52.9	24.9	3.9	13.0	24.3	4.5	29.5	43.4	16.3
LOS	C	C	A	D	C	A	B	C	A	C	D	B
Approach Delay		14.8			41.0			19.9			39.5	
Approach LOS		B			D			B			D	
Queue Length 50th (m)	5.2	4.2	0.0	56.9	4.8	0.0	4.9	55.4	0.0	18.5	74.3	2.1
Queue Length 95th (m)	10.7	9.2	0.0	76.9	10.1	6.7	13.2	88.7	14.5	37.9	93.4	12.1
Internal Link Dist (m)		178.3			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	551	755	669	531	740	644	419	1465	745	374	1568	761
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.04	0.06	0.54	0.04	0.12	0.14	0.49	0.24	0.29	0.39	0.08

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau



MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau PM Existing]

Arcadia Stage 5
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: Huntmar												
1	L2	81	2.0	0.090	8.3	LOS A	0.2	1.7	0.29	0.64	0.29	50.1
2	T1	387	2.0	0.423	2.8	LOS A	1.5	10.9	0.39	0.33	0.39	49.5
3	R2	62	2.0	0.069	3.3	LOS A	0.2	1.3	0.29	0.45	0.29	51.4
Approach		530	2.0	0.423	3.7	LOS A	1.5	10.9	0.36	0.39	0.36	49.8
East: Campeau												
4	L2	40	2.0	0.057	11.3	LOS B	0.1	1.0	0.41	0.77	0.41	50.3
5	T1	24	2.0	0.036	5.4	LOS A	0.1	0.7	0.43	0.53	0.43	56.6
6	R2	8	2.0	0.011	5.7	LOS A	0.0	0.2	0.42	0.59	0.42	50.9
Approach		72	2.0	0.057	8.7	LOS A	0.1	1.0	0.42	0.67	0.42	52.3
North: Huntmar												
7	L2	9	2.0	0.201	8.0	LOS A	0.6	4.4	0.23	0.27	0.23	54.0
8	T1	393	2.0	0.201	2.1	LOS A	0.6	4.4	0.22	0.26	0.22	50.2
9	R2	148	2.0	0.148	3.0	LOS A	0.4	3.0	0.22	0.40	0.22	51.6
Approach		550	2.0	0.201	2.5	LOS A	0.6	4.4	0.22	0.30	0.22	50.6
West: Campeau												
10	L2	190	2.0	0.233	10.8	LOS B	0.7	4.8	0.39	0.75	0.39	50.3
11	T1	79	2.0	0.099	4.7	LOS A	0.3	1.9	0.37	0.46	0.37	56.9
12	R2	66	2.0	0.080	4.7	LOS A	0.2	1.4	0.34	0.56	0.34	51.5
Approach		334	2.0	0.233	8.2	LOS A	0.7	4.8	0.38	0.65	0.38	52.0
All Vehicles		1487	2.0	0.423	4.5	LOS A	1.5	10.9	0.32	0.43	0.32	50.7

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

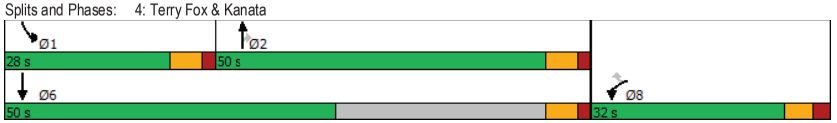
Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:11 AM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2021-098 Minto Arcadia Stage 5\DATA\Sidra \2021-048 Sidra 2021-09-24.sip8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	241	146	655	335	265	722
Future Volume (vph)	241	146	655	335	265	722
Satd. Flow (prot)	3216	1469	3316	1483	1658	3316
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3216	1469	3316	1452	1653	3316
Satd. Flow (RTOR)		162		372		
Lane Group Flow (vph)	268	162	728	372	294	802
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	50.0	50.0	28.0	50.0
Total Split (%)	29.1%	29.1%	45.5%	45.5%	25.5%	45.5%
Maximum Green (s)	25.8	25.8	44.0	44.0	22.0	44.0
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	18.0	18.0	12.0	12.0		12.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	13.2	13.2	44.1	44.1	20.7	70.8
Actuated g/C Ratio	0.14	0.14	0.46	0.46	0.21	0.74
v/c Ratio	0.61	0.48	0.48	0.43	0.83	0.33
Control Delay	45.4	11.1	20.1	3.6	56.8	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	11.1	20.1	3.6	56.8	5.1
LOS	D	B	C	A	E	A
Approach Delay	32.5		14.5			19.0
Approach LOS	C		B			B
Queue Length 50th (m)	24.8	0.0	49.2	0.0	52.4	22.9
Queue Length 95th (m)	37.2	17.0	69.8	16.0	#97.3	35.8
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	863	513	1519	866	379	2485
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.32	0.48	0.43	0.78	0.32

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 96.3
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 19.3 Intersection LOS: B
Intersection Capacity Utilization 57.0% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Terry Fox & Kanata



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	0	113	18	877	68	82	881	0
Future Volume (vph)	0	0	0	54	0	113	18	877	68	82	881	0
Satd. Flow (prot)	0	1745	0	0	1658	1483	1658	3279	0	1658	3316	0
Flt Permitted					0.757		0.246			0.223		
Satd. Flow (perm)	0	1745	0	0	1321	1483	429	3279	0	389	3316	0
Satd. Flow (RTOR)						126		13				
Lane Group Flow (vph)	0	0	0	0	60	126	20	1050	0	91	979	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	81.0	81.0		81.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%	32.5%	67.5%	67.5%		67.5%	67.5%	
Maximum Green (s)	32.4	32.4		32.4	32.4	32.4	74.6	74.6		74.6	74.6	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)					32.4	32.4	74.6	74.6		74.6	74.6	
Actuated g/C Ratio					0.27	0.27	0.62	0.62		0.62	0.62	
v/c Ratio					0.17	0.26	0.08	0.51		0.38	0.48	
Control Delay					35.1	7.2	5.4	6.0		16.8	13.1	
Queue Delay					0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay					35.1	7.2	5.4	6.0		16.8	13.1	
LOS					D	A	A	A		B	B	
Approach Delay					16.2			6.0			13.5	
Approach LOS					B			A			B	
Queue Length 50th (m)					10.8	0.0	0.7	19.8		9.9	60.8	
Queue Length 95th (m)					22.1	14.2	m1.7	27.2		22.4	75.6	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)							51.0			61.0		
Base Capacity (vph)					356	492	266	2043		241	2061	
Starvation Cap Reductn					0	0	0	0		0	0	
Spillback Cap Reductn					0	0	0	0		0	0	
Storage Cap Reductn					0	0	0	0		0	0	
Reduced v/c Ratio					0.17	0.26	0.08	0.51		0.38	0.48	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 83 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 5: Terry Fox & Signature SC

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	68	96	248	57	111	52	746	188	164	736	50
Future Volume (vph)	72	68	96	248	57	111	52	746	188	164	736	50
Satd. Flow (prot)	1658	1745	1483	1658	1712	1483	1658	3316	1483	1658	3316	1483
Flt Permitted	0.716			0.708			0.304			0.238		
Satd. Flow (perm)	1248	1745	1464	1234	1712	1464	530	3316	1449	415	3316	1449
Satd. Flow (RTOR)			107			123			208			89
Lane Group Flow (vph)	80	76	107	276	63	123	58	829	209	182	818	56
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Maximum Green (s)	41.6	41.6	41.6	41.6	41.6	41.6	15.6	43.6	43.6	15.6	43.6	43.6
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	30.0	30.0	30.0		27.0	27.0		30.0	30.0
Pedestrian Calls (#/hr)	1	1	1	1	1	1		1	1		2	2
Act Effct Green (s)	31.9	31.9	31.9	31.9	31.9	31.9	64.9	57.6	57.6	73.8	64.0	64.0
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.54	0.48	0.48	0.62	0.53	0.53
v/c Ratio	0.24	0.16	0.23	0.84	0.14	0.26	0.16	0.52	0.26	0.49	0.46	0.07
Control Delay	34.0	32.1	6.5	62.9	31.4	6.3	12.4	25.2	4.3	22.5	16.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	32.1	6.5	62.9	31.4	6.3	12.4	25.2	4.3	22.5	16.1	0.6
LOS	C	C	A	E	C	A	B	C	A	C	B	A
Approach Delay		22.2			43.6			20.5			16.3	
Approach LOS		C			D			C			B	
Queue Length 50th (m)	14.8	13.7	0.0	61.3	11.3	0.0	5.0	69.4	0.1	16.7	43.6	0.0
Queue Length 95th (m)	25.1	23.3	11.8	84.9	20.1	12.6	12.5	108.7	15.5	41.9	52.7	1.3
Internal Link Dist (m)		178.3			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	432	604	577	427	593	587	468	1591	803	421	1767	813
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.13	0.19	0.65	0.11	0.21	0.12	0.52	0.26	0.43	0.46	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 93 (78%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.9 Intersection LOS: C
Intersection Capacity Utilization 75.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 6: Terry Fox & Campeau

Appendix D

Background Development Volumes

CGH TRANSPORTATION

Figure 20: Trip Assignment

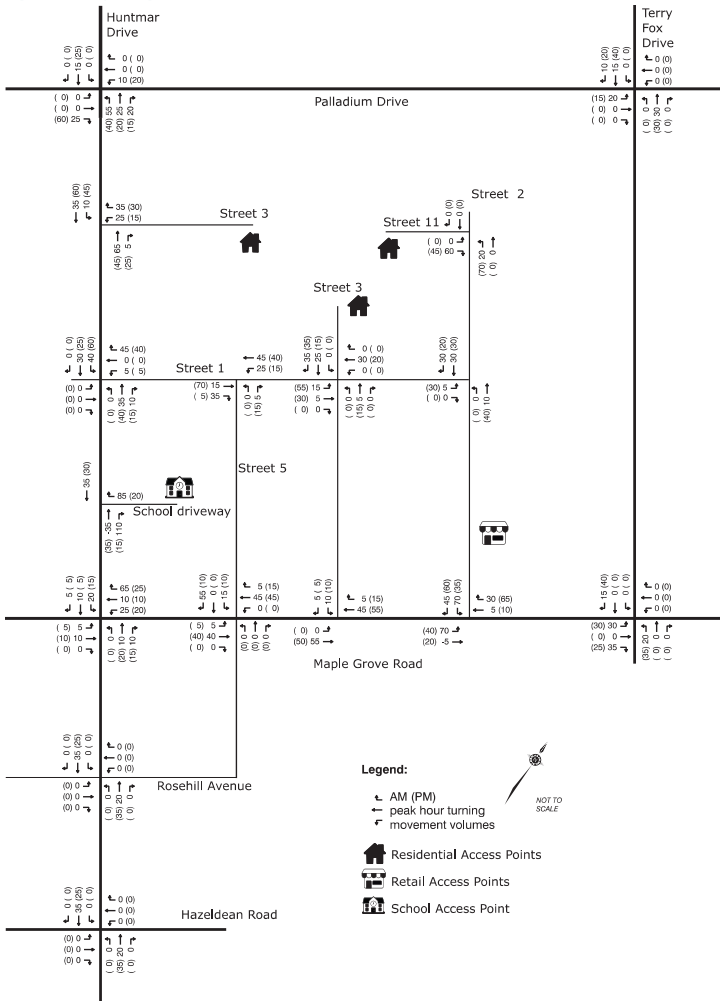


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Figure 12: 'New' and 'Pass-by' Site Generated Traffic Volumes

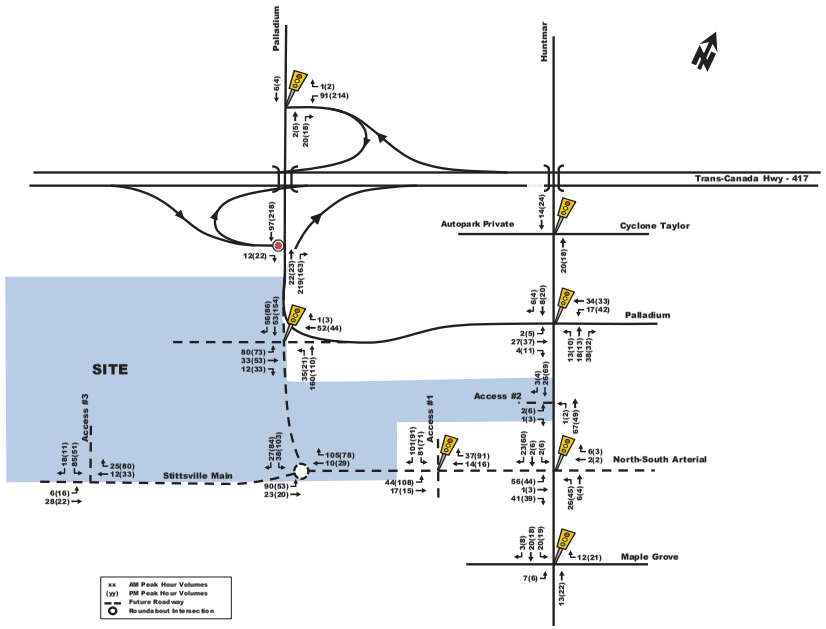
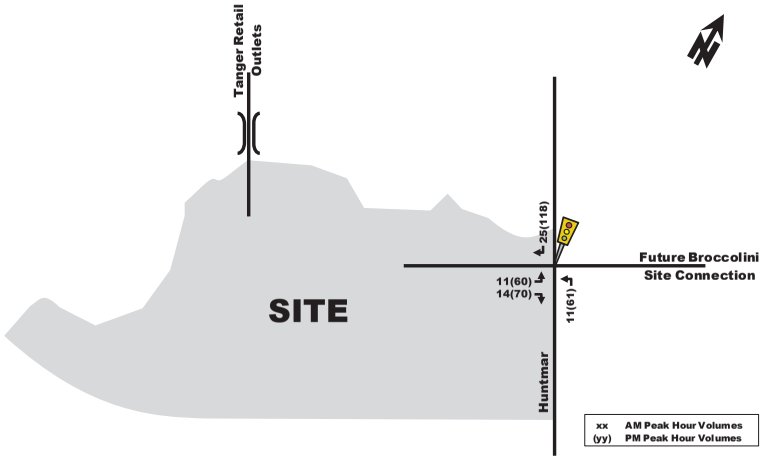


Figure 3: 'New' and 'Pass-by' Site-Generated Traffic Volumes



3.1.3. TRIP DISTRIBUTION AND ASSIGNMENT

Given the low projected number of vehicle trips projected to be generated by the proposed development, the future roadway network impact is considered negligible. However, a review of the number of vehicles projected to enter/exit the site at the proposed site driveways is provided as Figure 7.

Figure 7: Site-Generated Vehicle Trips

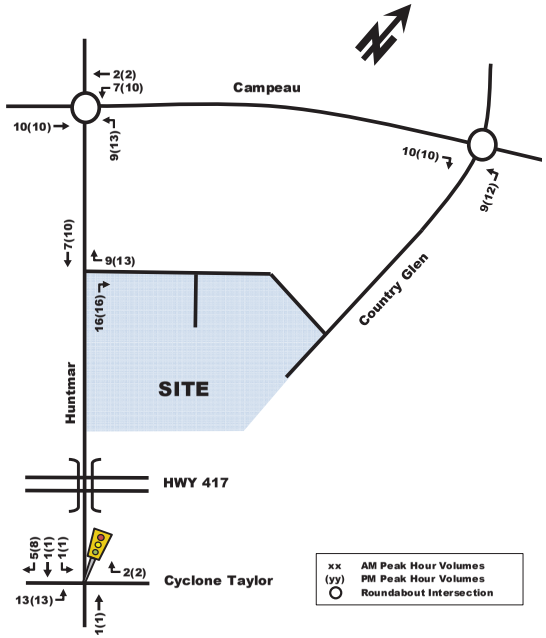


Figure 12 - Net Site Generated Traffic Volumes

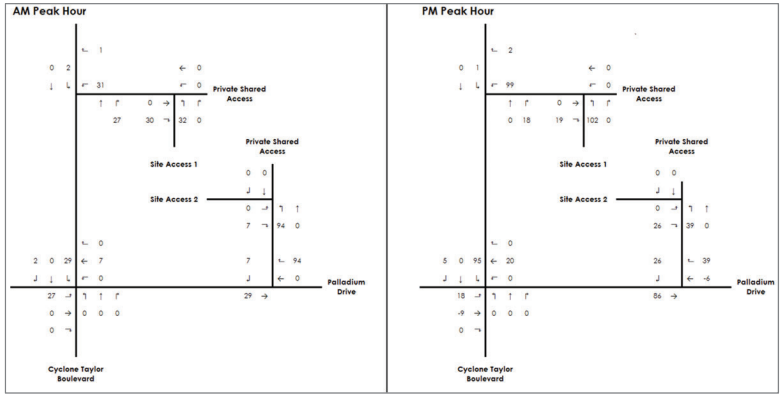


Figure 12: Purolator Facility Site-Generated Traffic (Phase 1)

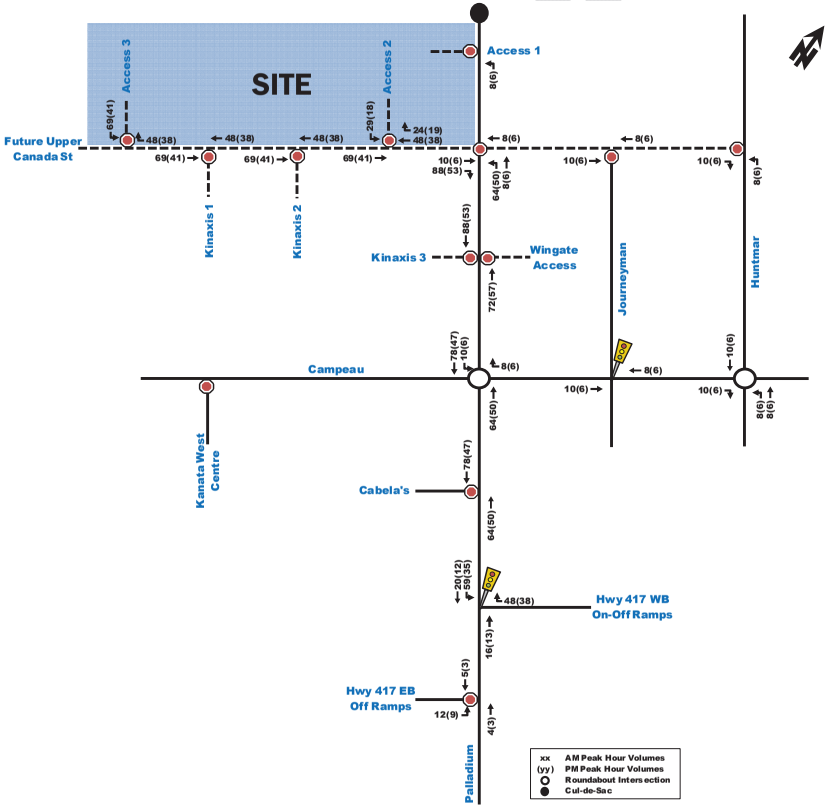
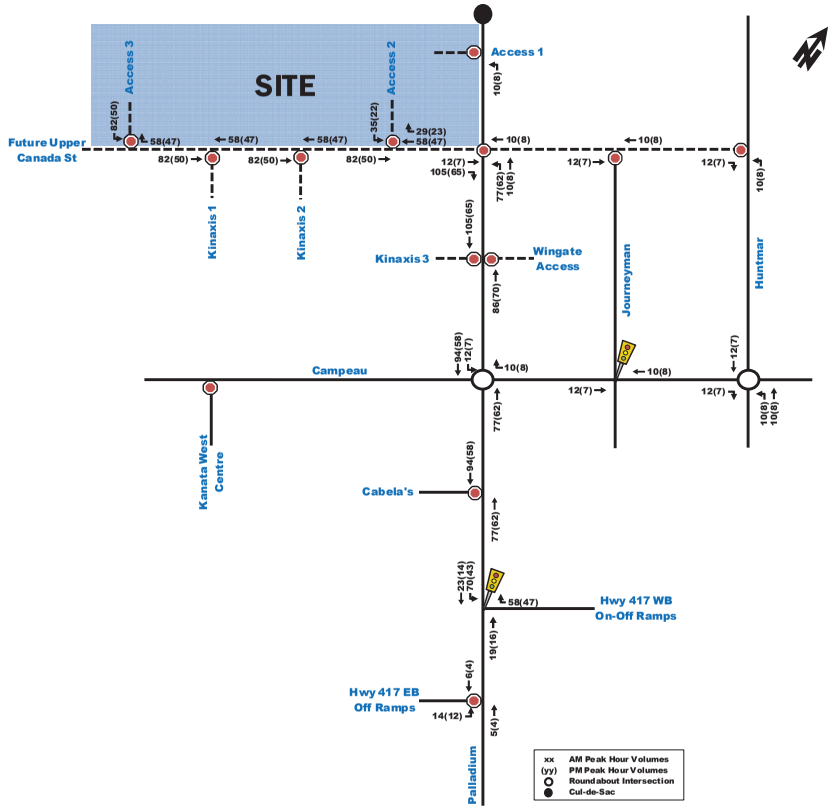


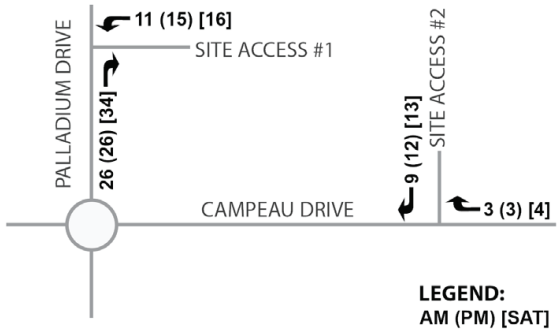
Figure 13: Purolator Facility Site-Generated Traffic (Phase 2)



3.1.7 Trip Assignment

Utilizing the estimated number of new auto trips and applying the above distribution, future site-generated traffic volumes at each of the proposed site access driveways have been illustrated in **Figure 3** as follows:

Figure 3 - Site-Generated Traffic



- **Based on the anticipated turning movement volumes illustrated in Figure 3 above, it is not expected that there will be any operational impacts at either of the site access driveways and therefore no further analysis is required.**

3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

Based on the 2011 NCR Household Origin-Destination Survey (Kanata – Stittsville district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 25% to/from the north;
- 10% to/from the south;
- 60% to/from the east; and,
- 5% to/from the west.

The expected site-generated auto trips in **Table 4** were then assigned to the road networks as shown in **Figure 9** below, based on existing traffic volumes, estimated travel times and engineering judgement.

Figure 9: Kinaxis Office Development Site-Generated Traffic

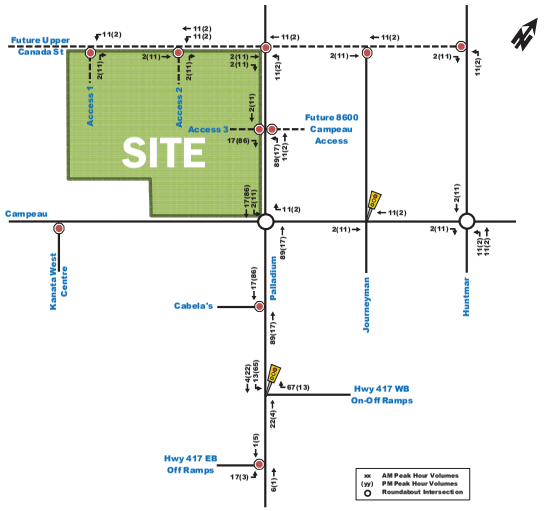


Figure 12: Maritime Ontario Facility Site-Generated Traffic (Phase 1)

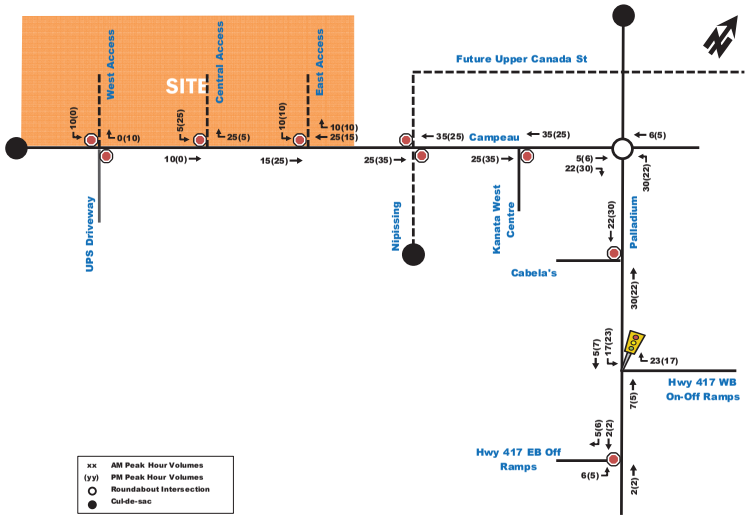
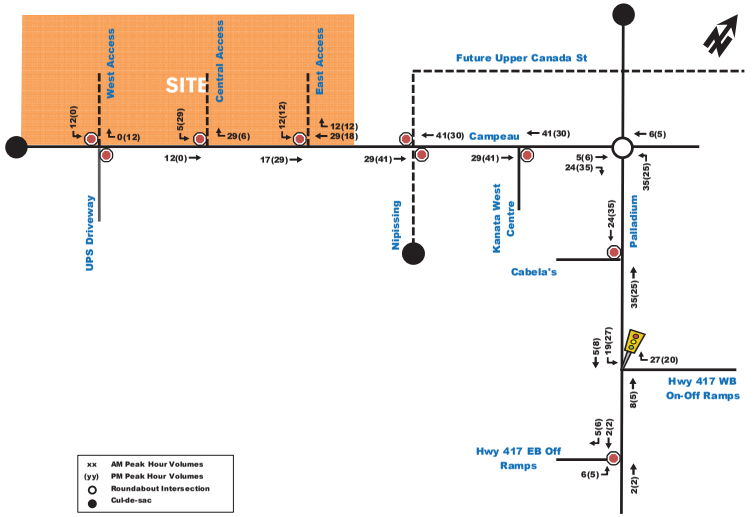


Figure 13: Maritime Ontario Facility Site-Generated Traffic (Phase 2)



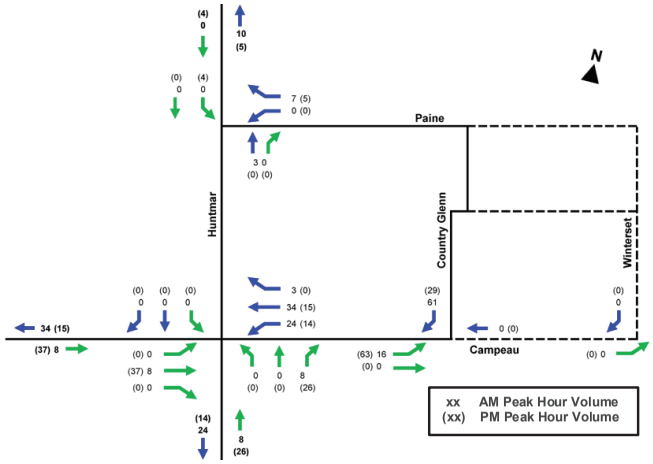


Figure 5: Site-Generated Traffic – Stage 3 Build-Out

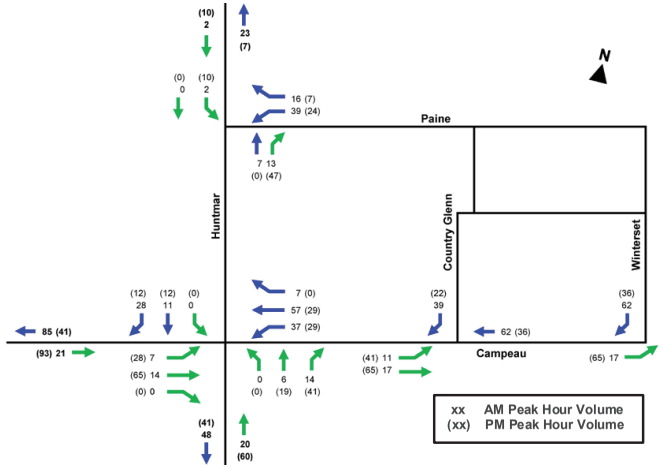
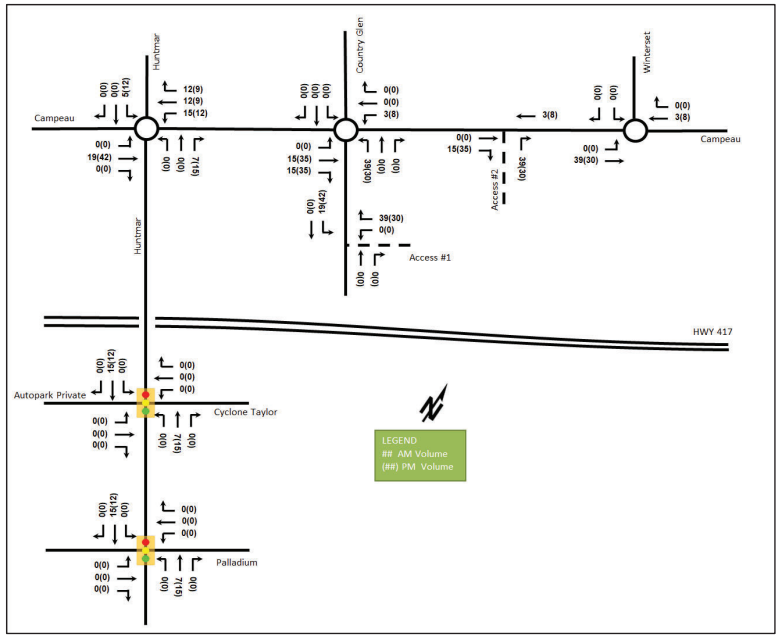


Figure 6: Site-Generated Traffic – Stage 3 and 4 Build-Out

Figure 11: New Site Generation Auto Volumes



Appendix E

Synchro and Sidra Intersection Worksheets – 2025 Future Background Conditions

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau AM FB2025]

Arcadia Stage 5
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: Huntmar												
1	L2	33	2.0	0.033	7.9	LOS A	0.1	0.6	0.19	0.58	0.19	50.4
2	T1	403	2.0	0.402	2.2	LOS A	1.5	10.4	0.27	0.26	0.27	50.0
3	R2	53	2.0	0.053	2.9	LOS A	0.1	1.0	0.20	0.38	0.20	51.7
Approach		489	2.0	0.402	2.7	LOS A	1.5	10.4	0.26	0.30	0.26	50.2
East: Campeau												
4	L2	132	2.0	0.170	10.9	LOS B	0.5	3.3	0.40	0.76	0.40	50.3
5	T1	83	2.0	0.109	4.9	LOS A	0.3	2.1	0.40	0.49	0.40	56.8
6	R2	28	2.0	0.037	5.2	LOS A	0.1	0.7	0.38	0.58	0.38	51.1
Approach		243	2.0	0.170	8.2	LOS A	0.5	3.3	0.39	0.65	0.39	52.4
North: Huntmar												
7	L2	7	2.0	0.197	8.3	LOS A	0.6	4.2	0.30	0.31	0.30	53.6
8	T1	357	2.0	0.197	2.5	LOS A	0.6	4.2	0.29	0.30	0.29	49.9
9	R2	106	2.0	0.115	3.3	LOS A	0.3	2.3	0.28	0.45	0.28	51.4
Approach		470	2.0	0.197	2.8	LOS A	0.6	4.2	0.29	0.33	0.29	50.2
West: Campeau												
10	L2	68	2.0	0.087	10.8	LOS B	0.2	1.6	0.37	0.74	0.37	50.4
11	T1	67	2.0	0.087	4.9	LOS A	0.2	1.7	0.39	0.48	0.39	56.8
12	R2	38	2.0	0.048	4.8	LOS A	0.1	0.9	0.36	0.57	0.36	51.4
Approach		173	2.0	0.087	7.2	LOS A	0.2	1.7	0.37	0.60	0.37	52.9
All Vehicles		1375	2.0	0.402	4.3	LOS A	1.5	10.4	0.31	0.41	0.31	50.9

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau AM FB2025]

Arcadia Stage 5
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: Country Glen												
1	L2	44	2.0	0.024	1.8	LOS A	0.1	0.4	0.17	0.25	0.17	39.4
2	T1	1	2.0	0.024	0.3	LOS A	0.1	0.4	0.16	0.23	0.16	29.5
3	R2	4	2.0	0.024	0.3	LOS A	0.1	0.4	0.16	0.23	0.16	38.2
Approach		49	2.0	0.024	1.6	LOS A	0.1	0.4	0.17	0.25	0.17	39.0
East: Campeau												
4	L2	7	2.0	0.033	9.6	LOS A	0.1	0.6	0.15	0.42	0.15	42.9
5	T1	57	2.0	0.033	3.5	LOS A	0.1	0.6	0.15	0.39	0.15	57.8
6	R2	5	2.0	0.033	4.4	LOS A	0.1	0.6	0.14	0.36	0.14	38.8
Approach		69	2.0	0.033	4.2	LOS A	0.1	0.6	0.15	0.39	0.15	54.0
North: Country Glen												
7	L2	19	2.0	0.153	1.8	LOS A	0.4	3.0	0.17	0.09	0.17	40.5
8	T1	1	2.0	0.153	0.3	LOS A	0.4	3.0	0.17	0.09	0.17	29.8
9	R2	138	2.0	0.153	0.3	LOS A	0.4	3.0	0.17	0.09	0.17	39.0
Approach		158	2.0	0.153	0.5	LOS A	0.4	3.0	0.17	0.09	0.17	39.1
West: Campeau												
10	L2	50	2.0	0.057	9.5	LOS A	0.2	1.4	0.10	0.58	0.10	41.6
11	T1	52	2.0	0.057	3.4	LOS A	0.2	1.4	0.10	0.41	0.10	57.5
12	R2	21	2.0	0.057	4.3	LOS A	0.2	1.4	0.10	0.36	0.10	38.8
Approach		123	2.0	0.057	6.0	LOS A	0.2	1.4	0.10	0.47	0.10	46.4
All Vehicles		399	2.0	0.153	3.0	LOS A	0.4	3.0	0.15	0.28	0.15	43.3

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau AM FB2025]

Arcadia Stage 5
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
East: Campeau												
5	T1	38	2.0	0.017	3.3	LOS A	0.0	0.3	0.03	0.32	0.03	59.0
6	R2	9	2.0	0.008	4.2	LOS A	0.0	0.1	0.03	0.45	0.03	38.5
Approach		47	2.0	0.017	3.4	LOS A	0.0	0.3	0.03	0.34	0.03	53.6
North: Winterset												
7	L2	31	2.0	0.029	1.6	LOS A	0.1	0.5	0.08	0.23	0.08	39.4
9	R2	31	2.0	0.014	0.1	LOS A	0.0	0.3	0.09	0.02	0.09	39.4
Approach		62	2.0	0.029	0.8	LOS A	0.1	0.5	0.09	0.13	0.09	39.4
West: Campeau												
10	L2	8	2.0	0.041	9.4	LOS A	0.1	0.7	0.08	0.40	0.08	43.1
11	T1	91	2.0	0.041	3.3	LOS A	0.1	0.7	0.09	0.35	0.09	58.3
Approach		99	2.0	0.041	3.8	LOS A	0.1	0.7	0.09	0.35	0.09	56.7
All Vehicles		208	2.0	0.041	2.9	LOS A	0.1	0.7	0.07	0.28	0.07	49.6

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:27 AM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2021-098 Minto Arcadia Stage 5\DATA\Sidra \2021-048 Sidra 2021-09-24.sip8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	317	337	699	172	253	515
Future Volume (vph)	317	337	699	172	253	515
Satd. Flow (prot)	3185	1414	3283	1441	1595	3283
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3185	1414	3283	1441	1595	3283
Satd. Flow (RTOR)		337		172		
Lane Group Flow (vph)	317	337	699	172	253	515
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	14.7	14.7	39.4	39.4	20.0	65.5
Actuated g/C Ratio	0.16	0.16	0.43	0.43	0.22	0.71
v/c Ratio	0.63	0.66	0.50	0.24	0.74	0.22
Control Delay	42.8	11.2	22.6	4.4	47.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	11.2	22.6	4.4	47.4	5.2
LOS	D	B	C	A	D	A
Approach Delay	26.6		19.0			19.1
Approach LOS	C		B			B
Queue Length 50th (m)	27.1	0.0	45.7	0.0	41.6	14.0
Queue Length 95th (m)	44.6	24.8	80.7	13.5	71.9	24.8
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	898	640	1399	713	644	2924
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.50	0.24	0.39	0.18

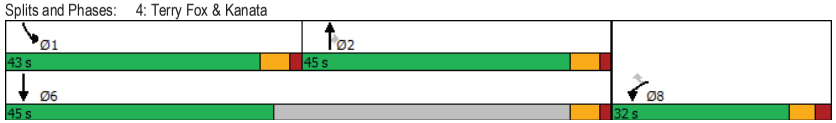
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 92.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74

Lanes, Volumes, Timings
4: Terry Fox & Kanata

11/12/2021

Intersection Signal Delay: 21.2 — Intersection LOS: C
Intersection Capacity Utilization 59.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata



Lanes, Volumes, Timings
5: Terry Fox & Signature SC

11/12/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	9	0	28	0	856	20	30	839	0
Future Volume (vph)	0	0	0	9	0	28	0	856	20	30	839	0
Satd. Flow (prot)	0	1745	0	0	1386	1455	1745	3233	0	1658	3283	0
Flt Permitted					0.757					0.293		
Satd. Flow (perm)	0	1745	0	0	1104	1455	1745	3233	0	511	3283	0
Satd. Flow (RTOR)						34		4				
Lane Group Flow (vph)	0	0	0	0	9	28	0	876	0	30	839	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	78.0	78.0		78.0	78.0	
Total Split (%)	29.1%	29.1%		29.1%	29.1%	29.1%	70.9%	70.9%		70.9%	70.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					25.4	25.4		71.6		71.6	71.6	
Actuated g/C Ratio					0.23	0.23		0.65		0.65	0.65	
v/c Ratio					0.04	0.08		0.42		0.09	0.39	
Control Delay					33.4	9.9		14.0		8.0	9.7	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					33.4	9.9		14.0		8.0	9.7	
LOS					C	A		B		A	A	
Approach Delay					15.6			14.0			9.6	
Approach LOS					B			B			A	
Queue Length 50th (m)					1.5	0.0		80.4		2.2	40.6	
Queue Length 95th (m)					5.6	6.1		100.8		5.9	51.8	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)										61.0		
Base Capacity (vph)					254	362		2105		332	2136	
Starvation Cap Reductn					0	0		0		0	0	
Spillback Cap Reductn					0	0		0		0	0	
Storage Cap Reductn					0	0		0		0	0	
Reduced v/c Ratio					0.04	0.08		0.42		0.09	0.39	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 45.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Terry Fox & Signature SC

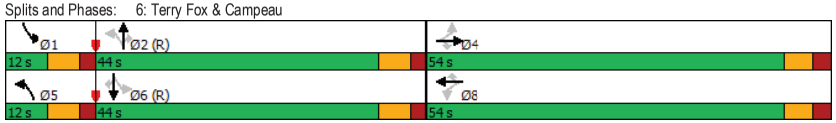
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	49	78	258	42	71	68	706	164	98	627	68
Future Volume (vph)	60	49	78	258	42	71	68	706	164	98	627	68
Satd. Flow (prot)	1642	1745	1441	1580	1712	1363	1658	3191	1441	1658	3191	1483
Flt Permitted	0.730			0.725			0.383			0.310		
Satd. Flow (perm)	1262	1745	1421	1204	1712	1363	668	3191	1410	541	3191	1463
Satd. Flow (RTOR)			97			97			164			97
Lane Group Flow (vph)	60	49	78	258	42	71	68	706	164	98	627	68
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	12.0	44.0	44.0	12.0	44.0	44.0
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	10.9%	40.0%	40.0%	10.9%	40.0%	40.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	29.7	29.7	29.7	29.7	29.7	29.7	60.2	52.7	52.7	63.2	56.0	56.0
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.55	0.48	0.48	0.57	0.51	0.51
v/c Ratio	0.18	0.10	0.17	0.79	0.09	0.16	0.16	0.46	0.22	0.25	0.39	0.09
Control Delay	28.9	27.2	4.0	54.0	26.9	3.1	12.0	22.5	4.4	26.8	41.7	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	27.2	4.0	54.0	26.9	3.1	12.0	22.5	4.4	26.8	41.7	18.0
LOS	C	C	A	D	C	A	B	C	A	C	D	B
Approach Delay		18.1			41.2			18.6			37.8	
Approach LOS		B			D			B			D	
Queue Length 50th (m)	9.9	7.9	0.0	51.5	6.8	0.0	5.5	51.4	0.0	16.0	75.0	2.8
Queue Length 95th (m)	17.7	14.8	6.7	70.9	13.1	5.2	14.3	85.6	13.8	34.0	94.8	15.2
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	546	755	669	521	740	644	433	1528	760	396	1623	792
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.06	0.12	0.50	0.06	0.11	0.16	0.46	0.22	0.25	0.39	0.09

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau



MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau PM FB2025]

Arcadia Stage 6
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: Huntmar												
1	L2	87	2.0	0.102	8.6	LOS A	0.3	2.0	0.33	0.67	0.33	49.9
2	T1	445	2.0	0.515	3.6	LOS A	2.2	15.8	0.48	0.45	0.53	49.1
3	R2	137	2.0	0.161	3.7	LOS A	0.5	3.3	0.35	0.50	0.35	51.2
Approach		669	2.0	0.515	4.3	LOS A	2.2	15.8	0.43	0.49	0.46	49.6
East: Campeau												
4	L2	131	2.0	0.193	11.7	LOS B	0.5	3.7	0.46	0.81	0.46	50.1
5	T1	54	2.0	0.082	5.7	LOS A	0.2	1.6	0.45	0.56	0.45	56.5
6	R2	16	2.0	0.024	6.0	LOS A	0.1	0.4	0.44	0.63	0.44	50.8
Approach		201	2.0	0.193	9.6	LOS A	0.5	3.7	0.46	0.73	0.46	51.7
North: Huntmar												
7	L2	20	2.0	0.284	8.5	LOS A	0.9	6.6	0.35	0.35	0.35	53.3
8	T1	497	2.0	0.284	2.7	LOS A	0.9	6.6	0.34	0.33	0.34	49.6
9	R2	141	2.0	0.156	3.4	LOS A	0.4	3.2	0.31	0.46	0.31	51.3
Approach		658	2.0	0.284	3.0	LOS A	0.9	6.6	0.33	0.36	0.33	50.1
West: Campeau												
10	L2	171	2.0	0.243	11.6	LOS B	0.7	4.9	0.47	0.80	0.47	50.1
11	T1	163	2.0	0.239	5.8	LOS A	0.7	5.1	0.49	0.57	0.49	56.3
12	R2	85	2.0	0.119	5.4	LOS A	0.3	2.2	0.42	0.65	0.42	51.2
Approach		419	2.0	0.243	8.1	LOS A	0.7	5.1	0.46	0.68	0.46	52.5
All Vehicles		1947	2.0	0.515	5.2	LOS A	2.2	15.8	0.41	0.51	0.42	50.6

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau PM FB2025]

Arcadia Stage 5
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: Country Glen												
1	L2	37	2.0	0.024	2.3	LOS A	0.1	0.4	0.27	0.32	0.27	39.2
2	T1	1	2.0	0.024	0.7	LOS A	0.1	0.4	0.26	0.29	0.26	29.5
3	R2	5	2.0	0.024	0.7	LOS A	0.1	0.4	0.26	0.29	0.26	38.1
Approach		43	2.0	0.024	2.0	LOS A	0.1	0.4	0.27	0.32	0.27	38.8
East: Campeau												
4	L2	12	2.0	0.057	9.9	LOS A	0.1	1.1	0.24	0.46	0.24	42.6
5	T1	77	2.0	0.057	3.8	LOS A	0.1	1.1	0.23	0.44	0.23	57.2
6	R2	20	2.0	0.057	4.7	LOS A	0.1	1.0	0.22	0.42	0.22	38.5
Approach		109	2.0	0.057	4.6	LOS A	0.1	1.1	0.23	0.44	0.23	50.8
North: Country Glen												
7	L2	11	2.0	0.095	1.8	LOS A	0.2	1.7	0.18	0.10	0.18	40.5
8	T1	1	2.0	0.095	0.3	LOS A	0.2	1.7	0.18	0.10	0.18	29.8
9	R2	85	2.0	0.095	0.3	LOS A	0.2	1.7	0.18	0.10	0.18	39.0
Approach		97	2.0	0.095	0.5	LOS A	0.2	1.7	0.18	0.10	0.18	39.1
West: Campeau												
10	L2	162	2.0	0.150	9.5	LOS A	0.6	4.1	0.10	0.61	0.10	41.1
11	T1	111	2.0	0.141	3.4	LOS A	0.5	3.8	0.10	0.35	0.10	58.4
12	R2	41	2.0	0.141	4.3	LOS A	0.5	3.8	0.10	0.35	0.10	38.8
Approach		314	2.0	0.150	6.6	LOS A	0.6	4.1	0.10	0.49	0.10	45.4
All Vehicles		563	2.0	0.150	4.8	LOS A	0.6	4.1	0.15	0.40	0.15	44.5

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau PM FB2025]

Arcadia Stage 5
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
East: Campeau												
5	T1	92	2.0	0.043	3.3	LOS A	0.1	0.8	0.08	0.32	0.08	58.7
6	R2	32	2.0	0.030	4.2	LOS A	0.1	0.5	0.08	0.44	0.08	38.4
Approach		124	2.0	0.043	3.6	LOS A	0.1	0.8	0.08	0.35	0.08	51.8
North: Winterset												
7	L2	18	2.0	0.017	1.7	LOS A	0.0	0.3	0.14	0.25	0.14	39.3
9	R2	18	2.0	0.009	0.2	LOS A	0.0	0.2	0.15	0.05	0.15	39.3
Approach		36	2.0	0.017	1.0	LOS A	0.0	0.3	0.14	0.15	0.14	39.3
West: Campeau												
10	L2	33	2.0	0.049	9.4	LOS A	0.1	0.9	0.06	0.54	0.06	42.1
11	T1	88	2.0	0.049	3.3	LOS A	0.1	0.9	0.07	0.37	0.07	58.0
Approach		121	2.0	0.049	5.0	LOS A	0.1	0.9	0.07	0.42	0.07	52.6
All Vehicles		281	2.0	0.049	3.8	LOS A	0.1	0.9	0.08	0.35	0.08	50.1

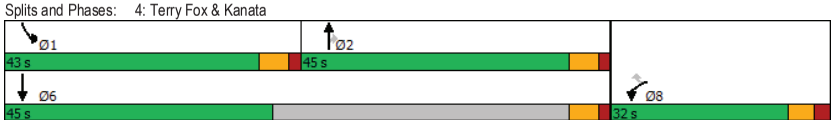
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result 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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	146	763	340	265	813
Future Volume (vph)	250	146	763	340	265	813
Satd. Flow (prot)	3216	1469	3316	1483	1658	3316
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3216	1469	3316	1452	1652	3316
Satd. Flow (RTOR)		146		340		
Lane Group Flow (vph)	250	146	763	340	265	813
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	12.4	12.4	39.3	39.3	19.5	64.9
Actuated g/C Ratio	0.14	0.14	0.44	0.44	0.22	0.72
v/c Ratio	0.56	0.44	0.52	0.41	0.73	0.34
Control Delay	42.0	11.1	21.4	4.0	45.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	11.1	21.4	4.0	45.5	5.1
LOS	D	B	C	A	D	A
Approach Delay	30.6		16.0			15.0
Approach LOS	C		B			B
Queue Length 50th (m)	20.8	0.0	48.3	0.0	42.3	22.1
Queue Length 95th (m)	35.5	16.5	82.5	17.0	71.3	35.8
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	933	530	1455	828	690	3029
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.28	0.52	0.41	0.38	0.27

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 89.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 60.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata

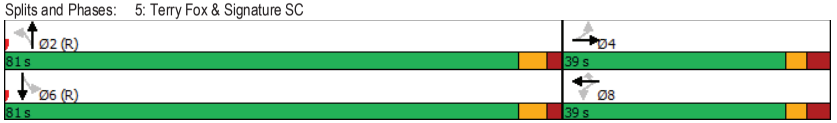


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	0	113	18	1019	68	82	996	0
Future Volume (vph)	0	0	0	54	0	113	18	1019	68	82	996	0
Satd. Flow (prot)	0	1745	0	0	1658	1483	1658	3286	0	1658	3316	0
Flt Permitted					0.757		0.240			0.211		
Satd. Flow (perm)	0	1745	0	0	1321	1483	419	3286	0	368	3316	0
Satd. Flow (RTOR)						113		11				
Lane Group Flow (vph)	0	0	0	0	54	113	18	1087	0	82	996	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	81.0	81.0		81.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%	32.5%	67.5%	67.5%		67.5%	67.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					32.4	32.4	74.6	74.6		74.6	74.6	
Actuated g/C Ratio					0.27	0.27	0.62	0.62		0.62	0.62	
v/c Ratio					0.15	0.23	0.07	0.53		0.36	0.48	
Control Delay					34.9	7.4	5.1	15.8		16.6	13.3	
Queue Delay					0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay					34.9	7.4	5.1	15.8		16.6	13.3	
LOS					C	A	A	B		B	B	
Approach Delay					16.3			15.6			13.5	
Approach LOS					B			B			B	
Queue Length 50th (m)					9.7	0.0	2.4	109.2		8.8	62.3	
Queue Length 95th (m)					20.3	13.6	m0.6	130.7		20.6	77.3	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)							51.0			61.0		
Base Capacity (vph)					356	482	260	2046		228	2061	
Starvation Cap Reductn					0	0	0	0		0	0	
Spillback Cap Reductn					0	0	0	0		0	0	
Storage Cap Reductn					0	0	0	0		0	0	
Reduced v/c Ratio					0.15	0.23	0.07	0.53		0.36	0.48	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 65		
Control Type: Pretimed		
Maximum v/c Ratio: 0.53		
Intersection Signal Delay: 14.7	Intersection LOS: B	
Intersection Capacity Utilization 64.9%	ICU Level of Service C	
Analysis Period (min) 15		

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

Splits and Phases: 5: Terry Fox & Signature SC



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	102	133	248	110	111	89	844	188	164	803	85
Future Volume (vph)	99	102	133	248	110	111	89	844	188	164	803	85
Satd. Flow (prot)	1658	1745	1483	1658	1712	1483	1658	3316	1483	1658	3316	1483
Flt Permitted	0.686			0.691			0.297			0.251		
Satd. Flow (perm)	1196	1745	1464	1205	1712	1464	518	3316	1449	438	3316	1463
Satd. Flow (RTOR)			133			111			184			89
Lane Group Flow (vph)	99	102	133	248	110	111	89	844	188	164	803	85
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	30.2	30.2	30.2	30.2	30.2	30.2	68.1	60.0	60.0	73.0	62.4	62.4
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.57	0.50	0.50	0.61	0.52	0.52
v/c Ratio	0.33	0.23	0.28	0.82	0.26	0.25	0.24	0.51	0.23	0.44	0.47	0.11
Control Delay	37.4	34.6	6.4	62.3	35.2	6.6	12.1	23.7	4.3	27.1	38.5	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	34.6	6.4	62.3	35.2	6.6	12.1	23.7	4.3	27.1	38.5	17.7
LOS	D	C	A	E	D	A	B	C	A	C	D	B
Approach Delay		24.2			42.8			19.5			35.0	
Approach LOS		C			D			B			D	
Queue Length 50th (m)	19.1	19.1	0.0	55.2	20.8	0.0	7.4	67.7	0.5	26.7	87.7	3.7
Queue Length 95th (m)	30.5	29.7	13.0	76.3	31.8	12.0	17.6	109.8	15.3	52.3	112.8	19.1
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	414	604	594	417	593	580	472	1656	816	438	1724	803
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.17	0.22	0.59	0.19	0.19	0.19	0.51	0.23	0.37	0.47	0.11

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 29.2	Intersection LOS: C
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau

Appendix F

Synchro and Sidra Intersection Worksheets – 2030 Future Background Conditions

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau AM FB2030]

Arcadia Stage 6
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: Huntmar												
1	L2	35	2.0	0.035	7.9	LOS A	0.1	0.6	0.20	0.58	0.20	50.4
2	T1	446	2.0	0.447	2.3	LOS A	1.7	12.3	0.29	0.27	0.29	49.9
3	R2	53	2.0	0.053	2.9	LOS A	0.1	1.0	0.20	0.38	0.20	51.7
Approach		534	2.0	0.447	2.7	LOS A	1.7	12.3	0.28	0.30	0.28	50.1
East: Campeau												
4	L2	132	2.0	0.175	11.1	LOS B	0.5	3.4	0.41	0.77	0.41	50.3
5	T1	87	2.0	0.119	5.1	LOS A	0.3	2.3	0.42	0.51	0.42	56.7
6	R2	28	2.0	0.038	5.4	LOS A	0.1	0.7	0.39	0.60	0.39	51.0
Approach		247	2.0	0.175	8.4	LOS A	0.5	3.4	0.41	0.66	0.41	52.4
North: Huntmar												
7	L2	7	2.0	0.217	8.4	LOS A	0.7	4.7	0.31	0.32	0.31	53.6
8	T1	392	2.0	0.217	2.5	LOS A	0.7	4.7	0.30	0.30	0.30	49.8
9	R2	106	2.0	0.116	3.3	LOS A	0.3	2.3	0.28	0.45	0.28	51.4
Approach		505	2.0	0.217	2.8	LOS A	0.7	4.7	0.30	0.33	0.30	50.2
West: Campeau												
10	L2	68	2.0	0.092	11.1	LOS B	0.2	1.8	0.40	0.76	0.40	50.3
11	T1	71	2.0	0.092	4.8	LOS A	0.2	1.8	0.38	0.48	0.38	56.8
12	R2	39	2.0	0.051	4.9	LOS A	0.1	0.9	0.37	0.58	0.37	51.4
Approach		178	2.0	0.092	7.2	LOS A	0.2	1.8	0.39	0.61	0.39	53.0
All Vehicles		1464	2.0	0.447	4.2	LOS A	1.7	12.3	0.32	0.41	0.32	50.9

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau AM FB2030]

Arcadia Stage 5
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: Country Glen												
1	L2	44	2.0	0.024	1.8	LOS A	0.1	0.4	0.17	0.25	0.17	39.4
2	T1	1	2.0	0.024	0.3	LOS A	0.1	0.4	0.16	0.23	0.16	29.5
3	R2	4	2.0	0.024	0.3	LOS A	0.1	0.4	0.16	0.23	0.16	38.2
Approach		49	2.0	0.024	1.7	LOS A	0.1	0.4	0.17	0.25	0.17	39.0
East: Campeau												
4	L2	7	2.0	0.033	9.6	LOS A	0.1	0.6	0.15	0.42	0.15	42.9
5	T1	57	2.0	0.033	3.5	LOS A	0.1	0.6	0.15	0.39	0.15	57.8
6	R2	5	2.0	0.033	4.4	LOS A	0.1	0.6	0.14	0.36	0.14	38.8
Approach		69	2.0	0.033	4.2	LOS A	0.1	0.6	0.15	0.39	0.15	54.0
North: Country Glen												
7	L2	19	2.0	0.153	1.8	LOS A	0.4	3.0	0.17	0.09	0.17	40.5
8	T1	1	2.0	0.153	0.3	LOS A	0.4	3.0	0.17	0.09	0.17	29.8
9	R2	138	2.0	0.153	0.3	LOS A	0.4	3.0	0.17	0.09	0.17	39.0
Approach		158	2.0	0.153	0.5	LOS A	0.4	3.0	0.17	0.09	0.17	39.1
West: Campeau												
10	L2	50	2.0	0.058	9.5	LOS A	0.2	1.4	0.10	0.58	0.10	41.6
11	T1	53	2.0	0.058	3.4	LOS A	0.2	1.4	0.10	0.41	0.10	57.5
12	R2	21	2.0	0.058	4.3	LOS A	0.2	1.4	0.10	0.36	0.10	38.8
Approach		124	2.0	0.058	6.0	LOS A	0.2	1.4	0.10	0.47	0.10	46.5
All Vehicles		400	2.0	0.153	3.0	LOS A	0.4	3.0	0.15	0.28	0.15	43.3

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau AM FB2030]

Arcadia Stage 5
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
East: Campeau												
5	T1	38	2.0	0.017	3.3	LOS A	0.0	0.3	0.03	0.32	0.03	59.0
6	R2	9	2.0	0.008	4.2	LOS A	0.0	0.1	0.03	0.45	0.03	38.5
Approach		47	2.0	0.017	3.4	LOS A	0.0	0.3	0.03	0.34	0.03	53.6
North: Winterset												
7	L2	31	2.0	0.029	1.6	LOS A	0.1	0.5	0.08	0.23	0.08	39.4
9	R2	31	2.0	0.014	0.1	LOS A	0.0	0.3	0.09	0.02	0.09	39.4
Approach		62	2.0	0.029	0.8	LOS A	0.1	0.5	0.09	0.13	0.09	39.4
West: Campeau												
10	L2	8	2.0	0.041	9.4	LOS A	0.1	0.8	0.08	0.40	0.08	43.1
11	T1	92	2.0	0.041	3.3	LOS A	0.1	0.8	0.09	0.35	0.09	58.3
Approach		100	2.0	0.041	3.8	LOS A	0.1	0.8	0.09	0.35	0.09	56.7
All Vehicles		209	2.0	0.041	2.9	LOS A	0.1	0.8	0.07	0.28	0.07	49.6

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:29 AM
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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	317	337	758	172	253	581
Future Volume (vph)	317	337	758	172	253	581
Satd. Flow (prot)	3185	1414	3283	1441	1595	3283
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3185	1414	3283	1441	1595	3283
Satd. Flow (RTOR)		337		172		
Lane Group Flow (vph)	317	337	758	172	253	581
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	14.7	14.7	39.4	39.4	20.0	65.5
Actuated g/C Ratio	0.16	0.16	0.43	0.43	0.22	0.71
v/c Ratio	0.63	0.66	0.54	0.24	0.74	0.25
Control Delay	42.8	11.2	23.3	4.4	47.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	11.2	23.3	4.4	47.4	5.4
LOS	D	B	C	A	D	A
Approach Delay	26.6		19.8			18.1
Approach LOS	C		B			B
Queue Length 50th (m)	27.1	0.0	50.7	0.0	41.6	16.1
Queue Length 95th (m)	44.6	24.8	89.1	13.5	71.9	28.3
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	898	640	1399	713	644	2924
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.54	0.24	0.39	0.20

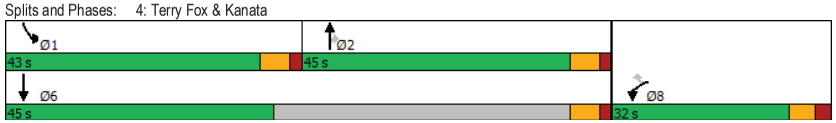
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 92.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74

Lanes, Volumes, Timings
4: Terry Fox & Kanata

11/12/2021

Intersection Signal Delay: 21.0 — Intersection LOS: C
Intersection Capacity Utilization 61.6% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata



Lanes, Volumes, Timings
5: Terry Fox & Signature SC

11/12/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	9	0	28	0	928	20	30	947	0
Future Volume (vph)	0	0	0	9	0	28	0	928	20	30	947	0
Satd. Flow (prot)	0	1745	0	0	1386	1455	1745	3233	0	1658	3283	0
Flt Permitted					0.757					0.267		
Satd. Flow (perm)	0	1745	0	0	1104	1455	1745	3233	0	466	3283	0
Satd. Flow (RTOR)						34		4				
Lane Group Flow (vph)	0	0	0	0	9	28	0	948	0	30	947	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	78.0	78.0		78.0	78.0	
Total Split (%)	29.1%	29.1%		29.1%	29.1%	29.1%	70.9%	70.9%		70.9%	70.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					25.4	25.4		71.6		71.6	71.6	
Actuated g/C Ratio					0.23	0.23		0.65		0.65	0.65	
v/c Ratio					0.04	0.08		0.45		0.10	0.44	
Control Delay					33.4	9.9		14.7		8.2	10.2	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					33.4	9.9		14.7		8.2	10.2	
LOS					C	A		B		A	B	
Approach Delay					15.6			14.7			10.2	
Approach LOS					B			B			B	
Queue Length 50th (m)					1.5	0.0		90.4		2.2	47.9	
Queue Length 95th (m)					5.6	6.1		112.8		6.0	60.6	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)										61.0		
Base Capacity (vph)					254	362		2105		303	2136	
Starvation Cap Reductn					0	0		0		0	0	
Spillback Cap Reductn					0	0		0		0	0	
Storage Cap Reductn					0	0		0		0	0	
Reduced v/c Ratio					0.04	0.08		0.45		0.10	0.44	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 46.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Terry Fox & Signature SC

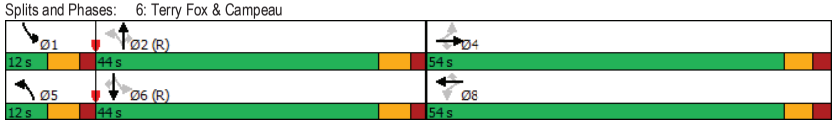
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	51	76	258	45	71	68	770	164	98	709	68
Future Volume (vph)	58	51	76	258	45	71	68	770	164	98	709	68
Satd. Flow (prot)	1642	1745	1441	1580	1712	1363	1658	3191	1441	1658	3191	1483
Flt Permitted	0.728			0.724			0.338			0.279		
Satd. Flow (perm)	1258	1745	1421	1202	1712	1363	590	3191	1410	487	3191	1463
Satd. Flow (RTOR)			97			97			164			97
Lane Group Flow (vph)	58	51	76	258	45	71	68	770	164	98	709	68
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	12.0	44.0	44.0	12.0	44.0	44.0
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	10.9%	40.0%	40.0%	10.9%	40.0%	40.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	29.7	29.7	29.7	29.7	29.7	29.7	60.2	52.7	52.7	63.2	56.0	56.0
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.55	0.48	0.48	0.57	0.51	0.51
v/c Ratio	0.17	0.11	0.17	0.80	0.10	0.16	0.17	0.50	0.22	0.27	0.44	0.09
Control Delay	28.7	27.3	3.7	54.1	27.0	3.1	12.2	23.3	4.4	26.8	42.8	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	27.3	3.7	54.1	27.0	3.1	12.2	23.3	4.4	26.8	42.8	17.6
LOS	C	C	A	D	C	A	B	C	A	C	D	B
Approach Delay		18.0			41.2			19.4			39.1	
Approach LOS		B			D			B			D	
Queue Length 50th (m)	9.5	8.2	0.0	51.4	7.2	0.0	5.5	57.7	0.0	16.2	86.4	3.1
Queue Length 95th (m)	17.3	15.1	6.2	70.9	13.7	5.2	14.3	95.3	13.8	34.3	105.4	15.4
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	544	755	669	520	740	644	395	1527	760	369	1623	791
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.07	0.11	0.50	0.06	0.11	0.17	0.50	0.22	0.27	0.44	0.09

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 29.7	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau



MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau PM FB2030]

Arcadia Stage 6
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: Huntmar												
1	L2	88	2.0	0.104	8.6	LOS A	0.3	2.0	0.34	0.67	0.34	49.9
2	T1	487	2.0	0.567	4.0	LOS A	2.7	19.3	0.52	0.50	0.59	48.9
3	R2	137	2.0	0.162	3.8	LOS A	0.5	3.3	0.36	0.51	0.36	51.1
Approach		712	2.0	0.567	4.5	LOS A	2.7	19.3	0.46	0.52	0.51	49.4
East: Campeau												
4	L2	131	2.0	0.199	11.9	LOS B	0.5	3.9	0.48	0.81	0.48	50.0
5	T1	58	2.0	0.091	5.9	LOS A	0.2	1.7	0.47	0.58	0.47	56.4
6	R2	16	2.0	0.025	6.1	LOS A	0.1	0.5	0.45	0.64	0.45	50.7
Approach		205	2.0	0.199	9.8	LOS A	0.5	3.9	0.47	0.74	0.47	51.6
North: Huntmar												
7	L2	20	2.0	0.311	8.6	LOS A	1.0	7.4	0.36	0.36	0.36	53.2
8	T1	544	2.0	0.311	2.7	LOS A	1.0	7.4	0.35	0.33	0.35	49.6
9	R2	141	2.0	0.157	3.4	LOS A	0.5	3.2	0.31	0.47	0.31	51.3
Approach		705	2.0	0.311	3.0	LOS A	1.0	7.4	0.34	0.36	0.34	50.0
West: Campeau												
10	L2	171	2.0	0.260	12.1	LOS B	0.8	5.5	0.51	0.83	0.51	49.8
11	T1	172	2.0	0.252	5.7	LOS A	0.7	5.1	0.48	0.57	0.48	56.3
12	R2	86	2.0	0.124	5.6	LOS A	0.3	2.3	0.44	0.67	0.44	51.1
Approach		429	2.0	0.260	8.2	LOS A	0.8	5.5	0.48	0.69	0.48	52.5
All Vehicles		2051	2.0	0.567	5.3	LOS A	2.7	19.3	0.43	0.52	0.44	50.5

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau PM FB2030]

Arcadia Stage 5
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: Country Glen												
1	L2	37	2.0	0.024	2.3	LOS A	0.1	0.4	0.28	0.32	0.28	39.2
2	T1	1	2.0	0.024	0.7	LOS A	0.1	0.4	0.27	0.29	0.27	29.5
3	R2	5	2.0	0.024	0.7	LOS A	0.1	0.4	0.27	0.29	0.27	38.1
Approach		43	2.0	0.024	2.1	LOS A	0.1	0.4	0.28	0.32	0.28	38.8
East: Campeau												
4	L2	12	2.0	0.057	9.9	LOS A	0.2	1.1	0.24	0.46	0.24	42.6
5	T1	78	2.0	0.057	3.8	LOS A	0.2	1.1	0.23	0.44	0.23	57.2
6	R2	20	2.0	0.057	4.7	LOS A	0.1	1.0	0.22	0.42	0.22	38.5
Approach		110	2.0	0.057	4.6	LOS A	0.2	1.1	0.23	0.44	0.23	50.8
North: Country Glen												
7	L2	19	2.0	0.155	1.9	LOS A	0.4	3.0	0.19	0.10	0.19	40.5
8	T1	1	2.0	0.155	0.4	LOS A	0.4	3.0	0.19	0.10	0.19	29.7
9	R2	138	2.0	0.155	0.4	LOS A	0.4	3.0	0.19	0.10	0.19	39.0
Approach		158	2.0	0.155	0.6	LOS A	0.4	3.0	0.19	0.10	0.19	39.1
West: Campeau												
10	L2	162	2.0	0.151	9.5	LOS A	0.6	4.1	0.12	0.61	0.12	41.1
11	T1	111	2.0	0.142	3.4	LOS A	0.5	3.8	0.12	0.35	0.12	58.3
12	R2	41	2.0	0.142	4.3	LOS A	0.5	3.8	0.12	0.35	0.12	38.8
Approach		314	2.0	0.151	6.7	LOS A	0.6	4.1	0.12	0.49	0.12	45.4
All Vehicles		625	2.0	0.155	4.4	LOS A	0.6	4.1	0.17	0.37	0.17	43.9

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau PM FB2030]

Arcadia Stage 5
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
East: Campeau												
5	T1	93	2.0	0.043	3.3	LOS A	0.1	0.8	0.08	0.32	0.08	58.7
6	R2	32	2.0	0.030	4.2	LOS A	0.1	0.5	0.08	0.44	0.08	38.4
Approach		125	2.0	0.043	3.6	LOS A	0.1	0.8	0.08	0.35	0.08	51.8
North: Winterset												
7	L2	18	2.0	0.017	1.7	LOS A	0.0	0.3	0.14	0.25	0.14	39.3
9	R2	18	2.0	0.009	0.2	LOS A	0.0	0.2	0.15	0.05	0.15	39.3
Approach		36	2.0	0.017	1.0	LOS A	0.0	0.3	0.14	0.15	0.14	39.3
West: Campeau												
10	L2	33	2.0	0.049	9.4	LOS A	0.1	0.9	0.06	0.54	0.06	42.1
11	T1	88	2.0	0.049	3.3	LOS A	0.1	0.9	0.07	0.37	0.07	58.0
Approach		121	2.0	0.049	5.0	LOS A	0.1	0.9	0.07	0.42	0.07	52.6
All Vehicles		282	2.0	0.049	3.8	LOS A	0.1	0.9	0.08	0.35	0.08	50.1

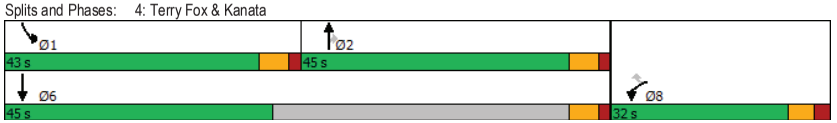
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result 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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	146	858	340	265	885
Future Volume (vph)	250	146	858	340	265	885
Satd. Flow (prot)	3216	1469	3316	1483	1658	3316
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3216	1469	3316	1452	1653	3316
Satd. Flow (RTOR)		146		340		
Lane Group Flow (vph)	250	146	858	340	265	885
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	12.4	12.4	39.3	39.3	19.5	64.9
Actuated g/C Ratio	0.14	0.14	0.44	0.44	0.22	0.72
v/c Ratio	0.56	0.44	0.59	0.41	0.73	0.37
Control Delay	42.0	11.1	22.6	4.0	45.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	11.1	22.6	4.0	45.5	5.3
LOS	D	B	C	A	D	A
Approach Delay	30.6		17.3			14.6
Approach LOS	C		B			B
Queue Length 50th (m)	20.8	0.0	56.4	0.0	42.3	24.8
Queue Length 95th (m)	35.5	16.5	95.5	17.0	71.3	39.8
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	933	530	1455	828	690	3029
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.28	0.59	0.41	0.38	0.29

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 89.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 63.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata

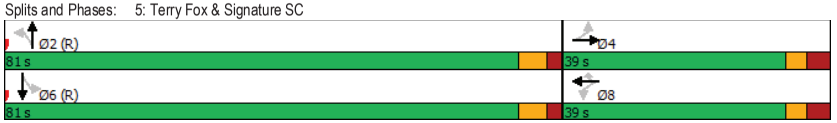


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	0	113	18	1148	68	82	1083	0
Future Volume (vph)	0	0	0	54	0	113	18	1148	68	82	1083	0
Satd. Flow (prot)	0	1745	0	0	1658	1483	1658	3289	0	1658	3316	0
Flt Permitted					0.757		0.212			0.173		
Satd. Flow (perm)	0	1745	0	0	1321	1483	370	3289	0	302	3316	0
Satd. Flow (RTOR)						94		9				
Lane Group Flow (vph)	0	0	0	0	54	113	18	1216	0	82	1083	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	81.0	81.0		81.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%	32.5%	67.5%	67.5%		67.5%	67.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					32.4	32.4	74.6	74.6		74.6	74.6	
Actuated g/C Ratio					0.27	0.27	0.62	0.62		0.62	0.62	
v/c Ratio					0.15	0.24	0.08	0.59		0.44	0.53	
Control Delay					34.9	10.9	4.7	16.8		20.9	13.9	
Queue Delay					0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay					34.9	10.9	4.7	16.8		20.9	13.9	
LOS					C	B	A	B		C	B	
Approach Delay					18.7			16.7			14.4	
Approach LOS					B			B			B	
Queue Length 50th (m)					9.7	3.3	2.1	131.3		9.4	70.4	
Queue Length 95th (m)					20.3	17.3	m0.4	155.8		24.2	86.8	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)							51.0			61.0		
Base Capacity (vph)					356	469	230	2048		187	2061	
Starvation Cap Reductn					0	0	0	0		0	0	
Spillback Cap Reductn					0	0	0	0		0	0	
Storage Cap Reductn					0	0	0	0		0	0	
Reduced v/c Ratio					0.15	0.24	0.08	0.59		0.44	0.53	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 75		
Control Type: Pretimed		
Maximum v/c Ratio: 0.59		
Intersection Signal Delay: 15.8	Intersection LOS: B	
Intersection Capacity Utilization 68.6%	ICU Level of Service C	
Analysis Period (min) 15		

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

Splits and Phases: 5: Terry Fox & Signature SC



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	108	130	248	116	111	89	955	188	164	875	85
Future Volume (vph)	97	108	130	248	116	111	89	955	188	164	875	85
Satd. Flow (prot)	1658	1745	1483	1658	1712	1483	1658	3316	1483	1658	3316	1483
Flt Permitted	0.682			0.687			0.267			0.203		
Satd. Flow (perm)	1189	1745	1464	1198	1712	1464	466	3316	1449	354	3316	1463
Satd. Flow (RTOR)			130			111			162			89
Lane Group Flow (vph)	97	108	130	248	116	111	89	955	188	164	875	85
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	30.4	30.4	30.4	30.4	30.4	30.4	67.5	59.3	59.3	73.4	62.3	62.3
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.56	0.49	0.49	0.61	0.52	0.52
v/c Ratio	0.32	0.24	0.28	0.82	0.27	0.25	0.26	0.58	0.24	0.49	0.51	0.11
Control Delay	37.1	34.8	6.4	62.4	35.3	6.6	12.5	25.7	6.0	28.9	40.3	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	34.8	6.4	62.4	35.3	6.6	12.5	25.7	6.0	28.9	40.3	18.0
LOS	D	C	A	E	D	A	B	C	A	C	D	B
Approach Delay		24.5			42.7			21.8			36.9	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	18.6	20.3	0.0	55.2	22.0	0.0	7.4	81.1	3.1	27.9	100.4	4.2
Queue Length 95th (m)	29.8	31.2	13.0	76.2	33.2	12.0	17.6	130.5	19.4	53.8	123.1	19.6
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	412	604	592	415	593	580	443	1639	798	395	1720	801
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.18	0.22	0.60	0.20	0.19	0.20	0.58	0.24	0.42	0.51	0.11

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 30.6	Intersection LOS: C
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau

Appendix G

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Intersections Form

Consultant	**CGH Transportation Inc.**	**Project**	**570 Winterset Road**
Scenario	**Existing/Future**	**Date**	**10/8/2021**
Comments			

Unlocked Rows for Replicating

	INTERSECTIONS	Kanata Avenue at Terry Fox Drive				Terry Fox Drive at Signature C				Campeau Drive at Terry Fox Drive			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	7		5		7	7	7	7	7	8	7	7
	Median	No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Protected		Protected		Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive
	Conflicting Right Turns	Permissive or yield control		Permissive or yield control		Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR allowed		RTOR allowed		RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No		No		No	No	No	No	No	No	No	No
	Right Turn Channel	Conv'tl without Receiving Lane		No Channel		No Channel	No Channel	No Channel	No Channel	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	No Channel	Conv'tl without Receiving Lane
	Corner Radius	>25m		>25m		10-15m	10-15m	10-15m	10-15m	15-25m	15-25m	15-25m	15-25m
	Crosswalk Type	Std transverse markings		Std transverse markings		Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**13**		**42**		**4**	**4**	**4**	**4**	**6**	**-10**	**2**	**6**
	Ped. Exposure to Traffic LoS	**F**	**-**	**E**	**-**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
	Cycle Length												
	Effective Walk Time												
	Average Pedestrian Delay												
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-	-	-	-	-
	Level of Service	**F**	**-**	**E**	**-**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**
		F				**F**				**F**			
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Pocket Bike Lane	Pocket Bike Lane		Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Pocket Bike Lane	Pocket Bike Lane	Mixed Traffic
	Right Turn Lane Configuration		Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn				≤ 50 m		Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	Bike lane shifts to the left of right turn	> 50 m
	Right Turning Speed		>25 to 30 km/h	>25 to 30 km/h				≤ 25 km/h		>25 to 30 km/h	>25 to 30 km/h	>25 to 30 km/h	>25 km/h
	Cyclist relative to RT motorists	**#N/A**	**F**	**F**	**-**	**#N/A**	**#N/A**	**D**	**#N/A**	**F**	**F**	**F**	**F**
	Separated or Mixed Traffic	**Separated**	**Separated**	**Separated**	**-**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	**Separated**	**Mixed Traffic**
	Left Turn Approach	≥ 2 lanes crossed		No lane crossed		≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	1 lane crossed	≥ 2 lanes crossed
	Operating Speed	≥ 60 km/h		≥ 60 km/h		≥ 60 km/h	≥ 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	**F**	**-**	**C**	**-**	**F**	**F**	**D**	**B**	**F**	**F**	**E**	**F**
	Level of Service	**#N/A**	**-**	**F**	**-**	**#N/A**	**#N/A**	**D**	**#N/A**	**F**	**F**	**F**	**F**
		#N/A				**#N/A**				**F**			
Transit	Average Signal Delay												
	Level of Service	-	-	-	-	-	-	-	-	-	-	-	-
		-				-				-			
Truck	Effective Corner Radius												
	Number of Receiving Lanes on Departure from Intersection												
	Level of Service	-	-	-	-	-	-	-	-	-	-	-	-
		-				-				-			
Auto	Volume to Capacity Ratio	0.61 - 0.70				0.0 - 0.60				0.61 - 0.70			
	Level of Service	**B**				**A**				**B**			

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc.**	**Project**	**570 Winterset Road**
Scenario	**Existing/Future**	**Date**	**10/8/2021**
Comments			

SEGMENTS			Campeau	Winterset	Section	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width		≥ 2 m 0.5 - 2 m	1.8 m > 2 m							
	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000							
	Operating Speed On-Street Parking		> 60 km/h no	> 50 to 60 km/h no							
	Exposure to Traffic PLoS	**-**	**B**	**A**	-	-	-	-	-	-	-
	Effective Sidewalk Width										
	Pedestrian Volume										
	Crowding PLoS		-	-	-	-	-	-	-	-	-
	Level of Service		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility		Physically Separated	Mixed Traffic							
	Number of Travel Lanes			≤ 2 (no centreline)							
	Operating Speed			≥ 50 to 60 km/h							
	# of Lanes & Operating Speed LoS		-	**D**	-	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width										
	Bike Lane Width LoS	**D**	-	-	-	-	-	-	-	-	-
	Bike Lane Blockages										
	Blockage LoS		-	-	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)			< 1.8 m refuge							
	No. of Lanes at Unsignalized Crossing			≤ 3 lanes							
	Sidestreet Operating Speed			≤ 40 km/h							
	Unsignalized Crossing - Lowest LoS		**A**	**A**	-	-	-	-	-	-	-
	Level of Service		**A**	**D**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Transit	Facility Type										
	Friction or Ratio Transit:Posted Speed	**-**									
	Level of Service		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Truck	Truck Lane Width										
	Travel Lanes per Direction	**-**									
	Level of Service		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Appendix H

Synchro and Sidra Intersection Worksheets – 2025 Future Total Conditions

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau AM FT2025]

Arcadia Stage 6
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: Huntmar												
1	L2	33	2.0	0.033	7.9	LOS A	0.1	0.6	0.19	0.58	0.19	50.4
2	T1	403	2.0	0.403	2.3	LOS A	1.5	10.4	0.28	0.26	0.28	50.0
3	R2	58	2.0	0.058	2.9	LOS A	0.2	1.1	0.20	0.38	0.20	51.7
Approach		494	2.0	0.403	2.7	LOS A	1.5	10.4	0.26	0.30	0.26	50.2
East: Campeau												
4	L2	144	2.0	0.185	11.0	LOS B	0.5	3.6	0.40	0.76	0.40	50.3
5	T1	86	2.0	0.113	4.9	LOS A	0.3	2.2	0.40	0.49	0.40	56.8
6	R2	34	2.0	0.045	5.3	LOS A	0.1	0.8	0.38	0.59	0.38	51.1
Approach		264	2.0	0.185	8.3	LOS A	0.5	3.6	0.40	0.65	0.40	52.3
North: Huntmar												
7	L2	10	2.0	0.201	8.4	LOS A	0.6	4.3	0.31	0.33	0.31	53.5
8	T1	357	2.0	0.201	2.5	LOS A	0.6	4.3	0.30	0.31	0.30	49.8
9	R2	106	2.0	0.117	3.3	LOS A	0.3	2.3	0.29	0.45	0.29	51.4
Approach		473	2.0	0.201	2.8	LOS A	0.6	4.3	0.30	0.34	0.30	50.2
West: Campeau												
10	L2	68	2.0	0.090	11.0	LOS B	0.2	1.7	0.40	0.75	0.40	50.3
11	T1	68	2.0	0.088	4.7	LOS A	0.2	1.6	0.37	0.47	0.37	56.9
12	R2	39	2.0	0.050	4.8	LOS A	0.1	0.9	0.36	0.57	0.36	51.4
Approach		175	2.0	0.090	7.2	LOS A	0.2	1.7	0.38	0.60	0.38	52.9
All Vehicles		1406	2.0	0.403	4.4	LOS A	1.5	10.4	0.31	0.42	0.31	50.9

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau AM FT2025]

Arcadia Stage 5
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: Country Glen												
1	L2	44	2.0	0.024	1.8	LOS A	0.1	0.4	0.16	0.25	0.16	39.4
2	T1	1	2.0	0.024	0.3	LOS A	0.1	0.4	0.16	0.23	0.16	29.5
3	R2	4	2.0	0.024	0.3	LOS A	0.1	0.4	0.16	0.23	0.16	38.2
Approach		49	2.0	0.024	1.6	LOS A	0.1	0.4	0.16	0.25	0.16	39.0
East: Campeau												
4	L2	7	2.0	0.044	9.6	LOS A	0.1	0.8	0.15	0.40	0.15	43.0
5	T1	78	2.0	0.044	3.5	LOS A	0.1	0.8	0.15	0.38	0.15	57.9
6	R2	5	2.0	0.044	4.4	LOS A	0.1	0.8	0.14	0.35	0.14	38.8
Approach		90	2.0	0.044	4.0	LOS A	0.1	0.8	0.15	0.38	0.15	54.9
North: Country Glen												
7	L2	19	2.0	0.155	1.9	LOS A	0.4	3.0	0.19	0.11	0.19	40.5
8	T1	1	2.0	0.155	0.4	LOS A	0.4	3.0	0.19	0.11	0.19	29.7
9	R2	138	2.0	0.155	0.4	LOS A	0.4	3.0	0.19	0.11	0.19	39.0
Approach		158	2.0	0.155	0.6	LOS A	0.4	3.0	0.19	0.11	0.19	39.1
West: Campeau												
10	L2	50	2.0	0.054	9.4	LOS A	0.2	1.3	0.10	0.59	0.10	41.5
11	T1	46	2.0	0.054	3.4	LOS A	0.2	1.3	0.10	0.40	0.10	57.6
12	R2	21	2.0	0.054	4.3	LOS A	0.2	1.3	0.10	0.36	0.10	38.8
Approach		117	2.0	0.054	6.1	LOS A	0.2	1.3	0.10	0.47	0.10	45.9
All Vehicles		414	2.0	0.155	3.0	LOS A	0.4	3.0	0.15	0.29	0.15	43.7

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau AM FT2025]

Arcadia Stage 5
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
East: Campeau												
5	T1	38	2.0	0.017	3.3	LOS A	0.0	0.3	0.05	0.31	0.05	58.9
6	R2	26	2.0	0.024	4.2	LOS A	0.1	0.4	0.05	0.44	0.05	38.4
Approach		64	2.0	0.024	3.7	LOS A	0.1	0.4	0.05	0.37	0.05	48.6
North: Winterset												
7	L2	70	2.0	0.065	1.6	LOS A	0.2	1.1	0.09	0.23	0.09	39.4
9	R2	52	2.0	0.024	0.1	LOS A	0.1	0.4	0.09	0.02	0.09	39.4
Approach		122	2.0	0.065	1.0	LOS A	0.2	1.1	0.09	0.14	0.09	39.4
West: Campeau												
10	L2	17	2.0	0.046	9.5	LOS A	0.1	0.8	0.13	0.47	0.13	42.6
11	T1	91	2.0	0.046	3.4	LOS A	0.1	0.8	0.13	0.38	0.13	57.8
Approach		108	2.0	0.046	4.4	LOS A	0.1	0.8	0.13	0.39	0.13	54.7
All Vehicles		294	2.0	0.065	2.8	LOS A	0.2	1.1	0.10	0.28	0.10	46.0

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:30 AM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2021-098 Minto Arcadia Stage 5\DATA\Sidra \2021-048 Sidra 2021-09-24.sip8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	317	337	702	172	253	516
Future Volume (vph)	317	337	702	172	253	516
Satd. Flow (prot)	3185	1414	3283	1441	1595	3283
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3185	1414	3283	1441	1595	3283
Satd. Flow (RTOR)		337		172		
Lane Group Flow (vph)	317	337	702	172	253	516
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	14.7	14.7	39.4	39.4	20.0	65.5
Actuated g/C Ratio	0.16	0.16	0.43	0.43	0.22	0.71
v/c Ratio	0.63	0.66	0.50	0.24	0.74	0.22
Control Delay	42.8	11.2	22.6	4.4	47.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	11.2	22.6	4.4	47.4	5.2
LOS	D	B	C	A	D	A
Approach Delay	26.6		19.0			19.1
Approach LOS	C		B			B
Queue Length 50th (m)	27.1	0.0	46.0	0.0	41.6	14.0
Queue Length 95th (m)	44.6	24.8	81.3	13.5	71.9	24.9
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	898	640	1399	713	644	2924
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.50	0.24	0.39	0.18

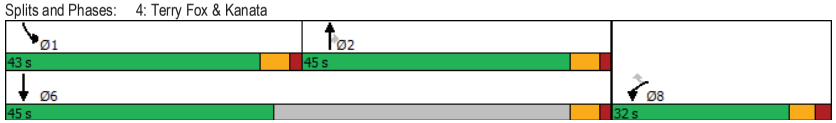
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 92.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74

Lanes, Volumes, Timings
4: Terry Fox & Kanata

11/12/2021

Intersection Signal Delay: 21.2 — Intersection LOS: C
Intersection Capacity Utilization 60.0% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata



Lanes, Volumes, Timings
5: Terry Fox & Signature SC

11/12/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	9	0	28	0	859	20	30	840	0
Future Volume (vph)	0	0	0	9	0	28	0	859	20	30	840	0
Satd. Flow (prot)	0	1745	0	0	1386	1455	1745	3233	0	1658	3283	0
Flt Permitted					0.757					0.292		
Satd. Flow (perm)	0	1745	0	0	1104	1455	1745	3233	0	509	3283	0
Satd. Flow (RTOR)						34		4				
Lane Group Flow (vph)	0	0	0	0	9	28	0	879	0	30	840	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	78.0	78.0		78.0	78.0	
Total Split (%)	29.1%	29.1%		29.1%	29.1%	29.1%	70.9%	70.9%		70.9%	70.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					25.4	25.4		71.6		71.6	71.6	
Actuated g/C Ratio					0.23	0.23		0.65		0.65	0.65	
v/c Ratio					0.04	0.08		0.42		0.09	0.39	
Control Delay					33.4	9.9		14.0		8.0	9.7	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					33.4	9.9		14.0		8.0	9.7	
LOS					C	A		B		A	A	
Approach Delay					15.6			14.0			9.6	
Approach LOS					B			B			A	
Queue Length 50th (m)					1.5	0.0		80.4		2.2	40.7	
Queue Length 95th (m)					5.6	6.1		100.8		5.9	51.9	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)										61.0		
Base Capacity (vph)					254	362		2105		331	2136	
Starvation Cap Reductn					0	0		0		0	0	
Spillback Cap Reductn					0	0		0		0	0	
Storage Cap Reductn					0	0		0		0	0	
Reduced v/c Ratio					0.04	0.08		0.42		0.09	0.39	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 45.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Terry Fox & Signature SC

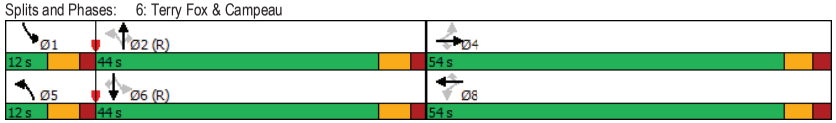
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	49	114	258	42	71	84	706	164	98	627	69
Future Volume (vph)	63	49	114	258	42	71	84	706	164	98	627	69
Satd. Flow (prot)	1642	1745	1441	1580	1712	1363	1658	3191	1441	1658	3191	1483
Flt Permitted	0.730			0.725			0.379			0.312		
Satd. Flow (perm)	1262	1745	1421	1204	1712	1363	661	3191	1410	544	3191	1463
Satd. Flow (RTOR)			114			97			164			97
Lane Group Flow (vph)	63	49	114	258	42	71	84	706	164	98	627	69
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	12.0	44.0	44.0	12.0	44.0	44.0
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	10.9%	40.0%	40.0%	10.9%	40.0%	40.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	29.7	29.7	29.7	29.7	29.7	29.7	60.7	52.7	52.7	62.8	55.5	55.5
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.55	0.48	0.48	0.57	0.50	0.50
v/c Ratio	0.19	0.10	0.24	0.79	0.09	0.16	0.19	0.46	0.22	0.25	0.39	0.09
Control Delay	29.1	27.2	5.9	54.0	26.9	3.1	12.1	22.5	4.4	26.9	42.2	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	27.2	5.9	54.0	26.9	3.1	12.1	22.5	4.4	26.9	42.2	18.4
LOS	C	C	A	D	C	A	B	C	A	C	D	B
Approach Delay		17.0			41.2			18.5			38.2	
Approach LOS		B			D			B			D	
Queue Length 50th (m)	10.4	7.9	0.0	51.5	6.8	0.0	6.8	51.4	0.0	16.1	75.4	3.0
Queue Length 95th (m)	18.4	14.8	11.2	70.9	13.1	5.2	16.9	85.6	13.8	33.9	94.8	15.5
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	546	755	679	521	740	644	437	1528	760	395	1611	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.06	0.17	0.50	0.06	0.11	0.19	0.46	0.22	0.25	0.39	0.09

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau



Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	0	30	13	0	92
Future Vol, veh/h	30	0	30	13	0	92
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	30	0	30	13	0	92

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	129	37	0	0	43	0
Stage 1	37	-	-	-	-	-
Stage 2	92	-	-	-	-	-
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	865	1035	-	-	1566	-
Stage 1	985	-	-	-	-	-
Stage 2	932	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	865	1035	-	-	1566	-
Mov Cap-2 Maneuver	865	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	932	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	865	1566	-
HCM Lane V/C Ratio	-	-	0.035	-	-
HCM Control Delay (s)	-	-	9.3	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

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	0	0	10	30	0	0	5	12	13	0	52	0
Future Vol, veh/h	0	0	10	30	0	0	5	12	13	0	52	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	10	30	0	0	5	12	13	0	52	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	81	87	52	86	81	19	52	0	0	25	0	0
Stage 1	52	52	-	29	29	-	-	-	-	-	-	-
Stage 2	29	35	-	57	52	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	907	803	1016	900	809	1059	1554	-	-	1589	-	-
Stage 1	961	852	-	988	871	-	-	-	-	-	-	-
Stage 2	988	866	-	955	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	905	801	1016	889	807	1059	1554	-	-	1589	-	-
Mov Cap-2 Maneuver	905	801	-	889	807	-	-	-	-	-	-	-
Stage 1	958	852	-	985	868	-	-	-	-	-	-	-
Stage 2	985	863	-	946	852	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.2	1.2	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1554	-	-	1016	889	1589	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.034	-	-	-
HCM Control Delay (s)	7.3	0	-	8.6	9.2	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau PM FT2025]

Arcadia Stage 6
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: Huntmar												
1	L2	87	2.0	0.103	8.6	LOS A	0.3	2.0	0.34	0.67	0.34	49.9
2	T1	445	2.0	0.518	3.7	LOS A	2.2	16.0	0.49	0.46	0.54	49.1
3	R2	149	2.0	0.177	3.8	LOS A	0.5	3.7	0.36	0.51	0.36	51.1
Approach		681	2.0	0.518	4.3	LOS A	2.2	16.0	0.44	0.50	0.47	49.6
East: Campeau												
4	L2	140	2.0	0.206	11.8	LOS B	0.6	4.0	0.47	0.81	0.47	50.1
5	T1	56	2.0	0.086	5.7	LOS A	0.2	1.6	0.46	0.56	0.46	56.5
6	R2	20	2.0	0.031	6.0	LOS A	0.1	0.6	0.44	0.64	0.44	50.8
Approach		216	2.0	0.206	9.6	LOS A	0.6	4.0	0.46	0.73	0.46	51.6
North: Huntmar												
7	L2	26	2.0	0.290	8.6	LOS A	0.9	6.7	0.36	0.37	0.36	53.1
8	T1	497	2.0	0.290	2.7	LOS A	0.9	6.7	0.34	0.34	0.34	49.5
9	R2	141	2.0	0.158	3.5	LOS A	0.5	3.2	0.31	0.47	0.31	51.3
Approach		664	2.0	0.290	3.1	LOS A	0.9	6.7	0.34	0.37	0.34	50.0
West: Campeau												
10	L2	171	2.0	0.246	11.7	LOS B	0.7	5.0	0.47	0.81	0.47	50.1
11	T1	166	2.0	0.246	5.8	LOS A	0.7	5.2	0.49	0.58	0.49	56.2
12	R2	85	2.0	0.120	5.4	LOS A	0.3	2.2	0.42	0.66	0.42	51.2
Approach		422	2.0	0.246	8.1	LOS A	0.7	5.2	0.47	0.69	0.47	52.6
All Vehicles		1983	2.0	0.518	5.3	LOS A	2.2	16.0	0.41	0.52	0.43	50.6

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:17 AM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2021-098 Minto Arcadia Stage 5\DATA\Sidra\2021-048 Sidra 2021-09-24.sip8

MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau PM FT2025]

Arcadia Stage 5
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: Country Glen												
1	L2	37	2.0	0.024	2.2	LOS A	0.1	0.4	0.26	0.31	0.26	39.2
2	T1	1	2.0	0.024	0.7	LOS A	0.1	0.4	0.26	0.28	0.26	29.5
3	R2	5	2.0	0.024	0.7	LOS A	0.1	0.4	0.26	0.28	0.26	38.1
Approach		43	2.0	0.024	2.0	LOS A	0.1	0.4	0.26	0.31	0.26	38.8
East: Campeau												
4	L2	12	2.0	0.065	9.9	LOS A	0.2	1.2	0.24	0.45	0.24	42.6
5	T1	92	2.0	0.065	3.8	LOS A	0.2	1.2	0.23	0.43	0.23	57.2
6	R2	20	2.0	0.065	4.7	LOS A	0.2	1.1	0.22	0.41	0.22	38.5
Approach		124	2.0	0.065	4.5	LOS A	0.2	1.2	0.23	0.43	0.23	51.5
North: Country Glen												
7	L2	11	2.0	0.096	1.9	LOS A	0.2	1.8	0.19	0.11	0.19	40.5
8	T1	1	2.0	0.096	0.4	LOS A	0.2	1.8	0.19	0.11	0.19	29.7
9	R2	85	2.0	0.096	0.4	LOS A	0.2	1.8	0.19	0.11	0.19	39.0
Approach		97	2.0	0.096	0.6	LOS A	0.2	1.8	0.19	0.11	0.19	39.0
West: Campeau												
10	L2	162	2.0	0.150	9.5	LOS A	0.6	4.1	0.10	0.61	0.10	41.1
11	T1	97	2.0	0.128	3.4	LOS A	0.5	3.4	0.10	0.35	0.10	58.4
12	R2	41	2.0	0.128	4.3	LOS A	0.5	3.4	0.10	0.35	0.10	38.8
Approach		300	2.0	0.150	6.8	LOS A	0.6	4.1	0.10	0.49	0.10	45.0
All Vehicles		564	2.0	0.150	4.8	LOS A	0.6	4.1	0.16	0.40	0.16	44.5

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau PM FT2025]

Arcadia Stage 5
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
East: Campeau												
5	T1	92	2.0	0.043	3.4	LOS A	0.1	0.8	0.11	0.33	0.11	58.5
6	R2	71	2.0	0.067	4.3	LOS A	0.2	1.2	0.11	0.45	0.11	38.3
Approach		163	2.0	0.067	3.8	LOS A	0.2	1.2	0.11	0.38	0.11	47.7
North: Winterset												
7	L2	47	2.0	0.045	1.7	LOS A	0.1	0.8	0.14	0.26	0.14	39.3
9	R2	33	2.0	0.016	0.2	LOS A	0.0	0.3	0.15	0.05	0.15	39.3
Approach		80	2.0	0.045	1.1	LOS A	0.1	0.8	0.14	0.17	0.14	39.3
West: Campeau												
10	L2	54	2.0	0.059	9.5	LOS A	0.2	1.1	0.10	0.60	0.10	41.4
11	T1	88	2.0	0.059	3.4	LOS A	0.2	1.1	0.11	0.36	0.11	58.1
Approach		142	2.0	0.059	5.7	LOS A	0.2	1.1	0.11	0.45	0.11	50.3
All Vehicles		385	2.0	0.067	3.9	LOS A	0.2	1.2	0.12	0.36	0.12	46.5

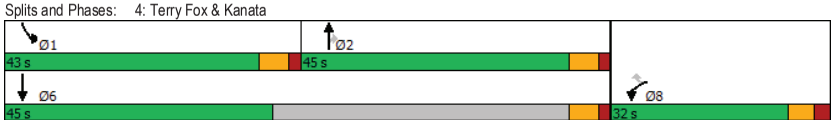
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result 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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	146	765	340	265	816
Future Volume (vph)	250	146	765	340	265	816
Satd. Flow (prot)	3216	1469	3316	1483	1658	3316
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3216	1469	3316	1452	1652	3316
Satd. Flow (RTOR)		146		340		
Lane Group Flow (vph)	250	146	765	340	265	816
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	12.4	12.4	39.3	39.3	19.5	64.9
Actuated g/C Ratio	0.14	0.14	0.44	0.44	0.22	0.72
v/c Ratio	0.56	0.44	0.53	0.41	0.73	0.34
Control Delay	42.0	11.1	21.4	4.0	45.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	11.1	21.4	4.0	45.5	5.1
LOS	D	B	C	A	D	A
Approach Delay	30.6		16.1			15.0
Approach LOS	C		B			B
Queue Length 50th (m)	20.8	0.0	48.5	0.0	42.3	22.2
Queue Length 95th (m)	35.5	16.5	82.8	17.0	71.3	35.9
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	933	530	1455	828	690	3029
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.28	0.53	0.41	0.38	0.27

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 89.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 60.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata

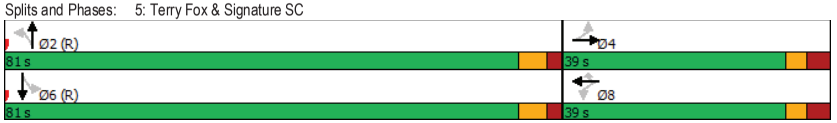


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	0	113	18	1021	68	82	999	0
Future Volume (vph)	0	0	0	54	0	113	18	1021	68	82	999	0
Satd. Flow (prot)	0	1745	0	0	1658	1483	1658	3286	0	1658	3316	0
Flt Permitted					0.757		0.239			0.210		
Satd. Flow (perm)	0	1745	0	0	1321	1483	417	3286	0	366	3316	0
Satd. Flow (RTOR)						113		11				
Lane Group Flow (vph)	0	0	0	0	54	113	18	1089	0	82	999	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	81.0	81.0		81.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%	32.5%	67.5%	67.5%		67.5%	67.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					32.4	32.4	74.6	74.6		74.6	74.6	
Actuated g/C Ratio					0.27	0.27	0.62	0.62		0.62	0.62	
v/c Ratio					0.15	0.23	0.07	0.53		0.36	0.48	
Control Delay					34.9	7.4	5.1	15.8		16.7	13.3	
Queue Delay					0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay					34.9	7.4	5.1	15.8		16.7	13.3	
LOS					C	A	A	B		B	B	
Approach Delay					16.3			15.6			13.5	
Approach LOS					B			B			B	
Queue Length 50th (m)					9.7	0.0	2.4	109.2		8.8	62.6	
Queue Length 95th (m)					20.3	13.6	m0.7	130.1		20.7	77.6	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)							51.0			61.0		
Base Capacity (vph)					356	482	259	2046		227	2061	
Starvation Cap Reductn					0	0	0	0		0	0	
Spillback Cap Reductn					0	0	0	0		0	0	
Storage Cap Reductn					0	0	0	0		0	0	
Reduced v/c Ratio					0.15	0.23	0.07	0.53		0.36	0.48	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 65		
Control Type: Pretimed		
Maximum v/c Ratio: 0.53		
Intersection Signal Delay: 14.7	Intersection LOS: B	
Intersection Capacity Utilization 64.9%	ICU Level of Service C	
Analysis Period (min) 15		

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

Splits and Phases: 5: Terry Fox & Signature SC



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	102	159	248	110	111	125	844	188	164	803	88
Future Volume (vph)	101	102	159	248	110	111	125	844	188	164	803	88
Satd. Flow (prot)	1658	1745	1483	1658	1712	1483	1658	3316	1483	1658	3316	1483
Flt Permitted	0.686			0.691			0.288			0.255		
Satd. Flow (perm)	1196	1745	1464	1205	1712	1464	502	3316	1449	445	3316	1463
Satd. Flow (RTOR)			159			111			184			89
Lane Group Flow (vph)	101	102	159	248	110	111	125	844	188	164	803	88
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	30.2	30.2	30.2	30.2	30.2	30.2	69.3	60.0	60.0	71.9	61.3	61.3
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.58	0.50	0.50	0.60	0.51	0.51
v/c Ratio	0.34	0.23	0.33	0.82	0.26	0.25	0.33	0.51	0.23	0.44	0.47	0.11
Control Delay	37.5	34.6	6.3	62.3	35.2	6.6	12.8	23.7	4.3	27.1	39.6	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	34.6	6.3	62.3	35.2	6.6	12.8	23.7	4.3	27.1	39.6	18.7
LOS	D	C	A	E	D	A	B	C	A	C	D	B
Approach Delay		23.0			42.8			19.4			35.9	
Approach LOS		C			D			B			D	
Queue Length 50th (m)	19.5	19.1	0.0	55.2	20.8	0.0	10.6	67.7	0.5	26.6	88.4	3.9
Queue Length 95th (m)	31.1	29.7	14.3	76.3	31.8	12.0	23.4	109.8	15.3	52.2	113.1	20.2
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	414	604	611	417	593	580	463	1656	816	439	1692	790
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.17	0.26	0.59	0.19	0.19	0.27	0.51	0.23	0.37	0.47	0.11

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 29.1 Intersection LOS: C
Intersection Capacity Utilization 75.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 6: Terry Fox & Campeau

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	0	95	30	0	58
Future Vol, veh/h	22	0	95	30	0	58
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	22	0	95	30	0	58

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	168	110	0	0	125	0
Stage 1	110	-	-	-	-	-
Stage 2	58	-	-	-	-	-
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	822	943	-	-	1462	-
Stage 1	915	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	822	943	-	-	1462	-
Mov Cap-2 Maneuver	822	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	965	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	822	1462	-
HCM Lane V/C Ratio	-	-	0.027	-	-
HCM Control Delay (s)	-	-	9.5	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	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	0	0	5	22	0	0	10	55	30	0	31	0
Future Vol, veh/h	0	0	5	22	0	0	10	55	30	0	31	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	22	0	0	10	55	30	0	31	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	121	136	31	124	121	70	31	0	0	85	0	0
Stage 1	31	31	-	90	90	-	-	-	-	-	-	-
Stage 2	90	105	-	34	31	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	854	755	1043	850	769	993	1582	-	-	1512	-	-
Stage 1	986	869	-	917	820	-	-	-	-	-	-	-
Stage 2	917	808	-	982	869	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	850	750	1043	842	764	993	1582	-	-	1512	-	-
Mov Cap-2 Maneuver	850	750	-	842	764	-	-	-	-	-	-	-
Stage 1	979	869	-	911	814	-	-	-	-	-	-	-
Stage 2	911	802	-	977	869	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.5	9.4	0.8	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1582	-	-	1043	842	1512	-	-
HCM Lane V/C Ratio	0.006	-	-	0.005	0.026	-	-	-
HCM Control Delay (s)	7.3	0	-	8.5	9.4	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Appendix I

Synchro and Sidra Intersection Worksheets – 2030 Future Total Conditions

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau AM FT2030]

Arcadia Stage 6
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: Huntmar												
1	L2	35	2.0	0.035	7.9	LOS A	0.1	0.7	0.20	0.58	0.20	50.4
2	T1	446	2.0	0.448	2.3	LOS A	1.7	12.3	0.30	0.27	0.30	49.9
3	R2	58	2.0	0.059	2.9	LOS A	0.2	1.1	0.20	0.39	0.20	51.7
Approach		539	2.0	0.448	2.7	LOS A	1.7	12.3	0.28	0.30	0.28	50.1
East: Campeau												
4	L2	144	2.0	0.191	11.1	LOS B	0.5	3.7	0.42	0.77	0.42	50.2
5	T1	90	2.0	0.123	5.1	LOS A	0.3	2.4	0.42	0.51	0.42	56.7
6	R2	34	2.0	0.046	5.4	LOS A	0.1	0.9	0.40	0.61	0.40	51.0
Approach		268	2.0	0.191	8.4	LOS A	0.5	3.7	0.42	0.66	0.42	52.3
North: Huntmar												
7	L2	10	2.0	0.221	8.4	LOS A	0.7	4.8	0.32	0.33	0.32	53.5
8	T1	392	2.0	0.221	2.6	LOS A	0.7	4.8	0.31	0.31	0.31	49.7
9	R2	106	2.0	0.117	3.4	LOS A	0.3	2.3	0.29	0.46	0.29	51.4
Approach		508	2.0	0.221	2.9	LOS A	0.7	4.8	0.31	0.34	0.31	50.1
West: Campeau												
10	L2	68	2.0	0.094	11.2	LOS B	0.3	1.8	0.41	0.76	0.41	50.3
11	T1	72	2.0	0.094	4.9	LOS A	0.3	1.8	0.39	0.49	0.39	56.8
12	R2	39	2.0	0.051	5.0	LOS A	0.1	0.9	0.37	0.59	0.37	51.4
Approach		179	2.0	0.094	7.3	LOS A	0.3	1.8	0.39	0.61	0.39	53.0
All Vehicles		1494	2.0	0.448	4.3	LOS A	1.7	12.3	0.33	0.42	0.33	50.8

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau AM FT2030]

Arcadia Stage 5
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: Country Glen												
1	L2	44	2.0	0.024	1.8	LOS A	0.1	0.4	0.18	0.26	0.18	39.4
2	T1	1	2.0	0.024	0.3	LOS A	0.1	0.4	0.17	0.23	0.17	29.5
3	R2	4	2.0	0.024	0.3	LOS A	0.1	0.4	0.17	0.23	0.17	38.2
Approach		49	2.0	0.024	1.7	LOS A	0.1	0.4	0.18	0.25	0.18	39.0
East: Campeau												
4	L2	7	2.0	0.044	9.6	LOS A	0.1	0.8	0.15	0.40	0.15	43.0
5	T1	78	2.0	0.044	3.5	LOS A	0.1	0.8	0.15	0.38	0.15	57.9
6	R2	5	2.0	0.044	4.4	LOS A	0.1	0.8	0.14	0.35	0.14	38.8
Approach		90	2.0	0.044	4.0	LOS A	0.1	0.8	0.15	0.38	0.15	54.9
North: Country Glen												
7	L2	19	2.0	0.155	1.9	LOS A	0.4	3.0	0.19	0.11	0.19	40.5
8	T1	1	2.0	0.155	0.4	LOS A	0.4	3.0	0.19	0.11	0.19	29.7
9	R2	138	2.0	0.155	0.4	LOS A	0.4	3.0	0.19	0.11	0.19	39.0
Approach		158	2.0	0.155	0.6	LOS A	0.4	3.0	0.19	0.11	0.19	39.1
West: Campeau												
10	L2	50	2.0	0.062	9.5	LOS A	0.2	1.5	0.10	0.57	0.10	41.7
11	T1	62	2.0	0.062	3.4	LOS A	0.2	1.5	0.10	0.41	0.10	57.4
12	R2	21	2.0	0.062	4.3	LOS A	0.2	1.5	0.10	0.36	0.10	38.8
Approach		133	2.0	0.062	5.8	LOS A	0.2	1.5	0.10	0.46	0.10	47.1
All Vehicles		430	2.0	0.155	3.0	LOS A	0.4	3.0	0.15	0.29	0.15	44.1

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau AM FT2030]

Arcadia Stage 5
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
East: Campeau												
5	T1	38	2.0	0.017	3.3	LOS A	0.0	0.3	0.05	0.31	0.05	58.9
6	R2	26	2.0	0.024	4.2	LOS A	0.1	0.4	0.05	0.44	0.05	38.4
Approach		64	2.0	0.024	3.7	LOS A	0.1	0.4	0.05	0.37	0.05	48.6
North: Winterset												
7	L2	70	2.0	0.065	1.6	LOS A	0.2	1.1	0.09	0.23	0.09	39.4
9	R2	52	2.0	0.024	0.1	LOS A	0.1	0.4	0.09	0.02	0.09	39.4
Approach		122	2.0	0.065	1.0	LOS A	0.2	1.1	0.09	0.14	0.09	39.4
West: Campeau												
10	L2	17	2.0	0.046	9.5	LOS A	0.1	0.9	0.13	0.47	0.13	42.6
11	T1	92	2.0	0.046	3.4	LOS A	0.1	0.9	0.13	0.38	0.13	57.8
Approach		109	2.0	0.046	4.4	LOS A	0.1	0.9	0.13	0.39	0.13	54.7
All Vehicles		295	2.0	0.065	2.8	LOS A	0.2	1.1	0.10	0.28	0.10	46.0

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:32 AM
Project: C:\Users\AndrewHarte\CGH TRANSPORTATION\CGH Working - Documents\Projects\2021-098 Minto Arcadia Stage 5\DATA\Sidra\2021-048 Sidra 2021-09-24.sip8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	317	337	761	172	253	582
Future Volume (vph)	317	337	761	172	253	582
Satd. Flow (prot)	3185	1414	3283	1441	1595	3283
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3185	1414	3283	1441	1595	3283
Satd. Flow (RTOR)		337		172		
Lane Group Flow (vph)	317	337	761	172	253	582
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	14.7	14.7	39.4	39.4	20.0	65.5
Actuated g/C Ratio	0.16	0.16	0.43	0.43	0.22	0.71
v/c Ratio	0.63	0.66	0.54	0.24	0.74	0.25
Control Delay	42.8	11.2	23.3	4.4	47.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	11.2	23.3	4.4	47.4	5.4
LOS	D	B	C	A	D	A
Approach Delay	26.6		19.8			18.1
Approach LOS	C		B			B
Queue Length 50th (m)	27.1	0.0	50.9	0.0	41.6	16.2
Queue Length 95th (m)	44.6	24.8	89.4	13.5	71.9	28.3
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	898	640	1399	713	644	2924
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.54	0.24	0.39	0.20

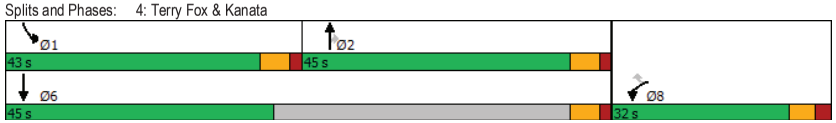
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 92.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74

Lanes, Volumes, Timings
4: Terry Fox & Kanata

11/12/2021

Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 61.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Terry Fox & Kanata



Lanes, Volumes, Timings
5: Terry Fox & Signature SC

11/12/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	9	0	28	0	931	20	30	948	0
Future Volume (vph)	0	0	0	9	0	28	0	931	20	30	948	0
Satd. Flow (prot)	0	1745	0	0	1386	1455	1745	3233	0	1658	3283	0
Flt Permitted					0.757					0.266		
Satd. Flow (perm)	0	1745	0	0	1104	1455	1745	3233	0	464	3283	0
Satd. Flow (RTOR)						34		4				
Lane Group Flow (vph)	0	0	0	0	9	28	0	951	0	30	948	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	32.0	32.0		32.0	32.0	32.0	78.0	78.0		78.0	78.0	
Total Split (%)	29.1%	29.1%		29.1%	29.1%	29.1%	70.9%	70.9%		70.9%	70.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					25.4	25.4		71.6		71.6	71.6	
Actuated g/C Ratio					0.23	0.23		0.65		0.65	0.65	
v/c Ratio					0.04	0.08		0.45		0.10	0.44	
Control Delay					33.4	9.9		14.7		8.2	10.2	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					33.4	9.9		14.7		8.2	10.2	
LOS					C	A		B		A	B	
Approach Delay					15.6			14.7			10.2	
Approach LOS					B			B			B	
Queue Length 50th (m)					1.5	0.0		90.4		2.2	48.0	
Queue Length 95th (m)					5.6	6.1		112.8		6.0	60.8	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)										61.0		
Base Capacity (vph)					254	362		2105		302	2136	
Starvation Cap Reductn					0	0		0		0	0	
Spillback Cap Reductn					0	0		0		0	0	
Storage Cap Reductn					0	0		0		0	0	
Reduced v/c Ratio					0.04	0.08		0.45		0.10	0.44	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 49 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 47.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Terry Fox & Signature SC

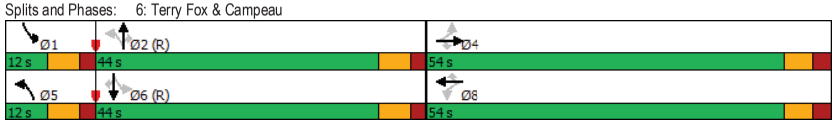
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	51	112	258	45	71	84	770	164	98	709	69
Future Volume (vph)	61	51	112	258	45	71	84	770	164	98	709	69
Satd. Flow (prot)	1642	1745	1441	1580	1712	1363	1658	3191	1441	1658	3191	1483
Flt Permitted	0.728			0.724			0.334			0.281		
Satd. Flow (perm)	1258	1745	1421	1202	1712	1363	583	3191	1410	490	3191	1463
Satd. Flow (RTOR)			112			97			164			97
Lane Group Flow (vph)	61	51	112	258	45	71	84	770	164	98	709	69
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	12.0	44.0	44.0	12.0	44.0	44.0
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	10.9%	40.0%	40.0%	10.9%	40.0%	40.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	29.7	29.7	29.7	29.7	29.7	29.7	60.7	52.7	52.7	62.8	55.5	55.5
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.55	0.48	0.48	0.57	0.50	0.50
v/c Ratio	0.18	0.11	0.24	0.80	0.10	0.16	0.21	0.50	0.22	0.27	0.44	0.09
Control Delay	29.0	27.3	6.0	54.1	27.0	3.1	12.3	23.3	4.4	26.8	43.3	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	27.3	6.0	54.1	27.0	3.1	12.3	23.3	4.4	26.8	43.3	18.1
LOS	C	C	A	D	C	A	B	C	A	C	D	B
Approach Delay		17.1			41.2			19.3			39.5	
Approach LOS		B			D			B			D	
Queue Length 50th (m)	10.0	8.2	0.0	51.4	7.2	0.0	6.9	57.7	0.0	16.2	86.4	3.1
Queue Length 95th (m)	17.9	15.1	11.2	70.9	13.7	5.2	16.9	95.3	13.8	34.3	105.4	15.6
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	544	755	678	520	740	644	399	1527	760	368	1610	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.07	0.17	0.50	0.06	0.11	0.21	0.50	0.22	0.27	0.44	0.09

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 27 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 29.5	Intersection LOS: C
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau



Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	0	30	13	0	92
Future Vol, veh/h	30	0	30	13	0	92
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	30	0	30	13	0	92

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	129	37	0	0	43	0
Stage 1	37	-	-	-	-	-
Stage 2	92	-	-	-	-	-
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	865	1035	-	-	1566	-
Stage 1	985	-	-	-	-	-
Stage 2	932	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	865	1035	-	-	1566	-
Mov Cap-2 Maneuver	865	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	932	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	865	1566	-
HCM Lane V/C Ratio	-	-	0.035	-	-
HCM Control Delay (s)	-	-	9.3	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

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	0	0	10	30	0	0	5	12	13	0	52	0
Future Vol, veh/h	0	0	10	30	0	0	5	12	13	0	52	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	10	30	0	0	5	12	13	0	52	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	81	87	52	86	81	19	52	0	0	25	0	0
Stage 1	52	52	-	29	29	-	-	-	-	-	-	-
Stage 2	29	35	-	57	52	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	907	803	1016	900	809	1059	1554	-	-	1589	-	-
Stage 1	961	852	-	988	871	-	-	-	-	-	-	-
Stage 2	988	866	-	955	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	905	801	1016	889	807	1059	1554	-	-	1589	-	-
Mov Cap-2 Maneuver	905	801	-	889	807	-	-	-	-	-	-	-
Stage 1	958	852	-	985	868	-	-	-	-	-	-	-
Stage 2	985	863	-	946	852	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.2	1.2	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1554	-	-	1016	889	1589	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.034	-	-	-
HCM Control Delay (s)	7.3	0	-	8.6	9.2	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

MOVEMENT SUMMARY

Site: 101 [Huntmar-Campeau PM FT2030]

Arcadia Stage 6
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: Huntmar												
1	L2	88	2.0	0.105	8.7	LOS A	0.3	2.0	0.34	0.67	0.34	49.9
2	T1	487	2.0	0.571	4.0	LOS A	2.7	19.5	0.52	0.51	0.60	48.9
3	R2	149	2.0	0.178	3.8	LOS A	0.5	3.7	0.36	0.52	0.36	51.1
Approach		724	2.0	0.571	4.6	LOS A	2.7	19.5	0.47	0.53	0.52	49.4
East: Campeau												
4	L2	140	2.0	0.213	11.9	LOS B	0.6	4.2	0.48	0.82	0.48	49.9
5	T1	60	2.0	0.095	5.9	LOS A	0.3	1.8	0.47	0.58	0.47	56.4
6	R2	20	2.0	0.032	6.1	LOS A	0.1	0.6	0.45	0.65	0.45	50.7
Approach		220	2.0	0.213	9.8	LOS A	0.6	4.2	0.48	0.74	0.48	51.6
North: Huntmar												
7	L2	26	2.0	0.317	8.6	LOS A	1.1	7.6	0.37	0.37	0.37	53.1
8	T1	544	2.0	0.317	2.8	LOS A	1.1	7.6	0.36	0.34	0.36	49.5
9	R2	141	2.0	0.158	3.5	LOS A	0.5	3.2	0.32	0.47	0.32	51.3
Approach		711	2.0	0.317	3.1	LOS A	1.1	7.6	0.35	0.37	0.35	50.0
West: Campeau												
10	L2	171	2.0	0.263	12.2	LOS B	0.8	5.6	0.51	0.83	0.51	49.8
11	T1	175	2.0	0.259	5.8	LOS A	0.7	5.3	0.49	0.57	0.49	56.3
12	R2	86	2.0	0.125	5.6	LOS A	0.3	2.3	0.44	0.67	0.44	51.1
Approach		432	2.0	0.263	8.3	LOS A	0.8	5.6	0.49	0.69	0.49	52.5
All Vehicles		2087	2.0	0.571	5.4	LOS A	2.7	19.5	0.43	0.53	0.45	50.5

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: CGH TRANSPORTATION | Processed: November 12, 2021 10:44:19 AM
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MOVEMENT SUMMARY

Site: 101 [Country Glen-Campeau PM FT2030]

Arcadia Stage 5
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: Country Glen												
1	L2	37	2.0	0.024	2.3	LOS A	0.1	0.4	0.28	0.33	0.28	39.2
2	T1	1	2.0	0.024	0.8	LOS A	0.1	0.4	0.27	0.30	0.27	29.4
3	R2	5	2.0	0.024	0.8	LOS A	0.1	0.4	0.27	0.30	0.27	38.1
Approach		43	2.0	0.024	2.1	LOS A	0.1	0.4	0.28	0.33	0.28	38.8
East: Campeau												
4	L2	12	2.0	0.065	9.9	LOS A	0.2	1.2	0.24	0.45	0.24	42.6
5	T1	93	2.0	0.065	3.8	LOS A	0.2	1.2	0.23	0.43	0.23	57.2
6	R2	20	2.0	0.065	4.7	LOS A	0.2	1.2	0.22	0.41	0.22	38.5
Approach		125	2.0	0.065	4.5	LOS A	0.2	1.2	0.23	0.43	0.23	51.6
North: Country Glen												
7	L2	11	2.0	0.096	1.9	LOS A	0.2	1.8	0.19	0.11	0.19	40.5
8	T1	1	2.0	0.096	0.4	LOS A	0.2	1.8	0.19	0.11	0.19	29.7
9	R2	85	2.0	0.096	0.4	LOS A	0.2	1.8	0.19	0.11	0.19	39.0
Approach		97	2.0	0.096	0.6	LOS A	0.2	1.8	0.19	0.11	0.19	39.0
West: Campeau												
10	L2	162	2.0	0.155	9.5	LOS A	0.6	4.3	0.10	0.61	0.10	41.2
11	T1	132	2.0	0.155	3.4	LOS A	0.6	4.3	0.10	0.36	0.10	58.2
12	R2	41	2.0	0.155	4.3	LOS A	0.6	4.3	0.10	0.35	0.10	38.9
Approach		335	2.0	0.155	6.4	LOS A	0.6	4.3	0.10	0.48	0.10	46.1
All Vehicles		600	2.0	0.155	4.8	LOS A	0.6	4.3	0.16	0.40	0.16	45.2

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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Winterset-Campeau PM FT2030]

Arcadia Stage 5
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
East: Campeau												
5	T1	93	2.0	0.044	3.4	LOS A	0.1	0.8	0.11	0.33	0.11	58.5
6	R2	71	2.0	0.067	4.3	LOS A	0.2	1.2	0.11	0.45	0.11	38.3
Approach		164	2.0	0.067	3.8	LOS A	0.2	1.2	0.11	0.38	0.11	47.8
North: Winterset												
7	L2	47	2.0	0.045	1.7	LOS A	0.1	0.8	0.14	0.26	0.14	39.3
9	R2	33	2.0	0.016	0.2	LOS A	0.0	0.3	0.15	0.05	0.15	39.2
Approach		80	2.0	0.045	1.1	LOS A	0.1	0.8	0.14	0.17	0.14	39.3
West: Campeau												
10	L2	54	2.0	0.059	9.5	LOS A	0.2	1.1	0.10	0.60	0.10	41.4
11	T1	88	2.0	0.059	3.4	LOS A	0.2	1.1	0.11	0.36	0.11	58.1
Approach		142	2.0	0.059	5.7	LOS A	0.2	1.1	0.11	0.45	0.11	50.3
All Vehicles		386	2.0	0.067	3.9	LOS A	0.2	1.2	0.12	0.36	0.12	46.6

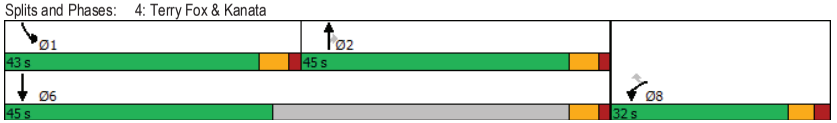
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result 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: US HCM 2010.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	146	860	340	265	888
Future Volume (vph)	250	146	860	340	265	888
Satd. Flow (prot)	3216	1469	3316	1483	1658	3316
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3216	1469	3316	1452	1653	3316
Satd. Flow (RTOR)		146		340		
Lane Group Flow (vph)	250	146	860	340	265	888
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	10.0	10.0	5.0	10.0
Minimum Split (s)	31.2	31.2	25.0	25.0	11.0	25.0
Total Split (s)	32.0	32.0	45.0	45.0	43.0	45.0
Total Split (%)	26.7%	26.7%	37.5%	37.5%	35.8%	37.5%
Yellow Time (s)	3.7	3.7	4.2	4.2	4.2	4.2
All-Red Time (s)	2.5	2.5	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	12.4	12.4	39.3	39.3	19.5	64.9
Actuated g/C Ratio	0.14	0.14	0.44	0.44	0.22	0.72
v/c Ratio	0.56	0.44	0.59	0.41	0.73	0.37
Control Delay	42.0	11.1	22.6	4.0	45.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	11.1	22.6	4.0	45.5	5.3
LOS	D	B	C	A	D	A
Approach Delay	30.6		17.3			14.6
Approach LOS	C		B			B
Queue Length 50th (m)	20.8	0.0	56.6	0.0	42.3	24.9
Queue Length 95th (m)	35.5	16.5	95.5	17.0	71.3	40.0
Internal Link Dist (m)	616.6		846.8			487.6
Turn Bay Length (m)				100.0	85.5	
Base Capacity (vph)	933	530	1455	828	690	3029
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.28	0.59	0.41	0.38	0.29

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 89.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 63.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: Terry Fox & Kanata

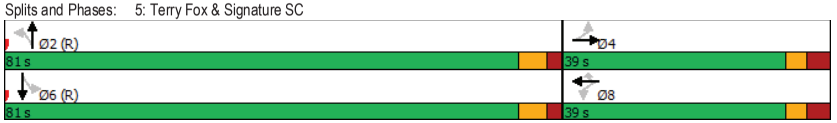


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	54	0	113	18	1150	68	82	1086	0
Future Volume (vph)	0	0	0	54	0	113	18	1150	68	82	1086	0
Satd. Flow (prot)	0	1745	0	0	1658	1483	1658	3289	0	1658	3316	0
Flt Permitted					0.757		0.211			0.173		
Satd. Flow (perm)	0	1745	0	0	1321	1483	368	3289	0	302	3316	0
Satd. Flow (RTOR)						94		9				
Lane Group Flow (vph)	0	0	0	0	54	113	18	1218	0	82	1086	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	31.6	31.6		31.6	31.6	31.6	31.4	31.4		32.8	32.8	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	81.0	81.0		81.0	81.0	
Total Split (%)	32.5%	32.5%		32.5%	32.5%	32.5%	67.5%	67.5%		67.5%	67.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	4.2	4.2		4.2	4.2	
All-Red Time (s)	3.6	3.6		3.6	3.6	3.6	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.6			6.6	6.6	6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)					32.4	32.4	74.6	74.6		74.6	74.6	
Actuated g/C Ratio					0.27	0.27	0.62	0.62		0.62	0.62	
v/c Ratio					0.15	0.24	0.08	0.59		0.44	0.53	
Control Delay					34.9	10.9	4.7	16.8		20.9	13.9	
Queue Delay					0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay					34.9	10.9	4.7	16.8		20.9	13.9	
LOS					C	B	A	B		C	B	
Approach Delay					18.7			16.6			14.4	
Approach LOS					B			B			B	
Queue Length 50th (m)					9.7	3.3	2.1	131.3		9.4	70.7	
Queue Length 95th (m)					20.3	17.3	m0.4	155.8		24.2	87.2	
Internal Link Dist (m)		19.8			92.3			301.0			846.8	
Turn Bay Length (m)							51.0			61.0		
Base Capacity (vph)					356	469	228	2048		187	2061	
Starvation Cap Reductn					0	0	0	0		0	0	
Spillback Cap Reductn					0	0	0	0		0	0	
Storage Cap Reductn					0	0	0	0		0	0	
Reduced v/c Ratio					0.15	0.24	0.08	0.59		0.44	0.53	

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 49 (41%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 5: Terry Fox & Signature SC



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	108	156	248	116	111	125	955	188	164	875	88
Future Volume (vph)	99	108	156	248	116	111	125	955	188	164	875	88
Satd. Flow (prot)	1658	1745	1483	1658	1712	1483	1658	3316	1483	1658	3316	1483
Flt Permitted	0.682			0.687			0.258			0.207		
Satd. Flow (perm)	1189	1745	1464	1198	1712	1464	450	3316	1449	361	3316	1463
Satd. Flow (RTOR)			156			111			162			89
Lane Group Flow (vph)	99	108	156	248	116	111	125	955	188	164	875	88
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	40.4	40.4	40.4	43.4	43.4	43.4	11.4	40.4	40.4	11.4	43.4	43.4
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	30.4	30.4	30.4	30.4	30.4	30.4	68.6	59.3	59.3	72.2	61.1	61.1
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.57	0.49	0.49	0.60	0.51	0.51
v/c Ratio	0.33	0.24	0.32	0.82	0.27	0.25	0.36	0.58	0.24	0.49	0.52	0.11
Control Delay	37.3	34.8	6.3	62.4	35.3	6.6	13.5	25.7	6.0	28.9	41.4	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	34.8	6.3	62.4	35.3	6.6	13.5	25.7	6.0	28.9	41.4	18.9
LOS	D	C	A	E	D	A	B	C	A	C	D	B
Approach Delay		23.2			42.7			21.6			37.9	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	19.1	20.3	0.0	55.2	22.0	0.0	10.7	81.1	3.1	27.8	101.5	4.5
Queue Length 95th (m)	30.5	31.2	14.0	76.2	33.2	12.0	23.5	130.5	19.4	53.7	123.3	20.7
Internal Link Dist (m)		128.0			204.4			313.2			301.0	
Turn Bay Length (m)	62.5		64.5	70.0		63.5	45.0		62.5	97.5		50.0
Base Capacity (vph)	412	604	609	415	593	580	436	1639	798	397	1688	788
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.18	0.26	0.60	0.20	0.19	0.29	0.58	0.24	0.41	0.52	0.11

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 75.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Terry Fox & Campeau

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	0	95	30	0	58
Future Vol, veh/h	22	0	95	30	0	58
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	22	0	95	30	0	58

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	168	110	0	0	125	0
Stage 1	110	-	-	-	-	-
Stage 2	58	-	-	-	-	-
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	822	943	-	-	1462	-
Stage 1	915	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	822	943	-	-	1462	-
Mov Cap-2 Maneuver	822	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	965	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	822	1462	-
HCM Lane V/C Ratio	-	-	0.027	-	-
HCM Control Delay (s)	-	-	9.5	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	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	0	0	5	22	0	0	10	55	30	0	31	0
Future Vol, veh/h	0	0	5	22	0	0	10	55	30	0	31	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	22	0	0	10	55	30	0	31	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	121	136	31	124	121	70	31	0	0	85	0	0
Stage 1	31	31	-	90	90	-	-	-	-	-	-	-
Stage 2	90	105	-	34	31	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	854	755	1043	850	769	993	1582	-	-	1512	-	-
Stage 1	986	869	-	917	820	-	-	-	-	-	-	-
Stage 2	917	808	-	982	869	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	850	750	1043	842	764	993	1582	-	-	1512	-	-
Mov Cap-2 Maneuver	850	750	-	842	764	-	-	-	-	-	-	-
Stage 1	979	869	-	911	814	-	-	-	-	-	-	-
Stage 2	911	802	-	977	869	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.5	9.4	0.8	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1582	-	-	1043	842	1512	-	-
HCM Lane V/C Ratio	0.006	-	-	0.005	0.026	-	-	-
HCM Control Delay (s)	7.3	0	-	8.5	9.4	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Appendix J

TDM Checklist

CGH TRANSPORTATION

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	☐