3971 Greenbank Road

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report

Prepared for:

MAC-BIC Project Committee
3971 Greenbank Road
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PN: 2026-075

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1 Screening

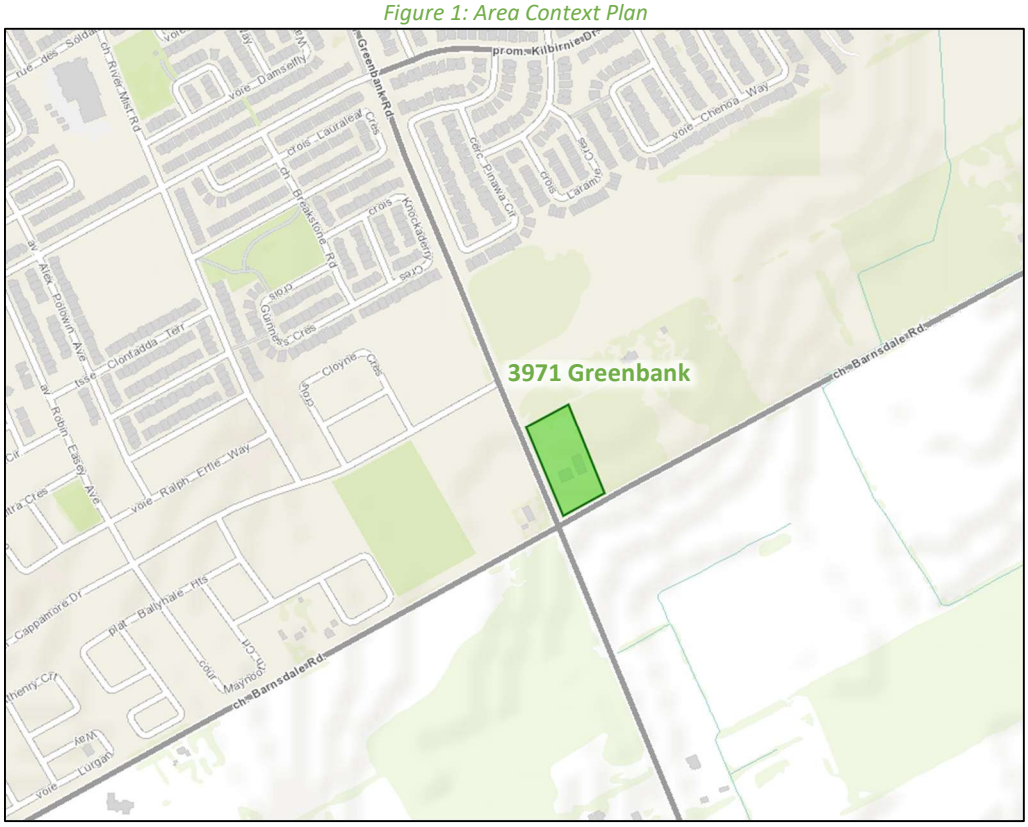
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required, and this study has been prepared to support a site plan application for the existing site.

2 Existing and Planned Conditions

2.1 Proposed Development

The existing site is located at 3971 Greenbank Road and includes a one-story administrative building occupying approximately 400 sq. m of the site and an adjacent structure occupying approximately 450 sq. m of the site serving as a mosque. The proposed access configuration on Greenbank Road includes the existing southern access as a one-way inbound only access, the existing central access as a two-way access with outbound left-turns restricted, and a new one-way outbound access at the northern property limits. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan

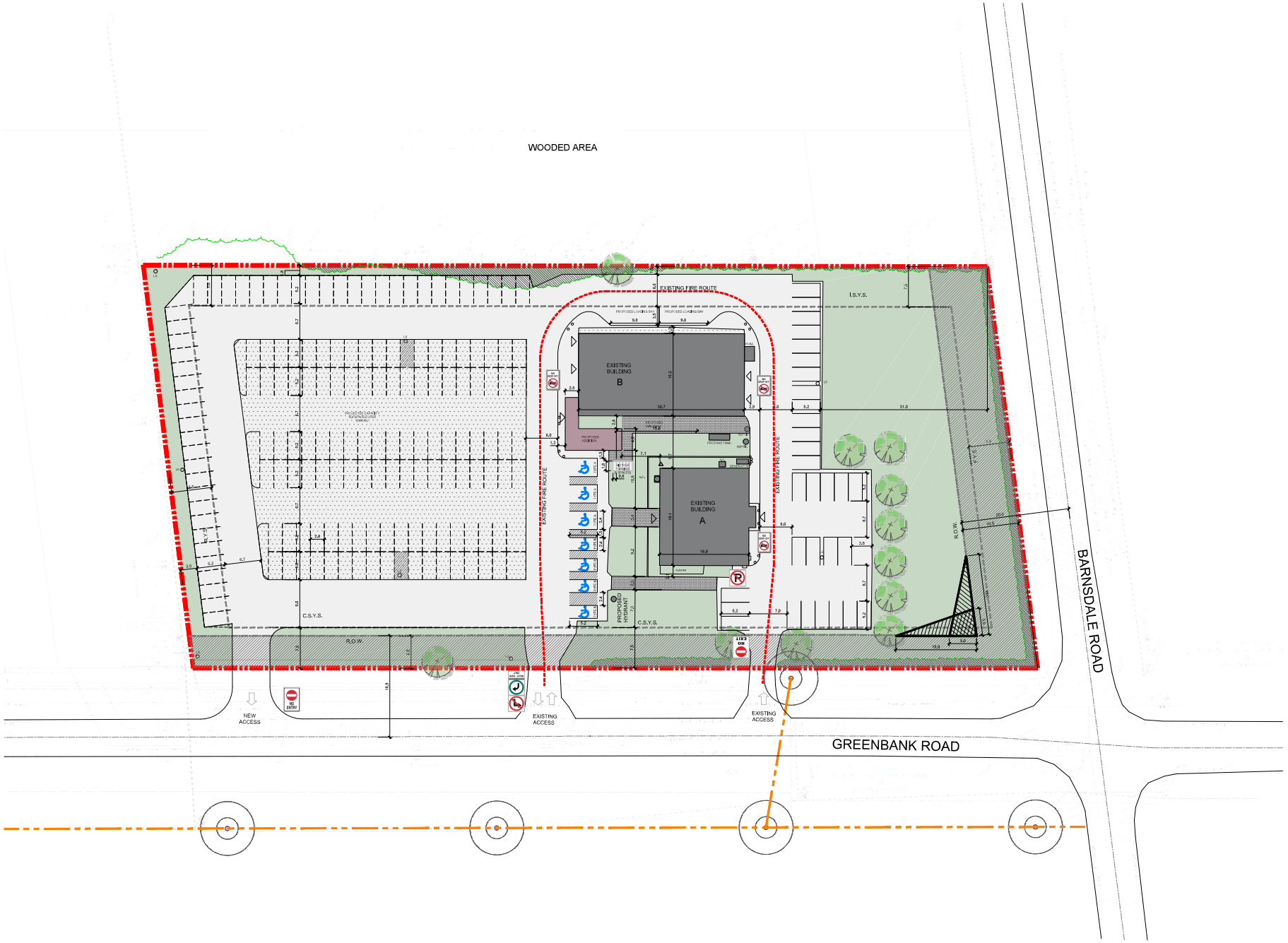


Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 07, 2026

3971 GREENBANK RD. OTTAWA
Site Plan



WOODED AREA



SITE INFORMATION

ZONING: DR

SITE AREA
Total Site Area: 11,699m²

SETBACKS: F.Y. 1m, S.Y. 8m, R.Y. 8m

PARKING RATES
10 spaces per 100 m2 of gross floor area of assembly area

DEVELOPMENT STATISTICS

AREAS

Existing Building A:	305.8 m²
Existing Building B:	475.8 m²
Proposed Addition:	56.5 m²
Total:	838.2 m²

GFA

Existing Building A:	260.0 m²
Existing Building B:	404.4 m²
Proposed Addition:	48.0 m²
Total:	712.4 m

PARKING	REQUIRED	PROVIDED
Accessible	3 spaces	7 spaces
Standard	69 spaces	190 spaces
TOTAL:	72 spaces	197 spaces

BICYCLES PARKING	REQUIRED	PROVIDED
TOTAL:	0	6 spaces

LEGEND
- EXISTING BUILDING
- PROPOSED BUILDING ADDITION
- SOFT LANDSCAPE
- BRICK
- ASPHALT
- HARDSCAPE / INTERLOCK
- PAINTED AREA
- SURROUNDING OPEN SPACE
- NEIGHBOURING BUILDING PROTECTION
- EXISTING HEDGES
- SUBJECT PROPERTY BOUNDARY
- SETBACKS
- HYDRO LINE
- LIGHT STANDART
- HYDRO POLE
- EXISTING TREES
- FIRE ROUTE
- CORNER TRIANGLE
- BUILDING ACCESS
- BOLLARDS

0 2.5m 5m 10m 20m

No.	REVISION	DATE	BY
3	REVISED SITE PLAN	2026.09.03	DM
2	REVISED SITE PLAN	2026.07.28	DM
1	SITE PLAN	2026.05.21	DM

CLIENT/OWNER
MUSLIM ASSOCIATION OF OTTAWA
3971Greenbank Rd. Ottawa, ON, K2C 3H2

Building Engineer: B.A. Design Ltd.
Complete Engineering Services2
1470 Lagan Way, Unit 2 Ottawa, Ontario, K1B3S6
Civil Engineer: Kollard and Associates Engineering
210 Prescott Street, Unit 1, P.O. Box 189, Kemptville, Ontario K0G 1J0 Canada
Geotechnical Investigation : GEMTEC consulting Engineering and Scientists Limited,
32 Steacie Drive Ottawa, ON, Canada K2K 2A9
Surveyor: Annis O'Sullivan Vollebekk, OLS
14 Concourse Gate, Suite 500, Nepean ON, K2E 7S6

FOTENN Planning + Design
420 O'Connor St, Ottawa ON K2P 1W4, 613.730.5709
www.fotenn.com

DESIGNED	DM
REVIEWED	TS
DATE	2026.05.08

P1

2.2 Existing Conditions

2.2.1 Area Road Network

Greenbank Road: Greenbank Road is a City of Ottawa arterial road with a two-lane cross-section north of Barnsdale Road and a rural collector road with a two-lane cross-section to the south. North of Kilbirnie Drive, a sidewalk and bike lane are present on the east side of the road, and a multi-use pathway is present on the west side of the road. South of Kilbirnie Drive, there is a paved shoulder on the west side of the road and a gravel shoulder on the east side, transitioning to gravel shoulders on both sides. The posted limit is 60 km/h north of Barnsdale Road, and it transitions to 80 km/h to the south for rural areas. The City protected right-of-way is 37.5 metres between Cambrian Road and Barnsdale Road, and the existing right-of-way is 24.0 metres south of Barnsdale Road.

Barnsdale Road: Barnsdale Road is a City of Ottawa arterial road with a two-lane cross-section, including gravel shoulders on both sides of the road. The posted limit is 80 km/h within the study area. The City protected right-of-way is 39.5 metres subject to the unequal widening north side 17.25 metres and south side 22.25 metres.

Cappamore Drive: Cappamore Drive is a City of Ottawa collector road with a two-lane cross-section, including cycletracks and sidewalks on both sides of the road. The unposted speed limit is assumed to be 50 km/h based on the Highway Traffic Act. The right-of-way is 24.0 metres.

2.2.2 Existing Intersections

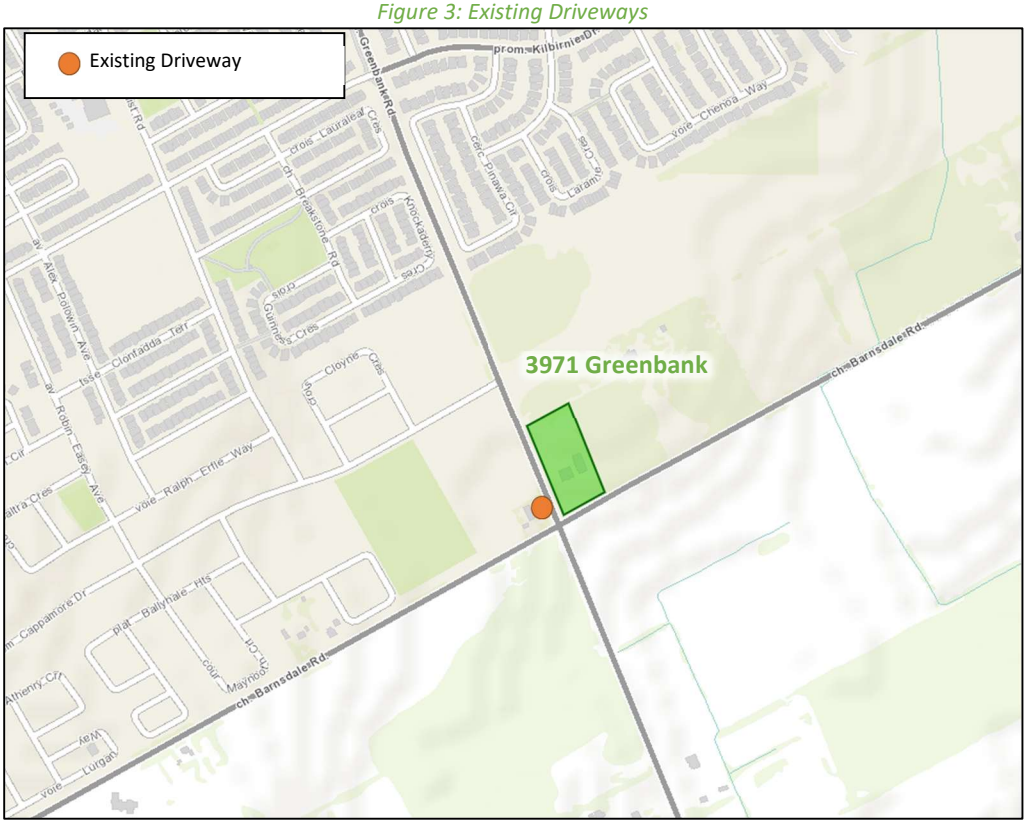
The key study area intersections within one kilometre of the site have been summarized below:

Greenbank Road at Cappamore Drive	The intersection of Greenbank Road at Cappamore Drive is a T-intersection with stop control on the minor approach of Cappamore Drive. The northbound approach consists of a shared left-turn/through lane, and the southbound approach consists of a shared through/right-turn lane. The eastbound approach consists of a shared left-turn/right-turn lane. No turn restrictions were noted.
Greenbank Road at Barnsdale Road	The intersection of Greenbank Road at Barnsdale Road is an unsignalized intersection with all-way stop control. All approaches consist of a shared all-movements lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres the site accesses, one driveway on Greenbank Road to a residential land use is present. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 7, 2026

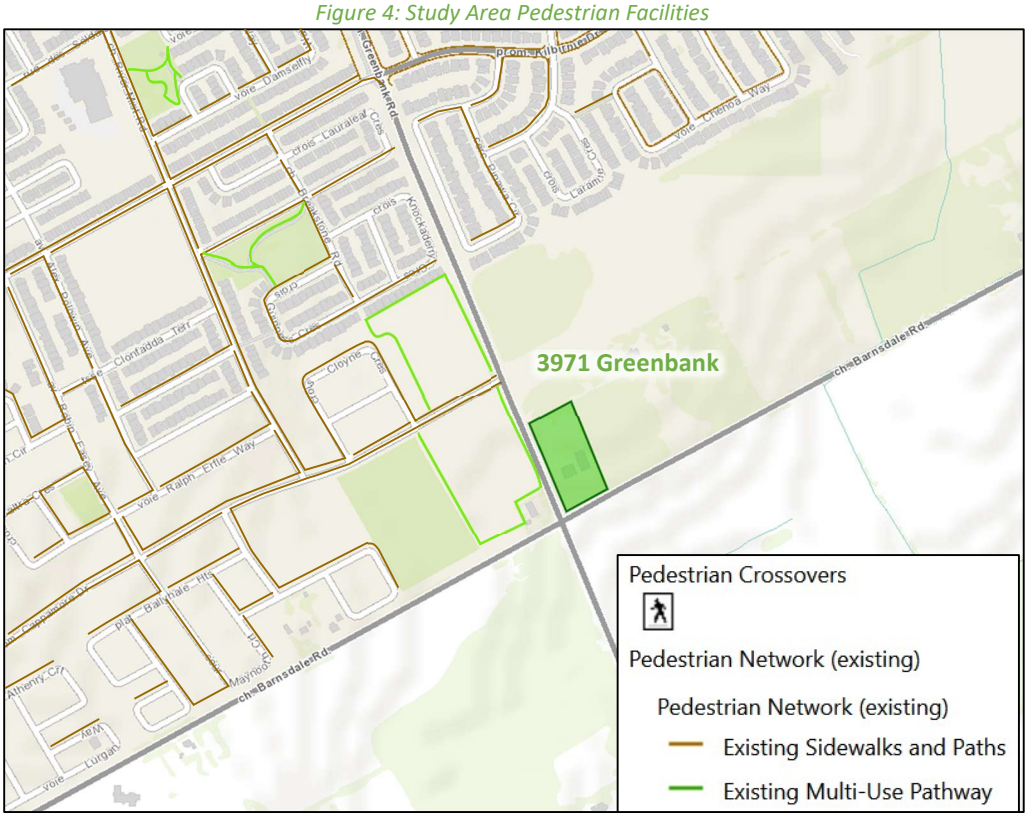
2.2.4 Cycling and Pedestrian Facilities

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

Sidewalks are provided along both sides of Cappamore Drive and east side of Greenbank Road north of Kilbirnie Drive.

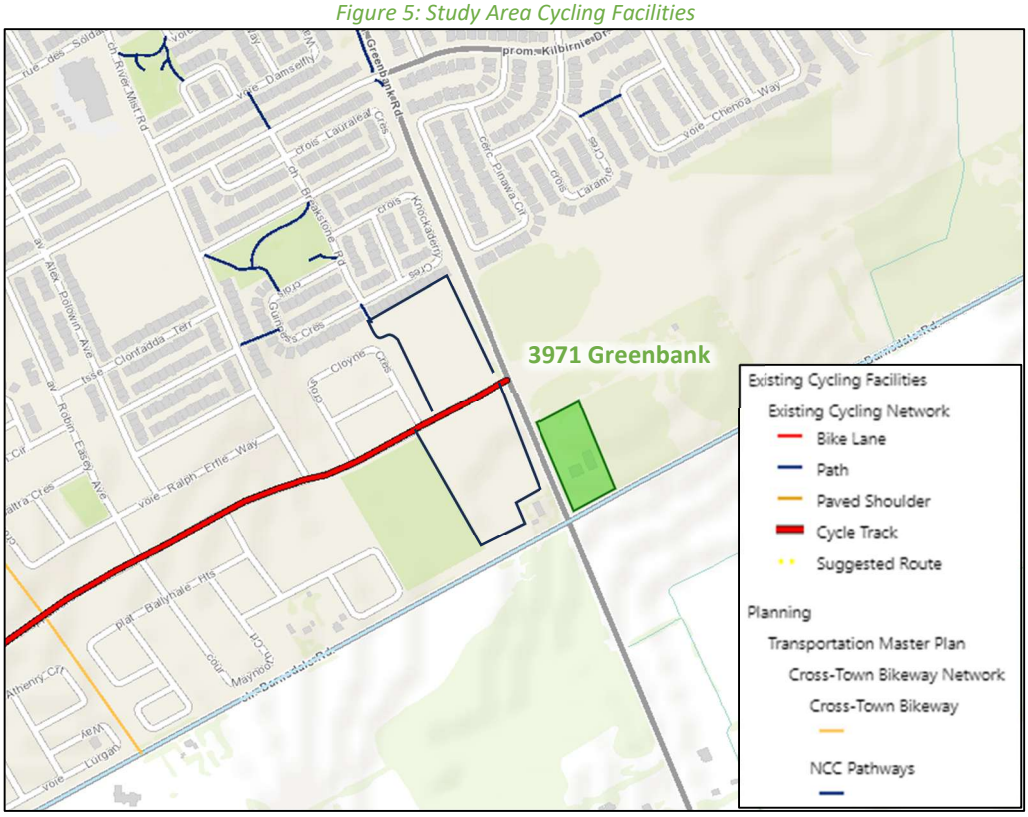
Cycling facilities include a bike lane is present on the east side of Greenbank Road north of Kilbirnie Drive, while a multi-use pathway is present on the west side. Cycletracks are provided along both sides of Cappamore Drive.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 7, 2026

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: May 7, 2026

Pedestrian and cycling volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively. The site peak hour occurs between 1:00 PM and 2:00 PM on Friday. It is noted that throughout the entire 4-hour count period, at the intersection of Greenbank Road at Cappamore Drive, 123 pedestrians walked to and from vehicles parked north of Cappamore Drive along the east side of Greenbank Road.

Figure 6: Existing Pedestrian Volumes- Friday Midday

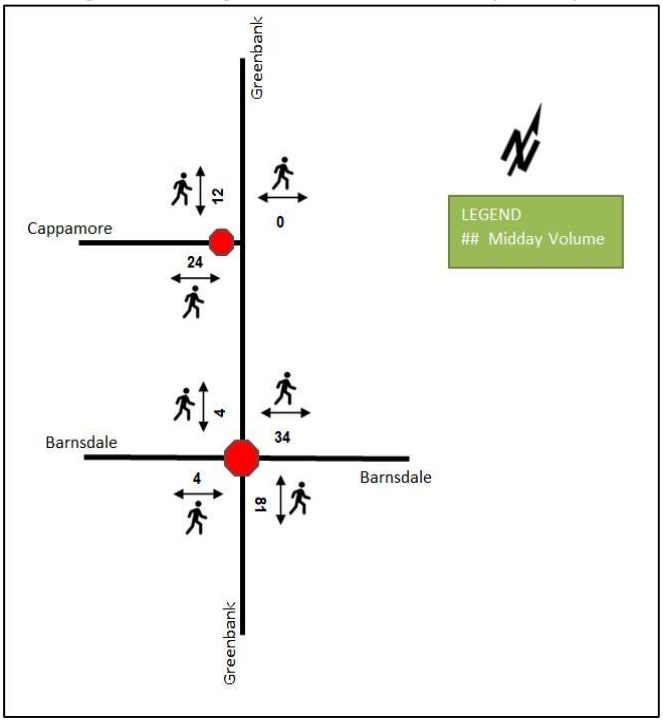
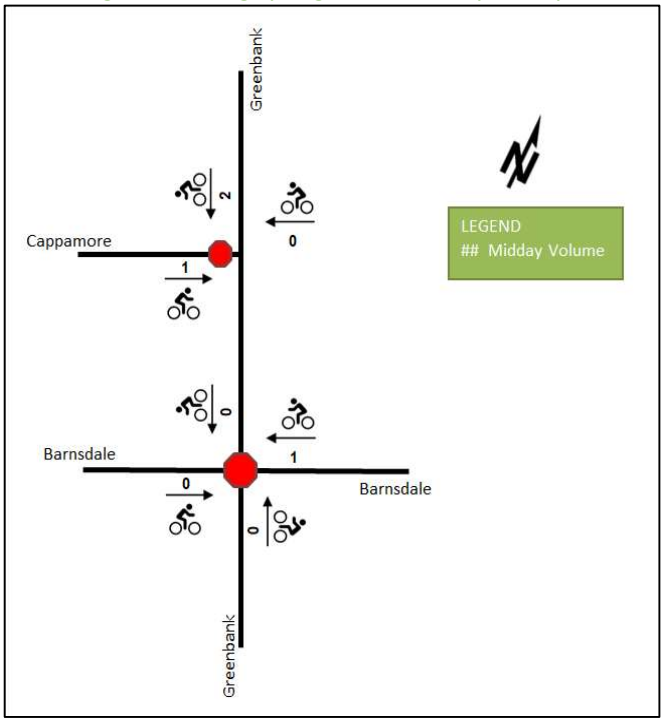


Figure 7: Existing Cycling Volumes- Friday Midday



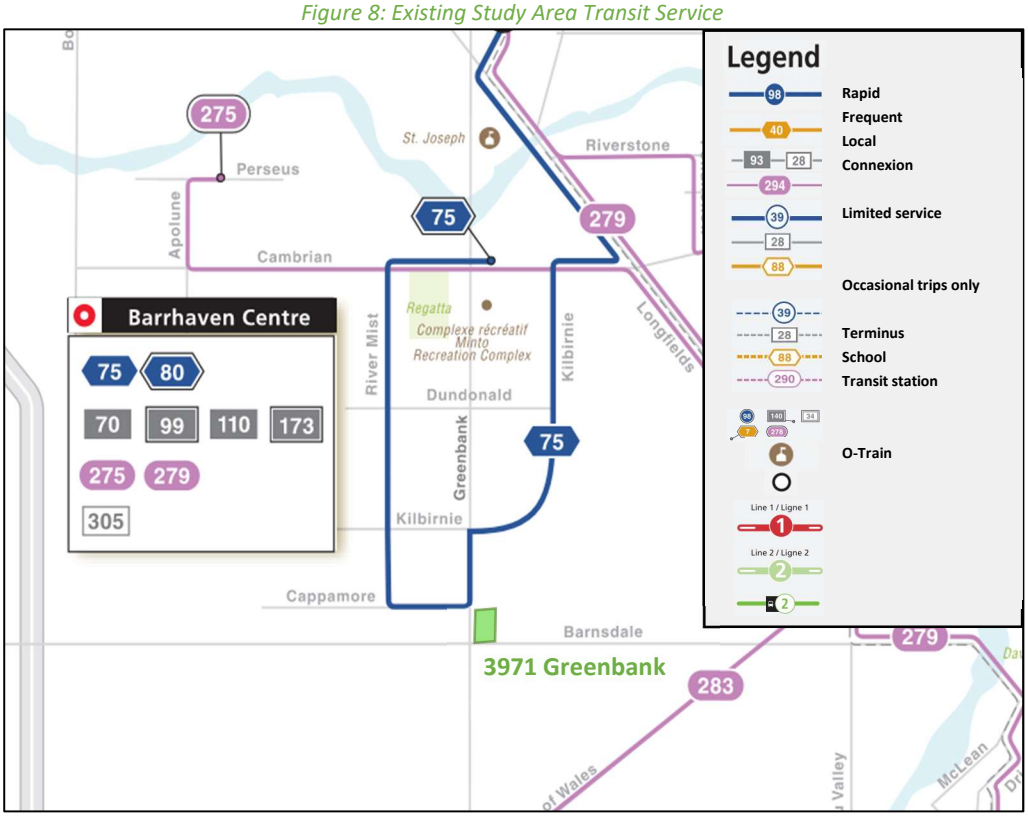
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from May 7, 2026, and is included for general information purposes and context to the surrounding area.

Within the study area, the route #75 travels along Kilbirnie Drive, Greenbank Road, and Cappamore Drive. The frequency of this route within proximity of the proposed site based on May 7, 2026, service levels is:

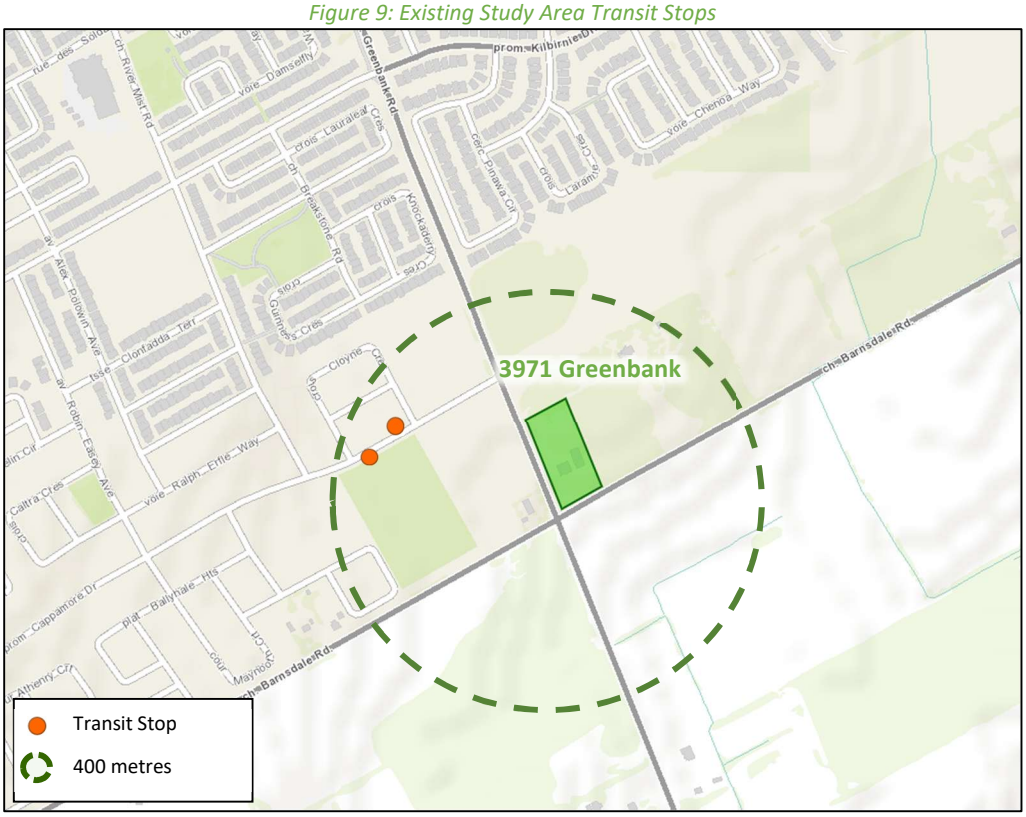
- Route #75 – 15-minute service all day

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: May 7, 2026

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: May 7, 2026

2.2.6 Existing Area Traffic Management Measures

The existing area traffic management measures consist of bulb-outs framing parking on Kilbirnie Drive and Cappamore Drive.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from J & S Traffic Services for the existing study area intersections during the site peak hours on Friday. The site access driveways were only collected to confirm site trips. Table 1 summarizes the intersection count dates and sources.

Table 1: Intersection Count Date

Intersection	Count Date	Source
Greenbank Road at Cappamore Drive	Friday, May 1, 2026	J & S Traffic Services
Greenbank Road at Barnsdale Road		
Greenbank Road at Access #1	Friday, August 21, 2026	J & S Traffic Services
Greenbank Road at Access #2		

Figure 10 illustrates the existing Friday midday traffic counts. Southbound U-turn movements are noted during at the intersection of Greenbank Road at Cappamore Drive. All U-turns appeared to be associated with drivers searching for a parking space along the east side of Greenbank Road.

Figure 10:Existing Traffic Counts- Friday Midday

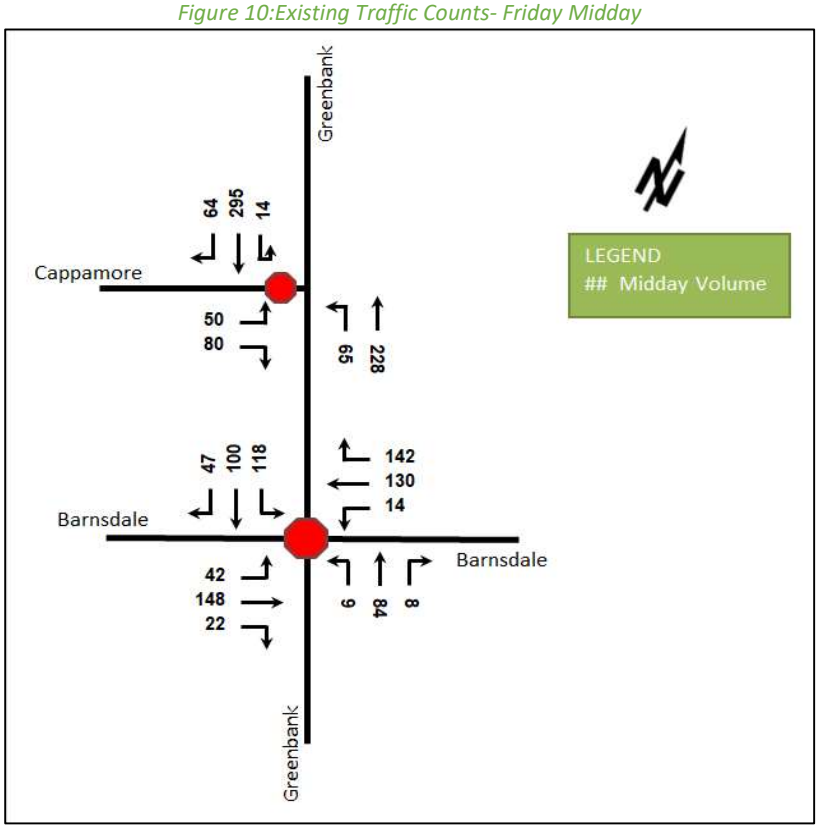


Table 2 summarizes the existing intersection operations during the Friday midday peak hour. The level of service is based on average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10:Existing Traffic Counts- Friday Midday

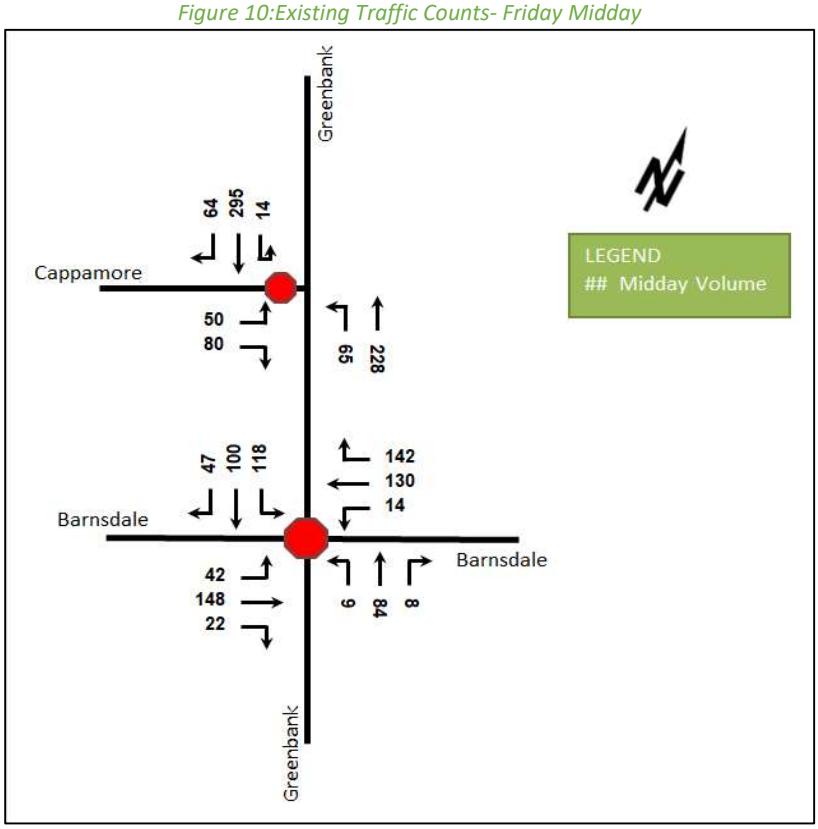


Table 2: Existing Intersection Operations- Friday Midday

Intersection	Lane	Midday Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)
Greenbank Road at Cappamore Drive *Unsignalized*	EBL/R	C	0.31	16.1	9.8
	NBL/T	A	0.06	8.4	1.5
	SBT/R	-	-	-	-
	Overall	**A**	**-**	**3.3**	**-**
Greenbank Road at Barnsdale Road *Unsignalized*	EB	B	0.37	12.0	12.8
	WB	B	0.47	12.8	18.8
	NB	B	0.19	10.7	5.3
	SB	B	0.46	13.4	18.0
	Overall	**B**	**-**	**12.5**	**-**

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

During the Friday midday peak hour, the study area intersections operate acceptably. No capacity issues are noted.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network (2018-2022). Table 3 summarizes the collision types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of the locations analyzed. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**18**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	2	11%
	Property Damage Only	16	89%
Initial Impact Type	**Approaching**	2	11%
	Angle	6	33%
	Rear end	3	17%
	Sideswipe	0	0%
	Turning Movement	0	0%
	SMV Unattended	0	0%
	SMV Other	6	33%
	Other	1	6%
Road Surface Condition	**Dry**	12	67%
	Wet	2	11%
	Loose Snow	1	6%
	Slush	2	11%
	Packed Snow	0	0%
	Ice	1	6%
	Unknown	0	0%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

Figure 11: Study Area Collision Records



Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**18**	**100%**
Greenbank Road at Barnsdale Road	7	39%
Barnsdale Road between Greenbank Road and Prince of Wales Drive	5	28%
Greenbank Road between Kilbirnie Drive and Barnsdale Road	3	17%
Barnsdale Road between Viewbank Road and Greenbank Road	2	11%
Greenbank Road between Barnsdale Road and Viewbank Road	1	6%

Within the study area, the intersection of Greenbank Road at Barnsdale Road is noted to have a total of seven collisions during the 2018-2022 time period, with all involving property damage only. The collision types are most represented by angle with five collisions and rear end with two collisions. The collisions were clustered around the early morning off-peak, AM, midday, and PM peak hours throughout the week. Weather conditions do not affect collisions at this location.

Based on detailed collision records from 2019-2022 and 2024 (representing a different analysis period than the publicly available data), a total of 17 collisions were recorded at the intersection of Greenbank Road at Barnsdale Road, including six angle collisions, six rear end, three turning movement, one approaching, and one SMV other collision.

From the detailed collision records, angle collisions predominantly involved westbound through/right-turning vehicles conflicting with northbound through vehicles (4 of 6) and southbound through vehicles conflicting with westbound/eastbound through vehicles. Given that the intersection operates all-way stop control, these collisions may be indicative of drivers failing to obey stop-control requirements. The collisions were clustered throughout the day, and no collisions were noted on Friday during the peak operating hours of the mosque.

The rear end collisions were predominantly involving westbound movements (5 of 6), which may be associated with congestion in the westbound direction. Only one collision was noted on Friday during the peak operating hours of the mosque.

Turning movement collisions predominantly involved westbound left-turning vehicles conflicting with eastbound and northbound through vehicles (2 of 3) and a westbound right-turning vehicle conflicting with a northbound through vehicle (the record noted southbound through, which is likely a reporting error), which may be indicative of drivers failing to obey stop-control requirements. The collisions were clustered throughout the day, and no collisions were noted on Friday during the peak operating hours of the mosque. No further collision review is required at this location as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

2.3.1.1 Transportation Master Plan (2025)

The recently approved Transportation Master Plan includes a Capital Infrastructure Plan identifying transportation investments to support the forecasted growth and strategic connectivity and livability targets for the City. It also identifies committed projects, and a subset of priority projects that are expected to be implemented by 2046 based on current affordability assumptions. Area projects anticipated to impact travel in the study area that are included within the Capital Infrastructure Plan are:

- Transit Network
  - Priority
    - Median bus rapid transit from Barrhaven Centre Station to Kilbirnie Station (Southwest Transitway)
- Road Network
  - Committed
    - Greenbank Road Re-Alignment and Widening between Chapman Mills Drive and Cambrian Road
  - Priority
    - Greenbank Road Re-Alignment including new two-lane road from Cambrian Road to Kilbirnie Drive
    - Greenbank Road Re-Alignment including new two-lane road from Kilbirnie Drive to Barnsdale Road
  - Need-based
    - Barnsdale Road Widening from Highway 416 to Greenbank Road Extension

2.3.1.2 Barrhaven South Urban Expansion Area Community Design Plan (CDP) (2018)

The Barrhaven South Urban Expansion Area CDP includes street hierarchy plan, pedestrian plan, transit facilities plan, and cycling facilities plan. The street hierarchy plan includes a westward extension of Kilbirnie Drive to the urban boundary. The planned 24.0 metre cross section of Kilbirnie Drive was envisioned to support pedestrian and cycling facilities and potentially be used as a local transit route. Cappamore Drive is identified as a new collector road in the CDP, has recently been constructed. It is designated as a potential local transit route and includes pedestrian and cycling facilities along the road. Streetscape elements are encouraged within the available boulevard space, with traffic calming and narrowing to reduce crossing distances noted along the collector and local roadways. Pathways linking neighbourhoods and providing connectivity to the park and ride are noted within the CDP.

2.3.1.3 Greenbank Road Realignment and Southwest Transitway Extension

The Realigned Greenbank Road includes the design of a new 4-lane arterial roadway with a 2-lane separated median Bus Rapid Transit (BRT) and includes sidewalks and cycletracks on both sides of the road. The BRT will connect from Chapman Mills Drive to the new park-and-ride at Kilbirnie Drive. A park-and-ride facility is anticipated to be located at the southwest corner of the future intersection of the Kilbirnie Drive Extension and Realigned Greenbank Road to provide parking for approximately 400 vehicles at the terminus of the BRT line. Stations will be located at major intersections, including Darjeeling Avenue, Riverboat Heights, River Run Avenue, Cambrian Road, and Dundonald Drive. Local bus routes will also be able to enter and exit the Transitway corridor to service adjacent streets. The project also includes a new bridge over the Jock River. Realigned Greenbank Road EA also includes a signalized configuration for the intersection of Greenbank Road at Barnsdale Road, consisting of southbound auxiliary left-and right-turn lanes, a northbound auxiliary left--turn lane, westbound auxiliary left- and right-turn lanes, and an eastbound auxiliary left-turn lane and an auxiliary channelized right-turn lane. The Greenbank Road Realignment from Cambrian Road to Kilbirnie Drive and from Kilbirnie Drive to Barnsdale Road are identified in the 2025 TMP Priority Road Network as Phase 1 projects, expected to be implemented between 2029 and 2037. However, the Southwest Transitway is identified in the Priority Transit Network projects as a project anticipated to be implemented by 2046 through Development Charges.

2.3.2 Highway 416 at Barnsdale Road Interchange

The environmental assessment study and preliminary design for an interchange at the intersection of Highway 416 and Barnsdale Road were completed in September 2023. The ultimate configuration consists of a partial cloverleaf interchange on the south side of Barnsdale Road and a four-lane bridge over Highway 416 with a multi-use pathway. The interim configurations will be subject to traffic demands, and it is expected that the free flow ramps on the north side of Barnsdale Road will not be constructed as part of this configuration and are considered a long-term improvement once warranted. The ramps on the north side of Barnsdale Road will result in the discontinuation of Borrisokane Road and Trail Road. Specific intersection configurations have not been explored as part of the EA and the provision of the ultimate bridge structure may not be provided during the interim configuration. The City of Ottawa included include a preferred solution for a Kilbirnie Drive extension to protect for future demands associated with Borrisokane Road becoming a cul-de-sac in the ultimate interchange configuration. On March 28, 2024, the Government of Ontario committed to constructing the Highway 416/Barnsdale Road interchange, including funding for the interchange planning and design over three years starting in 2025. It is expected that the interim conditions of the interchange will be completed by 2029.

2.3.3 Barnsdale Road Widening

The environmental assessment (EA) study for the Barnsdale Road Widening extends from Highway 416 in the west to Prince of Wales Drive in the east and review the need for widening from 2-lanes to 4-lanes. The complete street design will outline the facilities and right of way requirements for the corridor. It is noted that the Transportation Master Plan only identifies the widening between Highway 416 and Realigned Greenbank Road to be within the 2025 TMP Needs Based Road Network.

2.3.4 Other Study Area Developments

Background developments expected to impact the study area intersections include:

- Barrhaven South Future Neighbourhoods Phase 3 (S-1)
- Barrhaven South Future Neighbourhoods Phase 4 (S-2)
- Minto's Quinn's Pointe Stage 4

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Greenbank Road at:
  - Cappamore Drive
  - Barnsdale Road

The future intersections along Barnsdale Road associated with Barrhaven South Future Neighborhood Phase 4 are excluded from the analysis and will be further reviewed as part of Barrhaven South Future Neighborhood Phase 4 transportation report.

The boundary road will be Greenbank Road and Barnsdale Road and no screenlines are present within proximity to the site.

3.2 Time Periods

As the proposed development is composed of a mosque, the Friday midday Peak hour will be examined.

3.3 Horizon Years

The plus five years horizon year is 2031. As the traffic counts include the existing site, the future background and future total scenarios are combined in the same horizon.

4 Development-Generated Travel Demand

4.1 Mode Shares

Given that the site-generated trips are established directly from observed turning movement counts at the two existing site accesses, no mode share assumptions are required for this TIA. The turning movement counts were collected on Friday, August 21, 2026, and detailed turning movement count data is included in Appendix B.

4.2 Trip Generation

As requested by City Staff, turning movement counts were collected at the two existing site accesses to determine the site-generated trips. The existing site access traffic counts are illustrated in Section 4.3.

4.3 Trip Distribution and Assignment

The turning movement counts collected at the two existing site accesses establish the existing site trip distribution and assignment. Table 5 summarizes the existing trip distribution and assignment. Figure 12 illustrates the existing site access traffic counts, and Figure 13 illustrates the anticipated redistribution of site traffic with the proposed new access.

Table 5: Trip Distribution and Assignment

To/From	Via
North	87% Greenbank (N)
South	13% Greenbank (S)
Total	**100%**

Figure 12: Existing Site Access Traffic Counts- Friday Midday

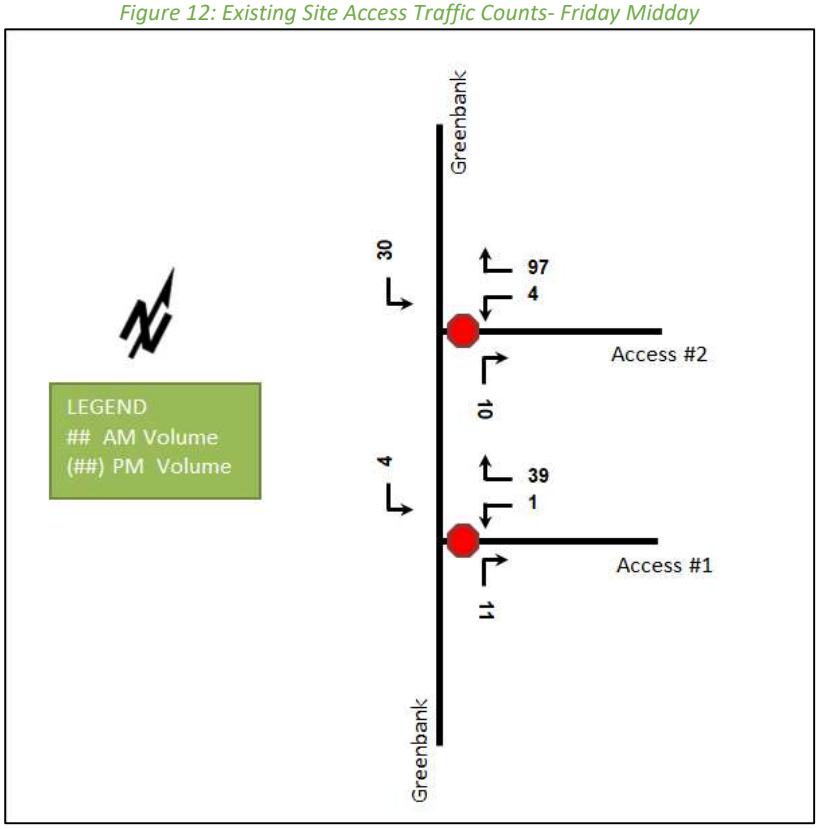
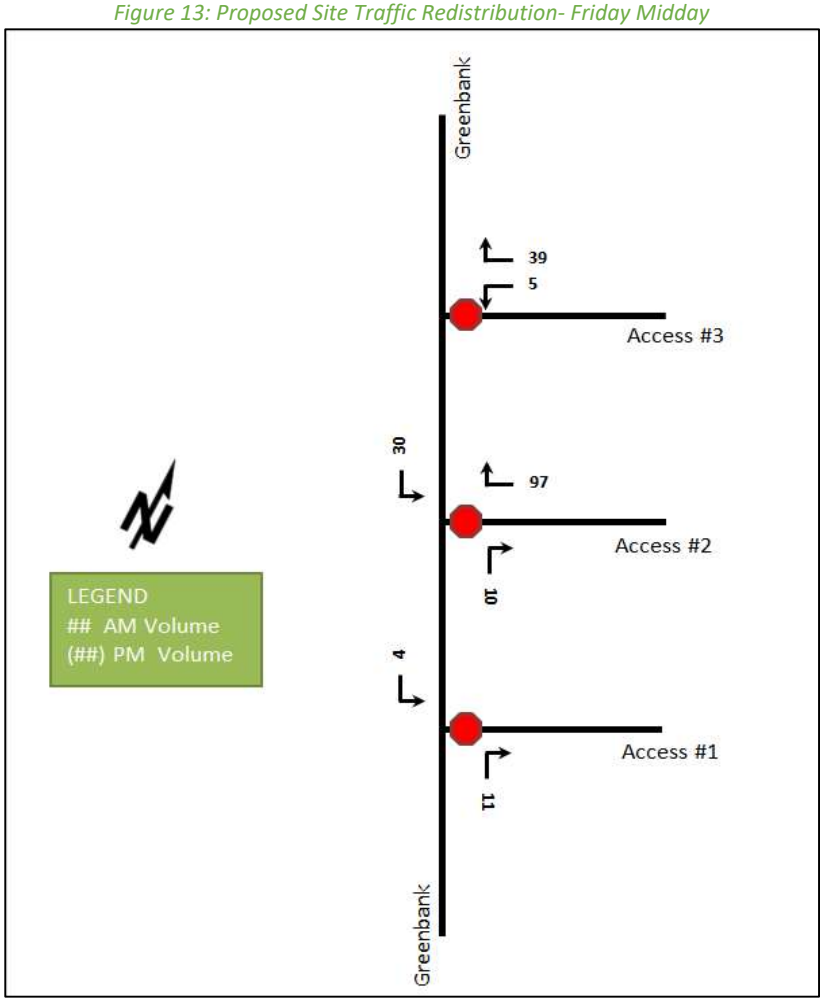


Figure 13: Proposed Site Traffic Redistribution- Friday Midday



5 Exemption Review

Table 6 summarizes the exemptions for this TIA.

Table 6: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Required
Boundary Street Design		All applications	Required
Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required
Network Impact			
Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered when the	Required

Module	Element	Explanation	Exempt/Required
		development generates more than 75 auto or transit trips	
Demand Rationalization		Only required when one or more other Network Impact Modules when the development generates more than 75 auto trips	Required
Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) 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 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced 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.	Exempt
Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Exempt
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Required
Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt
Intersection Design	4.4.1-2/4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Required
	4.4.3/4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Required

6 Development Design

6.1 Design for Sustainable Modes

The existing site currently operates as a mosque with surface parking areas located north, south, and west sides of the buildings. Building doorways are located on the north and south sides in conjunction with the parking areas. Existing walkways from east of the administrative building connect the building to the surface parking areas and facilitate pedestrian connection throughout the site. As part of the proposed modifications to the existing site, a new walkway is proposed west of the mosque building to further enhance pedestrian access to the building.

Greenbank Road has a rural cross-section with gravel shoulders and ditches on both sides. To the west of the Greenbank Road right-of-way, a pathway borders the stormwater facility and serves as an off-road facility adjacent to the site. No connection between the pathway and Greenbank Road currently exist.

6.1.1 Pedestrian Crossover Requirements

As no crossing of Greenbank Road is provided, a check of possible crossing options will be reviewed. According to the Ontario Traffic Manual (OTM) Book 12 Section 4.9, pedestrian crossovers (PXO) are intended for low to moderate volume, low speed roadways (60 km/h or less posted speed) and must not be used where road volume exceeds 35,000 AADT. PXO should not be installed at sites where there are heavy volumes of turning traffic or where there are more than four lanes of two-way traffic such as arterial roads. PXO should not be within 200 metres of other signal-protected pedestrian crossings. Parking and other sight obstructions should be prohibited within at least 30 metres of the crossings.

According to Ontario Traffic Manual (OTM) Book 15 Section 5.1.2, a location may be candidate for a PXO if the total 8-hour pedestrian volume crossing the main road at an intersection or midblock location during the highest pedestrian traffic hours is greater than 100 equivalent adult pedestrians and the 8-hour vehicular volume during the same time period is greater than 750 vehicles, and the distance of the site from the closest traffic control device is more than 200 metres. Alternatively, 4-hour thresholds of 65 equivalent adult pedestrians and 395 vehicle volumes may be used. Although the 4-hour pedestrian and vehicle volume thresholds are met at this location, the site is not more than 200 metres from the closest traffic control device. As noted in OTM Book 15, this spacing criterion is intended to avoid the proliferation of traffic control devices in close proximity which may result in incorrect driver decisions, increased collision risks for pedestrians and other road users, traffic flow disruptions, and reduced corridor level of service.

Overall, the pedestrian and vehicular volumes meet the thresholds and would support consideration of a PXO; however, given the road classification, posted speed limit, expected higher turning traffic volumes, and the close proximity to adjacent traffic control devices, implementation of a PXO is not recommended at the site access.

6.2 Alternative Crossing Locations

Given that a PXO is not permissible along Greenbank Road, the alternative controlled crossing options would include upgrading the intersection of Greenbank Road at Barnsdale Road to accommodate pedestrian crossings at the existing stop-controlled intersection or future signalization or upgrading the intersection of Greenbank Road at Cappamore Drive to an all-way stop control or signal condition to accommodate east-west pedestrian crossings. The signalization condition for both locations and the all-way stop-control at Cappamore Drive would be based on warrant analysis and are not currently met. The addition of crossings to the existing Greenbank Road at Barnsdale Road stop control would require facilities at each quadrant and connecting facilities along the adjoining roadways. Given the rural conditions, this is not feasible.

The planning context in the area has considered the intersection of Greenbank Road at Barnsdale Road within the Realigned Greenbank Road Environmental Assessment Study and it currently being reviewed as part of the Barnsdale Road Widening Environmental Assessment Study. The Realigned Greenbank Road Environmental Assessment Study outlined the protection for future widening for auxiliary lanes and signalization. As part of the Barrhaven South Future Neighborhood Phase 4, the intersection of Greenbank Road at Cappamore Drive is expected to become a four-legged intersection, and potential improvements and signalization will be reviewed as part of the development process.

While the warrants and infrastructure for the intersection improvements and pedestrian crossing opportunities are not available today, ongoing studies and future area projects are expected to gradually improve the mobility network for all users.

6.3 Circulation and Access

Vehicular Access to the site is provided via a 5.0-metre-wide one-way inbound access (Access #1), a 6.0-metre-wide two-way access (Access #2) with a left-out restriction, and a new 7.0-metre one-way outbound access (Access #3) on Greenbank Road. The accesses connect to the surface parking area. The site driveways meet the minimum width requirements of the Zoning By-Law. The garbage truck and emergency services can be accommodated on-site. The garbage trucks can access the site via Access #1 using the southbound left-turn movement and exit the site via Access #2 using the westbound right-turn movement. Garbage collection will occur within the drive aisle with bins being rolled out to the truck. Emergency service vehicles can access the site via either Access #1 or Access #2, circulate throughout the site and exit via Access #2. The fire route maintains a minimum width of 6.7 metres. Turning templates are provided in Appendix E.

7 Parking

7.1 Parking Supply

The existing site includes a total of 197 at grade vehicle parking spaces and six bicycle parking spaces.

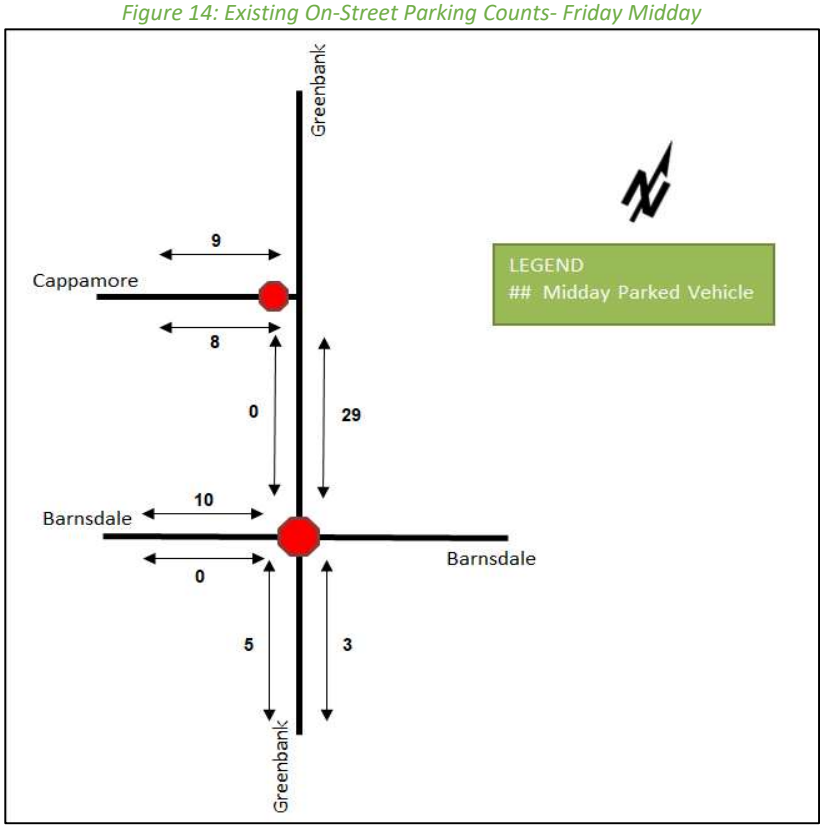
According to the Zoning By-Law for Area D, 10 spaces per 100 m^2 of gross floor area for place of worship is required resulting in the minimum need for 45 vehicle parking spaces. Therefore, the site meets the minimum requirements.

Seven accessible parking spaces are provided within the total site parking, which meets the minimum requirement of the Zoning By-Law.

According to the Zoning By-Law, the minimum bicycle parking provision is 1 space per 1,500 m^2 of gross floor for all other non-residential land uses is required. The site exceeds the minimum bicycle parking requirements.

To understand the on-street parking utilization within the study area, a parking survey was conducted on Friday, May 1, 2026, from 11:00 AM to 2:15 PM. The survey indicated that the critical peak hour for on-street parking utilization occurred between 1:00 PM to 2:00 PM. Figure 14 illustrates the existing Friday midday on-street parking counts. Detailed on-street parking count data is included in Appendix F.

Figure 14: Existing On-Street Parking Counts- Friday Midday



Along Cappamore Drive, between Greenbank Road and Cloyne Crescent, nine vehicles were parked on the north side of the road, of which five were parked within the non-compliant parking area subject to seasonal restrictions (April 1st to November 30th). On the south side, six vehicles were parked, of which two were parked within the non-compliant parking area. All other vehicles were parked in areas without parking restrictions. After 2:00 PM, the number of parked vehicles declined indicating that on-street parking demand is of relative short duration.

Along the north side of Cappamore Drive, between Greenbank Road and Cloyne Crescent, approximately 103 metres of on-street parking space is available, accommodating 13 parked vehicles. Along the south side, approximately 110 metres of on-street parking space is available, accommodating up to 14 parked vehicles. Based on the parking survey, residual capacity remains available along Cappamore Drive. Accordingly, the occurrence of non-compliant parking does not appear to be due to a shortage of parking supply.

Along Greenbank Road, between Cappamore Drive and Barnsdale Road, the available gravel shoulder area used for parking was fully utilized. South of Barnsdale Road, approximately 39 metres of gravel shoulder area is available along the west side of the roadway, with capacity to accommodate five parked vehicles. However, the available gravel shoulder area along the east side of the roadway is insufficient to accommodate parked vehicles based on the existing road cross-section.

Along Barnsdale Road, west of Greenbank Road, approximately 203 metres of gravel shoulder area is available along north side of the roadway, with capacity to accommodate approximately 27 parked vehicles. No space is available for parking along Barnsdale Road east of Greenbank Road. Accordingly, parking in this area may result in non-compliant parking conditions and potential safety concerns.

Given the existing site provides a total of 196 vehicle parking spaces, together with available on-street parking within the study area and considering the short duration of on-street parking utilization, the overall parking supply is theoretically possible to meet the demand generated by the site.

8 Boundary Street Design

Table 7 summarizes the MMLOS analysis for the boundary streets of Greenbank Road and Barnsdale Road. City of Ottawa typical cross-section for arterial road has been assumed for the future roadway of Barnsdale Road. Both roadways are within the "Suburban" area. The MMLOS worksheets has been provided in Appendix G.

Table 7: Boundary Street MMLOS Analysis

Segment	Condition	Pedestrian LOS		Bicycle LOS		Transit LOS		Public Realm LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Greenbank Road	Existing/Future	F	C	E	C	-	-	D	D
Barnsdale Road	Existing	F	C	E	C	-	-	E	E
	Future	C	C	C	C	-	-	B	B

Greenbank Road does not meet the pedestrian and bicycle LOS targets. To meet the pedestrian LOS target, either a 1.8-metre sidewalk with a 0.5-metre boulevard would be required, or a 1.8-metre sidewalk combined with a reduction in operating speed to 50 km/h. Given the presence of ditches and the rural conditions along Greenbank Road, the addition of sidewalks along the roadway is not considered feasible until the roadway is urbanized and including a stormwater management solution to support a sidewalk installation. It should also be noted that pedestrian demand currently exists along the east side of Greenbank Road, primarily associated with vehicles parked north of Cappamore Drive, as noted in Section 2.2.4. However, future urbanization of Greenbank Road as an arterial roadway, including the provision of sidewalks, is expected to eliminate on-street parking, which would accordingly reduce this pedestrian demand. While a sidewalk could potentially be provided along the site frontage, it would not connect to facilities due to grading constraints and property limitations opposite Cappamore Drive and to the north.

To meet the bicycle LOS target, one of the following options would be required: a 1.2-metre paved shoulder with a buffer and a 1.0-metre boulevard; a 1.2-1.49 paved shoulder with 0.5-0.99-metre boulevard; a 1.5-2.0-metre paved shoulder with 0.5-metre boulevard; or 1.5-1.99-metre paved shoulder without a buffer with the minimum level of separation; a 1.8-1.99-metre painted or physically separated bike lanes with a 1.0-metre boulevard and no vertical measure; a 1.5-1.79-metre or 1.8-metre contraflow bike lane with a 0.3-1.49 metre with vertical measure, or with 0.6-metre adjacent parking. As noted with the sidewalk considerations, additions of on-road facilities would reduce parking.

Barnsdale Road will not meet the pedestrian and bicycle LOS targets; however, the LOS targets will be met in the future conditions with a typical arterial cross-section for the future improvements.

9 Transportation Demand Management

9.1 Context for TDM

Considering the context of the existing development, TDM measures will be recommended to support achieving the mode share targets for the development.

9.2 Need and Opportunity

Given that the site-generated trips are already included in the existing Friday counts, the subject site has been assumed to rely predominantly on auto travel, and those assumptions have been carried through the analysis.

The study area intersections are anticipated to have residual capacity. Supporting TDM measures are recommended to encourage shifts toward sustainable modes and mitigate the risks associated with failing to meet mode share targets.

9.3 TDM Program

The suite of TDM measures has been summarized in the TDM checklists for the mosque. The checklist is provided in Appendix H. The key TDM measures include:

- Designate an internal coordinator, or contract with an external coordinator to manage parking and walking-related operations
- Designated pedestrian crossing guard
- Making regular announcements before prayer begins to inform attendees about site access, parking rules, proper pedestrian crossing safety practices
- Include multimodal travel option information in invitation or advertising that attract visitors

10 Background Network Travel Demands

10.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3 and will be considered in the analysis.

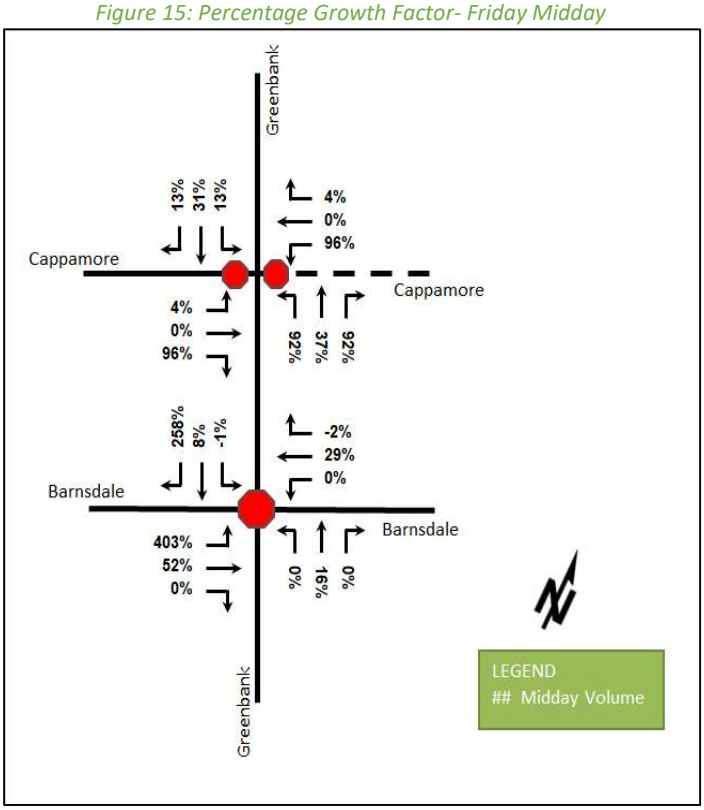
10.2 Background Growth

Given that all background developments within Barrhaven South have been taken into account and would account for the majority of growth in the area, the growths along study area roadway are assumed to be captured within the background development; therefore, no annual growth rate will be applied on study area roadways.

10.3 Other Developments

The study area developments were discussed in Section 2.3.4 and will be considered in the analysis. To develop the 2031 future total horizon volumes for the Friday midday peak, the Barrhaven South Future Neighbourhoods Phase 3 Transportation Study and historical 2024 traffic counts were compared to generate a conversion factor for the forecasted PM peak background volumes. The conversion factor is calculated from the 2026 Friday midday and weekday PM peak hours, and this factor converts the 2031 future background PM peak hour volumes to a 2031 future background Friday midday peak hour. In addition to the peak hour conversion factor, the assumption of the Barrhaven South Future Neighbourhoods Phase 4 build-out was included, totalling a build-out of 50% by 2031. These trips are included within the conversion factor and on the east leg of the intersection of Greenbank Road at Cappamore Drive. Figure 15 illustrates the calculated conversion factor to approximate the Friday midday peak growth to 2031.

Figure 15: Percentage Growth Factor- Friday Midday



11 Demand Rationalization

11.1 2031 Future Intersection Operations

Figure 16 illustrates the 2031 future total volumes and Table 8 summarizes the 2031 future total intersection operations. The level of service is based on average delay for unsignalized intersections. The synchro worksheets for the 2031 horizon are provided in Appendix I.

Figure 16: 2031 Future Total Volumes- Friday Midday

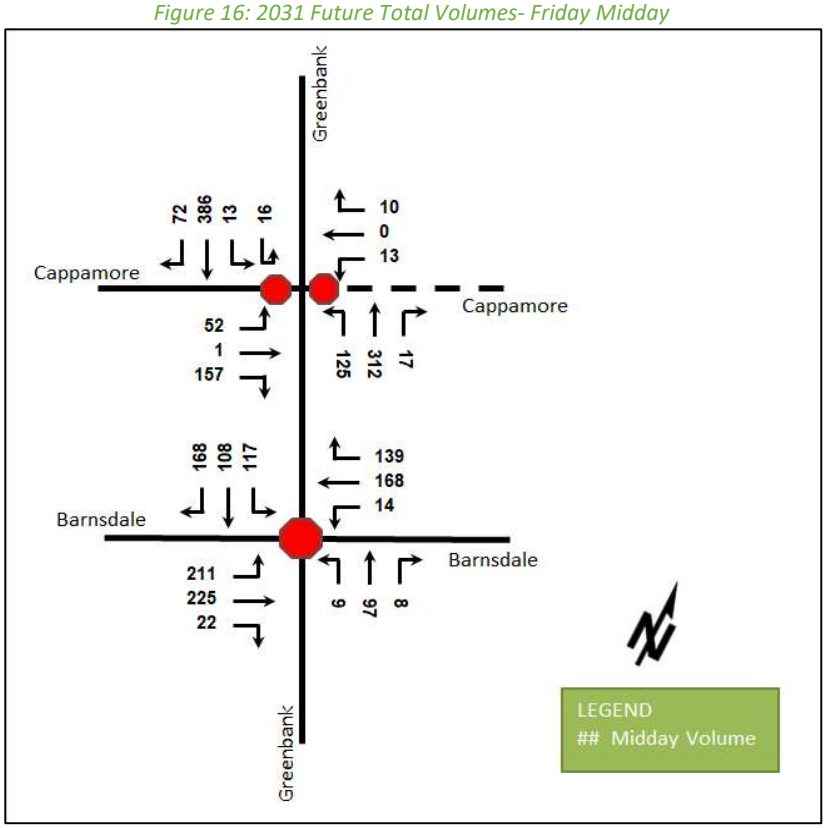


Table 8: 2031 Future Total Intersection Operations- Friday Midday

Intersection	Lane	Midday Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)
Greenbank Road at Cappamore Drive *Unsignalized*	EB	D	0.58	28.1	26.3
	WB	D	0.14	29.3	3.8
	NB	A	0.12	8.8	3.0
	SB	A	0.02	8.0	0.8
	Overall	**A**	-	**6.7**	-
Greenbank Road at Barnsdale Road *Unsignalized*	EB	D	0.83	33.6	63.0
	WB	C	0.59	18.7	28.5
	NB	B	0.25	13.5	7.5
	SB	C	0.72	24.5	43.5
	Overall	**D**	-	**25.3**	-

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

During the Friday midday peak hour, the study area intersections at the 2031 future conditions operate acceptably. No capacity issues are noted.

Given that the intersection of Greenbank Road at Cappamore Drive experiences the highest traffic volumes and operates acceptably, the site access intersections are also expected to operate acceptably without operational issues.

11.2 Transit Priority

Site traffic has negligible impact on transit movements throughout the study area. All intersections' transit LOS scores will be the same between the background and total conditions. No capacity issues were noted.

12 Access Intersection Design

12.1 Location and Design of Access

The existing site accesses on Greenbank Road will be maintained as a one-way inbound (Access #1) and two-way with a left-out restriction (Access #2). A new one-way outbound access (Access #3) is also proposed on Greenbank Road. Access #1, Access #2, and Access #3 are located approximately 53.0 metres, 93.0 metres, and 145.0 metres from Barnsdale Road, respectively. The Geometric Design Guide for Canadian Roads (TAC, 2017) suggests minimum corner clearance value for driveways of 35.0 metres along arterial road and thus the site access meets this guideline. The access meets the 3.0 metre offset requirement from the adjacent property line, and 45.0 metres offset requirement from the adjacent road right-of-way from the Private Approach By-Law.

According to the Private Approach By-Law, the maximum number of vehicular accesses permitted on a frontage between 150 and 240 metres, is either two two-way accesses or one two-way access and two one-way accesses. Therefore, the proposed access configuration meets the maximum number of vehicular accesses permitted by the By-Law.

Access #1 is 5.0-metre-wide at its typical dimension and 12.0 metres at the curb line, Access #2 is 6.0-metre-wide at its typical dimension and 12.6 metres at the curb line, and Access #3 is 7.0-metre-wide at its typical dimension and 19.0 metres at the curb line with corner radii of 6.0 metres. The maximum width of a two-way access from the private Approach By-Law is 9.0 metres at the highway line and 19.0 metres in width at the curb line or roadway edge. Therefore, the site driveways meet the private Approach By-Law width requirements.

The throat length at Access #1 and Access #2 to the first on-site conflict is approximately 13.0 metres. According to the TAC Geometric Design Guidelines, no minimum clear throat length is specifically recommended for a mosque or similar land use. Based on the inbound auto trips at site accesses during the Friday midday peak hour, 40 inbound auto trips were observed at Access #1 and 15 inbound auto trips at Access #2, corresponding to an average of approximately one vehicle arriving every 1.5 minutes at Access #1 and every 4 minutes at Access #2. Given the presence of an internal parking coordinator and the existing throat length, which can accommodate one vehicle, the current throat lengths are considered sufficient. Access #3 is proposed to operate as outbound only.

12.1.1 Intersection MMLOS

All study area intersections are unsignalized intersections, therefore, no MMLOS is required.

12.1.2 Recommended Design Elements

No study area intersection design elements are proposed for the network intersections as part of this study.

13 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The existing site includes a one-story administrative building occupying approximately 400 sq. m of the site and a mosque structure occupying approximately 450 sq. m of the site

- The current use of the development is a mosque
- The proposed access configuration on Greenbank Road includes the existing southern access as a one-way inbound only access, the existing central access as a two-way access with outbound left-turns restricted, and a new one-way outbound access at the northern property limits

TIA Screening and Exemptions

- The site plan application is for the existing site
- The exemption review for the TIA did not require new street networks, neighbourhood traffic calming review, transit review, and network concept review

Existing Conditions

- Greenbank Road and Barnsdale Road are arterial roads, and Cappamore Drive is a collector road in the study area
- Sidewalks are provided along both sides of Cappamore Drive and east side of Greenbank Road north of Kilbirnie Drive
- Cycling facilities include a bike lane is present on the east side of Greenbank Road north of Kilbirnie Drive, while a multi-use pathway is present on the west side and cycletracks are provided along both sides of Cappamore Drive
- During the Friday midday peak hour, the study area intersections operate acceptably
- The collisions were clustered throughout the day, and no angle and turning movement collisions were noted on Friday during the peak operating hours of the mosque
- Only one rear end collision was noted on Friday during the peak operating hours of the mosque
- Angle and turning movement collisions may be associated with drivers failing to obey stop-control requirements and rear end collisions may be associated with congestion in the westbound direction

Planned Conditions

- Southwest Transitway median BRT from Barrhaven Centre Station to Kilbirnie Station is identified as a transit priority project within the TMP Transit Network
- Greenbank Road Re-Alignment and Widening between Chapman Mills Drive and Cambrian Road is identified a committed road project, Greenbank Road Re-Alignment including new two-lane road from Cambrian Road to Barnsdale Road is identified as priority road projects, and Barnsdale Road Widening from Highway 416 to Greenbank Road Extension is identified as need-based road project within the TMP Road Network
- The interim conditions of the Highway 416/Barnsdale Road interchange is expected to be completed by 2029

Development Generated Travel Demand

- Turning movement counts were collected at the two existing site accesses to determine the site-generated trips
- The existing traffic counts indicate that the site generates 196 two-way vehicle trips during the Friday midday peak hour
- The turning movement counts collected at the two site accesses establish the existing site trip distribution and assignment
- Of the existing trips, 87% travel to/from the north and 13% travel to/from the south

- The outbound site traffic is expected to be redistributed due to the modified existing accesses and the proposed new access

Development Design

- Surface parking areas are located north, south, and west sides of the buildings
- Building doorways are located on the north and south sides in conjunction with the parking areas
- Existing walkways from east of the administrative building connect the building to the surface parking areas and facilitate pedestrian connection throughout the site
- As part of the proposed modifications to the existing site, a new walkway is proposed west of the mosque building to further enhance pedestrian access to the building
- To the west of the Greenbank Road right-of-way, a pathway borders the stormwater facility and serves as an off-road facility adjacent to the site
- No connection between the pathway and crossing Greenbank Road currently exists
- Given the road classification, posted speed limit, expected higher turning traffic volumes, and the close proximity to existing traffic control devices, implementation of a PXO is not recommended at the site access
- While the warrants and infrastructure for the intersection improvements and pedestrian crossing opportunities at the intersections of Greenbank Road at Cappamore Drive and Greenbank Road at Barnsdale Road are not available today, ongoing studies and future area projects are expected to gradually improve the mobility network for all users
- The garbage trucks can access the site via Access #1 using the southbound left-turn movement and exit the site via Access #2 using the westbound right-turn movement and garbage collection will occur on the drive aisle
- Emergency service vehicles can access the site via either Access #1 or Access #2, circulate throughout the site and exit via either Access #2 or Access #3 and the fire route maintains a minimum width of 6.7 metres

Parking

- The existing site includes a total of 197 at grade vehicle parking spaces and six bicycle parking spaces
- The site meets the minimum parking requirements for Area D
- The site exceeds the minimum bicycle parking requirements
- Given the existing site provides a total of 197 vehicle parking spaces, together with available on-street parking within the study area and considering the short duration of on-street parking utilization, the overall parking supply is expected to be sufficient to meet the demand generated by the existing site

Boundary Street Design

- Greenbank Road will not meet the pedestrian and bicycle LOS targets in the existing and future conditions
- To meet the pedestrian LOS target, either a 1.8-metre sidewalk with a 0.5-metre boulevard would be required, or a 1.8-metre sidewalk combined with a reduction in operating speed to 50 km/h
- Given the presence of ditches and the rural conditions along Greenbank Road, the addition of sidewalks along the roadway is not considered feasible until the roadway is urbanized and including a stormwater management solution to support a sidewalk installation
- While a sidewalk could potentially be provided along the site frontage, it would not connect to facilities due to grading constraints and property limitations opposite Cappamore Drive and to the north

- To meet the bicycle LOS target, one of the following options would be required: a 1.2-metre paved shoulder with a buffer and a 1.0-metre boulevard; a 1.2-1.49 paved shoulder with 0.5-0.99-metre boulevard; a 1.5-2.0-metre paved shoulder with 0.5-metre boulevard; or 1.5-1.99-metre paved shoulder without a buffer with the minimum level of separation; a 1.8-1.99-metre painted or physically separated bike lanes with a 1.0-metre boulevard and no vertical measure; a 1.5-1.79-metre or 1.8-metre contraflow bike lane with a 0.3-1.49 metre with vertical measure, or with 0.6-metre adjacent parking
- Barnsdale Road will not meet the pedestrian and bicycle LOS targets in the existing conditions; however, the LOS targets will be met in the future conditions with a typical arterial cross-section for the future improvements

TDM

- TDM measures to be included within the existing development include:
  - Designate an internal coordinator, or contract with an external coordinator to manage parking and walking-related operations
  - Designated pedestrian crossing guard
  - Making regular announcements before prayer begins to inform attendees about site access, parking rules, proper pedestrian crossing safety practices
  - Include multimodal travel option information in invitation or advertising that attract visitors

Background Conditions

- Given that all background developments within Barrhaven South have been accounted for and are expected to capture the majority of area growth, no annual growth rate has been applied to study area roadways
- Based on 2031 future total horizon from Barrhaven South Future Neighbourhoods Phase 3 Transportation Study and historical 2024 traffic counts, percentage growth for each movement has been calculated and applied to the 2026 Friday midday peak hour volumes
- During the Friday midday peak hour, the study area intersections at the 2031 future background/future total conditions operate acceptably
- Given that the intersection of Greenbank Road at Cappamore Drive experiences the highest traffic volumes and operates acceptably, the site access intersections are also expected to operate acceptably without operational issues

Transit

- No specific transit priority measures were considered as part of this development

Intersection Design

- Access #1 is 5.0-metre-wide at its typical dimension and 12.0 metres at the curb line, Access #2 is 6.0-metre-wide at its typical dimension and 12.6 metres at the curb line, and Access #3 is 7.0-metre-wide at its typical dimension and 19.0 metres at the curb line
- The site accesses meet the offset requirement from the adjacent property line and from the adjacent road right-of-way from the Private Approach By-Law
- The proposed access configuration meets the maximum number of vehicular accesses permitted by the Private Approach By-Law

- The current throat lengths are considered sufficient, and corner clearance meets the TAC suggested minimum values

14 Conclusion

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

Prepared By:

Reihaneh Azhdar

Reihaneh Azhdar
Transportation Engineering, Intern

Reviewed By:



Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2023 Revisions to 2017 TIA Guidelines
Step 1 - Screening Form

Date: 2026-05-28
Project Number: 2026-075
Project Reference: MAC 3971 Greenbank

1.1 Description of Proposed Development	
Municipal Address	3971 Greenbank Road
Description of Location	Northeast quadrant of Greenbank Rd at Barnsdale Rd intersection
Land Use Classification	Rural Countryside Zone
Development Size	a 400 sq.m one-story administrative building and an adjacent structure occupying approximately 450 sq. m of the site serving as a mosque
Accesses	Two full-movement accesses on Greenbank Rd
Phase of Development	-
Buildout Year	Application for the existing site
TIA Requirement	No TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Other-Mosque	
Development Size	4,844	G.F.A.
Trip Generation Trigger	No	The site-generated trips are already included in the existing Friday counts

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No
Location Trigger	No

1.4. Safety Triggers		
Are posted speed limits on a boundary street 80 km/hr or greater?	No	Posted speed limit on Greenbank Rd is 60 km/h north of Barnsdale Rd and 80 km/h south of Barnsdale Rd
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	No	
Is the proposed driveway within auxiliary lanes of an intersection?	No	
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	No	
Does the development include a drive-thru facility?	No	
Safety Trigger	No	

Certification Form for TIA Study PM

TIA Plan Reports

On April 14, 2022, the Province's Bill 109 received Royal Assent providing legislative direction to implement the More Homes for Everyone Act, 2022 aiming to increase the supply of a range of housing options to make housing more affordable. Revisions have been made to the TIA guidelines to comply with Bill 109 and streamline the process for applicants and staff.

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

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

CERTIFICATION

- ☑ I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines; (Update effective July 2023)
- ☑ I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
- ☑ I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
- ☑ I am either a licensed or registered[1] professional in good standing, whose field of expertise
  - ☑ is either transportation engineering
  - ☐ or transportation planning.

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

City Of Ottawa
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th fl.
Ottawa, ON
K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Revision Date: June 2023

Dated at Ottawa (City) this 17 day of August , 20 23 .

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa

Signature of individual certifier that s/he/they meet the above criteria

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa, K2H 7W1
Telephone / Extension: 613-697-3797
Email Address: andrew.harte@cghtransportation.com

Stamp



Revision Date: June 2023

Appendix B

Turning Movement Counts

Turning Movement Count

Summary Report Including AM, OFF Peak and PM Peak Hours Including PHF

All Vehicles Except Bicycles and Personal E-Transportation



Barnsdale Road & Greenbank Road — Nepean, ON

Survey Date: Friday, 1 May 2026 **Start Time:** 1100 **AADT Factor:** 0.8

Weather AM: Mostly Sunny +1° C **Survey Duration:** 4 Hrs. **Survey Hours:** 1100-1500

Weather PM: Mostly Sunny +10° C **Surveyor(s)** J. Mousseau

	Barnsdale Rd. Eastbound					Barnsdale Rd. Westbound						Greenbank Rd. Northbound					Greenbank Rd. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
1100-1200	26	121	16	0	**163**	4	129	89	0	**222**	**385**	14	62	4	0	**80**	123	106	44	0	**273**	**353**	**738**
1200-1300	57	125	14	0	**196**	6	133	145	0	**284**	**480**	7	68	2	0	**77**	131	103	37	0	**271**	**348**	**828**
1300-1400	42	148	22	0	**212**	14	130	142	0	**286**	**498**	9	84	8	0	**101**	118	100	47	1	**266**	**367**	**865**
1400-1500	73	186	16	0	**275**	16	152	187	0	**355**	**630**	16	99	9	0	**124**	162	112	58	0	**332**	**456**	**1086**
Totals	**198**	**580**	**68**	**0**	**846**	**40**	**544**	**563**	**0**	**1147**	**1993**	**46**	**313**	**23**	**0**	**382**	**534**	**421**	**186**	**1**	**1142**	**1524**	**3517**

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

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the 12-hour totals by the AADT factor of: **0.8**

AADT 12 Hr	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**n/a**	**n/a**

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

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

AADT and Expansion Factors provided by the City of Ottawa

AM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
N/A	0	0	0	0	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**0**
OFF Peak Hour Factor ➡ 0.91												**Highest Hourly Vehicle Volume Between 1000h & 1500h**										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1400-1500	73	186	16	0	**275**	16	152	187	0	**355**	**630**	16	99	9	0	**124**	162	112	58	0	**332**	**456**	**1086**
PM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 1500h & 1900h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
N/A	0	0	0	0	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**0**

Comments:

School buses comprise 17.97% of the heavy vehicle traffic.

Notes:

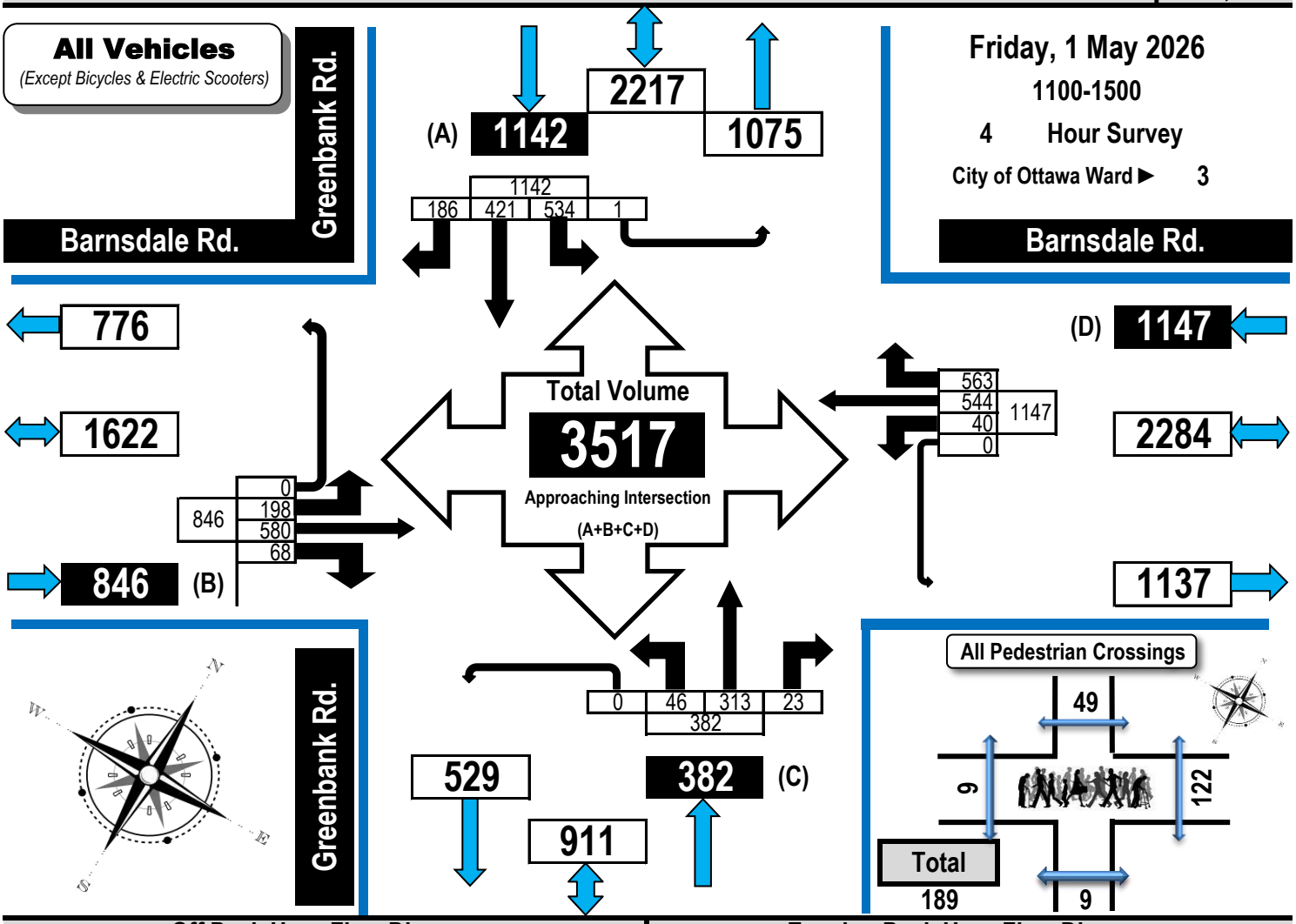
1. Includes all vehicle types except bicycles and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles and Personal E-Transportation

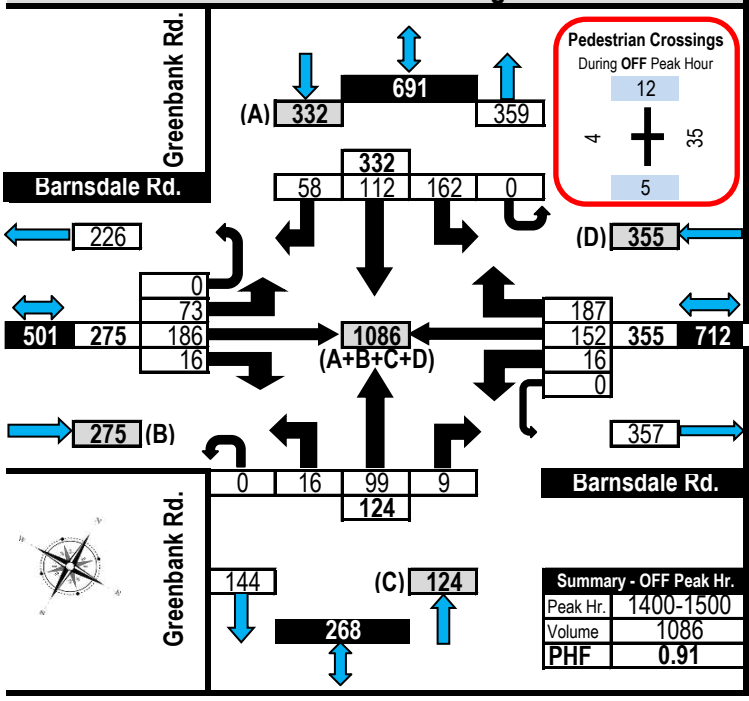
Barnsdale Road & Greenbank Road — Nepean, ON

All Vehicles *(Except Bicycles & Electric Scooters)*

Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3

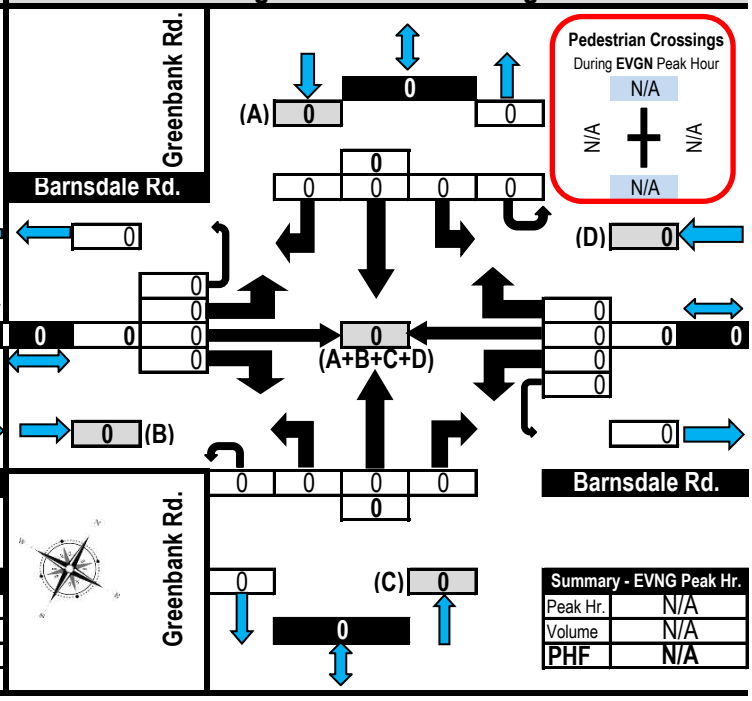


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1400-1500
Volume	1086
PHF	0.91

Evening Peak Hour Flow Diagram



Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

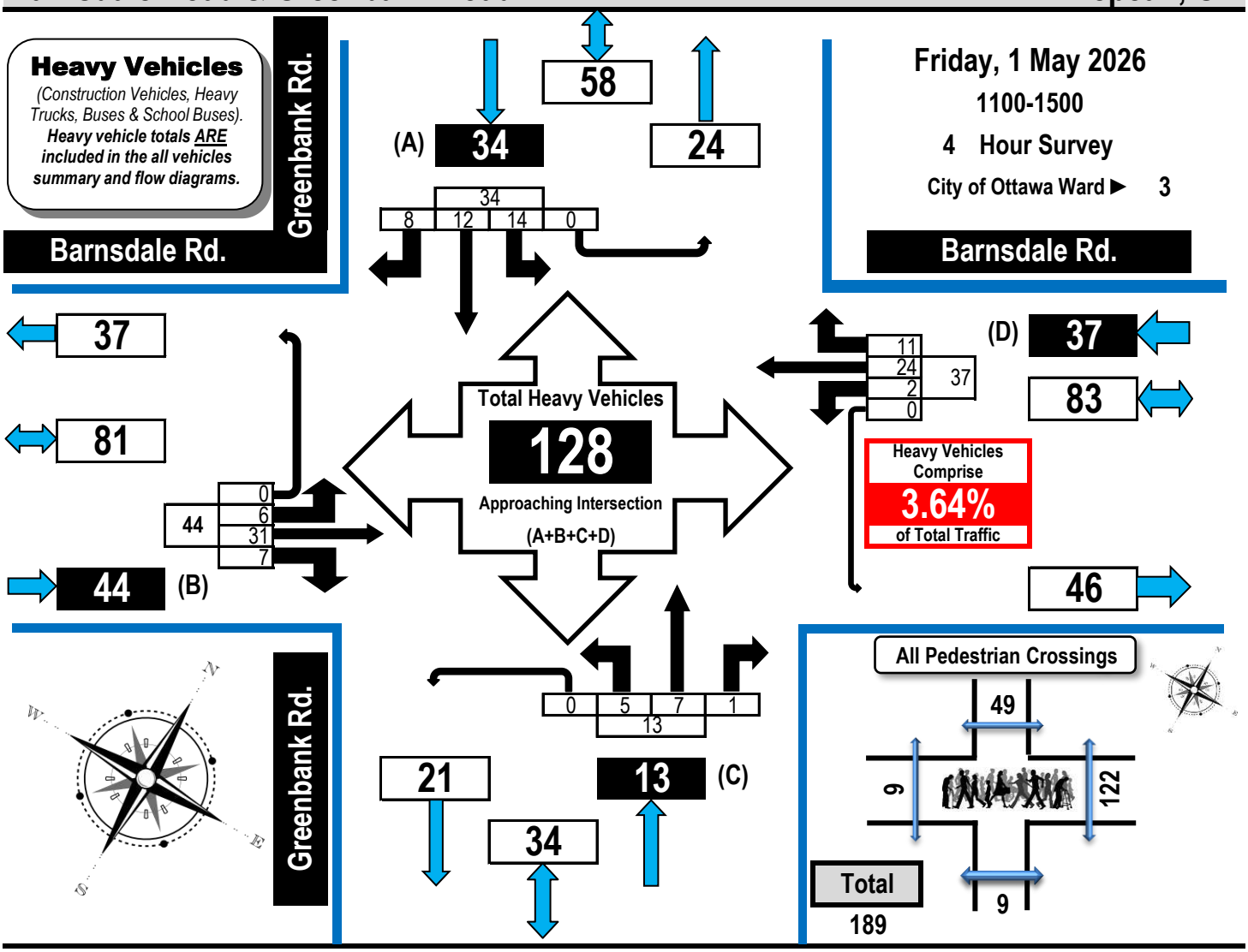
Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4-13)
Flow Diagram



Barnsdale Road & Greenbank Road — **Nepean, ON**

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

Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3



	Barnsdale Rd.					Barnsdale Rd.					Greenbank Rd.					Greenbank Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	1	10	3	0	14	1	5	2	0	8	2	1	0	0	3	3	1	1	0	5	30
1200-1300	2	3	1	0	6	1	6	1	0	8	1	3	0	0	4	2	4	2	0	8	26
1300-1400	0	8	2	0	10	0	9	4	0	13	1	1	0	0	2	2	3	1	0	6	31
1400-1500	3	10	1	0	14	0	4	4	0	8	1	2	1	0	4	7	4	4	0	15	41
Totals	6	31	7	0	44	2	24	11	0	37	5	7	1	0	13	14	12	8	0	34	128

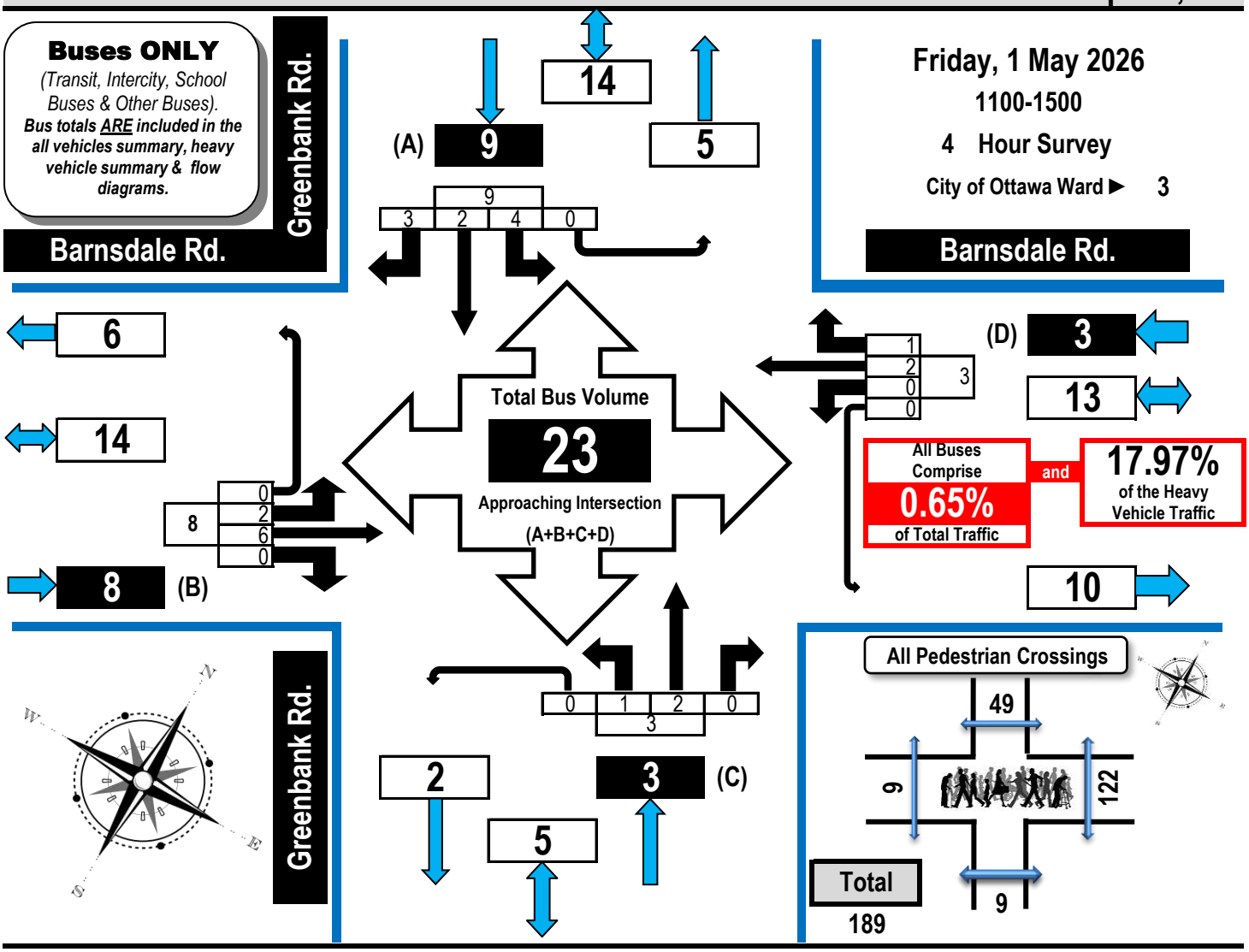
Turning Movement Count
All Buses Summary (FHWA Class 4 ONLY)
Flow Diagram



Barnsdale Road & Greenbank Road — Nepean, ON

Buses ONLY
(Transit, Intercity, School Buses & Other Buses).
Bus totals ARE included in the all vehicles summary, heavy vehicle summary & flow diagrams.

Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3

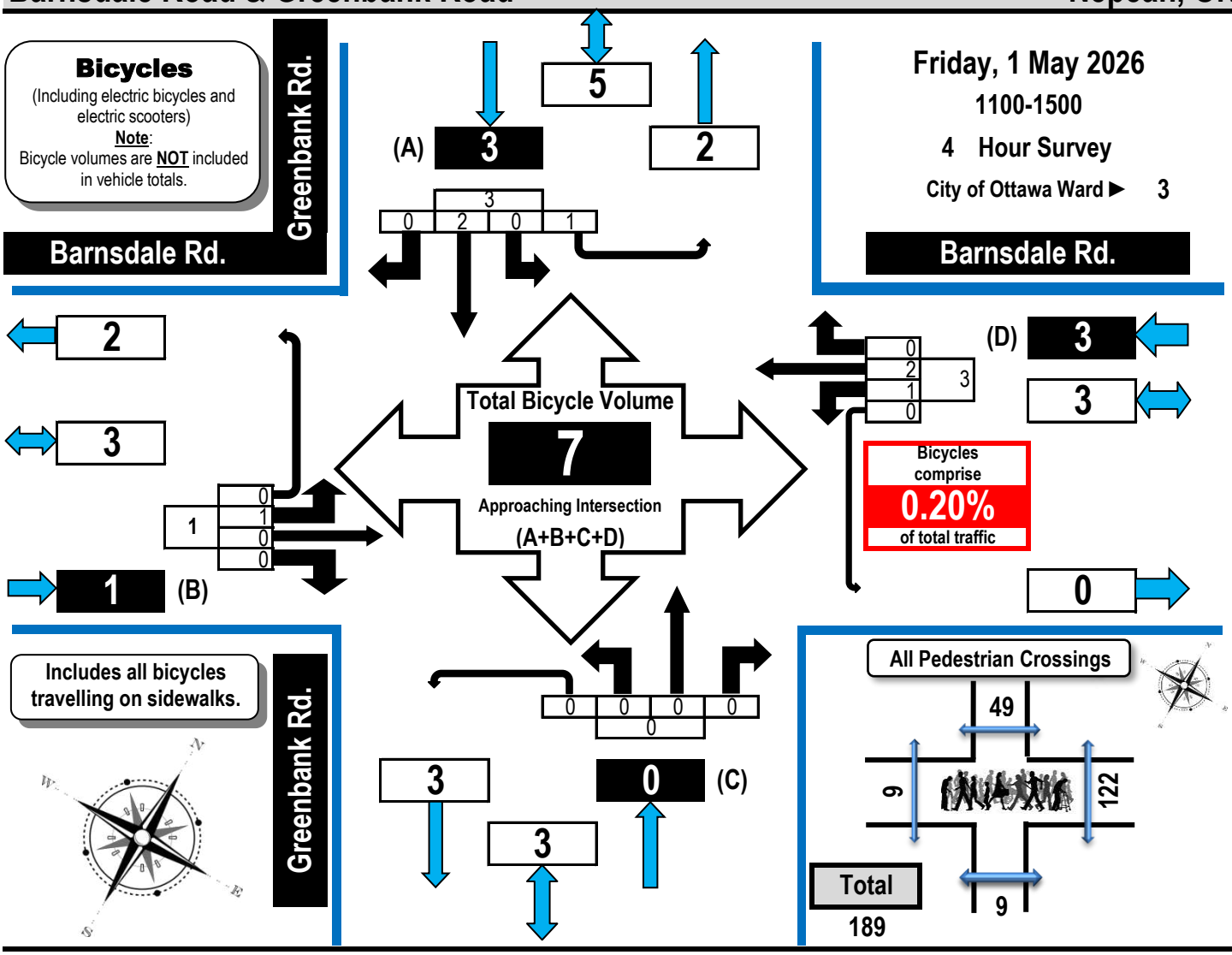


	Barnsdale Rd.					Barnsdale Rd.					Greenbank Rd.					Greenbank Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
1200-1300	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
1300-1400	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	4
1400-1500	1	4	0	0	5	0	0	1	0	1	1	1	0	0	2	4	1	1	0	6	14
Totals	2	6	0	0	8	0	2	1	0	3	1	2	0	0	3	4	2	3	0	9	23

Turning Movement Count
Bicycles and Personal E-Transportation Summary
Flow Diagram



Barnsdale Road & Greenbank Road — Nepean, ON



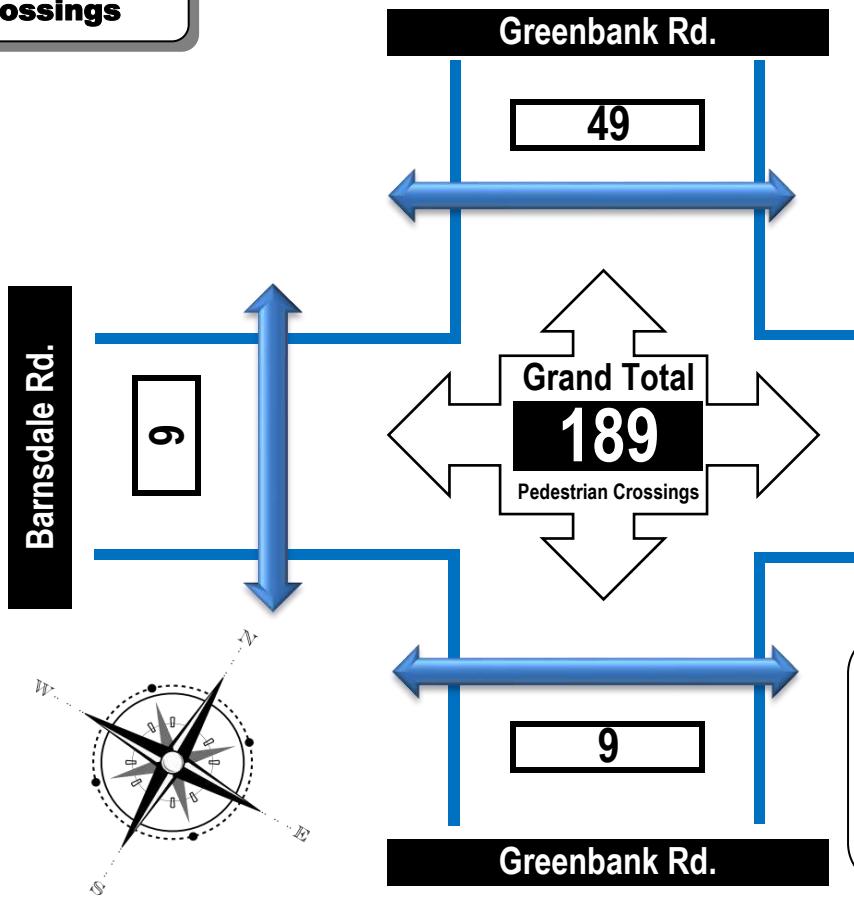
	Barnsdale Rd. Eastbound					Barnsdale Rd. Westbound					Greenbank Rd. Northbound					Greenbank Rd. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
1200-1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1300-1400	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1400-1500	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	0	0	0	1	1	4
Totals	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	0	2	0	1	3	7

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Barnsdale Road & Greenbank Road — Nepean, ON

Pedestrian Crossings

Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ► 3



Note

*The values in the summary table below and the flow diagram represent the number of pedestrian crossings **NOT** the number of individual pedestrians crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Barnsdale Rd.	East Side Crossing Barnsdale Rd.	Street Total	South Side Crossing Greenbank Rd.	North Side Crossing Greenbank Rd.	Street Total	Grand Total
0700-0800	0	0	0	0	0	0	0
0800-0900	0	0	0	0	0	0	0
0900-1000	0	0	0	0	0	0	0
1000-1100	0	0	0	0	0	0	0
1100-1200	0	0	0	0	0	0	0
1200-1300	1	6	7	0	3	3	10
1300-1400	4	81	85	4	34	38	123
1400-1500	4	35	39	5	12	17	56
1500-1600	0	0	0	0	0	0	0
1600-1700	0	0	0	0	0	0	0
1700-1800	0	0	0	0	0	0	0
1800-1900	0	0	0	0	0	0	0
Totals	**9**	**122**	**131**	**9**	**49**	**58**	**189**

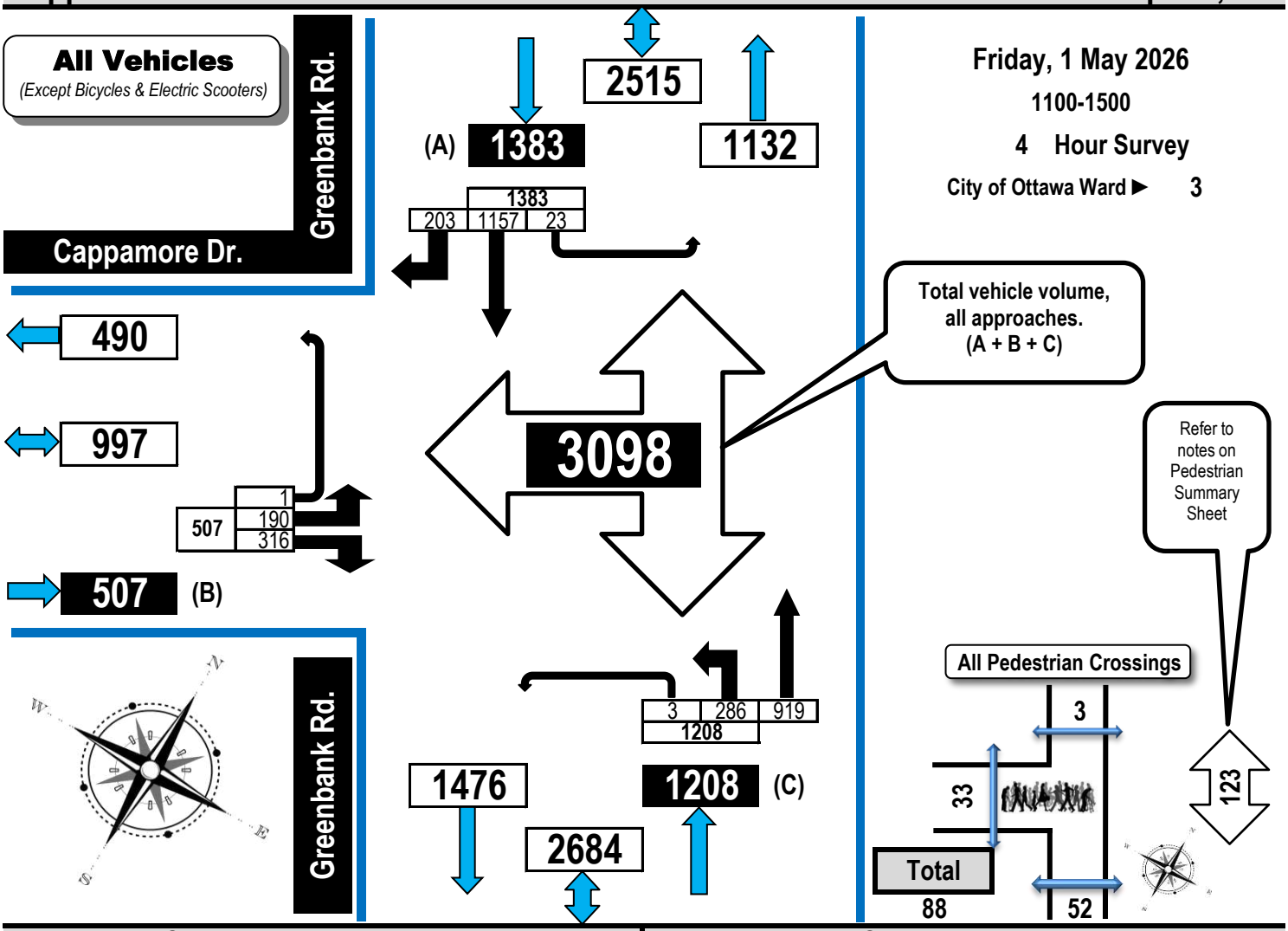
Comments:
School buses comprise 17.97% of the heavy vehicle traffic.

Turning Movement Count
Summary, OFF and EVGN Peak Hour Flow Diagrams
All Vehicles Except Bicycles and Personal E-Transportation

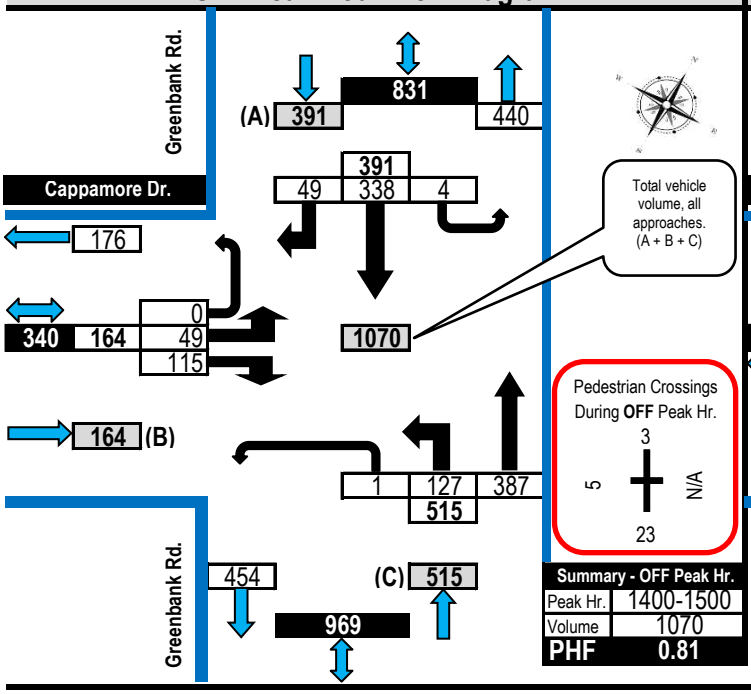
Cappamore Drive & Greenbank Road — Nepean, ON

All Vehicles
(Except Bicycles & Electric Scooters)

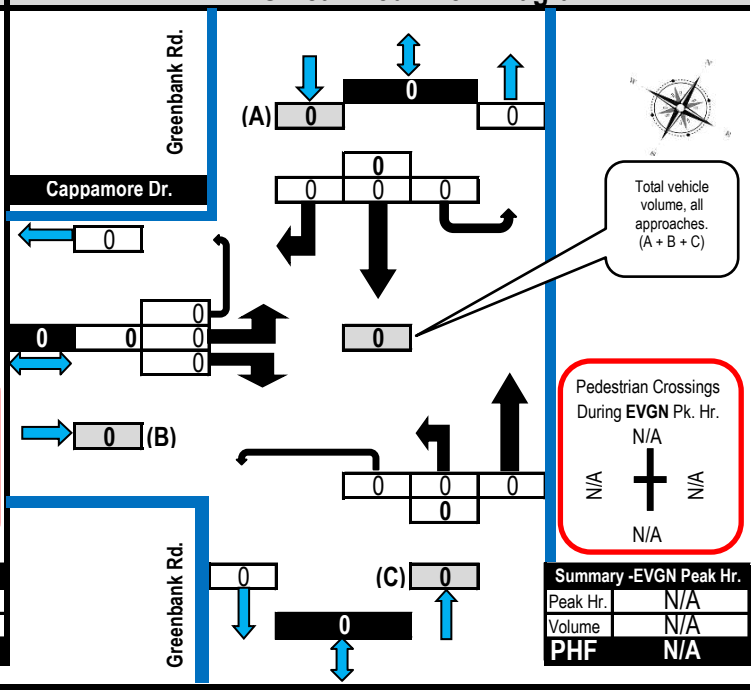
Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3



OFF Peak Hour Flow Diagram



EVENING Peak Hour Flow Diagram



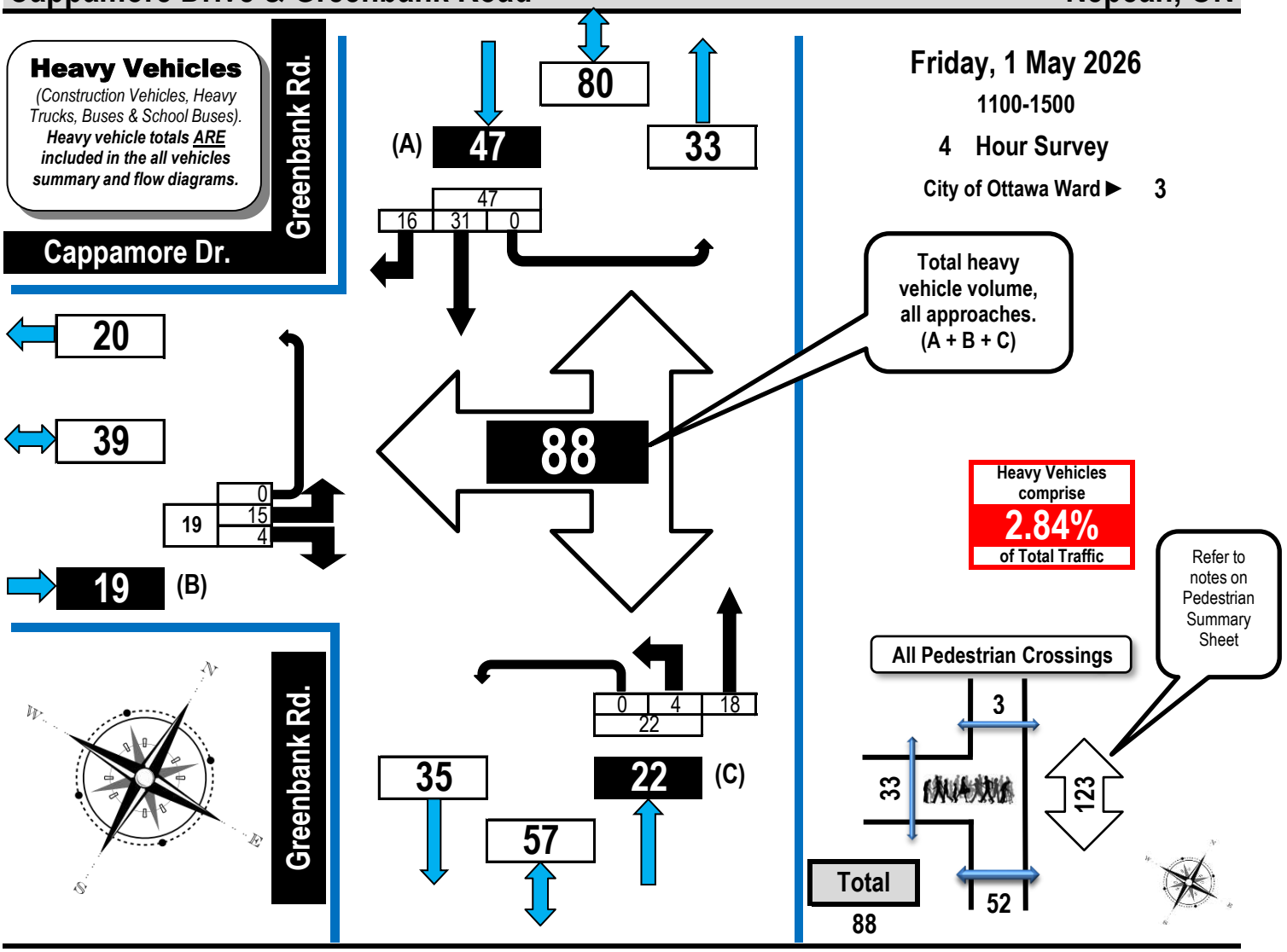
Turning Movement Count
Heavy Vehicle Summary (FHWA Class 4 to 13)
Flow Diagram



Cappamore Drive & Greenbank Road — **Nepean, ON**

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

Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3

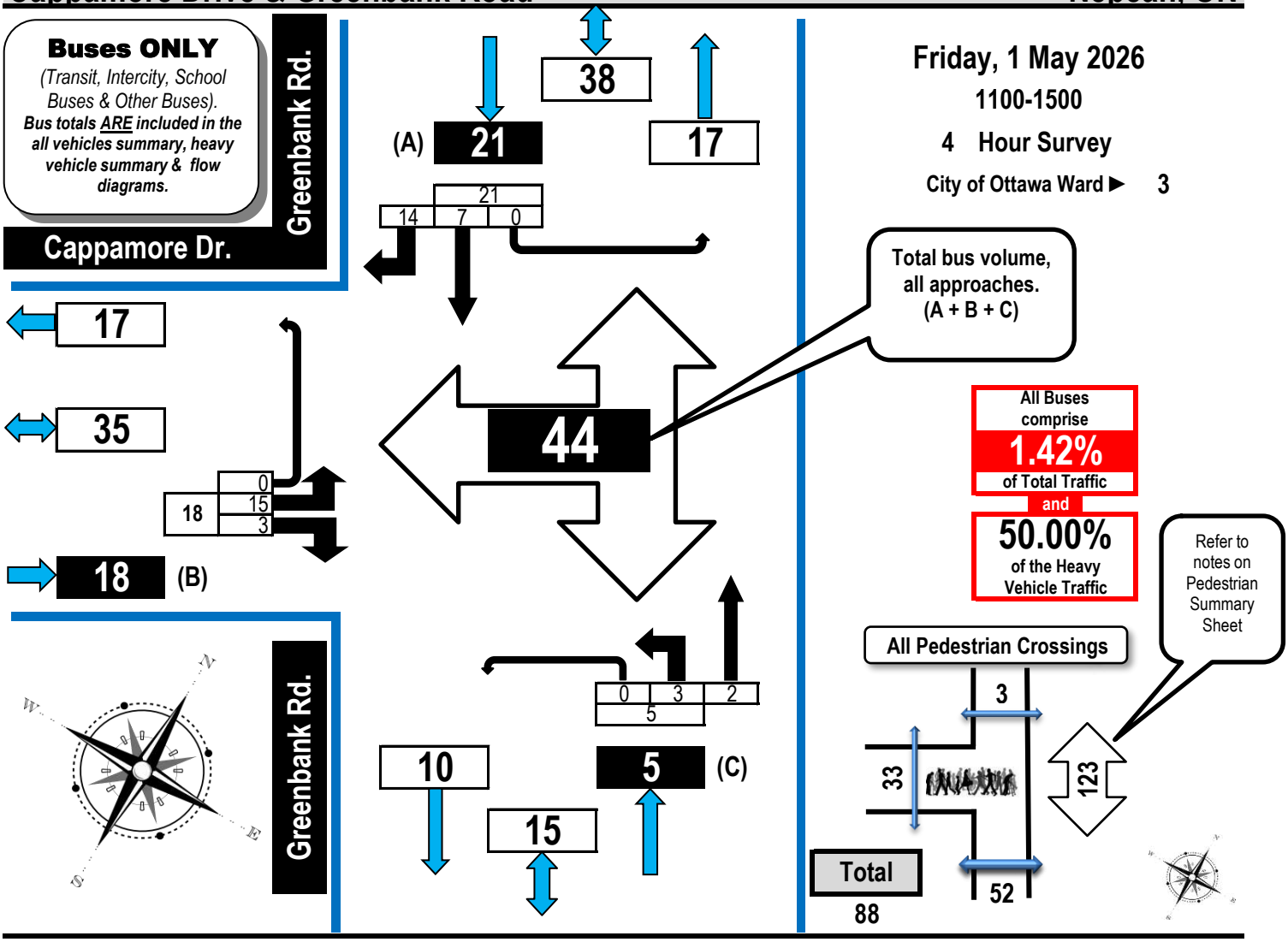


	Cappamore Dr.					N/A					Greenbank Rd.					Greenbank Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	4		1	0	5						1	3		0	4		4	4	0	8	17
1200-1300	4		1	0	5						1	5		0	6		7	4	0	11	22
1300-1400	2		0	0	2						1	2		0	3		6	3	0	9	14
1400-1500	5		2	0	7						1	8		0	9		14	5	0	19	35
Totals	15		4	0	19						4	18		0	22		31	16	0	47	88

Turning Movement Count
All Buses Summary (FHWA Class 4 ONLY)
Flow Diagram



Cappamore Drive & Greenbank Road — Nepean, ON

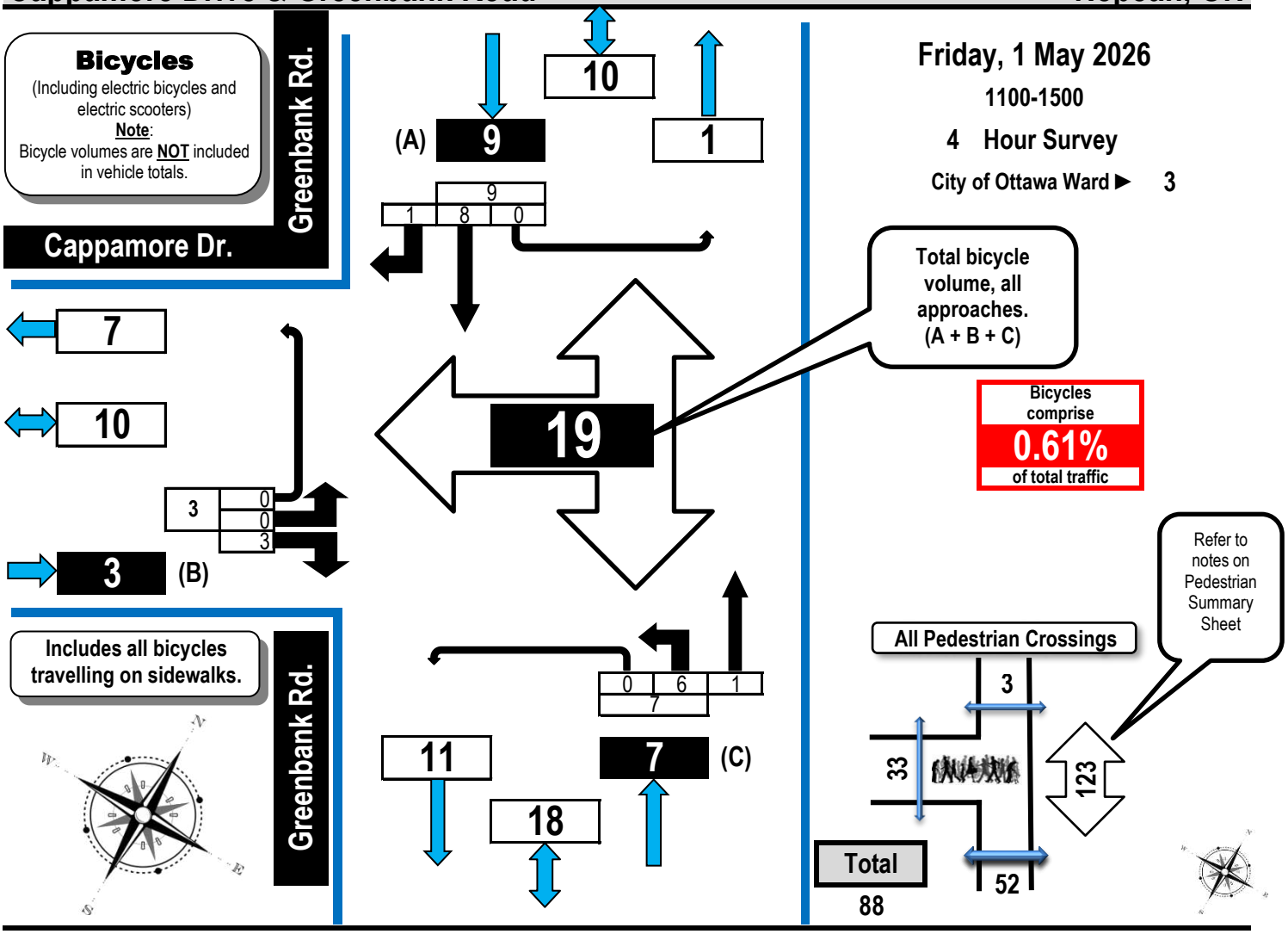


	Cappamore Dr.					N/A					Greenbank Rd.					Greenbank Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	4		1	0	5						1	0		0	1		0	4	0	4	10
1200-1300	4		1	0	5						1	0		0	1		1	4	0	5	11
1300-1400	2		0	0	2						0	0		0	0		1	2	0	3	5
1400-1500	5		1	0	6						1	2		0	3		5	4	0	9	18
Totals	15		3	0	18						3	2		0	5		7	14	0	21	44

Turning Movement Count
Bicycles and All Forms of Personal E-Transportation
Summary Flow Diagram



Cappamore Drive & Greenbank Road — Nepean, ON



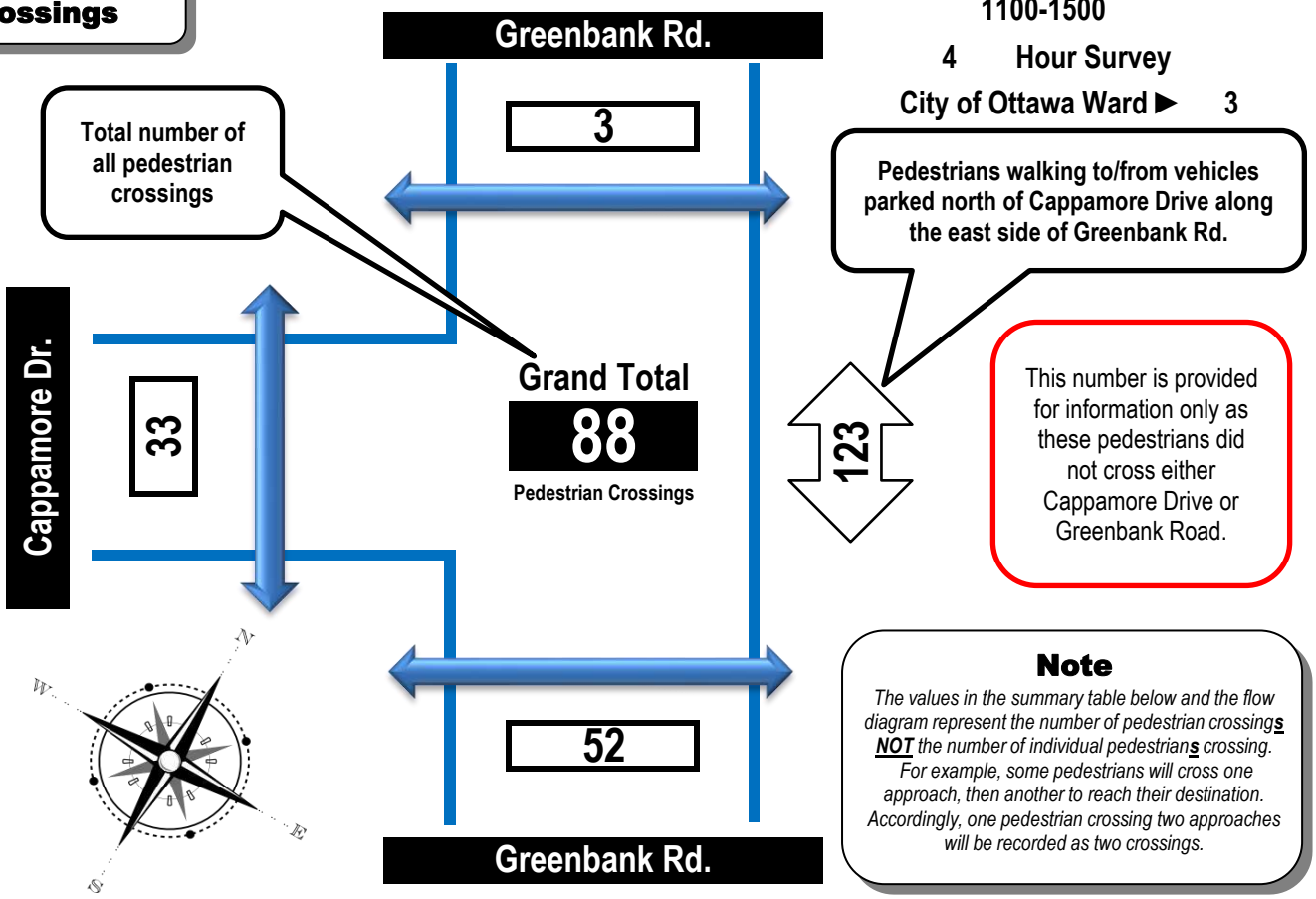
	Cappamore Dr.					N/A					Greenbank Rd.					Greenbank Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
1100-1200	0		1	0	1						1	0		0	1		2	0	0	2	4
1200-1300	0		0	0	0						0	0		0	0		2	0	0	2	2
1300-1400	0		1	0	1						1	0		0	1		1	1	0	2	4
1400-1500	0		1	0	1						4	1		0	5		3	0	0	3	9
Totals	0		3	0	3						6	1		0	7		8	1	0	9	19

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Cappamore Drive & Greenbank Road — Nepean, ON

Pedestrian Crossings

Friday, 1 May 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3



Note

*The values in the summary table below and the flow diagram represent the number of pedestrian crossings **NOT** the number of individual pedestrians crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Cappamore Dr.	East Side Crossing N/A	Street Total	South Side Crossing Greenbank Rd.	North Side Crossing Greenbank Rd.	Street Total	Grand Total
1100-1200	5		5	0	0	0	5
1200-1300	11		11	5	0	5	16
1300-1400	12		12	24	0	24	36
1400-1500	5		5	23	3	26	31
Totals	**33**		**33**	**52**	**3**	**55**	**88**

Comments:

OC Transpo and school buses comprise 50.00% of the heavy vehicle traffic. U-turns were counted between a point approximately 200 m north of Cappamore to a point approximately 75 m south of Cappamore. All U-turning drivers were focussed on finding a parking space along the east side of Greenbank, many of them making sudden stops and obstructing both N/B & S/B traffic on Greenbank. 123 pedestrians walked to/from vehicles parked along the east side of Greenbank north of Cappamore.

Turning Movement Count

Summary Report Including AM, OFF Peak and PM Peak Hours Including PHF

All Vehicles Except Bicycles and Personal E-Transportation



Cappamore Drive & Greenbank Road — Nepean, ON

Survey Date: Friday, 1 May 2026 **Start Time:** 1100 **AADT Factor:** 0.8

Weather AM: Mostly Sunny +1° C **Survey Duration:** 4 Hrs. **Survey Hours:** 1100-1500

Weather PM: Mostly Sunny +10° C **Surveyor(s)** J. Mousseau

	Cappamore Dr.					N/A						Greenbank Rd.					Greenbank Rd.						
	Eastbound					Westbound						Northbound					Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
1100-1200	45		58	0	**103**						**103**	40	139		0	**179**		215	35	0	**250**	**429**	**532**
1200-1300	46		63	1	**110**						**110**	54	165		0	**219**		309	55	5	**369**	**588**	**698**
1300-1400	50		80	0	**130**						**130**	65	228		2	**295**		295	64	14	**373**	**668**	**798**
1400-1500	49		115	0	**164**						**164**	127	387		1	**515**		338	49	4	**391**	**906**	**1070**
Totals	**190**		**316**	**1**	**507**						**507**	**286**	**919**		**3**	**1208**		**1157**	**203**	**23**	**1383**	**2591**	**3098**

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

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the 12-hour totals by the AADT factor of: **0.8**

AADT 12 Hr	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**n/a**	**na**

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

AADT 24 Hr	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	**n/a**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**n/a**	**na**

AADT and Expansion Factors provided by the City of Ottawa

AM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
N/A	0	0	0	0	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**0**
OFF Peak Hour Factor ➡ 0.81												Highest Hourly Vehicle Volume Between 1000h & 1500h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1400-1500	49	0	115	0	**164**	0	0	0	0	**0**	**164**	127	387	0	1	**515**	0	338	49	4	**391**	**906**	**1070**
PM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 1500h & 1900h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
N/A	0	0	0	0	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**0**

Comments:

OC Transpo and school buses comprise 50.00% of the heavy vehicle traffic. U-turns were counted between a point approximately 200 m north of Cappamore to a point approximately 75 m south of Cappamore. All U-turning drivers were focussed on finding a parking space along the east side of Greenbank, many of them making sudden stops and obstructing both N/B & S/B traffic on Greenbank. 123 pedestrians walked to/from vehicles parked along the east side of Greenbank north of Cappamore.

Notes:

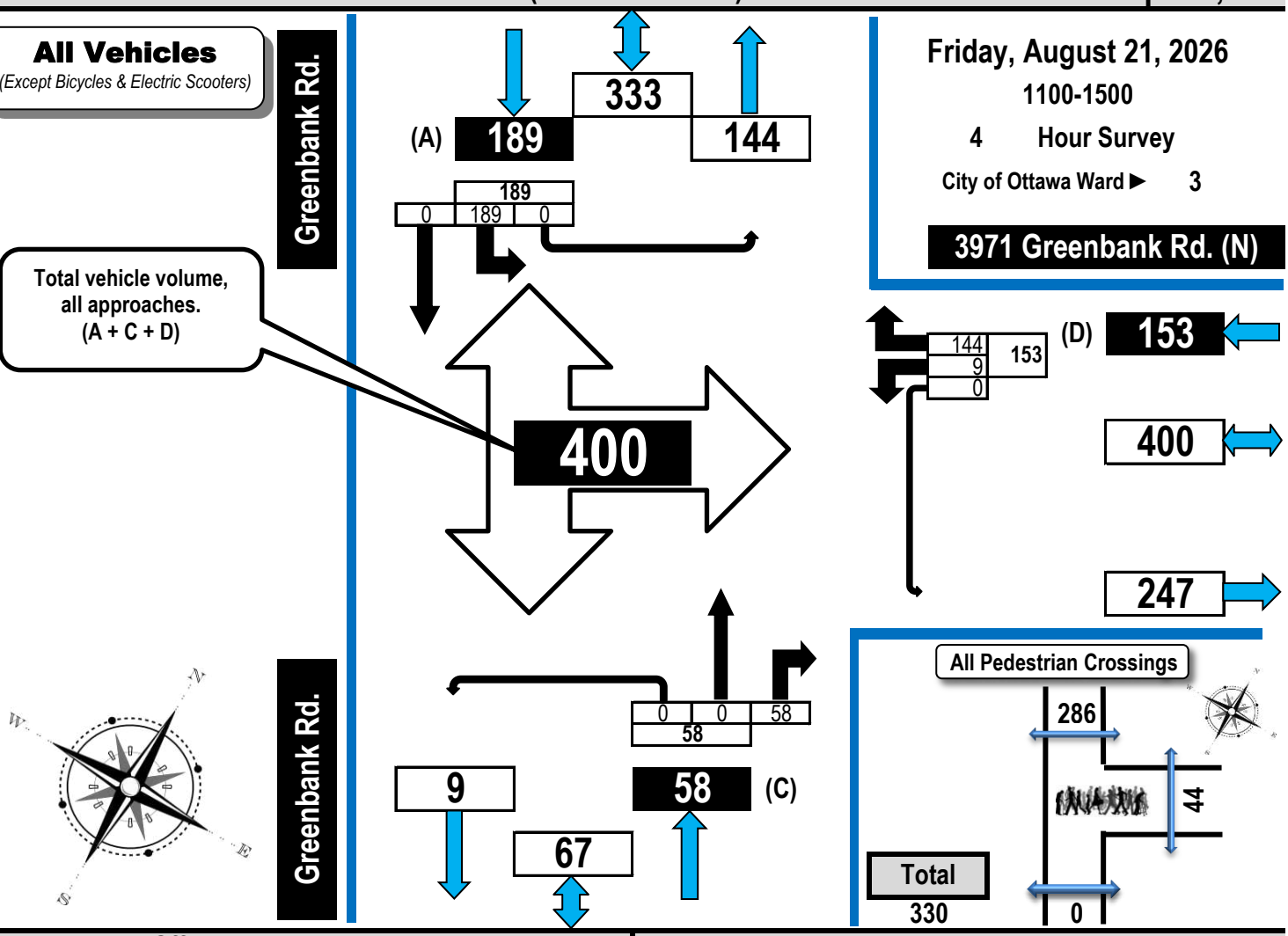
1. Includes all vehicle types except bicycles and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles and Personal E-Transportation

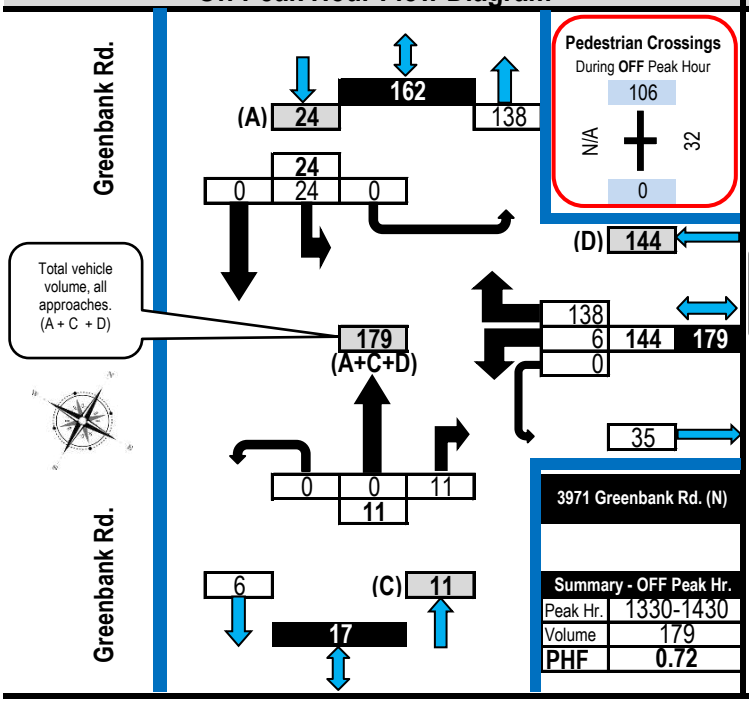
Greenbank Road & 3971 Greenbank Road (NORTH Access) — Nepean, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Friday, August 21, 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3

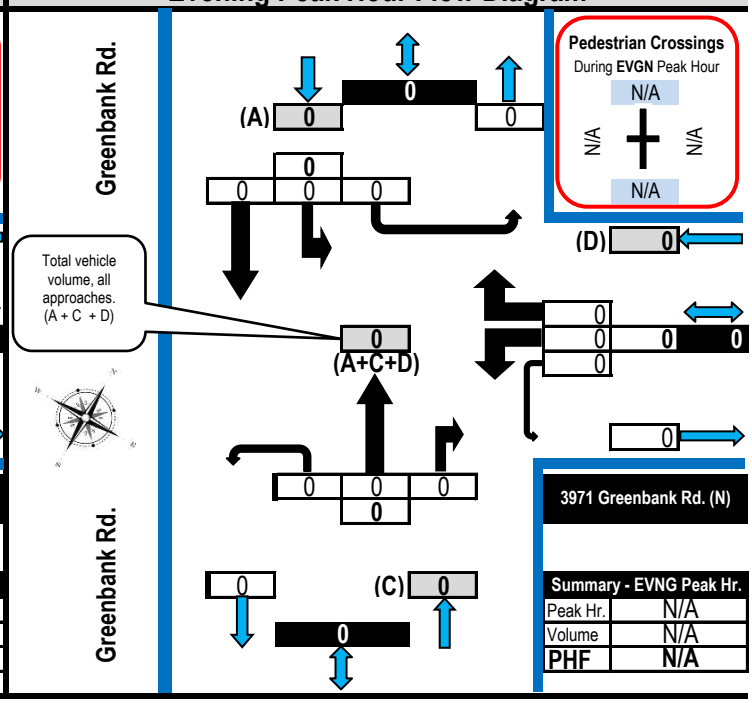


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1330-1430
Volume	179
PHF	0.72

Evening Peak Hour Flow Diagram



Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

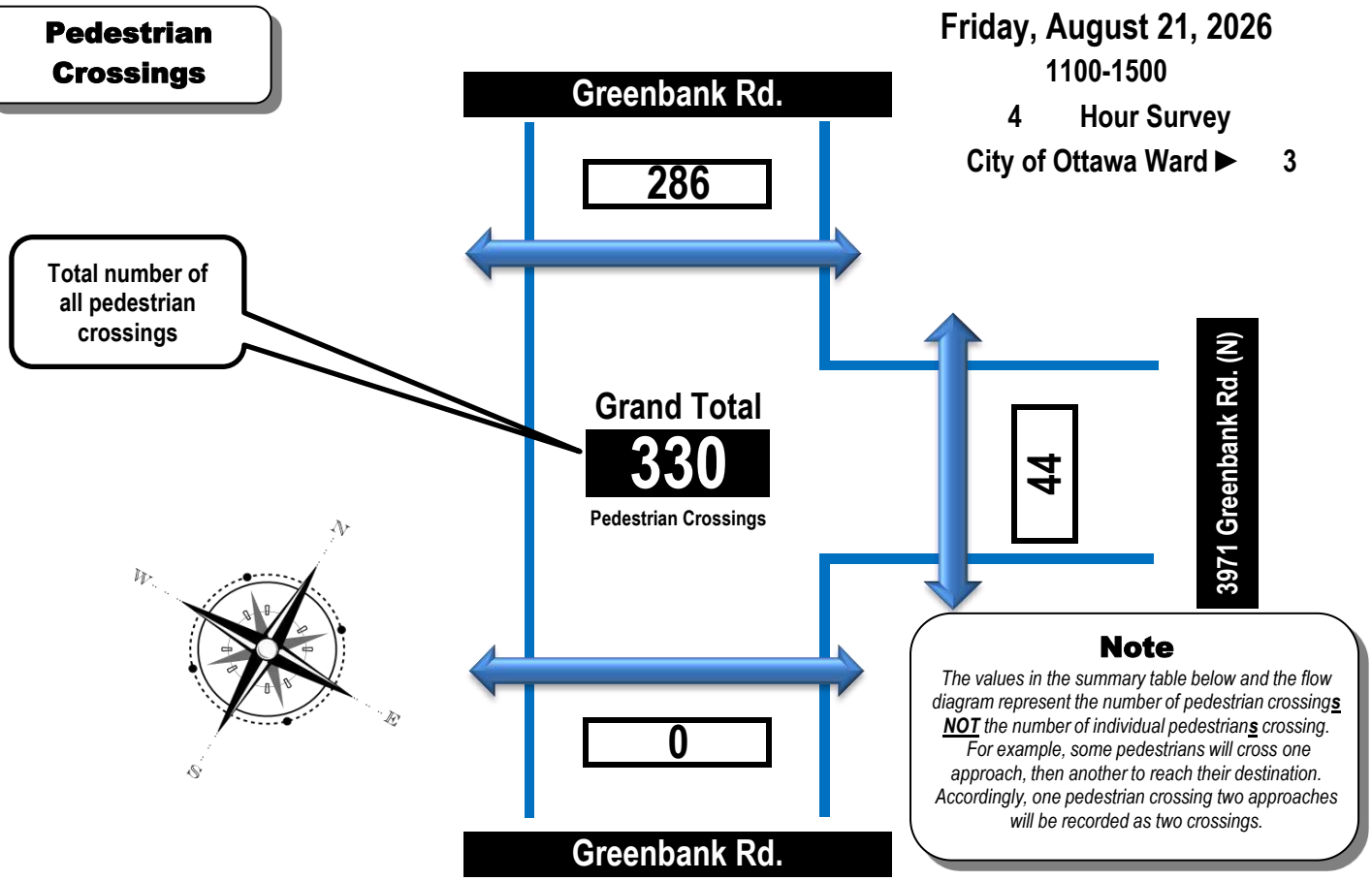
Turning Movement Count

Pedestrian Crossings Summary and Flow Diagram

Greenbank Road & 3971 Greenbank Road (NORTH Access) — Nepean, ON

Pedestrian Crossings

Friday, August 21, 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3



Note

*The values in the summary table below and the flow diagram represent the number of pedestrian crossing**s** **NOT** the number of individual pedestrian**s** crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing	East Side Crossing 3971 Greenbank Rd. (N)	Street Total	South Side Crossing Greenbank Rd.	North Side Crossing Greenbank Rd.	Street Total	Grand Total
1100-1200		0	0	0	0	0	0
1200-1300		10	10	0	74	74	84
1300-1400		30	30	0	126	126	156
1400-1500		4	4	0	86	86	90
Totals		**44**	**44**	**0**	**286**	**286**	**330**

Comments:

Through traffic on Greenbank Road was not counted. Refer to the traffic count at the intersection of Barnsdale Road & Greenbank Road for these details. Heavy vehicles and bicycles were also not counted.

Turning Movement Count
Summary Report Including AM, OFF Peak, PM, Evening Peak Hours, and PHF
All Vehicles Except Bicycles and Personal E-Transportation



Greenbank Road & 3971 Greenbank Road (NORTH Access) — Nepean, ON

Survey Date: Friday, August 21, 2026 **Start Time:** 1100 **AADT Factor:** 1.1

Weather AM: Sunny 18° C **Survey Duration:** 4 Hrs. **Survey Hours:** 1100-1500

Weather PM: Cloudy 22° C **Surveyor(s):** J. Mousseau

	3971 Greenbank Rd. (N)										Greenbank Rd.					Greenbank Rd.					
	Eastbound					Westbound					Northbound					Southbound					
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
1100-1200						0		0	0	0	0		0	0	0	0	2	0		0	2	2	2
1200-1300						2		2	0	4	4		0	24	0	24	79	0		0	79	103	107
1300-1400						4		97	0	101	101		0	10	0	10	30	0		0	30	40	141
1400-1500						3		45	0	48	48		0	24	0	24	78	0		0	78	102	150
Totals						9		144	0	153	153		0	58	0	58	189	0		0	189	247	400

Average daily 12-hour (0700-1900 ONLY) traffic. These volumes are calculated by multiplying the 12-hour totals (0700-1900) by the AADT factor of: 1.1

AADT 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and Expansion Factors provided by the City of Ottawa

AM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 0500h & 1000h											
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF Peak Hour Factor ➡ 0.72												Highest Hourly Vehicle Volume Between 1000h & 1500h											
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
1330-1430	0	0	0	0	0	6	0	138	0	144	144	0	0	11	0	11	24	0	0	0	24	35	179
PM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 1500h & 1900h											
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVNG Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 1900h & 0000h											
EVNG Pk Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

Through traffic on Greenbank Road was not counted. Refer to the traffic count at the intersection of Barnsdale Road & Greenbank Road for these details. Heavy vehicles and bicycles were also not counted.

Notes:

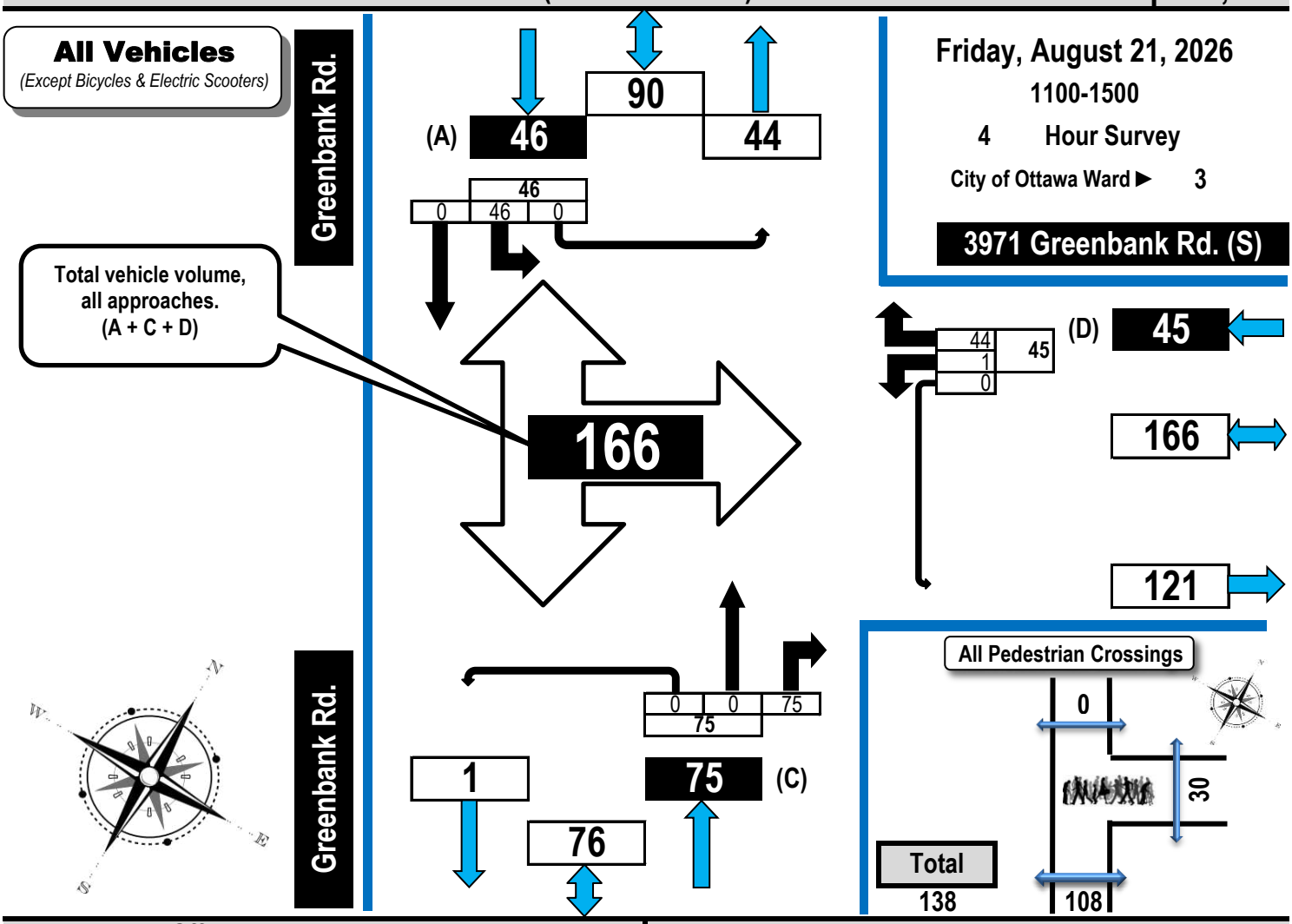
1. Includes all vehicle types except bicycles and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles and Personal E-Transportation

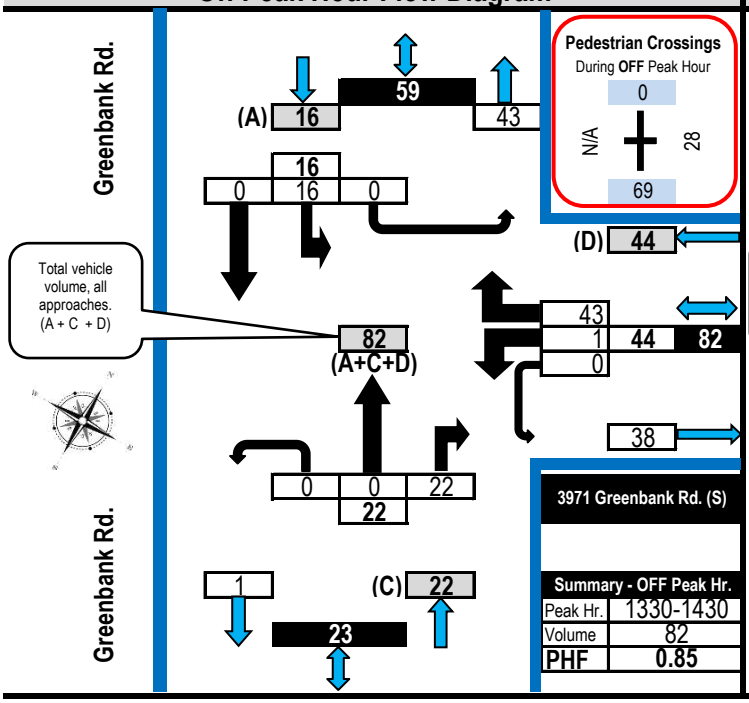
Greenbank Road & 3971 Greenbank Road (SOUTH Access) — **Nepean, ON**

All Vehicles
(Except Bicycles & Electric Scooters)

Friday, August 21, 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ▶ 3

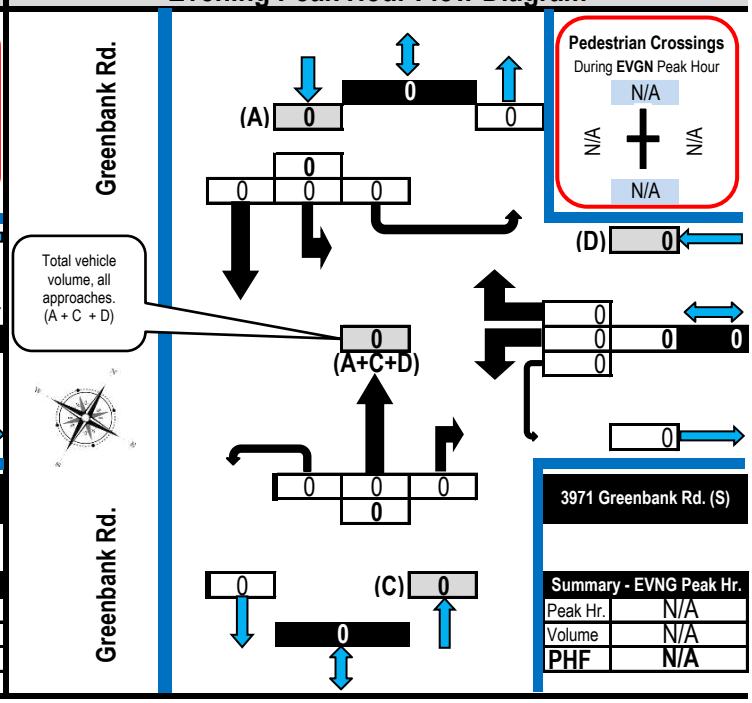


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1330-1430
Volume	82
PHF	0.85

Evening Peak Hour Flow Diagram



Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

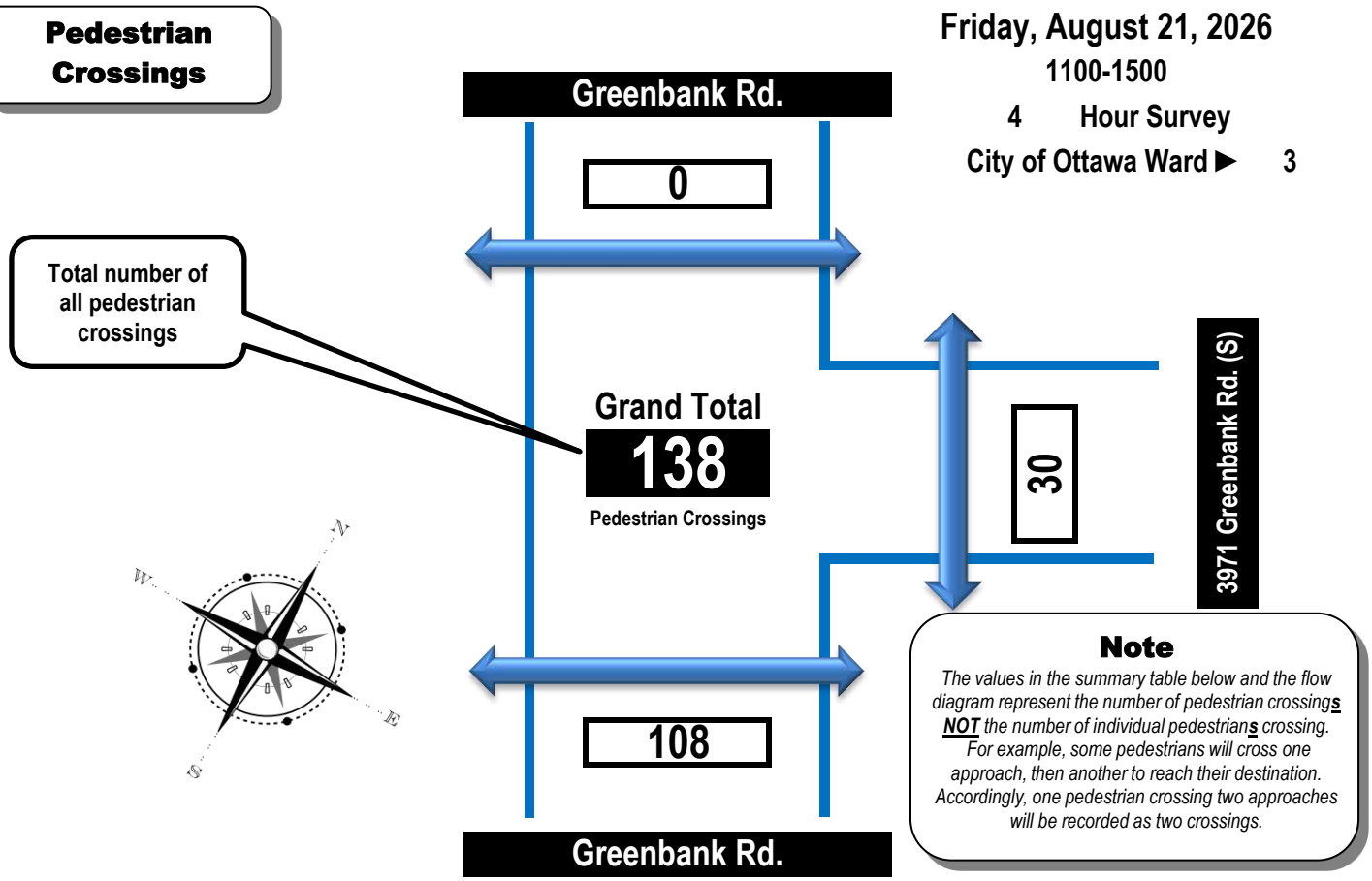
Turning Movement Count

Pedestrian Crossings Summary and Flow Diagram

Greenbank Road & 3971 Greenbank Road (SOUTH Access) — Nepean, ON

Pedestrian Crossings

Friday, August 21, 2026
1100-1500
4 Hour Survey
City of Ottawa Ward ► 3



Note

*The values in the summary table below and the flow diagram represent the number of pedestrian crossing**s** **NOT** the number of individual pedestrian**s** crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing	East Side Crossing 3971 Greenbank Rd. (S)	Street Total	South Side Crossing Greenbank Rd.	North Side Crossing Greenbank Rd.	Street Total	Grand Total
1100-1200		0	0	1	0	1	1
1200-1300		2	2	11	0	11	13
1300-1400		25	25	60	0	60	85
1400-1500		3	3	36	0	36	39
Totals		**30**	**30**	**108**	**0**	**108**	**138**

Comments:

Through traffic on Greenbank Road was not counted. Refer to the traffic count at the intersection of Barnsdale Road & Greenbank Road for these details. Heavy vehicles and bicycles were also not counted.

Turning Movement Count
Summary Report Including AM, OFF Peak, PM, Evening Peak Hours, and PHF
All Vehicles Except Bicycles and Personal E-Transportation



Greenbank Road & 3971 Greenbank Road (SOUTH Access) — Nepean, ON

Survey Date: Friday, August 21, 2026 **Start Time:** 1100 **AADT Factor:** 1.1

Weather AM: Sunny 18° C **Survey Duration:** 4 Hrs. **Survey Hours:** 1100-1500

Weather PM: Cloudy 22° C **Surveyor(s):** J. Mousseau

		3971 Greenbank Rd. (S)										Greenbank Rd.					Greenbank Rd.						
	Eastbound					Westbound						Northbound					Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
1100-1200						0		1	0	1	1		0	2	0	2	1	0		0	1	3	4
1200-1300						0		0	0	0	0		0	33	0	33	22	0		0	22	55	55
1300-1400						1		39	0	40	40		0	11	0	11	4	0		0	4	15	55
1400-1500						0		4	0	4	4		0	29	0	29	19	0		0	19	48	52
Totals						1		44	0	45	45		0	75	0	75	46	0		0	46	121	166

Average daily 12-hour (0700-1900 ONLY) traffic. These volumes are calculated by multiplying the 12-hour totals (0700-1900) by the AADT factor of: 1.1

AADT 12 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AADT 24 Hr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

AADT and Expansion Factors provided by the City of Ottawa

AM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 0500h & 1000h											
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF Peak Hour Factor ➡ 0.85												Highest Hourly Vehicle Volume Between 1000h & 1500h											
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
1330-1430	0	0	0	0	0	1	0	43	0	44	44	0	0	22	0	22	16	0	0	0	16	38	82
PM Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 1500h & 1900h											
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVNG Peak Hour Factor ➡ N/A												Highest Hourly Vehicle Volume Between 1900h & 0000h											
EVNG Pk Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Grd. Tot.
N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

Through traffic on Greenbank Road was not counted. Refer to the traffic count at the intersection of Barnsdale Road & Greenbank Road for these details. Heavy vehicles and bicycles were also not counted.

Notes:

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

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	50	80	65	228	14	295	64
Future Vol, veh/h	50	80	65	228	14	295	64
Conflicting Peds, #/hr	0	24	12	0	0	0	12
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90
Heavy Vehicles, %	4	2	2	2	2	2	5
Mvmt Flow	56	89	72	253	16	328	71

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	773	400	411	0	-	-	0
Stage 1	376	-	-	-	-	-	-
Stage 2	397	-	-	-	-	-	-
Critical Hdwy	6.44	6.22	4.12	-	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-	-
Follow-up Hdwy	3.536	3.318	2.218	-	-	-	-
Pot Cap-1 Maneuver	365	650	1148	-	-	-	-
Stage 1	690	-	-	-	-	-	-
Stage 2	675	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	332	632	1137	-	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-	-
Stage 1	633	-	-	-	-	-	-
Stage 2	669	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	1.9	
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1137	-	469	-	-
HCM Lane V/C Ratio	0.064	-	0.308	-	-
HCM Control Delay (s)	8.4	0	16.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	-	-

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	148	22	14	130	142	9	84	8	118	100	47
Future Vol, veh/h	42	148	22	14	130	142	9	84	8	118	100	47
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	5	9	2	7	3	11	2	2	2	3	2
Mvmt Flow	47	164	24	16	144	158	10	93	9	131	111	52
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12	12.8	10.7	13.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	9%	20%	5%	45%
Vol Thru, %	83%	70%	45%	38%
Vol Right, %	8%	10%	50%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	101	212	286	265
LT Vol	9	42	14	118
Through Vol	84	148	130	100
RT Vol	8	22	142	47
Lane Flow Rate	112	236	318	294
Geometry Grp	1	1	1	1
Degree of Util (X)	0.191	0.368	0.463	0.46
Departure Headway (Hd)	6.122	5.621	5.243	5.629
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	582	636	683	636
Service Time	4.197	3.683	3.299	3.688
HCM Lane V/C Ratio	0.192	0.371	0.466	0.462
HCM Control Delay	10.7	12	12.8	13.4
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.7	1.7	2.5	2.4

Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2018-12-12	2018	11:00	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-10-15	2019	16:27	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-11-07	2019	8:00	BARNSDALE RD @ GREENBANK RD (0001069)	03 - Snow	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	06 - Ice	2	0	0	0
2021-03-04	2021	6:39	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2021-12-07	2021	14:30	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2022-04-15	2022	4:02	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	07 - Dark	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2022-09-06	2022	19:00	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	05 - Dusk	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2018-01-27	2018	9:30	BARNSDALE RD btwn GREENBANK RD & PRINCE OF WALES DR (__3ZAHA2)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2018-07-07	2018	23:46	BARNSDALE RD btwn GREENBANK RD & PRINCE OF WALES DR (__3ZAHA2)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	1	0	0	0
2019-12-23	2019	21:18	BARNSDALE RD btwn GREENBANK RD & PRINCE OF WALES DR (__3ZAHA2)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	01 - Approaching	01 - Dry	2	0	0	0
2020-01-01	2020	16:19	BARNSDALE RD btwn GREENBANK RD & PRINCE OF WALES DR (__3ZAHA2)	04 - Freezing Rain	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	04 - Slush	1	0	0	0
2020-01-12	2020	11:30	BARNSDALE RD btwn GREENBANK RD & PRINCE OF WALES DR (__3ZAHA2)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	04 - Slush	2	0	0	0
2019-05-21	2019	10:31	BARNSDALE RD btwn VIEWBANK RD & GREENBANK RD (__3ZD635)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2020-11-03	2020	18:45	BARNSDALE RD btwn VIEWBANK RD & GREENBANK RD (__3ZD635)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	1	0	0	0
2020-03-21	2020	22:23	GREENBANK RD btwn BARNSDALE RD & VIEWBANK RD (__3ZAHAX)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2020-09-11	2020	16:28	GREENBANK RD btwn KILBIRNIE DR & BARNSDALE RD (__3Z07TE)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2020-11-11	2020	17:32	GREENBANK RD btwn KILBIRNIE DR & BARNSDALE RD (3Z07TE)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	99 - Other	02 - Wet	2	0	0	0
2022-03-07	2022	18:55	GREENBANK RD btwn KILBIRNIE DR & BARNSDALE RD (__3Z07TE)	05 - Drifting Snow	07 - Dark	10 - No control	0	02 - Non-fatal injury	01 - Approaching	03 - Loose snow	2	0	0	0

Collision Summary Report

Location:	BARNSDALE RD @ GREENBANK RD	**Geo ID:**	0001069
Municipality:	Ottawa	**Jurisdiction:**	Municipal (excl. Twp. Rd.)
Traffic Control:	Stop sign	**Total Collisions:**	17

Collision ID	Date/Time	Env	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle Type	First Event	Driver Action	No. Ped
240917102	2024-Dec-12, Thu, 6:20	Freezing Rain	Turning movement	P.D. only	North	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					West	Ice	Turning left	Automobile, station wagon		Driving properly	
240293305	2024-Oct-30, Wed, 7:48	Clear	Angle	Non-fatal injury	West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	0
Comments:					North	Wet	Going ahead	Automobile, station wagon		Driving properly	
240912891	2024-Sep-24, Tue, 21:30	Rain	Approaching	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					North	Wet	Slowing or stopping	Automobile, station wagon	Ditch	Unknown	
240212813	2024-Aug-8, Thu, 12:43	Clear	Rear end	Non-fatal injury	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Unknown	0
Comments:					West	Dry	Stopped	Automobile, station wagon		Unknown	
240188410	2024-Jul-15, Mon, 18:19	Rain	Turning movement	P.D. only	East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	0
Comments:					West	Wet	Turning left	Automobile, station wagon		Driving properly	
240167599	2024-Jun-26, Wed, 15:30	Clear	Angle	P.D. only	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Unknown	0
Comments:					West	Dry	Going ahead	Automobile, station wagon		Unknown	
240908125	2024-Jun-10, Mon, 16:05	Clear	Rear end	P.D. only	South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					South	Dry	Going ahead	Pick-up truck		Unknown	
240907017	2024-May-22, Wed, 17:00	Clear	Rear end	P.D. only	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					West	Dry	Slowing or stopping	Automobile, station wagon		Driving properly	
240904788	2024-Apr-4, Thu, 8:15	Drifting Snow	SMV other	P.D. only	West	Slush	Going ahead	Automobile, station wagon	Skidding/sliding	Driving properly	0
Comments:									Other		
240902668	2024-Feb-16, Fri, 14:20	Clear	Rear end	P.D. only	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	0

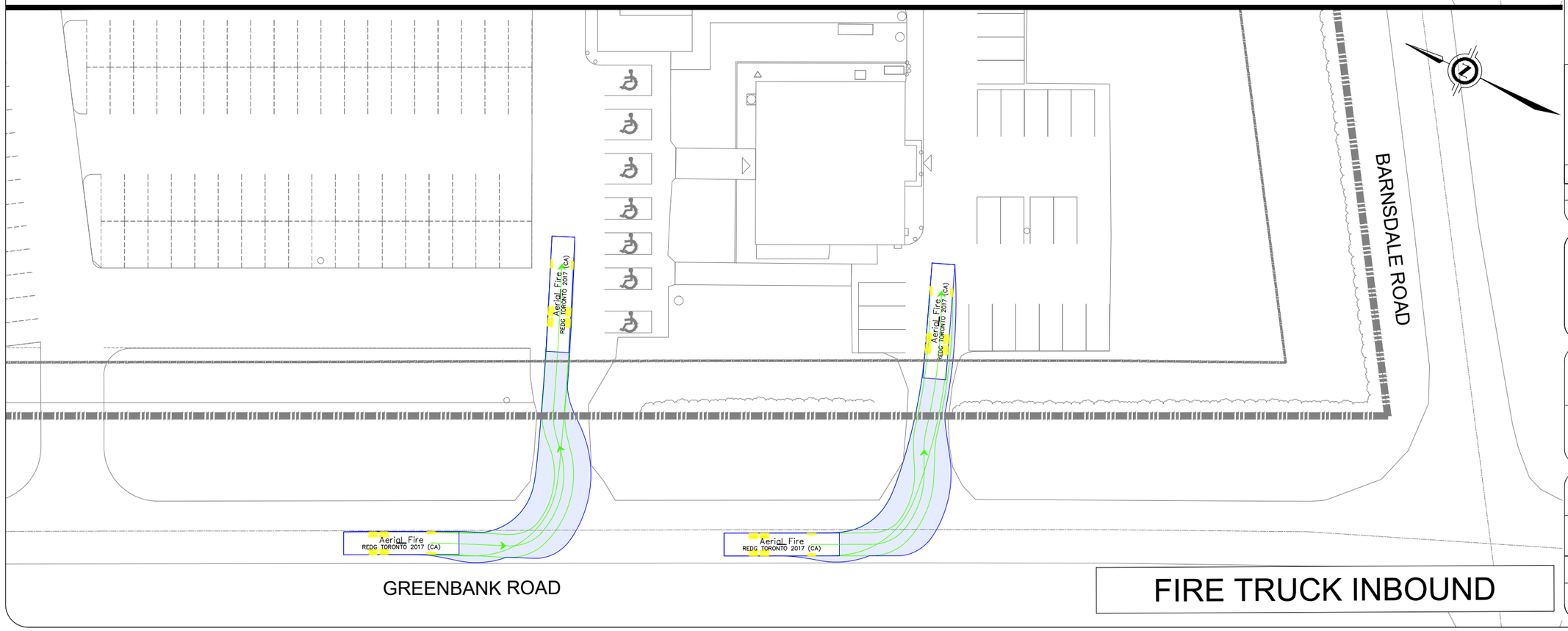
Comments:					West	Dry	Going ahead	Delivery van		Unknown	
240901815	2024-Jan-31, Wed, 17:40	Clear	Turning movement	P.D. only	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	0
Comments:					West	Dry	Turning right	Unknown		Unknown	
220239519	2022-Sep-6, Tue, 19:00	Clear	Angle	P.D. only	West	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Unknown	0
Comments:					North	Dry	Going ahead	Automobile, station wagon		Other	
220093629	2022-Apr-15, Fri, 4:02	Clear	Angle	P.D. only	East	Dry	Unknown	Unknown	Other motor vehicle	Unknown	0
Comments:					South	Dry	Going ahead	Automobile, station wagon		Driving properly	
210315694	2021-Dec-7, Tue, 14:30	Clear	Angle	P.D. only	North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Unknown	0
Comments:					West	Dry	Turning right	Pick-up truck		Unknown	
210049534	2021-Mar-4, Thu, 6:39	Clear	Angle	P.D. only	West	Dry	Going ahead	Pick-up truck	Other motor vehicle	Failed to yield right-of-way	0
Comments:					North	Dry	Going ahead	Pick-up truck		Driving properly	
190296822	2019-Nov-7, Thu, 8:00	Snow	Rear end	P.D. only	West	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Lost control	0
Comments:					West	Ice	Stopped	Automobile, station wagon		Driving properly	
190272837	2019-Oct-15, Tue, 16:27	Clear	Rear end	P.D. only	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	0
Comments:					West	Dry	Stopped	Pick-up truck		Driving properly	

Appendix E

Turning Templates

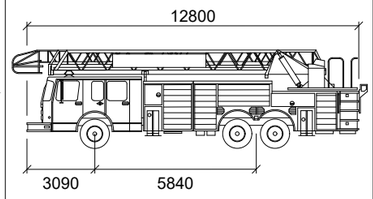


FIRE TRUCK INBOUND



FIRE TRUCK INBOUND

Notes:



Aerial Fire

		mm
Width	:	2540
Track	:	2540
Lock to Lock Time	:	6.0
Steering Angle	:	37.0

Legend:

- Forward Movement
- Reverse Movement

REV:	DESCRIPTION:	BY:	DATE:
01	ISSUED FOR REVIEW	YP	2026-09-18

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

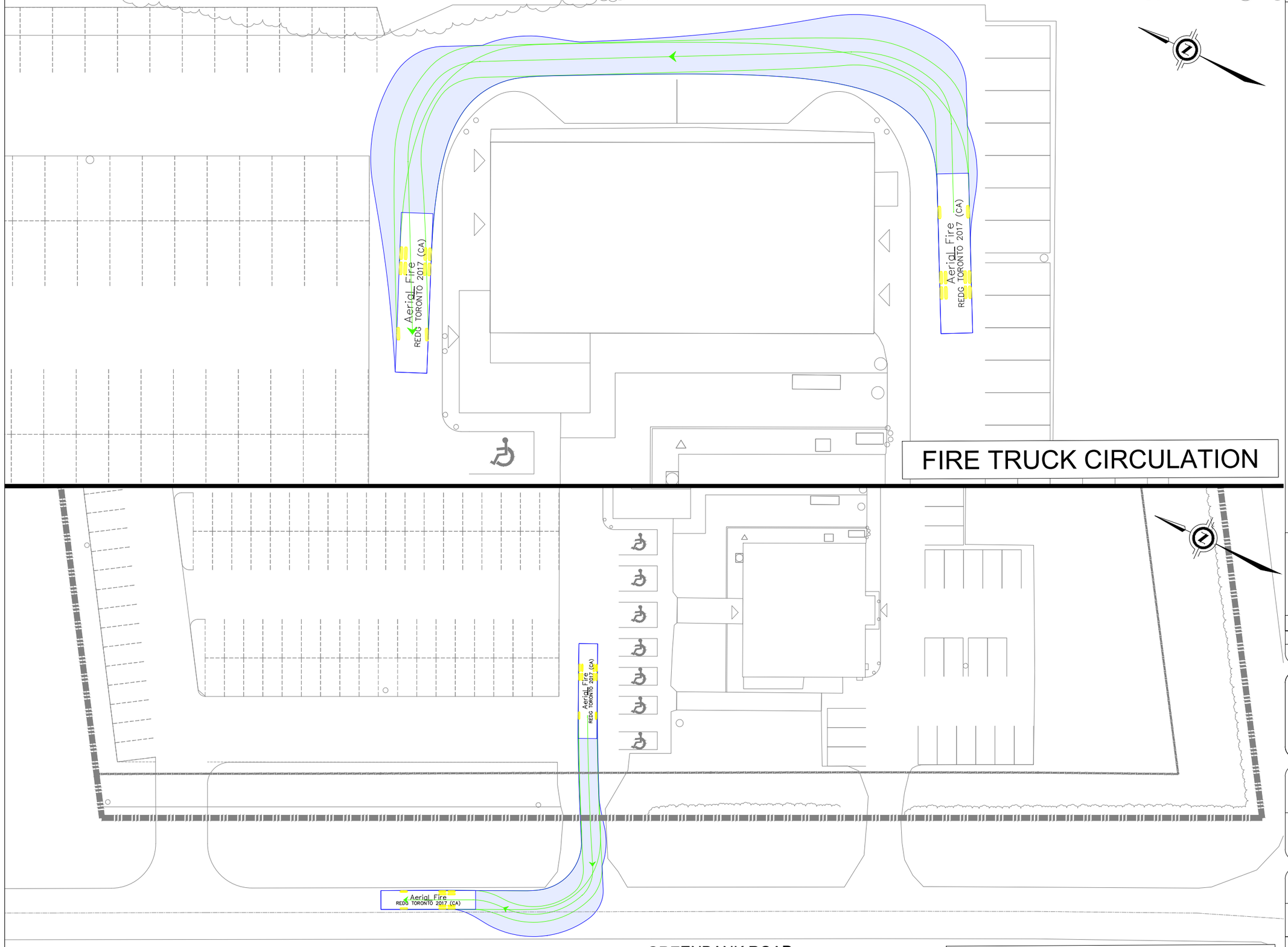
CLIENT: Muslim Association of Canada
Barrhaven Islamic Centre

ARCHITECT:

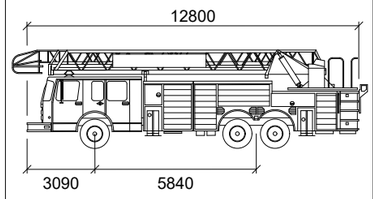
SITE: 3971 Greenbank Road

TITLE: Firetruck Inbound
Turning Movement Analysis

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-09-18	YP	AL
PROJECT NO:	DRAWING NO:		REVISION:
2026-075	001		01



Notes:



Aerial Fire

	mm
Width	: 2540
Track	: 2540
Lock to Lock Time	: 6.0
Steering Angle	: 37.0

Legend:

- Forward Movement
- Reverse Movement

REV:	DESCRIPTION:	BY:	DATE:
01	ISSUED FOR REVIEW	YP	2026-09-18

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Muslim Association of Canada
Barrhaven Islamic Centre

ARCHITECT:

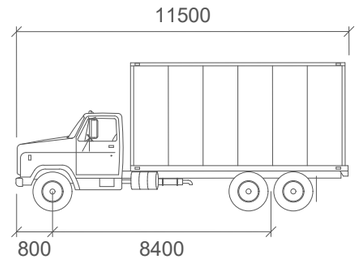
SITE: 3971 Greenbank Road

TITLE: Firetruck Circulation & Outbound Turning Movement Analysis

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-09-18	YP	AL

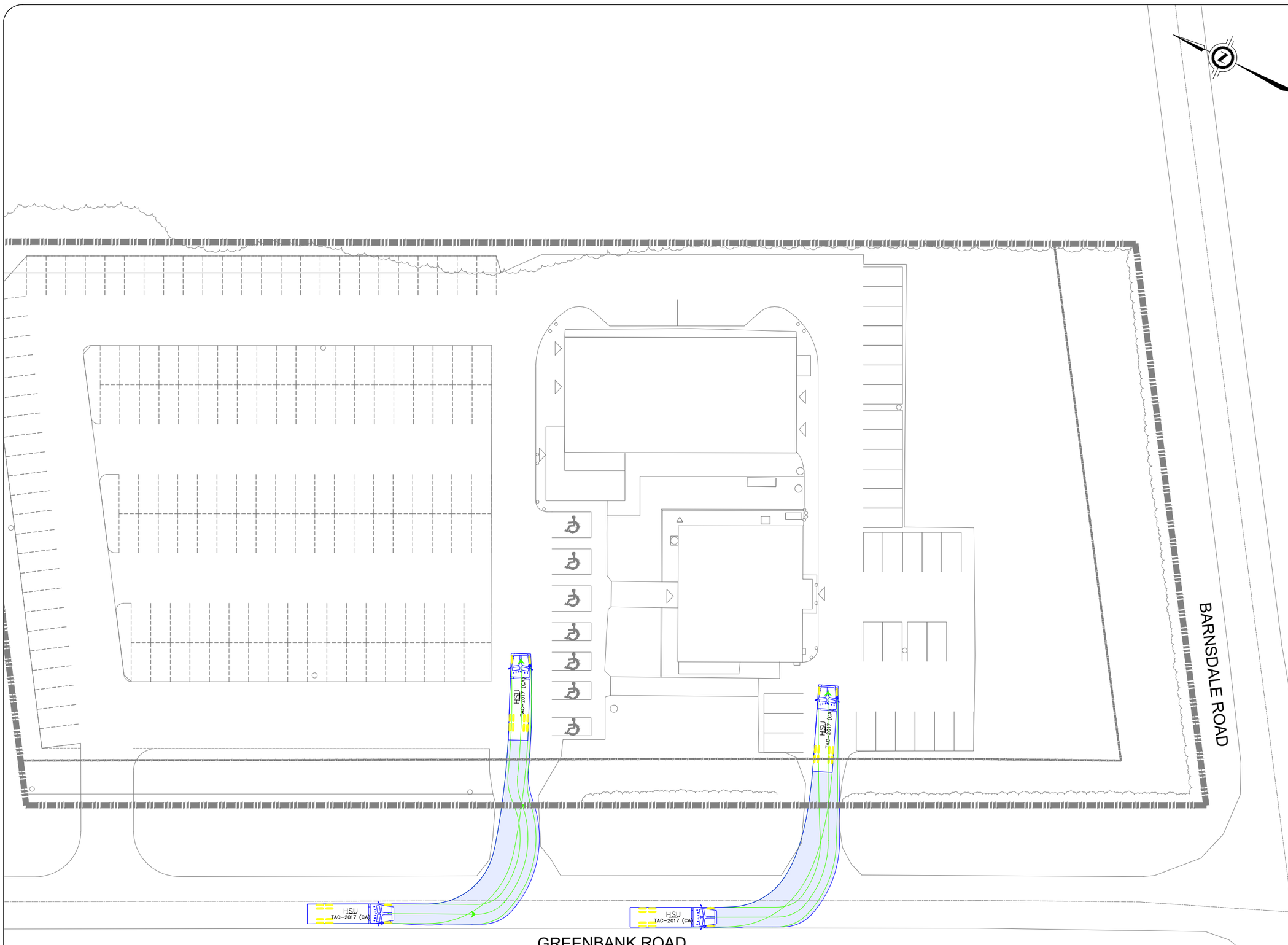
PROJECT NO:	DRAWING NO:	REVISION:
2026-075	002	01

Notes:



HSU

		mm
Width	:	2600
Track	:	2600
Lock to Lock Time	:	6.0
Steering Angle	:	40.0



Legend:

Forward Movement

Reverse Movement

REV:	DESCRIPTION:	BY:	DATE:
01	ISSUED FOR REVIEW	YP	2026-09-18

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Muslim Association of Canada
Barrhaven Islamic Centre

ARCHITECT:

SITE: 3971 Greenbank Road

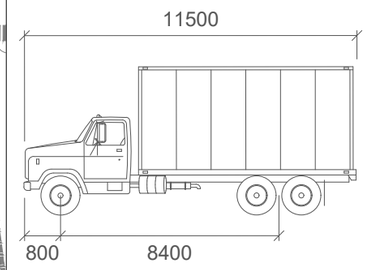
TITLE: HSU Inbound
Turning Movement Analysis

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-09-18	YP	AL

PROJECT NO:	DRAWING NO:	REVISION:
2026-075	003	01

HSU INBOUND

Notes:



HSU

		mm
Width	:	2600
Track	:	2600
Lock to Lock Time	:	6.0
Steering Angle	:	40.0

HSU TAC-2017 (CA)

HSU TAC-2017 (CA)

Legend:

Forward Movement

Reverse Movement

REV:	DESCRIPTION:	BY:	DATE:
01	ISSUED FOR REVIEW	YP	2026-09-18

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Muslim Association of Canada
Barrhaven Islamic Centre

ARCHITECT:

SITE: 3971 Greenbank Road

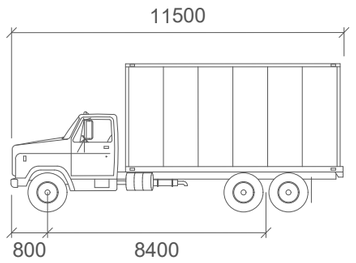
TITLE: HSU Garbage Collection & Clockwise Circulation Turning Movement Analysis

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-09-18	YP	AL

PROJECT NO:	DRAWING NO:	REVISION:
2026-075	004	01

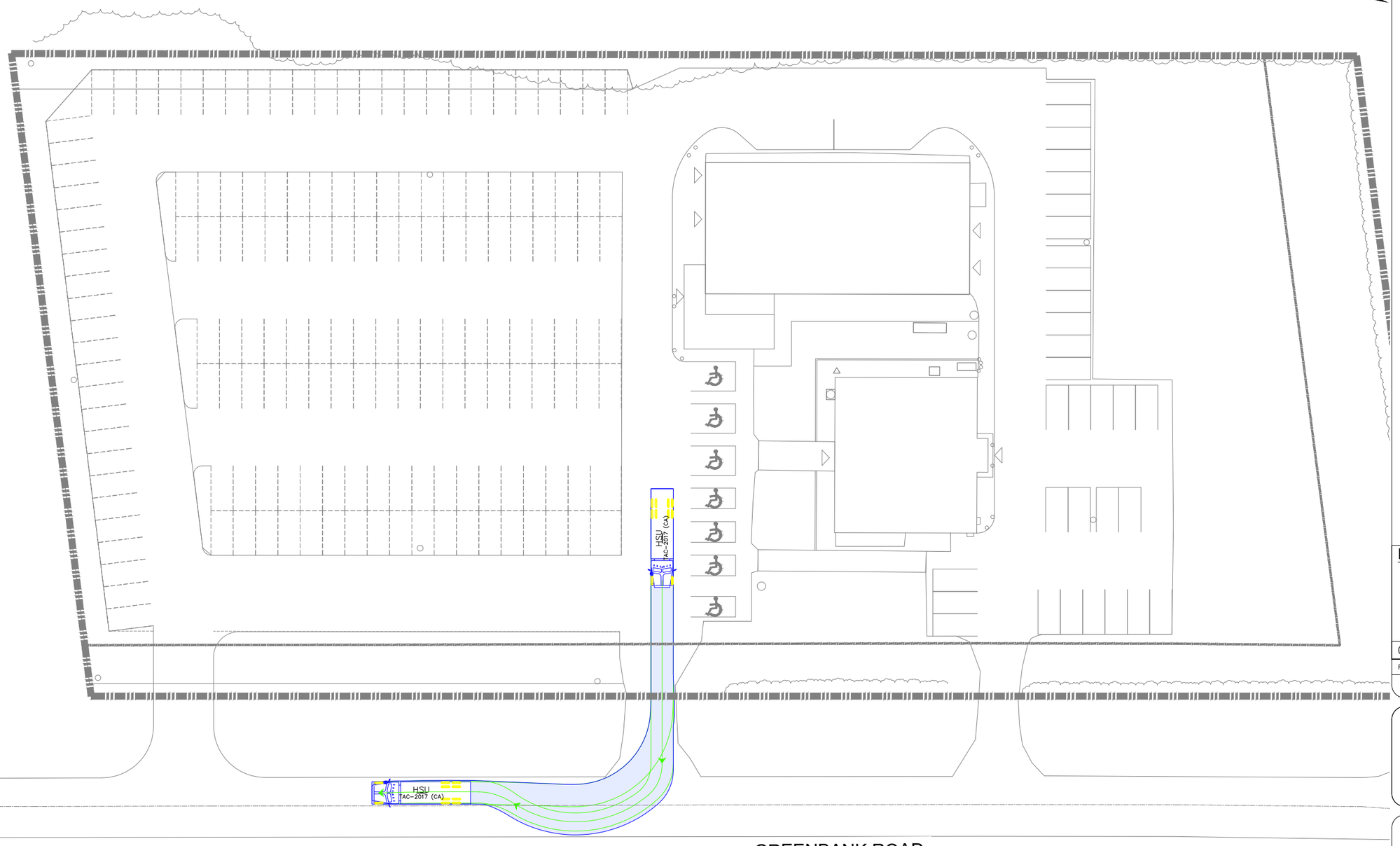
HSU - CIRCULATION

Notes:



HSU

		mm
Width	:	2600
Track	:	2600
Lock to Lock Time	:	6.0
Steering Angle	:	40.0



Legend:

- Forward Movement
- Reverse Movement

REV:	DESCRIPTION:	BY:	DATE:
01	ISSUED FOR REVIEW	YP	2026-09-18

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Muslim Association of Canada
Barrhaven Islamic Centre

ARCHITECT:

SITE: 3971 Greenbank Road

TITLE: HSU Outbound
Turning Movement Analysis

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-09-18	YP	AL

PROJECT NO:	DRAWING NO:	REVISION:
2026-075	005	01

HSU OUTBOUND

Appendix F

On-Street Parking Count Data

CGH TRANSPORTATION

Parking Study Barnsdale & Greenbank

Cappamore Dr. Cloyne Cr. – Greenbank Rd.

11:00 – 12:00 zero

12:00 – 13:00 zero

13:00 – 14:00 N Curb 9 (4 legal 5 in N/P April 1st – Nov. 30th)

13:00 – 14:00 S Curb 8 (6 legal 2 in N/P)

14:00 – 14:15 N Curb Zero

14:00 – 14:15 S Curb 3 (3 legal 0 in N/P)

Greenbank Rd. Barnsdale Rd. – Cappamore Dr.

11:00 – 12:00 zero

12:00 – 13:00 zero

13:00 – 14:00 E Curb 29

14:00 – 14:15 E Curb 6

Greenbank Rd. Barnsdale Rd. – Viewbank Rd.

11:00 – 12:00 zero

12:00 – 13:00 zero

13:00 – 14:00 E Curb 3 W Curb 5

14:00 – 14:15 E Curb 1 W Curb 5

Barnsdale Rd. Greenbank Rd. – P.O.W.

11:00 to 14:15 zero

Barnsdale rd. Greenbank Rd. – Viewbank Rd

11:00 – 12:00 zero

12:00 – 13:00 zero

13:00 – 14:00 N Curb 10 S Curb zero

14:00 – 14:15 N Curb 1 S Curb 2

Appendix G

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

Project: 3971 Greenbank Road
Consultant: CGH Transportation
Date: 2026-05-22
Scenario: Existing/Future

		Segment Name	Barnsdale (Existing)		Barnsdale (Future)		Greenbank (Existing/Future)	
		OP Transect / Policy Area	Outer Urban or Suburban		Outer Urban or Suburban		Outer Urban or Suburban	
		Segment Component	Majority (>50%)		Majority (>50%)		Majority (>50%)	
		Side of Street	N		N		E	
Pedestrian		PLOS Inputs						
		Posted Speed (km/h)	80 km/h		80 km/h		60 km/h	
		Two-Way ADT	4,000		4,000		5,350	
		Pedestrian Facility	None		Sidewalk		None	
		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?	No		Yes		No	
		Facility Width (m)	-		2.00m		-	
		Offset from Motor Vehicle Travel Lanes (m)	-		≥ 3.0m		-	
		Presence of Adjacent Parking?	-		No		-	
		General Purpose Curb Lane ADT	-		-		-	
		Max. Distance between Controlled Crossings (m)	-		> 400m		-	
		Score	0.00	-	3.00	-	-	0.00
		PLOS	F	-	C	-	-	F
		Target PLOS	C		C		C	
Bicycle		BLOS Inputs						
		Cycling Route Classification	Elsewhere		Elsewhere		Elsewhere	
		Cycling Facility	Shared Operating Space	Input PLOS First	Painted or Physically Separated Bike Lanes	Input PLOS First	Input PLOS First	Shared Operating Space
		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			-
		Pedestrian/Cyclist Volume	-		-			-
		Facility Width	-		2.0-2.5m			-
		Boulevard/Buffer Width (excluding curb)	-		-			-
		Unsignalized Roadway Crossing Type (where cyclists are required to yield)	Cross-Street		Cross-Street			Cross-Street
		Number of Travel Lanes at Crossing	≤ 2		≤ 2			≤ 2
		Crossing includes Median Refuge (≥ 2.7m)	No		No			No
		Cross-street Posted Speed (km/h)	≥ 60 km/h		≥ 60 km/h			≥ 60 km/h
		Cycling Path Blockages (e.g. bus stops and/or loading zones)	Rare		Rare			Rare
		Score	0.90	-	2.65	-	-	0.90
		BLOS	E	-	C	-	-	E
		Target BLOS	C		C		C	
Transit		TLOS Inputs						
		Transit Facility	Select Transit Designation		Select Transit Designation		Select Transit Designation	
		Facility Type						
		Expected Transit Running Time						
		Transit Travel Speed (if available)						
		TLOS	-	-	-	-	-	-
		Target TLOS	-		-		-	
Public Realm		PRLOS Inputs						
		Context	Other Streets	Input PLOS and BLOS First	Other Streets	Input PLOS and BLOS First	Input PLOS and BLOS First	Other Streets
		Inner Boulevard Width	≤ 0.6m		≤ 0.6m			≤ 0.6m
		Middle Boulevard Width	≤ 0.5m		≥ 3.0m			≤ 0.5m
		Outer Boulevard (Frontage) Width	0.5-1.49m		2.0-2.99m			2.0-2.99m
		Transit Route on Segment?	No		No			No
		Bus Stop Elements	-		-			-
		Number of Midblock Traffic Lanes (both travel directions)	≤ 2		4		≤ 2	
		Score	7.80	-	17.70	-	-	11.40
		PRLOS	E	-	C	-	-	D
			E		C		D	

Appendix H

TDM Checklist

CGH TRANSPORTATION

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
	1.	**TDM PROGRAM MANAGEMENT**	
	1.1	**Program coordinator**	
BASIC ★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☑
	1.2	**Travel surveys**	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
	2.	**WALKING AND CYCLING**	
	2.1	**Information on walking/cycling routes & destinations**	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances	☐
	2.2	**Bicycle skills training**	
		Commuter travel	
BETTER ★	2.2.1	Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
	2.3	**Valet bike parking**	
		Visitor travel	
BETTER	2.3.1	Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances	☐
BASIC		3.1.2	Provide online links to OC Transpo and STO information	☐
BETTER		3.1.3	Provide real-time arrival information display at entrances	☐
		3.2	**Transit fare incentives**	
			Commuter travel	
BETTER		3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER	★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
			Visitor travel	
BETTER		3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3	**Enhanced public transit service**	
			Commuter travel	
BETTER		3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4	**Private transit service**	
			Commuter travel	
BETTER		3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		4.	**RIDESHARING**	
		4.1	**Ridematching service**	
			Commuter travel	
BASIC	★	4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2	**Carpool parking price incentives**	
			Commuter travel	
BETTER		4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3	**Vanpool service**	
			Commuter travel	
BETTER		4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5.	**CARSHARING & BIKESHARING**	
		5.1	**Bikeshare stations & memberships**	
BETTER		5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
			Commuter travel	
BETTER		5.1.2	Provide employees with bikeshare memberships for local business travel	☐
		5.2	**Carshare vehicles & memberships**	
			Commuter travel	
BETTER		5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER		5.2.2	Provide employees with carshare memberships for local business travel	☐
		6.	**PARKING**	
		6.1	**Priced parking**	
			Commuter travel	
BASIC	★	6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC		6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☐
			Visitor travel	
BETTER		6.1.3	Charge for short-term parking (hourly)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7.	**TDM MARKETING & COMMUNICATIONS**	
		7.1	**Multimodal travel information**	
			Commuter travel	
BASIC	★	7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☐
			Visitor travel	
BETTER	★	7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☑
		7.2	**Personalized trip planning**	
			Commuter travel	
BETTER	★	7.2.1	Offer personalized trip planning to new/relocating employees	☐
		7.3	**Promotions**	
			Commuter travel	
BETTER		7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8.	**OTHER INCENTIVES & AMENITIES**	
		8.1	**Emergency ride home**	
			Commuter travel	
BETTER	★	8.1.1	Provide emergency ride home service to non-driving commuters	☐
		8.2	**Alternative work arrangements**	
			Commuter travel	
BASIC	★	8.2.1	Encourage flexible work hours	☐
BETTER		8.2.2	Encourage compressed workweeks	☐
BETTER	★	8.2.3	Encourage telework	☐
		8.3	**Local business travel options**	
			Commuter travel	
BASIC	★	8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4	**Commuter incentives**	
			Commuter travel	
BETTER		8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5	**On-site amenities**	
			Commuter travel	
BETTER		8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

Appendix I

Synchro Intersection Worksheets – 2031 Future Background/Future Total Conditions

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕				⇕	
Traffic Vol, veh/h	52	1	157	13	0	10	125	312	17	16	13	386	72
Future Vol, veh/h	52	1	157	13	0	10	125	312	17	16	13	386	72
Conflicting Peds, #/hr	0	0	24	0	0	0	12	0	0	0	0	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	2	2	2	2	2	2	2	2	2	2	2	5
Mvmt Flow	52	1	157	13	0	10	125	312	17	16	13	386	72

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1036	1071	458	1122	1099	321	470	0	0	-	329	0	0
Stage 1	460	492	-	571	571	-	-	-	-	-	-	-	-
Stage 2	576	579	-	551	528	-	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.52	6.22	7.12	6.52	6.22	4.12	-	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.52	-	6.12	5.52	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.018	3.318	3.518	4.018	3.318	2.218	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	208	221	603	183	212	720	1092	-	-	-	1231	-	-
Stage 1	577	548	-	506	505	-	-	-	-	-	-	-	-
Stage 2	499	501	-	519	528	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	181	188	586	117	180	720	1082	-	-	~	~	-	-
Mov Cap-2 Maneuver	181	188	-	117	180	-	-	-	-	-	-	-	-
Stage 1	490	543	-	434	433	-	-	-	-	-	-	-	-
Stage 2	422	430	-	372	523	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.1	27.3	2.4	
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1082	-	-	375	184	~	-	-
HCM Lane V/C Ratio	0.116	-	-	0.56	0.125	~	-	-
HCM Control Delay (s)	8.8	0	-	26.1	27.3	-	-	-
HCM Lane LOS	A	A	-	D	D	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.3	0.4	~	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	25.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	211	225	22	14	168	139	9	97	8	117	108	168
Future Vol, veh/h	211	225	22	14	168	139	9	97	8	117	108	168
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	5	9	2	7	3	11	2	2	2	3	2
Mvmt Flow	211	225	22	14	168	139	9	97	8	117	108	168
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	33.6	18.7	13.5	24.5
HCM LOS	D	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	46%	4%	30%
Vol Thru, %	85%	49%	52%	27%
Vol Right, %	7%	5%	43%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	114	458	321	393
LT Vol	9	211	14	117
Through Vol	97	225	168	108
RT Vol	8	22	139	168
Lane Flow Rate	114	458	321	393
Geometry Grp	1	1	1	1
Degree of Util (X)	0.249	0.826	0.59	0.714
Departure Headway (Hd)	7.851	6.604	6.617	6.649
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	459	554	549	546
Service Time	5.874	4.604	4.617	4.649
HCM Lane V/C Ratio	0.248	0.827	0.585	0.72
HCM Control Delay	13.5	33.6	18.7	24.5
HCM Lane LOS	B	D	C	C
HCM 95th-tile Q	1	8.4	3.8	5.8