Ironclad Developments Inc. (ICD)

Transportation Impact Assessment

Residential Development – 475 Terry Fox Drive

Project #: 25-9532

June 2026

Table of Contents

Certification

1.0 Screening 1

1.1 Description of Proposed Development 1
1.2 Triggers 1

2.0 Scoping 4

2.1 Existing and Planned Conditions 4
2.1.1 Proposed Development 4
2.1.2 Existing Conditions 8
2.1.3 Planning Conditions 18
2.1.4 Study Area Intersections 18
2.1.5 Surrounding Network 18
2.2 Study Parameters 20
2.2.1 Study Area 20
2.2.2 Time Periods 21
2.2.3 Horizon Years 21
2.3 Exemptions Review 21

3.0 Forecasting 24

3.1 Development-Generated Travel Demand 24
3.1.1 Trip Generation and Mode Shares 24
3.1.2 Trip Distribution 26
3.1.3 Trip Assignment 26
3.2 Background Network Travel Demand 27
3.2.1 Transportation Network Plans 27
3.2.2 Background Growth 27
3.2.3 Background Developments 28
3.3 Demand Rationalization 29
3.4 Total Future Traffic Volumes 29

4.0 Analysis 32
4.1 Development Design 32
4.1.1 Design for Sustainable Modes 32
4.1.2 Circulation and Access 34
4.1.3 New Street Networks 35
4.2 Parking 35
4.2.1 Parking Supply 35
4.3 Boundary Street Design 38
4.3.1 Mobility 38
4.3.2 Road Safety 44
4.3.3 Neighbourhood Traffic Management (NTM) 44
4.4 Access Intersection Design 44
4.4.1 Access Intersection Location 44
4.4.2 Access Intersection Design 44
4.4.3 Cycling Treatments on Kanata Avenue 45
4.4.4 Intersection Control 45
4.4.5 Access Intersection Design 46
4.5 Transportation Demand Management (TDM) 47
4.5.1 TDM Measures Checklist 47
4.5.2 TDM Supportive Design and Infrastructure Checklist 48
4.6 Neighbourhood Traffic Calming 48
4.7 Transit 49
4.7.1 Route Capacity 49
4.7.2 Transit Priority 49
4.8 Network Concept 49
4.9 Intersection Design 50
4.9.1 Terry Fox Drive at Richardson Side Road 50
4.9.2 Terry Fox Drive at Kanata Avenue 52
4.9.3 Kanata Avenue at Huntsville Drive 54

5.0 Summary/Conclusions 56

Figures

Figure 1: Site Location 5
Figure 2: Study Area Intersections 6
Figure 3: Site Plan 7
Figure 4: Existing Conditions on Terry Fox Drive and Kanata Avenue 8
Figure 5: Existing Intersection Geometry and Traffic Control 10
Figure 6: Cycling Facilities in the Study Area 12
Figure 7: New Ways to Bus - April 2025 Transit Route Map 13
Figure 8: Nearest Transit Stop within the Study Area 14
Figure 9: Existing Traffic Volumes 15
Figure 10: Number of Collisions in the Vicinity of the Site (2018 to 2022) 18
Figure 11: Richardson Ridge Development – Location 20
Figure 12: Lane Geometry and Traffic Control at the Site Access 21
Figure 13: Site Generated Traffic Volumes 27
Figure 14: Richardson Ridge Development – Location 28
Figure 15: Richardson Ridge Development – Phase 4 Site Generated Trips 29
Figure 16: 2028 Total Traffic Volumes 30
Figure 17: 2033 Total Traffic Volumes 31
Figure 18: Site Plan 32
Figure 19: Appropriate Curb Return Access Requirements 44
Figure 20: Cycling Driveway Treatment 45
Figure 21: Anticipated Lane Geometry and Traffic Control 46

Tables

Table 1: Trip Generation Trigger 2
Table 2: Location Triggers 2
Table 3: Safety Triggers 3
Table 4: Trigger Summary 3
Table 5: Existing Weekday Pedestrian Activity 16
Table 6: Exemption Review 22
Table 7: Peak Period Residential Person-Trips 24
Table 8: Peak Hour Trips by Mode 25

Table 9: Site Generated Residential Trips 25
Table 10: Site Trip Distribution 26
Table 11: Transit Stop Walking Distances 34
Table 12: Automobile Zoning By-Law Parking Space Requirements 35
Table 13: Automobile Zoning By-Law Parking Space Requirements (R5 Zoning) 36
Table 14: Bicycle Zoning By-Law Parking Space Requirements 38
Table 15: MMLOS Conditions – Segments 39
Table 16: MMLOS Conditions – Intersection 43
Table 17: Site Access and Kanata Avenue Intersection Operations - AM (PM) Peak Hour 47
Table 18: Terry Fox Drive at Richardson Side Road Intersection Operations 50
Table 19: Terry Fox Drive at Kanata Avenue Intersection Operations 52
Table 20: Kanata Avenue at Huntsville Drive Intersection Operations 54

Appendices

A Site Plan
B Turning Movement Count Data
C Collision Data (2010 to 2022)
D TRANS Trip Generation Manual Summary Report Tables
E Swept Path Movements
F Curb Return Access Types
G Level of Service (LOS) Definitions
H Synchro Worksheets
I Transportation Demand Management (TDM) Checklist

Certification

1. I have reviewed and have a sound understanding of the objectives, needs, and requirements of the City of Ottawa's Official Plan and the Transportation Impact Assessment (2017) Guidelines, and the City of Ottawa Traffic Impact Assessment Guidelines Revisions (2023).
2. I have a sound knowledge of industry standard practice with respect to the presentation of transportation impact assessment reports, including multimodal 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.
4. I am either a licensed or registered professional in good standing, whose field of expertise is either transportation engineering or transportation planning.

Signature of individual certifier that she/he meets the above four criteria.

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1.0 Screening

1.1 Description of Proposed Development

Municipal Address:	475 Terry Fox Drive, Kanata, ON K2T 1E8
Description of Location:	The northeast quadrant of the Terry Fox Drive and Kanata Avenue intersection
Land Use Classification:	LC [1706] H(11) The purpose of the LC – Local Commercial Zone is to: • Allow a variety of small, locally oriented convenience and service uses as well as residential uses in the General Urban Areas and in the Residential Character Areas of the Central Area designations of the Official Plan. • Restrict the non-residential uses to individual occupancies or in groupings as part of a small plaza that would meet the needs of the surrounding residential areas. • Provide an opportunity to accommodate residential or mixed uses development. • Impose development standards that ensure the size and scale of the development are consistent with those of the surrounding residential area.
Development Size:	Ironclad Developments Inc. (ICD) is proposing to construct three six-story residential buildings with a total of 182 dwelling units. The proposed site plan provides a total of 210 parking spaces, including 166 residential parking spaces, 37 visitor parking spaces, and 7 accessible parking spaces.
Number of Accesses and Locations:	One access: A full-movement site access on Kanata Avenue
Phases of Development:	Single Phase
Build-out Year:	2028

1.2 Triggers

The City of Ottawa is currently finalizing the 2023 Traffic Impact Assessment Guidelines. Revisions to the 2017 guidelines were completed in June 2023, which were used in developing this TIA.

Table 1 summarizes the trip generation triggers as indicated in the City of Ottawa Traffic Impact Assessment Guidelines Revisions (2023).

Table 1: Trip Generation Trigger

Land Use Type	Minimum Development Size	Yes	No
Single-Detached	60 units		X
Multi-Use Family (Low Rise)	90 units	X	
Multi-Use Family (High Rise)	150 units		X
Office	1,400 square metres (m^2)		X
Industrial	7,000 m^2		X
Fast-food restaurant or coffee shop	110 m^2		X
Destination retail	1,800 m^2		X
Gas station or convenience market	90 m^2		X

Table 2 and Table 3 summarize the location and safety triggers as indicated in the City of Ottawa Traffic Impact Assessment Guidelines (2017). Table 4 summarizes the location and safety triggers.

Table 2: Location Triggers

Description	Yes	No
Does the development propose a new driveway to a boundary street designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?		X
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?[1]		X

[1] The guideline indicates that DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). Step 4 of the TIA Guidelines provide a list of Reference Documents and Methods that support the completion of a TIA).

Table 3: Safety Triggers

Description	Yes	No
Are posted speed limits on a boundary street are 80 km/h or greater?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		X
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e., within 300 m of intersection in rural conditions or within 150 m of intersection in urban/ suburban conditions)?		X
Is the proposed driveway within the auxiliary lanes of an intersection?		X
Does the proposed driveway make use of an existing median break that serves an existing site?	X[2]	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		X
Does the development include a drive-thru facility?		X

Table 4: Trigger Summary

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

[2] The access to the site on Kanata Avenue has already been constructed; however, the land is currently vacant.

2.0 Scoping

2.1 Existing and Planned Conditions

2.1.1 Proposed Development

The proposed development is located at 475 Terry Fox Drive in the suburb of Kanata, in the City of Ottawa. The site plan consists of three residential buildings with a total of 182 dwelling units. The breakdown shown below outlines a total of 182 units.

- Building A: 72 dwelling units.
- Building B: 56 dwelling units.
- Building C: 54 dwelling units.

The subject site provides 210 total parking spaces, including 166 residential parking spaces, 37 visitor parking spaces, and 7 accessible parking spaces. The access to the proposed site is envisioned via a single full movement access to Kanata Avenue.

Figure 1 illustrates the site location of the proposed development. Figure 2 illustrates the proposed study area intersections to be considered within this TIA, as well as the location of the site access. Figure 3 illustrates the proposed site plan. The detailed current site plan can be found in Appendix A

The site is currently zoned as a Local Commercial Zone (LC[1706] H(11)), which permits residential developments; however, the height limitation is 11 metres. The proposed residential development is expected to be completely built and ready for occupancy by 2028.

2.1.1.1 Location of Access

The existing access on Kanata is located approximately 158 metres north of the Terry Fox Drive and Kanata Avenue intersection, at the existing median opening, and is not proposed to be changed. The access currently has a boulevard, sidewalk, and a depressed curb.

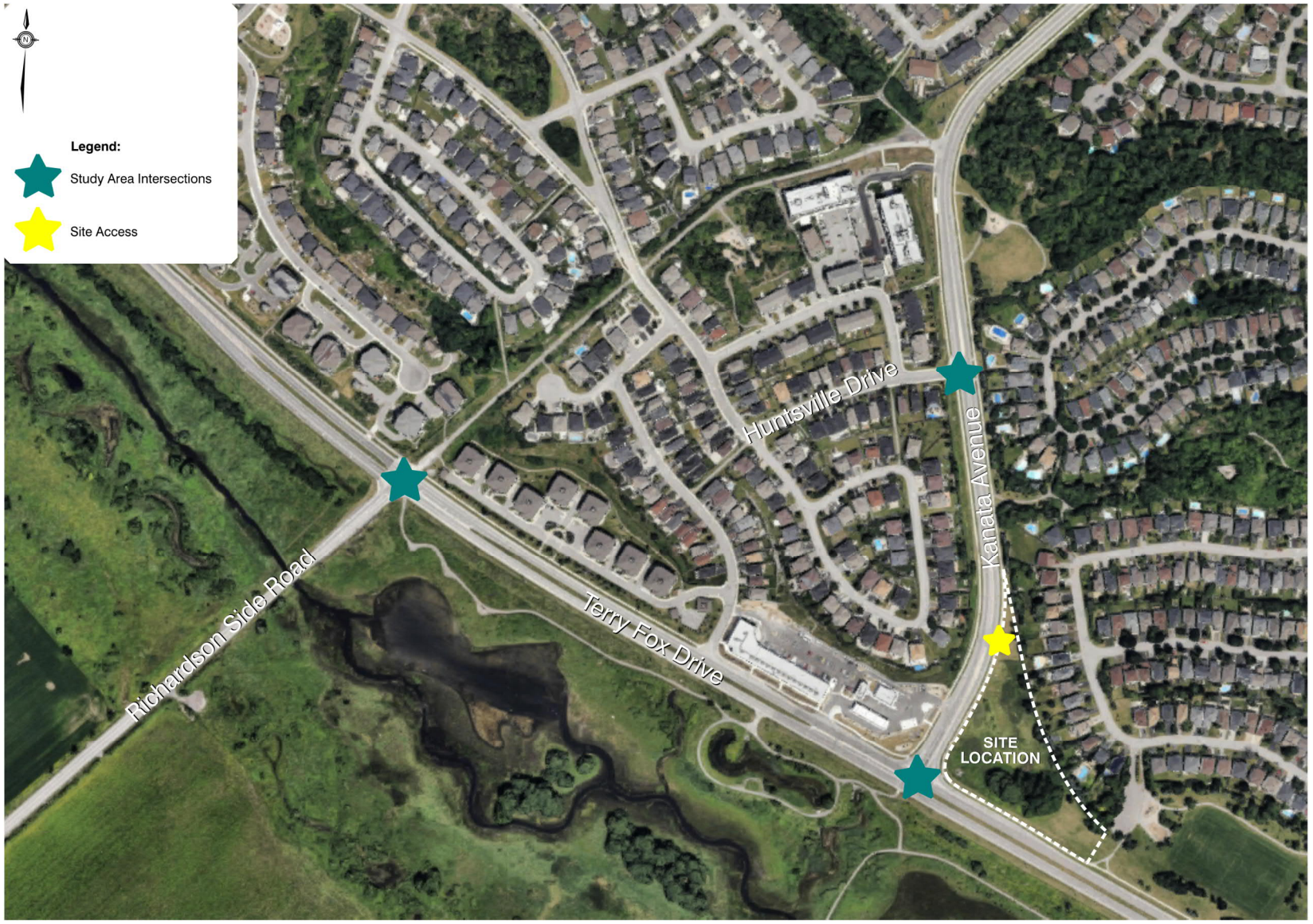
The site access is proposed to operate unsignalized with westbound stop-control. It is proposed to have a width of approximately 10 meters and is anticipated to operate with low operating speeds and clear sightlines, which were confirmed using Google Maps.

The site access design requirements are discussed in Section 4.4.2.

Figure 1: Site Location

Source: City of Ottawa – geoOttawa, accessed January 2025, imagery date 2022

Figure 2: Study Area Intersections



Source: Google Maps, accessed January 2025, imagery date July 2022

Figure 3: Site Plan

2.1.2 Existing Conditions

The site is currently undeveloped; however, access to Kanata Avenue was provided when the roadway was originally constructed. Figure 4 illustrates the existing conditions for Terry Fox Drive and Kanata Avenue. The transit landing pads were constructed in 2025.

Figure 4: Existing Conditions on Terry Fox Drive and Kanata Avenue

Figure 4 (continued): Existing Conditions on Terry Fox Drive and Kanata Avenue

Source: Google Maps, accessed October 2025, imagery date July 2024

2.1.2.1 Road and Traffic Control

The roadways in the study area are described as follows:

- Terry Fox Drive, in proximity to the site is an east/west roadway; however, it is generally considered a north-south arterial road under the jurisdiction of the City of Ottawa. Terry Fox Drive has a four-lane urban cross-section within the study area with a posted speed limit of 70 km/h.
- Kanata Avenue is a major collector road under the jurisdiction of the City of Ottawa. Within the study area, it has a two-lane urban cross-section and a posted speed limit of 60 km/h.
- Richardson Side Road is a collector road under the jurisdiction of the City of Ottawa. It extends southwest from Terry Fox Drive for 8 kilometres and ends at Beavertail Road. Richardson Side

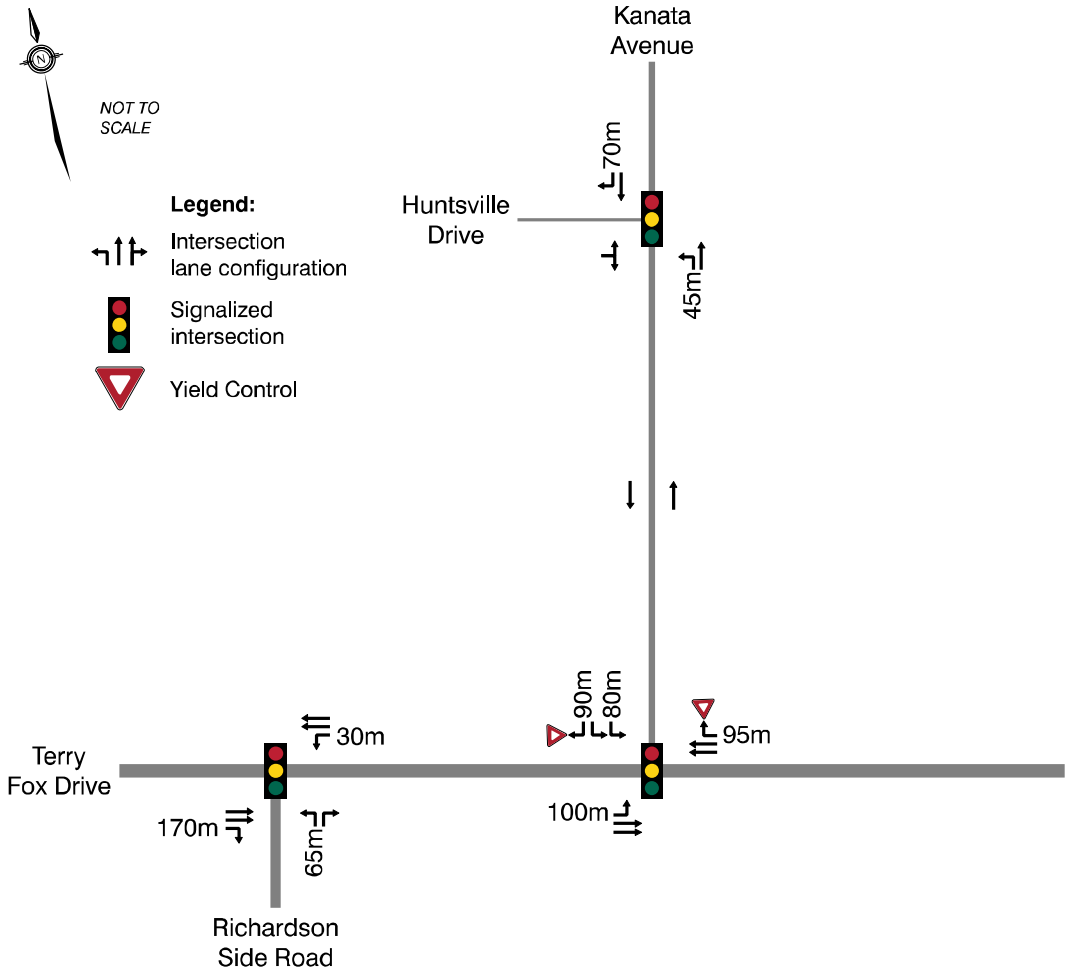
Road has a two-lane rural cross-section within the study area and a posted speed limit of 60 km/h.

- Huntsville Drive is a local road under the jurisdiction of the City of Ottawa that extends west from Kanata Avenue and serves a residential development. Within the vicinity of the site, Huntsville Drive has a two-lane urban cross-section and a posted speed limit of 40 km/h.

The City of Ottawa's Rural Truck Routes Map, 2024 indicates that Terry Fox Drive is considered as a "Full Loads" rural truck route.

Figure 5 illustrates the existing traffic control and lane configuration at the study area intersections.

Figure 5: Existing Intersection Geometry and Traffic Control



It is important to note that the intersection of Terry Fox Drive and Richardson Side Road is four-legged; however, the north leg is closed to vehicle traffic. Therefore, the intersection currently operates as a T- intersection.

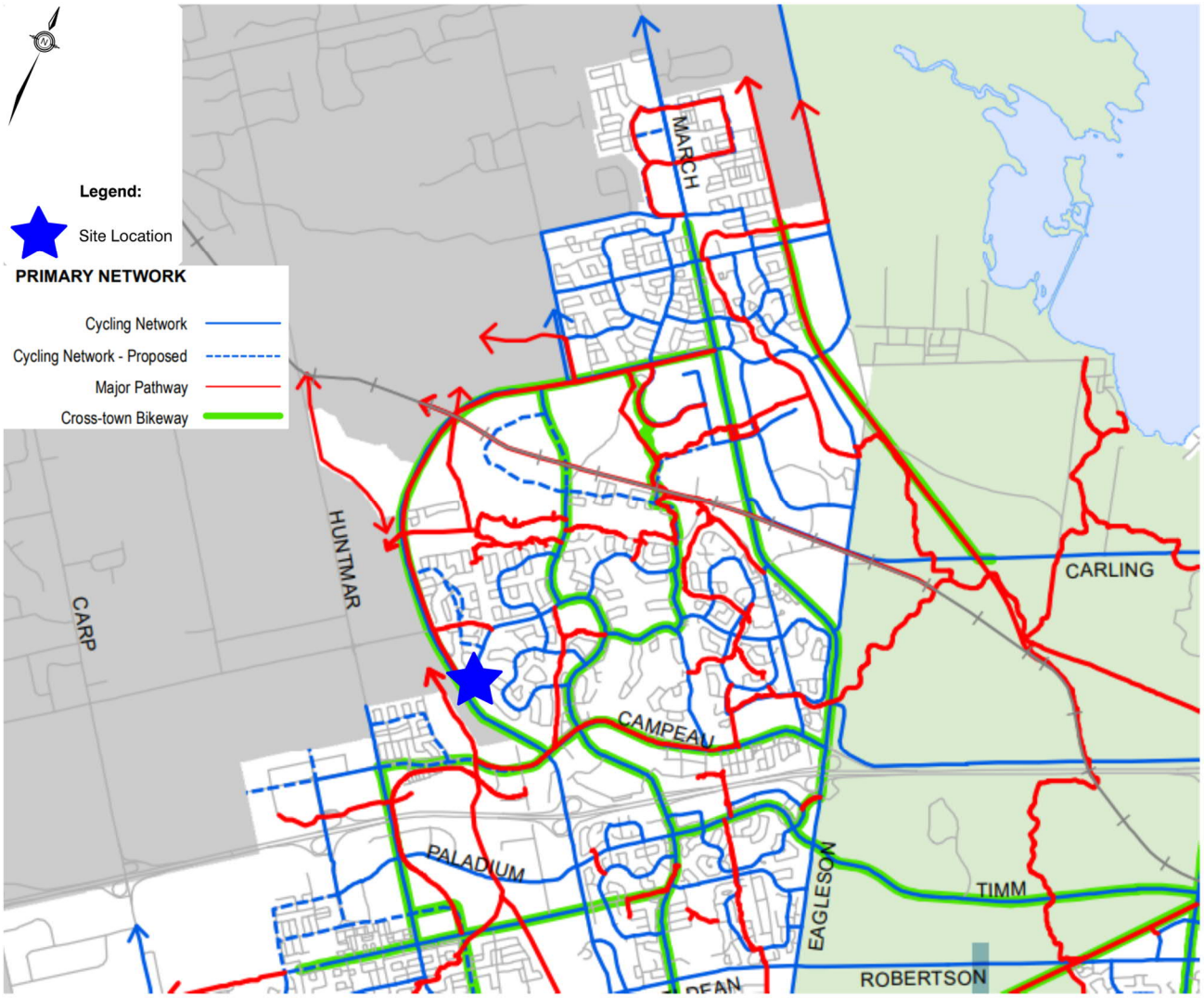
2.1.2.2 Walking and Cycling

The following outlines pedestrian and cycling facilities provided within the study area:

- Terry Fox Drive
  - A sidewalk is provided on the north side of the roadway.
  - A multi-use pathway is provided on the south side of the roadway.
  - On-street bike lanes are provided on both sides of the roadway.
  - Terry Fox Drive is designated as part of the crosstown bikeway.
- Kanata Avenue
  - Sidewalks are provided on both sides of the roadway.
  - On-street bike lanes are provided on both sides of the roadway.
- Richardson Side Road
  - Sidewalks are not provided within the vicinity of the study area.
  - Bike lanes are not provided on either side of the road; however, paved shoulders are provided on both sides of the road southwest of Terry Fox Drive.
- Huntsville Drive
  - Sidewalks are provided on both sides of the road.
  - Bike lanes are not provided on Huntsville Drive.

The existing and proposed cycling network, major pathways, and the cross-town bikeway is illustrated in Figure 6.

Figure 6: Cycling Facilities in the Study Area



Source: City of Ottawa, Transportation Master Plan (June 2025), September 25, 2025

2.1.2.3 Transit

OC Transpo operates a few routes within the study area:

Route 161 runs from Terry Fox Station towards the Innovation centre along Terry Fox Drive. It also connects to Terry Fox Station, which is a major transit hub in the area. The route operates with 30- minute headways during the weekday AM and PM peak periods.

Route 165 runs from Terry Fox Station towards the Innovation centre along Terry Fox Drive. It also connects to Terry Fox Station, which is a major transit hub in the area. The route operates with 60- minute headways during the weekday AM and PM peak periods.

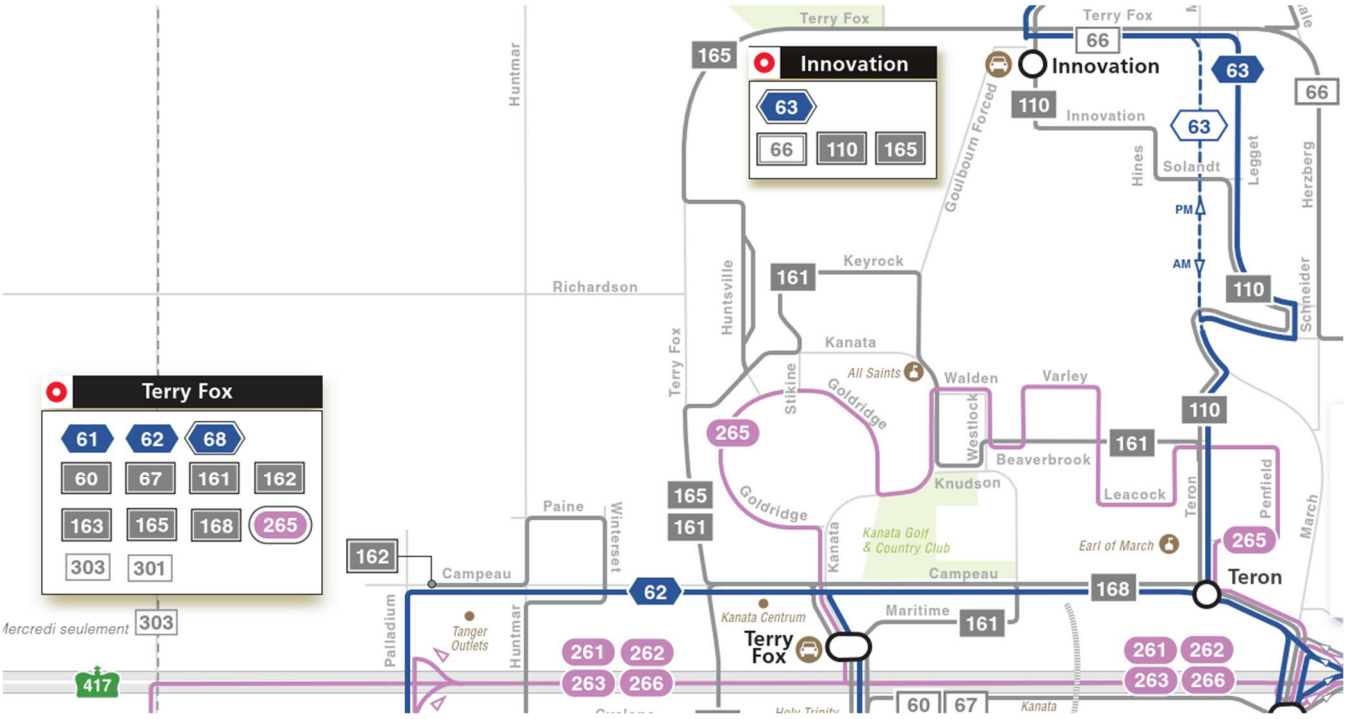
Currently, Route 664 remains unaffected by the "New Way to Bus," although there may be changes to the route once the network is in effect in the spring of 2025.

Figure 7 illustrates the latest transit route map within the area.

The closest transit stops in both directions to the subject site is located less than 270 metres from the building site access points, located along the south side of Building 'B' and on the northwest corner of the Terry Fox Drive and Kanata Avenue intersection. Another nearby transit stop is located on Terry Fox Drive at Tillsonburg Street, which is approximately 420 metres west of the site.

Figure 8 illustrates the locations of the existing transit stops adjacent to the subject site.

Figure 7: New Ways to Bus - April 2025 Transit Route Map



Source: OC Transpo Transit Route Map, April 27, 2025

Figure 8: Nearest Transit Stop within the Study Area

Source: Google Maps, accessed July 2025, imagery date July 2022

2.1.2.4 Traffic Volumes

Turning movement counts (TMCs) were provided by the City of Ottawa for all the study area intersections for the AM and PM peak hours (weekday). The intersection traffic counts were conducted by the City of Ottawa as follows:

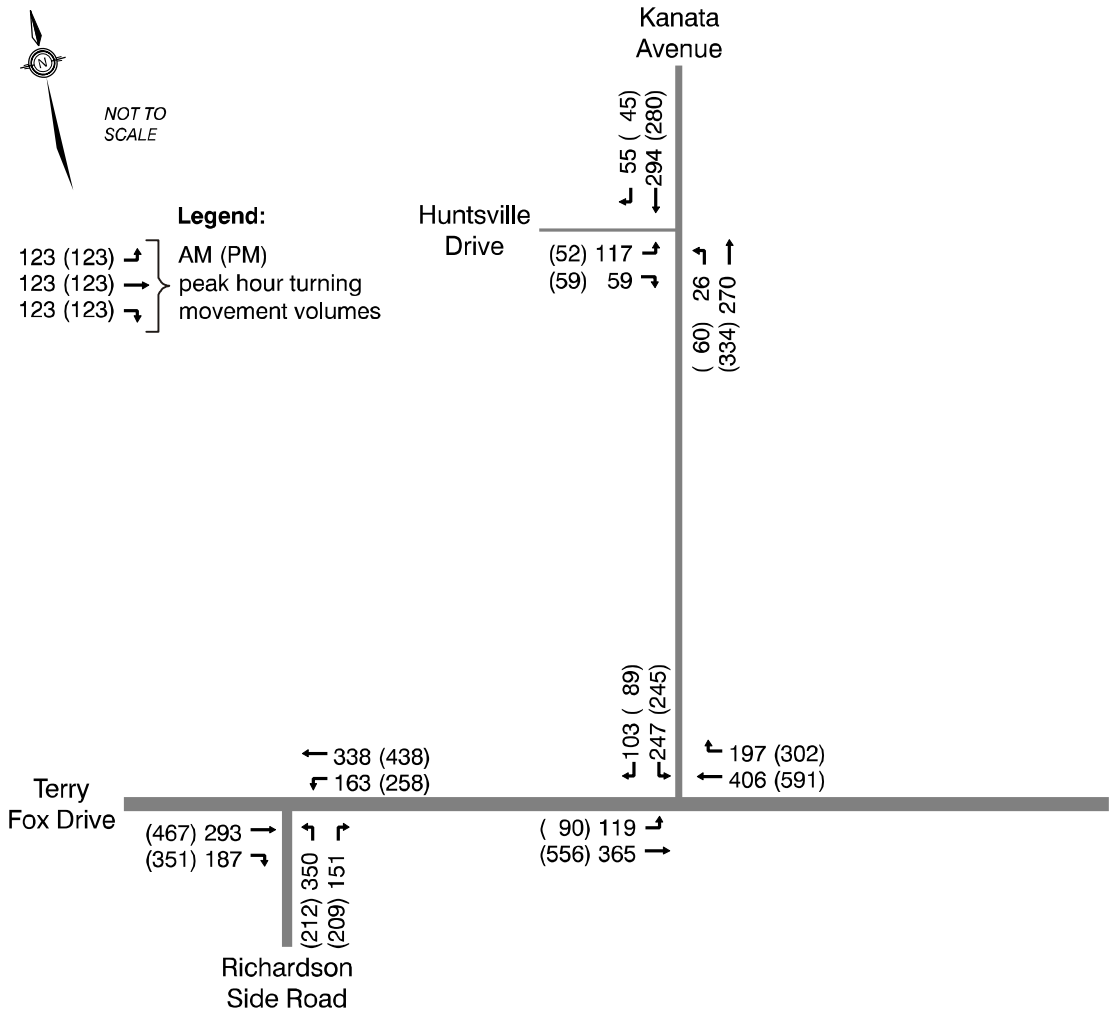
- Terry Fox Drive at Kanata Avenue – Thursday, February 29, 2024.
- Terry Fox Drive at Richardson Side Road – Tuesday, February 13, 2024.
- Kanata Avenue at Huntsville Drive – Wednesday, January 22, 2025.

The 2024 traffic volumes for the Terry Fox Drive/Kanata Avenue and Terry Fox Drive/Richardson Side Road intersections were grown by 2% to reflect 2025 existing traffic volumes.

During the PM peak hour, the northbound traffic volumes exiting the Terry Fox Drive at Kanata Avenue intersection were found to be imbalanced compared to the volumes entering the south leg of the Kanata Avenue at Huntsville Drive intersection. The remaining study area intersection turning movements were found to be nearly balanced. To ensure the traffic volume data was represented accurately, Dillon recounted the Terry Fox Drive at March Road intersection turning movements (to/from the north leg only) during the PM peak hour, in March 2025. The March 2025 volumes were closely balanced to the traffic volumes at the Kanata Avenue at Huntsville Drive intersection collected by the City in January 2025. The traffic volumes carried through this report have used the March 2025 turning movements for the Terry Fox Drive at March Road intersection.

The existing AM and PM peak hour traffic volumes are presented in Figure 9. The detailed turning movement count data are provided in Appendix B.

Figure 9: Existing Traffic Volumes



Existing Pedestrian and Cycling Data

Pedestrian and cyclist volumes were recorded as part of the City of Ottawa traffic surveys. No cyclists were observed at any of the study area intersections (winter conditions), however, the number of pedestrians crossing at each intersection during the weekday peak hour is presented in Table 5.

For the purpose of this analysis, Terry Fox Drive is considered as east-west, while Richardson Side Road and Kanata Avenue are considered as north/south roadways.

Table 5: Existing Weekday Pedestrian Activity

Intersection	AM Peak Hour					PM Peak Hour				
	North Leg	South Leg	West Leg	East Leg	Total	North Leg	South Leg	West Leg	East Leg	Total
Terry Fox Drive at Richardson Side Road	0	0	0	1	1	3	0	0	0	3
Terry Fox Drive at Kanata Avenue	1	0	1	0	2	2	0	1	0	3
Kanata Avenue at Huntsville Drive	1	0	1	0	2	1	0		0	3

2.1.2.5 Collision History

Figure 10 illustrates the number of collisions in the general vicinity of the site between 2018 and 2022 for the following locations:

- Kanata Avenue and Huntsville Drive.
- Terry Fox Drive and Kanata Avenue.
- Terry Fox Drive and Richardson Side Road.

The City of Ottawa collision data reported an average of 2 collisions per year at the intersection of Terry Fox Drive/Huntsville Drive, 7 collisions per year at the intersection of Terry Fox Drive/Kanata Avenue and 5 collisions per year at Terry Fox Drive/ Richardson Side Road.

The Kanata Avenue/Huntsville Drive intersection experienced an average of two collisions per year, for a total of eight collisions over a 5-year period. The most frequently reported collision type during the collected period is rear-end collisions, with a total of 7 collisions, while 1 angle collision was reported.

The Terry Fox Drive/Kanata Avenue intersection experienced an average of 7 collisions per year, for a total of 34 collisions over a 5-year period. The most frequently reported collision type during the collected period is rear-end collisions, with a total of 17 collisions, 11 of these traveling south from Kanata Avenue. This is followed by 7 turning movement collisions, 4 sideswipe collisions, 3 angle collisions, 2 single motor vehicle collision, and 1 approaching collision. Most of these collisions occurred under clear weather conditions, during daylight hours, and typically and around 3:00 PM.

The Terry Fox Drive/ Richardson Side Road intersection experienced an average of 5 collisions per year, for a total of 25 collisions over a 5-year period. Turning movement collisions were the most frequently reported collision type over the period, with a total of 14 collisions. Out of these 14 collisions, 8 collisions occurred during daylight, 3 during dusk, and 3 during dark lighting conditions. The majority of the daylight collisions involved vehicles turning left, occurred in clear weather conditions, and mostly resulted in non-fatal injuries. Of these left-turn collisions, the majority of vehicles were traveling either east or west on Terry Fox Drive, resulting in westbound left-turn collisions. The 14 turning movement collisions were followed by 5 rear-end collisions, 4 angle collisions, and 2 sideswipe collisions.

The overall number and types of collisions is generally within the range expected for signalized intersections. The City should continue to monitor collisions and screen for abnormal frequency and severity of occurrences over time as part of its regular safety program.

Collision data as provided by the City of Ottawa is provided in Appendix C.

Figure 10: Number of Collisions in the Vicinity of the Site (2018 to 2022)

Source: Google Maps, accessed February 2025, imagery date July 2022

2.1.3 Planning Conditions

2.1.3.1 Road Network Improvements

2.1.4 Study Area Intersections

A review of the City of Ottawa Transportation Master Plan (TMP) (2025) reveals that no road network improvements are planned for any of the study area intersections.

2.1.5 Surrounding Network

The Earl Grey Drive Extension Project aims to enhance traffic flow and bus service in the Kanata Centrum area by extending Earl Grey Drive as a two-lane road with cycling and pedestrian facilities, adjacent to Terry Fox Drive. It includes a new intersection at Didsbury Road, a bridge under Terry Fox Drive, and storm sewers connecting to the Carp River stormwater pond. Upgrades to Didsbury Road West and the intersection of Terry Fox Drive and Didsbury Road will include cycle tracks and crosswalks.

Project timeline:

- Design completion: March 2025.
- Construction start: August 2025.
- Completion: December 2027.

2.1.5.1 Walking and Cycling

The City of Ottawa's new TMP indicates no pedestrian or cycling projects with prioritization within proximity to the study area.

2.1.5.2 Transit

The new TMP does not include Transit network improvements within the study area.

2.1.5.3 Future Background Developments

City staff identified Richardson Ridge Phase 4 as the only active development near the subject site.

The Richardson Ridge Phase 4 traffic impact study (August 2016) is located on the east side of Terry Fox Drive, as shown in Figure 11.

Figure 11: Richardson Ridge Development – Location

Source: Google Maps, accessed February 2025, imagery date July 2022

2.2 Study Parameters

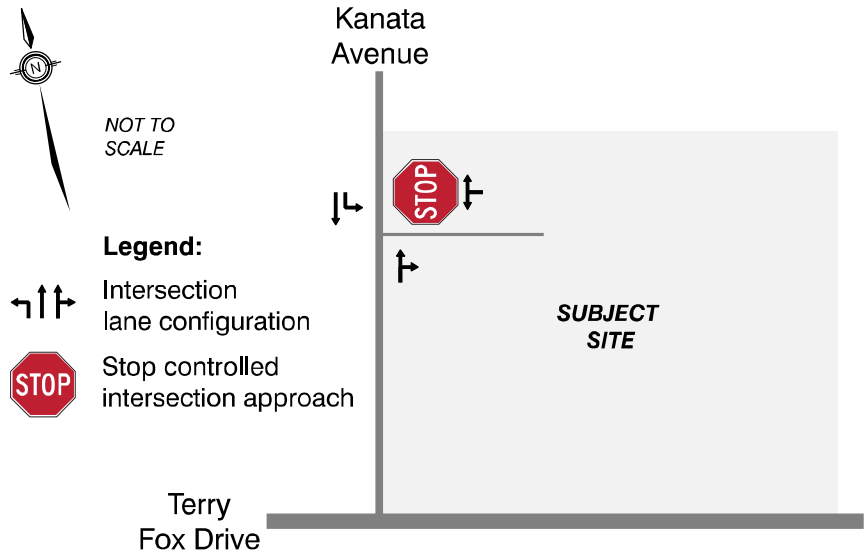
2.2.1 Study Area

The study area includes three existing intersections and the proposed private driveway access:

- Terry Fox Drive at Richardson Side Road (existing).
- Terry Fox Drive at Kanata Avenue (existing).
- Kanata Avenue at Huntsville Drive (existing).
- Terry Fox Drive at site access (constructed under existing conditions).

The study area intersections are located within one kilometre of the subject site, as illustrated in Figure 2. Figure 12 illustrates the anticipated lane geometry and traffic control at the site access. The site access on Kanata Avenue is proposed to provide full-movement access.

Figure 12: Lane Geometry and Traffic Control at the Site Access



2.2.2 Time Periods

The selected periods for analysis are the weekday AM and PM peak hours of adjacent street traffic (i.e. the AM and PM rush hours) since these are often the periods that typically generate the highest traffic volumes and govern the roadway design.

2.2.3 Horizon Years

Traffic volumes have been forecast for the weekday AM and PM peak hours to the following horizon years:

- 2028 (the anticipated build-out year).
- 2033 (five years following the anticipated build-out year).

2.3 Exemptions Review

Table 6 summarizes the trip generation triggers as indicated in the City of Ottawa Traffic Impact Assessment Guidelines (TIA) Revisions (2023). Although Modules 4.4 and 4.9 are not required, these sections were included in the report as they relate to traffic operations, which may be a contentious item with the public.

Table 6: Exemption Review

Module	Element	Exemption Consideration	Status
4.1 Development Design	4.1.1 Design for Sustainable Modes	Always required	Included
	4.1.2 Circulation and Access	All site plan and zoning by-law applications	Included
	4.1.3 New Street Networks	All plans of subdivision	Not Included
4.2 Parking	4.2.1 Parking Supply	All site plan and zoning by-law applications	Included
4.3 Boundary Street Design		Always required	Included
4.5 Transportation Demand Management (TDM)[3]	4.5.1 Context for TDM	Always required	Included
	4.5.2 Need and Opportunity	Always required	Included
	4.5.3 TDM Program	Always required	Included
4.6 Neighbourhood Traffic Calming		If the development meets all of the following criteria along the route(s) that site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: ○ School (within 250 m walking distance); ○ Park; ○ Retirement / Older Adult Facility (i.e. long-term care and retirement homes);	Not Included

[3] The City of Ottawa Traffic Impact Assessment Guidelines (TIA) Revisions (2023) indicates that the TDM module is required for any development generating more than 60 person trips.

Module	Element	Exemption Consideration	Status
		○ Licensed Child Care Centre; ○ Community Centre; or ○ 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	
4.7 Transit	4.7.1 Transit Route Capacity	> 75 site transit trips	Not included
	4.7.2 Transit Priority Requirements	> 75 site auto trips	Not included
4.8 Network Concept		When proposed development generates > 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning.	Not included
4.9 Intersection Design	4.9.1 Intersection Controls (including site accesses)	> 75 site auto trips	Included but not Required
	4.9.2 Intersection Design	> 75 site auto trips	Included but not Required

3.0 Forecasting

3.1 Development-Generated Travel Demand

The site's residents will generate trips using various transportation modes. Trip generation for each mode share has been calculated based on the rates published in the TRANS Trip Generation Manual Summary Report (2020), for the Kanata traffic assessment zone.

3.1.1 Trip Generation and Mode Shares

Residential person trips and mode shares were determined using the TRANS Trip Generation Manual Summary Report (2020). The TRANS Manual is the recommended source per the City's TIA Guidelines (2017), with established residential trip generation rates specific to the City of Ottawa. Applicable tables used from the TRANS Trip Generation Manual Summary Report (2020) can be found in Appendix D.

The Trans Trip Generation Manual defines high-rise multifamily housing as "any building that houses multiple families that is three or more storeys (e.g., apartments and condo buildings)." Based on this definition, the proposed site is classified as high-rise housing within this transportation planning context.

3.1.1.1 Residential Trip Rates

Residential person trips were determined using Table 3 from the TRANS Trip Generation Manual Summary Report (2020). Residential mode shares for high-rise multifamily housing were determined using Table 8 from the TRANS Manual (the site is located in Kanata district). Directional splits were determined using Table 9 of the manual. Peak hour adjustments were applied using Table 4 of the manual. The residential trip rates are provided in Appendix D.

Table 7 summarizes the residential person-trip generation rates for the peak period.

Table 7: Peak Period Residential Person-Trips

Land Use Code/Land Use	Source	Dwelling Units	Trans Person Trip-Rate (Peak Period)		Peak Period Trips	
			AM	PM	AM	PM
Multi-Unit (High-Rise)	TRANS 2020	182	0.8	0.9	146	164

The AM and PM peak period person-trips were used to estimate peak hour trips by multiplying the number of person-trips by the appropriate mode share and adjusting to the peak hour using the appropriate peak hour adjustment factors for each transportation mode, as shown in Table 8.

Table 8: Peak Hour Trips by Mode

LUC 221 & 222 – Multi-Unit (High-Rise)	Mode Share		Peak Period Person Trips Generated		Peak Hour Adjustment		Peak Hour Trips	
	AM	PM	AM	PM	AM	PM	AM	PM
Auto Mode Share	43%	55%	63	90	0.48	0.44	30	40
Auto Passenger	26%	19%	37	31	0.48	0.44	18	14
Transit	28%	21%	40	34	0.55	0.47	22	16
Cycling	0%	0%	0	0	0.58	0.48	0	0
Walking	4%	5%	5	8	0.58	0.52	3	4
Total	100%	100%	145	164	-	-	73	74

Peak hour trips were multiplied by appropriate directional splits to determine total site-generated residential trips during the AM and PM peak hours to/from the site, as shown in Table 9.

Table 9: Site Generated Residential Trips

RESIDENTIAL								
Travel Mode	Directional Split		AM Peak Hour			PM Peak Hour		
	AM IN %	PM IN %	Total	In	Out	Total	In	Out
Auto Driver	31%	58%	30	9	21	40	23	17
Auto Passenger			18	6	12	14	8	6
Transit			22	7	15	16	9	7
Cycling			0	0	0	0	0	0
Walking			3	1	2	4	2	2
Total Residential Trips			73	23	50	74	42	32

The proposed residential development is anticipated to generate 30 vehicle trips (9 inbound, 21 outbound) during the AM peak hour and 40 vehicle trips (23 inbound, 17 outbound) during the PM peak hour.

3.1.2 Trip Distribution

The distribution of the site-generated traffic considered the existing turning movement counts at the study intersections, especially the traffic turning into and out of Huntsville Drive, given that it serves a residential development near the subject site. Table 10 summarizes the trip distribution applied to the site-generated trips.

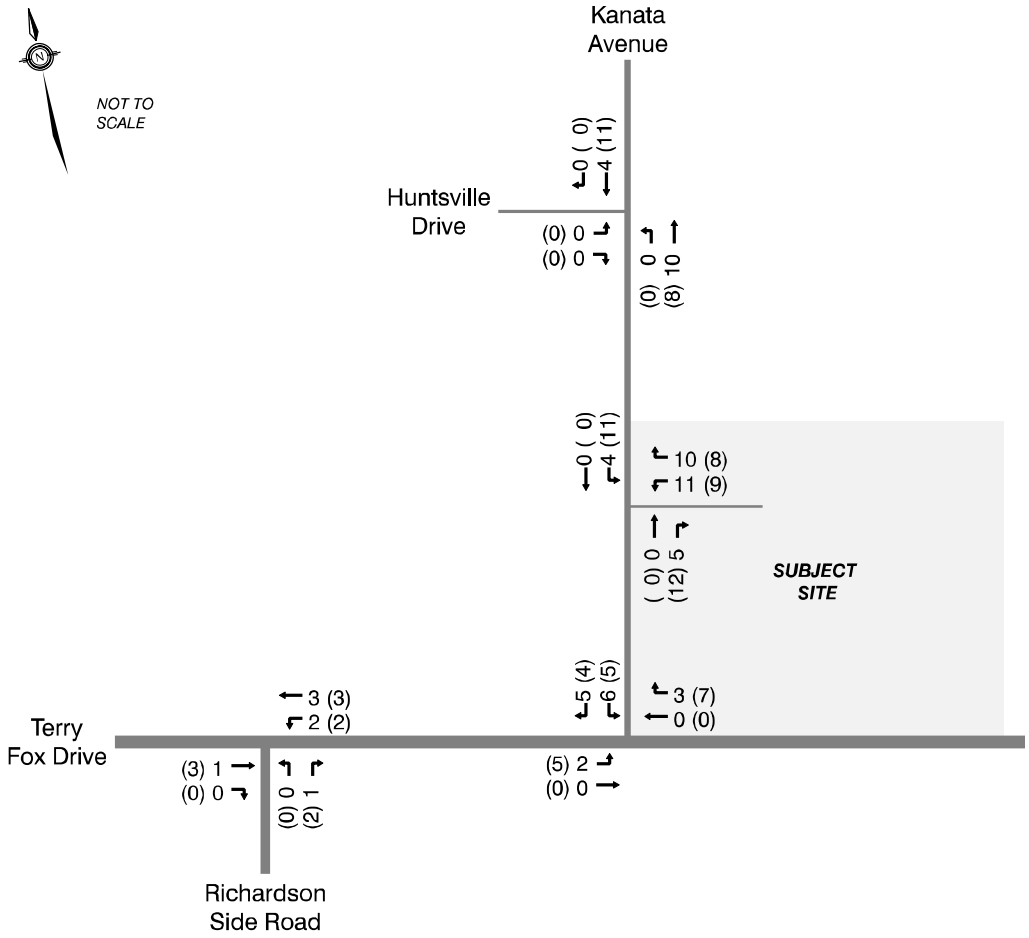
Table 10: Site Trip Distribution

Direction	Distributed % of Trips
to/from the east – Terry Fox Drive	30%
to/from the west – Terry Fox Drive	15%
to/from the north – Kanata Avenue	45%
to/from the south – Richardson Side Road	10%
Total	100%

3.1.3 Trip Assignment

Vehicle trips were assigned to the road network in accordance with Table 10. Figure 13 illustrates the site-generated trips for the weekday AM and PM peak hours based on the above assumptions. Due to rounding, some traffic volumes may not balance completely throughout the study area intersections.

Figure 13: Site Generated Traffic Volumes



3.2 Background Network Travel Demand

3.2.1 Transportation Network Plans

As indicated in Section 2.1.3.1 no proposed network changes are planned within the study area.

3.2.2 Background Growth

A background growth rate of 2% per annum was applied to the existing traffic volumes to account for traffic volume growth created by other developments within Kanata Lakes or the outlining areas. The background growth rate was applied to all study area intersection movements, except for those turning into or out of Huntsville Drive, as that roadway is not expected to experience traffic growth as the subdivision is built out and no longer growing.

3.2.3 Background Developments

City staff identified Richardson Ridge Phase 4 as the only active development near the subject site.

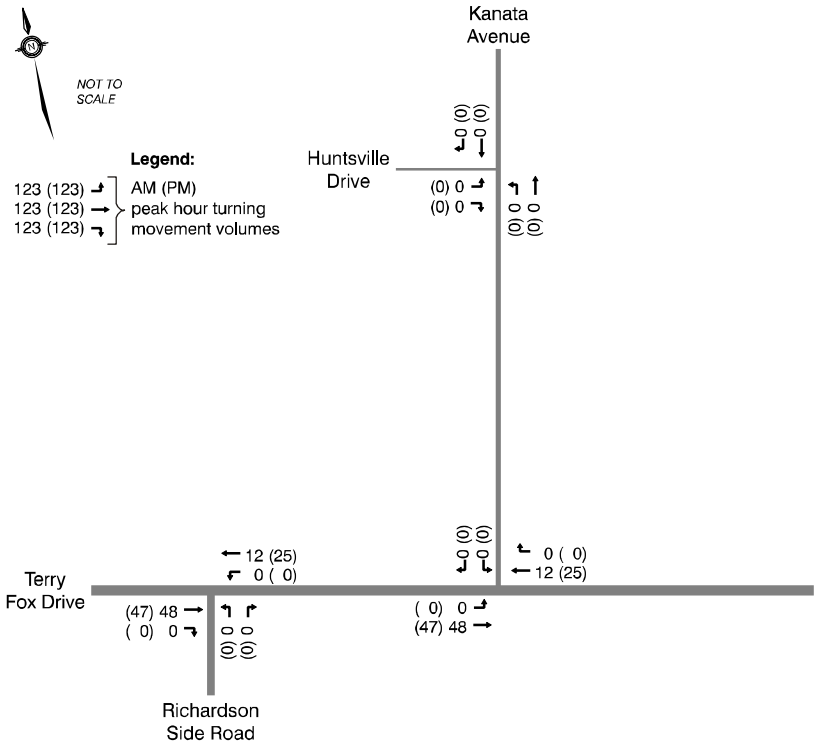
The Richardson Ridge Phase 4 (traffic impact study – August 2016) is located on the east side of Terry Fox Drive, as shown in Figure 14.

This background development comprises of 197 residential units (41 single-detached family homes and 156 townhouse units). The Phase 4 TIS assumed the build-out year of 2019; a site visit in March 2025 confirms that Phase 4 is mostly built-out. The Richardson Ridge Phase 4 site-generated trips were included within the background condition to be conservative. Figure 15 presents the traffic volumes associated with the Richardson Ridge Phase 4 development.

Figure 14: Richardson Ridge Development – Location

Source: Google Maps, accessed February 2025, imagery date July 2022

Figure 15: Richardson Ridge Development – Phase 4 Site Generated Trips



3.3 Demand Rationalization

The proposed development is not anticipated to significantly increase traffic volumes along study area roadways. Traffic volumes along Terry Fox Drive, Kanata Avenue, and Richardson Side Road are not anticipated to exceed capacity. For these reasons, demand rationalization was not completed.

3.4 Total Future Traffic Volumes

The forecast for future total traffic volumes includes site-generated trips, background traffic volume growth of 2% per annum, and the Richardson Ridge Phase 4 traffic volumes. Figure 16 and Figure 17 illustrate the forecasted total future traffic volumes to the 2028 build-out year and 2033 horizons (build-out plus five years) respectively.

Figure 16: 2028 Total Traffic Volumes

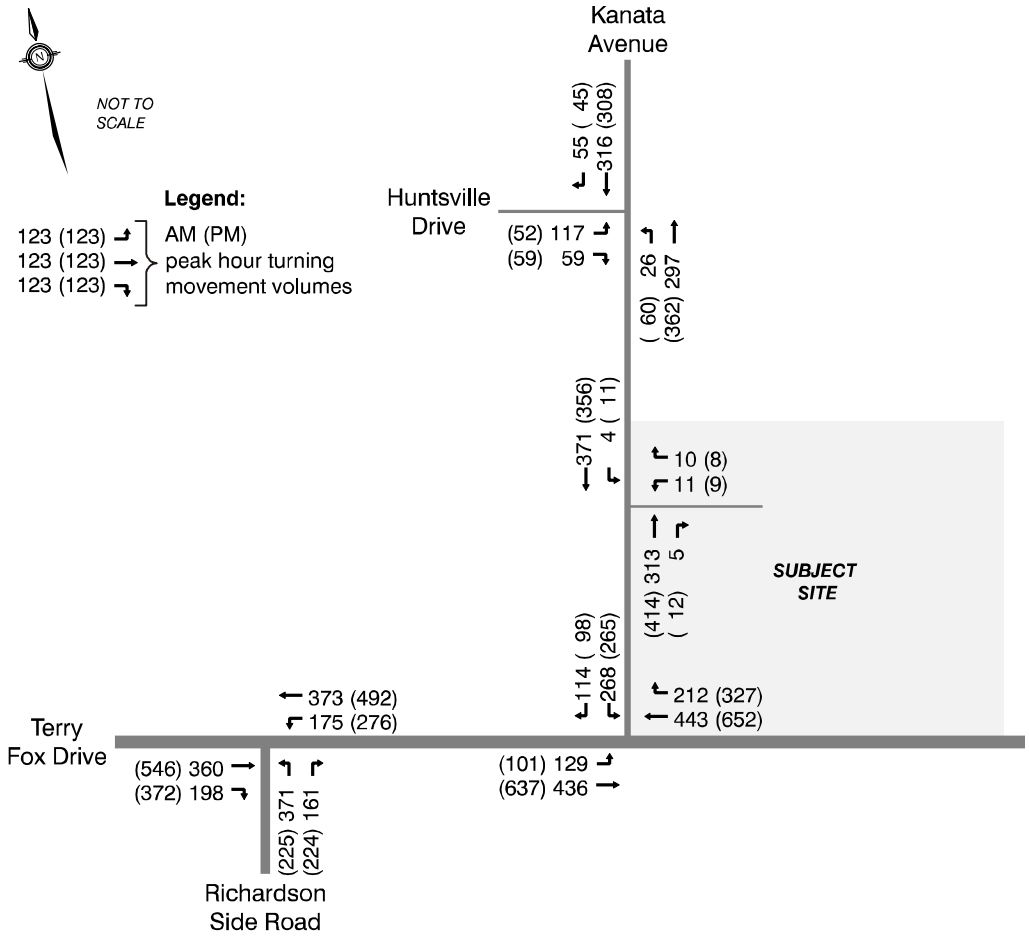
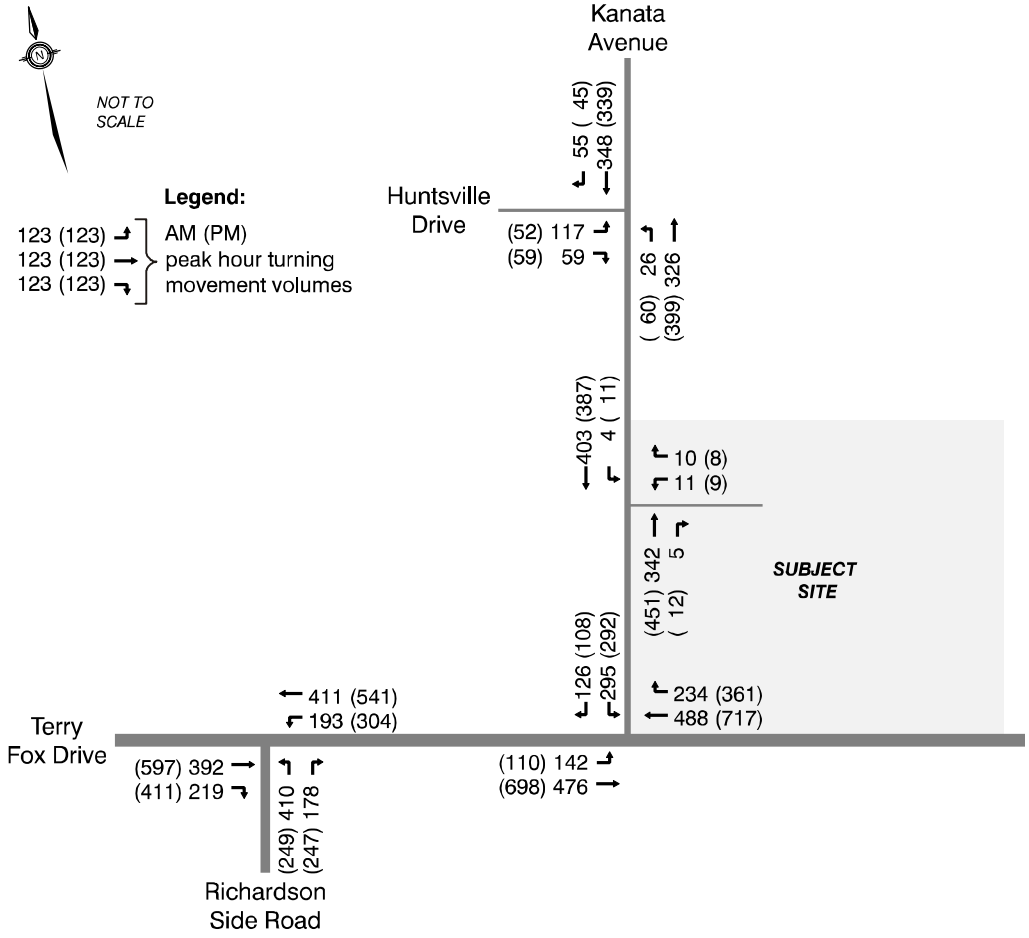


Figure 17: 2033 Total Traffic Volumes



4.0 Analysis

4.1 Development Design

For reference, the site plan is illustrated again in Figure 18.

Figure 18: Site Plan

4.1.1 Design for Sustainable Modes

The following summarizes the sustainable transportation aspects of the proposed residential site.

Location and Designed of Proposed Auto and Bicycle Parking Areas:

- Auto Facilities
  - The underground garage flows under and is connected between Buildings A and C with two parking garage accesses, one from Building A and from Building C. Surface parking is located between Buildings B and C and in a central courtyard. The parking layout is efficient and designed to minimize visual impacts on neighbouring properties.

- Bicycle facilities
  - The site plan indicates 37 total surface bicycle parking spaces in the following locations:
    - Building A near the front entrance (7 spaces) and to the north near the parking ramp (9 spaces).
    - Building B just west of the front entrance (16 spaces).
    - Building C near the front entrance (5 spaces).
  - Additional bicycle parking is provided in the underground parkades, totalling 100 spaces.
    - Building A and B provides 58 spaces within a dedicated bicycle storage area, 21 long term bicycle spaces within the parkade plus two inclusive bike spaces).
    - Building C provides 19 bicycle spaces within the parkade.
  - Bicycle Parking Access Routes
    - Cyclists can access surface bicycle parking by using the connections from Terry Fox Drive and Kanata Avenue.
    - For underground parkade bicycle parking, cyclists will enter/exit the underground parking area via the garage ramps.

The Design of Pedestrian Routes and Facilities:

- A municipal sidewalk currently runs along both site frontages, on the east side of Kanata Avenue and the north side of Terry Fox Drive.
- Building C has two direct connections to the Terry Fox Drive sidewalk. An additional sidewalk connects the site to Kanata Avenue.

The Design and Location of Transit Amenities:

- The nearest transit stops are located:
  - Stop ID: 7572: Services southbound transit routes on Kanata Avenue. The stop is located approximately 40 metres south of the Kanata Avenue and Huntsville Drive intersection.
  - Stop ID: 5444: Services southbound transit routes on Kanata Avenue. The stop is located approximately 70 metres north of the Terry Fox Drive and Kanata Avenue intersection
  - Stop ID: 5443: Services westbound transit routes on Terry Fox Drive. The stop is located approximately 30 metres east of the Terry Fox Drive and Kanata Avenue intersection.
- No new specific routes or transit stop locations are planned in conjunction with the site.
- As mentioned in Section 2.1.5.2 there are no proposed rapid transit and transit priority network changes within the study area.
- Landing pads are present at Stop ID: 5444 and Stop ID: 5443, while Stop ID 7572 does not have a pad. None of the transit stops have shelters. During the review of the draft site plan submission, the city requested a transit concrete shelter pad at Stop ID: 5443 as per city SC11 drawing.

- Walking Distances
  - The closest transit stops to each building from the front entrances are indicated in Table 11.

Table 11: Transit Stop Walking Distances

Building	Stop ID: 5443	Stop ID: 5444	Stop ID: 7572
Building 'A'	210 metres	300 metres	395 metres
Building 'B'	55 metres	185 metres	530 metres
Building 'C'	115 metres	245 metres	590 metres

The development is anticipated to generate 22 transit trips (7 inbound, 15 outbound) during the AM peak hour and 16 transit trips (9 inbound, 7 outbound) during the PM peak hour. Opportunities to increase the percentage of units within 400 metres walking distance were not considered due to the site's existing proximity to transit stops and the anticipated low volume of transit trips generated by the development. Additionally, no specific routes or stop locations are planned with the construction of the development.

4.1.2 Circulation and Access

The site was assessed to determine if appropriate spacing is provided for passenger vehicles, garbage trucks, single-unit trucks, and fire trucks to access municipal services.

Swept path analyses were performed using AutoTURN software to assess the navigational capabilities of these design vehicles.

Ironclad confirmed that the garbage bins are on rollers and would be moved into position for the garbage truck. The single-unit trucks are assumed to be the design vehicle for moving trucks.

The Ontario Building Code (OBC) and the National Building Code (NBC) specify the requirements for the location and design of access fire routes. A site with three or more storeys is required to have an access route for fire department vehicles. The site plan does not explicitly indicate the fire route; however, Ironclad has confirmed that the fire truck will circulate within the site to serve Building 'A' and Building 'B', while Building 'C' will be accessed from Terry Fox Drive.

The fire route is required to be located no greater than 15 metres from an access driveway to the closest building entrance, be at least 6 metres wide, and have a minimum centreline radius of 12 metres. The fire route is located 8.5 metres from a lobby entrance, meeting the required 15-metre distance. It is proposed to be more than 6 metres wide, meeting the 6-metres requirement and proposed to have a 12-metre centre line radius, meeting the 12-metre centerline requirement.

The parking lot on the west side of Building 'C' accommodates passenger vehicles; however, swept path analysis indicates that the two parking spaces closest to Terry Fox Drive may be difficult to access if all spaces are occupied. Ironclad has suggested designating these two spaces for small passenger vehicles. Additionally, the other parking spaces along Building 'C' are designated for small vehicles.

All required turning movements can be accommodated for the design vehicles. Appendix E contains the turning swept path movements.

4.1.3 New Street Networks

This section is not included in the TIA, as New Street Networks evaluations are not required for applications involving site plans.

4.2 Parking

4.2.1 Parking Supply

4.2.1.1 Automobile Parking

As per City of Ottawa Zoning By-law 2008-250, the minimum parking requirement for a 182 dwelling unit mid-high rise apartment building located in Area C of Schedule 1A is 1.2 parking spaces per unit for residents and 0.2 spaces per unit for visitor parking. Table 12 summarizes the parking rate details. The detailed current site plan is provided in Appendix A.

Table 12: Automobile Zoning By-Law Parking Space Requirements

Note: [1] Sourced from Section 101, Table 101, Row R12.
[2] Sourced from Section 102, Table 102, Row 1.
[3] The accessible parking space requirements are discussed in Section 4.2.1.2.

Land Use	Area	Type	Rate	Required Spaces	Provided Spaces
Dwelling, Mid-High Rise Apartment	Area C on Schedule 1A	Residential Spaces	1.2 [1]	218	166
		Visitor Spaces	0.2 [2]	36	37
			Total	254	203
		Accessible Spaces	[3]	8	7

Given that the proposed development consists of 182 dwelling units, the developer is required to provide a minimum of 218 residential parking spaces (including 8 accessible spaces) and 36 visitor spaces, for a total of 254 parking spaces. The site plan provides 210 total parking spaces, consisting of 166 parking residential spaces, 7 accessible spaces and 37 for visitors. Therefore, the site plan does not meet the zoning by-law parking space requirements of an R12 land use.

Ironclad Developments Inc. (ICD) plans to rezone the property to R5- Residential Fifth Density Zone, Sections 163-164. The R5 parking rate is 1.0 dedicated parking spaces per unit for the first four storeys and 0.75 spaces per unit for additional storeys. Table 13 summarizes the rezoning parking rate details.

Table 13: Automobile Zoning By-Law Parking Space Requirements (R5 Zoning)

Note: [1] Sourced from Table 164B, Row 34.
[2] The accessible parking space requirements are discussed in Section 4.2.1.2.

Land Use	Area	Type	Rate	Required Spaces	Provided Spaces
Apartment Dwellings	n/a	Residential Spaces (Floors 1-4) (130 units)	1.0 [1]	130	166
		Residential Spaces (Floors 5+) (52 units)	0.75 [1]	39	37
		Accessible Spaces	[2]	7	7
			Total	169	210

Using the R5 land use parking rate, the site is required to provide a total of 169 parking spaces, with 130 parking spaces for floors 1 to 4 and 39 parking spaces for floors 5 and 6, and 7 accessible parking spaces. The site plan meets and exceeds the R5 zoning by-law parking space requirements.

4.2.1.2 Accessibility Parking

As per City of Ottawa Zoning By-law 2017-301, Section 112 indicates that a development with 210 parking spaces is required to have 7 accessible spaces (3 Type A and 4 Type B).

Dimensions:

The specified dimensions for accessible parking spaces are as follows:

(a) Type A spaces (minimum 3400 mm wide): consist of wider parking spaces which accommodate larger vehicles such as vans that are equipped with transfer ramps for users of wheeled mobility aids.
(b) Type B spaces (minimum 2400 mm wide): are standard parking spaces which accommodate users who are ambulatory but have limited mobility and cannot travel lengthy distances, or use other mobility aids, such as canes, crutches and walkers.

Design and Layout:

The specified design and layout for Type A and Type B are as follows:

1. The design and layout of Type A and Type B parking spaces referred to in Section 112 shall be in accordance with the following:
   (a) accessible parking spaces must be located as close as possible to an accessible entrance and integrate with an accessible route.
   (b) ensure ground surface is firm, stable and slip-resistant.
   (c) maximum running slope of surface at 1:50 (2%).
   (d) maximum cross-slope of surface at 1:50 (2%).
   (e) length of 5200 mm.
   (f) minimum width of 3400 mm for “Type A” wide van accessible spaces and minimum width of 2400 mm for “Type B” standard parking spaces.
   (g) provide an access aisle adjacent and parallel to each accessible parking space:
      (i) 1500 mm wide (minimum).
      (ii) extend the full length of the space.
      (iii) clearly indicated by high colour contrast diagonal pavement markings.
      (iv) where two accessible parking spaces are provided adjacent to each other, they may share an access aisle.
      (v) connect with adjacent accessible path of travel and centre curb ramp on access aisle.
   (h) ensure vertical height clearance of 2100 mm (minimum) at designated parking spaces and along the vehicle access and egress routes.

4.2.1.3 Bicycle Parking

As per City of Ottawa Zoning By-law 2016-249 (Section 111), the minimum bicycle parking rate is 0.5 bicycle parking spaces per dwelling unit. Table 14 summarizes the rezoning parking rate details.

Table 14: Bicycle Zoning By-Law Parking Space Requirements

Note: [1] Sourced from Table 111A, Row 2

Land Use	Area	Type	Rate	Required Spaces	Provided Spaces
Apartment Building Mid Rise	n/a	Bicycle	0.5 [1]	91	121

The site plan proposed 182 dwelling units, therefore, 91 bicycle parking spaces are required. The site plan provides 121 spaces. The site plan meets the zoning by-law bicycle parking space requirements.

4.3 Boundary Street Design

4.3.1 Mobility

The City of Ottawa's 2025 Multi-Modal Level of Service (MMLOS) guideline was used to evaluate the future conditions in 2033 on Terry Fox Drive and Kanata Avenue.Table 15 presents the MMLOS conditions for roadway segments adjacent to the residential development on Terry Fox Drive and Kanata Avenue under future background conditions as of 2033. The 2025 MMLOS guideline defines road segments as "links between signalized intersections".

Table 15: MMLOS Conditions – Segments

Mode	Criteria	Terry Fox Drive between Kanata Avenue and Richardson Side Road (Arterial Road)		Kanata Avenue between Terry Fox Road and Huntsville Drive (Major Collector Road)	
		South Side	North Side	West Side	East Side
Pedestrian LOS	Posted Speed (km/h)	70 km/h		60 km/h	60 km/h
	Two-Way ADT	23,000		11,000	11,000
	Pedestrian Facility	None	Sidewalk	Sidewalk	Sidewalk
	Does the facility meet the TMP Sidewalk or MUP Policy? If not, for MUPs, does the location have a low volume of peak daily users AND are pedestrian volumes likely less than 20% of total users?	Yes	Yes	Yes	Yes
	Facility Width (m)	-	2.00 m	2.00 m	2.00 m
	Offset from Motor Vehicle Travel Lanes (m)	-	1.5-2.99 m	1.5-2.99 m	1.5-2.99 m
	Presence of Adjacent Parking?	-	-	-	-
	General Purpose Curb Lane ADT	-	≤ 3000	≤ 3000	≤ 3000
	Max. Distance between Controlled Crossings (m)	-	> 400 m	291-400 m	291-400 m
	PLOS	-	D	C	C
	Target PLOS	-	C	C	C

Mode	Criteria	Terry Fox Drive between Kanata Avenue and Richardson Side Road (Arterial Road)		Kanata Avenue between Terry Fox Road and Huntsville Drive (Major Collector Road)	
		South Side	North Side	West Side	East Side
Bicycle LOS	Cycling Route Classification	Cross-Town Bikeway	Cross-Town Bikeway	Elsewhere	Elsewhere
	Cycling Facility	Painted or Physically Separated Bike Lanes	Painted or Physically Separated Bike Lanes	Painted or Physically Separated Bike Lanes	Painted or Physically Separated Bike Lanes
	Is the minimum level of separation provided according to OTM Book 18 Pre-Selection Nomograph – Rural Context (Figure 5.6)? (for paved shoulders)	-		-	-
	Facility Operation	Unidirectional	Unidirectional	Unidirectional	Unidirectional
	Pedestrian/Cyclist Volume	-	-	-	-
	Facility Width	1.8-1.99 m	1.8-1.99 m	1.8-1.99 m	1.8-1.99 m
	Boulevard/Buffer Width (excluding curb)	-	-	< 1.0 m and no vertical measure or < 0.6 m with adjacent parking	< 1.0 m and no vertical measure or < 0.6 m with adjacent parking
	Unsignalized Roadway Crossing Type (where cyclists are required to yield)	Cross-Street	Cross-Street	Cross-Street	Cross-Street
	Number of Travel Lanes at Crossing	4-5	4-5	3	3

Mode	Criteria	Terry Fox Drive between Kanata Avenue and Richardson Side Road (Arterial Road)		Kanata Avenue between Terry Fox Road and Huntsville Drive (Major Collector Road)	
		South Side	North Side	West Side	East Side
	Crossing includes Median Refuge (≥ 2.7m)	Yes	Yes	No	No
	Cross-street Posted Speed (km/h)	≥ 60 km/h	≥ 60 km/h	40 km/h	40 km/h
	Cycling Path Blockages (e.g. bus stops and/or loading zones)	Rare	Rare	Rare	Rare
	BLOS	D	D	C	C
	Target BLOS	B	B	C	C
Transit LOS	Transit Facility	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Facility Type	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Expected Transit Running Time	Slightly Impeded	Slightly Impeded	Slightly Impeded	Slightly Impeded
	Transit Travel Speed (if available)	70 km/h	70 km/h	60 km/h	60 km/h
	TLOS	B	B	B	B
	Target TLOS	E (D for frequent transit routes)	E (D for frequent transit routes)	E (D for frequent transit routes)	E (D for frequent transit routes)
Public Realm	Context	Other Streets	Other Streets	Other Streets	Other Streets
	Inner Boulevard Width	2.0-3.99 m	2.0-3.99 m	1.5-1.99 m	1.5-1.99 m
	Middle Boulevard Width	≤ 0.5 m	≤ 0.5 m	≤ 0.5 m	≤ 0.5 m

Mode	Criteria	Terry Fox Drive between Kanata Avenue and Richardson Side Road (Arterial Road)		Kanata Avenue between Terry Fox Road and Huntsville Drive (Major Collector Road)	
		South Side	North Side	West Side	East Side
	Outer Boulevard (Frontage) Width	≥ 3.0 m	≥ 3.0 m	≥ 3.0 m	≥ 3.0 m
	Transit Route on Segment?	Yes	Yes	Yes	Yes
	Bus Stop Elements	No platform, landing zone or shelter	No platform, landing zone or shelter	No platform, landing zone or shelter	No platform, landing zone or shelter
	Number of Midblock Traffic Lanes (both travel directions)	4		3	3
	PRLOS	E	E	C	C

Source: MMLOS Guideline, 2025

The analysis shows that MMLOS targets for transit modes are anticipated to be easily met on the studied segment of Terry Fox Drive, however, the pedestrian and cycling MMLOS does not meet the target. All MMLOS targets are met on the studied segment of and Kanata Avenue.

The target PLOS is C, while the Terry Fox Drive segment achieves PLOS D, the Kanata Avenue segment meets the mode target with a PLOS C.

The target BLOS is B for the Terry Fox Drive segment and BLOS C for the Kanata Avenue segment. While the Terry Fox Drive segment achieves BLOS D, the Kanata Avenue segment meets the mode target with a BLOS C.

There are no improvements that would meet the PLOS and BLOS target for Terry Fox Drive, however, it is recommended that the City consider constructing a sidewalk or multi-use path along the south side of the Terry Fox Drive connecting to the sidewalk at Campeau Drive.

As indicated in Section 2.1.3.1, no proposed network changes are planned within the study area.

Table 16 presents the MMLOS conditions for the Terry Fox Drive and Kanata Avenue intersection under 2033 total future conditions.

The MMLOS analysis is based on the planned roadway conditions. The volume to capacity ratios and the average signal delays are forecasted for 2033 future background conditions and are evaluated in Section 4.9.

Table 16: MMLOS Conditions – Intersection

Mode	Criteria	Terry Fox Drive at Kanata Avenue			
Pedestrian LOS	Pedestrians Crossing the	North Leg	South Leg	East Leg	West Leg
	PLOS	C	-	-	C
		C			
	Target PLOS	C			
Bicycle LOS	Cyclists Crossing the	North Leg	South Leg	East Leg	West Leg
	BLOS	-	D	-	D
		D			
	Target BLOS	B			
Transit LOS	Vehicles Travelling	Southbound	Northbound	Westbound	Eastbound
	TLOS	C	-	C	C
		C			
	Target TLOS	E (D for frequent transit routes)			
Auto LOS	AutoLOS	A			
	Target AutoLOS	E			

Source: MMLOS Guideline, 2025

The analysis shows that MMLOS targets for all modes except the cycling mode are anticipated to be easily met at Terry Fox Drive and Kanata Avenue.

The target BLOS is B, while the intersection achieves BLOS D.

There are no improvements that would meet the BLOS target for the Terry Fox Drive and Kanata Avenue intersection.

4.3.2 Road Safety

As mentioned in Section 2.1.2.5, the City of Ottawa collision data reported an average of 2 collisions per year at the intersection of Terry Fox Drive/Huntsville Drive, 7 collisions per year at the intersection of Terry Fox Drive/Kanata Avenue and 5 collisions per year at Terry Fox Drive/ Richardson Side Road. The proposed development is not anticipated to have an impact on the collision rates.

4.3.3 Neighbourhood Traffic Management (NTM)

The proposed site is expected to generate low traffic volumes. Therefore, it is not expected to have a significant impact on the operation of Terry Fox Drive or Kanata Avenue.

4.4 Access Intersection Design

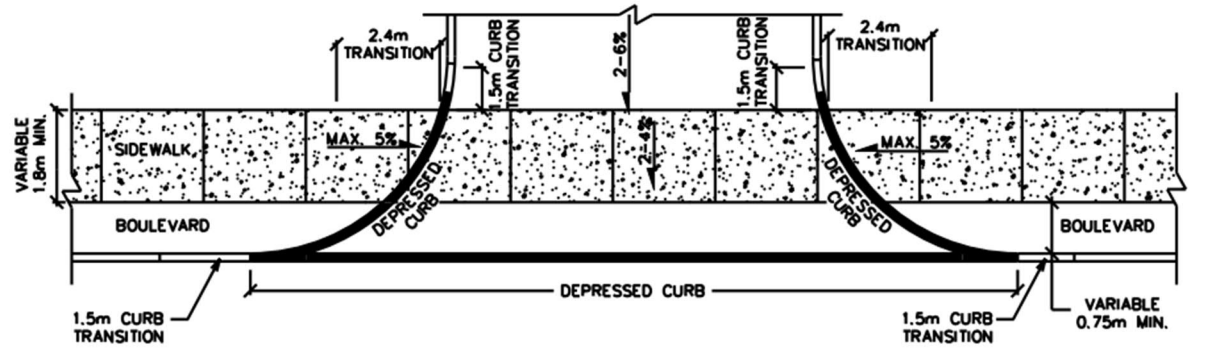
4.4.1 Access Intersection Location

The site plan proposes to use the existing access to Kanata Avenue. The access is located 158 metres north of the Terry Fox Drive and Kanata Avenue intersection.

4.4.2 Access Intersection Design

The curb return at the access should be designed based on the City of Ottawa's "Curb Return Entrances" drawing SC7.1, March 2014. Figure 19 illustrates the city's curb return access requirements for unsignalized intersections with boulevards. Drawing Number SC7.1 is provided in Appendix F.

Figure 19: Appropriate Curb Return Access Requirements



The access is currently constructed with a boulevard, sidewalk, and a depressed curb similar to the SC7.1 standard. These existing components are proposed to be retained, meeting the access requirements for an unsignalized intersection.

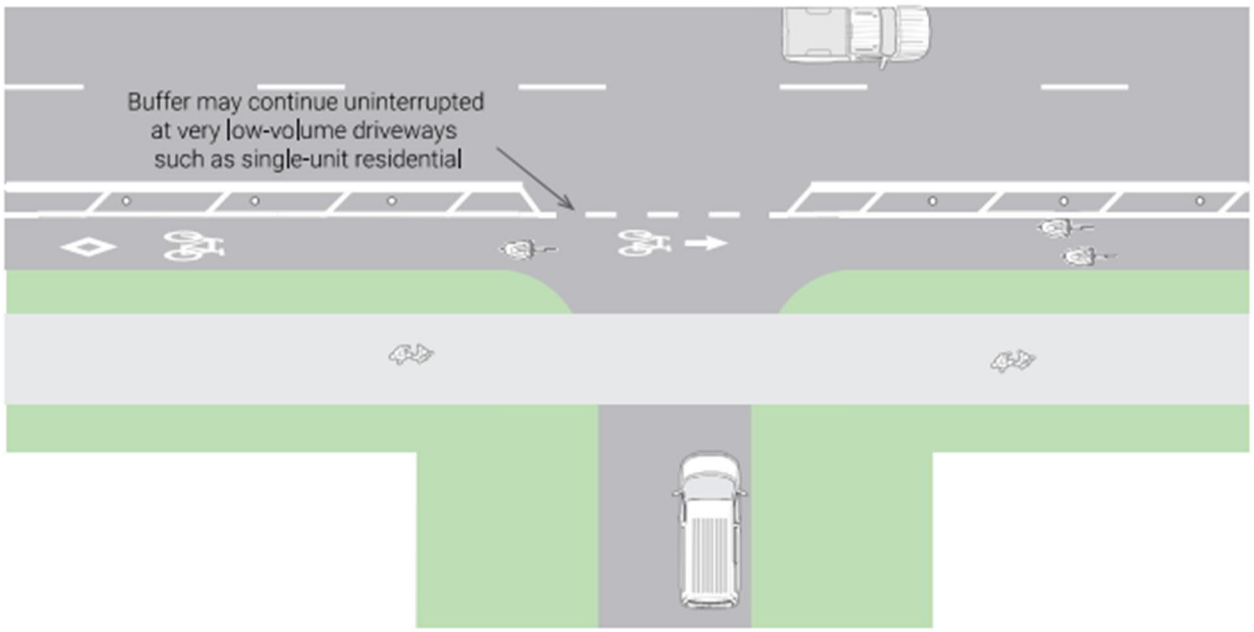
As per City of Ottawa Private Approach By-law 2003-447, Section 11 and 25, the maximum width of the private approach for a residential development is 9.0 metres wide. The proposed access meets the private approach by-law requirements.

As per Chapter 8 of TAC's Geometric Design Guide: Access, Section 8.9.10, an apartment building with between 100 and 200 units should provide a minimum clear throat length of 15 metres for a connection to a collector roadway. Kanata Avenue is a major collector road and is proposed to have a throat distance of approximately 17 metres, meeting the required throat distance of 15 metres.

4.4.3 Cycling Treatments on Kanata Avenue

At the site driveway on Kanata Avenue, it is recommended to introduce a white dashed line on the east side of the cycling lane. Introduce a cycling stencil and arrow to indicate a low-volume driveway treatment, as shown in Figure 20.

Figure 20: Cycling Driveway Treatment



Source: Ontario Traffic Manual Book 18 – Cycling Facilities (Figure 6.68), accessed October 1 2025

4.4.4 Intersection Control

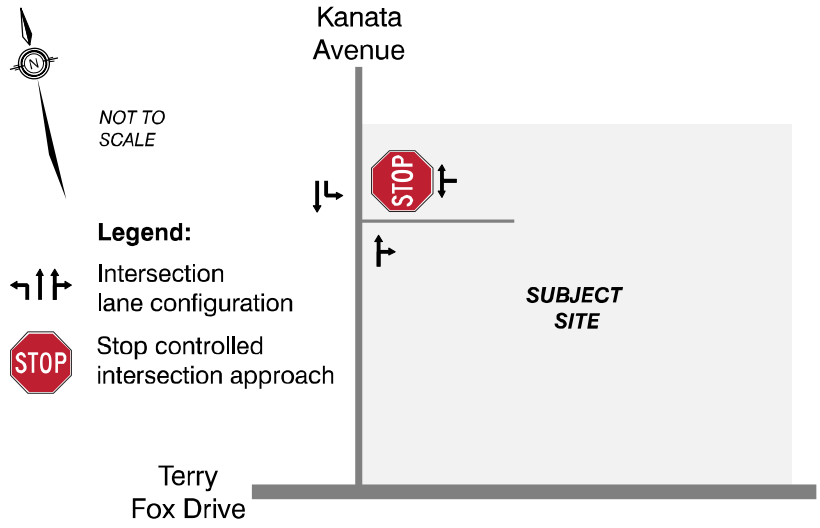
The site access on Kanata Avenue is proposed to be a full-movement unsignalized access with stop-control. A traffic signal warrant was not conducted, as the site access is expected to operate acceptably from a capacity analysis perspective as discussed in Section 4.4.5.

The site generates less than 75 trips and is exempt from this section. However, relevant details are provided below.

The Kanata Avenue southbound left-turn lane is already in place with a solid white edge line to indicate that it is not in use. With the site in operation, this turn lane should provide a storage length of 25 metres, with a 3 x 3 x 3 metre dashed taper extending to the end of the median to the north of the intersection. The taper can be achieved by grinding or blasting portions of the existing line. Two painted left-turn arrows are required within the southbound left-turn lane. Additionally, it is recommended that the solid white bicycle lane line that crosses the driveway be modified to a 1 x 1 x 1 metre dashed line with a painted bicycle stencil within the bike lane at the driveway, as discussed in the section above. No changes to signage are required.

The anticipated lane geometry and traffic control for the site access is shown in Figure 21.

Figure 21: Anticipated Lane Geometry and Traffic Control



4.4.5 Access Intersection Design

Intersection operational analyses were completed for the study area intersections using Trafficware's Synchro software (version 11). At the study area intersections, the volume-to-capacity (v/c) ratio, delay, level of service and 95th percentile queue was noted. Level of service (LOS) definitions are provided in Appendix G. The Synchro analysis worksheets reports are provided in Appendix H.

Table 17 summarizes the 2028 and 2033 future traffic operations for the site access on Kanata Avenue for the weekday AM and PM peak hours.

All movements at the site access are forecast to operate at a LOS A or better with minimal delay during the weekday AM and PM peak commuter hours.

Table 17: Site Access and Kanata Avenue Intersection Operations - AM (PM) Peak Hour

Note: Results are presented in the format AM (PM) peak hour; Q95th (m) indicates the 95th percentile queues, LOS is an abbreviation for Level-of-Service, WB = westbound, NB = northbound, SB = southbound; LTR = left, through, right movements for single lane.

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
Total Future (2028)					
WB approach	21(17)	12.9(14.3)	A(A)	0.05(0.05)	1(1)
NB approach	318(426)	0.0(0.0)	A(A)	0.21(0.28)	0(0)
SBL	4(11)	8.0(8.3)	A(A)	0.00(0.01)	0(0)
SBT	371(356)	0.0(0.0)	A(A)	0.24(0.23)	0(0)
Total Future (2033)					
WB approach	21(17)	13.6(15.2)	A(A)	0.05(0.05)	1(1)
NB approach	347(463)	0.0(0.0)	A(A)	0.23(0.30)	0(0)
SBL	4(11)	8.1(8.4)	A(A)	0.00(0.01)	0(0)
SBT	403(387)	0.0(0.0)	A(A)	0.26(0.25)	0(0)

4.5 Transportation Demand Management (TDM)

4.5.1 TDM Measures Checklist

Appendix I contains the TDM measures checklist. Based on the TDM measures checklists, below are some recommendations:

- Provide a multimodal travel option information package to new residents.

In order to promote other transportation modes, efforts will also be made to increase transit ridership through a combination of:

- Providing an updated map of transit routes and stops locations in the lobby.
- Unbundling parking costs from monthly rent.
- Offer a 1-month Presto card as an incentive for new occupants, available for a limited time (e.g., within the first 6 months) following the site's opening.

4.5.2 TDM Supportive Design and Infrastructure Checklist

Appendix I contains the TDM supportive design and infrastructure checklist. Based on the TDM measures checklists, below are some recommendations:

- Locate building close to the street, and do not locate parking areas between the street and building entrances.
- Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations.
- Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort.
- Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances.
- Provide sidewalks of smooth, well-drained walking surfaces.
- Make sidewalks and open space areas easily accessible.
- Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation.
- Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible.
- Provide the number of bicycle parking spaces.
- Ensure that bicycle parking spaces and access aisles meet minimum dimensions.
- Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists.
- Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers.
- Provide a designated drop-off area for residents.
- Reserve one visitor parking space for a car sharing service.
- Provide separate areas for short-term and long-term parking.

4.6 Neighbourhood Traffic Calming

Terry Fox Drive is an arterial road and is therefore exempt from this section.

The city's Transportation Impact Assessment Guideline, 2017, indicates the threshold for a major collector roadway is a maximum of 5,000 vehicles per day or 600 vehicles during the peak hour.

Kanata Avenue is classified as a major collector road. Under total future 2028 conditions, the forecast weekday peak hour volumes north of the site are 698 vehicles in the AM and 789 vehicles in the PM peak hour, the volumes exceed the threshold for a major collector road. However, the site is

contributing 14 vehicles in the AM and 19 vehicles in the PM peak hour, north of the site, resulting in a negligible impact on Kanata Avenue.

The site generates less than 75 peak hour trips and will have a negligible effect on the neighbourhood. Therefore, a neighbourhood traffic management plan is not recommended to be undertaken by the developer to address background conditions.

4.7 Transit

4.7.1 Route Capacity

The development is anticipated to generate 22 transit trips (7 inbound, 15 outbound) during the AM peak hour and 16 transit trips (9 inbound, 7 outbound) during the PM peak hour. The site is anticipated to generate less than 75 peak hour transit trips and is therefore exempt from this section.

4.7.2 Transit Priority

The site is located in a residential area with local intersections that are stop-sign controlled. The automobile traffic generated by the site will have a minor impact on the transit operations. Therefore, transit priority measures are exempt.

4.8 Network Concept

This section is not included in the TIA, as the development is proposed to generate fewer than 200 person-trips during the peak hour, in excess of the equivalent volume permitted by established zoning.

Currently, the site's land is vacant and generates no traffic. However, once the proposed residential development is constructed, it is anticipated to develop 73 person-trips (30 vehicle trips) during the AM peak hour and 74 person-trips (40 vehicle trips) during the PM peak hour.

The existing LC[1706] H(11) zoning permits a wide range of local commercial uses, with a maximum leasable area of up to 32,000 sq ft. The zoning also allows various residential uses, including but not limited to low-rise apartments, group homes, retirement homes, townhouses, or stacked townhouses. A small retail plaza with 30,000 sq ft GLA would generate approximately 71 AM vehicle trips and 198 PM peak hour trips, which is much higher than the proposed mid-rise apartments. Therefore, the proposed residential development will generate fewer trips than what the existing zoning permits.

4.9 Intersection Design

The site generates less than 75 trips and is exempt from this section. However, the analysis has been completed in response to potential public comments regarding traffic impacts associated with the proposed lane use.

Intersection operational analyses were completed for the study area intersections using Trafficware's Synchro software (version 11). At the study area intersections, the volume-to-capacity (v/c) ratio, delay, level of service and 95th percentile queue was noted. Level of service (LOS) definitions are provided in Appendix G and are based on the City of Ottawa approach. The Synchro analysis worksheets reports are provided in Appendix H.

The analyses reflect the existing lane configurations and traffic signal timings as provided by the City of Ottawa.

For this analysis, Terry Fox Drive is regarded as running east-west, while Richardson Side Road and Kanata Avenue are regarded as north-south roads.

4.9.1 Terry Fox Drive at Richardson Side Road

Table 18 summarizes the weekday AM and PM peak hour traffic operations at the Terry Fox Drive and Richardson Side Road intersection.

Table 18: Terry Fox Drive at Richardson Side Road Intersection Operations

Note: Results are presented in the format AM (PM) peak hour; Q95th (m) indicates the 95th percentile queues, LOS is an abbreviation for Level-of-Service, * EB = eastbound, WB = westbound, NB = northbound, SB = southbound; LTR = left, through, right movements for single lane.

Note: '#' means that the 95th %ile volume exceeds capacity, queue may be longer. If the v/c is >1.0, the method used is a representative valid method for estimating the 95th %ile queue. Queue shown is maximum after two cycles.

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
Existing					
EBT	293(467)	19.5(15.9)	A(A)	0.29(0.40)	32(40)
EBR	187(351)	5.0(4.2)	A(A)	0.33(0.48)	15(17)
WBL	163(258)	13.3(16.2)	A(B)	0.37(0.63)	30(#39)
WBT	338(438)	10.7(7.6)	A(A)	0.22(0.25)	27(26)

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
NBL	350(212)	34.4(30.1)	C(B)	0.78(0.63)	79(46)
NBR	151(209)	4.7(6.2)	A(A)	0.30(0.45)	12(15)
Future Background (2028)					
EBT	359(543)	19.4(17.0)	A(A)	0.32(0.47)	35(49)
EBR	198(372)	5.0(4.4)	A(A)	0.32(0.50)	15(17)
WBL	173(274)	12.9(23.3)	A(C)	0.36(0.74)	29(#53)
WBT	370(489)	10.4(8.0)	A(A)	0.21(0.28)	27(30)
NBL	371(225)	33.6(30.4)	C(B)	0.77(0.65)	75(49)
NBR	160(222)	4.8(6.0)	A(A)	0.30(0.46)	12(15)
Total Future (2028)					
EBT	360(546)	20.6(17.0)	A(A)	0.36(0.47)	39(49)
EBR	198(372)	5.1(4.4)	A(A)	0.35(0.50)	15(17)
WBL	175(276)	14.5(24.1)	A(C)	0.43(0.75)	32(#55)
WBT	373(492)	11.2(8.1)	A(A)	0.24(0.28)	30(30)
NBL	371(225)	35.7(30.4)	D(B)	0.81(0.65)	85(49)
NBR	161(224)	4.6(6.1)	A(A)	0.31(0.46)	12(15)
Future Background (2033)					
EBT	391(594)	22.0(18.3)	A(A)	0.41(0.52)	43(56)
EBR	219(411)	5.2(4.7)	A(A)	0.39(0.54)	16(19)
WBL	191(302)	17.0(41.8)	A(D)	0.50(0.89)	35(#75)
WBT	408(538)	12.2(8.8)	A(A)	0.27(0.32)	33(35)
NBL	410(249)	37.9(30.9)	D(B)	0.84(0.68)	97(54)
NBR	177(245)	4.4(6.5)	A(A)	0.32(0.48)	13(17)
Total Future (2033)					
EBT	392(597)	22.0(18.4)	A(A)	0.41(0.52)	43(56)
EBR	219(411)	5.2(4.7)	A(A)	0.39(0.54)	16(19)
WBL	193(304)	17.1(43.1)	A(D)	0.51(0.90)	35(#76)
WBT	411(541)	12.2(8.8)	A(A)	0.27(0.32)	33(36)

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
NBL	410(249)	37.9(30.9)	D(B)	0.84(0.68)	97(54)
NBR	178(247)	4.4(6.7)	A(A)	0.33(0.49)	13(17)

The movements at the signalized intersection are currently operating at a reasonable level of service (LOS D or better) during the AM and PM peak hours. No critical movements have been identified. The westbound left-turn 95th percentile queue during the PM peak hour and the northbound left-turn queue during the AM peak hour are currently exceeding the available storage length, while the westbound left-turn 95th percentile queue during the AM peak hour is nearly exceeding the storage length. These movements are currently operating with acceptable v/c ratios well below capacity. This is expected to continue through to the 2033 horizon year. The addition of site traffic is anticipated to have a minimal effect on the intersection operations.

4.9.2 Terry Fox Drive at Kanata Avenue

Table 19 summarizes the weekday AM and PM peak hour traffic operations at the Terry Fox Drive and Kanata Avenue intersection.

Table 19: Terry Fox Drive at Kanata Avenue Intersection Operations

Note: Results are presented in the format AM (PM) peak hour; Q95th (m) indicates the 95th percentile queues, LOS is an abbreviation for Level-of-Service, * EB = eastbound, WB = westbound, NB = northbound, SB = southbound; LTR = left, through, right movements for single lane.

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
Existing					
EBL	119(90)	33.8(46.1)	A(A)	0.52(0.50)	35(35)
EBT	365(556)	6.5(5.7)	A(A)	0.19(0.26)	25(37)
WBT	406(591)	17.5(14.4)	A(A)	0.33(0.35)	47(67)
WBR	197(302)	4.9(3.5)	A(A)	0.31(0.35)	17(19)
SBL	247(245)	26.3(38.1)	A(A)	0.46(0.53)	26(35)
SBR	103(89)	7.3(9.5)	A(A)	0.32(0.32)	11(13)
Future Background (2028)					
EBL	127(96)	33.5(46.4)	A(A)	0.50(0.52)	34(37)
EBT	436(637)	6.5(6.0)	A(A)	0.21(0.30)	27(43)

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
WBT	443(652)	17.2(15.2)	A(A)	0.32(0.39)	46(75)
WBR	209(320)	4.9(4.5)	A(A)	0.30(0.37)	16(26)
SBL	262(260)	26.2(38.4)	A(A)	0.45(0.55)	25(37)
SBR	109(94)	7.4(9.3)	A(A)	0.31(0.32)	11(13)
Total Future (2028)					
EBL	129(101)	34.5(46.5)	A(A)	0.54(0.53)	37(38)
EBT	436(637)	6.9(6.1)	A(A)	0.23(0.30)	30(43)
WBT	443(652)	18.2(15.4)	A(A)	0.36(0.39)	52(76)
WBR	212(327)	4.9(4.6)	A(A)	0.34(0.38)	17(26)
SBL	268(265)	26.6(38.5)	A(A)	0.49(0.55)	28(38)
SBR	114(98)	7.1(9.3)	A(A)	0.34(0.33)	12(13)
Future Background (2033)					
EBL	140(105)	35.4(46.8)	A(A)	0.58(0.54)	40(39)
EBT	476(698)	7.1(6.4)	A(A)	0.26(0.33)	33(48)
WBT	488(717)	20.1(17.3)	A(A)	0.45(0.46)	57(86)
WBR	231(354)	5.3(5.9)	A(A)	0.39(0.43)	18(35)
SBL	289(287)	26.9(39.0)	A(A)	0.52(0.58)	30(41)
SBR	121(104)	7.0(9.1)	A(A)	0.35(0.34)	12(14)
Total Future (2033)					
EBL	142(110)	35.5(46.9)	A(A)	0.58(0.55)	41(41)
EBT	476(698)	7.2(6.5)	A(A)	0.26(0.33)	33(48)
WBT	488(717)	20.2(17.5)	A(A)	0.46(0.47)	57(86)
WBR	234(361)	5.3(6.0)	A(A)	0.4.0(0.44)	18(36)
SBL	295(292)	27.0(39.1)	A(A)	0.52(0.59)	31(41)
SBR	126(108)	7.0(9.0)	A(A)	0.36(0.35)	12(14)

The movements at the signalized intersection are currently operating at a good overall level of service (LOS A) during the AM and PM peak hours. No critical movements have been identified and queues do

not exceed the available storage lengths. This is expected to continue through to the 2033 horizon year. The addition of site traffic is anticipated to have a minimal effect on the intersection operations.

4.9.3 Kanata Avenue at Huntsville Drive

Table 20 summarizes the weekday AM and PM peak hour traffic operations at the Kanata Avenue and Huntsville Drive intersection.

Table 20: Kanata Avenue at Huntsville Drive Intersection Operations

Note: Results are presented in the format AM (PM) peak hour; Q95th (m) indicates the 95th percentile queues, LOS is an abbreviation for Level-of-Service, * EB = eastbound, WB = westbound, NB = northbound, SB = southbound; LTR = left, through, right movements for single lane.

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
Existing					
EB approach	176(111)	33.5(21.8)	B(A)	0.65(0.50)	42(21)
NBL	26(60)	5.7(3.9)	A(A)	0.04(0.09)	5(7)
NBT	270(334)	6.4(4.3)	A(A)	0.26(0.27)	33(30)
SBT	294(280)	6.5(4.1)	A(A)	0.28(0.23)	36(25)
SBR	55(45)	2.0(1.4)	A(A)	0.06(0.05)	4(3)
Future Background (2028)					
EB approach	176(111)	32.5(21.8)	B(A)	0.63(0.50)	37(21)
NBL	26(60)	5.2(3.9)	A(A)	0.04(0.09)	4(7)
NBT	287(354)	5.8(4.4)	A(A)	0.24(0.29)	30(32)
SBT	312(297)	6.0(4.2)	A(A)	0.26(0.25)	33(27)
SBR	55(45)	1.9(1.4)	A(A)	0.06(0.05)	4(3)
Total Future (2028)					
EB approach	176(111)	33.5(21.8)	B(A)	0.65(0.50)	42(21)
NBL	26(60)	5.7(4.0)	A(A)	0.04(0.09)	5(7)
NBT	297(362)	6.6(4.4)	A(A)	0.28(0.29)	37(33)
SBT	316(308)	6.7(4.2)	A(A)	0.30(0.26)	39(28)
SBR	55(45)	2.0(1.4)	A(A)	0.06(0.05)	4(3)

Approach / Movement	Volume	Delay (s)	LOS	V/C	Q95th (m)
Future Background (2033)					
EB approach	176(111)	33.5(21.8)	B(A)	0.65(0.50)	42(21)
NBL	26(60)	5.7(4.0)	A(A)	0.05(0.09)	5(7)
NBT	316(391)	6.7(4.6)	A(A)	0.30(0.32)	39(36)
SBT	344(328)	6.9(4.3)	A(A)	0.33(0.27)	44(30)
SBR	55(45)	2.0(1.4)	A(A)	0.06(0.05)	4(3)
Total Future (2033)					
EB approach	176(111)	33.5(21.8)	B(A)	0.65(0.50)	42(21)
NBL	26(60)	5.7(4.0)	A(A)	0.05(0.09)	5(7)
NBT	326(399)	6.8(4.6)	A(A)	0.31(0.32)	41(37)
SBT	348(339)	7.0(4.4)	A(A)	0.33(0.28)	44(31)
SBR	55(45)	2.0(1.4)	A(A)	0.06(0.05)	4(3)

5.0 Summary/Conclusions

Ironclad Developments Inc. (ICD) is proposing to construct three six-storey residential buildings with a total of 182 dwelling units. The proposed site plan provides a total of 210 parking spaces, including 166 residential parking spaces, 37 visitor parking spaces, and 7 accessible parking spaces. The site plan meets the required number of parking spaces, provided that the site is rezoned as R5 residential.

The existing access to Kanata Avenue is located at 158 metres north of the Terry Fox Drive and Kanata Avenue intersection, at the existing median opening, and is not proposed to be changed. The access currently has a boulevard, sidewalk, and a depressed curb. The site access on Kanata Avenue is proposed to be a full-movement unsignalized access with stop control. A southbound left-turn lane exists at the site and is sufficient to accommodate the site traffic, however pavement marking modifications are required.

The proposed residential development is anticipated to generate 30 vehicle trips (9 inbound, 21 outbound) during the AM peak hour and 40 vehicle trips (23 inbound, 17 outbound) during the PM peak hour.

The study area intersection and the proposed site access to Kanata Avenue are forecast to operate at an acceptable LOS with no critical movements identified. All movements are forecast to operate acceptably in 2033, operating under capacity at LOS D or better. The addition of site traffic is anticipated to have a negligible impact on the intersection operations.

On-site swept path analyses confirmed that all required turning movements can be accommodated for the design vehicles.

The MMLOS target for transit is anticipated to be easily met. The pedestrian and cycling MMLOS target on Terry Fox Drive is not met however is close to the target. All MMLOS targets are met on the Kanata Avenue segment. There are no improvements that would achieve the PLOS and BLOS target for the Terry Fox Drive segment, however, it is recommended that the City consider constructing a sidewalk or multi-use path along the south side of the Terry Fox Drive connecting to the sidewalk at Campeau Drive.

The Terry Fox Drive at Kanata Avenue Intersection is operating with acceptable MMLOS, however the BLOS is a D, where the target is a B. Significant improvement by the city would be required to meet the target.

The existing site access generally meets the private approach by-law requirements and the minimum required throat distance. The access design shall meet the requirements of the City drawing SC7.1.

It is recommended that the existing pavement markings on Kanata Avenue be revised to include the southbound left turn lane and taper. The existing southbound white solid line at the turn lane will require grinding or blasting to create a 3 x 3 x 3 metre dashed taper line, with a 25 metre solid white line delineating the vehicle storage. Two southbound left-turn painted arrows are needed within the turn lane. Additionally, it is recommended that the solid white bicycle lane crossing the driveway be changed to a 1 x 1 x 1 metre dashed line with a painted bicycle stencil and arrow within the northbound bike lane at the driveway.

The following TDM measures are to be provided:

TDM Measures Checklist Summary:

- Provide a multimodal travel option information package to new residents.

In order to promote other transportation modes, efforts will also be made to increase transit ridership through a combination of:

- Providing an updated map of transit routes and stops locations in the lobby.
- Unbundling parking costs from monthly rent.
- Offer a 1-month Presto card as an incentive for new occupants, available for a limited time (e.g., within the first 6 months) following the site's opening.

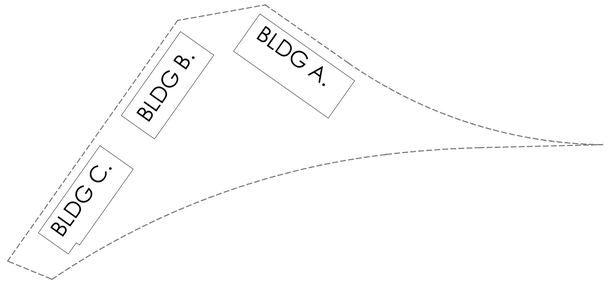
TDM Supportive Design and Infrastructure Checklist Summary:

- Locate building close to the street, and do not locate parking areas between the street and building entrances.
- Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations.
- Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort.
- Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances.
- Make sidewalks and open space areas easily accessible with good drainage.
- Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation.
- Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible.
- Ensure that bicycle parking spaces and access aisles meet minimum dimensions.
- Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists.

- Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers.
- Reserve one visitor parking space for a car sharing service.
- Provide separate areas for short-term and long-term parking.

Appendix A

Site Plan



KEY PLAN

Building A= 6 floors (top floor-half floor)
Building B=6 floors (top floor-half floor)
Building C= 6 floors (top floor-half floor)

Building 'A' Bike Parking (Table 613B - Ottawa Zoning Bylaw 2026-50):

Visitor (Short Term) Spaces = 2 + (~72/20) = 6 Spaces
Tenant (Long Term) Spaces = 72 x 0.75 = 54 Spaces

Building 'B' Bike Parking (Table 613B - Ottawa Zoning Bylaw 2026-50):

Visitor (Short Term) Spaces = 2 + (~56/20) = 5 Spaces
Tenant (Long Term) Spaces = 56 x 0.75 = 42 Spaces

Building 'C' Bike Parking (Table 613B - Ottawa Zoning Bylaw 2026-50):

Visitor (Short Term) Spaces = 2 + (~54/20) = 5 Spaces
Tenant (Long Term) Spaces = 54 x 0.75 = 41 Spaces

Section 208 - Amenity Area - Ottawa Zoning Bylaw 2026-50):

Total number of suites = 182
Minimum required amenity area = 182 x 6.0 m2 = 1092.0 m2
Total combined amenity area (proposed) = 1099.7 m2

Site Parking (Section 112 - Ottawa Traffic and Parking Bylaw 2017-301):

Total combined space = 210
7 Accessible Parking Spaces are Required; 3 must be Type A and 4 must be Type B

PARKING	Surface	Parkade	Combined
Total parking provided	120	90	210
Details: Included in residential parking			
Accessible stalls	*3* (Type B)	*4* (3 Type A) (1 Type B)	7
Small cars	*23*	*9*	32
Visitor parking	*37*	*0*	37
Bike Parking	37	100	137

INCLUDING 2 INCLUSIVE BIKE PARKING STALLS

		BUILDING A							BUILDING B							BUILDING C									
	Sq. Ft.	1st	2nd	3rd	4th	5th	6th	Total Suites	1st	2nd	3rd	4th	5th	6th	Total Suites	1st	2nd	3rd	4th	5th	6th	Total Suites	Grand Total		
A1.0 (1bdrm)	636.59	4	2	2	2	2	1	13	1	1	1	1	1	1	6	2	0	0	0	0	0	2	21	11.5%	
A1.0a (1bdrm)	692.86	1	1	1	1	1	1	6	1	1	1	1	1	1	6	0	1	1	1	1	0	4	16	8.8%	34.6%
A2.0 (1bdrm)	742.64	0	2	2	2	2	0	8	0	2	2	2	2	0	8	0	2	2	2	2	2	10	26	14.3%	
B1.0 (2bdrm)	935.77	1	1	1	1	1	1	6	0	1	1	1	1	1	5	2	2	2	2	2	1	11	22	12.1%	
B1.0a (2bdrm)	935.77	1	1	1	1	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	3.3%	
B1.1 (2bdrm)	842.67	0	1	1	1	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2.2%	38.5%
B1.2 (1bdrm)	757.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	5	5	2.7%	
B2.0 (2bdrm)	968.92	2	2	2	2	2	1	11	1	1	1	1	1	0	5	1	1	1	1	1	0	5	21	11.5%	
B2.0a (2bdrm)	968.92	0	0	0	0	0	0	0	1	1	1	1	1	1	6	1	1	1	1	1	1	6	12	6.6%	
C1.0 (3bdrm)	1067.43	1	1	1	1	1	0	5	0	1	1	1	1	0	4	0	0	0	0	0	0	0	9	4.9%	
C1.0a (3bdrm)	1148.75	1	1	1	1	1	1	6	0	1	1	1	1	1	5	1	1	1	1	1	1	6	17	9.3%	17.0%
C2.0 (3bdrm)	1170.73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	5	5	2.7%	
D1.0 (Studio)	416.42	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1.1%	
D1.1 (Studio)	584.97	0	0	0	0	0	0	0	0	1	1	1	1	0	4	0	0	0	0	0	0	0	4	2.2%	9.9%
D1.0a (Studio)	484.22	1	1	1	1	1	1	6	1	1	1	1	1	1	6	0	0	0	0	0	0	0	12	6.6%	
TOTAL SUITES		13	13	13	13	13	7	72	6	11	11	11	11	6	56	9	10	10	10	10	5	54	182		100%

33% OF THE SUITES IN THE BUILDING ARE ADAPTABLE | 41% OF THE SUITES IN THE BUILDING ARE ADAPTABLE | 35% OF THE SUITES IN THE BUILDING ARE ADAPTABLE

CONSULTANTS:

Architect
Robert J. S. Garvey, OAA
Architecture 77

201-57158 Symington Rd. 20E
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t: 204-227-9274

Structural Engineering
Andrew Meads, P. Eng.
Conclusive Edge Engineering

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t: 204-777-1972

Mechanical Engineering
Henry Cortens, P. Eng.
Conclusive Edge Engineering

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t: 204-777-1972

Electrical Engineering
Amir Tavakoli, P. Eng.
Conclusive Edge Engineering

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Civil Engineering
Ryan Faith
D.B. Gray Engineering Inc.

700 Long Point Circle,
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K1T 4E9
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Landscape Architect
Marietta Ruhland, Principal,
BLA, OALA
Ruhland & Associates Ltd.

Suite 200-1750 Courtwood Cr.
Ottawa, ON
K2C 2B5
t: 613-224-4744

Geotechnical Engineering

Paterson Group

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Ottawa, ON
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Land Surveyor

Ed Herweyer
Annis O'Sullivan Vollebekk Ltd.
Ontario Land Surveyors

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Nepean, Ontario K2E 7S6
t: 613-727-0850

NOTES:

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Consultant

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SEAL:

MANITOBA ASSOCIATION OF ARCHITECTS
ROBERT J. S. GARVEY
LICENCE 9039

No.	Date	REVISION
6		
5		
4	07-06-2026	Plan Approval/ Revision
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1	11-09-2025	Plan Approval

Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

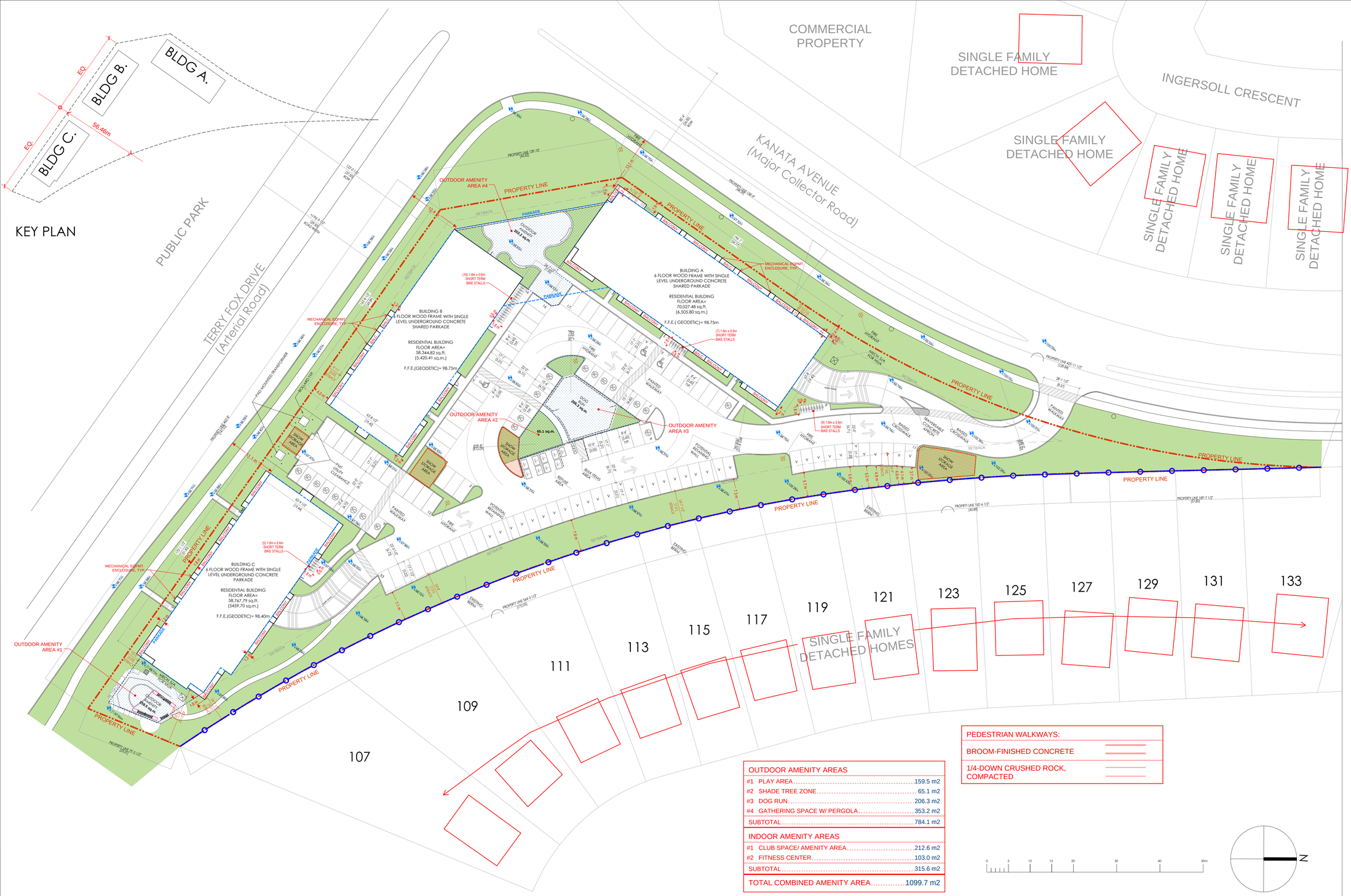
DEVELOPMENT PERMIT SET

GENERAL PROJECT INFO.
SCALE: N.T.S.

DP00

APPLICATION No. D07-12-25-0104

PLAN No. 19347



OUTDOOR AMENITY AREAS	
#1 PLAY AREA	159.5 m2
#2 SHADE TREE ZONE	65.1 m2
#3 DOG RUN	206.3 m2
#4 GATHERING SPACE W/ PERGOLA	353.2 m2
SUBTOTAL	784.1 m2
INDOOR AMENITY AREAS	
#1 CLUB SPACE/ AMENITY AREA	212.6 m2
#2 FITNESS CENTER	103.0 m2
SUBTOTAL	315.6 m2
TOTAL COMBINED AMENITY AREA	1099.7 m2

PEDESTRIAN WALKWAYS:	
BROOM-FINISHED CONCRETE	
1/4-DOWN CRUSHED ROCK, COMPACTED	

0 5 10 15 20 30 40 50m

N

NOTES:

FOR LANDSCAPING DETAILS, PLEASE REFER TO LANDSCAPING PLAN.

FOR GRADING AND RETAINING WALL DETAILS, PLEASE REFER TO CIVIL PLAN.

ALL INTERNAL SIDEWALKS ARE 6" RAISED CONCRETE

SURVEY DATA PROVIDED BY E. H. HERWEYER, ONTARIO LAND SURVEYOR, ANNIS, O'SULLIVAN, VALLEBEKK LTD. DATA RECORDED ON JANUARY 15, 2025; CIVIC UNDERGROUND SERVICES LOCATED BY UNDERGROUND SERVICE LOCATORS USL-1 INC. SEPTEMBER 21, 2025.

*PIN (Parcel Identification Numbers):
04749-1275 (LT);
04749-1276 (LT);
04510-0076 (LT);
04510-0337 (LT);

*SIZE OF THE PROPERTY: 3.03 Acres (+/-)

BLDG A: SHORT TERM BIKE STALLS	16
BLDG B: SHORT TERM BIKE STALLS	16
BLDG C: SHORT TERM BIKE STALLS	05
TOTAL SHORT TERM BIKE STALLS	37

04749-1275 (LT)-Part of Lots 4 and 5, Concession 1, March, being Part 2 on Plan 4R-24998 (closed by by-law no.OC840728); City of Ottawa

04749-1276 (LT)-Part of Lot 4, Concession 1, March, being Part 4 on Plan 4R-24998 (closed by by-law no.OC1263323); City of Ottawa

04510-0076 (LT)- Part of Lots 4 and 5, Concession 1, March, being Part 11 on Plan 4R-18222; City of Ottawa

04510-0337 (LT)- Part of Lots 4 and 5, Concession 1, March, being Part 3 on Plan 4R-24998 (closed by by-law no.OC1263323); City of Ottawa

collectively, the "**Property**"

PROPERTY LINE — SC - SMALL CAR PARKING

LANDSCAPE AREA — V - VISITOR PARKING

PEDESTRIAN WALKWAY — EXISTING 6' HIGH VERTICAL WOOD PRIVACY FENCE

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SEAL:

MANITOBA ASSOCIATION OF ARCHITECTS
2024 | 22
ROBERT J. S. GARVEY
LICENCE
9039

No.	Date	REVISION
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Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

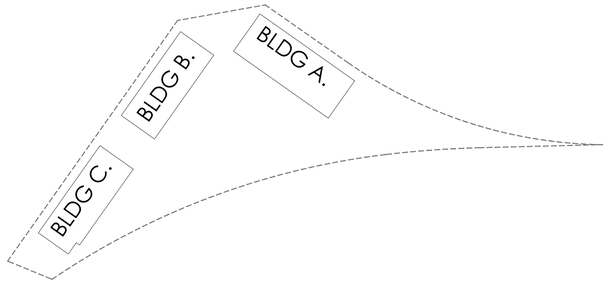
DEVELOPMENT PERMIT SET

SITE PLAN
SCALE: 1:400

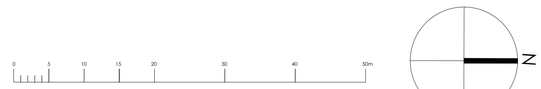
DP01

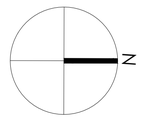
APPLICATION No. D07-12-25-0104

PLAN No. 19347



KEY PLAN





NOTES:

BLDG A&B: LONG TERM BIKE STALLS	81
BLDG C: LONG TERM BIKE STALLS	19
TOTAL LONG TERM BIKE STALLS	100 (INCLUDING 2 INCLUSIVE BIKE STALLS)

PAINTED PEDESTRIAN CROSSING
SUPPORTING SPACES
VERTICAL CIRCULATION
LOBBY/ENTRANCE AREA
PROPERTY LINE
S.C. - SMALL CAR PARKING

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SEAL:

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LICENCE 9039

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Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

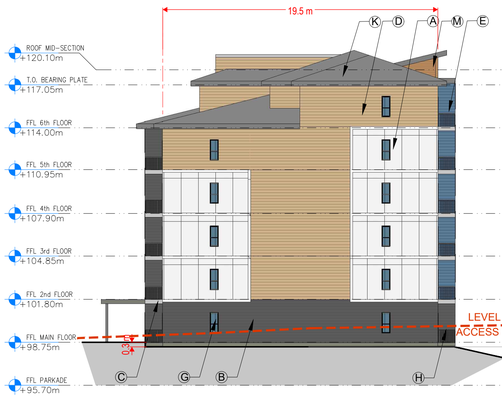
PARKADE
SCALE: 1:400

DP02

APPLICATION No. D07-12-25-0104

BUILDING A- ELEVATIONS

WEST ELEVATION



NORTH ELEVATION

SOUTH ELEVATION

EAST ELEVATION

BUILDING B- ELEVATIONS

SOUTH ELEVATION

EAST ELEVATION

WEST ELEVATION

NORTH ELEVATION

0 5 10 15 20 30 40 50m

NOTES:
EAVESTROUGHS AND DOWNSPOUTS TO MATCH FASCIA AND CLADDING COLOUR

BUILDING 'A' - AVERAGE GRADE CALCULATION:

WEST: 98.45m + 97.25m = 195.7m; 195.7m / 2 = 97.85m; 97.85m x 59.6m = 5831.86m2
NORTH: 98.45m + 98.45m = 196.9m; 196.9m / 2 = 98.45m; 98.45m x 19.5m = 1919.78m2
SOUTH: 97.15m + 97.45m = 194.6m; 194.6m / 2 = 97.3m; 97.3m x 19.5m = 1897.35m2
EAST: 98.25m + 98.55m = 194.6m; 196.8m / 2 = 98.4m; 98.4m x 59.6m = 5864.64m2
5831.86m2 + 1919.78m2 + 1897.35m2 + 5864.64m2 = 15513.72m2
59.6m + 19.5m + 19.5m + 59.6m = 158.2m
15513.72m2 / 158.2m = 98.06m

BUILDING 'A' - BUILDING HEIGHT:
= MID-ROOF ELEVATION - AVERAGE GRADE
= 120.10m - 98.06m
= 22.04m

LEGEND

- (A) JAMES HARDIE, PANEL (4x8ft), SMOOTH- ARCTIC WHITE
- (B) WESTMAN STEEL, HORIZONTAL METAL PANEL, WS 200- IRON GRAY
- (C) JAMES HARDIE, DECK FASCIA, SMOOTH- PEARL GRAY
- (D) WESTMAN STEEL, HORIZONTAL METAL PANEL, WS 200- TAN QC8315
- (E) WESTMAN STEEL, HORIZONTAL METAL PANEL, WS 200- SLATE BLUE QC8260
- (F) WESTMAN STEEL, VERTICAL METAL PANEL, WS 200- BONE WHITE QC8273
- (G) PVC FRAMED WINDOWS WITH CLEAR GLASS
- (H) METAL PICKET RAILING
- (J) PREFIN. ALUMINUM SOFFIT PANEL (IRON GRAY)
- (K) ASPHALT ROOF SHINGLES, MIDNIGHT BLACK
- (L) PREFIN. ALUMINUM FASCIA AND SOFFIT
- (M) ALUMINUM SOFIT, WOOD TONE, MANUFACTURER TBD

BUILDING 'B' - AVERAGE GRADE CALCULATION:

SOUTH: 97.55m + 98.65m = 196.2m; 196.2m / 2 = 98.1m; 98.1m x 50.0m = 4905.00m2
EAST: 97.85m + 98.55m = 196.4m; 196.4m / 2 = 98.2m; 98.2m x 19.5m = 1914.90m2
WEST: 98.45m + 97.55m = 196.0m; 196.0m / 2 = 98.0m; 98.0m x 19.5m = 1911.00m2
NORTH: 98.35m + 98.65m = 197.0m; 197.0m / 2 = 98.4m; 98.5m x 50.0m = 4925.00m2
4905.00m2 + 1914.90m2 + 1911.00m2 + 4925.00m2 = 13655.90m2
50.0m + 19.5m + 19.5m + 59.6m = 139.0m
13655.90m2 / 139.0m = 98.24m

BUILDING 'B' - BUILDING HEIGHT:
= MID-ROOF ELEVATION - AVERAGE GRADE
= 120.10m - 98.24m
= 21.86m

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SEAL:

ONTARIO ASSOCIATION OF ARCHITECTS
ROBERT J. S. GARVEY
LICENCE 9039

BLDG 'B' MAIN FLOOR ELEVATION

GLAZING
[2.2 x 7] = 15.4 sq.m.
[3.3 x 4] = 13.2 sq.m.
[2.1 x 3] = 6.3 sq.m.
TOTAL = 34.9 sq.m.

TOTAL MAIN FLOOR AREA = 136.1 sq.m.

PERCENTAGE OF GLAZING TO MAIN FLOOR AREA = 25.64%

No.	Date	REVISION
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1	11-09-2025	Plan Approval

Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

BUILDING ELEVATIONS
SCALE: 1:200

DP03

APPLICATION No. D07-12-25-0104

PLAN No. 19347

BUILDING C- ELEVATIONS

SOUTH ELEVATION

WEST ELEVATION

EAST ELEVATION

NORTH ELEVATION

0 5 10 15 20 30 40 50m

NOTES:
EAVESTROUGHS AND DOWNSPOUTS TO MATCH FASCIA AND CLADDING COLOUR

BUILDING 'C' - AVERAGE GRADE CALCULATION:

SOUTH: 97.90m + 97.20m = 195.1m; 195.1m / 2 = 97.55m; 97.55m x 51.8m = 5053.09m2
WEST: 97.80m + 98.10m = 195.9m; 195.9m / 2 = 97.95m; 97.95m x 19.5m = 1910.03m2
EAST: 98.20m + 97.80m = 196.0m; 196.0m / 2 = 98.0m; 98.0m x 19.5m = 1911.00m2
NORTH: 98.20m + 98.20m = 196.4m; 196.4m / 2 = 98.2m; 98.2m x 51.8m = 5086.76m2
5053.09m2 + 1910.03m2 + 1911.00m2 + 5086.76m2 = 13960.88m2
51.8m + 19.5m + 19.5m + 51.8m = 142.6m
13960.88m2 / 142.6m = 97.90m

BUILDING 'C' - BUILDING HEIGHT:

= MID-ROOF ELEVATION - AVERAGE GRADE
= 117.94m - 97.90m
= 20.04m

LEGEND

- (A) JAMES HARDIE, PANEL (4x8ft), SMOOTH- ARCTIC WHITE
- (B) WESTMAN STEEL, HORIZONTAL METAL PANEL, WS 200- IRON GRAY
- (C) JAMES HARDIE, DECK FASCIA, SMOOTH- PEARL GRAY
- (D) WESTMAN STEEL, HORIZONTAL METAL PANEL, WS 200- TAN QC8315
- (E) WESTMAN STEEL, HORIZONTAL METAL PANEL, WS 200- SLATE BLUE QC8260
- (F) WESTMAN STEEL, VERTICAL METAL PANEL, WS 200- BONE WHITE QC8273
- (G) PVC FRAMED WINDOWS WITH CLEAR GLASS
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- (K) ASPHALT ROOF SHINGLES, MIDNIGHT BLACK
- (L) PREFIN. ALUMINUM FASCIA AND SOFFIT
- (M) ALUMINUM SOFIT, WOOD TONE, MANUFACTURER TBD

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MANITOBA ASSOCIATION OF ARCHITECTS 22 ROBERT J.S. GARVEY LICENCE 9039

BLDG 'C' MAIN FLOOR ELEVATION

GLAZING
[2.0 x 2] = 4.0 sq.m.
[3.3 x 4] = 13.2 sq.m.
[2.1 x 8] = 16.8 sq.m.
[0.8 x 2] = 1.6 sq.m.
TOTAL = 35.6 sq.m.

TOTAL MAIN FLOOR AREA = 140.9 sq.m.

PERCENTAGE OF GLAZING TO MAIN FLOOR AREA = 25.27%

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DEVELOPMENT PERMIT SET

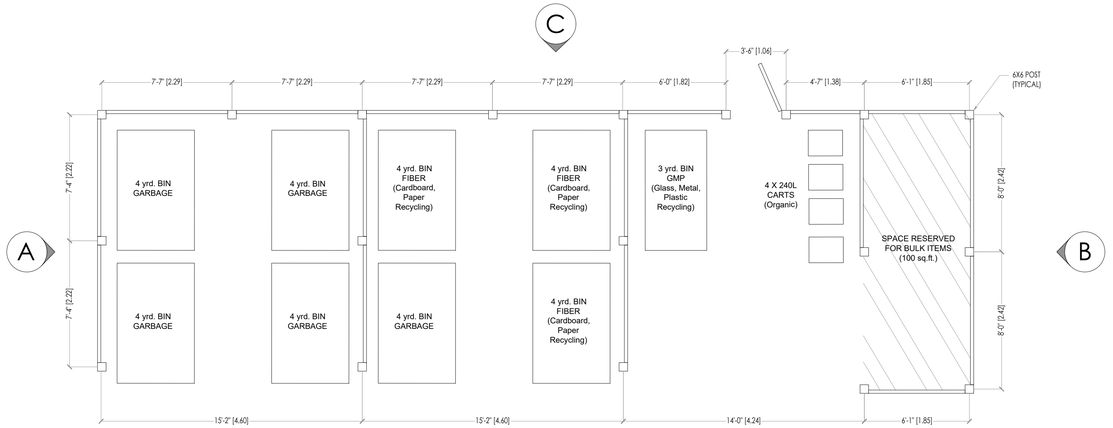
BUILDING ELEVATIONS
SCALE: 1:200

DP04

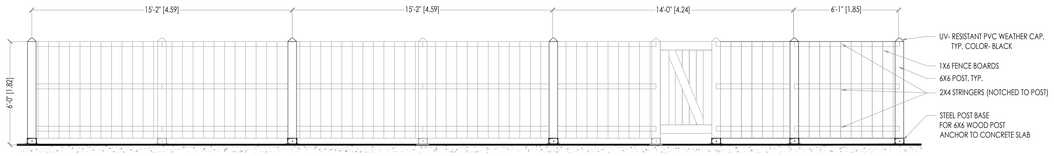
APPLICATION No. D07-12-25-0104

PLAN No. 19347

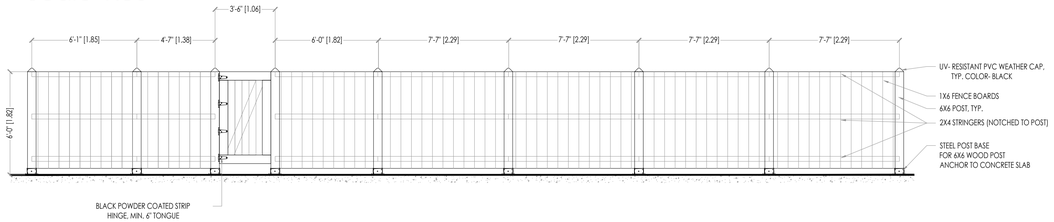
LARGE SCALE SITE PLAN
Scale 1:100



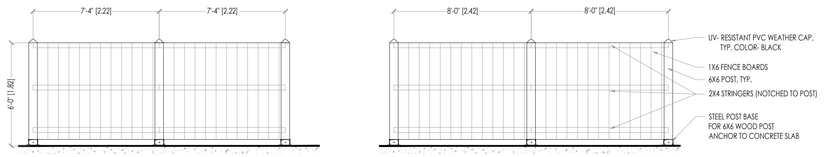
SITE PLAN DETAIL
Scale 1:50



ELEVATION D
Scale 1:50



ELEVATION C
Scale 1:50



ELEVATION A
Scale 1:50

ELEVATION B
Scale 1:50

0 5 10m

REFUSE ENCLOSURE- FINAL DETAILS TO BE CONFIRMED

IRONCLAD DEVELOPMENTS INC.
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ONTARIO ASSOCIATION OF ARCHITECTS
ROBERT J. S. GARVEY
LICENCE 9039

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Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

REFUSE ENCLOSURE
SCALE: As Indicated

DP05

APPLICATION No. D07-12-25-0104

PLAN No. 19347

21st June 08:00 AM (EDT)

0 50 100m

21st June 09:00 AM (EDT)

0 50 100m

21st June 10:00 AM (EDT)

0 50 100m

21st June 11:00 AM (EDT)

0 50 100m

21st June 12:00 PM (EDT)

0 50 100m

21st June 01:00 PM (EDT)

0 50 100m

21st June 02:00 PM (EDT)

0 50 100m

NOTES:

PROPOSED SHADOW OUTLINE

AS OF RIGHT SHADOW OUTLINE

PROPOSED DEVELOPMENT

TRADITIONAL MAIN STREET

NEW NET SHADOW

COMMUNAL AMENITY AREAS

ROADS/SIDEWALKS

EXISTING BUILDINGS

PUBLIC SPACES

PRIVATE PROPERTY

N

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Consultant
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SEAL:

MANITOBA ASSOCIATION OF ARCHITECTS
2025 | 22
ROBERT J.S. GARVEY
LICENCE
9039

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Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

SHADOW STUDY- 21st June

SCALE: N.T.S.

DP06

APPLICATION No. D07-12-25-0104

PLAN No. 19347

21st June 03:00 PM (EDT)

0 50 100m

21st June 04:00 PM (EDT)

0 50 100m

21st June 05:00 PM (EDT)

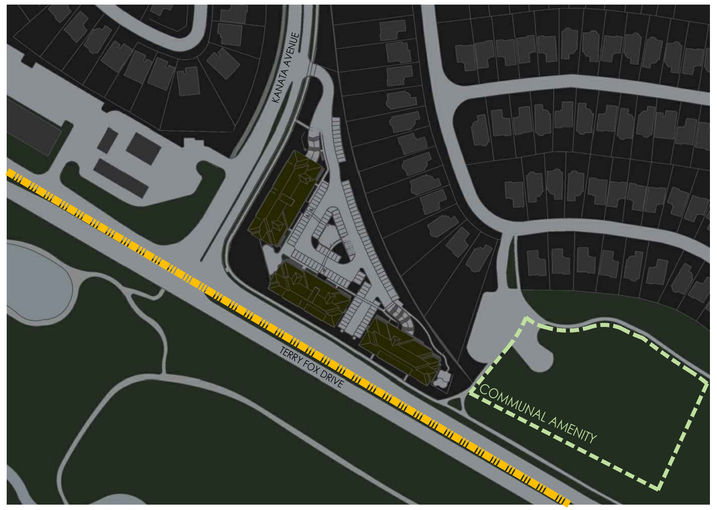
0 50 100m

21st June 06:00 PM (EDT)

0 50 100m

21st June 07:00 PM (EDT)

50 100m



21st June 08:00 PM (EDT)

0 50 100m

NOTES:

PROPOSED SHADOW OUTLINE

AS OF RIGHT SHADOW OUTLINE

PROPOSED DEVELOPMENT

TRADITIONAL MAIN STREET

NEW NET SHADOW

COMMUNAL AMENITY AREAS

ROADS/SIDEWALKS

EXISTING BUILDINGS

PUBLIC SPACES

PRIVATE PROPERTY

N

IRONCLAD DEVELOPMENTS INC.
101-57158 Symington Road
Springfield, MB R2J 4L6
Ph: 204-777-1972
info@icdev.ca

Consultant

RDB GARVEY
ARCHITECTURE 77 INC.
201-57158 SYMINGTON RD 20E
SPRINGFIELD, MB R2J 4L6
T: 204.227.9274
E: RGARVEY@A77.CA

SEAL:

MANITOBA ASSOCIATION OF ARCHITECTS
ROBERT J.S. GARVEY
LICENCE
9039

No.	Date	REVISION
6		
5		
4	07-06-2026	Plan Approval/ Revision
3	05-02-2026	Plan Approval/ Revision
2	21-10-2025	Plan Approval/ Revision
1	11-09-2025	Plan Approval

Project Number: 2402

Designed By: J.P.M.

Drawn By: D.D.

Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

SHADOW STUDY- 21st June

SCALE: N.T.S.

DP07

APPLICATION No. D07-12-25-0104

PLAN No. 19347

21st September 08:00 AM (EDT)

21st September 11:00 AM (EDT)

21st September 09:00 AM (EDT)

21st September 12:00 PM (EDT)

21st September 10:00 AM (EDT)

21st September 01:00 PM (EDT)

NOTES:

PROPOSED SHADOW OUTLINE
AS OF RIGHT SHADOW OUTLINE
PROPOSED DEVELOPMENT
TRADITIONAL MAIN STREET
NEW NET SHADOW
COMMUNAL AMENITY AREAS
ROADS/SIDEWALKS
EXISTING BUILDINGS
PUBLIC SPACES
PRIVATE PROPERTY

N

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SEAL:

MANITOBA ASSOCIATION OF ARCHITECTS
2025 22
ROBERT J. S. GARVEY
LICENCE
9039

No.	Date	REVISION
6		
5		
4	07-06-2026	Plan Approval/ Revision
3	05-02-2026	Plan Approval/ Revision
2	21-10-2025	Plan Approval/ Revision
1	11-09-2025	Plan Approval

Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

SHADOW STUDY- EQUINOX
SCALE: N.T.S.

DP08

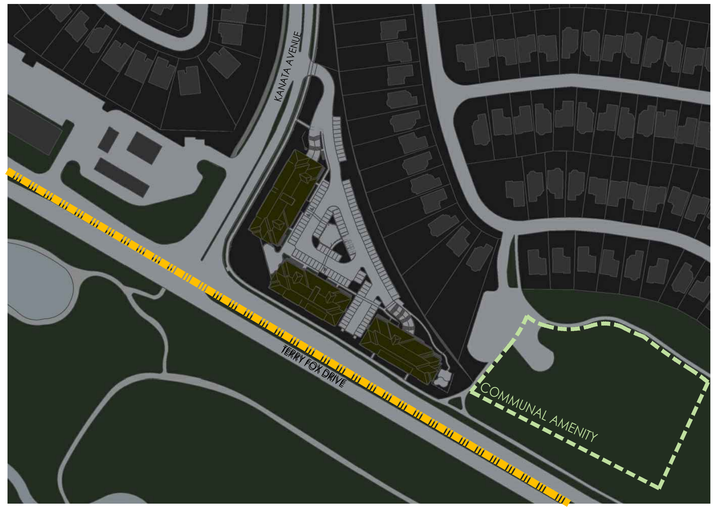
APPLICATION No. D07-12-25-0104

21st September 02:00 PM (EDT) 0 50 100m

21st September 03:00 PM (EDT) 0 50 100m

21st September 04:00 PM (EDT) 0 50 100m

21st September 05:00 PM (EDT) 0 50 100m



21st September 06:00 PM (EDT) 0 50 100m

NOTES:

PROPOSED SHADOW OUTLINE
AS OF RIGHT SHADOW OUTLINE
PROPOSED DEVELOPMENT
TRADITIONAL MAIN STREET
NEW NET SHADOW
COMMUNAL AMENITY AREAS
ROADS/SIDEWALKS
EXISTING BUILDINGS
PUBLIC SPACES
PRIVATE PROPERTY

N

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SEAL:

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LICENCE
9039

No.	Date	REVISION
6		
5		
4	07-06-2026	Plan Approval/ Revision
3	05-02-2026	Plan Approval/ Revision
2	21-10-2025	Plan Approval/ Revision
1	11-09-2025	Plan Approval

Project Number: 2402
Designed By: J.P.M.
Drawn By: D.D.
Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

SHADOW STUDY- EQUINOX
SCALE: N.T.S.

DP09

APPLICATION No. D07-12-25-0104

PLAN No. 19347

21st December 09:00 AM (EST)

0 50 100m

21st December 10:00 AM (EST)

0 50 100m

21st December 11:00 AM (EST)

0 50 100m

21st December 12:00 PM (EST)

0 50 100m

21st December 01:00 PM (EST)

0 50 100m

21st December 02:00 PM (EST)

0 50 100m

21st December 03:00 PM (EST)

0 50 100m

NOTES:

PROPOSED SHADOW OUTLINE

AS OF RIGHT SHADOW OUTLINE

PROPOSED DEVELOPMENT

TRADITIONAL MAIN STREET

NEW NET SHADOW

COMMUNAL AMENITY AREAS

ROADS/SIDEWALKS

EXISTING BUILDINGS

PUBLIC SPACES

PRIVATE PROPERTY

N

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Consultant

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SEAL:

MANITOBA ASSOCIATION OF ARCHITECTS
ROBERT J.S. GARVEY
LICENCE
9039

No.	Date	REVISION
6		
5		
4	07-06-2026	Plan Approval/ Revision
3	05-02-2026	Plan Approval/ Revision
2	21-10-2025	Plan Approval/ Revision
1	11-09-2025	Plan Approval

Project Number: 2402

Designed By: J.P.M.

Drawn By: D.D.

Checked By: R.G.

Terry Fox Drive,
Kanata, Ontario;

DEVELOPMENT PERMIT SET

SHADOW STUDY- WINTER SOLISTICE

SCALE: N.T.S.

DP10

APPLICATION No. D07-12-25-0104

PLAN No. 19347

Appendix B

Turning Movement Count Data

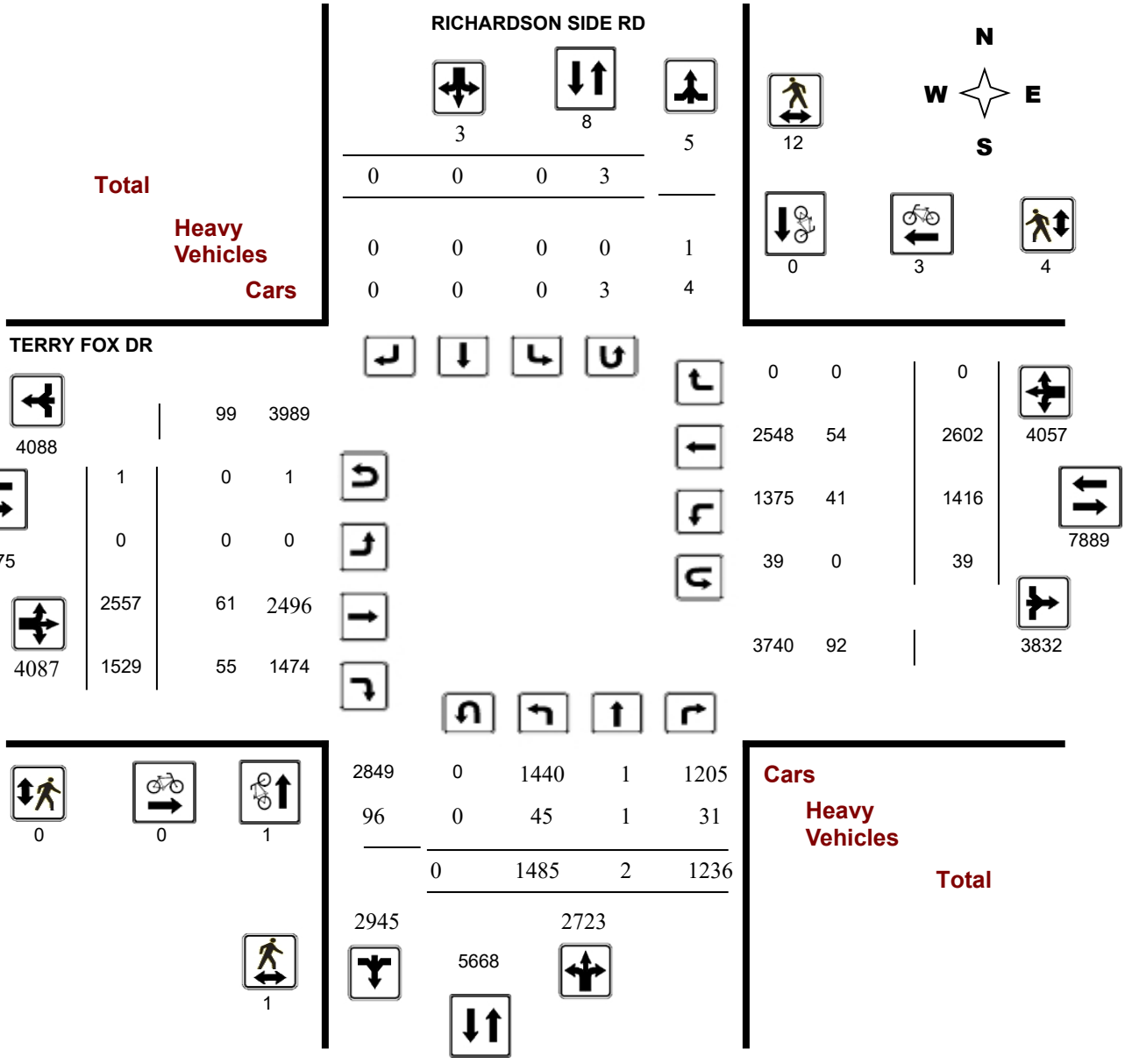
Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024
Start Time: 07:00
WO No: 41696
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

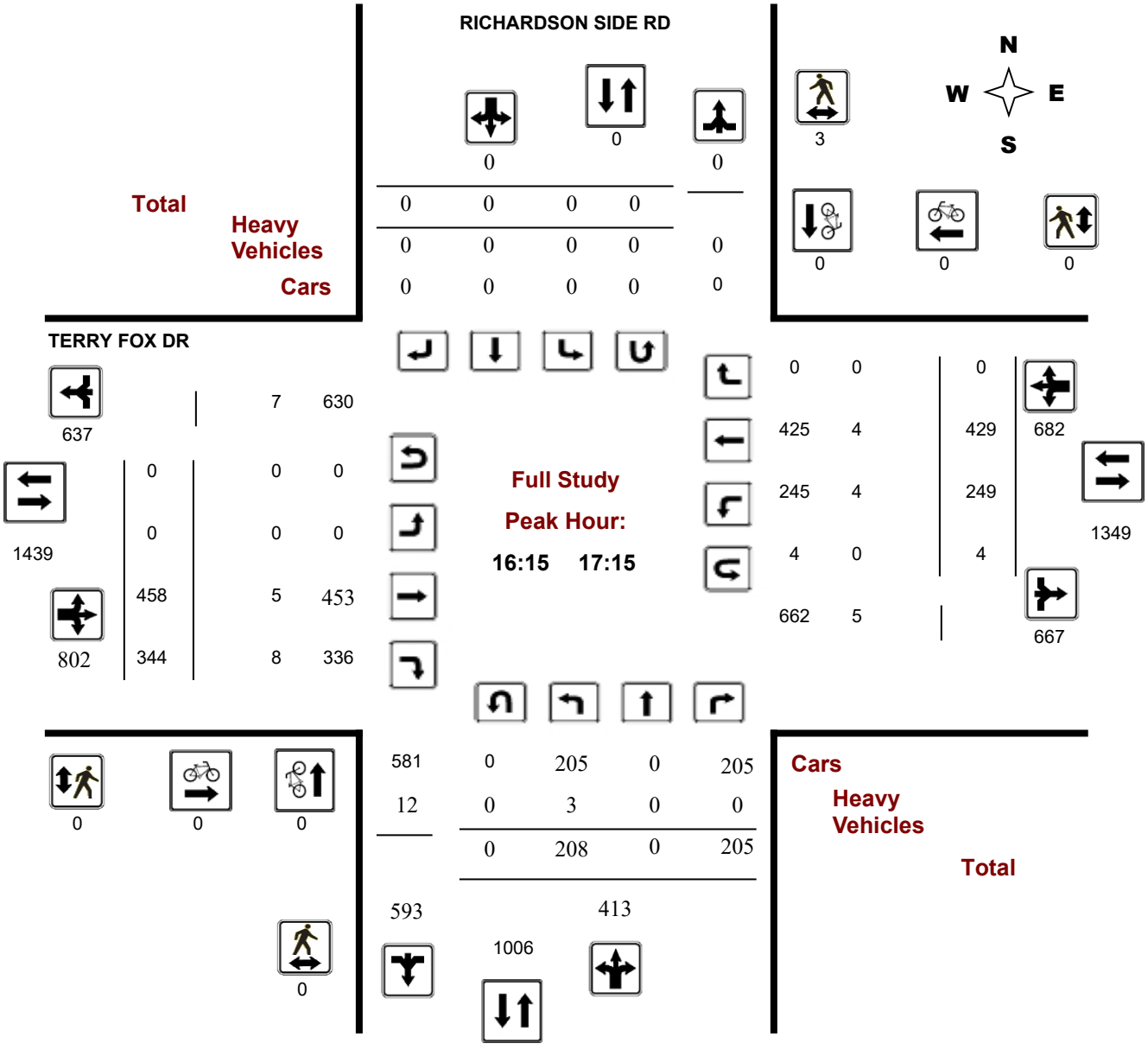
Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

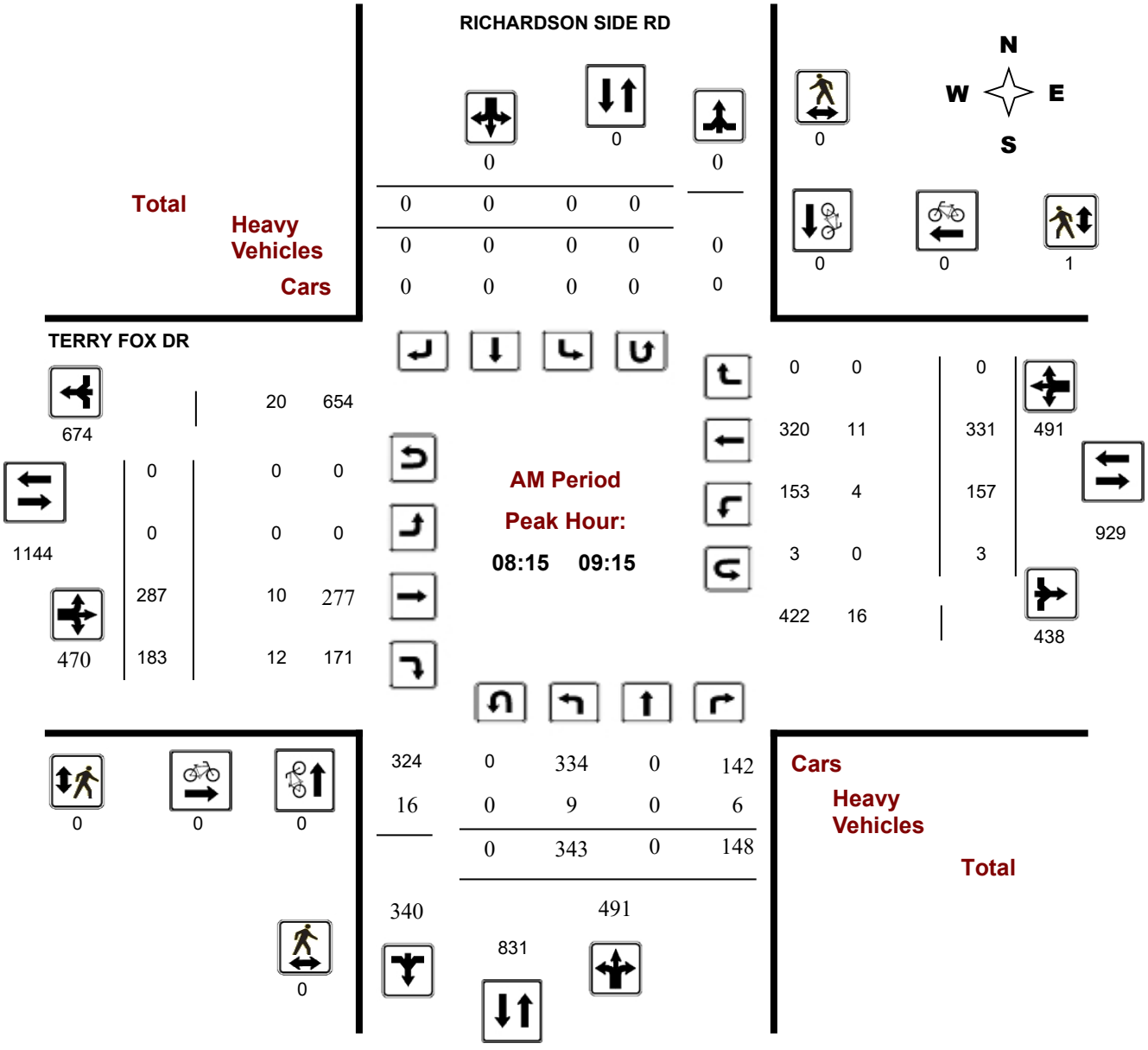
Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

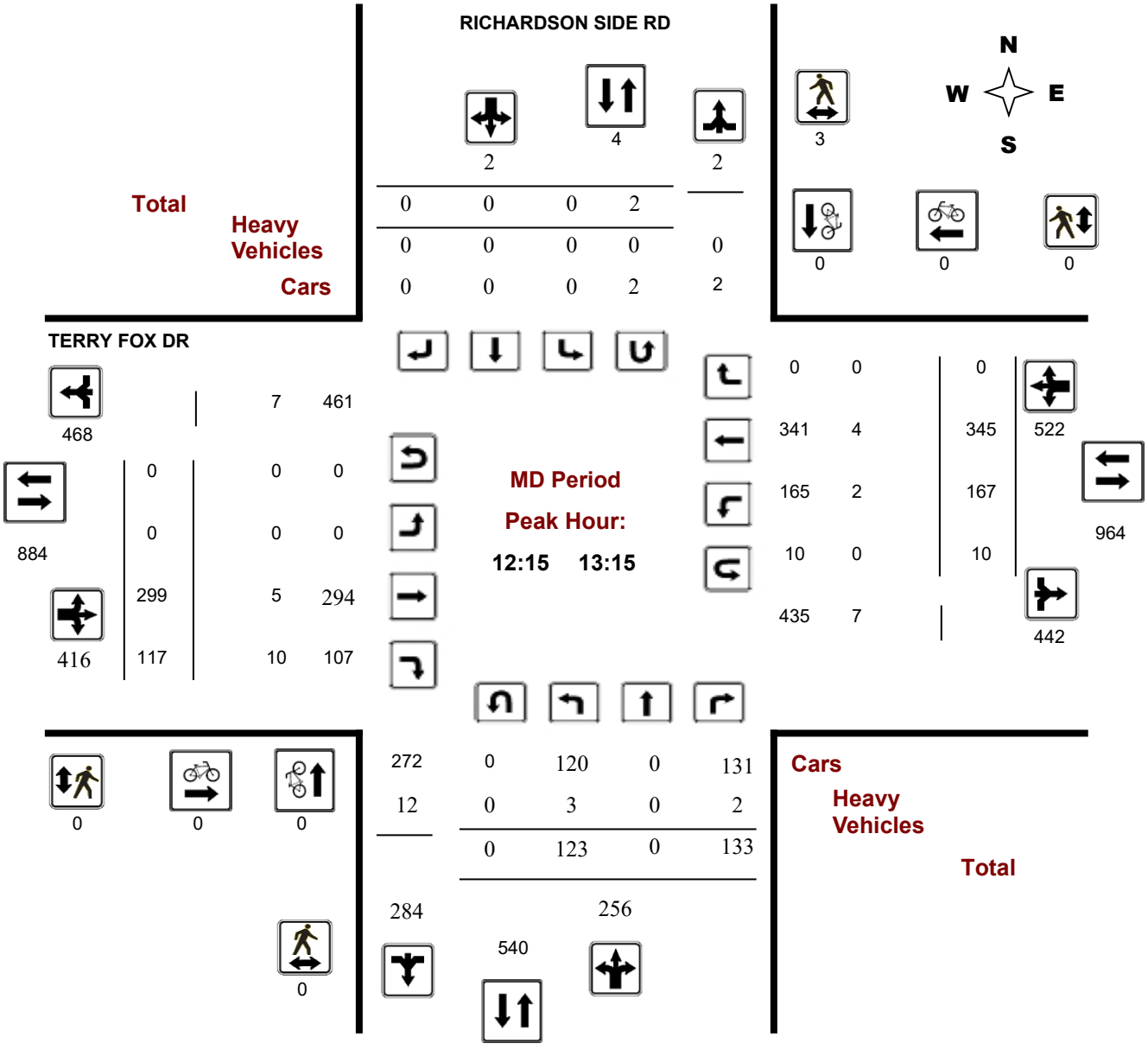
Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

MD Period Peak Hour Diagram


RICHARDSON SIDE RD
TERRY FOX DR
N
W
E
S
Total
Heavy Vehicles
Cars
MD Period
Peak Hour:
12:15 13:15
Cars
Heavy Vehicles
Total
2
4
2
3
0
0
0
468
884
416
522
964
442
0
0
0

Transportation Services - Traffic Services

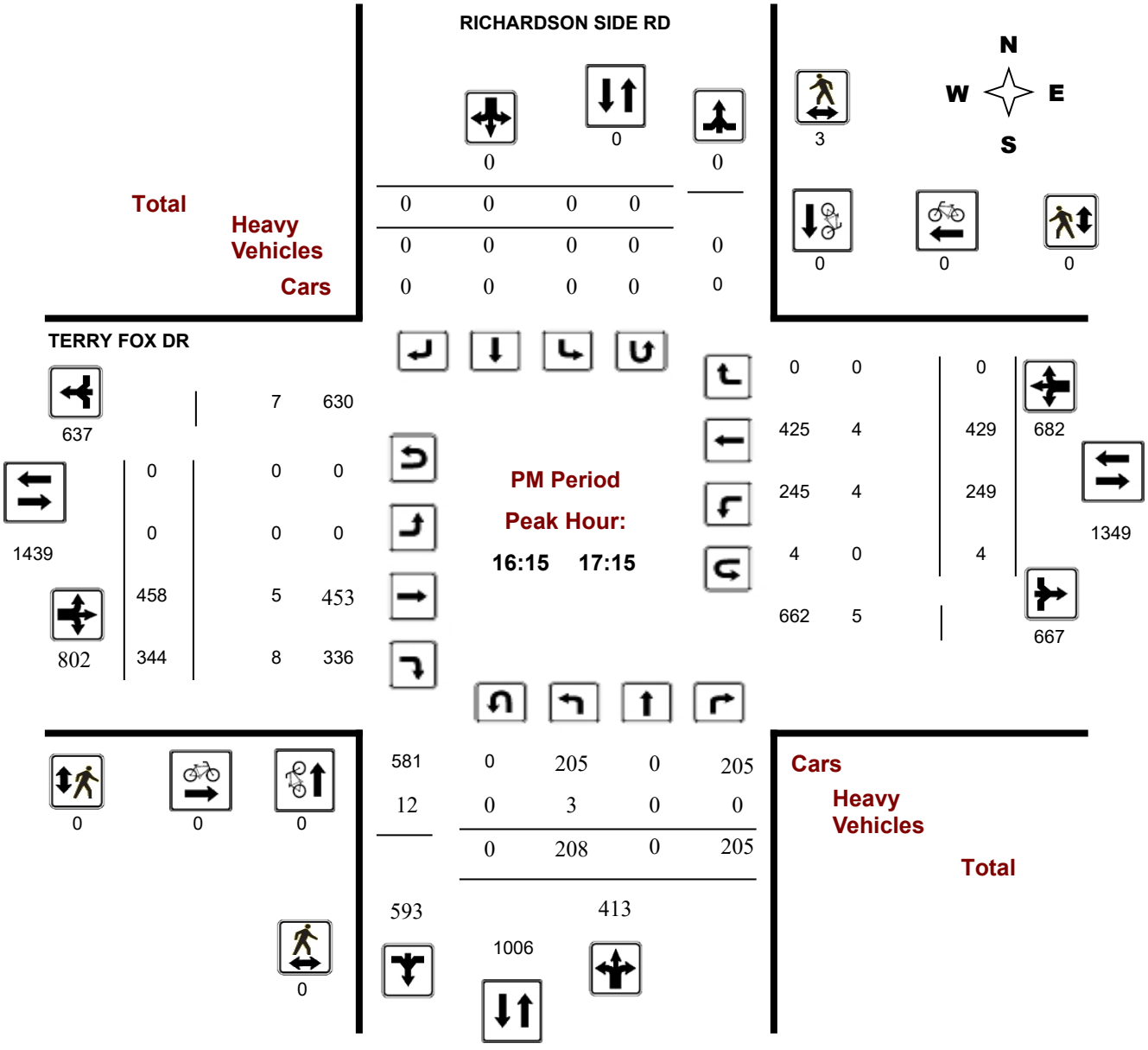
Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, February 13, 2024

Total Observed U-Turns

Northbound: 0 Southbound: 3

Eastbound: 1 Westbound: 39

AADT Factor

1.00

	RICHARDSON SIDE RD									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	157	0	144	**301**	0	0	0	**0**	**301**	0	202	107	**309**	106	153	0	**259**	**568**	**869**
08:00 09:00	323	0	160	**483**	0	0	0	**0**	**483**	0	289	169	**458**	160	321	0	**481**	**939**	**1422**
09:00 10:00	203	1	134	**338**	0	0	0	**0**	**338**	0	278	152	**430**	118	278	0	**396**	**826**	**1164**
11:30 12:30	111	0	126	**237**	0	0	0	**0**	**237**	0	317	131	**448**	156	268	0	**424**	**872**	**1109**
12:30 13:30	142	0	126	**268**	0	0	0	**0**	**268**	0	266	111	**377**	160	367	0	**527**	**904**	**1172**
15:00 16:00	165	1	174	**340**	0	0	0	**0**	**340**	0	313	228	**541**	233	384	0	**617**	**1158**	**1498**
16:00 17:00	193	0	203	**396**	0	0	0	**0**	**396**	0	449	333	**782**	239	410	0	**649**	**1431**	**1827**
17:00 18:00	191	0	169	**360**	0	0	0	**0**	**360**	0	443	298	**741**	244	421	0	**665**	**1406**	**1766**
Sub Total	1485	2	1236	**2723**	0	0	0	**0**	**2723**	0	2557	1529	**4086**	1416	2602	0	**4018**	**8104**	**10827**
U Turns				**0**				**3**	**3**				**1**				**39**	**40**	**43**
Total	1485	2	1236	**2723**	0	0	0	**3**	**2726**	0	2557	1529	**4087**	1416	2602	0	**4057**	**8144**	**10870**
EQ 12Hr	2064	3	1718	**3785**	0	0	0	**4**	**3789**	0	3554	2125	**5681**	1968	3617	0	**5639**	**11320**	**15109**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	2064	3	1718	**3785**	0	0	0	**4**	**3789**	0	3554	2125	**5681**	1968	3617	0	**5639**	**11320**	**15109**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	2704	4	2251	**4958**	0	0	0	**5**	**4964**	0	4656	2784	**7442**	2578	4738	0	**7387**	**14829**	**19793**
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

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study 15 Minute Increments

		RICHARDSON SIDE RD									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	29	0	21	50	0	0	0	0	50	0	48	10	58	19	23	0	44	102	152
07:15	07:30	41	0	28	69	0	0	0	0	69	0	51	26	77	21	35	0	56	133	202
07:30	07:45	39	0	37	76	0	0	0	0	76	0	54	29	84	27	42	0	70	154	230
08:30	08:45	80	0	34	114	0	0	0	0	114	0	88	44	132	38	77	0	117	249	363
12:15	12:30	27	0	36	63	0	0	0	2	65	0	83	39	122	43	75	0	120	242	307
07:45	08:00	48	0	58	106	0	0	0	1	107	0	49	42	91	39	53	0	93	184	291
08:00	08:15	55	0	51	106	0	0	0	0	106	0	67	32	99	38	67	0	105	204	310
08:15	08:30	85	0	38	123	0	0	0	0	123	0	63	42	105	41	82	0	123	228	351
08:45	09:00	103	0	37	140	0	0	0	0	140	0	71	51	122	43	95	0	138	260	400
09:00	09:15	75	0	39	114	0	0	0	0	114	0	65	46	111	35	77	0	113	224	338
09:15	09:30	54	0	35	89	0	0	0	0	89	0	78	48	126	39	75	0	115	241	330
09:30	09:45	41	1	33	75	0	0	0	0	75	0	64	31	95	26	65	0	91	186	261
09:45	10:00	33	0	27	60	0	0	0	0	60	0	71	27	98	18	61	0	80	178	238
11:30	11:45	26	0	30	56	0	0	0	0	56	0	69	27	96	24	71	0	95	191	247
11:45	12:00	23	0	32	55	0	0	0	0	55	0	100	32	132	39	57	0	97	229	284
12:00	12:15	35	0	28	63	0	0	0	0	63	0	65	33	98	50	65	0	117	215	278
12:30	12:45	34	0	34	68	0	0	0	0	68	0	83	20	103	41	101	0	144	247	315
12:45	13:00	29	0	31	60	0	0	0	0	60	0	69	33	102	39	75	0	116	218	278
13:00	13:15	33	0	32	65	0	0	0	0	65	0	64	25	89	44	94	0	142	231	296
15:45	16:00	37	0	38	75	0	0	0	0	75	0	98	89	187	75	96	0	171	358	433
16:15	16:30	52	0	52	104	0	0	0	0	104	0	124	79	203	65	111	0	177	380	484
17:00	17:15	54	0	52	106	0	0	0	0	106	0	117	85	202	68	118	0	186	388	494
17:15	17:30	55	0	40	95	0	0	0	0	95	0	106	72	178	49	117	0	168	346	441
17:30	17:45	40	0	31	71	0	0	0	0	71	0	124	73	197	53	92	0	147	344	415
17:45	18:00	42	0	46	88	0	0	0	0	88	0	96	68	164	74	94	0	170	334	422
13:15	13:30	46	0	29	75	0	0	0	0	75	0	50	33	83	36	97	0	137	220	295
15:15	15:30	43	0	49	92	0	0	0	0	92	0	80	50	130	52	96	0	149	279	371
15:00	15:15	40	1	44	85	0	0	0	0	85	0	59	37	96	43	93	0	136	232	317
15:30	15:45	45	0	43	88	0	0	0	0	88	0	76	52	128	63	99	0	162	290	378
16:00	16:15	39	0	50	89	0	0	0	0	89	0	108	74	182	58	99	0	159	341	430
16:30	16:45	46	0	53	99	0	0	0	0	99	0	102	87	189	57	99	0	157	346	445
16:45	17:00	56	0	48	104	0	0	0	0	104	0	115	93	208	59	101	0	162	370	474
Total:		1485	2	1236	2723	0	0	0	3	2726	0	2557	1529	4087	1416	2602	0	4057	8144	10,870

Note: U-Turns are included in Totals, cyclist volume is not included in totals. For cycliste volumes reffer to Cyclist Volume report.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study Cyclist Volume

Time Period		RICHARDSON SIDE RD			TERRY FOX 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
08:30	08:45	0	0	0	0	0	0	0
12:15	12:30	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
08:45	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
12:30	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
15:45	16:00	0	0	0	0	0	0	0
16:15	16:30	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	2	2	2
13:15	13:30	0	0	0	0	1	1	1
15:15	15:30	1	0	1	0	0	0	1
15:00	15:15	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
16:00	16:15	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
Total		1	0	**1**	0	3	3	4

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study Pedestrian Volume

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study Heavy Vehicles

		RICHARDSON SIDE RD									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	9	0	6	**15**	0	0	0	**0**	**15**	0	0	0	**0**	0	2	0	**2**	**2**	**17**
07:15	07:30	2	0	2	**4**	0	0	0	**0**	**4**	0	1	0	**1**	0	2	0	**2**	**3**	**7**
07:30	07:45	1	0	3	**4**	0	0	0	**0**	**4**	0	8	1	**9**	1	0	0	**1**	**10**	**14**
08:30	08:45	4	0	1	**5**	0	0	0	**0**	**5**	0	1	4	**5**	1	2	0	**3**	**8**	**13**
12:15	12:30	0	0	1	**1**	0	0	0	**0**	**1**	0	0	1	**1**	0	1	0	**1**	**2**	**3**
07:45	08:00	2	0	5	**7**	0	0	0	**0**	**7**	0	2	0	**2**	2	3	0	**5**	**7**	**14**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	5	4	0	**9**	**11**	**11**
08:15	08:30	2	0	1	**3**	0	0	0	**0**	**3**	0	4	1	**5**	0	4	0	**4**	**9**	**12**
08:45	09:00	3	0	2	**5**	0	0	0	**0**	**5**	0	2	0	**2**	1	5	0	**6**	**8**	**13**
09:00	09:15	0	0	2	**2**	0	0	0	**0**	**2**	0	3	7	**10**	2	0	0	**2**	**12**	**14**
09:15	09:30	1	0	0	**1**	0	0	0	**0**	**1**	0	5	3	**8**	8	5	0	**13**	**21**	**22**
09:30	09:45	0	1	1	**2**	0	0	0	**0**	**2**	0	3	1	**4**	3	4	0	**7**	**11**	**13**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	2	0	**2**	**6**	**6**
11:30	11:45	4	0	0	**4**	0	0	0	**0**	**4**	0	5	0	**5**	3	2	0	**5**	**10**	**14**
11:45	12:00	1	0	1	**2**	0	0	0	**0**	**2**	0	1	2	**3**	0	0	0	**0**	**3**	**5**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	2	**2**	0	0	0	**0**	**2**	**2**
12:30	12:45	3	0	1	**4**	0	0	0	**0**	**4**	0	2	4	**6**	0	1	0	**1**	**7**	**11**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	4	**7**	1	1	0	**2**	**9**	**9**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	1	**1**	1	1	0	**2**	**3**	**3**
15:45	16:00	2	0	1	**3**	0	0	0	**0**	**3**	0	1	1	**2**	4	0	0	**4**	**6**	**9**
16:15	16:30	2	0	0	**2**	0	0	0	**0**	**2**	0	3	5	**8**	1	3	0	**4**	**12**	**14**
17:00	17:15	1	0	0	**1**	0	0	0	**0**	**1**	0	1	0	**1**	0	1	0	**1**	**2**	**3**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	1	**1**	0	2	0	**2**	**3**	**3**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	0	0	**1**	**1**	**1**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
13:15	13:30	1	0	2	**3**	0	0	0	**0**	**3**	0	1	2	**3**	2	2	0	**4**	**7**	**10**
15:15	15:30	1	0	1	**2**	0	0	0	**0**	**2**	0	5	3	**8**	1	2	0	**3**	**11**	**13**
15:00	15:15	2	0	1	**3**	0	0	0	**0**	**3**	0	1	0	**1**	0	2	0	**2**	**3**	**6**
15:30	15:45	4	0	0	**4**	0	0	0	**0**	**4**	0	1	3	**4**	0	2	0	**2**	**6**	**10**
16:00	16:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	6	**7**	1	1	0	**2**	**9**	**9**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	3	**3**	1	0	0	**1**	**4**	**4**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	2	0	0	**2**	**3**	**3**
Total:	None	45	1	31	**77**	0	0	0	**0**	**77**	0	61	55	**116**	41	54	0	**95**	**211**	**288**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHARDSON SIDE RD @ TERRY FOX DR

Survey Date: Tuesday, February 13, 2024 **WO No:** 41696

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

Full Study 15 Minute U-Turn Total

Time Period		RICHARDSON SIDE RD Northbound U-Turn Total	RICHARDSON SIDE RD Southbound U-Turn Total	TERRY FOX DR Eastbound U-Turn Total	TERRY FOX DR Westbound U-Turn Total	Total
07:00	07:15	0	0	0	2	2
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	1	1	2
08:30	08:45	0	0	0	2	2
12:15	12:30	0	2	0	2	4
07:45	08:00	0	1	0	1	2
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	1	1
09:15	09:30	0	0	0	1	1
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	1	1
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	1	1
12:00	12:15	0	0	0	2	2
12:30	12:45	0	0	0	2	2
12:45	13:00	0	0	0	2	2
13:00	13:15	0	0	0	4	4
15:45	16:00	0	0	0	0	0
16:15	16:30	0	0	0	1	1
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	2	2
17:30	17:45	0	0	0	2	2
17:45	18:00	0	0	0	2	2
13:15	13:30	0	0	0	4	4
15:15	15:30	0	0	0	1	1
15:00	15:15	0	0	0	0	0
15:30	15:45	0	0	0	0	0
16:00	16:15	0	0	0	2	2
16:30	16:45	0	0	0	1	1
16:45	17:00	0	0	0	2	2
Total		0	3	1	39	43

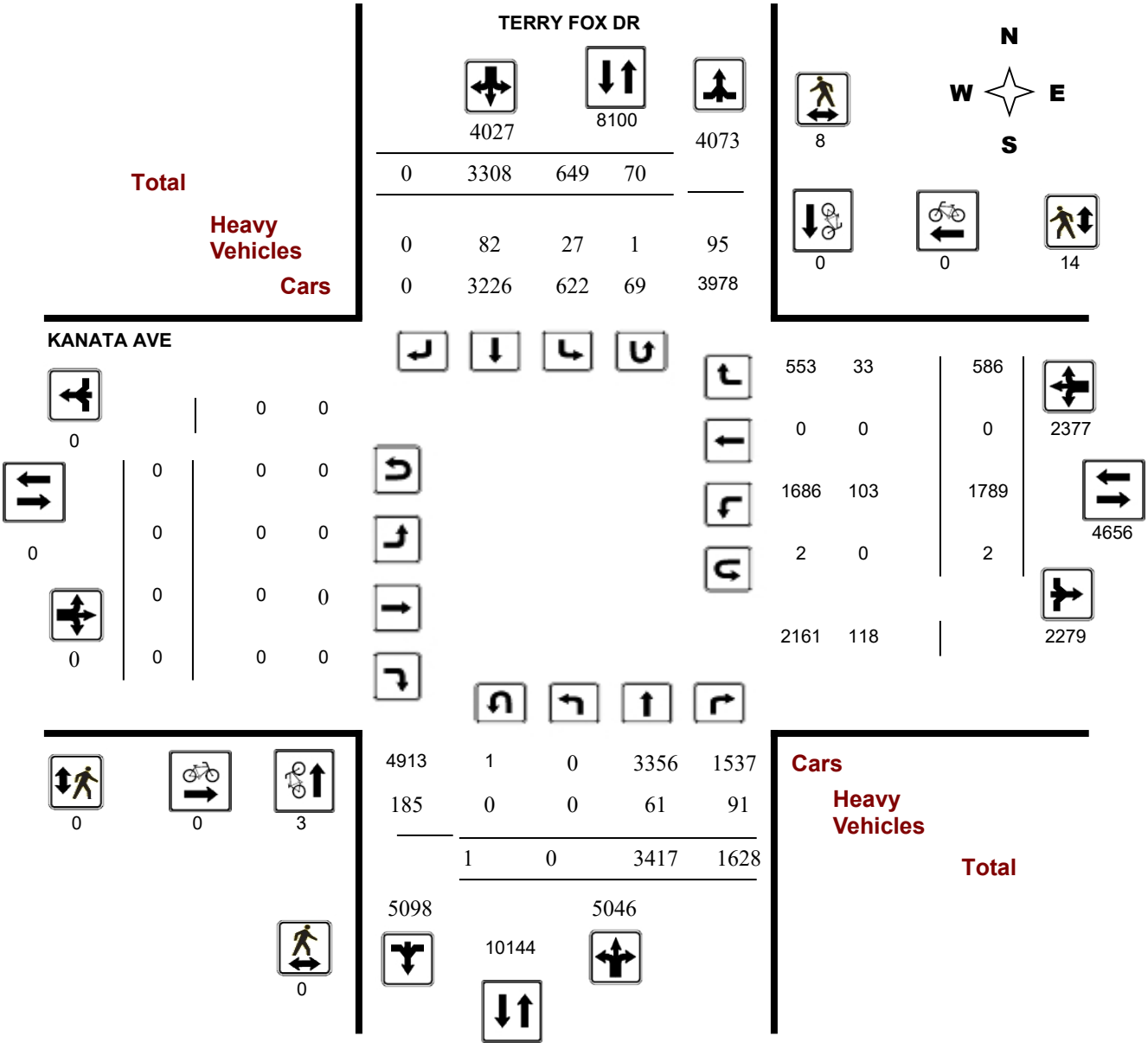
Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024
Start Time: 07:00
WO No: 41712
Device: Miovision

Full Study Diagram



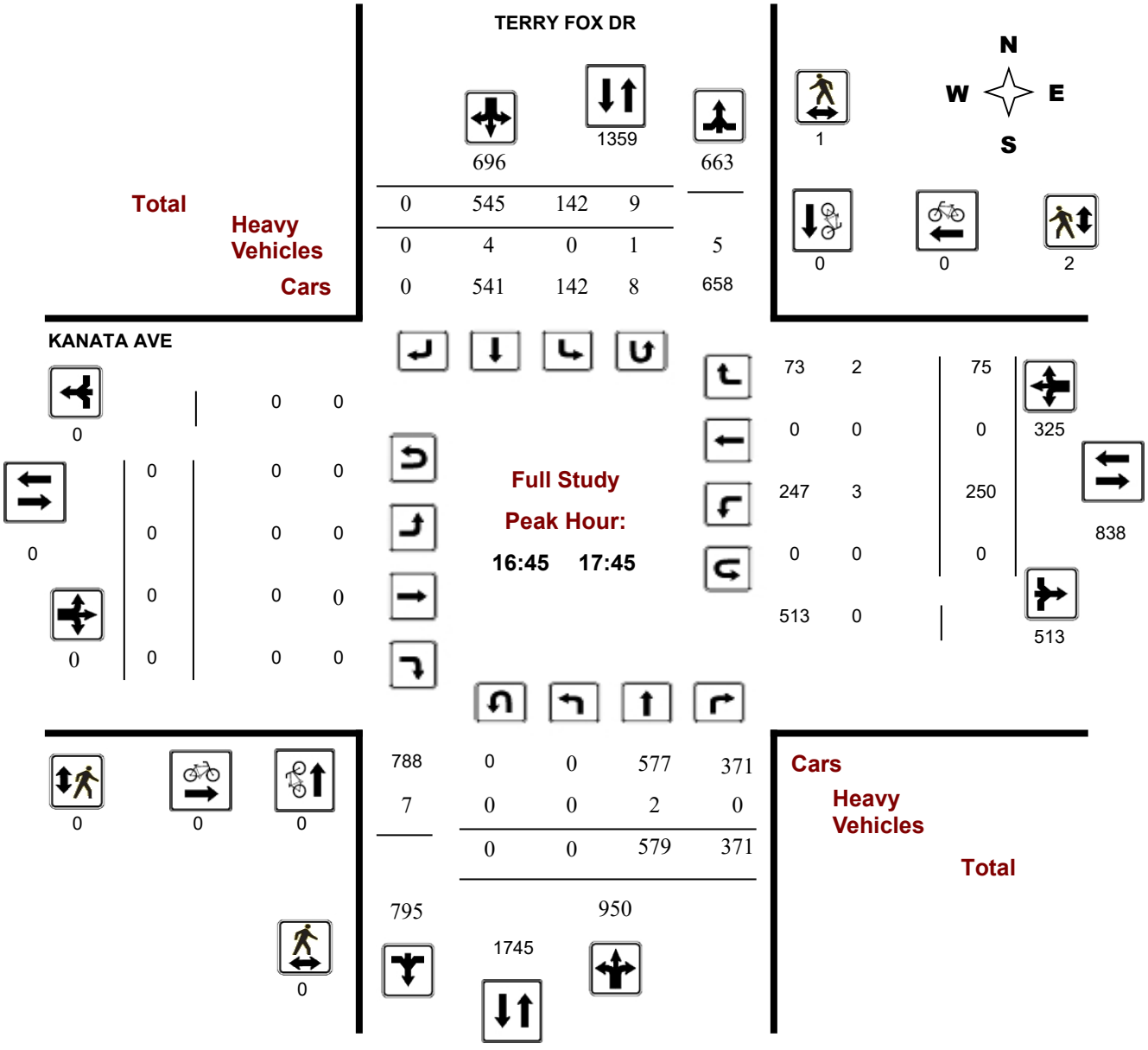
Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024
Start Time: 07:00
WO No: 41712
Device: Miovision

Full Study Peak Hour Diagram



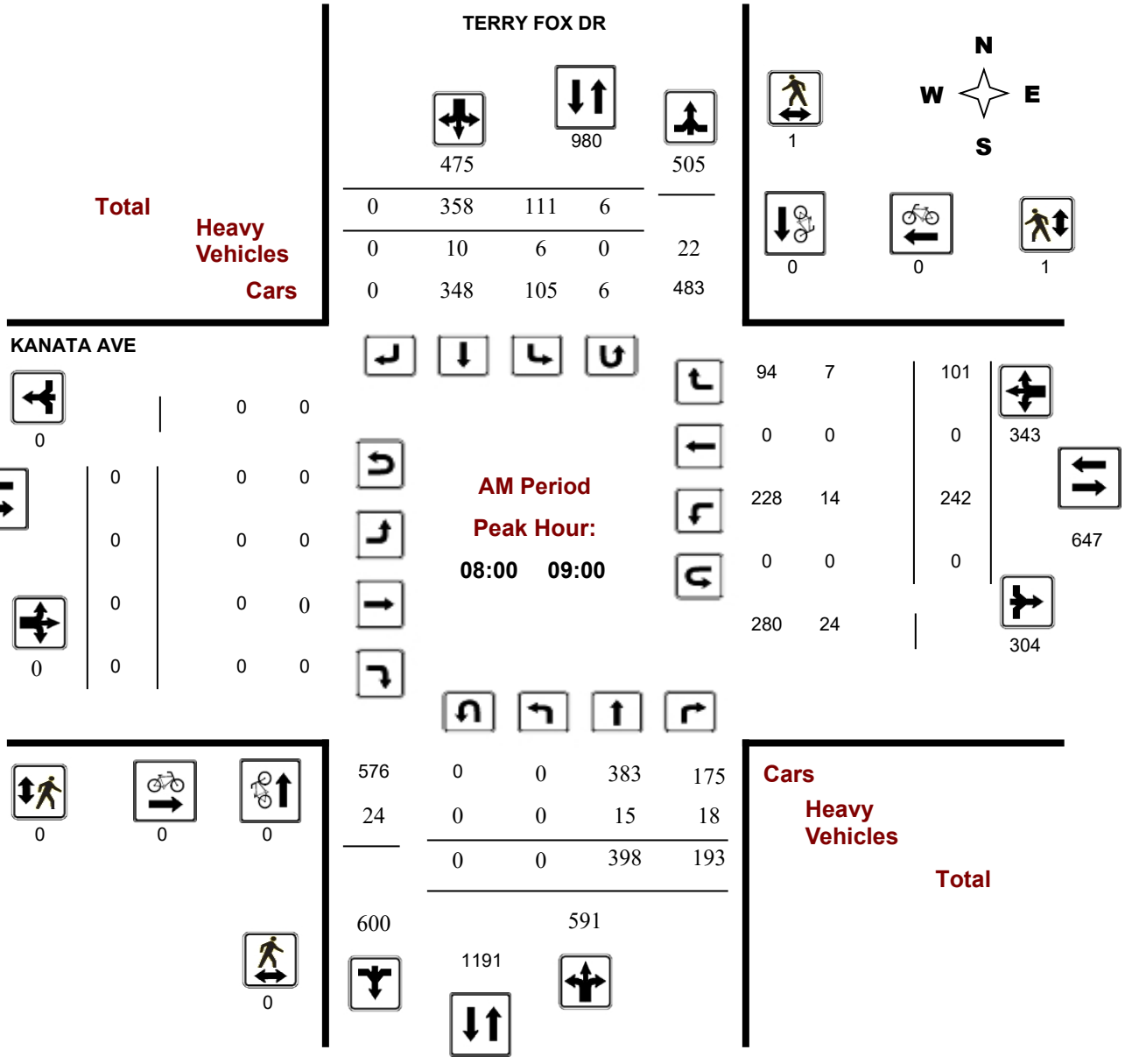
Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024
Start Time: 07:00
WO No: 41712
Device: Miovision

AM Period Peak Hour Diagram



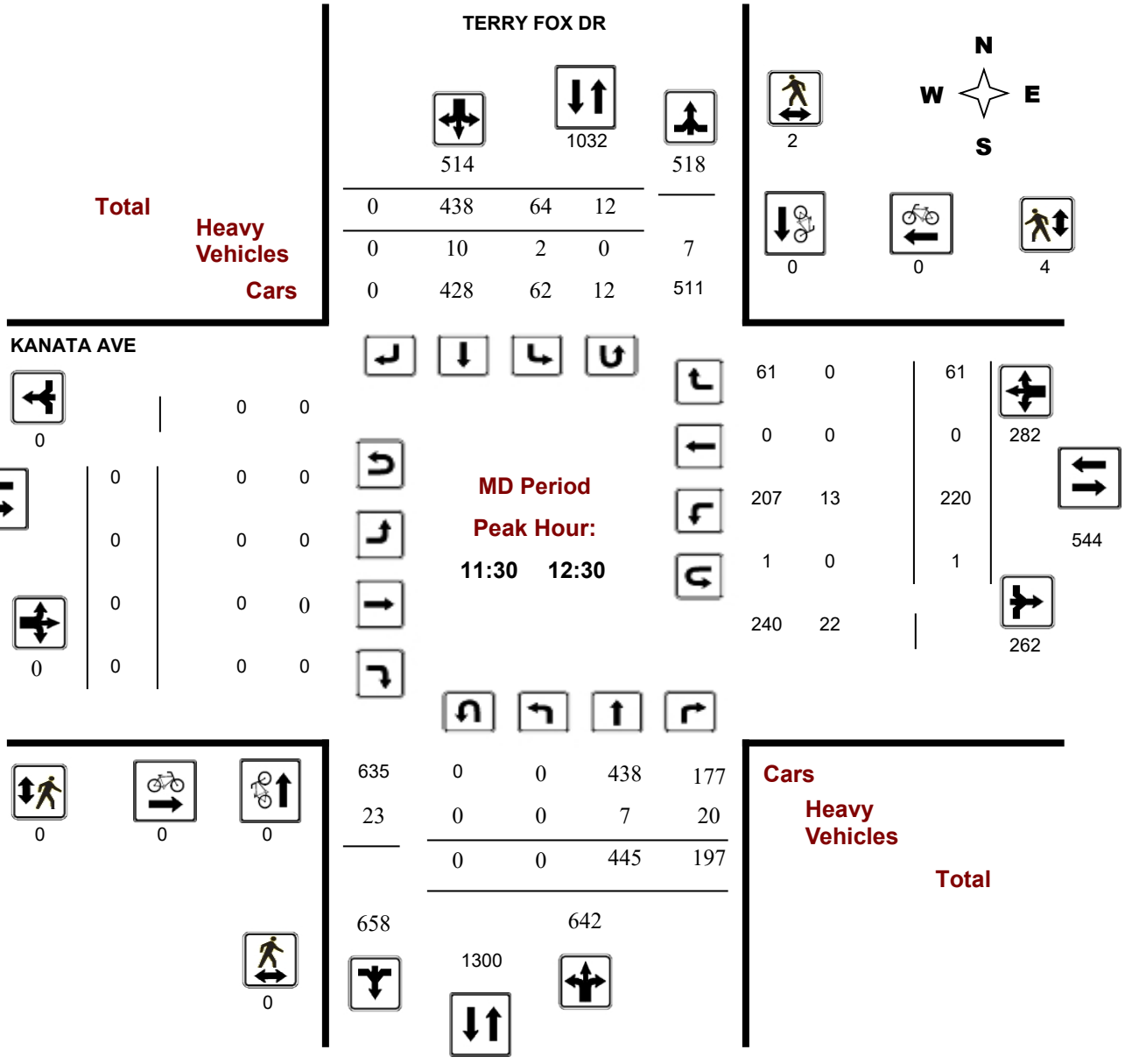
Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024
Start Time: 07:00
WO No: 41712
Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

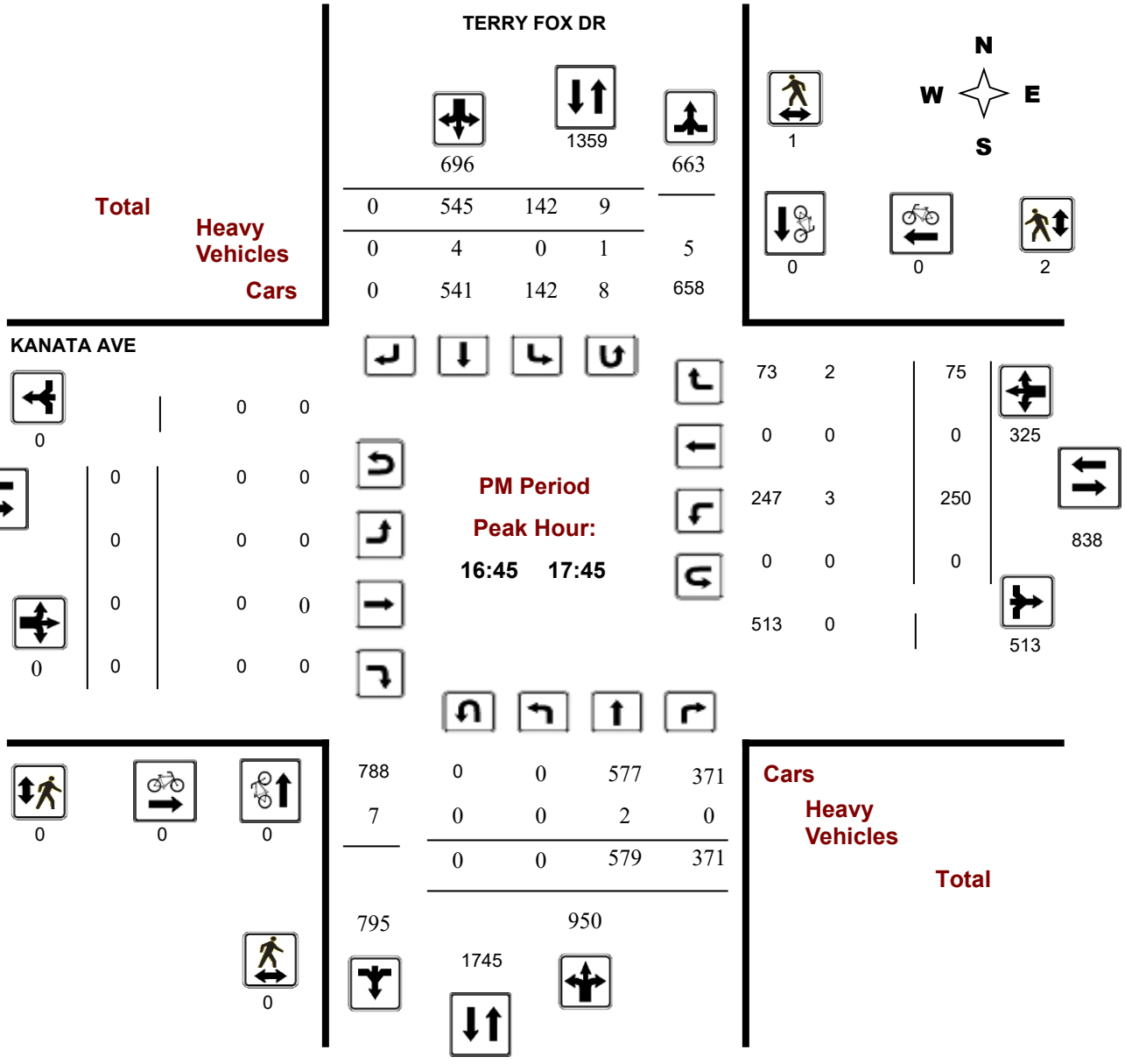
Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024 **WO No:** 41712

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

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024 **WO No:** 41712

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, February 29, 2024

Total Observed U-Turns

Northbound: 1 Southbound: 70

Eastbound: 0 Westbound: 2

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	232	129	**361**	73	285	0	**358**	**719**	0	0	0	**0**	214	0	48	**262**	**262**	**981**
08:00 09:00	0	398	193	**591**	111	358	0	**469**	**1060**	0	0	0	**0**	242	0	101	**343**	**343**	**1403**
09:00 10:00	0	325	132	**457**	46	332	0	**378**	**835**	0	0	0	**0**	201	0	55	**256**	**256**	**1091**
11:30 12:30	0	445	197	**642**	64	438	0	**502**	**1144**	0	0	0	**0**	220	0	61	**281**	**281**	**1425**
12:30 13:30	0	450	189	**639**	51	323	0	**374**	**1013**	0	0	0	**0**	185	0	58	**243**	**243**	**1256**
15:00 16:00	0	413	154	**567**	79	475	0	**554**	**1121**	0	0	0	**0**	249	0	96	**345**	**345**	**1466**
16:00 17:00	0	557	262	**819**	74	606	0	**680**	**1499**	0	0	0	**0**	235	0	88	**323**	**323**	**1822**
17:00 18:00	0	597	372	**969**	151	491	0	**642**	**1611**	0	0	0	**0**	243	0	79	**322**	**322**	**1933**
Sub Total	0	3417	1628	**5045**	649	3308	0	**3957**	**9002**	0	0	0	**0**	1789	0	586	**2375**	**2375**	**11377**
U Turns				**1**				**70**	**71**				**0**				**2**	**2**	**73**
Total	0	3417	1628	**5046**	649	3308	0	**4027**	**9073**	0	0	0	**0**	1789	0	586	**2377**	**2377**	**11450**
EQ 12Hr	0	4750	2263	**7014**	902	4598	0	**5598**	**12611**	0	0	0	**0**	2487	0	815	**3304**	**3304**	**15915**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	4275	2037	**6313**	812	5421	0	**5038**	**11350**	0	0	0	**0**	2238	0	734	**2974**	**2974**	**14324**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	0	5600	2668	**8270**	1064	7102	0	**6600**	**14868**	0	0	0	**0**	2932	0	962	**3896**	**3896**	**18764**
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: Thursday, February 29, 2024 **WO No:** 41712

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	40	24	64	7	60	0	69	133	0	0	0	0	40	0	8	48	48	181
07:15	07:30	0	64	25	89	8	61	0	71	160	0	0	0	0	53	0	8	61	61	221
07:30	07:45	0	55	28	83	21	75	0	96	179	0	0	0	0	58	0	10	68	68	247
08:00	08:15	0	83	75	158	50	77	0	127	285	0	0	0	0	64	0	30	94	94	379
17:45	18:00	0	148	84	232	34	116	0	154	386	0	0	0	0	61	0	21	83	83	469
07:45	08:00	0	73	52	125	37	89	0	127	252	0	0	0	0	63	0	22	85	85	337
08:15	08:30	0	116	37	153	25	80	0	108	261	0	0	0	0	63	0	36	99	99	360
08:30	08:45	0	108	36	144	17	94	0	114	258	0	0	0	0	54	0	13	67	67	325
08:45	09:00	0	91	45	136	19	107	0	126	262	0	0	0	0	61	0	22	83	83	345
09:00	09:15	0	84	37	121	20	84	0	107	228	0	0	0	0	50	0	23	73	73	301
09:15	09:30	0	103	30	133	10	87	0	99	232	0	0	0	0	51	0	9	60	60	292
09:30	09:45	0	68	34	102	7	76	0	88	190	0	0	0	0	47	0	12	59	59	249
09:45	10:00	0	70	31	101	9	85	0	98	199	0	0	0	0	53	0	11	64	64	263
11:30	11:45	0	96	51	147	20	98	0	120	267	0	0	0	0	54	0	14	68	68	335
11:45	12:00	0	127	51	178	17	116	0	140	318	0	0	0	0	43	0	20	63	63	381
12:00	12:15	0	108	57	165	14	118	0	133	298	0	0	0	0	70	0	16	87	87	385
12:15	12:30	0	114	38	152	13	106	0	121	273	0	0	0	0	53	0	11	64	64	337
12:30	12:45	0	120	38	158	11	79	0	94	252	0	0	0	0	41	0	13	54	54	306
12:45	13:00	0	111	50	161	14	77	0	93	254	0	0	0	0	42	0	13	55	55	309
13:00	13:15	0	100	56	156	10	69	0	80	236	0	0	0	0	50	0	18	68	68	304
13:15	13:30	0	119	45	164	16	98	0	116	280	0	0	0	0	52	0	14	66	66	346
15:15	15:30	0	91	43	134	21	120	0	141	275	0	0	0	0	59	0	25	84	84	359
15:30	15:45	0	99	20	119	20	123	0	144	263	0	0	0	0	65	0	22	87	87	350
15:45	16:00	0	104	29	133	19	136	0	156	289	0	0	0	0	67	0	24	91	91	380
16:00	16:15	0	142	60	202	14	153	0	170	372	0	0	0	0	66	0	20	86	86	458
16:15	16:30	0	147	58	206	18	148	0	168	374	0	0	0	0	60	0	20	80	80	454
16:30	16:45	0	138	61	199	17	135	0	156	355	0	0	0	0	41	0	31	72	72	427
16:45	17:00	0	130	83	213	25	170	0	197	410	0	0	0	0	68	0	17	85	85	495
17:00	17:15	0	151	94	245	50	119	0	171	416	0	0	0	0	56	0	13	69	69	485
17:15	17:30	0	138	110	248	30	134	0	167	415	0	0	0	0	64	0	23	87	87	502
17:30	17:45	0	160	84	244	37	122	0	161	405	0	0	0	0	62	0	22	84	84	489
15:00	15:15	0	119	62	181	19	96	0	115	296	0	0	0	0	58	0	25	83	83	379
Total:		0	3417	1628	5046	649	3308	0	4027	9073	0	0	0	0	1789	0	586	2377	2377	11,450

Note: U-Turns are included in Totals, cyclist volume is not included in totals. For cycliste volumes reffer to Cyclist Volume report.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024 **WO No:** 41712

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	0	1	0	0	0	1
08:00	08:15	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
07:45	08:00	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
15:15	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	2	0	2	0	0	0	2
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
15:00	15:15	0	0	0	0	0	0	0
Total		3	0	**3**	0	0	0	3

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024 **WO No:** 41712

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

Full Study Pedestrian Volume

	TERRY FOX DR			KANATA AVE			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	**Total**	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	**Total**	**Grand Total**
07:00 07:15	0	0	**0**	0	0	**0**	**0**
07:15 07:30	0	0	**0**	0	0	**0**	**0**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
08:00 08:15	0	1	**1**	0	0	**0**	**1**
17:45 18:00	0	1	**1**	0	0	**0**	**1**
07:45 08:00	0	3	**3**	0	1	**1**	**4**
08:15 08:30	0	0	**0**	0	0	**0**	**0**
08:30 08:45	0	0	**0**	0	0	**0**	**0**
08:45 09:00	0	0	**0**	0	1	**1**	**1**
09:00 09:15	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	1	**1**	0	0	**0**	**1**
11:45 12:00	0	0	**0**	0	2	**2**	**2**
12:00 12:15	0	1	**1**	0	1	**1**	**2**
12:15 12:30	0	0	**0**	0	1	**1**	**1**
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	0	0	**0**	0	1	**1**	**1**
13:15 13:30	0	0	**0**	0	1	**1**	**1**
15:15 15:30	0	0	**0**	0	1	**1**	**1**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	0	**0**	0	0	**0**	**0**
16:15 16:30	0	0	**0**	0	0	**0**	**0**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	0	0	**0**	**0**
17:00 17:15	0	0	**0**	0	0	**0**	**0**
17:15 17:30	0	1	**1**	0	1	**1**	**2**
17:30 17:45	0	0	**0**	0	1	**1**	**1**
15:00 15:15	0	0	**0**	0	0	**0**	**0**
Total	0	8	**8**	0	14	**14**	**22**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024 **WO No:** 41712

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	1	3	**4**	1	5	0	**6**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
07:15	07:30	0	4	5	**9**	1	4	0	**5**	**14**	0	0	0	**0**	1	0	0	**1**	**1**	**15**
07:30	07:45	0	4	3	**7**	5	5	0	**10**	**17**	0	0	0	**0**	4	0	0	**4**	**4**	**21**
08:00	08:15	0	3	4	**7**	1	3	0	**4**	**11**	0	0	0	**0**	5	0	5	**10**	**10**	**21**
17:45	18:00	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
07:45	08:00	0	1	1	**2**	6	5	0	**11**	**13**	0	0	0	**0**	9	0	5	**14**	**14**	**27**
08:15	08:30	0	7	2	**9**	1	4	0	**5**	**14**	0	0	0	**0**	1	0	2	**3**	**3**	**17**
08:30	08:45	0	5	5	**10**	0	1	0	**1**	**11**	0	0	0	**0**	2	0	0	**2**	**2**	**13**
08:45	09:00	0	0	7	**7**	4	2	0	**6**	**13**	0	0	0	**0**	6	0	0	**6**	**6**	**19**
09:00	09:15	0	3	1	**4**	0	5	0	**5**	**9**	0	0	0	**0**	8	0	4	**12**	**12**	**21**
09:15	09:30	0	4	5	**9**	1	7	0	**8**	**17**	0	0	0	**0**	6	0	2	**8**	**8**	**25**
09:30	09:45	0	1	4	**5**	0	3	0	**3**	**8**	0	0	0	**0**	5	0	1	**6**	**6**	**14**
09:45	10:00	0	2	7	**9**	0	2	0	**2**	**11**	0	0	0	**0**	4	0	0	**4**	**4**	**15**
11:30	11:45	0	0	7	**7**	0	3	0	**3**	**10**	0	0	0	**0**	4	0	0	**4**	**4**	**14**
11:45	12:00	0	2	1	**3**	1	0	0	**1**	**4**	0	0	0	**0**	2	0	0	**2**	**2**	**6**
12:00	12:15	0	2	7	**9**	0	3	0	**3**	**12**	0	0	0	**0**	3	0	0	**3**	**3**	**15**
12:15	12:30	0	3	5	**8**	1	4	0	**5**	**13**	0	0	0	**0**	4	0	0	**4**	**4**	**17**
12:30	12:45	0	1	5	**6**	0	1	0	**1**	**7**	0	0	0	**0**	4	0	0	**4**	**4**	**11**
12:45	13:00	0	1	2	**3**	0	1	0	**1**	**4**	0	0	0	**0**	3	0	0	**3**	**3**	**7**
13:00	13:15	0	2	5	**7**	0	2	0	**2**	**9**	0	0	0	**0**	3	0	1	**4**	**4**	**13**
13:15	13:30	0	0	5	**5**	0	2	0	**2**	**7**	0	0	0	**0**	3	0	0	**3**	**3**	**10**
15:15	15:30	0	4	1	**5**	2	6	0	**8**	**13**	0	0	0	**0**	6	0	1	**7**	**7**	**20**
15:30	15:45	0	0	0	**0**	2	1	0	**3**	**3**	0	0	0	**0**	6	0	0	**6**	**6**	**9**
15:45	16:00	0	0	0	**0**	0	2	0	**2**	**2**	0	0	0	**0**	4	0	4	**8**	**8**	**10**
16:00	16:15	0	2	1	**3**	0	3	0	**3**	**6**	0	0	0	**0**	1	0	2	**3**	**3**	**9**
16:15	16:30	0	2	0	**2**	0	2	0	**2**	**4**	0	0	0	**0**	3	0	1	**4**	**4**	**8**
16:30	16:45	0	2	0	**2**	0	0	0	**0**	**2**	0	0	0	**0**	0	0	1	**1**	**1**	**3**
16:45	17:00	0	2	0	**2**	0	3	0	**4**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	0	1	**2**	**2**	**2**
17:15	17:30	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	1	0	1	**2**	**2**	**3**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	1	0	0	**1**	**1**	**1**
15:00	15:15	0	2	5	**7**	1	2	0	**3**	**10**	0	0	0	**0**	3	0	2	**5**	**5**	**15**
Total:	None	0	61	91	**152**	27	82	0	**110**	**262**	0	0	0	**0**	103	0	33	**136**	**136**	**398**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

KANATA AVE @ TERRY FOX DR

Survey Date: Thursday, February 29, 2024 **WO No:** 41712

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	2	0	0	2
07:15	07:30	0	2	0	0	2
07:30	07:45	0	0	0	0	0
08:00	08:15	0	0	0	0	0
17:45	18:00	0	4	0	1	5
07:45	08:00	0	1	0	0	1
08:15	08:30	0	3	0	0	3
08:30	08:45	0	3	0	0	3
08:45	09:00	0	0	0	0	0
09:00	09:15	0	3	0	0	3
09:15	09:30	0	2	0	0	2
09:30	09:45	0	5	0	0	5
09:45	10:00	0	4	0	0	4
11:30	11:45	0	2	0	0	2
11:45	12:00	0	7	0	0	7
12:00	12:15	0	1	0	1	2
12:15	12:30	0	2	0	0	2
12:30	12:45	0	4	0	0	4
12:45	13:00	0	2	0	0	2
13:00	13:15	0	1	0	0	1
13:15	13:30	0	2	0	0	2
15:15	15:30	0	0	0	0	0
15:30	15:45	0	1	0	0	1
15:45	16:00	0	1	0	0	1
16:00	16:15	0	3	0	0	3
16:15	16:30	1	2	0	0	3
16:30	16:45	0	4	0	0	4
16:45	17:00	0	2	0	0	2
17:00	17:15	0	2	0	0	2
17:15	17:30	0	3	0	0	3
17:30	17:45	0	2	0	0	2
15:00	15:15	0	0	0	0	0
Total		1	70	0	2	73

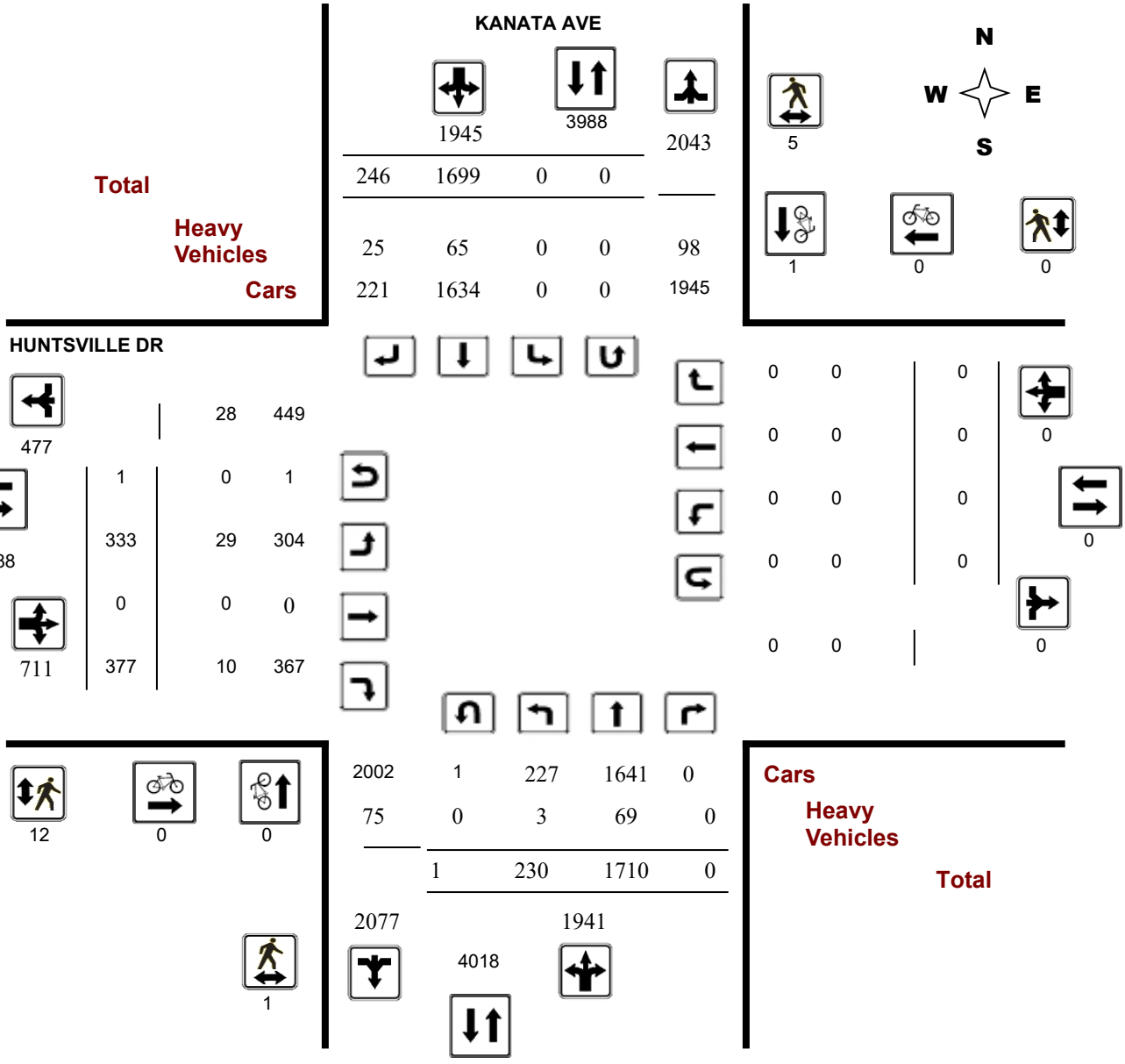
Transportation Services - Traffic Services

Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025
Start Time: 07:00
WO No: 42446
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

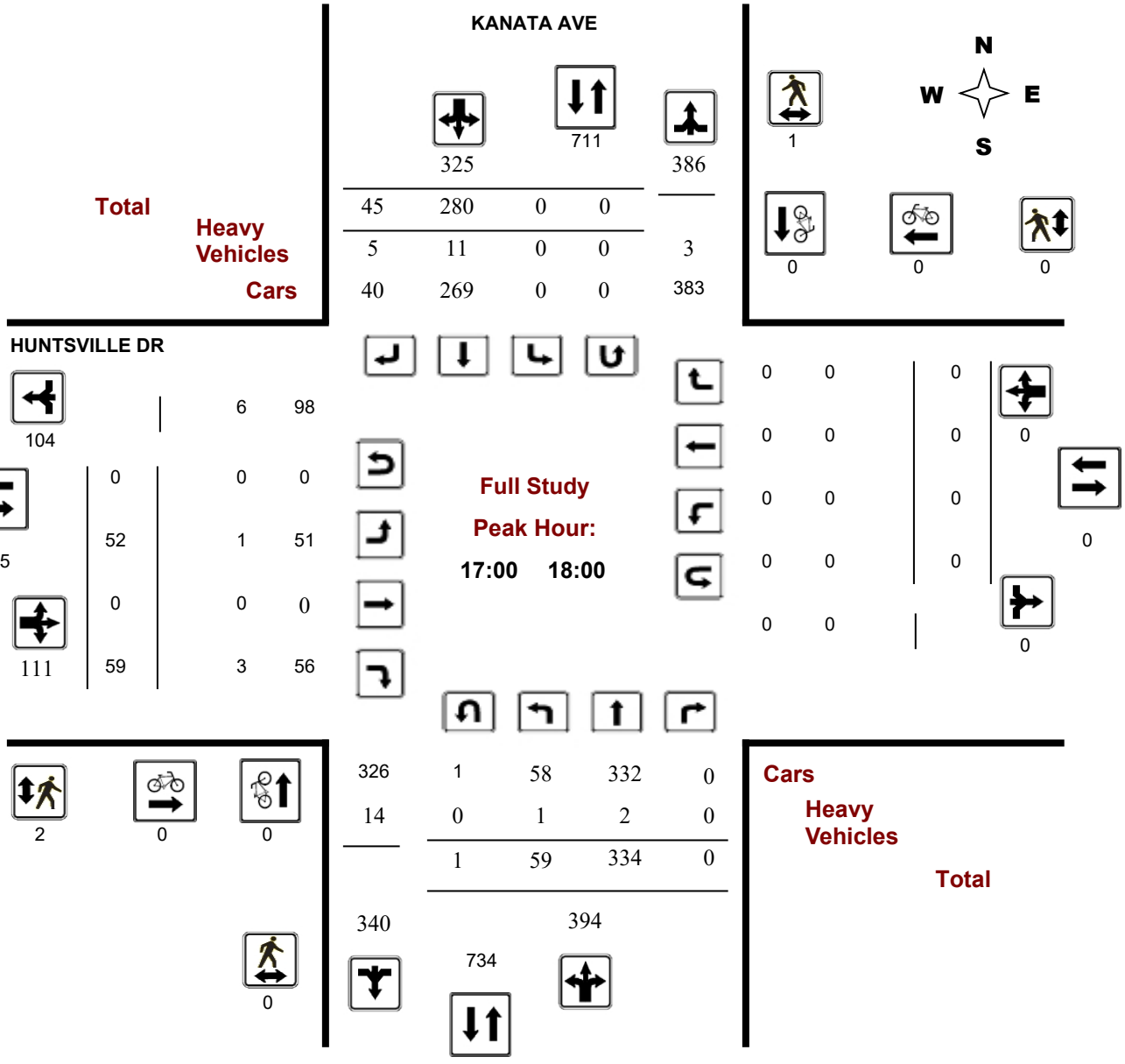
Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

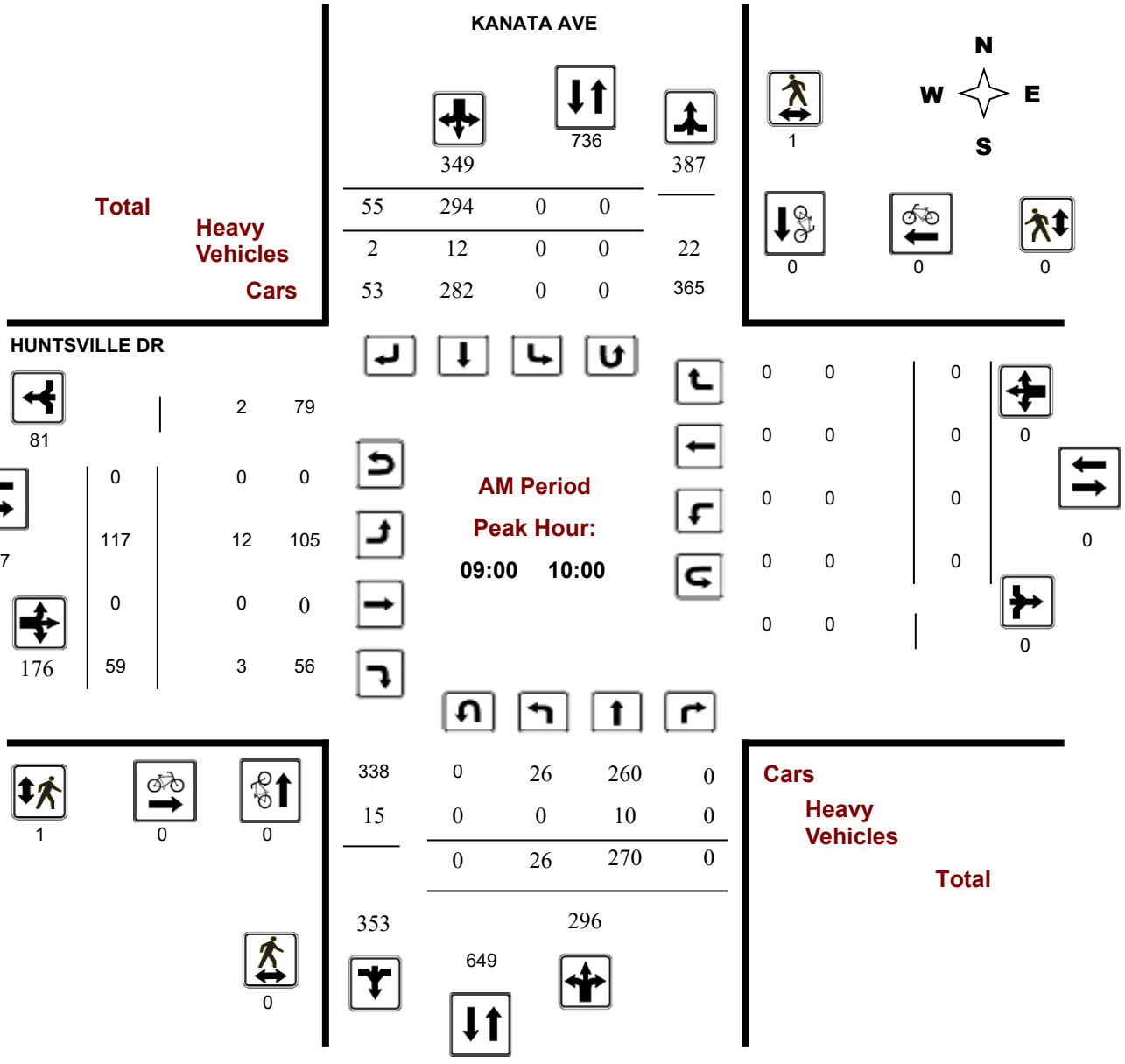
Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

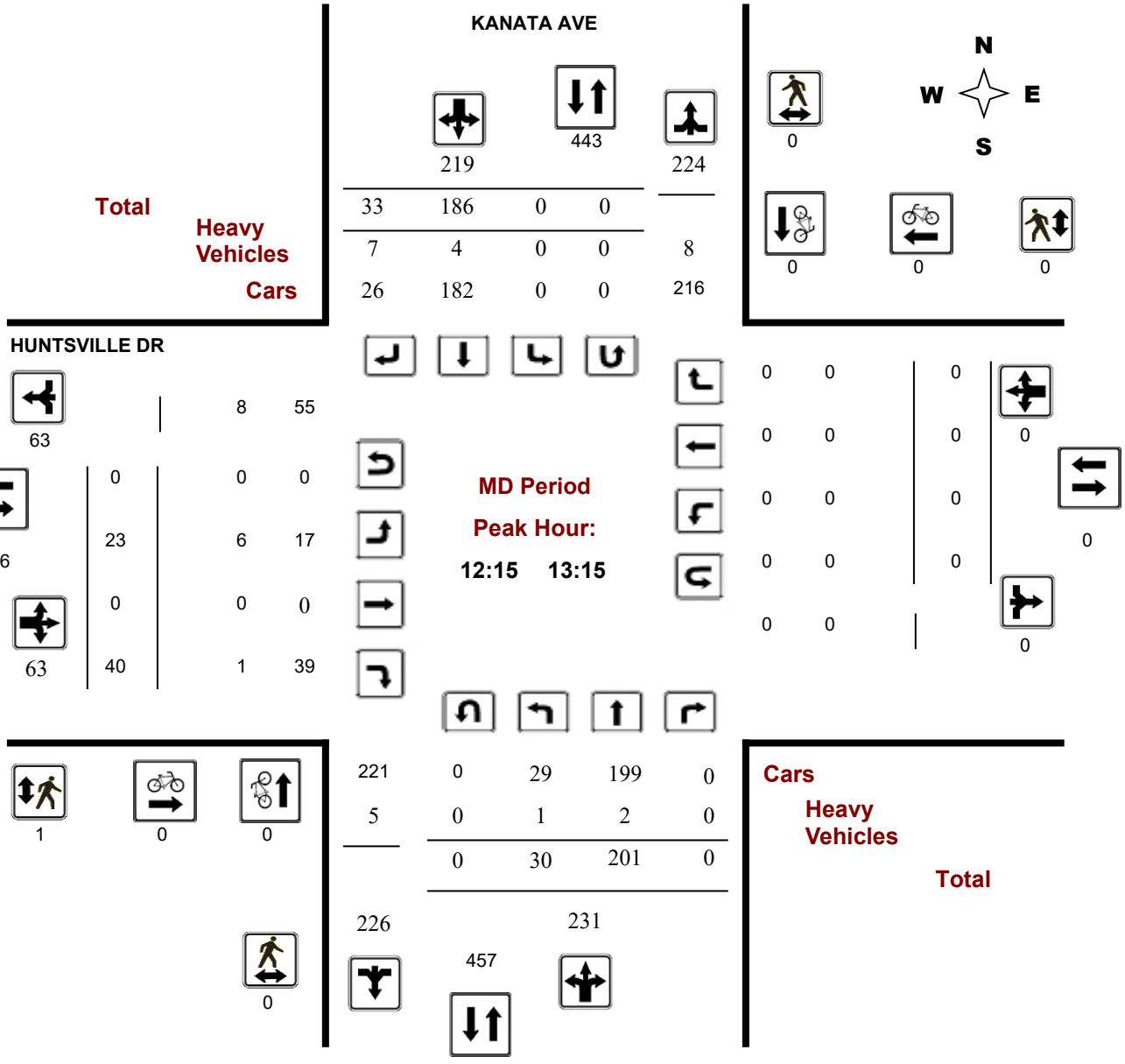
Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

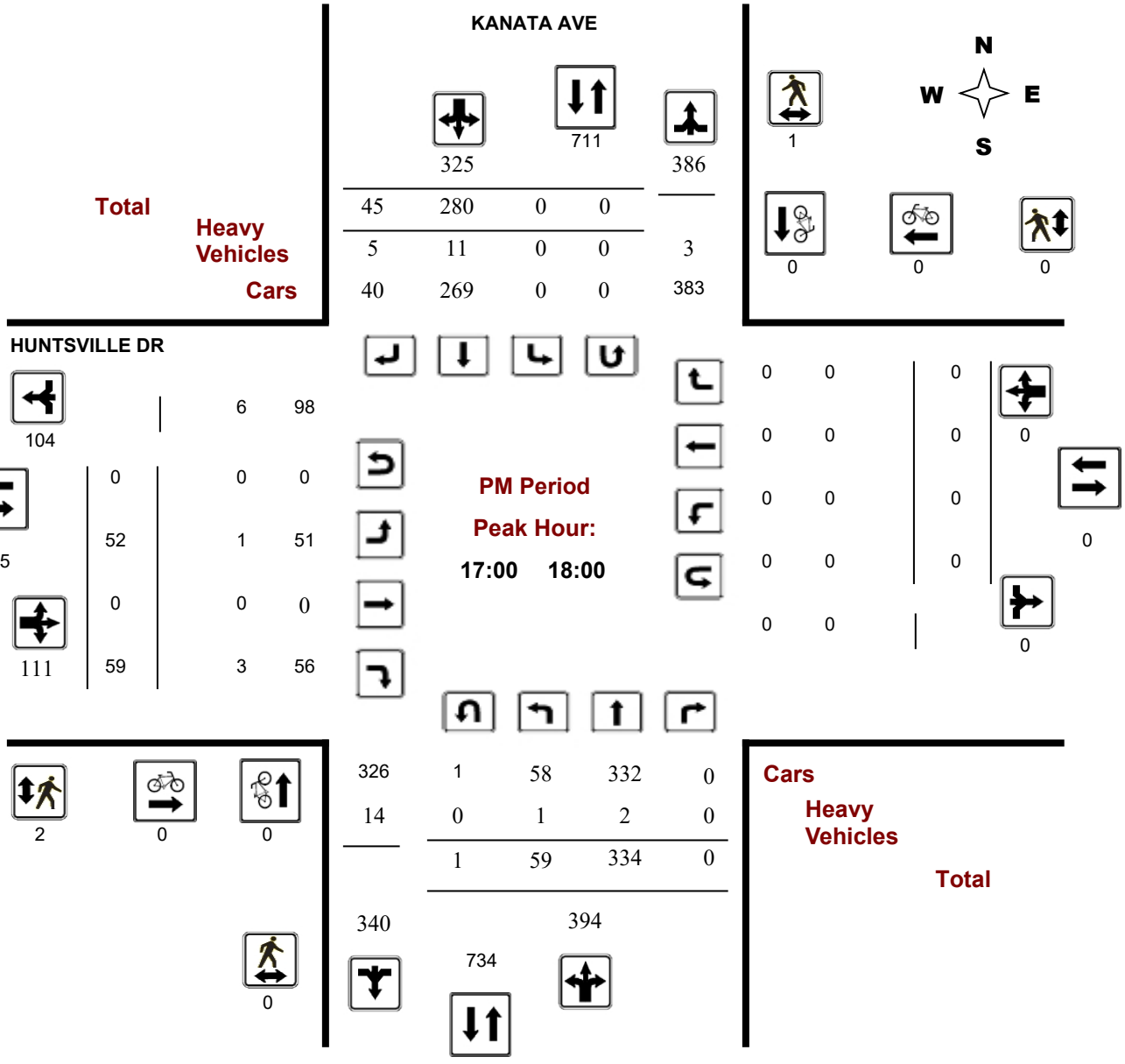
Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, January 22, 2025

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 1 Westbound: 0

AADT Factor

1.00

	KANATA AVE									HUNTSVILLE 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	3	47	0	**50**	0	61	1	**62**	**112**	1	0	35	**36**	0	0	0	**0**	**36**	**148**
08:00 09:00	11	182	0	**193**	0	203	12	**215**	**408**	30	0	62	**92**	0	0	0	**0**	**92**	**500**
09:00 10:00	26	270	0	**296**	0	294	55	**349**	**645**	117	0	59	**176**	0	0	0	**0**	**176**	**821**
11:30 12:30	23	156	0	**179**	0	187	17	**204**	**383**	20	0	38	**58**	0	0	0	**0**	**58**	**441**
12:30 13:30	30	190	0	**220**	0	177	29	**206**	**426**	26	0	36	**62**	0	0	0	**0**	**62**	**488**
15:00 16:00	30	286	0	**316**	0	258	33	**291**	**607**	37	0	30	**67**	0	0	0	**0**	**67**	**674**
16:00 17:00	48	245	0	**293**	0	239	54	**293**	**586**	50	0	58	**108**	0	0	0	**0**	**108**	**694**
17:00 18:00	59	334	0	**393**	0	280	45	**325**	**718**	52	0	59	**111**	0	0	0	**0**	**111**	**829**
Sub Total	230	1710	0	**1940**	0	1699	246	**1945**	**3885**	333	0	377	**710**	0	0	0	**0**	**710**	**4595**
U Turns				**1**				**0**	**1**				**1**				**0**	**1**	**2**
Total	230	1710	0	**1941**	0	1699	246	**1945**	**3886**	333	0	377	**711**	0	0	0	**0**	**711**	**4597**
EQ 12Hr	320	2377	0	**2698**	0	2362	342	**2704**	**5402**	463	0	524	**988**	0	0	0	**0**	**988**	**6390**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	320	2377	0	**2698**	0	3094	448	**2704**	**5402**	463	0	524	**988**	0	0	0	**0**	**988**	**6390**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	419	3114	0	**3534**	0	4053	587	**3542**	**7077**	607	0	686	**1294**	0	0	0	**0**	**1294**	**8371**
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

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study 15 Minute Increments

		KANATA AVE									HUNTSVILLE 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	6	0	7	0	12	0	12	19	0	0	8	8	0	0	0	0	8	27
07:15	07:30	0	6	0	6	0	12	1	13	19	0	0	7	7	0	0	0	0	7	26
07:30	07:45	2	9	0	11	0	16	0	16	27	1	0	11	12	0	0	0	0	12	39
07:45	08:00	0	26	0	26	0	21	0	21	47	0	0	9	9	0	0	0	0	9	56
08:00	08:15	2	21	0	23	0	38	0	38	61	6	0	19	25	0	0	0	0	25	86
08:15	08:30	3	25	0	28	0	41	6	47	75	6	0	14	20	0	0	0	0	20	95
08:30	08:45	1	46	0	47	0	49	2	51	98	11	0	11	22	0	0	0	0	22	120
08:45	09:00	5	90	0	95	0	75	4	79	174	7	0	18	25	0	0	0	0	25	199
09:00	09:15	4	111	0	115	0	87	19	106	221	40	0	9	49	0	0	0	0	49	270
09:15	09:30	7	68	0	75	0	65	14	79	154	27	0	11	38	0	0	0	0	38	192
09:30	09:45	8	44	0	52	0	60	9	69	121	19	0	19	38	0	0	0	0	38	159
09:45	10:00	7	47	0	54	0	82	13	95	149	31	0	20	51	0	0	0	0	51	200
11:30	11:45	3	26	0	29	0	44	6	50	79	4	0	8	12	0	0	0	0	12	91
11:45	12:00	6	31	0	37	0	41	2	43	80	4	0	10	14	0	0	0	0	14	94
12:00	12:15	4	40	0	44	0	50	2	52	96	8	0	6	14	0	0	0	0	14	110
12:15	12:30	10	59	0	69	0	52	7	59	128	4	0	14	18	0	0	0	0	18	146
12:30	12:45	7	35	0	42	0	48	8	56	98	7	0	9	16	0	0	0	0	16	114
12:45	13:00	5	63	0	68	0	44	6	50	118	5	0	11	16	0	0	0	0	16	134
13:00	13:15	8	44	0	52	0	42	12	54	106	7	0	6	13	0	0	0	0	13	119
13:15	13:30	10	48	0	58	0	43	3	46	104	7	0	10	17	0	0	0	0	17	121
15:00	15:15	8	59	0	67	0	41	4	45	112	4	0	7	12	0	0	0	0	12	124
15:15	15:30	5	87	0	92	0	41	2	43	135	8	0	5	13	0	0	0	0	13	148
15:30	15:45	12	74	0	86	0	101	15	116	202	14	0	6	20	0	0	0	0	20	222
15:45	16:00	5	66	0	71	0	75	12	87	158	11	0	12	23	0	0	0	0	23	181
16:00	16:15	6	57	0	63	0	55	13	68	131	11	0	26	37	0	0	0	0	37	168
16:15	16:30	14	68	0	82	0	58	12	70	152	16	0	10	26	0	0	0	0	26	178
16:30	16:45	16	60	0	76	0	61	18	79	155	17	0	7	24	0	0	0	0	24	179
16:45	17:00	12	60	0	72	0	65	11	76	148	6	0	15	21	0	0	0	0	21	169
17:00	17:15	11	72	0	84	0	82	10	92	176	10	0	9	19	0	0	0	0	19	195
17:15	17:30	15	85	0	100	0	64	13	77	177	5	0	17	22	0	0	0	0	22	199
17:30	17:45	19	89	0	108	0	69	9	78	186	11	0	19	30	0	0	0	0	30	216
17:45	18:00	14	88	0	102	0	65	13	78	180	26	0	14	40	0	0	0	0	40	220
Total:		230	1710	0	1941	0	1699	246	1945	3886	333	0	377	711	0	0	0	0	711	4,597

Note: U-Turns are included in Totals, cyclist volume is not included in totals. For cycliste volumes reffer to Cyclist Volume report.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study Cyclist Volume

Time Period		KANATA AVE			HUNTSVILLE DR			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	1	1	0	0	0	1
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		0	1	**1**	0	0	0	1

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study Pedestrian Volume

	KANATA AVE			HUNTSVILLE DR			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	**Total**	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	**Total**	**Grand Total**
07:00 07:15	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	1	0	**1**	0	0	**0**	**1**
08:45 09:00	0	0	**0**	0	0	**0**	**0**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
09:15 09:30	0	0	**0**	0	0	**0**	**0**
09:30 09:45	0	1	**1**	0	0	**0**	**1**
09:45 10:00	0	0	**0**	1	0	**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	0	**0**	**0**
12:30 12:45	0	0	**0**	0	0	**0**	**0**
12:45 13:00	0	0	**0**	1	0	**1**	**1**
13:00 13:15	0	0	**0**	0	0	**0**	**0**
13:15 13:30	0	0	**0**	2	0	**2**	**2**
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	1	**1**	3	0	**3**	**4**
16:15 16:30	0	1	**1**	1	0	**1**	**2**
16:30 16:45	0	0	**0**	0	0	**0**	**0**
16:45 17:00	0	0	**0**	2	0	**2**	**2**
17:00 17:15	0	0	**0**	1	0	**1**	**1**
17:15 17:30	0	0	**0**	0	0	**0**	**0**
17:30 17:45	0	0	**0**	1	0	**1**	**1**
17:45 18:00	0	1	**1**	0	0	**0**	**1**
Total	1	5	**6**	12	0	**12**	**18**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study Heavy Vehicles

		KANATA AVE									HUNTSVILLE DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
07:15	07:30	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
07:30	07:45	0	1	0	**1**	0	0	0	**0**	**1**	1	0	0	**1**	0	0	0	**0**	**1**	**2**
07:45	08:00	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
08:00	08:15	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
08:15	08:30	0	3	0	**3**	0	0	0	**0**	**3**	1	0	1	**2**	0	0	0	**0**	**2**	**5**
08:30	08:45	0	4	0	**4**	0	2	0	**2**	**6**	1	0	0	**1**	0	0	0	**0**	**1**	**7**
08:45	09:00	0	7	0	**7**	0	7	0	**7**	**14**	1	0	0	**1**	0	0	0	**0**	**1**	**15**
09:00	09:15	0	3	0	**3**	0	6	1	**7**	**10**	3	0	1	**4**	0	0	0	**0**	**4**	**14**
09:15	09:30	0	3	0	**3**	0	1	0	**1**	**4**	1	0	0	**1**	0	0	0	**0**	**1**	**5**
09:30	09:45	0	1	0	**1**	0	2	1	**3**	**4**	3	0	2	**5**	0	0	0	**0**	**5**	**9**
09:45	10:00	0	3	0	**3**	0	3	0	**3**	**6**	5	0	0	**5**	0	0	0	**0**	**5**	**11**
11:30	11:45	0	1	0	**1**	0	1	0	**1**	**2**	1	0	0	**1**	0	0	0	**0**	**1**	**3**
11:45	12:00	0	1	0	**1**	0	2	1	**3**	**4**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
12:00	12:15	0	0	0	**0**	0	2	1	**3**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
12:15	12:30	1	0	0	**1**	0	1	3	**4**	**5**	2	0	0	**2**	0	0	0	**0**	**2**	**7**
12:30	12:45	0	1	0	**1**	0	2	1	**3**	**4**	3	0	1	**4**	0	0	0	**0**	**4**	**8**
12:45	13:00	0	1	0	**1**	0	0	2	**2**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
13:00	13:15	0	0	0	**0**	0	1	1	**2**	**2**	1	0	0	**1**	0	0	0	**0**	**1**	**3**
13:15	13:30	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
15:00	15:15	0	5	0	**5**	0	1	1	**2**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
15:15	15:30	0	18	0	**18**	0	1	0	**1**	**19**	0	0	0	**0**	0	0	0	**0**	**0**	**19**
15:30	15:45	0	1	0	**1**	0	6	1	**7**	**8**	2	0	1	**3**	0	0	0	**0**	**3**	**11**
15:45	16:00	0	1	0	**1**	0	9	0	**9**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
16:00	16:15	0	4	0	**4**	0	1	0	**1**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
16:15	16:30	0	4	0	**4**	0	1	3	**4**	**8**	2	0	0	**2**	0	0	0	**0**	**2**	**10**
16:30	16:45	0	2	0	**2**	0	0	2	**2**	**4**	1	0	0	**1**	0	0	0	**0**	**1**	**5**
16:45	17:00	1	0	0	**1**	0	4	2	**6**	**7**	0	0	1	**1**	0	0	0	**0**	**1**	**8**
17:00	17:15	0	0	0	**0**	0	3	4	**7**	**7**	1	0	2	**3**	0	0	0	**0**	**3**	**10**
17:15	17:30	0	0	0	**0**	0	6	0	**6**	**6**	0	0	1	**1**	0	0	0	**0**	**1**	**7**
17:30	17:45	1	1	0	**2**	0	2	1	**3**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
17:45	18:00	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
Total:	None	3	69	0	**72**	0	65	25	**90**	**162**	29	0	10	**39**	0	0	0	**0**	**39**	**201**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

HUNTSVILLE DR @ KANATA AVE

Survey Date: Wednesday, January 22, 2025 **WO No:** 42446

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

Full Study 15 Minute U-Turn Total

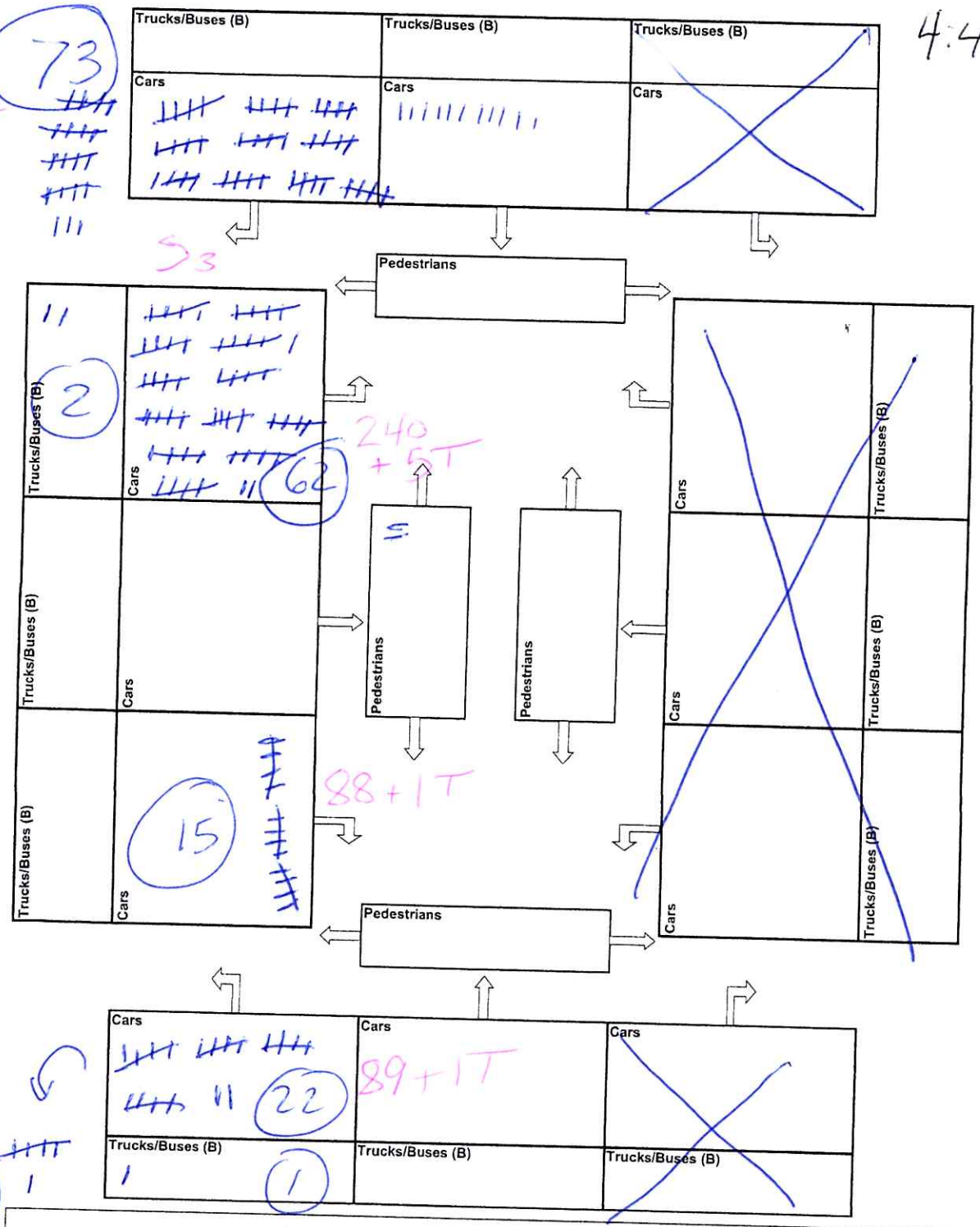
Time Period		KANATA AVE Northbound U-Turn Total	KANATA AVE Southbound U-Turn Total	HUNTSVILLE DR Eastbound U-Turn Total	HUNTSVILLE DR Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	1	0	1
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	1	0	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	0	1	0	2

March 7, 2025

1

VEHICLE TURNING MOVEMENT COUNT

4:45 - 5:00



Kanata

Main Street: Terry Fox Dr.
Side Street: Kanata
Observer: Dock

Weather: Clear -1
Date: March 7, 2025
Time: 4:45 to 5:00

Draw north arrow below

NOTES: Use tick-marks in the appropriate box for each vehicle.
Change sheets every 15 minutes.
(i.e. ||||)

HEAVY VEHICLE

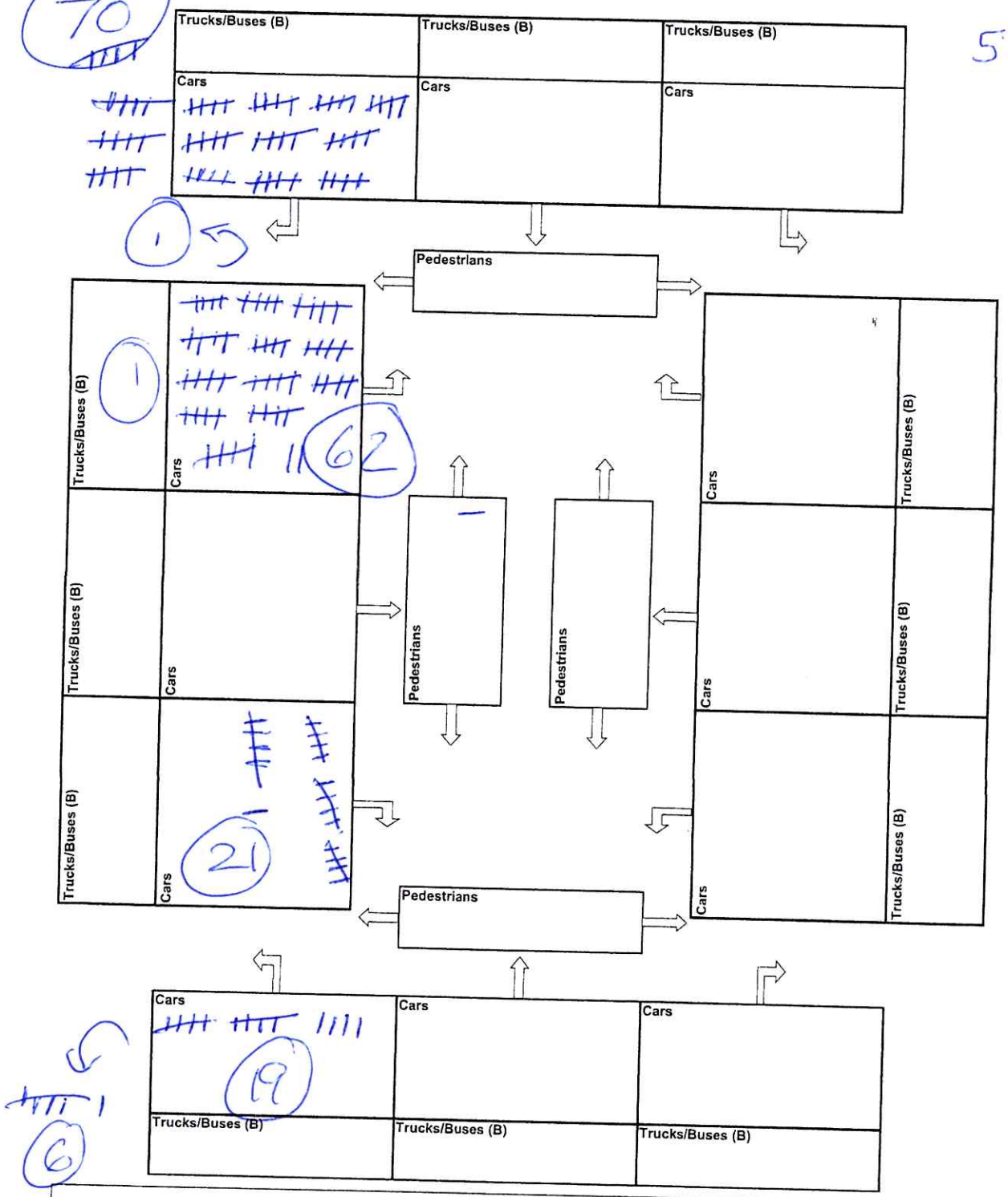
Trucks include anything larger than a typical pickup truck or van or anything with 3 or more axles.

Cyclists riding their bikes should be counted the same way as cars/trucks/buses. They can be counted using the letter "C" in either the box for cars or the box for trucks/buses. Cyclists walking beside their bike should be counted as a pedestrian.

Pedestrians should be categorized as:
Adult (A) || Senior (S) >= 65 yrs old || Handicap (H) physical impairment || Child (K) <=12 years old

Please add up the tallys at the end of the count. Summarize as "100 Cars, 10 T, 20 B, 5 Cyclists, 12 A, 5S, 1H, and 2K"

VEHICLE TURNING MOVEMENT COUNT



Main Street: _____

Side Street: _____

Observer: _____

Weather: _____

Date: _____

Time: _____ to _____

Draw north arrow below

NOTES: Use tick-marks in the appropriate box for each vehicle. Change sheets every 15 minutes.

(i.e. 𝍸)

HEAVY VEHICLE

Trucks include anything larger than a typical pickup truck or van or anything with 3 or more axles.

Cyclists riding their bikes should be counted the same way as cars/trucks/buses. They can be counted using the letter "C" in either the box for cars or the box for trucks/buses. Cyclists walking beside their bike should be counted as a pedestrian.

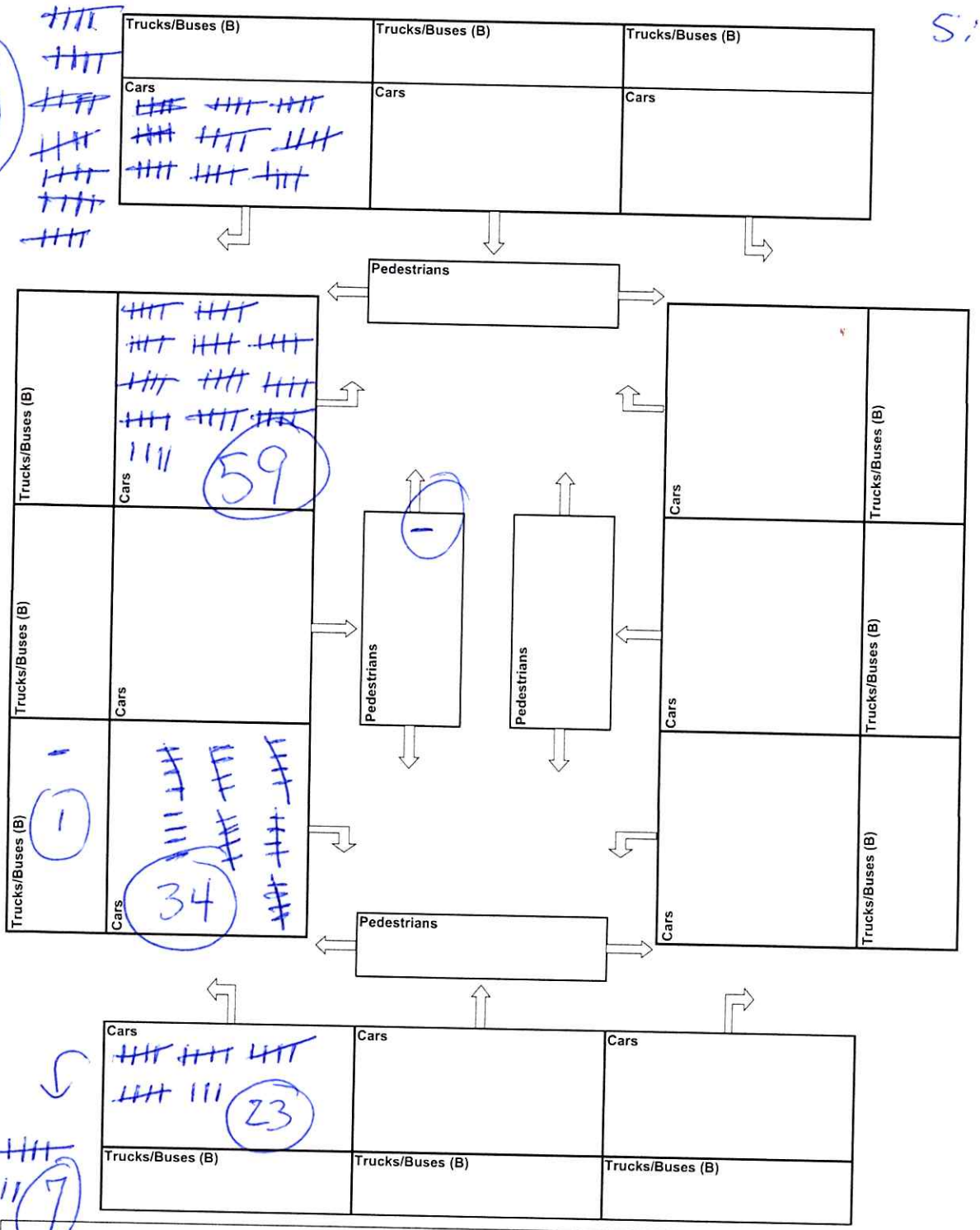
Pedestrians should be categorized as:
Adult (A) || Senior (S) >= 65 yrs old || Handicap (H) physical impairment || Child (K) <=12 years old

Please add up the tallys at the end of the count. Summarize as "100 Cars, 10 T, 20 B, 5 Cyclists, 12 A, 5S, 1H, and 2K"

3

VEHICLE TURNING MOVEMENT COUNT

5:15 - 5:30



Main Street: _____

Side Street: _____

Observer: _____

Weather: _____

Date: _____

Time: _____ to _____

Draw north arrow below

NOTES: Use tick-marks in the appropriate box for each vehicle. Change sheets every 15 minutes. (i.e. 𝍸)

HEAVY VEHICLE

Trucks include anything larger than a typical pickup truck or van or anything with 3 or more axles.

Cyclists riding their bikes should be counted the same way as cars/trucks/buses. They can be counted using the letter "C" in either the box for cars or the box for trucks/buses. Cyclists walking beside their bike should be counted as a pedestrian.

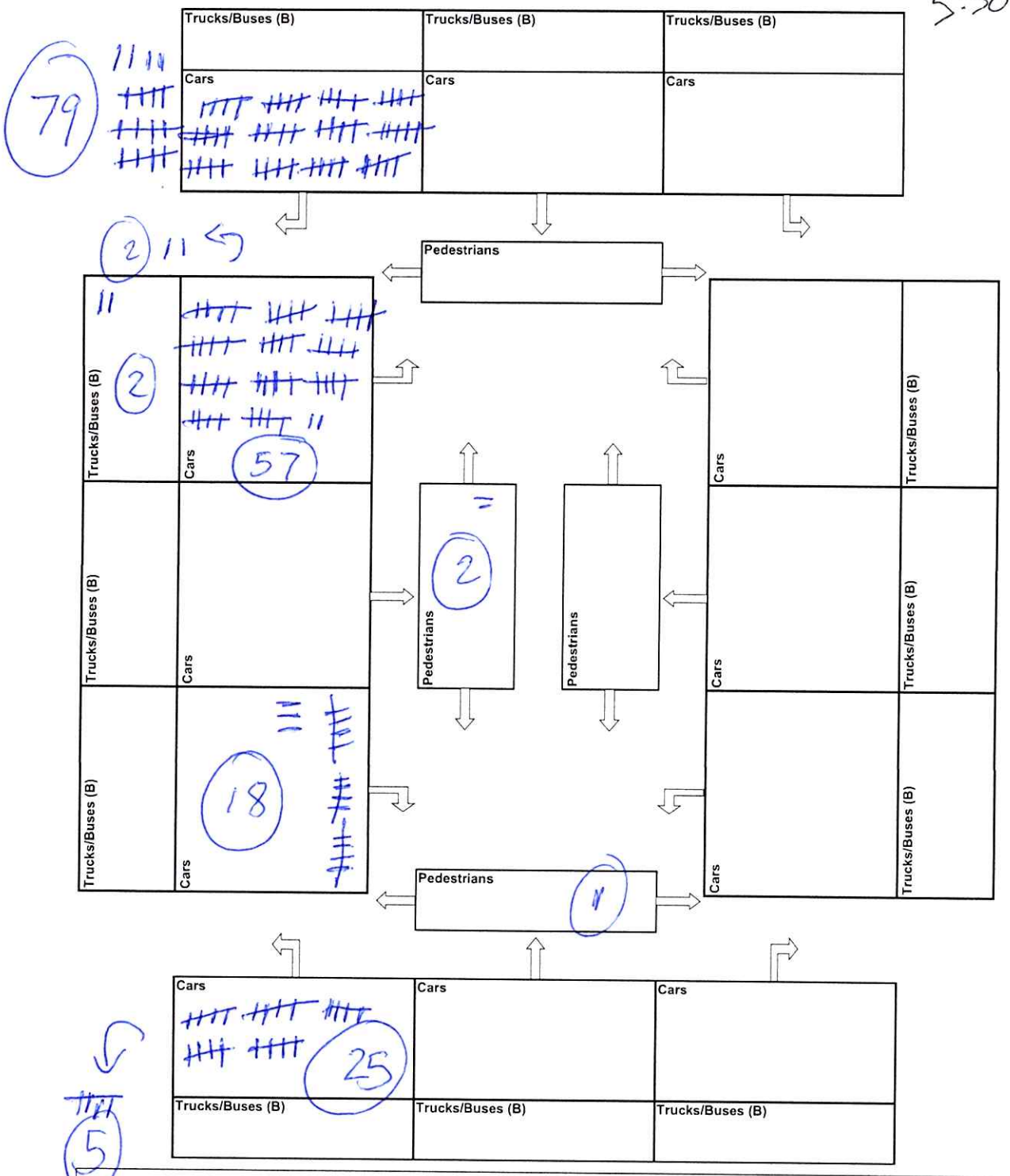
Pedestrians should be categorized as:
Adult (A) || Senior (S) >= 65 yrs old || Handicap (H) physical impairment || Child (K) <=12 years old

Please add up the tallys at the end of the count. Summarize as "100 Cars, 10 T, 20 B, 5 Cyclists, 12 A, 5S, 1H, and 2K"

4

VEHICLE TURNING MOVEMENT COUNT

5:30-5:45



Main Street: _____

Side Street: _____

Observer: _____

Weather: _____

Date: _____

Time: _____ to _____

Draw north arrow below

NOTES: Use tick-marks in the appropriate box for each vehicle. (i.e. 𝍸)
Change sheets every 15 minutes.

HEAVY VEHICLE

Trucks include anything larger than a typical pickup truck or van or anything with 3 or more axles.

Cyclists riding their bikes should be counted the same way as cars/trucks/buses. They can be counted using the letter "C" in either the box for cars or the box for trucks/buses. Cyclists walking beside their bike should be counted as a pedestrian.

Pedestrians should be categorized as:
Adult (A) || Senior (S) >= 65 yrs old || Handicap (H) physical impairment || Child (K) <=12 years old

Please add up the tallys at the end of the count. Summarize as "100 Cars, 10 T, 20 B, 5 Cyclists, 12 A, 5S, 1H, and 2K"

Appendix C

Collision Data (2010 to 2022)

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: HUNTSVILLE DR @ TERRY FOX DR

Traffic Control: Stop sign **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Feb-22, Thu,15:06	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Farm tractor	Other motor vehicle	
2018-Oct-06, Sat,18:30	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-06, Tue,17:29	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Nov-14, Sat,11:00	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2021-May-28, Fri,15:15	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2021-Oct-09, Sat,15:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2022-Jan-21, Fri,09:17	Clear	Rear end	P.D. only	Ice	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
					South	Unknown	Unknown	Other motor vehicle	
2022-Feb-17, Thu,12:03	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	

Location: KANATA AVE @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 34

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Mar-02, Fri,14:15	Clear	Turning movement	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	School bus	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: KANATA AVE @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 34

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jun-13, Wed,14:57	Clear	Rear end	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Jun-15, Fri,15:36	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Jul-04, Wed,20:16	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-01, Wed,17:12	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Aug-23, Thu,08:35	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Aug-25, Sat,23:53	Rain	SMV other	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Curb	0
2018-Sep-07, Fri,18:05	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-18, Tue,14:15	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2018-Dec-23, Sun,16:31	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-04, Fri,18:10	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Mar-24, Sun,15:36	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Apr-04, Thu,11:54	Clear	SMV other	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Ran off road	0
2019-Apr-12, Fri,17:42	Clear	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: KANATA AVE @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 34

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Apr-24, Wed,16:15	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-May-04, Sat,19:36	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-15, Mon,10:20	Clear	Turning movement	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Oct-31, Thu,17:31	Rain	Rear end	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-02, Sat,18:54	Rain	Angle	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-07, Tue,19:07	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-07, Tue,22:12	Clear	Approaching	P.D. only	Wet	North	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Oct-15, Thu,15:18	Rain	Rear end	P.D. only	Wet	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	
2020-Nov-05, Thu,07:55	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2021-Jan-14, Thu,20:10	Clear	Angle	P.D. only	Wet	North	Going ahead	Passenger van	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2021-May-13, Thu,15:33	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: KANATA AVE @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 34

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2021-Jun-18, Fri,12:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2021-Jun-18, Fri,15:43	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2021-Aug-25, Wed,17:12	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2021-Aug-30, Mon,07:37	Clear	Turning movement	P.D. only	Wet	South	Making "U" turn	Municipal transit bus	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Feb-20, Sun,18:30	Clear	Sideswipe	P.D. only	Wet	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2022-Sep-20, Tue,07:40	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	
2022-Oct-13, Thu,15:30	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2022-Nov-11, Fri,17:20	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Nov-11, Fri,18:30	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RICHARDSON SIDE RD @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: RICHARDSON SIDE RD @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Feb-02, Fri,08:35	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-21, Wed,21:06	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-10, Wed,14:22	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-24, Wed,16:43	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Nov-07, Wed,12:44	Clear	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-02, Sat,17:45	Snow	Turning movement	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Mar-02, Sat,09:23	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Passenger van	Other motor vehicle	0
					North	Turning left	Passenger van	Other motor vehicle	
2019-Mar-15, Fri,16:45	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-02, Tue,15:20	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jun-20, Thu,09:45	Rain	Angle	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-10, Wed,19:28	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: RICHARDSON SIDE RD @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Dec-16, Mon,07:30	Clear	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Unknown	Other motor vehicle	
2019-Dec-24, Tue,18:37	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-15, Wed,17:14	Clear	Turning movement	Non-fatal injury	Wet	North	Turning left	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Feb-10, Mon,16:52	Clear	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Mar-11, Wed,19:00	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Apr-25, Sat,14:48	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2020-Nov-20, Fri,14:15	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2020-Dec-16, Wed,18:25	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2021-Sep-14, Tue,09:55	Clear	Angle	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2021-Oct-28, Thu,18:40	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: RICHARDSON SIDE RD @ TERRY FOX DR

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2022-Jul-26, Tue,09:58	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2022-Sep-14, Wed,19:32	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2022-Dec-01, Thu,17:00	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Dec-20, Tue,17:45	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	

Location: TERRY FOX DR btwn HUNTSVILLE DR & RICHARDSON SIDE RD

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Aug-31, Fri,16:48	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: TERRY FOX DR btwn RICHARDSON SIDE RD & TILLSONBURG ST

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2021-Sep-24, Fri,08:15	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: TERRY FOX DR btwn TILLSONBURG ST & KANATA AVE

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 **To:** December 31, 2022

Location: TERRY FOX DR btwn TILLSONBURG ST & KANATA AVE

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-22, Sat,19:14	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

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Appendix D

TRANS Trip Generation Manual
Summary Report Tables

3.2 Recommended Residential Trip Generation Rates

A blended trip rate was developed from the three data sources through application of a rank-sum weighting process, considering the strengths and weaknesses of each dataset for the dwelling type in question. The recommended blended **residential person-trip rates** are presented in **Table 3**. All rates represent person-trips per dwelling unit and are to be applied to the **AM or PM peak period.**

Table 3: Recommended Residential Person-trip Rates

ITE Land Use Code	Dwelling Unit Type	Period	Person-Trip Rate
210	Single-detached	AM	2.05
		PM	2.48
220	Multi-Unit (Low-Rise)	AM	1.35
		PM	1.58
221 & 222	Multi-Unit (High-Rise)	AM	0.80
		PM	0.90

Table 8: Residential Mode Share for High-Rise Multifamily Housing

District	Period	Mode				
		Auto Driver	Auto Pass.	Transit	Cycling	Walking
Ottawa Centre	AM	18%	2%	26%	1%	52%
	PM	17%	9%	21%	1%	52%
Ottawa Inner Area	AM	26%	6%	28%	5%	34%
	PM	25%	8%	21%	6%	39%
Île de Hull	AM	27%	3%	37%	12%	21%
	PM	26%	8%	27%	11%	28%
Ottawa East	AM	39%	7%	38%	2%	13%
	PM	40%	14%	28%	3%	15%
Beacon Hill	AM	48%	9%	30%	3%	10%
	PM	52%	16%	28%	0%	4%
Alta Vista	AM	38%	12%	42%	2%	7%
	PM	45%	16%	28%	2%	9%
Hunt Club	AM	39%	6%	44%	1%	9%
	PM	44%	11%	35%	2%	9%
Merivale	AM	41%	6%	42%	2%	8%
	PM	41%	11%	33%	2%	13%
Ottawa West	AM	28%	11%	41%	3%	16%
	PM	33%	11%	26%	7%	23%
Bayshore/Cedarview	AM	40%	12%	38%	2%	8%
	PM	40%	15%	33%	1%	11%
Hull Périphérie	AM	48%	11%	30%	1%	10%
	PM	47%	15%	23%	3%	13%
Orleans	AM	54%	7%	29%	0%	10%
	PM	61%	13%	21%	0%	6%
South Gloucester / Leitrim	AM	50%	15%	25%	1%	9%
	PM	53%	17%	21%	1%	9%
South Nepean	AM	58%	6%	30%	2%	4%
	PM	54%	15%	25%	0%	7%
Kanata - Stittsville	AM	43%	26%	28%	0%	4%
	PM	55%	19%	21%	0%	5%

5 RESIDENTIAL DIRECTIONAL SPLITS

After calculating the total person trips generated by the development and applying the appropriate modal shares, directional factors can be applied to estimate the number of inbound and outbound trips by vehicle. The vehicle trip directional splits were developed for both the AM and PM peak periods[2]. The vehicle trip directional splits, as shown in **Table 9**, have been developed for the NCR based on a review of the local trip generator surveys as well as the latest published data in the ITE *Trip Generation Manual* (10th Edition).

Table 9: Recommended Vehicle Trip Directional Splits (Peak Period)

ITE Land Use Code	Dwelling Unit Type	Period	Inbound	Outbound
210	Single-detached	AM	30%	70%
		PM	62%	38%
220	Multi-Unit (Low-Rise)	AM	30%	70%
		PM	56%	44%
221 & 222	Multi-Unit (High-Rise)	AM	31%	69%
		PM	58%	42%

3.3 Adjustment Factors – Peak Period to Peak Hour

The various trip generation data sources require some adjustment to standardize the data for developing robust blended trip rates. The peak period conversion factor in **Table 4** may be used where applicable to develop trip generation rate estimates in the desired format.

Table 4: Adjustment Factors for Residential Trip Generation Rates

Factor	Application	Apply To	Period	Value
Peak Period Conversion Factor	**Peak period to peak hour conversion.** Because the 2020 TRANS Trip Generation Study reports trip generation rates by peak period, factors must be applied if the practitioner requires peak hour rates. In practice, the conversion to peak hour trip rates should occur **after** the application of modal shares.	Person-trip rates per peak period	AM	0.50
			PM	0.44
		Vehicle trip rates per peak period	AM	0.48
			PM	0.44
		Transit trip rates per peak period	AM	0.55
			PM	0.47
		Cycling trip rates per peak period	AM	0.58
			PM	0.48
		Walking trip rates per peak period	AM	0.58
			PM	0.52

Appendix E

Swept Path Movements

414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.2
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1463.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
PAINTED WALKWAY
POTENTIAL RETAINING WALL
EXISTING BERM
BULK ITEMS AREA
REFUSE AREA
MECH. S/A FOR MAA
PMT
UTILITY CLEARANCE

414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.2
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1403.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
PAINTED WALKWAY
POTENTIAL RETAINING WALL
BULK ITEMS AREA
REFUSE AREA
MECH. S/A FOR MAA
EXISTING BERM
PMT
UTILITY CLEARANCE

414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.0
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
OUTDOOR AMENITY 3015.69 sq.ft.
OUTDOOR AMENITY 1403.13 sq.ft.
OUTDOOR AMENITY 1291.47 sq.ft.
PAINTED WALKWAY
PAINTED WALKWAY
POTENTIAL RETAINING WALL
POTENTIAL RETAINING WALL
EXISTING BERM
EXISTING BERM
EXISTING BERM
BIKE REPAIR AREA
BIKE RENTAL AREA
MECH. S/A FOR MAA
MECH. S/A FOR MAA
PMT
PMT UTILITY CLEARANCE
WALKWAY
9'-11" [3.02] SNOW BERM
9'-11" [3.02] SNOW BERM
18'-0" [5.48] SNOW BERM
A
B
C
D

414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.0
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1403.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
PAINTED WALKWAY
POTENTIAL RETAINING WALL
EXISTING BERM
MECH. S/A FOR MAA
SILO REMS AREA
REPAIR AREA
PMT
UTILITY CLEARANCE

414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.0
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
PAINTED WALKWAY
PAINTED WALKWAY
PAINTED WALKWAY
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1403.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
POTENTIAL RETAINING WALL
POTENTIAL RETAINING WALL
BULK ITEMS AREA
REPAIR AREA
PMT
PMT UTILITY CLEARANCE
MECH. S/A FOR MAA
MECH. S/A FOR MAA
EXISTING BERM
EXISTING BERM
EXISTING BERM

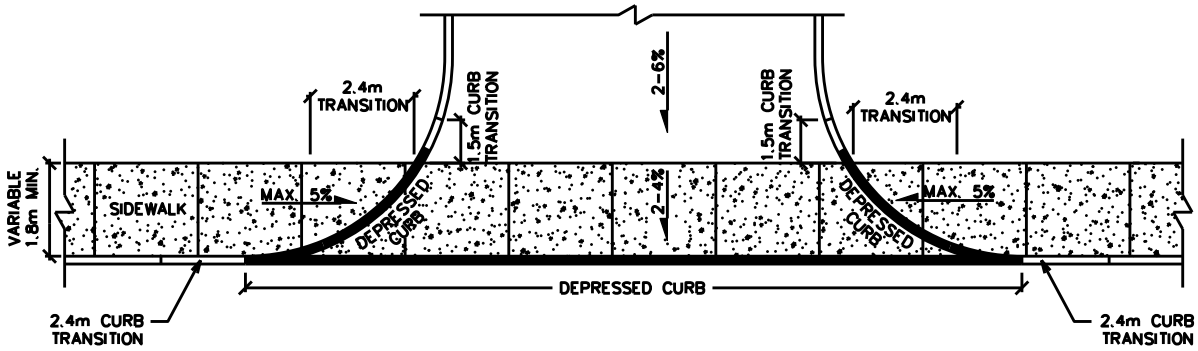
414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.2
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1403.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
PAINTED WALKWAY
POTENTIAL RETAINING WALL
EXISTING BERM
MECH. S/A FOR MAA
BULK BINS AREA
REFUSE AREA
PMT
UTILITY CLEARANCE

414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.0
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1463.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
PAINTED WALKWAY
POTENTIAL RETAINING WALL
EXISTING BERM
MECH. S/A FOR MAA
BIKE RACKS AREA
REFUSE AREA
PMT
UTILITY CLEARANCE

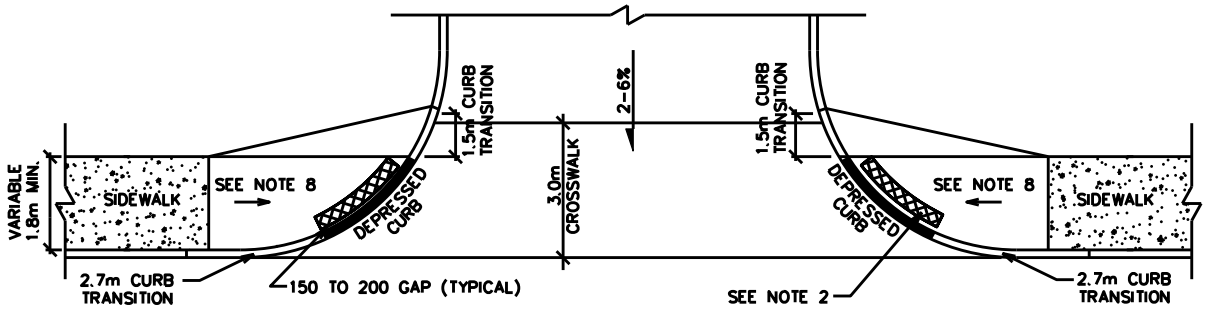
414.0
98.2
213.0
Spartan Gladiator 2013
Inches
Width : 99.2
Track : 98.4
Lock to Lock Time : 6.0
Steering Angle : 36.7
393.7
78.7
212.6
Waste Collection Truck
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 27.7
393.7
31.5
255.9
MSU
Inches
Width : 102.4
Track : 102.4
Lock to Lock Time 6.0
Steering Angle : 40.2
220.5
43.3
126.0
P
Inches
Width : 78.7
Track : 78.7
Lock to Lock Time 6.0
Steering Angle : 35.9
KANATA AVE.
TERRY FOX Dr.
TERRY FOX Dr.
PROPERTY LINE
OUTDOOR AMENITY
3015.69 sq.ft.
OUTDOOR AMENITY
1403.13 sq.ft.
OUTDOOR AMENITY
1291.47 sq.ft.
PAINTED WALKWAY
POTENTIAL RETAINING WALL
EXISTING BERM
BULK ITEMS AREA
REFUSE AREA
MECH. S/A FOR MAA
PMT
UTILITY CLEARANCE

Appendix F

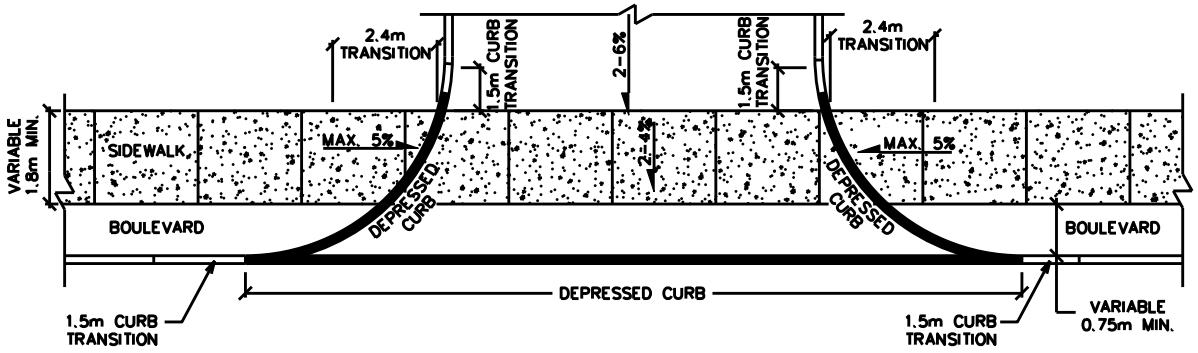
Curb Return Access Types



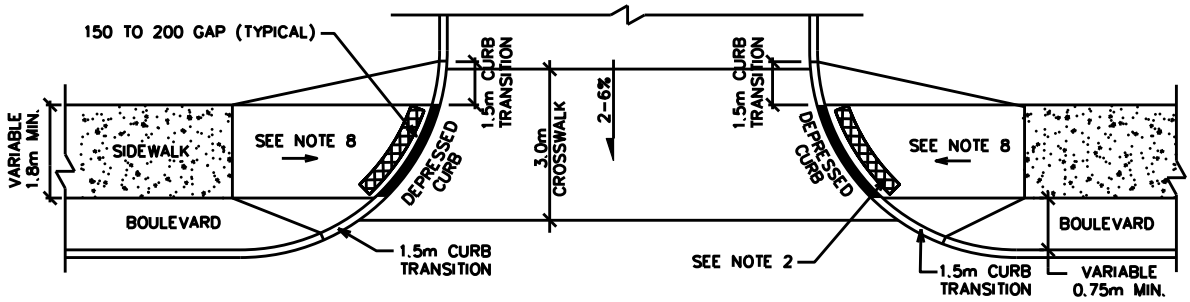
CURB RETURN AT A PRIVATE OR COMMERCIAL ENTRANCE - UNSIGNALIZED INTERSECTION



COMMERCIAL ENTRANCE OR CURB RETURN PRIVATE ENTRANCE AT A CONTROLLED INTERSECTION



CURB RETURN AT A PRIVATE OR COMMERCIAL ENTRANCE WITH BOULEVARD - UNSIGNALIZED INTERSECTION



COMMERCIAL ENTRANCE OR CURB RETURN PRIVATE ENTRANCE WITH BOULEVARD AT A CONTROLLED INTERSECTION

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. APPROVED 610 X WIDTH OF CURB RAMP (1500MIN) TACTILE WALKING SURFACE INDICATOR, RADIUS TO MATCH CURB. DRAIN GROOVES AS PER SC7.
3. CURB DETAILS SEE SC1.1, SC1.2 AND SC1.3.
4. SIDEWALK DETAILS SEE SC2 AND SC3.
5. CURB RAMPS AS PER SC6 AND SC7.
6. CONTROLLED MEANS SIGNALIZED OR A 4-WAY STOP INTERSECTION.
7. SUBJECT TO AVOIDANCE OF MEDIANS, CROSSWALK LINES TO BE CENTRED ON THE CURB RAMP.
8. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%.

Ottawa

CURB RETURN ENTRANCES

DATE:	MARCH 2007
REV. DATE:	MARCH 2014
DWG. No.:	SC7.1

Appendix G

Level of Service (LOS) Definitions

CAPACITY ANALYSIS AT SIGNALIZED INTERSECTIONS

To assist in clarifying the arithmetic analysis associated with traffic engineering, it is often useful to refer to Level of Service (LOS). The term LOS implies a qualitative measure of traffic flow at an intersection. It is dependent upon vehicle delay and vehicle queue lengths at the approaches. The LOS is usually calculated in terms of the ratio between traffic volumes and approach capacity, or Volume to Capacity (V/C) ratio.

The City of Ottawa has adopted criteria that directly relate the V/C ratio of a signalized intersection to a LOS rating.

The following table describes the categories and characteristics of each level:

LOS	FEATURES	V/C RATIO
A	At this level of service, almost no signal phase is fully utilized by traffic. Very seldom does a vehicle wait longer than one red indication. The approach appears open, turning movements are easily made and drivers have freedom of operation.	0-0.60
B	At this level, an occasional signal phase is fully utilized and many phases approach full use. Many drivers begin to feel somewhat restricted within platoons of vehicles approaching the intersection.	0.61-0.70
C	At this level, the operation is stable though with more frequent fully utilized signal phases. Drivers feel more restricted and occasionally may have to wait more than one red signal indication, and queues may develop behind turning vehicles. This level is normally employed in urban intersection design.	0.71-0.80
D	At this level, the motorist experiences increasing restriction and instability of flow. There are substantial delays to approaching vehicles during short peaks within the peak period, but there are enough cycles with lower demand to permit occasional clearance of developing queues and prevent excessive backups.	0.81-0.90
E	At this level, capacity is reached. There are long queues of vehicles waiting upstream of the intersection, and delays to vehicles may extend to several signal cycles.	0.91-1.00
F	At this level, saturation occurs, with vehicle demand exceeding the available capacity.	> 1.00

Appendix H

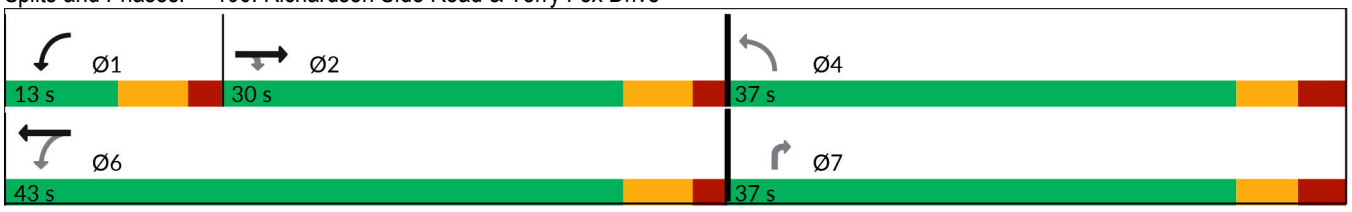
Synchro Worksheets

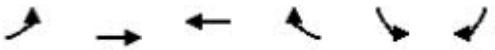
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	293	187	163	338	350	151
Future Volume (vph)	293	187	163	338	350	151
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						0.99
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3288	1430	1660	3320	1660	1471
Flt Permitted			0.442		0.950	
Satd. Flow (perm)	3288	1430	772	3320	1660	1452
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		208				168
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	7%	3%	3%	3%	4%
Adj. Flow (vph)	326	208	181	376	389	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	208	181	376	389	168
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	13.0	43.0	37.0	37.0
Total Split (%)	37.5%	37.5%	16.3%	53.8%	46.3%	46.3%
Maximum Green (s)	23.9	23.9	6.8	36.9	30.4	30.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	1	1
Act Effct Green (s)	24.1	24.1	37.1	37.2	21.3	21.3
Actuated g/C Ratio	0.34	0.34	0.52	0.52	0.30	0.30
v/c Ratio	0.29	0.33	0.37	0.22	0.78	0.30
Control Delay (s/veh)	19.5	5.0	13.3	10.7	34.4	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.5	5.0	13.3	10.7	34.4	4.7
LOS	B	A	B	B	C	A
Approach Delay (s/veh)	13.9			11.5	25.4	
Approach LOS	B			B	C	
Queue Length 50th (m)	17.4	0.0	12.7	13.9	49.2	0.0
Queue Length 95th (m)	32.4	14.9	29.8	27.4	78.9	11.8
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1113	621	486	1730	712	719
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	0.29	0.33	0.37	0.22	0.55	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 71.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 17.0		Intersection LOS: B	
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive



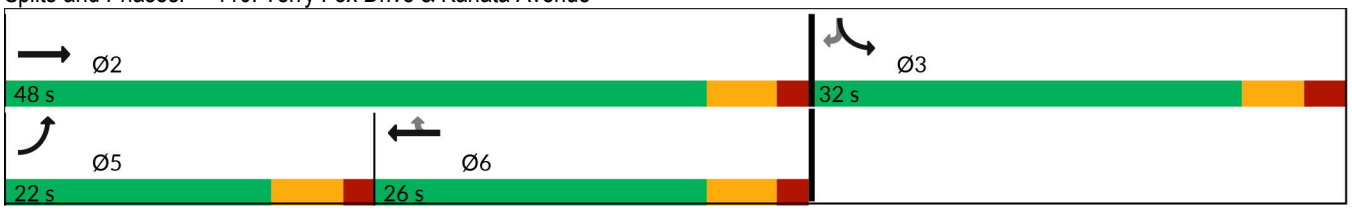


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	119	365	406	197	247	103
Future Volume (vph)	119	365	406	197	247	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.98		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	3320	3288	1391	3130	1430
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1627	3320	3288	1360	3130	1411
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				219		114
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	1			1		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	3%	4%	10%	6%	7%
Adj. Flow (vph)	132	406	451	219	274	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	406	451	219	274	114
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	22.0	48.0	26.0	26.0	32.0	32.0
Total Split (%)	27.5%	60.0%	32.5%	32.5%	40.0%	40.0%
Maximum Green (s)	16.0	41.9	19.9	19.9	25.8	25.8
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	1	1	1	1
Act Effct Green (s)	10.7	42.4	28.4	28.4	12.8	12.8
Actuated g/C Ratio	0.16	0.63	0.42	0.42	0.19	0.19
v/c Ratio	0.52	0.19	0.33	0.31	0.46	0.32
Control Delay (s/veh)	33.8	6.5	17.5	4.9	26.3	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.8	6.5	17.5	4.9	26.3	7.3
LOS	C	A	B	A	C	A
Approach Delay (s/veh)		13.2	13.4		20.7	
Approach LOS		B	B		C	
Queue Length 50th (m)	15.6	9.3	20.5	0.0	16.5	0.0
Queue Length 95th (m)	34.6	25.0	47.4	16.5	26.2	10.9
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	388	2083	1383	699	1203	612
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	0.34	0.19	0.33	0.31	0.23	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 67.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 15.1		Intersection LOS: B	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

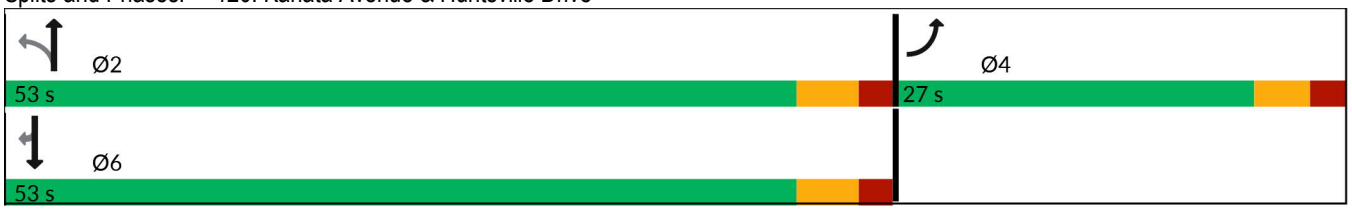


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	117	59	26	270	294	55
Future Volume (vph)	117	59	26	270	294	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.955					0.850
Flt Protected	0.968		0.950			
Satd. Flow (prot)	1536	0	1710	1731	1731	1471
Flt Permitted	0.968		0.563			
Satd. Flow (perm)	1534	0	1012	1731	1731	1440
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	31					61
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		1			1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	5%	0%	4%	4%	4%
Adj. Flow (vph)	130	66	29	300	327	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	0	29	300	327	61
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	1	1
Act Effct Green (s)	13.3		49.7	49.7	49.7	49.7
Actuated g/C Ratio	0.18		0.67	0.67	0.67	0.67
v/c Ratio	0.65		0.04	0.26	0.28	0.06
Control Delay (s/veh)	33.5		5.7	6.4	6.5	2.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5		5.7	6.4	6.5	2.0
LOS	C		A	A	A	A
Approach Delay (s/veh)	33.5			6.3	5.8	
Approach LOS	C			A	A	
Queue Length 50th (m)	21.6		1.2	14.7	16.3	0.0
Queue Length 95th (m)	41.6		4.8	33.1	36.3	4.2
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	467		677	1159	1159	984
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	0.42		0.04	0.26	0.28	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 11.9		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive



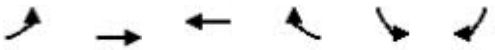
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	467	351	258	438	212	209
Future Volume (vph)	467	351	258	438	212	209
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3386	1500	1676	3386	1693	1530
Flt Permitted			0.354		0.950	
Satd. Flow (perm)	3386	1500	625	3386	1693	1530
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		390				232
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	2%	2%	1%	1%	0%
Adj. Flow (vph)	519	390	287	487	236	232
Shared Lane Traffic (%)						
Lane Group Flow (vph)	519	390	287	487	236	232
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	12.0	42.0	38.0	38.0
Total Split (%)	37.5%	37.5%	15.0%	52.5%	47.5%	47.5%
Maximum Green (s)	23.9	23.9	5.8	35.9	31.4	31.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
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	Max	Max	None	Max	None	None

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		3	0	0
Act Effct Green (s)	24.0	24.0	35.9	36.0	13.8	13.8
Actuated g/C Ratio	0.38	0.38	0.57	0.58	0.22	0.22
v/c Ratio	0.40	0.48	0.63	0.25	0.63	0.45
Control Delay (s/veh)	15.9	4.2	16.2	7.6	30.1	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	15.9	4.2	16.2	7.6	30.1	6.2
LOS	B	A	B	A	C	A
Approach Delay (s/veh)	10.9			10.8	18.2	
Approach LOS	B			B	B	
Queue Length 50th (m)	23.2	0.0	15.8	13.5	26.0	0.0
Queue Length 95th (m)	40.3	16.7	#38.8	26.0	46.1	14.7
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1298	815	456	1950	853	886
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	0.48	0.63	0.25	0.28	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 62.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 12.4		Intersection LOS: B	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive

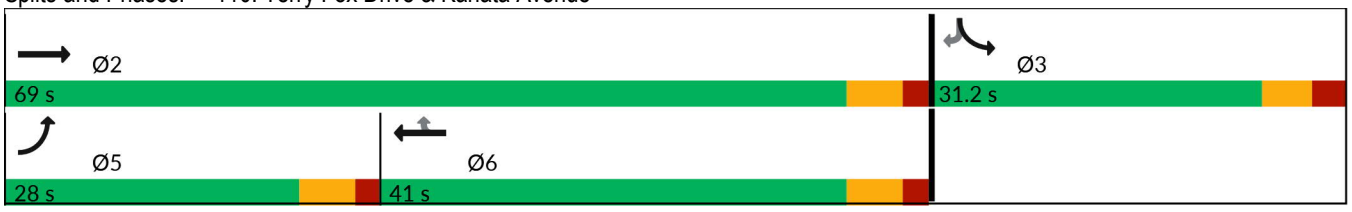


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	90	556	591	302	245	89
Future Volume (vph)	90	556	591	302	245	89
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.97		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1693	3386	3420	1530	3285	1485
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1689	3386	3420	1491	3285	1466
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				321		99
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%
Adj. Flow (vph)	100	618	657	336	272	99
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	618	657	336	272	99
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	28.0	69.0	41.0	41.0	31.2	31.2
Total Split (%)	27.9%	68.9%	40.9%	40.9%	31.1%	31.1%
Maximum Green (s)	22.0	62.9	34.9	34.9	25.0	25.0
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	2	2	1	1
Act Effct Green (s)	10.6	63.2	49.2	49.2	14.0	14.0
Actuated g/C Ratio	0.12	0.71	0.55	0.55	0.16	0.16
v/c Ratio	0.50	0.26	0.35	0.35	0.53	0.32
Control Delay (s/veh)	46.1	5.7	14.4	3.5	38.1	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.1	5.7	14.4	3.5	38.1	9.5
LOS	D	A	B	A	D	A
Approach Delay (s/veh)		11.3	10.7		30.5	
Approach LOS		B	B		C	
Queue Length 50th (m)	16.8	16.6	33.6	1.2	23.5	0.0
Queue Length 95th (m)	34.9	36.9	66.7	18.8	35.2	12.7
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	417	2388	1879	964	919	481
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	0.24	0.26	0.35	0.35	0.30	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 100.2			
Actuated Cycle Length: 89.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 14.4		Intersection LOS: B	
Intersection Capacity Utilization 45.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

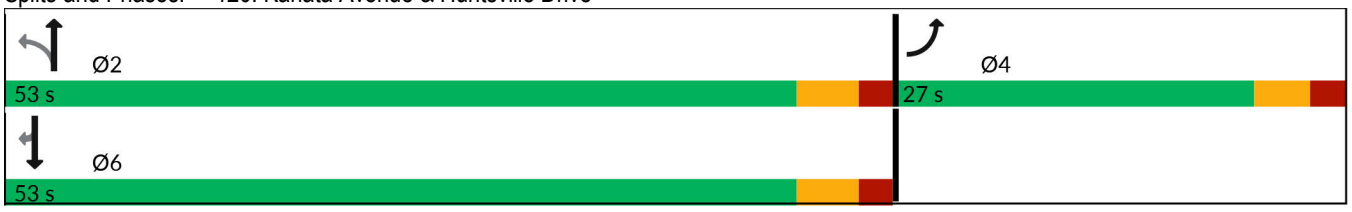


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	59	60	334	280	45
Future Volume (vph)	52	59	60	334	280	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1575	0	1676	1782	1731	1378
Flt Permitted	0.977		0.571			
Satd. Flow (perm)	1574	0	1006	1782	1731	1347
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	66					50
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		2			2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	2%	1%	4%	11%
Adj. Flow (vph)	58	66	67	371	311	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	67	371	311	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	2	2
Act Effct Green (s)	8.3		53.2	53.2	53.2	53.2
Actuated g/C Ratio	0.12		0.77	0.77	0.77	0.77
v/c Ratio	0.50		0.09	0.27	0.23	0.05
Control Delay (s/veh)	21.8		3.9	4.3	4.1	1.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.8		3.9	4.3	4.1	1.4
LOS	C		A	A	A	A
Approach Delay (s/veh)	21.8			4.2	3.7	
Approach LOS	C			A	A	
Queue Length 50th (m)	7.0		2.1	13.6	11.0	0.0
Queue Length 95th (m)	21.4		6.7	30.1	24.9	2.9
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	534		771	1367	1328	1044
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	0.23		0.09	0.27	0.23	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 6.4		Intersection LOS: A	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive

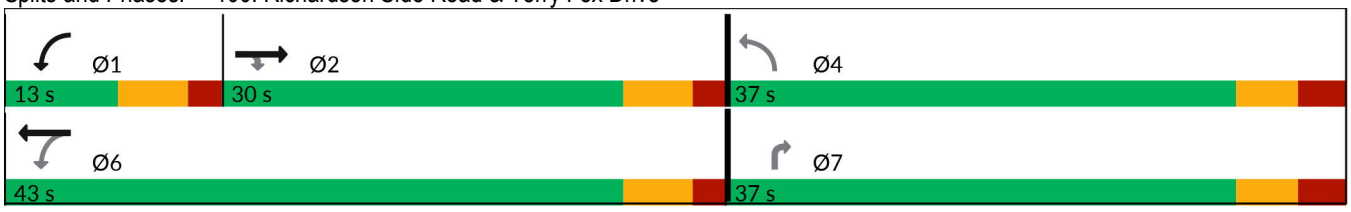


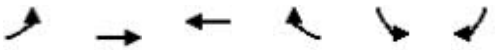
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	359	198	173	370	371	160
Future Volume (vph)	359	198	173	370	371	160
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						0.99
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3288	1430	1660	3320	1660	1471
Flt Permitted			0.428		0.950	
Satd. Flow (perm)	3288	1430	748	3320	1660	1452
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		198				160
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Confl. Peds. (#/hr)						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	7%	3%	3%	3%	4%
Adj. Flow (vph)	359	198	173	370	371	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	359	198	173	370	371	160
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	13.0	43.0	37.0	37.0
Total Split (%)	37.5%	37.5%	16.3%	53.8%	46.3%	46.3%
Maximum Green (s)	23.9	23.9	6.8	36.9	30.4	30.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	1	1
Act Effct Green (s)	24.2	24.2	37.1	37.2	20.6	20.6
Actuated g/C Ratio	0.34	0.34	0.53	0.53	0.29	0.29
v/c Ratio	0.32	0.32	0.36	0.21	0.77	0.30
Control Delay (s/veh)	19.4	5.0	12.9	10.4	33.6	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.4	5.0	12.9	10.4	33.6	4.8
LOS	B	A	B	B	C	A
Approach Delay (s/veh)	14.3			11.2	24.9	
Approach LOS	B			B	C	
Queue Length 50th (m)	18.9	0.0	11.7	13.2	46.3	0.0
Queue Length 95th (m)	35.4	14.6	28.6	27.0	74.6	11.6
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1125	619	481	1748	719	720
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	0.32	0.32	0.36	0.21	0.52	0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 70.6			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 16.7		Intersection LOS: B	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive



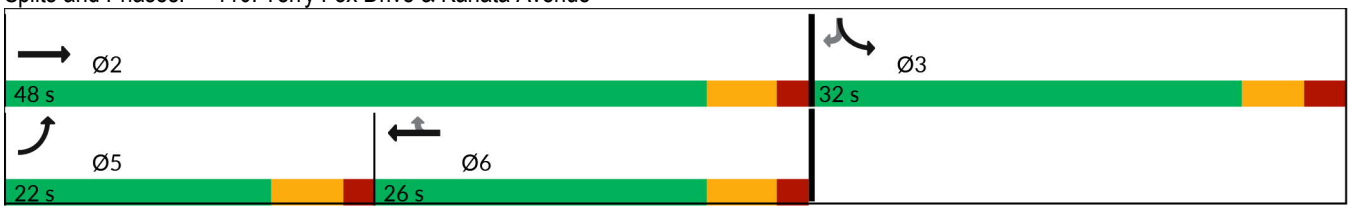


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	127	436	443	209	262	109
Future Volume (vph)	127	436	443	209	262	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.98		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	3320	3288	1391	3130	1430
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1627	3320	3288	1360	3130	1411
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				209		109
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	1			1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	3%	4%	10%	6%	7%
Adj. Flow (vph)	127	436	443	209	262	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	436	443	209	262	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	22.0	48.0	26.0	26.0	32.0	32.0
Total Split (%)	27.5%	60.0%	32.5%	32.5%	40.0%	40.0%
Maximum Green (s)	16.0	41.9	19.9	19.9	25.8	25.8
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	1	1	1	1
Act Effct Green (s)	10.5	42.6	28.8	28.8	12.6	12.6
Actuated g/C Ratio	0.16	0.63	0.43	0.43	0.19	0.19
v/c Ratio	0.50	0.21	0.32	0.30	0.45	0.31
Control Delay (s/veh)	33.5	6.5	17.2	4.9	26.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5	6.5	17.2	4.9	26.2	7.4
LOS	C	A	B	A	C	A
Approach Delay (s/veh)		12.6	13.2		20.7	
Approach LOS		B	B		C	
Queue Length 50th (m)	14.9	9.9	19.8	0.0	15.8	0.0
Queue Length 95th (m)	33.6	26.8	46.4	16.0	25.1	10.8
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	388	2094	1399	698	1202	609
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	0.33	0.21	0.32	0.30	0.22	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 67.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 14.8		Intersection LOS: B	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

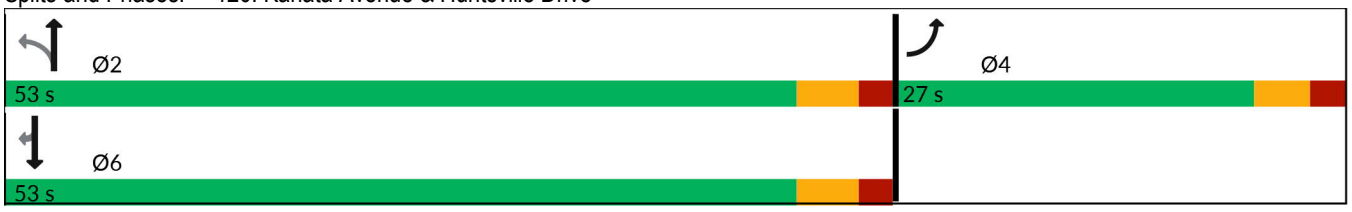


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	117	59	26	287	312	55
Future Volume (vph)	117	59	26	287	312	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.955					0.850
Flt Protected	0.968		0.950			
Satd. Flow (prot)	1536	0	1710	1731	1731	1471
Flt Permitted	0.968		0.571			
Satd. Flow (perm)	1534	0	1027	1731	1731	1440
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	31					55
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	5%	0%	4%	4%	4%
Adj. Flow (vph)	117	59	26	287	312	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	176	0	26	287	312	55
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	1	1
Act Effct Green (s)	12.3		50.2	50.2	50.2	50.2
Actuated g/C Ratio	0.17		0.68	0.68	0.68	0.68
v/c Ratio	0.63		0.04	0.24	0.26	0.06
Control Delay (s/veh)	32.5		5.2	5.8	6.0	1.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.5		5.2	5.8	6.0	1.9
LOS	C		A	A	A	A
Approach Delay (s/veh)	32.5			5.8	5.4	
Approach LOS	C			A	A	
Queue Length 50th (m)	18.7		1.0	13.2	14.6	0.0
Queue Length 95th (m)	37.3		4.3	29.6	32.6	3.8
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	471		699	1178	1178	998
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	0.37		0.04	0.24	0.26	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 73.7			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 11.1		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive

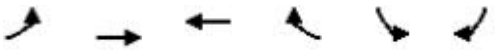


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	543	372	274	489	225	222
Future Volume (vph)	543	372	274	489	225	222
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3386	1500	1676	3386	1693	1530
Flt Permitted			0.305		0.950	
Satd. Flow (perm)	3386	1500	538	3386	1693	1530
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		413				247
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	2%	2%	1%	1%	0%
Adj. Flow (vph)	603	413	304	543	250	247
Shared Lane Traffic (%)						
Lane Group Flow (vph)	603	413	304	543	250	247
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	12.0	42.0	38.0	38.0
Total Split (%)	37.5%	37.5%	15.0%	52.5%	47.5%	47.5%
Maximum Green (s)	23.9	23.9	5.8	35.9	31.4	31.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
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	Max	Max	None	Max	None	None

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		3	0	0
Act Effct Green (s)	24.0	24.0	35.9	36.0	14.3	14.3
Actuated g/C Ratio	0.38	0.38	0.57	0.57	0.23	0.23
v/c Ratio	0.47	0.50	0.74	0.28	0.65	0.46
Control Delay (s/veh)	17.0	4.4	23.3	8.0	30.4	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.0	4.4	23.3	8.0	30.4	6.0
LOS	B	A	C	A	C	A
Approach Delay (s/veh)	11.9			13.5	18.3	
Approach LOS	B			B	B	
Queue Length 50th (m)	28.3	0.0	17.5	15.8	27.8	0.0
Queue Length 95th (m)	48.5	17.4	#53.4	30.1	48.6	15.1
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1286	825	411	1932	845	887
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	0.47	0.50	0.74	0.28	0.30	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 63.1			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 13.8		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		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: 100: Richardson Side Road & Terry Fox Drive

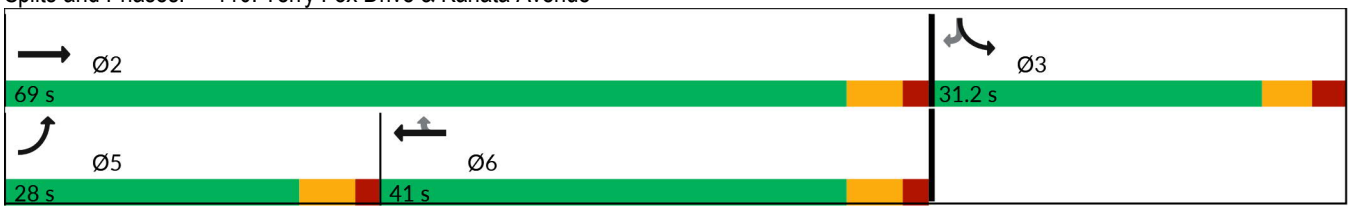


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	96	637	652	320	260	94
Future Volume (vph)	96	637	652	320	260	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.97		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1693	3386	3420	1530	3285	1485
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1690	3386	3420	1491	3285	1466
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				309		104
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%
Adj. Flow (vph)	107	708	724	356	289	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	708	724	356	289	104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	28.0	69.0	41.0	41.0	31.2	31.2
Total Split (%)	27.9%	68.9%	40.9%	40.9%	31.1%	31.1%
Maximum Green (s)	22.0	62.9	34.9	34.9	25.0	25.0
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	2	2	1	1
Act Effct Green (s)	11.0	63.1	48.9	48.9	14.4	14.4
Actuated g/C Ratio	0.12	0.70	0.54	0.54	0.16	0.16
v/c Ratio	0.52	0.30	0.39	0.37	0.55	0.32
Control Delay (s/veh)	46.4	6.0	15.2	4.5	38.4	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.4	6.0	15.2	4.5	38.4	9.3
LOS	D	A	B	A	D	A
Approach Delay (s/veh)		11.3	11.6		30.7	
Approach LOS		B	B		C	
Queue Length 50th (m)	18.1	20.1	38.6	3.9	25.1	0.0
Queue Length 95th (m)	36.7	43.0	75.3	25.6	37.2	13.2
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	415	2378	1859	951	917	484
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	0.26	0.30	0.39	0.37	0.32	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 100.2			
Actuated Cycle Length: 89.9			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 14.8		Intersection LOS: B	
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

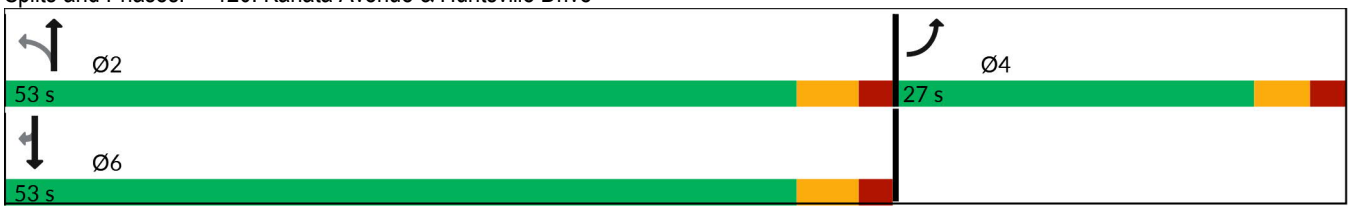


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	59	60	354	297	45
Future Volume (vph)	52	59	60	354	297	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1575	0	1676	1782	1731	1378
Flt Permitted	0.977		0.561			
Satd. Flow (perm)	1574	0	988	1782	1731	1347
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	66					50
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		2			2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	2%	1%	4%	11%
Adj. Flow (vph)	58	66	67	393	330	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	67	393	330	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	2	2
Act Effct Green (s)	8.3		53.2	53.2	53.2	53.2
Actuated g/C Ratio	0.12		0.77	0.77	0.77	0.77
v/c Ratio	0.50		0.09	0.29	0.25	0.05
Control Delay (s/veh)	21.8		3.9	4.4	4.2	1.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.8		3.9	4.4	4.2	1.4
LOS	C		A	A	A	A
Approach Delay (s/veh)	21.8			4.3	3.8	
Approach LOS	C			A	A	
Queue Length 50th (m)	7.0		2.1	14.7	11.9	0.0
Queue Length 95th (m)	21.4		6.8	32.2	26.7	2.9
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	534		758	1367	1328	1044
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	0.23		0.09	0.29	0.25	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 6.4		Intersection LOS: A	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive

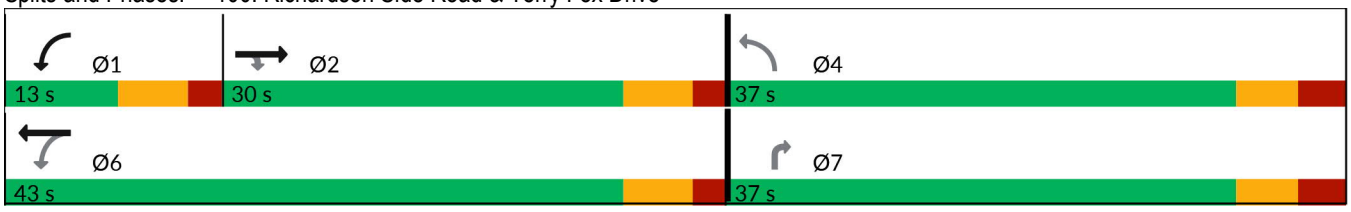


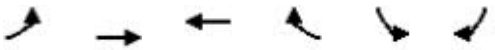
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	391	219	191	408	410	177
Future Volume (vph)	391	219	191	408	410	177
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						0.99
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3288	1430	1660	3320	1660	1471
Flt Permitted			0.378		0.950	
Satd. Flow (perm)	3288	1430	661	3320	1660	1452
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		243				197
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	7%	3%	3%	3%	4%
Adj. Flow (vph)	434	243	212	453	456	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	434	243	212	453	456	197
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	13.0	43.0	37.0	37.0
Total Split (%)	37.5%	37.5%	16.3%	53.8%	46.3%	46.3%
Maximum Green (s)	23.9	23.9	6.8	36.9	30.4	30.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	1	1
Act Effct Green (s)	24.0	24.0	37.0	37.1	24.2	24.2
Actuated g/C Ratio	0.32	0.32	0.50	0.50	0.33	0.33
v/c Ratio	0.41	0.39	0.50	0.27	0.84	0.32
Control Delay (s/veh)	22.0	5.2	17.0	12.2	37.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.0	5.2	17.0	12.2	37.9	4.4
LOS	C	A	B	B	D	A
Approach Delay (s/veh)	16.0			13.7	27.8	
Approach LOS	B			B	C	
Queue Length 50th (m)	26.3	0.0	17.3	19.6	60.9	0.0
Queue Length 95th (m)	42.8	16.1	34.8	33.0	96.7	12.7
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1066	627	422	1662	684	714
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	0.41	0.39	0.50	0.27	0.67	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.1			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 19.1		Intersection LOS: B	
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive



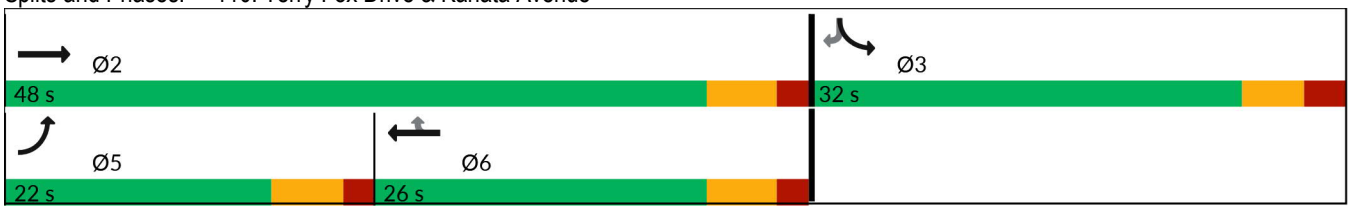


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	140	476	488	231	289	121
Future Volume (vph)	140	476	488	231	289	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.98		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	3320	3288	1391	3130	1430
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1627	3320	3288	1360	3130	1411
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				257		134
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	1			1		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	3%	4%	10%	6%	7%
Adj. Flow (vph)	156	529	542	257	321	134
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	529	542	257	321	134
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	22.0	48.0	26.0	26.0	32.0	32.0
Total Split (%)	27.5%	60.0%	32.5%	32.5%	40.0%	40.0%
Maximum Green (s)	16.0	41.9	19.9	19.9	25.8	25.8
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	1	1	1	1
Act Effct Green (s)	11.3	42.2	24.8	24.8	13.5	13.5
Actuated g/C Ratio	0.17	0.62	0.36	0.36	0.20	0.20
v/c Ratio	0.58	0.26	0.45	0.39	0.52	0.35
Control Delay (s/veh)	35.4	7.1	20.1	5.3	26.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	7.1	20.1	5.3	26.9	7.0
LOS	D	A	C	A	C	A
Approach Delay (s/veh)		13.6	15.3		21.1	
Approach LOS		B	B		C	
Queue Length 50th (m)	18.7	13.4	27.0	0.0	19.7	0.0
Queue Length 95th (m)	40.4	32.8	57.4	17.8	30.4	11.8
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	385	2056	1197	658	1193	621
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	0.41	0.26	0.45	0.39	0.27	0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 68.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

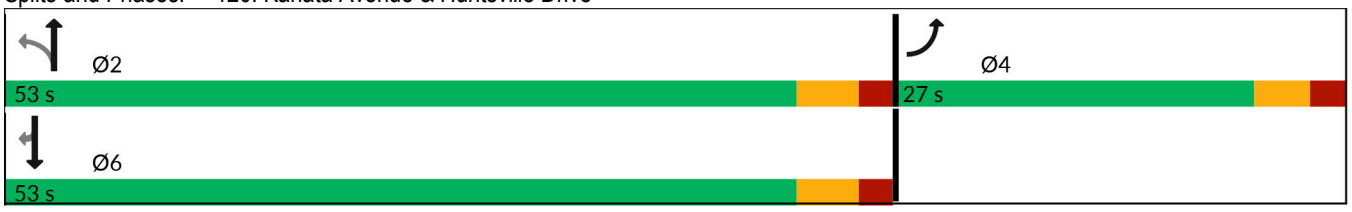


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	117	59	26	316	344	55
Future Volume (vph)	117	59	26	316	344	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.955					0.850
Flt Protected	0.968		0.950			
Satd. Flow (prot)	1536	0	1710	1731	1731	1471
Flt Permitted	0.968		0.526			
Satd. Flow (perm)	1534	0	946	1731	1731	1440
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	31					61
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		1			1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	5%	0%	4%	4%	4%
Adj. Flow (vph)	130	66	29	351	382	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	0	29	351	382	61
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	1	1
Act Effct Green (s)	13.3		49.7	49.7	49.7	49.7
Actuated g/C Ratio	0.18		0.67	0.67	0.67	0.67
v/c Ratio	0.65		0.05	0.30	0.33	0.06
Control Delay (s/veh)	33.5		5.7	6.7	6.9	2.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5		5.7	6.7	6.9	2.0
LOS	C		A	A	A	A
Approach Delay (s/veh)	33.5			6.6	6.2	
Approach LOS	C			A	A	
Queue Length 50th (m)	21.6		1.2	17.8	19.8	0.0
Queue Length 95th (m)	41.6		4.9	39.4	43.5	4.2
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	467		633	1159	1159	984
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	0.42		0.05	0.30	0.33	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 11.6		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive



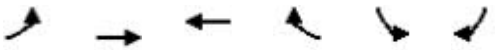
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	594	411	302	538	249	245
Future Volume (vph)	594	411	302	538	249	245
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3386	1500	1676	3386	1693	1530
Flt Permitted			0.272		0.950	
Satd. Flow (perm)	3386	1500	480	3386	1693	1530
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		457				259
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	2%	2%	1%	1%	0%
Adj. Flow (vph)	660	457	336	598	277	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	660	457	336	598	277	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	12.0	42.0	38.0	38.0
Total Split (%)	37.5%	37.5%	15.0%	52.5%	47.5%	47.5%
Maximum Green (s)	23.9	23.9	5.8	35.9	31.4	31.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
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	Max	Max	None	Max	None	None

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		3	0	0
Act Effct Green (s)	24.0	24.0	35.9	36.0	15.5	15.5
Actuated g/C Ratio	0.37	0.37	0.56	0.56	0.24	0.24
v/c Ratio	0.52	0.54	0.89	0.32	0.68	0.48
Control Delay (s/veh)	18.3	4.7	41.8	8.8	30.9	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.3	4.7	41.8	8.8	30.9	6.5
LOS	B	A	D	A	C	A
Approach Delay (s/veh)	12.7			20.7	18.8	
Approach LOS	B			C	B	
Queue Length 50th (m)	32.7	0.0	20.8	18.7	31.4	1.3
Queue Length 95th (m)	55.7	18.7	#74.6	35.3	53.7	16.9
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1263	846	376	1898	830	882
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	0.52	0.54	0.89	0.32	0.33	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 16.9		Intersection LOS: B	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive

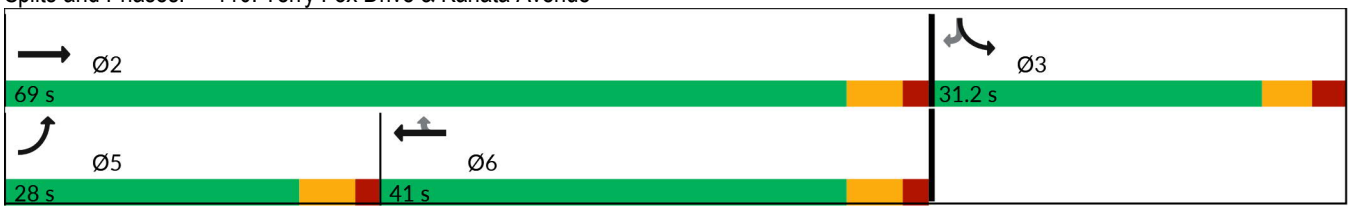


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	698	717	354	287	104
Future Volume (vph)	105	698	717	354	287	104
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.97		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1693	3386	3420	1530	3285	1485
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1690	3386	3420	1491	3285	1466
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				310		116
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%
Adj. Flow (vph)	117	776	797	393	319	116
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	776	797	393	319	116
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	28.0	69.0	41.0	41.0	31.2	31.2
Total Split (%)	27.9%	68.9%	40.9%	40.9%	31.1%	31.1%
Maximum Green (s)	22.0	62.9	34.9	34.9	25.0	25.0
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	2	2	1	1
Act Effct Green (s)	11.5	63.1	45.5	45.5	15.1	15.1
Actuated g/C Ratio	0.13	0.70	0.50	0.50	0.17	0.17
v/c Ratio	0.54	0.33	0.46	0.43	0.58	0.34
Control Delay (s/veh)	46.8	6.4	17.3	5.9	39.0	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.8	6.4	17.3	5.9	39.0	9.1
LOS	D	A	B	A	D	A
Approach Delay (s/veh)		11.7	13.5		31.0	
Approach LOS		B	B		C	
Queue Length 50th (m)	20.0	23.6	45.6	7.3	28.0	0.0
Queue Length 95th (m)	39.4	48.0	85.8	34.7	40.9	13.7
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	412	2360	1720	904	910	490
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	0.28	0.33	0.46	0.43	0.35	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 100.2			
Actuated Cycle Length: 90.5			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 15.9		Intersection LOS: B	
Intersection Capacity Utilization 51.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

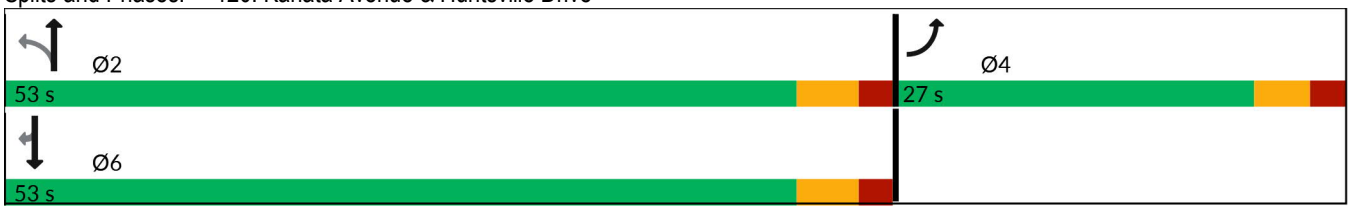


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	59	60	391	328	45
Future Volume (vph)	52	59	60	391	328	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1575	0	1676	1782	1731	1378
Flt Permitted	0.977		0.544			
Satd. Flow (perm)	1574	0	958	1782	1731	1347
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	66					50
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		2			2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	2%	1%	4%	11%
Adj. Flow (vph)	58	66	67	434	364	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	67	434	364	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	2	2
Act Effct Green (s)	8.3		53.2	53.2	53.2	53.2
Actuated g/C Ratio	0.12		0.77	0.77	0.77	0.77
v/c Ratio	0.50		0.09	0.32	0.27	0.05
Control Delay (s/veh)	21.8		4.0	4.6	4.3	1.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.8		4.0	4.6	4.3	1.4
LOS	C		A	A	A	A
Approach Delay (s/veh)	21.8			4.5	4.0	
Approach LOS	C			A	A	
Queue Length 50th (m)	7.0		2.1	16.7	13.4	0.0
Queue Length 95th (m)	21.4		6.8	36.3	29.8	2.9
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	534		735	1367	1328	1044
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	0.23		0.09	0.32	0.27	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 6.3		Intersection LOS: A	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive

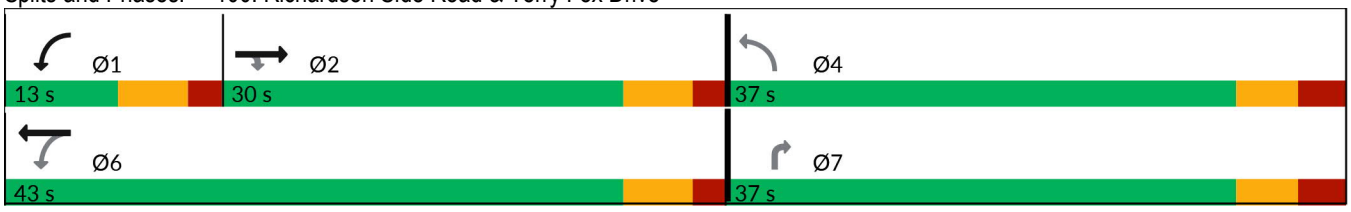


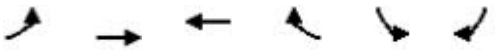
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	360	198	175	373	371	161
Future Volume (vph)	360	198	175	373	371	161
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						0.99
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3288	1430	1660	3320	1660	1471
Flt Permitted			0.407		0.950	
Satd. Flow (perm)	3288	1430	711	3320	1660	1452
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		220				179
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	7%	3%	3%	3%	4%
Adj. Flow (vph)	400	220	194	414	412	179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	400	220	194	414	412	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	13.0	43.0	37.0	37.0
Total Split (%)	37.5%	37.5%	16.3%	53.8%	46.3%	46.3%
Maximum Green (s)	23.9	23.9	6.8	36.9	30.4	30.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	1	1
Act Effct Green (s)	24.1	24.1	37.1	37.2	22.3	22.3
Actuated g/C Ratio	0.33	0.33	0.51	0.52	0.31	0.31
v/c Ratio	0.36	0.35	0.43	0.24	0.81	0.31
Control Delay (s/veh)	20.6	5.1	14.5	11.2	35.7	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.6	5.1	14.5	11.2	35.7	4.6
LOS	C	A	B	B	D	A
Approach Delay (s/veh)	15.1			12.3	26.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	22.5	0.0	14.4	16.2	53.1	0.0
Queue Length 95th (m)	39.4	15.4	31.9	30.2	84.6	12.1
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1097	623	454	1708	703	718
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	0.36	0.35	0.43	0.24	0.59	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 72.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 17.8		Intersection LOS: B	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive



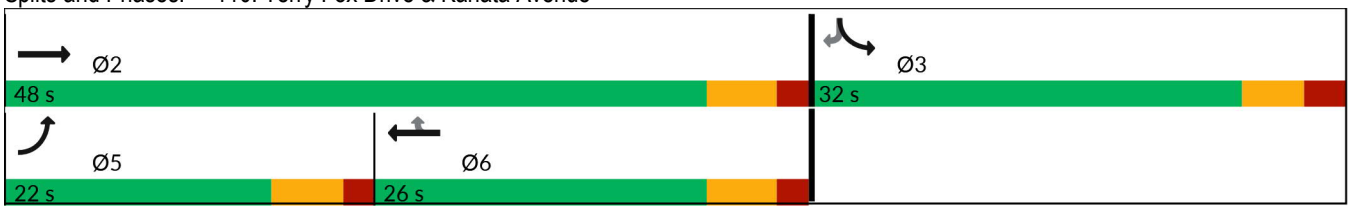


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	129	436	443	212	268	114
Future Volume (vph)	129	436	443	212	268	114
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.98		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	3320	3288	1391	3130	1430
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1627	3320	3288	1360	3130	1411
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				236		127
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	1			1		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	3%	4%	10%	6%	7%
Adj. Flow (vph)	143	484	492	236	298	127
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	484	492	236	298	127
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	22.0	48.0	26.0	26.0	32.0	32.0
Total Split (%)	27.5%	60.0%	32.5%	32.5%	40.0%	40.0%
Maximum Green (s)	16.0	41.9	19.9	19.9	25.8	25.8
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	1	1	1	1
Act Effct Green (s)	11.0	42.2	28.0	28.0	13.1	13.1
Actuated g/C Ratio	0.16	0.62	0.41	0.41	0.19	0.19
v/c Ratio	0.54	0.23	0.36	0.34	0.49	0.34
Control Delay (s/veh)	34.5	6.9	18.2	4.9	26.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.5	6.9	18.2	4.9	26.6	7.1
LOS	C	A	B	A	C	A
Approach Delay (s/veh)		13.2	13.9		20.8	
Approach LOS		B	B		C	
Queue Length 50th (m)	17.0	11.7	23.4	0.0	18.1	0.0
Queue Length 95th (m)	37.2	29.8	51.9	16.9	28.2	11.5
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	387	2068	1358	700	1200	619
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	0.37	0.23	0.36	0.34	0.25	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 67.7			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

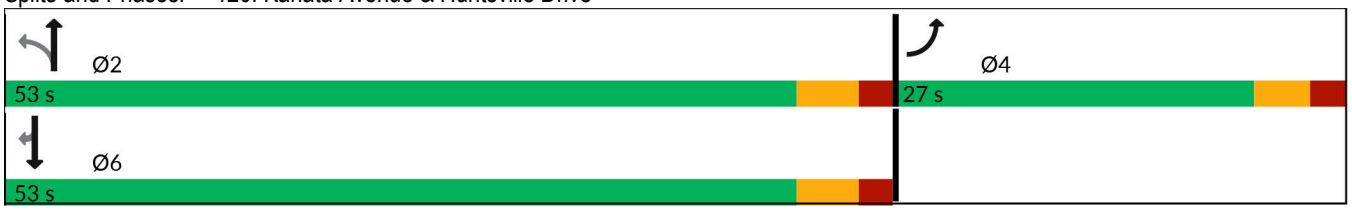


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	117	59	26	297	316	55
Future Volume (vph)	117	59	26	297	316	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.955					0.850
Flt Protected	0.968		0.950			
Satd. Flow (prot)	1536	0	1710	1731	1731	1471
Flt Permitted	0.968		0.548			
Satd. Flow (perm)	1534	0	986	1731	1731	1440
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	31					61
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		1			1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	5%	0%	4%	4%	4%
Adj. Flow (vph)	130	66	29	330	351	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	0	29	330	351	61
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	1	1
Act Effct Green (s)	13.3		49.7	49.7	49.7	49.7
Actuated g/C Ratio	0.18		0.67	0.67	0.67	0.67
v/c Ratio	0.65		0.04	0.28	0.30	0.06
Control Delay (s/veh)	33.5		5.7	6.6	6.7	2.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5		5.7	6.6	6.7	2.0
LOS	C		A	A	A	A
Approach Delay (s/veh)	33.5			6.5	6.0	
Approach LOS	C			A	A	
Queue Length 50th (m)	21.6		1.2	16.5	17.8	0.0
Queue Length 95th (m)	41.6		4.8	36.7	39.4	4.2
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	467		660	1159	1159	984
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	0.42		0.04	0.28	0.30	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 11.8		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	10	313	5	4	371
Future Volume (Veh/h)	11	10	313	5	4	371
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	11	348	6	4	412
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			160			262
pX, platoon unblocked	0.96					
vC, conflicting volume	771	351			354	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	737	351			354	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			100	
cM capacity (veh/h)	370	697			1216	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	23	354	4	412
Volume Left	12	0	4	0
Volume Right	11	6	0	0
cSH	477	1700	1216	1700
Volume to Capacity	0.05	0.21	0.00*	0.24
Queue Length 95th (m)	1.2	0.0	0.1	0.0
Control Delay (s/veh)	12.9	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s/veh)	12.9	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		

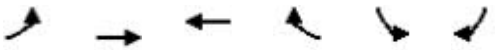
* Value less than 0.01.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	546	372	276	492	225	224
Future Volume (vph)	546	372	276	492	225	224
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3386	1500	1676	3386	1693	1530
Flt Permitted			0.303		0.950	
Satd. Flow (perm)	3386	1500	535	3386	1693	1530
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		413				249
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	2%	2%	1%	1%	0%
Adj. Flow (vph)	607	413	307	547	250	249
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	413	307	547	250	249
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	12.0	42.0	38.0	38.0
Total Split (%)	37.5%	37.5%	15.0%	52.5%	47.5%	47.5%
Maximum Green (s)	23.9	23.9	5.8	35.9	31.4	31.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
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	Max	Max	None	Max	None	None

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		3	0	0
Act Effct Green (s)	24.0	24.0	35.9	36.0	14.3	14.3
Actuated g/C Ratio	0.38	0.38	0.57	0.57	0.23	0.23
v/c Ratio	0.47	0.50	0.75	0.28	0.65	0.46
Control Delay (s/veh)	17.0	4.4	24.1	8.1	30.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.0	4.4	24.1	8.1	30.4	6.1
LOS	B	A	C	A	C	A
Approach Delay (s/veh)	11.9			13.8	18.2	
Approach LOS	B			B	B	
Queue Length 50th (m)	28.5	0.0	17.6	16.0	27.8	0.0
Queue Length 95th (m)	48.8	17.4	#54.9	30.2	48.6	15.0
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1286	825	409	1932	845	888
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	0.47	0.50	0.75	0.28	0.30	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 63.1			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 13.9		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		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: 100: Richardson Side Road & Terry Fox Drive

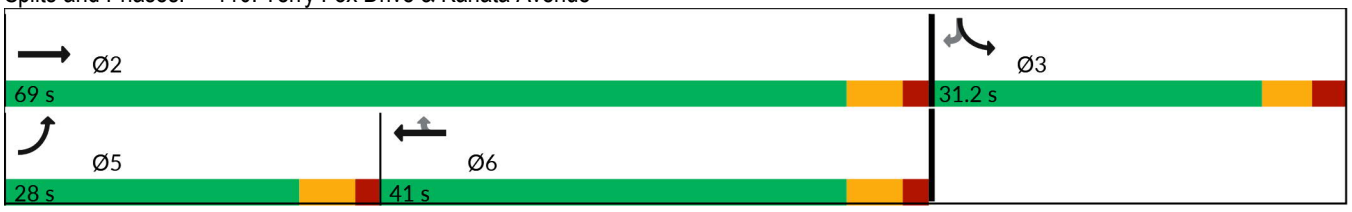


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	101	637	652	327	265	98
Future Volume (vph)	101	637	652	327	265	98
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.97		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1693	3386	3420	1530	3285	1485
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1690	3386	3420	1491	3285	1466
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				315		109
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%
Adj. Flow (vph)	112	708	724	363	294	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	708	724	363	294	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	28.0	69.0	41.0	41.0	31.2	31.2
Total Split (%)	27.9%	68.9%	40.9%	40.9%	31.1%	31.1%
Maximum Green (s)	22.0	62.9	34.9	34.9	25.0	25.0
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	2	2	1	1
Act Effct Green (s)	11.2	63.1	48.6	48.6	14.5	14.5
Actuated g/C Ratio	0.12	0.70	0.54	0.54	0.16	0.16
v/c Ratio	0.53	0.30	0.39	0.38	0.55	0.33
Control Delay (s/veh)	46.5	6.1	15.4	4.6	38.5	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.5	6.1	15.4	4.6	38.5	9.3
LOS	D	A	B	A	D	A
Approach Delay (s/veh)		11.6	11.8		30.6	
Approach LOS		B	B		C	
Queue Length 50th (m)	19.0	20.3	39.2	4.0	25.5	0.0
Queue Length 95th (m)	37.8	43.0	75.8	26.3	37.8	13.4
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	415	2374	1846	949	915	487
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	0.30	0.39	0.38	0.32	0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 100.2			
Actuated Cycle Length: 90			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 15.0		Intersection LOS: B	
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

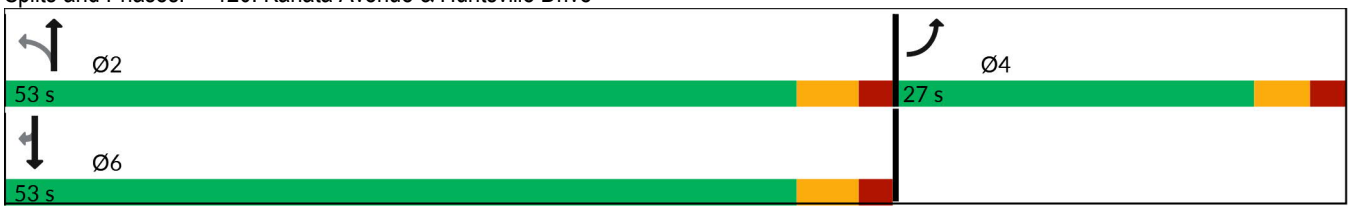


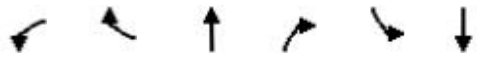
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	59	60	362	308	45
Future Volume (vph)	52	59	60	362	308	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1575	0	1676	1782	1731	1378
Flt Permitted	0.977		0.555			
Satd. Flow (perm)	1574	0	978	1782	1731	1347
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	66					50
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		2			2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	2%	1%	4%	11%
Adj. Flow (vph)	58	66	67	402	342	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	67	402	342	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	2	2
Act Effct Green (s)	8.3		53.2	53.2	53.2	53.2
Actuated g/C Ratio	0.12		0.77	0.77	0.77	0.77
v/c Ratio	0.50		0.09	0.29	0.26	0.05
Control Delay (s/veh)	21.8		4.0	4.4	4.2	1.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.8		4.0	4.4	4.2	1.4
LOS	C		A	A	A	A
Approach Delay (s/veh)	21.8			4.3	3.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	7.0		2.1	15.2	12.4	0.0
Queue Length 95th (m)	21.4		6.8	33.0	27.8	2.9
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	534		750	1367	1328	1044
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	0.23		0.09	0.29	0.26	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 6.4		Intersection LOS: A	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	8	414	12	11	356
Future Volume (Veh/h)	9	8	414	12	11	356
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	9	460	13	12	396
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			160			262
pX, platoon unblocked	1.00					
vC, conflicting volume	887	467			473	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	886	467			473	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	314	600			1099	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	19	473	12	396
Volume Left	10	0	12	0
Volume Right	9	13	0	0
cSH	406	1700	1099	1700
Volume to Capacity	0.05	0.28	0.01	0.23
Queue Length 95th (m)	1.2	0.0	0.3	0.0
Control Delay (s/veh)	14.3	0.0	8.3	0.0
Lane LOS	B		A	
Approach Delay (s/veh)	14.3	0.0	0.2	
Approach LOS	B			

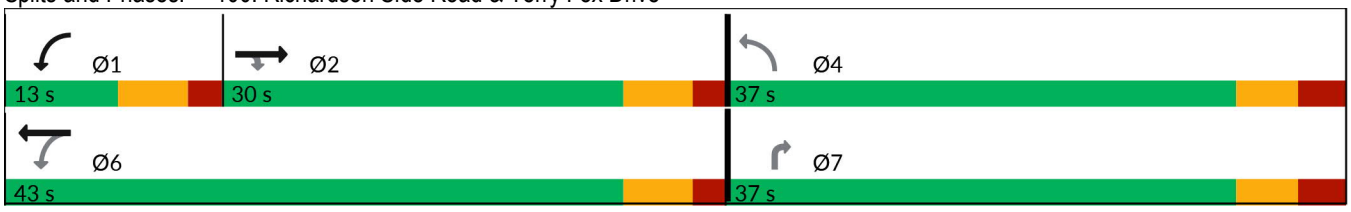
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		

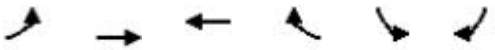
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	392	219	193	411	410	178
Future Volume (vph)	392	219	193	411	410	178
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						0.99
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3288	1430	1660	3320	1660	1471
Flt Permitted			0.377		0.950	
Satd. Flow (perm)	3288	1430	659	3320	1660	1452
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		243				198
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Confl. Peds. (#/hr)						1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	7%	3%	3%	3%	4%
Adj. Flow (vph)	436	243	214	457	456	198
Shared Lane Traffic (%)						
Lane Group Flow (vph)	436	243	214	457	456	198
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	13.0	43.0	37.0	37.0
Total Split (%)	37.5%	37.5%	16.3%	53.8%	46.3%	46.3%
Maximum Green (s)	23.9	23.9	6.8	36.9	30.4	30.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	None	Max	None	None
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		0	1	1
Act Effct Green (s)	24.0	24.0	37.0	37.1	24.2	24.2
Actuated g/C Ratio	0.32	0.32	0.50	0.50	0.33	0.33
v/c Ratio	0.41	0.39	0.51	0.27	0.84	0.33
Control Delay (s/veh)	22.0	5.2	17.1	12.2	37.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.0	5.2	17.1	12.2	37.9	4.4
LOS	C	A	B	B	D	A
Approach Delay (s/veh)	16.0			13.8	27.7	
Approach LOS	B			B	C	
Queue Length 50th (m)	26.4	0.0	17.5	19.8	60.9	0.0
Queue Length 95th (m)	42.8	16.1	35.1	33.3	96.7	12.7
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1066	627	421	1662	684	715
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	0.41	0.39	0.51	0.27	0.67	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.1			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 19.1		Intersection LOS: B	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive



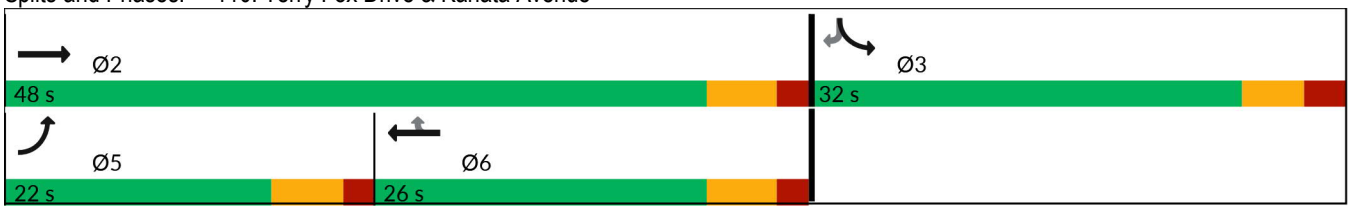


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	142	476	488	234	295	126
Future Volume (vph)	142	476	488	234	295	126
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.98		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1629	3320	3288	1391	3130	1430
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1627	3320	3288	1360	3130	1411
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				260		140
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	1			1		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	3%	4%	10%	6%	7%
Adj. Flow (vph)	158	529	542	260	328	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	529	542	260	328	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	22.0	48.0	26.0	26.0	32.0	32.0
Total Split (%)	27.5%	60.0%	32.5%	32.5%	40.0%	40.0%
Maximum Green (s)	16.0	41.9	19.9	19.9	25.8	25.8
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	1	1	1	1
Act Effct Green (s)	11.4	42.2	24.7	24.7	13.7	13.7
Actuated g/C Ratio	0.17	0.62	0.36	0.36	0.20	0.20
v/c Ratio	0.58	0.26	0.46	0.40	0.52	0.36
Control Delay (s/veh)	35.5	7.2	20.2	5.3	27.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.5	7.2	20.2	5.3	27.0	7.0
LOS	D	A	C	A	C	A
Approach Delay (s/veh)		13.7	15.4		21.0	
Approach LOS		B	B		C	
Queue Length 50th (m)	19.0	13.5	27.2	0.0	20.2	0.0
Queue Length 95th (m)	40.6	32.8	57.4	17.8	30.9	12.0
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	384	2052	1191	658	1191	623
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	0.41	0.26	0.46	0.40	0.28	0.22

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 68.2			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 48.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

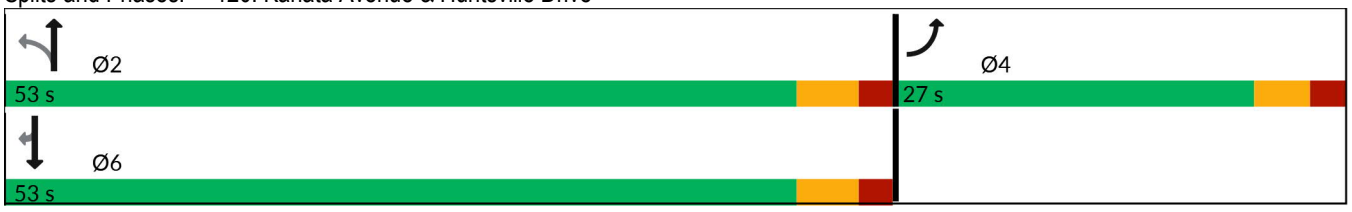


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	117	59	26	326	348	55
Future Volume (vph)	117	59	26	326	348	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.955					0.850
Flt Protected	0.968		0.950			
Satd. Flow (prot)	1536	0	1710	1731	1731	1471
Flt Permitted	0.968		0.522			
Satd. Flow (perm)	1534	0	939	1731	1731	1440
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	31					61
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		1			1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	5%	0%	4%	4%	4%
Adj. Flow (vph)	130	66	29	362	387	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	0	29	362	387	61
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	1	1
Act Effct Green (s)	13.3		49.7	49.7	49.7	49.7
Actuated g/C Ratio	0.18		0.67	0.67	0.67	0.67
v/c Ratio	0.65		0.05	0.31	0.33	0.06
Control Delay (s/veh)	33.5		5.7	6.8	7.0	2.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5		5.7	6.8	7.0	2.0
LOS	C		A	A	A	A
Approach Delay (s/veh)	33.5			6.7	6.3	
Approach LOS	C			A	A	
Queue Length 50th (m)	21.6		1.2	18.6	20.2	0.0
Queue Length 95th (m)	41.6		4.9	40.9	44.2	4.2
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	467		628	1159	1159	984
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	0.42		0.05	0.31	0.33	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 11.6		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	10	342	5	4	403
Future Volume (Veh/h)	11	10	342	5	4	403
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	11	380	6	4	448
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			160			262
pX, platoon unblocked	0.94					
vC, conflicting volume	839	383			386	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	795	383			386	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	336	669			1184	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	23	386	4	448
Volume Left	12	0	4	0
Volume Right	11	6	0	0
cSH	441	1700	1184	1700
Volume to Capacity	0.05	0.23	0.00*	0.26
Queue Length 95th (m)	1.3	0.0	0.1	0.0
Control Delay (s/veh)	13.6	0.0	8.1	0.0
Lane LOS	B		A	
Approach Delay (s/veh)	13.6	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

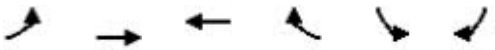
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	597	411	304	541	249	247
Future Volume (vph)	597	411	304	541	249	247
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		170.0	30.0		65.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3386	1500	1676	3386	1693	1530
Flt Permitted			0.271		0.950	
Satd. Flow (perm)	3386	1500	478	3386	1693	1530
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		457				258
Link Speed (k/h)	50			70	50	
Link Distance (m)	293.3			584.5	587.3	
Travel Time (s)	21.1			30.1	42.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	2%	2%	1%	1%	0%
Adj. Flow (vph)	663	457	338	601	277	274
Shared Lane Traffic (%)						
Lane Group Flow (vph)	663	457	338	601	277	274
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		4	7
Detector Phase	2	2	1	6	4	7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.1	25.1	11.2	25.1	36.6	36.6
Total Split (s)	30.0	30.0	12.0	42.0	38.0	38.0
Total Split (%)	37.5%	37.5%	15.0%	52.5%	47.5%	47.5%
Maximum Green (s)	23.9	23.9	5.8	35.9	31.4	31.4
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.9	1.9	2.0	1.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.2	6.1	6.6	6.6
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	Max	Max	None	Max	None	None

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Walk Time (s)	7.0	7.0		7.0	7.0	7.0
Flash Don't Walk (s)	12.0	12.0		12.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0		3	0	0
Act Effct Green (s)	24.0	24.0	35.9	36.0	15.5	15.5
Actuated g/C Ratio	0.37	0.37	0.56	0.56	0.24	0.24
v/c Ratio	0.52	0.54	0.90	0.32	0.68	0.49
Control Delay (s/veh)	18.4	4.7	43.1	8.8	30.9	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.4	4.7	43.1	8.8	30.9	6.7
LOS	B	A	D	A	C	A
Approach Delay (s/veh)	12.8			21.2	18.8	
Approach LOS	B			C	B	
Queue Length 50th (m)	32.8	0.0	20.9	18.8	31.4	1.5
Queue Length 95th (m)	56.0	18.7	#75.8	35.5	53.7	17.3
Internal Link Dist (m)	269.3			560.5	563.3	
Turn Bay Length (m)		170.0	30.0		65.0	
Base Capacity (vph)	1263	846	375	1898	830	881
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	0.52	0.54	0.90	0.32	0.33	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 17.1		Intersection LOS: B	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 100: Richardson Side Road & Terry Fox Drive

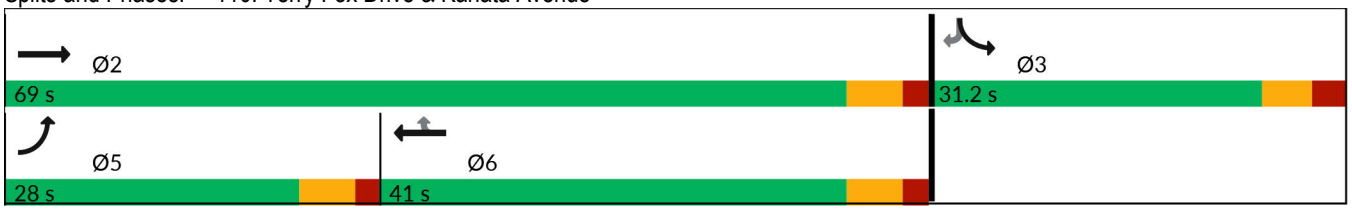


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	110	698	717	361	292	108
Future Volume (vph)	110	698	717	361	292	108
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0			40.0	80.0	90.0
Storage Lanes	1			1	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Ped Bike Factor	1.00			0.97		0.99
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1693	3386	3420	1530	3285	1485
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1690	3386	3420	1491	3285	1466
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				317		120
Link Speed (k/h)		70	70		60	
Link Distance (m)		584.5	132.6		159.6	
Travel Time (s)		30.1	6.8		9.6	
Confl. Peds. (#/hr)	2			2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%
Adj. Flow (vph)	122	776	797	401	324	120
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	776	797	401	324	120
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		7.2	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		3	
Permitted Phases				6		3
Detector Phase	5	2	6	6	3	3
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	25.1	25.1	25.1	31.2	31.2
Total Split (s)	28.0	69.0	41.0	41.0	31.2	31.2
Total Split (%)	27.9%	68.9%	40.9%	40.9%	31.1%	31.1%
Maximum Green (s)	22.0	62.9	34.9	34.9	25.0	25.0
Yellow Time (s)	4.2	4.2	4.2	4.2	3.7	3.7
All-Red Time (s)	1.8	1.9	1.9	1.9	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.1	6.1	6.1	6.2	6.2
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)		12.0	12.0	12.0	18.0	18.0
Pedestrian Calls (#/hr)		0	2	2	1	1
Act Effct Green (s)	11.8	63.1	45.3	45.3	15.2	15.2
Actuated g/C Ratio	0.13	0.70	0.50	0.50	0.17	0.17
v/c Ratio	0.55	0.33	0.47	0.44	0.59	0.35
Control Delay (s/veh)	46.9	6.5	17.5	6.0	39.1	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.9	6.5	17.5	6.0	39.1	9.0
LOS	D	A	B	A	D	A
Approach Delay (s/veh)		12.0	13.7		30.9	
Approach LOS		B	B		C	
Queue Length 50th (m)	20.9	23.8	46.2	7.5	28.5	0.0
Queue Length 95th (m)	40.5	48.0	86.4	35.5	41.4	13.9
Internal Link Dist (m)		560.5	108.6		135.6	
Turn Bay Length (m)	100.0			40.0	80.0	90.0
Base Capacity (vph)	412	2357	1709	903	909	492
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	0.30	0.33	0.47	0.44	0.36	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 100.2			
Actuated Cycle Length: 90.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 110: Terry Fox Drive & Kanata Avenue

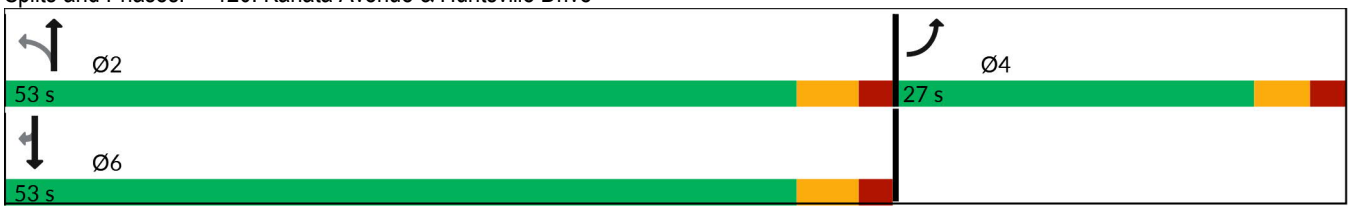


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	59	60	399	339	45
Future Volume (vph)	52	59	60	399	339	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	45.0			70.0
Storage Lanes	1	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			0.98
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1575	0	1676	1782	1731	1378
Flt Permitted	0.977		0.538			
Satd. Flow (perm)	1574	0	948	1782	1731	1347
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	66					50
Link Speed (k/h)	50			60	60	
Link Distance (m)	200.7			261.9	149.7	
Travel Time (s)	14.5			15.7	9.0	
Confl. Peds. (#/hr)	1		2			2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	2%	1%	4%	11%
Adj. Flow (vph)	58	66	67	443	377	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	67	443	377	50
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	26.5		32.7	32.7	32.7	32.7
Total Split (s)	27.0		53.0	53.0	53.0	53.0
Total Split (%)	33.8%		66.3%	66.3%	66.3%	66.3%
Maximum Green (s)	21.5		47.3	47.3	47.3	47.3
Yellow Time (s)	3.3		3.7	3.7	3.7	3.7
All-Red Time (s)	2.2		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5		5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	7.0		15.0	15.0	15.0	15.0
Flash Don't Walk (s)	14.0		12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0		0	0	2	2
Act Effct Green (s)	8.3		53.2	53.2	53.2	53.2
Actuated g/C Ratio	0.12		0.77	0.77	0.77	0.77
v/c Ratio	0.50		0.09	0.32	0.28	0.05
Control Delay (s/veh)	21.8		4.0	4.6	4.4	1.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.8		4.0	4.6	4.4	1.4
LOS	C		A	A	A	A
Approach Delay (s/veh)	21.8			4.5	4.0	
Approach LOS	C			A	A	
Queue Length 50th (m)	7.0		2.1	17.2	14.1	0.0
Queue Length 95th (m)	21.4		6.8	37.3	31.2	2.9
Internal Link Dist (m)	176.7			237.9	125.7	
Turn Bay Length (m)			45.0			70.0
Base Capacity (vph)	534		727	1367	1328	1044
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	0.23		0.09	0.32	0.28	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 6.3		Intersection LOS: A	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 120: Kanata Avenue & Huntsville Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	8	451	12	11	387
Future Volume (Veh/h)	9	8	451	12	11	387
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	9	501	13	12	430
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			160			262
pX, platoon unblocked	0.98					
vC, conflicting volume	962	508			514	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	952	508			514	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			99	
cM capacity (veh/h)	282	569			1062	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	19	514	12	430
Volume Left	10	0	12	0
Volume Right	9	13	0	0
cSH	371	1700	1062	1700
Volume to Capacity	0.05	0.30	0.01	0.25
Queue Length 95th (m)	1.3	0.0	0.3	0.0
Control Delay (s/veh)	15.2	0.0	8.4	0.0
Lane LOS	C		A	
Approach Delay (s/veh)	15.2	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix I

Transportation Demand Management (TDM) Checklist

Introduction

The City of Ottawa's *Transportation Impact Assessment (TIA) Guidelines* (specifically Module 4.1—Development Design) requires proponents of qualifying developments to use the City's **TDM-Supportive Development Design and Infrastructure Checklist** to assess the opportunity to implement design elements that are supportive of sustainable modes. The goal of this assessment is to ensure that the development provides safe and efficient access for all users, while creating an environment that encourages walking, cycling and transit use.

The remaining sections of this document are:

- Using the Checklist
- Glossary
- TDM-Supportive Development Design and Infrastructure Checklist: Non-Residential Developments
- TDM-Supportive Development Design and Infrastructure Checklist: Residential Developments

Readers are encouraged to contact the City of Ottawa's TDM Officer for any guidance and assistance they require to complete this checklist.

Using the Checklist

This **TDM-Supportive Development Design and Infrastructure Checklist** document includes two actual checklists, one for non-residential developments (office, institutional, retail or industrial) and one for residential developments (multi-family or condominium only; subdivisions are exempt). Readers may download the applicable checklist in electronic format and complete it electronically, or print it out and complete it by hand. As an alternative, they may create a freestanding document that lists the design and infrastructure measures being proposed and provides additional detail on them.

Each measure in the checklist is numbered for easy reference. Each measure is also flagged as:

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

Glossary

This glossary defines and describes the following measures that are identified in the **TDM-Supportive Development Design and Infrastructure Checklist**:

Walking & cycling: Routes
- Building location & access points
- Facilities for walking & cycling
- Amenities for walking & cycling

Walking & cycling: End-of-trip facilities
- Bicycle parking
- Secure bicycle parking
- Shower & change facilities
- Bicycle repair station

Transit
- Walking routes to transit
- Customer amenities

Ridesharing
- Pick-up & drop-off facilities
- Carpool parking

Carsharing & bikesharing
- Carshare parking spaces
- Bikeshare station location

Parking
- Number of parking spaces
- Separate long-term & short-term parking areas

Other
- On-site amenities to minimize off-site trips

In addition to specific references made in this glossary, readers should consult the City of Ottawa's design and planning guidelines for a variety of different land uses and contexts, available on the City's website at www.ottawa.ca. Readers may also find the following resources to be helpful:

- *Promoting Sustainable Transportation through Site Design*, Institute of Transportation Engineers, 2004 (www.cite7.org/wpdm-package/iterp-promoting-sustainable-transportation)
- *Bicycle End-of-Trip Facilities: A Guide for Canadian Municipalities and Employers*, Transport Canada, 2010 (www.fcm.ca/Documents/tools/GMF/Transport_Canada/BikeEndofTrip_EN.pdf)

▶ *Walking & cycling: Routes*

Building location & access points. Correctly positioning buildings and their entrances can help make walking convenient, comfortable and safe. Minimizing travel distances and maximizing visibility are key.

Facilities for walking & cycling. The Official Plan gives clear direction on the provision and design of walking and cycling facilities for both access and circulation. On larger, busier sites (e.g. multi-building campuses) the inclusion of sidewalks, pathways, marked crossings, stop signs and traffic calming features can create a safer and more supportive environment for active transportation.

Amenities for walking & cycling. Lighting, landscaping, benches and wayfinding can make walking and cycling safer and more secure, comfortable and accessible.

▶ *Walking & cycling: End-of-trip facilities*

Bicycle parking. The Official Plan and Zoning By-law both address the need for adequate bicycle parking at developments. Weather protection and theft prevention are major concerns for commuters who spend hundreds or thousands of dollars on a quality bicycle. Bicycle racks should have a design that enables secure locking while preventing damage to wheels. They should be located within sight of busy areas such as main building entrances or staffed parking kiosks.

Secure bicycle parking. Ottawa's Zoning By-law requires a secure area for bicycles at office or residential developments having more than 50 bicycle parking spaces. Lockable outdoor bike cages or indoor storage rooms that limit access to registered users are ideal.

Shower & change facilities. Longer-distance cyclists, joggers and even pedestrians can need a place to shower and change at work; the lack of such facilities is a major barrier to active commuting. Lockers and drying racks provide a place to store gear away from workspaces, and showers and grooming stations allow commuters to make themselves presentable for the office.

Bicycle repair station. Cycling commuters can experience maintenance issues that make the homeward trip difficult or impossible. A small supply of tools (e.g. air pump, Allen keys, wrenches) and supplies (e.g. inner tube patches, chain lubricant) in the workplace can help.

▶ *Transit*

Customer amenities. Larger developments that feature an on-site transit stop can make transit use more attractive by providing shelters, lighting and benches. Even better, they could integrate the passenger waiting area into a building entrance.

▶ *Ridesharing*

Pick-up & drop-off facilities. Having a safe place to load or unload passengers (for carpools as well as taxis and ride-hailing services) without obstructing pedestrians, cyclists or other vehicles can help make carpooling work.

Carpool parking. At destinations with large parking lots (or lots that regularly fill to capacity), signed priority carpool parking spaces can be an effective ridesharing incentive. Priority spaces are frequently abused by non-carpoolers, so a system to provide registered users with vehicle identification tags is recommended.

▶ *Carsharing & bikesharing*

Carshare parking spaces. For developments where carsharing could be an attractive option for employees, visitors or residents, ensuring an attractive location for future carshare parking spaces can avoid challenges associated with future retrofits.

Bikeshare station location. For developments where bikesharing could be an attractive option for employees, visitor or residents, ensuring an attractive location for a future bikeshare station can avoid challenges associated with future retrofits.

▶ *Parking*

Number of parking spaces. Parking capacity is an important variable in development design, as it can either support or subvert the mode share targets set during the transportation impact analysis (TIA). While the Zoning By-law establishes any minimum and/or maximum requirements for parking capacity, it also allows a reduction in any minimum to reflect the existence of on-site shower, change and locker rooms provided for cyclists.

Separate long-term & short-term parking areas. Because access to unused parking spaces can be a powerful incentive to drive, developments can better manage their parking supply and travel behaviours by separating long-term from short-term parking through the use of landscaping, gated controls or signs. Doing so makes it difficult for long-term parkers (e.g. commuters) to park in short-term areas (e.g. for visitors) as long as enforcement occurs; it also protects long-term parking capacity for its intended users.

▶ *Other*

On-site amenities to minimize off-site trips. Developments that offer facilities to limit employees' need for a car during their commute (e.g. to drop off children at daycare) or during their workday (e.g. to hit the gym) can free employees to make the commuting decision that otherwise works best for them.

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

Legend

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

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☒
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☒
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☒
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐ No known bus stop location at this time
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☒

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

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

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☒ Convenient drop-off on street for north building and in courtyard for south building
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☒ Reserving one visitor parking space for car share service
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☐ Requesting variance for parking reduction of 25 stalls or 11%.
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐ N/A. Project is entirely residential
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☒ Separated by signage

Introduction

The City of Ottawa's *Transportation Impact Assessment (TIA) Guidelines* (specifically Module 4.3—Transportation Demand Management) requires proponents of qualifying developments to assess the context, need and opportunity for transportation demand management (TDM) measures at their development. The guidelines require that proponents complete the City's **TDM Measures Checklist**, at a minimum, to identify any TDM measures being proposed.

The remaining sections of this document are:

- Using the Checklist
- Glossary
- TDM Measures Checklist: Non-Residential Developments
- TDM Measures Checklist: Residential developments

Readers are encouraged to contact the City of Ottawa's TDM Officer for any guidance and assistance they require to complete this checklist.

Using the Checklist

The City's *TIA Guidelines* are designed so that *Module 3.1—Development-Generated Travel Demand*, *Module 4.1—Development Design*, and *Module 4.2—Parking* are complete before a proponent begins *Module 4.3—Transportation Demand Management*.

Within Module 4.3, *Element 4.3.1—Context for TDM* and *Element 4.3.2—Need and Opportunity* are intended to create an understanding of the need for any TDM measures, and of the results they are expected to achieve or support. Once those two elements are complete, proponents begin *Element 4.3.3—TDM Program* that requires proponents to identify proposed TDM measures using the **TDM Measures Checklist**, at a minimum. The *TIA Guidelines* note that the City may require additional analysis for large or complex development proposals, or those that represent a higher degree of performance risk; as well, proponents proposing TDM measures for a new development must also propose an implementation plan that addresses planning and coordination, funding and human resources, timelines for action, performance targets and monitoring requirements.

This **TDM Measures Checklist** document includes two actual checklists, one for non-residential developments (office, institutional, retail or industrial) and one for residential developments (multi-family, condominium or subdivision). Readers may download the applicable checklist in electronic format and complete it electronically, or print it out and complete it by hand. As an alternative, they may create a freestanding document that lists the TDM measures being proposed and provides additional detail on them, including an implementation plan as required by the City's *TIA Guidelines*.

Each measure in the checklist is numbered for easy reference. Each measure is also flagged as:

- 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.

Glossary

This glossary defines and describes the following measures that are identified in the **TDM Measures Checklist**:

TDM program management
- Program coordinator
- Travel surveys

Parking
- Priced parking

Walking & cycling
- Information on walking/cycling routes & destinations
- Bicycle skills training
- Valet bike parking

Transit
- Transit information
- Transit fare incentives
- Enhanced public transit service
- Private transit service

Ridesharing
- Ridematching service
- Carpool parking price incentives
- Vanpool service

Carsharing & bikesharing
- Bikeshare stations & memberships
- Carshare vehicles & memberships

TDM marketing & communications
- Multimodal travel information
- Personalized trip planning
- Promotions

Other incentives & amenities
- Emergency ride home
- Alternative work arrangements
- Local business travel options
- Commuter incentives
- On-site amenities

For further information on selecting and implementing TDM measures (particularly as they apply to non-residential developments, with a focus on workplaces), readers may find it helpful to consult Transport Canada's *Workplace Travel Plans: Guidance for Canadian Employers*, which can be

downloaded in English and French from the ACT Canada website at www.actcanada.com/resources/act-resources.

▶ *TDM program management*

While some TDM measures can be implemented with a minimum of effort through routine channels (e.g. parking or human resources), more complex measures or a larger development site may warrant assigning responsibility for TDM program coordination to a designated person either inside or outside the implementing organization. Similarly, some TDM measures are more effective if they are targeted or customized for specific audiences, and would benefit from the collection of related information.

Program coordinator. This person is charged with day-to-day TDM program development and implementation. Only in very large employers with thousands of workers is this likely to be a full-time, dedicated position. Usually, it is added to an existing role in parking, real estate, human resources or environmental management. In practice, this role may be called TDM coordinator, commute trip reduction coordinator or employee transportation coordinator. The City of Ottawa can identify external resources (e.g. non-profit organizations or consultants) that could provide these services.

Travel surveys. Travel surveys are most commonly conducted at workplaces, but can be helpful in other settings. They identify how and why people travel the way they do, and what barriers and opportunities exist for different behaviours. They usually capture the following information:

- *Personal data* including home address or postal code, destination, job type or function, employment status (full-time, part-time and/or teleworker), gender, age and hours of work
- *Commute information* including distance or time for the trip between home and work, usual methods of commuting, and reasons for choosing them
- *Barriers and opportunities* including why other commuting methods are unattractive, willingness to consider other options, and what improvements to other options could make them more attractive

▶ *Parking*

Priced parking. Charging for parking is typically among the most effective ways of getting drivers to consider other travel options. While drivers may not support parking fees, they can be more accepting if the revenues are used to improve other travel options (e.g. new showers and change rooms, improved bicycle parking or subsidized transit passes). At workplaces or daytime destinations, parking discounts (e.g. early bird specials, daily passes that cost significantly less than the equivalent hourly charge, monthly passes that cost significantly less than the equivalent daily charge) encourage long-term parking and discourage the use of other travel options. For residential uses, unbundling parking costs from dwelling purchase, lease or rental costs provides an incentive for residents to own fewer cars, and can reduce car use and the costs of parking provision.

▶ *Walking & cycling*

Active transportation options like cycling and walking are particularly attractive for short trips (typically up to 5 km and 2 km, respectively). Other supportive factors include an active, health-conscious audience, and development proximity to high-quality walking and cycling networks. Common challenges to active transportation include rain, darkness, snowy or icy conditions, personal safety concerns, the potential for bicycle theft, and a lack of shower and change facilities for those making longer trips.

Information on walking/cycling routes & destinations. Ottawa, Gatineau and the National Capital Commission all publish maps to help people identify the most convenient and comfortable walking or cycling routes.

Bicycle skills training. Potential cyclists can be intimidated by the need to ride on roads shared with motor vehicles. This barrier can be reduced or eliminated by offering cycling skills training to interested cyclists (e.g. CAN-BIKE certification courses).

Valet bike parking. For large events, temporary “valet parking” areas can be easily set up to maximize convenience and security for cyclists. Experienced local non-profit groups can help.

▶ *Transit*

Transit information. Difficulty in finding or understanding basic information on transit fares, routes and schedules can prevent people from trying transit. Employers can help by providing online links to OC Transpo and STO websites. Transit users also appreciate visible maps and schedules of transit routes that serve the site; even better, a screen that shows real-time transit arrival information is particularly useful at sites with many transit users and an adjacent transit stop or station.

Transit fare incentives. Free or subsidized transit fares are an attractive incentive for non-transit riders to try transit. Many non-users are unsure of how to pay a fare, and providing tickets or a preloaded PRESTO card (or, for special events, pre-arranging with OC Transpo that transit fares are included with event tickets) overcome that barrier.

Enhanced public transit service. OC Transpo may adjust transit routes, stop locations, service hours or frequencies for an agreed fee under contract, or at no cost where warranted by the potential ridership increase. Information provided by a survey of people who travel to a given development can support these decisions.

Private transit service. At remote suburban or rural workplaces, a poor transit connection to the nearest rapid transit station can be an obstacle for potential transit users, and an employer in this situation could initiate a private shuttle service to make transit use more feasible or attractive. Other circumstances where a shuttle makes sense include large special events, or a residential development for people with limited independent mobility who still require regular access to shops and services.

▶ *Ridesharing*

Ridesharing's potential is greatest in situations where transit ridership is low, where parking costs are high, and/or where large numbers of car commuters (e.g. employees or full-time students) live reasonably far from the workplace.

Ridematching service. Potential carpoolers in Ottawa are served by www.OttawaRideMatch.com, an online service to help people find carpool partners. Employers can arrange for a dedicated portal where their employees can search for potential carpool partners only among their colleagues, if they desire. Some very large employers may establish internal ridematching services, to maximize employee uptake and corporate control. Ridematching service providers typically include a waiver to relieve employers of liability when their employees start carpooling through a ridematching service. Ridesharing with co-workers also tends to eliminate security concerns.

Carpool parking price incentives. Discounted parking fees for carpools can be an extra incentive to rideshare.

Vanpool service. Vanpools operate in the Toronto and Vancouver metropolitan areas, where vans that carry up to about ten occupants are driven by one of the vanpool members. Vanpools tend to operate on a cost-recovery basis, and are most practical for long-distance commutes where transit is not an option. Current legislation in Ontario does not permit third-party (i.e. private or non-profit) vanpool services, but does permit employers to operate internal vanpools.

▶ *Carsharing & bikesharing*

Bikeshare station & memberships. VeloGO Bike Share and Right Bike both operate bikesharing services in Ottawa. Developments that would benefit from having a bikeshare station installed at or near their development may negotiate directly with either service provider.

Carshare vehicles & memberships. VRTUCAR and Zipcar both operate carsharing services in Ottawa, for use by the general public or by businesses as an alternative to corporate fleets. Carsharing services offer 24-hour access, self-serve reservation systems, itemized monthly billings, and outsourcing of all financing, insurance, maintenance and administrative responsibilities.

▶ *TDM marketing & communications*

Multimodal travel information. Aside from mode-specific information discussed elsewhere in this document, multimodal information that identifies and explains the full range of travel options available to people can be very influential—especially when provided at times and locations where individuals are actively choosing among those options. Examples include: employees when their employer is relocating, or when they are joining a new employer; students when they are starting a program at a new institution; visitors or customers travelling to an unfamiliar destination, or when faced with new options (e.g. shuttle services or parking restrictions); and residents when they purchase or occupy a residence that is new to them.

Personalized trip planning. As an extension to the simple provision of information, this technique (also known as *individualized marketing*) is effective in helping people make more sustainable travel choices. The approach involves identifying who is most likely to change their travel choices (notably relocating employees, students or residents) giving them customized information, training and incentives to support them in making that change. It may be conducted with assistance from an external service provider with the necessary skills, and delivered in a variety of settings including workplaces and homes.

Promotions. Special events and incentives can raise awareness and encourage individuals to examine and try new travel options.

- *Special events* can help attract attention, build participation and celebrate successes. Events that have been held in Ottawa include Earth Day (in April) Bike to Work Month (in May), Environment Week (early June), International Car Free Day (September 22), and Canadian Ridesharing Week (October). At workplaces or educational institutions, similarly effective internal events could include workshops, lunch-and-learns, inter-departmental challenges, pancake breakfasts, and so on.
- *Incentives* can encourage trial of sustainable modes, and might include loyalty rewards for duration or consistency of activity (e.g. 1,000 km commuted by bicycle), participation prizes (e.g. for completing a survey or joining a special event), or personal recognition that highlights individual accomplishments.

▶ *Other incentives & amenities*

Emergency ride home. This measure assures non-driving commuters that they will be able to get home quickly and conveniently in case of family emergency (or in some workplaces, in case of unexpected overtime, severe weather conditions, or the early departure of a carpool driver) by offering a chit or reimbursement for taxi, carshare or rental car usage. Limits on annual usage or cost per employee may be set, although across North America the actual rates of usage are typically very low.

Alternative work arrangements. A number of alternatives to the standard 9-to-5, Monday-to-Friday workweek can support sustainable commuting (and work-life balance) at workplaces:

- *Flexible working hours* allow transit commuters to take advantage of the fastest and most convenient transit services, and allow potential carpoolers to include people who work slightly different schedules in their search for carpool partners. They also allow active commuters to travel at least one direction in daylight, either in the morning or the afternoon, during the winter.
- *Compressed workweeks* allow employees to work their required hours over fewer days (e.g. five days in four, or ten days in nine), eliminating the need to commute on certain days. For employees, this can promote work-life balance and gives flexibility for appointments. For employers, this can permit extended service hours as well as reduced parking demands if employees stagger their days off.
- *Telework* is a normal part of many workplaces. It helps reduce commuting activity, and can lead to significant cost savings through workspace sharing. Telework initiatives involve many stakeholders, and may face as much resistance as support within an organization. Consultation, education and training are helpful.

Local business travel options. A common obstacle for people who might prefer to not drive to work is that their employer requires them to bring a car to work so they can make business trips during the day. Giving employees convenient alternatives to private cars for local business travel during the workday makes walking, cycling, transit or carpooling in someone else's car more practical.

- *Walking and cycling*—Active transportation can be a convenient and enjoyable way to make short business trips. They can also reduce employer expenses, although they may require extra travel time. Providing a fleet of shared bikes, or reimbursing cyclists for the kilometres they ride, are inexpensive ways to validate their choice.
- *Public transit*—Transit can be convenient and inexpensive compared to driving. OC Transpo's PRESTO cards are transferable among employees and automatically reloadable, making them the perfect tool for enabling transit use during the day.
- *Ridesharin*g—When multiple employees attend the same off-site meeting or event, they can be reminded to carpool whenever possible.
- *Taxis or ride-hailing*—Taxis and ride-hailing can eliminate parking costs, save time and eliminate collision liability concerns. Taxi chits eliminate cash transactions and minimize paperwork.
    - *Fleet vehicles or carsharing*—Fleet vehicles can be cost-effective for high travel volumes, while carsharing is a great option for less frequent trips.
    - *Interoffice shuttles*—Employers with multiple worksites in the region could use a shuttle service to move people as well as mail or supplies.
    - *Videoconferencing*—New technologies mean that staying in the office to hold meetings electronically is more viable, affordable and productive than ever.

Commuter incentives. Financial incentives can help create a level playing field and support commuting by sustainable modes. A "commuting allowance" given to all employees as a taxable benefit is one such incentive; employees who choose to drive could then be charged for parking, while other employees could use the allowance for transit fares or cycling equipment, or for spending or saving. (Note that in the United States this practice is known as "parking cash-out," and is popular because commuting allowances are not taxable up to a certain limit). Alternatively, a monthly commuting allowance for non-driving employees would give drivers an incentive to choose a different commuting mode. Another practical incentive for active commuters or transit users is to offer them discounted "rainy day" parking passes for a small number of days each month.

On-site amenities. Developments that offer services to limit employees' need for a car during their commute (e.g. to drop off clothing at the dry cleaners) or during their workday (e.g. to buy lunch) can free employees to make the commuting decision that otherwise works best for them.

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	☐ Will allocate 1 space to be used for carsharing, but will not provide a subsidy
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	☐

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