

PROPOSED RESIDENTIAL DEVELOPMENT  
5497 MANOTICK MAIN STREET

TRAFFIC IMPACT ASSESSMENT  
DESIGN REVIEW  
VERSION 2.1

Presented to:

**Ms. Josiane Gervais, P.Eng, M.Eng**  
Project Manager, Transportation Approvals  
City of Ottawa  
110 Laurier Avenue  
Ottawa, Ontario K1P 1J1

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Project 7261

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## 1.0 EXISTING AND PLANNED CONDITIONS

### 1.1 PROPOSED DEVELOPMENT

Exhibit 1-1 illustrates the general location of the proposed residential development located at 5497 Manotick Main Street. The proposed site is located west of Manotick Main Street and would involve removal of the existing building to accommodate the proposed development application.

Exhibit 1-2 illustrates the proposed site plan (August, 2021) highlighting the location of the existing site access to the property (See Appendix “D” for Site Plan). The development when completed would provide for 21 low-rise apartment dwelling units.

The development provides for 10 above ground and 16 underground parking stalls. The entire development would be constructed in a single phase and is anticipated to begin occupancy in 2022.

The proposed development is located within the General Urban Area. A review of the current Zoning By-law indicates a “VM9 – Village Residential Zone” designation. This study is in support of a Site Plan Control application.



**Exhibit 1-1: Proposed Development’s Location**

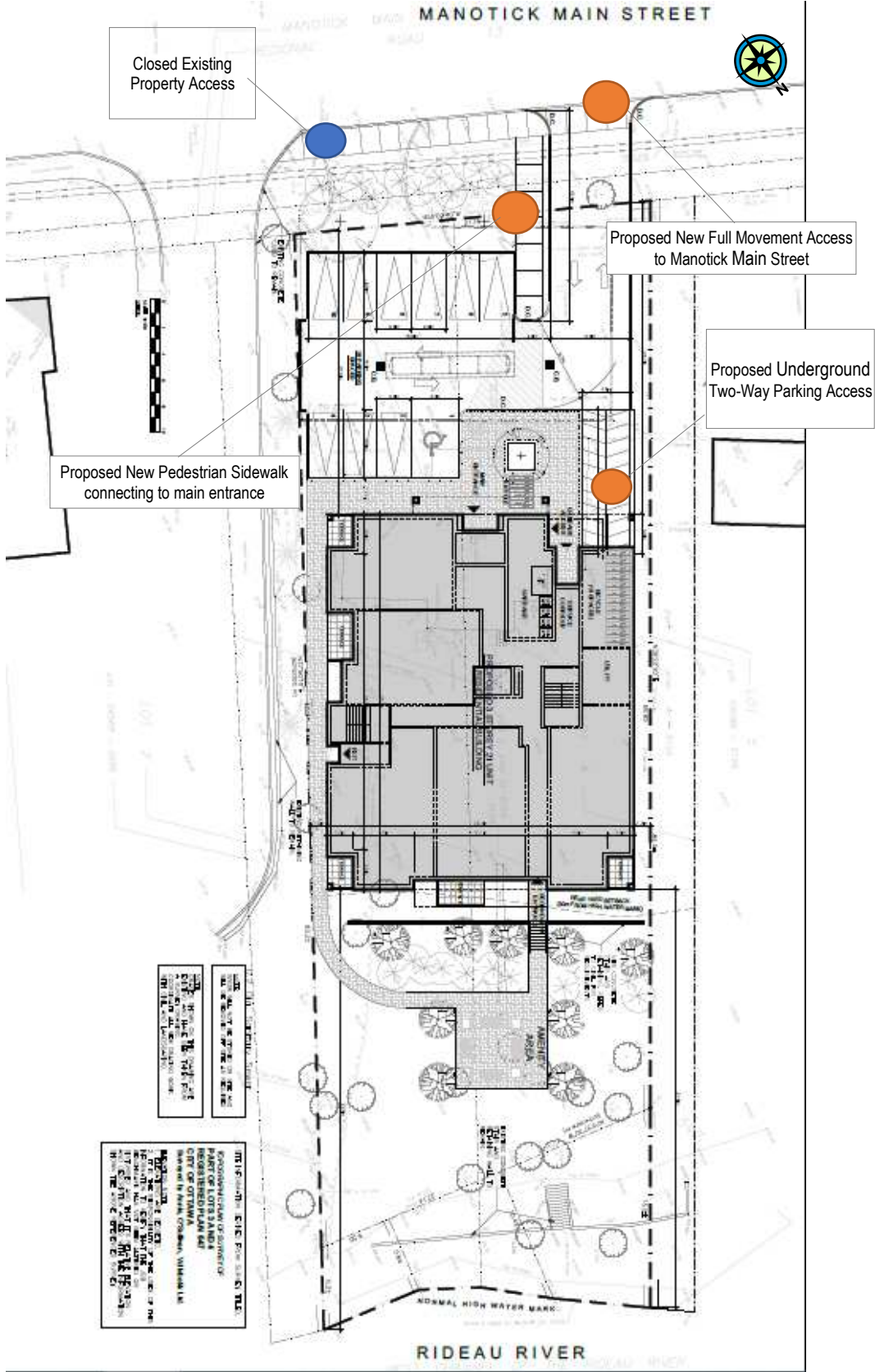


Exhibit 1-2: Proposed 5497 Manotick Main Street: Site Plan (August 2021)

## 1.2 EXISTING CONDITIONS

**Study Area Roadways:** The City of Ottawa TMP (Map 8 and 9) was referenced along with a desktop review of aerial photography to document the existing roadways that would serve the proposed development:

- *Manotick Main Street* is an existing north-south arterial roadway which becomes Rideau Valley Drive and Longfields Drive to the north, and Rideau Valley Drive to the south terminating at Roger Stevens Drive near Kars. In the vicinity of the proposed development, Manotick Main Street is characterized by:
  - a 4-lane undivided arterial cross-section north of the Maple Avenue-Bridge Street intersection;
  - a sidewalk and boulevard configuration located on the west side of the corridor.
  - The lack of sidewalk between the existing site access and the south side of the adjacent commercial accesses along the east side of the corridor; and
  - a 50 km/hr posted speed limit.



**Area Traffic Management:** ATM

strategies have not been identified for the boundary roads within the study area.

**Adjacent Driveways:** The following land uses access Manotick Main Street within 200m of the proposed development (From north to south):

- 5491 and 5495 Manotick Main Street – Residential dwellings that are located to the immediate north of the site. Each dwelling is provided their own respective driveway;
- 5495, 5500, 5506 and 5510 Manotick Main Street – Low-rise commercial office spaces that are each provided their own driveway accesses opposite the proposed development; and
- 5501 Manotick Main Street (Manotick Main Commercial Plaza) – An access to the retail plaza is provided immediately to the south of the proposed development, across from Highcroft Drive.

**Study Area Intersections:** *Manotick Main Street / Bridge Street-Maple Avenue:* This intersection is a 4-leg traffic signal-controlled intersection with pedestrian provisions on all legs of the intersection.

- The eastbound approach provides for an auxiliary left turn bay and one shared EB-Th/RT lane.
- The westbound approach provides for one auxiliary WB-LT lane, one WB-Th lane and one auxiliary WB-RT lane.
- The northbound approach provides for one NB-Th lane and one NB-RT lane, and left turns are prohibited except for buses.
- The southbound approach provides for one SB-LT lane and one shared SB-Th/RT lane.

**Existing Cycling Facilities:** The City of Ottawa’s Transportation Master Plan “*Map 2: Cycling Network – Primary Rural (with Scenic Entry Routes)*” indicates that Manotick Main Street and Bridge Street are designated as cycling “*Spine Routes*”. In terms of cycling demand, the only information that was available to review included a traffic count that was performed on Wednesday December 11<sup>th</sup> 2019 at the Manotick Main Street/ Bridge Street-Maple Avenue intersection which indicated no cyclist activity at the intersection. (This is likely attributed to Winter conditions.)

**Existing Pedestrian Facilities:** A review of the site found that a sidewalk along the east side of Manotick Main Street is not present fronting the proposed site. However, from a point south of the development a sidewalk exists fronting the retail plaza that connects to the Manotick Main Street / Bridge Street-Maple Avenue intersection.

A review of the December 11<sup>th</sup>, 2019 Manotick Main Street / Bridge Street-Maple Avenue intersection traffic counts indicated that:

- 1 pedestrian crossed north-south on Bridge Street-Maple Avenue in the AM peak hour;
- 3 pedestrians crossed north-south on Bridge Street-Maple Avenue in the PM peak hour;
- 3 pedestrians crossed east-west on Manotick Main Street in the AM peak hour; and
- 1 pedestrian crossed east-west on Manotick Main Street in the PM peak hour.

The above pedestrian traffic volumes can be considered low recognizing the timing of the traffic count during winter conditions.

**Existing Transit Provisions:** Exhibit 1-3 illustrates the transit routes (Routes 176, 299 and 305) within the study area in the vicinity of the proposed development.

OC Transpo schedules were reviewed for each of the above routes serving the area in the vicinity of the proposed development:



- **Route 176:** connects the proposed development to the Barrhaven Centre transitway station and travels east-west into the study area at the Manotick Main Street / Bridge Street-Maple Avenue intersection.
  - Route 176 runs only in the peak weekday periods from Monday-to-Friday with one-hour headways.
- **Route 305:** connects North Gower and Kars to Carlingwood through Manotick. The route runs east-west along Bridge Street.
  - Route 305 runs once in the morning and once in the afternoon on Fridays.
    - The route is scheduled in the morning at the nearby Ann/Beaverwood transit stop around 10:07AM and proceeds northwards to Carlingwood;
    - The route in the afternoon terminates at the Ann/Beaverwood transit stop at 3:12PM.
- **Route 299:** connects Manotick and the development to Hurdman Station and runs along Manotick Main Street as well as east-west at the Manotick Main Street / Bridge Street-Maple Avenue intersection.
  - Route 299 runs only in the weekday peak periods from Monday-to-Friday with roughly 50-minute headways.



**Exhibit 1-3: Existing Transit Routes**

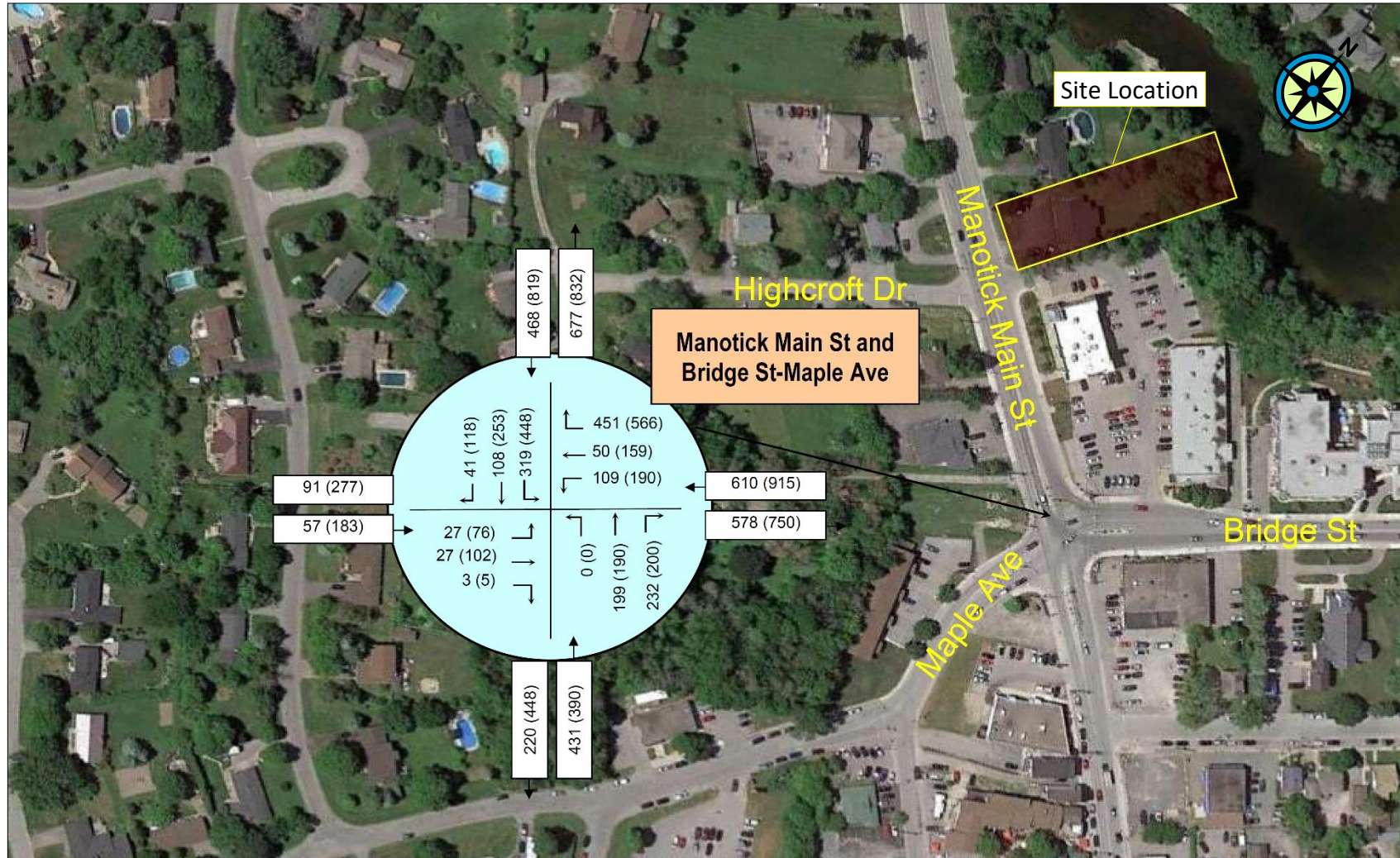
***Existing (2020) Traffic Volumes:*** Exhibit 1-4 illustrates the existing morning and afternoon peak hour traffic volumes obtained from the City of Ottawa's Manotick Main Street/Bridge Street-Maple Avenue/ (City Count: December, 2019) traffic count.

***Collision History Review:*** For each intersection or road segment within the study area, a standard collision rate based on the number of collisions- per-million-entering-vehicles (MEV) was calculated. A collision rate greater than 1.0 collisions/MEV was considered to pose a potential safety concern.

The following provides a summary of the collision information collected and evaluated:

- *Manotick Main Street/Bridge Street-Maple Avenue intersection:* A total of 20 collisions occurred at this intersection in the past 5 years.
  - 35% (7) of the collisions were rear-end collisions;
  - 40% (8) of the collisions were turning movement collisions;
  - All 20 of the collisions were found to result in property damage only (PDO); and
  - A collision rate of 0.44 collisions/MEV was calculated.
  
- *Manotick Main Street between Highcroft Drive and Bridge Street-Maple Avenue (fronting the site):* A total of 5 collisions were found to occur:
  - all 5 of the collisions involve property damage only (PDO); and
  - A collision rate for this segment was found to be 0.25/MEV.

A review of the available collision information indicated that there appears to be no discernable pattern given the incidence of collisions over the 5-year period.



Morning (Afternoon) – Vehicles-Per-Hour

Exhibit 1-4: Existing (2020) Peak Hour Traffic Volumes

### 1.3 PLANNED CONDITIONS

**Planned Transportation Network Modifications:** A review of the City of Ottawa’s documents<sup>1</sup> indicated that no additional improvements to the road network or rapid transit/transit priority network are expected within the study area surrounding the proposed development.

**Other Adjacent Development Initiatives:** A review of adjacent developments planned within the immediate study area was undertaken as part of this scoping report:

- *1164-1166 Highcroft Drive* is a proposed development consisting of 11 single-family dwellings fronting onto Highcroft Drive and a private road;
- *5506 Manotick Main Street:* This proposed development is a four-unit commercial restaurant/retail/office building on the southwest corner of Highcroft Drive/Manotick Main Street, over 494m<sup>2</sup> (5,320 SF) of gross floor area;
- *5514 Manotick Main Street:* This proposed development is located on the northwest corner of the Manotick Main Street/Bridge Street-Maple Avenue intersection and proposes to develop a three-storey 12.5m high residential commercial
- *5536 Manotick Main Street:* This proposal intends to redevelop the existing site into a new two-storey commercial and office residential building with access from Manotick Main Street. The development gross floor area would provide for approximately 720 m<sup>2</sup> of commercial and office space;

**External Development Initiatives:** Two significant development initiatives have been identified south of the study area which are likely to increase north-south traffic adjacent to the proposed development:

- *5651 First Line – Mahogany Subdivision Stage 2, Minto* is currently in development of Stage 2, Phase 2 of a 5-phase residential subdivision bordered by Century Road East on the south, Manotick Main Street to the east and First Line Road to the west. The total unit count is projected to be less than 1,400 units with 50% of development traffic destined to/from the Manotick Main / Bridge Street intersection. Phase 2 of the development would consist of 347 single units and 99 townhouse units; and
- *5721, 5731, 5741 – Riverwalk Subdivision, EQ Homes* is an 85-unit residential subdivision location east of Manotick Main Street nearest the intersection of Century Road. It is expected that full build-out and occupation would be achieved within the 1-to-2 years;

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1. City of Ottawa Transportation Master Plan (Nov. 2013) Map 11 (Road Network Affordable Transportation Network), Map 5 (Rapid Transit and Transit Priority Network – 2031 Affordable Network), Appendix “E” of the 2019 DC Background Study and other planning documents

## **2.0 STUDY AREA AND TIME PERIODS**

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### **2.1 STUDY AREA**

Appendix “B” Screening Form indicates that the proposed 5497 Manotick Main Street development is not anticipated to generate traffic volumes that would satisfy the 60 person-trips during the weekday peak hours of travel demand trigger or threshold that would require a Design Review and Network Impact component.

However, Appendix “B” Screening Form does indicate that the development would meet the Location and Safety Triggers, that necessitate a Design Review.

The study area is proposed to include Manotick Main Street as the “Boundary Street” for further analysis.

Further analysis would address the following intersections in terms of traffic:

- Manotick Main Street/Bridge Street-Maple Avenue (Signalized); and
- Manotick Main Street/Highcroft Drive-Commercial Access.

### **2.2 TIME PERIODS**

The study will analyze the morning and afternoon peak hours of travel demand as they were envisioned to represent the “worst-case” scenario in terms of weekday traffic volumes.

### **2.3 HORIZON YEARS**

The small size of this development does not meet the travel demand triggers that would require a full traffic impact assessment. Recognizing this it is proposed that a single horizon year be analyzed that would represent a 2022 horizon-year corresponding to build-out of the proposed development. The City is requested to waive the requirement for a 5-year horizon analysis as impacts to Manotick Main Street traffic operations are anticipated to remain largely unaffected by the proposed development.

### 3.0 EXEMPTION REVIEW

Table 3.1 is an extract from the TIA Guidelines (2017) in regard to possible reduction in scope of work of the traffic study.

Castleglenn would request the City of Ottawa to provide exemptions for Elements 4.1.3, 4.2.2, 4.5, 4.6 and 4.8 as indicated within the table.

Given that the traffic study has scoped out of the “Network Impact” component of the traffic impact study, Module 3.1 is also considered to be exempt.

**Table 3-1: Exemptions as per TIA Guidelines**

Module	Element	Exemption Considerations	Include Module in TIA
<b>Design Review Component</b>			
<b>4.1 Development Design</b>	<b>4.1.2 Circulation and Access</b>	Required for site plan.	Yes
	<b>4.1.3 New Street Networks</b>	Only required for plans of subdivision	No
<b>4.2 Parking</b>	<b>4.2.1 Parking Supply</b>	Required for site plan.	Yes
	<b>4.2.2 Spillover Parking</b>	Parking supply not anticipated to exceed minimum	No
<b>Network Impact Component</b>			
<b>4.5 Transportation Demand Management</b>	<b>All elements</b>		No
<b>4.6 Neighbourhood Traffic Management</b>	<b>4.6.1 Adjacent Neighbourhoods</b>	The development trips are not anticipated to rely on any collector or local streets for access.	No
<b>4.8 Network Concept</b>		The proposed development is not anticipated to generate 200-person-trips more than the permitted zoning	No

## 4.0 BACKGROUND NETWORK TRAFFIC

### 4.1 CHANGES TO THE BACKGROUND TRAFFIC NETWORK

As indicated in Section 1.3, no significant changes are forecast within the background traffic network, particularly by the build-out forecast of 2022 for the proposed 5497 Manotick Main Street development.

### 4.2 HISTORICAL BACKGROUND GROWTH RATE

Table 4-1 presents the City of Ottawa TRANS Regional Model outputs for the SL49 screen line north of Manotick assuming the 2011 and 2031 morning peak hour runs to estimate background traffic growth in the study area. The table also indicates the Manotick Main Street link volumes north of Manotick for comparison purposes. The 2011 model assumes the Strandherd Bridge is not in place, while the bridge would be available in the 2031 model.

**Table 4-1: TRANS Regional Model Outputs**

<i>Location</i>	<i>2011 AM Pk Hr</i>	<i>2031 AM Pk Hr</i>	<i>Annual Growth</i>
SR41 Screenline	5,318	8,751	3.2%
Manotick Main Street	930	1174	1.3%

The land use for TAZ No. 4502 was reviewed to indicate a growth of approximately 1,350 households between 2011 and 2031. This includes growth in the Minto Mahogany and EQ Homes subdivision in south Manotick. This would represent an average annual growth of almost 7% in both population and households over the 20-year period.

Inspection of the table and the SL49 screen line found a 3.2% annual growth over the 20-year period. It is expected that the growth in south Manotick would be the main component of northbound traffic using Manotick Main Street and crossing the SR41 screen line. It could be anticipated that the traffic growth rate over the next decade would be greater than 3.2% as a significant number of units are anticipated to become occupied in the coming years.

### 4.3 ADJACENT DEVELOPMENT TRAFFIC

Section 1.3 described 4 adjacent developments within the study area that could be occupied by the date of occupancy for the proposed 5497 Manotick Main Street development (2022). A review of the development applications indicated that no TIA information nor specific occupancy information is available at this time for any of the 4 developments. The commercial/office/retail buildings were assumed to be restaurant-related on the ground floor and office-related on the second floor entirely for the purpose of trip generation. The future tenants can likely vary greatly from this assumption.

Table 4-2 summarizes the trip generation rates adopted for the adjacent study area developments. A “High Turn Over Restaurant” was considered a worst-case generation for the ground floor of each residential building along Manotick Main Street.

Table 4-3 indicates the anticipated forecast auto trips generated by the adjacent developments on the surrounding transportation network. This analysis assumes negligible internal capture rates and pass-by rates that could further limit the overall impact of each adjacent development on the surrounding network.

**Table 4-2: Trip Generation Rates adopted for Adjacent Developments**

<i>Land Use</i>	<i>Source</i>	<i>Independent Variable</i>	<i>Morning Peak Hour</i>			<i>Afternoon Peak Hour</i>		
			<i>Rate</i>	<i>In</i>	<i>Out</i>	<i>Rate</i>	<i>In</i>	<i>Out</i>
Small Office Building	ITE - Land Use 712	Gross Floor Area (1000 ft <sup>2</sup> )	1.54	60%	40%	3.73	46%	54%
Services - High Turnover (Sit-Down) Restaurant	ITE - Land Use 932	Gross Floor Area (1000 ft <sup>2</sup> )	9.94	55%	45%	9.77	62%	38%
Single-Detached Dwellings	TRANS (Table 6.2, 6.3)	Dwelling Units	0.7	29%	71%	0.9	62%	38%

The Rural Southwest TAZ (which includes areas such as Richmond to the west) from the 2011 TRANS OD survey was reviewed to determine the trip distribution and assignment for adjacent developments. Approximately 34% of outbound AM trips remained within the Rural Southwest Zone while the remaining 66% were destined to zones north of the study area. 40% of all trips were assumed to occur along the Manotick Main Street corridor fronting the proposed 5497 Manotick Main Street development.

This was found to result in an additional:

- 20 NB trips during the morning peak hour; and
- 25-to-32 trips in the afternoon peak hour.

This would be an equivalent background growth of 1.5%-to-1.9% per year along Manotick Main Street from the combined trip generation of adjacent developments.



**Table 4-3: Adjacent Development Forecast Trip Generation**

<b>1164-1166 Highcroft Drive - Residential</b>								
<i>Land Use</i>	<i>Source</i>	<i>Size</i>	<i>Morning Peak Hour (veh/hr)</i>			<i>Afternoon Peak Hour (veh/hr)</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Single-Detached Dwellings	TRANS (Table 6.2, 6.3)	11 Single Dwelling Units	3	5	8	7	3	10
<b>5506 Manotick Main Street</b>								
<i>Land Use</i>	<i>Source</i>	<i>Size</i>	<i>Morning Peak Hour (veh/hr)</i>			<i>Afternoon Peak Hour (veh/hr)</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Small Office Building	ITE - Land Use 712	2.65 thousand sq. ft.	3	2	5	5	5	10
Services - High Turnover (Sit-Down) Restaurant	ITE - Land Use 932	2.65 thousand sq. ft.	15	12	27	17	9	26
<b>Total</b>			<b>18</b>	<b>14</b>	<b>32</b>	<b>22</b>	<b>14</b>	<b>36</b>
<b>5514 Manotick Main Street</b>								
<i>Land Use</i>	<i>Source</i>	<i>Size</i>	<i>Morning Peak Hour (veh/hr)</i>			<i>Afternoon Peak Hour (veh/hr)</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Small Office Building	ITE - Land Use 712	3.65 thousand sq. ft.	4	2	6	7	7	14
Services - High Turnover (Sit-Down) Restaurant	ITE - Land Use 932	3.65 thousand sq. ft.	20	17	37	23	13	36
<b>Total</b>			<b>24</b>	<b>19</b>	<b>43</b>	<b>30</b>	<b>20</b>	<b>50</b>
<b>5536 Manotick Main Street</b>								
<i>Land Use</i>	<i>Source</i>	<i>Size</i>	<i>Morning Peak Hour (veh/hr)</i>			<i>Afternoon Peak Hour (veh/hr)</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Medical-Dental Office Building	ITE - Land Use 720	2.4 thousand sq. ft.	3	1	4	5	4	9
Services - High Turnover (Sit-Down) Restaurant	ITE - Land Use 932	2.6 thousand of sq. ft.	15	11	26	16	10	26
<b>Total</b>			<b>18</b>	<b>12</b>	<b>30</b>	<b>21</b>	<b>14</b>	<b>35</b>
<b>Grand Total</b>			<b>63</b>	<b>50</b>	<b>113</b>	<b>80</b>	<b>51</b>	<b>131</b>

#### 4.4 EXTERNAL DEVELOPMENT TRAFFIC

Section 1.3 described 2 external developments located south of the study area which could cause additional traffic growth along Manotick Main Street and Bridge Street.

Table 4-4 summarizes the trip generation from the EQ Homes Riverwalk development and the Minto Homes Mahogany Stage 2, Phase 2 development. It is expected that 100% of EQ Homes and 30% of Mahogany Phase 2 would be developed by the 2022 forecast horizon.

**Table 4-4: Trip Generation Extracts for External Residential Developments**

EQ Homes - 5741, 5731 and 5721 Manotick Main Street Auto Trip Generation <sup>1</sup>								
<i>Land Use</i>	<i>Source</i>	<i>Size</i>	<i>Morning Peak Hour (veh/hr)</i>			<i>Afternoon Peak Hour (veh/hr)</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Single Family Homes	ITE 210	30 units	7	24	31	22	14	36
Residential Condos/Towns	ITE 230	54 units	5	27	32	24	12	36
<b>Total</b>		<b>84 units</b>	<b>12</b>	<b>51</b>	<b>63</b>	<b>46</b>	<b>26</b>	<b>72</b>
Assigned to Manotick Main / Bridge Street <sup>2</sup>		90%	11	46	57	41	23	65
1. Referenced from Table 2 and Table 3, 5741, 5731, 5721 Manotick Main Street Transportation Brief, Novatech, July 2016 2. It would be expected that 70% of EQ Homes traffic would utilize Manotick Main Street								
Minto Mahogany Stage 2, Phase 2 Trip Generation <sup>3</sup>								
<i>Land Use</i>	<i>Source</i>	<i>Size</i>	<i>Morning Peak Hour (veh/hr)</i>			<i>Afternoon Peak Hour (veh/hr)</i>		
			<i>In</i>	<i>Out</i>	<i>Total</i>	<i>In</i>	<i>Out</i>	<i>Total</i>
Single Family Homes	ITE 210	30 units	71	159	230	194	100	294
Residential Condos/Towns	ITE 230	54 units	8	39	47	37	40	57
<b>Total</b>		<b>84 units</b>	<b>79</b>	<b>199</b>	<b>278</b>	<b>231</b>	<b>120</b>	<b>351</b>
Assigned to Manotick Main		35%	28	70	97	81	42	123
Assigned to Bridge Street		15%	4	10	15	12	6	18

3. Referenced from Tables 5 and 6 of Minto Mahogany Stage 2 - Transportation Impact Study, Parsons, June 2017

Therefore, fronting the development, it is anticipated that Manotick Main Street would experience:

- During the morning peak hour, a two-way volume increase of 76 vehicles per hour; and
- During the afternoon peak hour, a two-way traffic volume increase of 91 vehicles per hour.

This would be an equivalent background growth of up to 3.6%-to-4.4% in the peak direction per year during the peak hour of travel demand for the next 2 years from the external developments along Manotick Main Street fronting the development.

## 5.0 DEMAND RATIONALIZATION

### 5.1 REVIEW OF EXISTING NETWORK CONSTRAINTS

Table 5-1 summarizes the intersection capacity analysis for the 2020 morning and afternoon peak hours of travel demand without the proposed 5497 Manotick Main Street or the adjacent development traffic. The table denotes the most critical movements at the study area intersections based on level-of-service (v/c ratio for traffic signals, delay for non-signalized).

The analysis was found to indicate, as regards City of Ottawa standards for overall intersection operations, that the Manotick Main Street / Bridge Street intersection would meet the target level of service of “D”.

**Table 5-1: Existing Intersection Capacity Analysis**

<i>Intersection</i>	<i>Weekday Morning Peak Hour (Afternoon Peak Hour)</i>							
	<i>Critical Movement</i>					<i>Overall Intersection</i>		
	<i>Approach / Movement</i>	<i>Queue Length (m)</i>	<i>Delay (seconds)</i>	<i>LOS</i>	<i>v/c</i>	<i>Delay (seconds)</i>	<i>LOS</i>	<i>v/c</i>
<i>Signalized</i>								
<i>Manotick Main Street / Bridget Street</i>	<i>WB-Th (WB-Th)</i>	25 (72)	45 (62)	A (B)	0.22 (0.66)	22 (30)	D (D)	0.81 (0.83)
	<i>SB-LT (SB-LT)</i>	81 (125)	17 (31)	A (D)	0.55 (0.83)			
<i>Unsignalized – STOP controlled</i>								
<i>Manotick Main Street / Highcroft Drive</i>	<i>EB Approach (EB Approach)</i>	1 (2)	17 (29)	C (D)	0.03 (0.06)	--		

### 5.2 QUALITATIVE REVIEW OF FUTURE CONDITIONS

A review of the existing intersection capacity analysis indicates that the existing Manotick Main Street / Bridge Street intersection operates with acceptable levels of service, delay and v/c ratios that meet the target LOS “D”.

By the 2022 horizon year, the 5 adjacent residential/commercial developments and 2 external residential developments are anticipated to increase the peak hour traffic volume in the north-south directions by up to 7% fronting the proposed development. While the existing transportation network is capable of accommodating additional growth, the combined external residential and adjacent developments are likely to increase delays at the Manotick Main Street / Bridge Street intersection and reduce gaps within the north-south traffic stream.

The proposed 5497 Manotick Main Street development is anticipated to generate a negligible amount of auto traffic onto the surrounding roadway network when compared to the forecast background growth.

## **6.0 ANALYSIS**

---

### **6.1 DEVELOPMENT DESIGN**

#### **6.1.1 Design for Sustainable Modes**

The proposed 5497 Manotick Main Street residential re-development:

- Provides 10 interior and sheltered cycling parking stalls for the residential unit portion of the development;
- Provides 4 cycle stalls fronting the development. It is recommended that cycle stalls also be located in the rear of the building to provide more secure bicycle parking for tenants; and
- Proposes to implement a 2.0m concrete sidewalk fronting the development with firm surface walkways connecting the building accesses to the street front. The sidewalk and curb are to be depressed and continuous across the site access.
- Proposes to implement a direct pedestrian connection of building's entrance to the street front by means of providing a concrete sidewalk with a depressed curb parallel to the parking access. Hatched pavement markings over the parking lot access and a depressed curb directly in front of the main entrance are also to be provided. These provisions ensure proper pedestrian connectivity of the development to the adjacent street network.

The above elements follow the City of Ottawa Planning and Design Guidelines.

Exhibit 6-1 illustrates the approximately 200m walking distance measured from the center of the proposed development to two transit stops west of the Manotick Main Street / Bridge Street (2847 and 2848). Concrete sidewalks connect the proposed development to these two stop locations. This achieves the standard of a 400m walking distance to transit.

The City of Ottawa's TDM-Supportive Development Design and Infrastructure Checklist has been completed and included with Appendix "F" for the residential development.

A review of the TDM Checklist indicated that the proposed site plan:

- provides satisfactory pedestrian circulation within the site which includes hard walking surfaces between doors and the rear-amenity area. The development should ensure that the amenity area is accessible to all users from both the rear and side doors;
- provides a concrete sidewalk connecting main entrance of the development to existing transit facilities south of the site; and
- meets minimum vehicle parking requirements while exceeding cycle stall requirements. The development proponent is recommended to afford 1 additional cycle stall indoors and additional cycle stalls in the rear of the building to promote cycling for the residential building.

### 6.1.2 Circulation and Access

The site proposes to relocate the access to the north of its current location. Regarding circulation, it is anticipated that:

- Waste collection refuse would be conducted at the street front. Manotick Main Street provides for two-lanes of northbound traffic which would allow vehicles to flow around the truck when waste pick up is required; and
- Deliveries to the site, such as tenant move-in vehicles, are anticipated to be infrequent. In the rare case of a large delivery vehicle (i.e. a medium size truck) the delivery would be accommodated on the street-front. The proponent is recommended to coordinate with tenants on how best to accommodate dwelling move-ins.



**Exhibit 6-1: Local Transit Stops (200m Walking Distance)**

## 6.2 PARKING

### 6.2.1 Motor Vehicle Parking

Parking is to be accommodated on-site by both above-ground stalls and underground stalls. 26 parking stalls are proposed to be available, which would consist of 10 surface stalls and 16 underground stalls contained within a single floor. The proposed site is located in Area “D - Rural” of Schedule 1A (Zoning By-law No.2008-250).

Table 6-1 summarizes the auto parking required and proposed supply for the development.

**Table 6-1: Parking Requirements for the 5497 Manotick Main Street**

<i>Parking Type</i>	<i>Rate</i>	<i>Unit</i>	<i>Parking Requirements</i>	<i>Provided Parking*</i>
Residential - Tenant (Table 101)	1 stalls / unit	21 Units	21 Stalls	16 underground stalls for tenants
Residential - Visitor (Table 102)	0.2 stalls / unit		5 Stalls	10 Surface stalls for visitors/tenants
<b>Total Parking Stalls</b>			<b>26 Stalls Required</b>	<b>26 Stalls Provided</b>

Table 6-1 indicates that the proposed development includes 26 total parking stalls which meets the minimum parking requirements according to City of Ottawa By-law in Area ‘D’ for a residential development.

### 6.2.2 Bicycle Parking

As regards bicycle parking supply, a review of By-Law Section 111 indicates 0.50 bicycle parking spaces per-dwelling-unit for a residential apartment building. The bylaw requirements indicates that 11 bicycle spaces would be required for the residential component of the development.

The proposed site plan provides for 10 horizontal bicycle stalls located on the ground floor of the building. An additional 4 bicycle stalls are located on the front exterior of the building. It is recommended to locate additional bicycle stalls in the rear of the building to encourage tenant use and promote a safe parking area.

## **6.3 BOUNDARY STREET DESIGN**

### **6.3.1 Mobility – Segment MMLOS Analysis**

The Multi-Modal Level-of-Service (MMLOS) guidelines were used to evaluate the segment level of service for all modes of transportations along Manotick Main Street northbound fronting the site. The Manotick Main Street corridor was assumed to be an “Arterial Main Street” corridor for the purpose of MMLOS targets.

Table 6-2 summarizes the segment MMLOS analysis fronting the proposed development assuming the proposed conditions that include a 2.0m sidewalk fronting the site. For the pedestrian and bike LOS analysis, the analysis has adopted the assumption that the operating speed is 10 km/hr greater than the roadway posted speed<sup>2</sup>.

Inspection of the analysis found:

- A PLOS of “E” due to the lack of boulevard, the operating speed of 60 km/hr, the lack of on-street parking and the presence of more than 3,000 vehicles per day on the curb lane of traffic to achieve a PLOS target of “C”, a boulevard greater than 2.0m would be required. However, this boulevard would be inconsistent with the adjacent sidewalk segment and could pose design challenges when connecting both sidewalks;
- A BLOS “F” due to the mixed cycling and traffic flow and an operating speed equal to 60 km/hr. To achieve the BLOS target of “C”, cycle lanes would be required along Manotick Main Street;
- No transit analysis was undertaken as there are no transit routes along this section of Manotick Main Street; and
- Manotick Main Street was found to achieve a TkLOS “A” which exceeds the TkLOS “D” for a designated truck route.

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<sup>2</sup> Section 2.5, “Addendum to MMLOS Guidelines”, City of Ottawa, May 2017.

**Table 6-2: Segment MMLOS for Manotick Main Street at Build-Out (2022)**

<i>Performance Measure</i>	<i>Roadway Segments Adjacent to the Development</i>
	Northbound Manotick Main Street
<b><i>Pedestrian LOS (PLOS)</i></b>	
Sidewalk Width (m)	2.0
Boulevard Width (m)	0m
Average Daily Curb Lane Traffic Volume	~8,500
Presence of On-Street Parking	No
Operating Speed (km/h) Posted +10 km/hr	60
Segment PLOS	<b>E</b>
Target PLOS	<b>C</b>
<b><i>Bicycle LOS (BLOS)</i></b>	
Bikeway Type	Mixed Traffic
Number of Lanes per direction	2 (marked centreline)
Bike Lane Width (m)	N/A
Operating Speed (km/h) Posted +10 km/hr	60
Bike Lane Blockage	N/A
Segment BLOS	<b>F</b>
Target BLOS Spine Route	<b>C</b>
<b><i>Transit LOS (TLOS)</i></b>	
Facility Type	N/A
Level/Exposure to Parking/Driveway Friction	
Average Transit Travel Speed (km/h)	
Posted Speed Limit (km/h)	
Segment TLOS	
Target TLOS	
<b><i>Truck LOS (TkLOS)</i></b>	
Number of lanes (in each direction)	2
Curb Lane Width (m)	>3.7
Segment TkLOS	<b>A</b>
Target TkLOS	<b>D</b>

## 6.4 ACCESS INTERSECTIONS DESIGN

### 6.4.1 Location and Design of Site Access

The 5497 Manotick Main development proposes to relocate the existing property access approximately 17m north along Manotick Main Street to access the proposed parking facilities. The relocated access provides improved spacing to the adjacent commercial access for a more ideal access arrangement.

Inspection of the 5497 Manotick Main site access was found to indicate:



- the access is located approximately 120m north of the Manotick Main Street / Bridge Street intersection. This is within the SB-LT auxiliary lane of the adjacent intersection, which extends north as a continuous left-turn lane towards the Bankfield Road intersection. A review of the existing queue lengths found that during the morning peak hour, the 95<sup>th</sup> percentile queue could extend up to 140m along the Manotick Main Street corridor. The proposed development is not anticipated to involve such significant traffic volumes as to develop a significant safety concern between the site vehicles and the Manotick Main Street traffic;
- a clear throat length greater than 14m where, according to the Transportation Association of Canada (TAC) Table 8.9.10 recommends 15m from a residential property of less than 100 units accessing an arterial street. This throat length is considered acceptable given the site arrangement and the low number of residential units;
- direct sight lines between the access, the adjacent Commercial Plaza access, and to either direction along Manotick Main Street;
- the access is approximately 9.0m in width at the street front, which meets the maximum allowable width for a property access;
- the proposed site access is located effectively along the property line, measured where the property line intersects the curb edge at the street front. The minimum desired distance from the property line is identified as 3.0m as per section 25.1 p of the Private Approach By-Law. However, this separation is identified as an existing constraint where the full 3.0m is difficult to achieve given the adjacent access. The proposed access is anticipated to have suitable sight lines, would have a negligible impact on the adjacent access operates, and would continue to operate similar to the existing access configuration. Therefore, the proposed separation is considered acceptable;
- the access is located opposite 5500 Manotick Main (Coldwell Bankers) driveway along Manotick Main. Given the low development generated travels demands from the proposed development, conflicts with opposing accesses along Manotick Main Street are anticipated to be minimal; and
- a 6.0m drive aisle width for two-way travel that accesses less than 50 parking stalls. A 6.7m aisle width is provided to access parking stalls arranged at a 90<sup>0</sup> angle.

#### **6.4.2 Intersection Control**

The proposed development would maintain STOP-control on the minor leg of the site access. No changes to the Manotick Main Street free-flow traffic are proposed, as traffic signals at this location would likely be a detriment to traffic flow.

The site access is anticipated to experience similar delays to the existing Highcroft Drive-Commercial Plaza intersection immediately to the south of the development. These delays were found to be manageable during the peak hours of travel demand.

## **7.0 TIA STRATEGY**

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### **7.1 RECOMMENDED IMPROVEMENTS**

Should it be desired, it is recommended that the City of Ottawa undertake improvements to the adjacent 5511 Manotick Main Street access to provide a continuous depressed sidewalk and curb to connect with the existing sidewalk along the east side of Manotick Main Street. This improvement has been omitted from the site plan as it is believed to be an improvement undertaken by others.

### **7.2 CONCLUSION**

The 5497 Manotick Main Street application proposes to re-develop the existing site into a residential building with 21 apartment units. The development is anticipated to generate negligible vehicle traffic volumes that would have an insignificant impact on the surrounding roadway network.

Should you have any questions or comments, please do not hesitate to contact us at your convenience.

Yours truly,



---

Mr. Arthur Gordon B.A. P.Eng  
Principal Engineer  
**Castleglenn Consultants Inc.**



---

Mr. Andrey Kirillov B.Eng  
Transportation Planner  
**Castleglenn Consultants Inc.**

APPENDIX A: CERTIFICATION FORM FOR TIA STUDY PROJECT MANAGER



## **TIA Plan Reports**

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

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

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

### **CERTIFICATION**

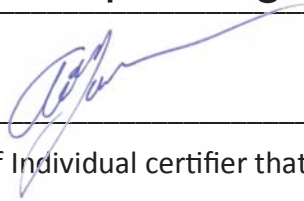
1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation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

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

Dated at Ottawa this 23 day of October, 2020.  
(City)

Name: Arthur Gordon  
(Please Print)

Professional Title: Principal Engineer

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

<b>Office Contact Information (Please Print)</b>
Address: Suite 200 - 2460 Lancaster Road
City / Postal Code: Ottawa / K1B 4S5
Telephone / Extension: 613 - 731 - 4052
E-Mail Address: agordon@castleglenn.ca

Stamp



APPENDIX B: SCREENING FORM

2460 Lancaster Road, Suite 200,  
Ottawa, Ontario, K1B 4S5  
Tel: 613-731-4052

## City of Ottawa 2017 TIA Guidelines Screening Form

**Ms. Josiane Gervais, P.Eng, M.Eng**  
Project Manager, Infrastructure Approvals  
Planning, Infrastructure and Economic Development  
City of Ottawa, 110 Laurier Avenue West, Ottawa, ON K1P 1J1

September 20<sup>th</sup>, 2021

Please see below the completed screening form for the proposed mixed-use development located at 5497 Manotick Main Street. The proposed 5497 Manotick Main Street development is located approximately 110m north of the Manotick Main/Bridge Street intersection and is to be composed of 21 low-rise apartment dwelling units.

In summary, the development is not anticipated to generate sufficient two-way person-trips to meet the Trip Generation Trigger. However, the development was found to meet the Location and Safety Triggers. Therefore, a Design Review TIA is understood to be required.

### 1. Description of Proposed Development

<b>Municipal Address</b>	5497 Manotick Main Street
<b>Description of Location</b>	The proposed site is located west of Manotick Main Street and north of Bridge Street, across from Highcroft Drive. The site backs into the Rideau River.
<b>Land Use Classification</b>	Mixed-Use Residential and Retail – Village Mainstreet
<b>Development Size (units)</b>	21 Apartment Units
<b>Development Size (m<sup>2</sup>)</b>	~2,170 m <sup>2</sup>
<b>Number of Accesses and Locations</b>	The site proposes to one existing access from Manotick Main Street
<b>Phase of Development</b>	One Phase
<b>Buildout Year</b>	Estimated 2022

### 2. Trip Generation Trigger

The development will consist of 21 apartment residential units. At this time, the tenants for the retail development are unknown. However, it is highly likely that the development would produce less than 60 person-trips during the weekday peak hours of travel demand.

Therefore, **the Trip Generation Trigger is not satisfied.**

2460 Lancaster Road, Suite 200,  
Ottawa, Ontario, K1B 4S5  
Tel: 613-731-4052

### 3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or <b>Spine Bicycle Networks</b> ?		X
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone? *	X	

*\*DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

The development proposes to use the existing access to the property. The development is located within a Design Priority Area (Manotick Village Core). Therefore, **the Location Trigger is satisfied.**

### 4. Safety Triggers

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

The existing property access is located approximately 110m north of the Manotick Main Street / Bridge Street intersection. The SB-LT auxiliary lane, that begins at Bankfield Road upstream, fronts the development. Therefore, **the Safety Trigger is satisfied.**



2460 Lancaster Road, Suite 200,  
Ottawa, Ontario, K1B 4S5  
Tel: 613-731-4052

## 5. Summary

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

Yours Truly,



Mr. Arthur Gordon B.A. P.Eng  
Principal Engineer  
Castleglenn Consultants Inc.



Mr. Jake Berube B.Eng. EIT  
Traffic Planning Specialist  
Castleglenn Consultants Inc.

## APPENDIX C: EXISTING TRAFFIC VOLUMES, COLLISIONS AND TIMING PLAN



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Traffic Control:** Traffic signal

**Total Collisions:** 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Jan-07, Tue,08:00	Clear	Rear end	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2014-Feb-03, Mon,10:07	Clear	Turning movement	P.D. only	Dry	West	Turning left	Truck - open	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2014-Feb-11, Tue,22:36	Clear	Turning movement	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2014-Jul-18, Fri,07:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2014-Oct-28, Tue,08:25	Rain	Turning movement	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2015-Feb-24, Tue,12:39	Clear	SMV other	P.D. only	Dry	West	Turning right	Truck and trailer	Pole (utility, power)	0
2015-Mar-10, Tue,15:12	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Passenger van	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-May-15, Fri,14:27	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2015-Aug-04, Tue,23:09	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-01, Tue,12:46	Clear	Turning movement	P.D. only	Dry	West	Turning right	Truck and trailer	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Mar-09, Wed,15:50	Clear	Angle	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-04, Sat,10:42	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Traffic Control:** Traffic signal

**Total Collisions:** 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-May-09, Tue,14:38	Clear	Angle	P.D. only	Dry	West	Turning right	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-16, Fri,12:35	Clear	Rear end	P.D. only	Dry	South	Going ahead	Truck - dump	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-16, Sat,16:17	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2018-Jan-25, Thu,13:27	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Delivery van	Other motor vehicle	
2018-Mar-26, Mon,07:21	Clear	SMV other	P.D. only	Dry	South	Going ahead	Delivery van	Ran off road	0
2018-Jun-25, Mon,07:14	Clear	Rear end	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Oct-11, Thu,06:46	Rain	Turning movement	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-14, Wed,10:05	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	

**Location:** MANOTICK MAIN ST btwn HIGHCROFT DR & MAPLE AVE

**Traffic Control:** No control

**Total Collisions:** 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-11, Tue,06:35	Clear	Rear end	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Mar-17, Mon,16:02	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** MANOTICK MAIN ST btwn HIGHCROFT DR & MAPLE AVE

**Traffic Control:** No control

**Total Collisions:** 5

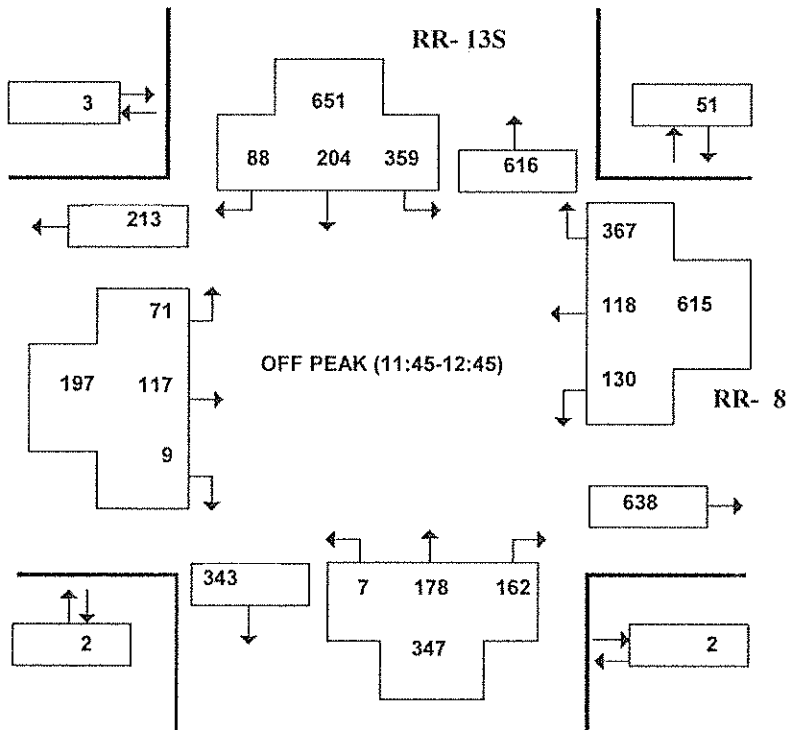
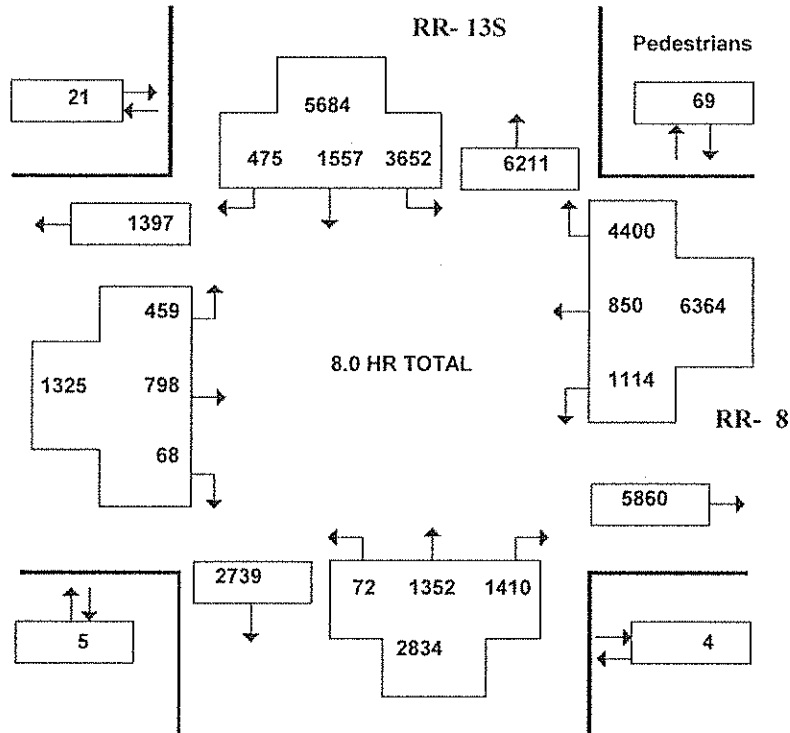
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Mar-18, Wed, 17:21	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-May-13, Sat, 10:12	Rain	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-16, Fri, 13:03	Clear	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

**BRIDGE ST and MAIN ST**  
(ULRS Listing RR- 8 & RR- 13S)

Survey Date: Tuesday 29 May 2012  
 Conditions: dry  
 Start Time: 0700

Total Observed U-Turns  
 Northbound: 0 Southbound: 0  
 Eastbound: 0 Westbound: 0

AADT Factor  
 Tuesday in May is  
 9



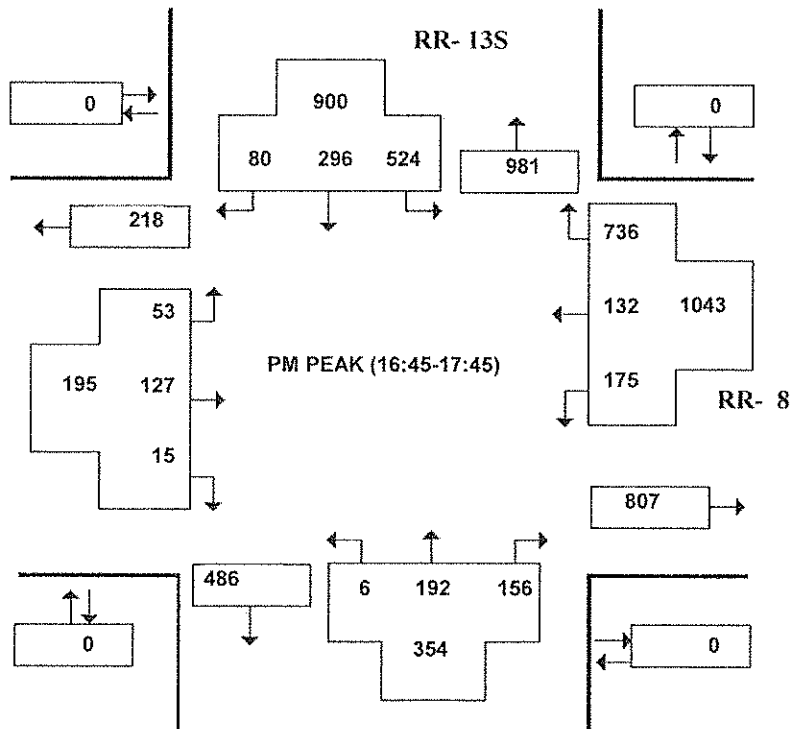
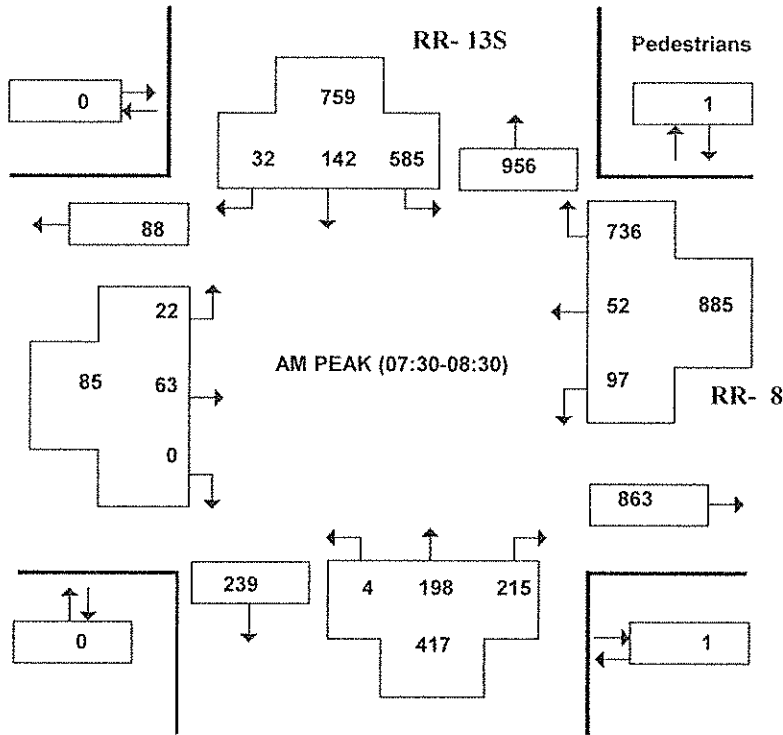
Refer to Summary  
 Page for Survey  
 Hours.

**BRIDGE ST and MAIN ST**  
(ULRS Listing RR- 8 & RR- 13S)

Survey Date: Tuesday 29 May 2012  
 Conditions: dry  
 Start Time: 0700

**Total Observed U-Turns**  
 Northbound: 0 Southbound: 0  
 Eastbound: 0 Westbound: 0

**AADT Factor**  
 Tuesday in May is  
 9



Vehicular Turning Movements - Summary

**BRIDGE ST and MAIN ST**

(ULRS Listing RR- 8 & RR- 13S)

Survey Date: Tuesday 29 May 2012

Conditions: dry

Start Time: 0700

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

Tuesday in May is

9

Time Period	RR- 13S										RR- 8									
	Northbound			SUB TOT	Southbound			SUB TOT	STR TOT	Eastbound			SUB TOT	Westbound			SUB TOT	STR TOT	GRAND TOT	
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT				
07:00-08:00	7	187	209	403	538	100	26	664	1067	18	50	0	68	66	39	633	738	806	1873	
08:00-09:00	7	186	180	373	511	141	43	695	1068	50	67	4	121	119	69	732	920	1041	2109	
09:00-10:00	13	132	156	301	390	128	56	574	875	61	82	14	157	150	111	514	775	932	1807	
11:30-12:30	6	194	167	367	336	181	87	604	971	81	123	11	215	123	117	343	583	798	1769	
12:30-13:30	10	129	197	336	353	195	51	599	935	53	104	4	161	138	116	342	596	757	1692	
15:00-16:00	14	173	190	377	493	277	71	841	1218	74	133	12	219	160	115	436	711	930	2148	
16:00-17:00	10	185	154	349	518	276	63	857	1206	62	118	9	189	183	138	631	952	1141	2347	
17:00-18:00	5	166	157	328	513	259	78	850	1178	60	121	14	195	175	145	769	1089	1284	2462	
<b>8.0 HR TOTAL</b>	<b>72</b>	<b>1352</b>	<b>1410</b>	<b>2834</b>	<b>3652</b>	<b>1557</b>	<b>475</b>	<b>5684</b>	<b>8518</b>	<b>459</b>	<b>798</b>	<b>68</b>	<b>1325</b>	<b>1114</b>	<b>850</b>	<b>4400</b>	<b>6364</b>	<b>7689</b>	<b>16207</b>	

EQU. 12 HR TOTAL 100 1879 1959 39385076 2164 660 7900 11838 638 1109 94 1841 1548 1181 6116 8845 10686 22524

Note: These values are calculated by multiplying the totals by the appropriate expansion factor.

AVG. 12 HR TOTAL 90 1691 1763 3544 4568 1947 594 7109 10653 574 998 84 1656 1393 1062 5504 7959 9615 20268

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.

AVG. 24 HR TOTAL 117 2215 2309 4641 5984 2550 778 9312 13953 751 1307 110 2168 1824 1391 7210 10425 12593 26546

Note: These volumes were calculated by multiplying the Average Daily 12 hr totals by 1.31.

AM TOTAL (0700-0900) 14 373 389 776 1049 241 69 1359 2135 68 117 4 189 185 108 1365 1658 1847 3982

PM TOTAL (1530-1730) 19 379 318 716 989 571 134 1694 2410 126 264 24 414 367 259 1259 1885 2299 4709



Vehicular Turning Movements (15 Min. Volumes)

**BRIDGE ST and MAIN ST**  
(ULRS Listing RR- 8 & RR- 13S)

Survey Date: Tuesday 29 May 2012  
 Conditions: dry  
 Start Time: 07:00

Total Observed U-Turns  
 Northbound: 0 Southbound: 0  
 Eastbound: 0 Westbound: 0

AADT Factor  
 Tuesday in May is  
 9

Time Period	RR- 13S									RR- 8									SUB TOT	STR TOT	GRAND TOT
	Northbound			SUB TOT	Southbound			SUB TOT	STR TOT	Eastbound			SUB TOT	Westbound							
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT					
07:00-07:15	3	40	61	104	118	14	8	140	244	5	10	0	15	12	7	109	128	143	387		
07:15-07:30	2	44	39	85	124	20	6	150	235	3	11	0	14	14	9	153	176	190	425		
07:30-07:45	1	51	56	108	151	25	7	183	291	5	13	0	18	22	10	185	217	235	526		
07:45-08:00	1	52	53	106	145	41	5	191	297	5	16	0	21	18	13	186	217	238	535		
08:00-08:15	0	49	58	107	122	37	7	166	273	6	20	0	26	30	10	188	228	254	527		
08:15-08:30	2	46	48	96	167	39	13	219	315	6	14	0	20	27	19	177	223	243	558		
08:30-08:45	1	41	29	71	118	36	11	165	236	28	17	3	48	31	12	185	228	276	512		
08:45-09:00	4	50	45	99	104	29	12	145	244	10	16	1	27	31	28	182	241	268	512		
09:00-09:15	1	41	46	88	106	38	13	157	245	11	18	2	31	32	26	143	201	232	477		
09:15-09:30	4	29	42	75	103	33	16	152	227	16	29	3	48	57	28	135	220	268	495		
09:30-09:45	5	31	36	72	101	27	13	141	213	15	17	3	35	34	29	129	192	227	440		
09:45-10:00	3	31	32	66	80	30	14	124	190	19	18	6	43	27	28	107	162	205	395		
11:30-11:45	1	48	43	92	66	20	10	96	188	22	23	5	50	28	28	61	117	167	355		
11:45-12:00	1	37	51	89	98	36	23	157	246	31	36	3	70	34	29	91	154	224	470		
12:00-12:15	1	47	28	76	79	54	17	150	226	14	27	2	43	35	34	93	162	205	431		
12:15-12:30	3	62	45	110	93	71	37	201	311	14	37	1	52	26	26	98	150	202	513		
12:30-12:45	2	32	38	72	89	43	11	143	215	12	17	3	32	35	29	85	149	181	396		
12:45-13:00	1	32	58	91	85	59	12	156	247	19	31	0	50	35	25	78	138	188	435		
13:00-13:15	4	26	54	84	91	44	15	150	234	10	27	0	37	29	32	82	143	180	414		
13:15-13:30	3	39	47	89	88	49	13	150	239	12	29	1	42	39	30	97	166	208	447		
15:00-15:15	7	39	63	109	115	49	18	182	291	11	17	2	30	32	27	95	154	184	475		
15:15-15:30	1	38	36	75	148	80	18	246	321	22	27	3	52	38	35	90	163	215	536		
15:30-15:45	5	50	51	106	126	68	17	211	317	16	34	3	53	47	26	134	207	260	577		
15:45-16:00	1	46	40	87	104	80	18	202	289	25	55	4	84	43	27	117	187	271	560		
16:00-16:15	4	41	41	86	142	71	15	228	314	17	34	3	54	43	40	137	220	274	588		
16:15-16:30	1	53	36	90	103	53	12	168	258	18	37	0	55	45	28	145	218	273	531		
16:30-16:45	2	37	35	74	136	90	18	244	318	13	23	1	37	47	39	178	264	301	619		
16:45-17:00	3	54	42	99	137	62	18	217	316	14	24	5	43	48	31	171	250	293	609		
17:00-17:15	3	53	26	82	110	69	18	197	279	11	31	1	43	49	36	200	285	328	607		
17:15-17:30	0	45	47	92	131	78	18	227	319	12	26	7	45	45	32	177	254	299	618		
17:30-17:45	0	40	41	81	146	87	26	259	340	16	46	2	64	33	33	188	254	318	658		
17:45-18:00	2	28	43	73	126	25	16	167	240	21	18	4	43	48	44	204	296	339	579		

## Pedestrian Volume Summary Sheet - Hourly Volumes

**BRIDGE ST and MAIN ST**

(ULRS Listing RR- 8 &amp; RR- 13S )

Survey Date: Tuesday 29 May 2012

Conditions: dry

Start Time: 0700

Time Period	CROSSING	CROSSING	STREET TOTAL	CROSSING	CROSSING	STREET TOTAL	GRAND TOTAL
	RR- 13S N/B APPROACH	RR- 13S S/B APPROACH		RR- 8 E/B APPROACH	RR- 8 W/B APPROACH		
07:00-08:00	0	0	0	1	2	3	3
08:00-09:00	1	0	1	1	10	11	12
09:00-10:00	0	1	1	0	1	1	2
11:30-12:30	2	2	4	0	51	51	55
12:30-13:30	1	3	4	2	3	5	9
15:00-16:00	0	5	5	1	2	3	8
16:00-17:00	0	10	10	0	0	0	10
17:00-18:00	0	0	0	0	0	0	0
<b>8.0 HR TOTAL</b>	<b>4</b>	<b>21</b>	<b>25</b>	<b>5</b>	<b>69</b>	<b>74</b>	<b>99</b>

**PEAK PERIOD SUMMARIES**
**AM PEAK PERIOD (7:00-9:00)**

07:00-07:15	0	0	0	0	0	0	0
07:15-07:30	0	0	0	1	2	3	3
07:30-07:45	0	0	0	0	0	0	0
07:45-08:00	0	0	0	0	0	0	0
08:00-08:15	0	0	0	0	0	0	0
08:15-08:30	1	0	1	0	1	1	2
08:30-08:45	0	0	0	1	9	10	10
08:45-09:00	0	0	0	0	0	0	0
<b>TOTALS</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>12</b>	<b>14</b>	<b>15</b>

**OFF PEAK PERIOD (11:30-13:30)**

11:30-11:45	1	0	1	0	1	1	2
11:45-12:00	0	0	0	0	0	0	0
12:00-12:15	1	1	2	0	7	7	9
12:15-12:30	0	1	1	0	43	43	44
12:30-12:45	1	1	2	2	1	3	5
12:45-13:00	0	0	0	0	0	0	0
13:00-13:15	0	0	0	0	0	0	0
13:15-13:30	0	2	2	0	2	2	4
<b>TOTALS</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>2</b>	<b>54</b>	<b>56</b>	<b>64</b>

**PM PEAK PERIOD (15:30-17:30)**

15:30-15:45	0	2	2	0	0	0	2
15:45-16:00	0	0	0	1	2	3	3
16:00-16:15	0	0	0	0	0	0	0
16:15-16:30	0	10	10	0	0	0	10
16:30-16:45	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0
<b>TOTALS</b>	<b>0</b>	<b>12</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>15</b>

Approved by: MO

Printed on : 21/02/2013

Heavy Vehicle Summary Sheet - Hourly Volumes

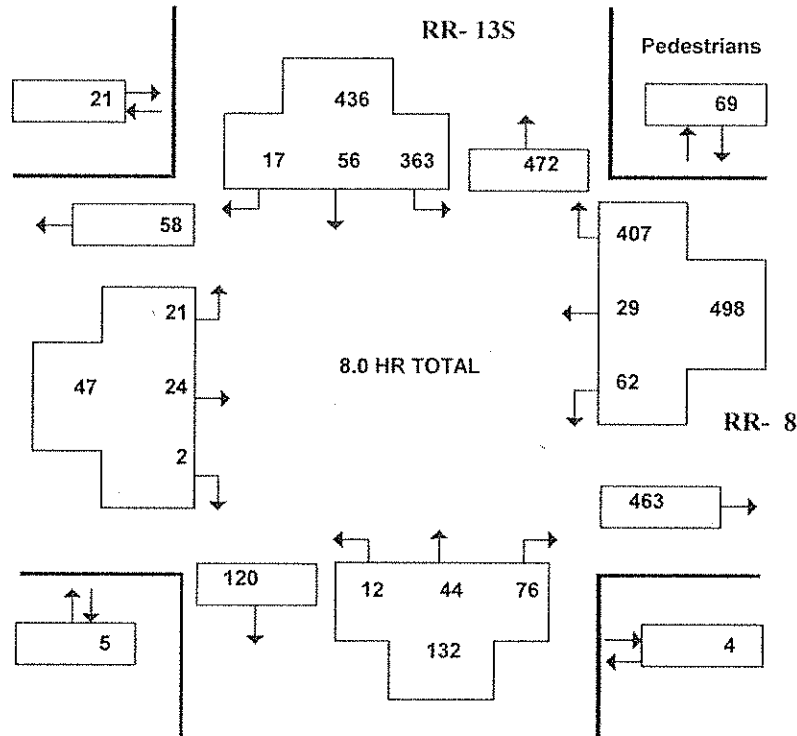
**BRIDGE ST and MAIN ST**

(ULRS Listing RR- 8 & RR- 13S)

Survey Date : Tuesday 29 May 2012

Conditions : dry

Start Time : 0700



Time Period	RR- 13S									RR- 8									
	Northbound			SUB TOT	Southbound			SUB TOT	STR TOT	Eastbound			SUB TOT	Westbound			SUB TOT	STR TOT	GRAND TOT
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00-08:00	6	10	11	27	40	10	1	51	78	2	4	0	6	5	2	92	99	105	183
08:00-09:00	2	7	14	23	42	10	4	56	79	6	3	0	9	12	4	74	90	99	178
09:00-10:00	4	5	18	27	41	5	3	49	76	2	2	0	4	12	2	48	62	66	142
11:30-12:30	0	5	6	11	46	8	4	58	69	3	3	1	7	9	1	29	39	46	115
12:30-13:30	0	5	9	14	43	4	0	47	61	3	2	0	5	1	5	45	51	56	117
15:00-16:00	0	7	9	16	60	6	3	69	85	1	5	0	6	10	4	45	59	65	150
16:00-17:00	0	3	5	8	55	9	0	64	72	1	2	1	4	11	8	50	69	73	145
17:00-18:00	0	2	4	6	36	4	2	42	48	3	3	0	6	2	3	24	29	35	83
<b>8.0 HR TOTAL</b>	<b>12</b>	<b>44</b>	<b>76</b>	<b>132</b>	<b>363</b>	<b>56</b>	<b>17</b>	<b>436</b>	<b>568</b>	<b>21</b>	<b>24</b>	<b>2</b>	<b>47</b>	<b>62</b>	<b>29</b>	<b>407</b>	<b>498</b>	<b>545</b>	<b>1113</b>

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.

Bicycle Volume Summary Sheet - Hourly Volumes

**BRIDGE ST and MAIN ST**

(ULRS Listing RR- 8 & RR- 13S )

Survey Date: Tuesday 29 May 2012

Conditions: dry

Start Time: 0700

Time Period	NORTHBOUND APPROACH ON RR- 13S	SOUTHBOUND APPROACH ON RR- 13S	STREET TOTAL	EASTBOUND APPROACH ON RR- 8	WESTBOUND APPROACH ON RR- 8	STREET TOTAL	GRAND TOTAL
07:00-08:00	1	1	2	0	0	0	2
08:00-09:00	0	0	0	0	2	2	2
09:00-10:00	0	1	1	0	1	1	2
11:30-12:30	5	0	5	0	49	49	54
12:30-13:30	0	0	0	0	0	0	0
15:00-16:00	0	2	2	0	1	1	3
16:00-17:00	0	1	1	0	0	0	1
17:00-18:00	0	1	1	0	0	0	1
<b>8.0 HR TOTAL</b>	<b>6</b>	<b>6</b>	<b>12</b>	<b>0</b>	<b>53</b>	<b>53</b>	<b>65</b>

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

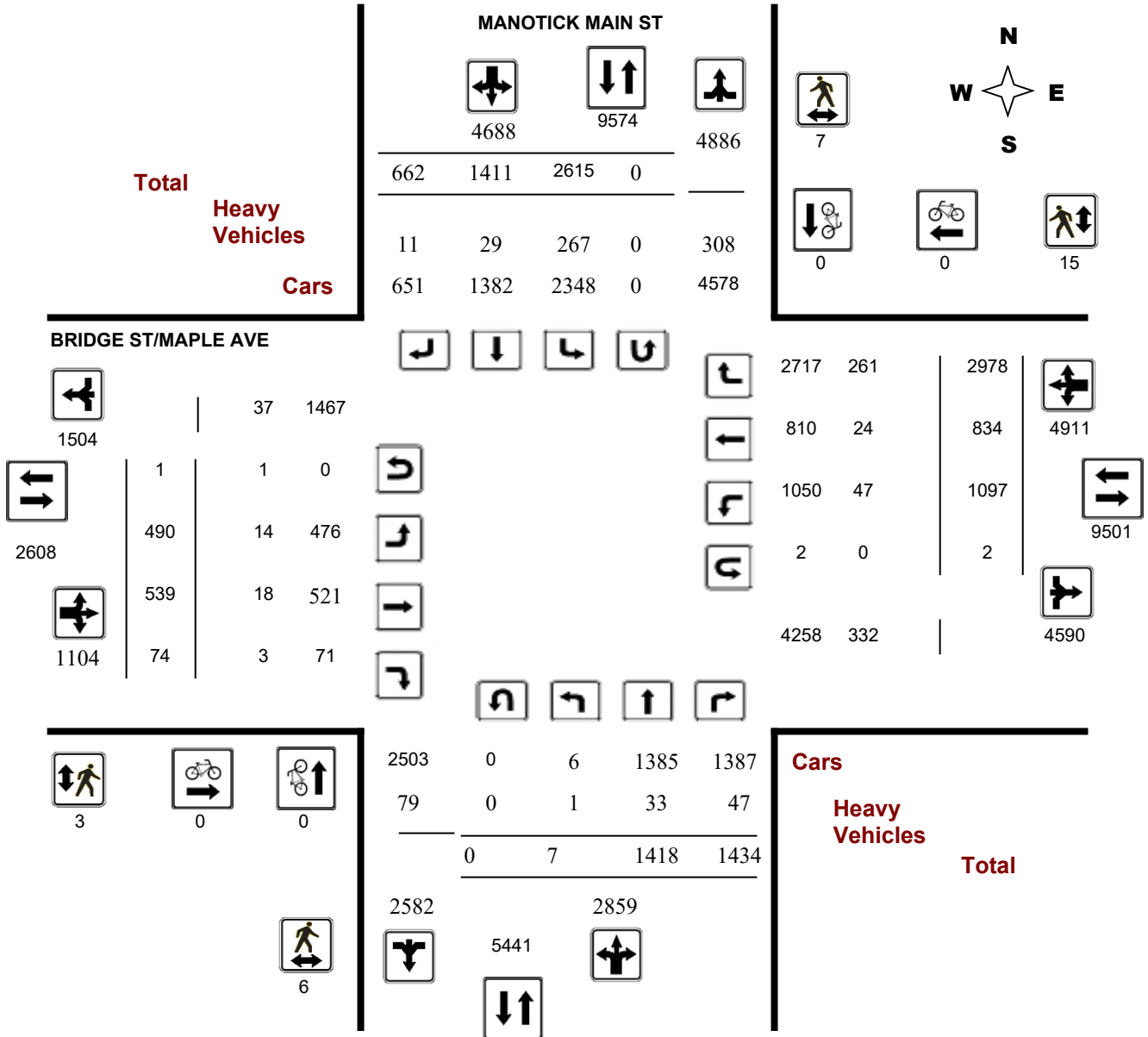
**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram





## Turning Movement Count - Peak Hour Diagram

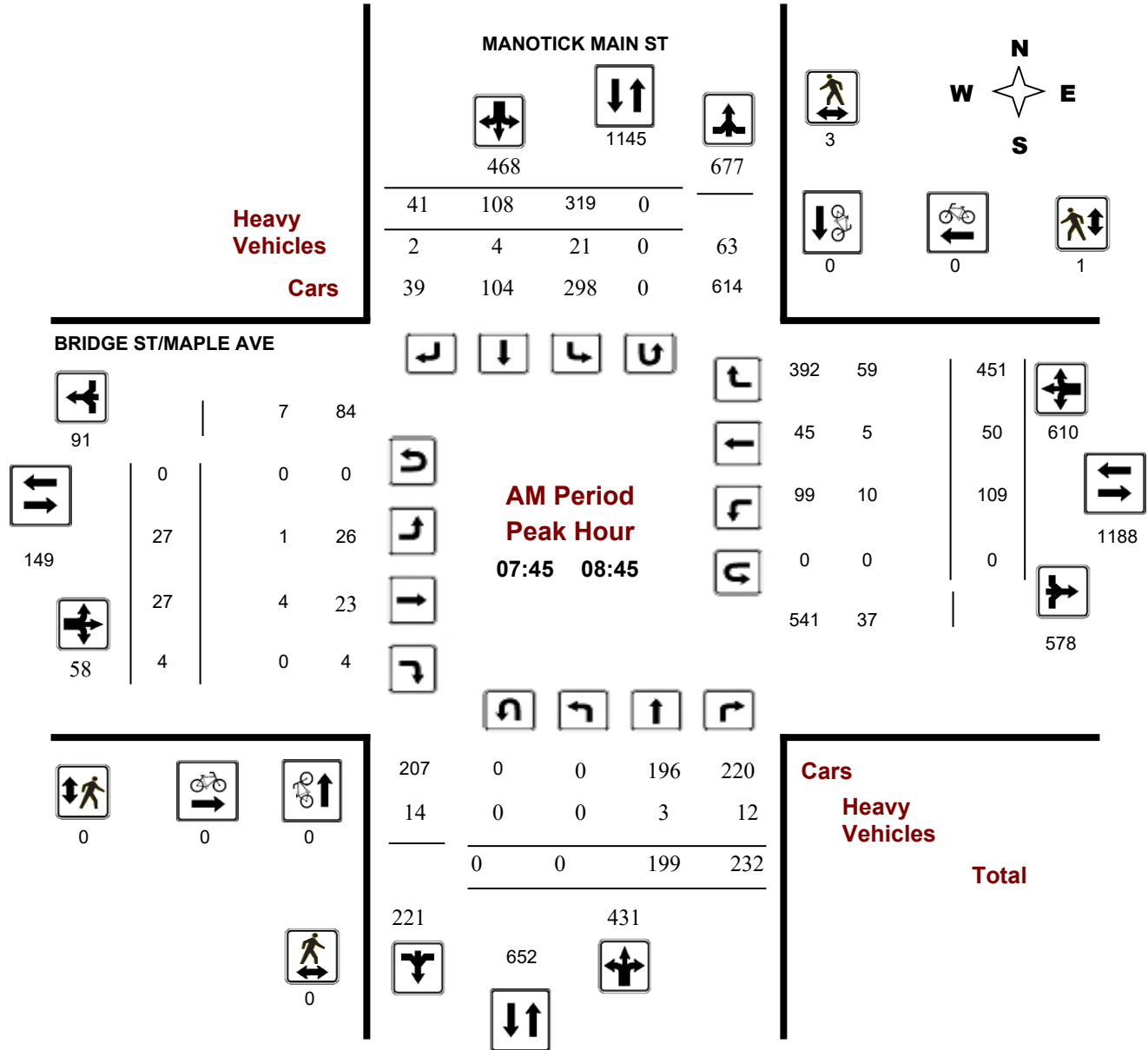
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**Start Time:** 07:00

**WO No:** 39209

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

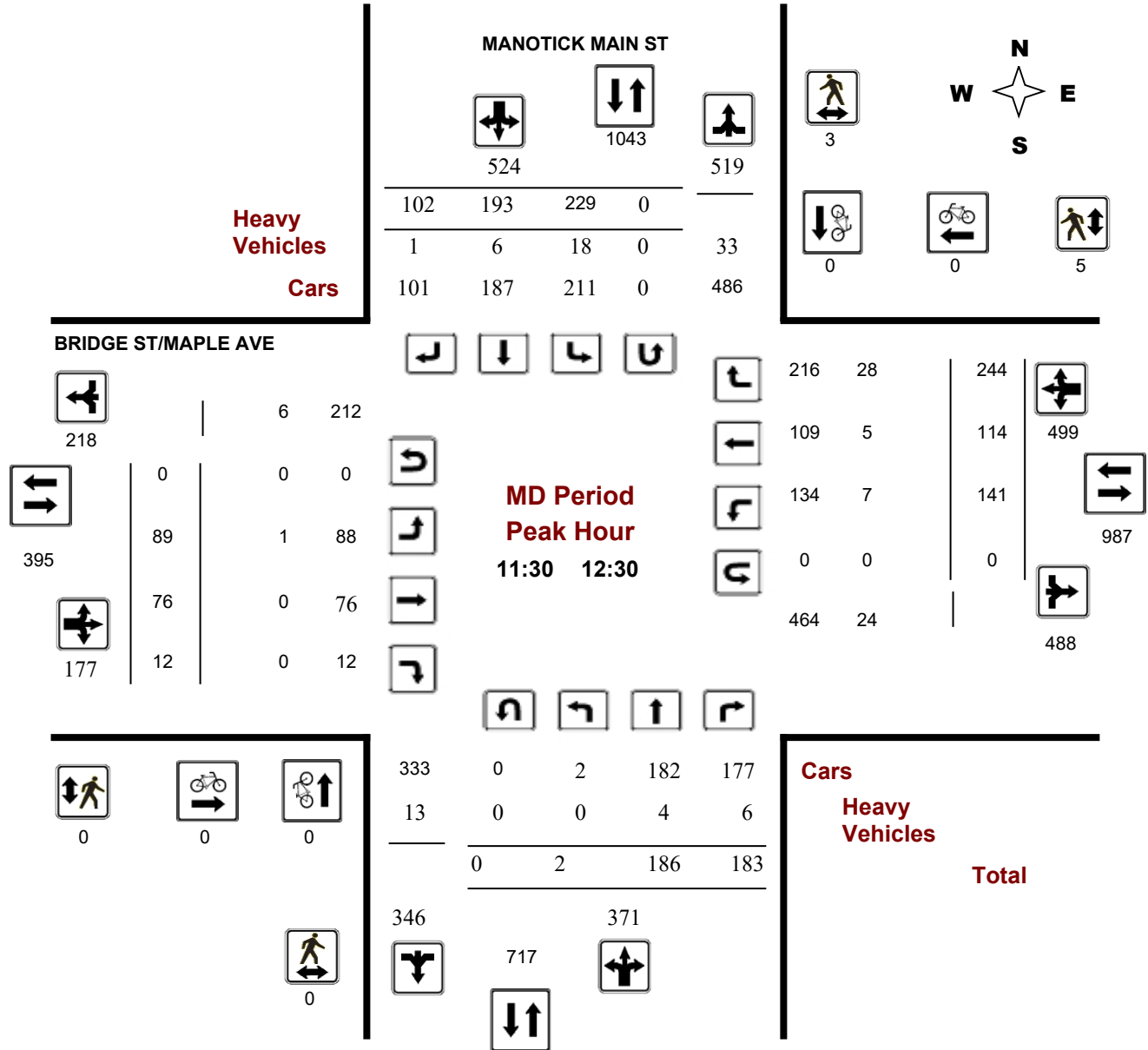
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**Start Time:** 07:00

**WO No:** 39209

**Device:** Miovision





## Turning Movement Count - Peak Hour Diagram

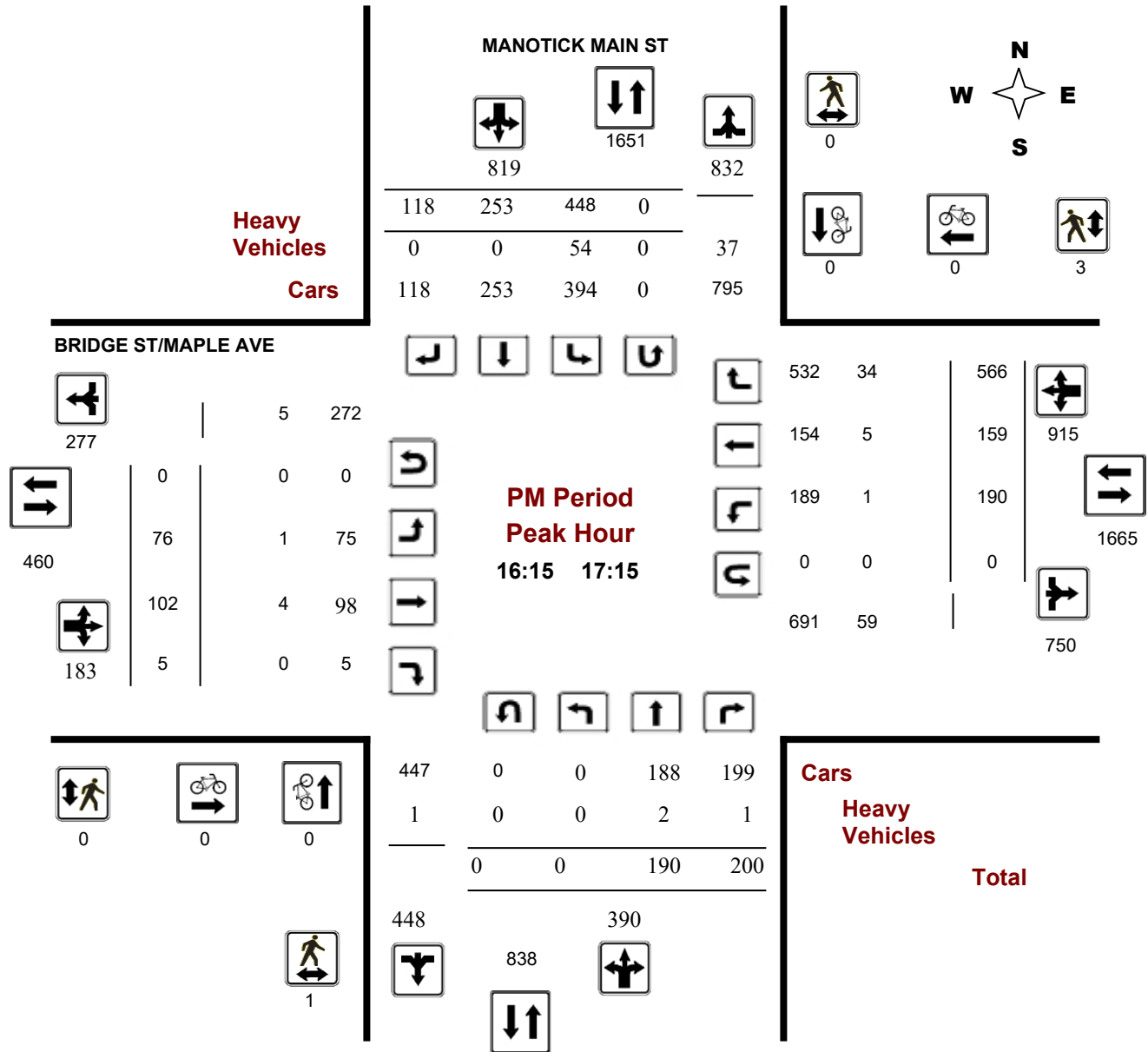
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**Start Time:** 07:00

**WO No:** 39209

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Wednesday, December 11, 2019

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 0  
 Eastbound: 1      Westbound: 2

1.00

**MANOTICK MAIN ST**

**BRIDGE ST/MAPLE AVE**

Period	MANOTICK MAIN ST Northbound					MANOTICK MAIN ST Southbound					BRIDGE ST/MAPLE AVE Eastbound					BRIDGE ST/MAPLE AVE Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	1	164	193	358	783	322	79	24	425	783	17	25	0	42	546	77	26	401	504	546	1329
08:00 09:00	0	190	212	402	872	297	121	52	470	872	31	26	7	64	682	115	69	434	618	682	1554
09:00 10:00	3	147	147	297	773	275	146	55	476	773	47	34	10	91	619	127	96	305	528	619	1392
11:30 12:30	2	186	183	371	895	229	193	102	524	895	89	76	12	177	676	141	114	244	499	676	1571
12:30 13:30	1	164	150	315	830	231	180	104	515	830	73	79	18	170	674	125	113	266	504	674	1504
15:00 16:00	0	198	171	369	1120	434	200	117	751	1120	80	98	13	191	851	160	137	363	660	851	1971
16:00 17:00	0	192	188	380	1230	475	249	126	850	1230	83	104	8	195	1073	177	148	553	878	1073	2303
17:00 18:00	0	177	190	367	1044	352	243	82	677	1044	70	97	6	173	891	175	131	412	718	891	1935
<b>Sub Total</b>	7	1418	1434	2859	7547	2615	1411	662	4688	7547	490	539	74	1103	6012	1097	834	2978	4909	6012	13559
<b>U Turns</b>	0			0	0	0			0	0	1			1	3	2			2	3	3
<b>Total</b>	7	1418	1434	2859	7547	2615	1411	662	4688	7547	491	539	74	1104	6015	1099	834	2978	4911	6015	13562
<b>EQ 12Hr</b>	10	1971	1993	3974	10490	3635	1961	920	6516	10490	682	749	103	1534	8360	1528	1159	4139	6826	8360	18850
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																<b>1.39</b>					
<b>AVG 12Hr</b>	10	1971	1993	3974	10490	3635	1961	920	6516	10490	682	749	103	1534	8360	1528	1159	4139	6826	8360	18850
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																<b>1.00</b>					
<b>AVG 24Hr</b>	13	2582	2611	5206	13742	4762	2569	1205	8536	13742	893	981	135	2009	10951	2002	1518	5422	8942	10951	24693
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																<b>1.31</b>					
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																					



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
17:45 18:00	0	53	38	91	78	66	29	173	264	18	20	3	41	40	32	77	149	190	454
07:00 07:15	0	24	43	67	79	13	3	95	162	3	8	0	11	20	5	78	103	114	276
07:15 07:30	1	40	43	84	76	20	6	102	186	2	6	0	8	17	6	93	116	124	310
07:30 07:45	0	46	41	87	80	24	2	106	193	9	4	0	13	16	7	120	143	156	349
07:45 08:00	0	54	66	120	87	22	13	122	242	3	7	0	10	24	8	110	142	152	394
08:00 08:15	0	48	85	133	64	27	11	102	235	6	12	1	19	37	16	119	172	191	426
08:15 08:30	0	50	41	91	85	24	9	118	209	5	5	2	12	25	11	122	158	170	379
08:30 08:45	0	47	40	87	83	35	8	126	213	13	3	1	17	23	15	100	138	155	368
08:45 09:00	0	45	46	91	65	35	24	124	215	7	6	3	16	30	27	93	150	166	381
09:00 09:15	1	38	51	90	74	35	13	122	212	17	8	3	28	38	26	72	136	164	376
09:15 09:30	0	43	26	69	74	31	11	116	185	10	8	2	20	36	21	77	134	154	339
09:30 09:45	0	32	31	63	62	34	12	108	171	9	10	1	20	27	21	82	130	150	321
09:45 10:00	2	34	39	75	65	46	19	130	205	12	8	4	24	26	28	74	128	152	357
11:30 11:45	1	54	49	104	63	46	29	138	242	27	21	0	48	32	33	77	142	190	432
11:45 12:00	0	44	37	81	61	55	29	145	226	21	18	1	40	41	29	45	115	155	381
12:00 12:15	0	34	48	82	50	50	19	119	201	25	17	4	46	31	33	63	127	173	374
12:15 12:30	1	54	49	104	55	42	25	122	226	16	20	7	43	37	19	59	115	158	384
12:30 12:45	1	47	43	91	53	50	17	120	211	19	18	5	42	26	24	79	129	171	382
12:45 13:00	0	38	39	77	54	51	32	137	214	13	24	6	43	37	31	77	145	188	402
13:00 13:15	0	45	31	76	64	36	25	125	201	18	11	3	32	33	29	43	105	137	338
13:15 13:30	0	34	37	71	60	43	30	133	204	23	26	4	53	29	29	67	125	178	382
15:00 15:15	0	59	32	91	90	36	27	153	244	20	26	3	49	31	16	81	128	177	421
15:15 15:30	0	48	41	89	122	42	29	193	282	20	20	4	44	48	37	74	159	203	485
15:30 15:45	0	37	54	91	118	53	24	195	286	21	25	1	47	39	44	88	171	218	504
15:45 16:00	0	54	44	98	104	69	37	210	308	19	27	5	51	44	40	120	204	255	563
16:00 16:15	0	50	45	95	124	56	31	211	306	26	36	3	65	42	26	106	174	239	545
16:15 16:30	0	48	50	98	130	64	18	212	310	16	23	2	41	45	28	150	223	264	574
16:30 16:45	0	57	43	100	122	51	36	209	309	24	16	0	40	39	47	148	234	274	583
16:45 17:00	0	37	50	87	99	78	41	218	305	17	29	3	49	51	47	149	247	296	601
17:00 17:15	0	48	57	105	97	60	23	180	285	19	34	0	53	55	37	119	211	264	549
17:15 17:30	0	44	55	99	103	66	19	188	287	16	22	3	41	38	25	131	194	235	522
17:30 17:45	0	32	40	72	74	51	11	136	208	17	21	0	38	42	37	85	164	202	410
<b>Total:</b>	<b>7</b>	<b>1418</b>	<b>1434</b>	<b>2859</b>	<b>2615</b>	<b>1411</b>	<b>662</b>	<b>4688</b>	<b>7547</b>	<b>491</b>	<b>539</b>	<b>74</b>	<b>1104</b>	<b>1099</b>	<b>834</b>	<b>2978</b>	<b>4911</b>	<b>7547</b>	<b>13,562</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

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



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
17:45 18:00	0	0	0	0	0	0	0
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	1	1	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	3	3	0	0	0	3
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	2	2	0	1	1	3
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	1	1	0	1	1	2
12:15 12:30	0	0	0	0	3	3	3
12:30 12:45	2	0	2	0	1	1	3
12:45 13:00	0	0	0	1	3	4	4
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	2	1	3	1	0	1	4
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	1	1	1
15:45 16:00	1	0	1	1	0	1	2
16:00 16:15	0	0	0	0	1	1	1
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	1	0	1	0	1	1	2
16:45 17:00	0	0	0	0	1	1	1
17:00 17:15	0	0	0	0	1	1	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
<b>Total</b> .....	<b>6</b>	<b>7</b>	<b>13</b>	<b>3</b>	<b>15</b>	<b>18</b>	<b>31</b>



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total	
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT				
17:45 18:00	0	0	1	1	7	0	0	7	8	0	0	0	0	0	0	2	2	2	10	
07:00 07:15	0	0	1	1	9	0	0	9	10	0	1	0	1	5	2	8	15	16	26	
07:15 07:30	1	2	2	5	8	3	1	12	17	0	1	0	1	3	0	8	11	12	29	
07:30 07:45	0	1	3	4	7	1	0	8	12	0	0	0	0	2	0	17	19	19	31	
07:45 08:00	0	0	5	5	4	1	2	7	12	0	1	0	1	2	1	15	18	19	31	
08:00 08:15	0	0	6	6	7	2	0	9	15	0	1	0	1	2	3	17	22	23	38	
08:15 08:30	0	1	1	2	7	1	0	8	10	0	2	0	2	4	0	16	20	22	32	
08:30 08:45	0	2	0	2	3	0	0	3	5	1	0	0	1	2	1	11	14	15	20	
08:45 09:00	0	2	4	6	7	1	1	9	15	0	1	0	1	2	1	13	16	17	32	
09:00 09:15	0	2	2	4	5	1	0	6	10	2	0	1	3	4	0	5	9	12	23	
09:15 09:30	0	0	0	0	6	2	2	10	10	2	0	0	2	1	0	6	7	9	19	
09:30 09:45	0	1	1	2	9	1	1	11	13	0	1	0	1	0	1	8	9	10	23	
09:45 10:00	0	1	0	1	5	1	2	8	9	3	0	0	3	1	0	6	7	10	19	
11:30 11:45	0	2	2	4	6	1	1	8	12	0	0	0	0	2	1	15	18	18	30	
11:45 12:00	0	2	1	3	2	0	0	2	5	0	0	0	0	1	1	5	7	7	12	
12:00 12:15	0	0	1	1	7	2	0	9	10	1	0	0	1	2	2	5	9	10	20	
12:15 12:30	0	0	2	2	3	3	0	6	8	0	0	0	0	2	1	3	6	6	14	
12:30 12:45	0	3	2	5	7	1	0	8	13	1	1	0	2	0	0	11	11	13	26	
12:45 13:00	0	0	1	1	4	1	0	5	6	0	0	0	0	1	0	7	8	8	14	
13:00 13:15	0	1	1	2	3	0	0	3	5	1	0	0	1	1	0	5	6	7	12	
13:15 13:30	0	4	1	5	3	1	1	5	10	0	1	0	1	0	0	6	6	7	17	
15:00 15:15	0	3	2	5	10	0	0	10	15	1	1	0	2	1	0	11	12	14	29	
15:15 15:30	0	0	1	1	12	1	0	13	14	0	1	1	2	1	0	4	5	7	21	
15:30 15:45	0	1	4	5	21	1	0	22	27	0	1	1	2	2	1	7	10	12	39	
15:45 16:00	0	3	1	4	16	2	0	18	22	0	1	0	1	4	1	5	10	11	33	
16:00 16:15	0	0	0	0	15	1	0	16	16	0	0	0	0	0	0	7	7	7	23	
16:15 16:30	0	1	0	1	23	0	0	23	24	1	1	0	2	0	1	5	6	8	32	
16:30 16:45	0	1	0	1	13	0	0	13	14	0	2	0	2	0	2	19	21	23	37	
16:45 17:00	0	0	1	1	9	0	0	9	10	0	0	0	0	0	1	4	5	5	15	
17:00 17:15	0	0	0	0	9	0	0	9	9	0	1	0	1	1	1	6	8	9	18	
17:15 17:30	0	0	1	1	11	1	0	12	13	1	0	0	1	0	1	3	4	5	18	
17:30 17:45	0	0	0	0	9	0	0	9	9	0	0	0	0	1	2	1	4	4	13	
<b>Total:</b>	None	1	33	47	81	267	29	11	307	388	14	18	3	35	47	24	261	332	367	756



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, December 11, 2019

**WO No:** 39209

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

Time Period	MANOTICK MAIN ST		BRIDGE ST/MAPLE AVE		Total
	Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	
17:45 - 18:00	0	0	0	0	0
07:00 - 07:15	0	0	0	0	0
07:15 - 07:30	0	0	0	0	0
07:30 - 07:45	0	0	0	0	0
07:45 - 08:00	0	0	0	0	0
08:00 - 08:15	0	0	0	0	0
08:15 - 08:30	0	0	0	0	0
08:30 - 08:45	0	0	0	0	0
08:45 - 09:00	0	0	0	0	0
09:00 - 09:15	0	0	1	0	1
09:15 - 09:30	0	0	0	0	0
09:30 - 09:45	0	0	0	0	0
09:45 - 10:00	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0
15:00 - 15:15	0	0	0	1	1
15:15 - 15:30	0	0	0	0	0
15:30 - 15:45	0	0	0	1	1
15:45 - 16:00	0	0	0	0	0
16:00 - 16:15	0	0	0	0	0
16:15 - 16:30	0	0	0	0	0
16:30 - 16:45	0	0	0	0	0
16:45 - 17:00	0	0	0	0	0
17:00 - 17:15	0	0	0	0	0
17:15 - 17:30	0	0	0	0	0
17:30 - 17:45	0	0	0	0	0
<b>Total</b>	0	0	1	2	3

APPENDIX D: SITE PLAN



- LEGEND:
- PROPOSED NEW BUILDING
  - NEW UNIT PAVERS
  - PROPERTY LINE
  - ADJACENT LOT PROPERTY LINES
  - EXISTING OVERHEAD HYDRO LINE
  - NEW WOOD FENCE
  - EXISTING HYDRO POLE TO REMAIN
  - ENTRANCE ARROWS
  - NEW BIKE RACKS
  - NEW PARKING
  - EXISTING CONCRETE CURB
  - LIGHT STANDARD
  - WALL MOUNTED LIGHTING FIXTURE
  - EXTERIOR SOFFIT LIGHTING FIXTURE
  - EXTERIOR WALL MOUNTED LIGHT FIXTURE

No.	REVISIONS	BY	DATE
12	FOR REVIEW	PE	AUG 19 2021
11	FOR REVIEW	PE	JUNE 29 2021
10	FOR REVIEW	PE	MAY 14 2021
09	FOR REVIEW	PE	APR 27 2021
08	FOR REVIEW OVERALL REDESIGN	PE	APR 16 2021
07	FOR REVIEW	PE	MAR 16 2021
06	FOR REVIEW	PE	FEB 16 2021
05	REVISIONS TO SITE ACCESS	PE	JAN 06 2021
04	FOR REVIEW	PE	NOV 24 2020
03	FOR REVIEW	PE	NOV 16 2020
02	FOR REVIEW	PE	OCT 09 2020
01	FOR REVIEW	PE	SEPT 24 2020

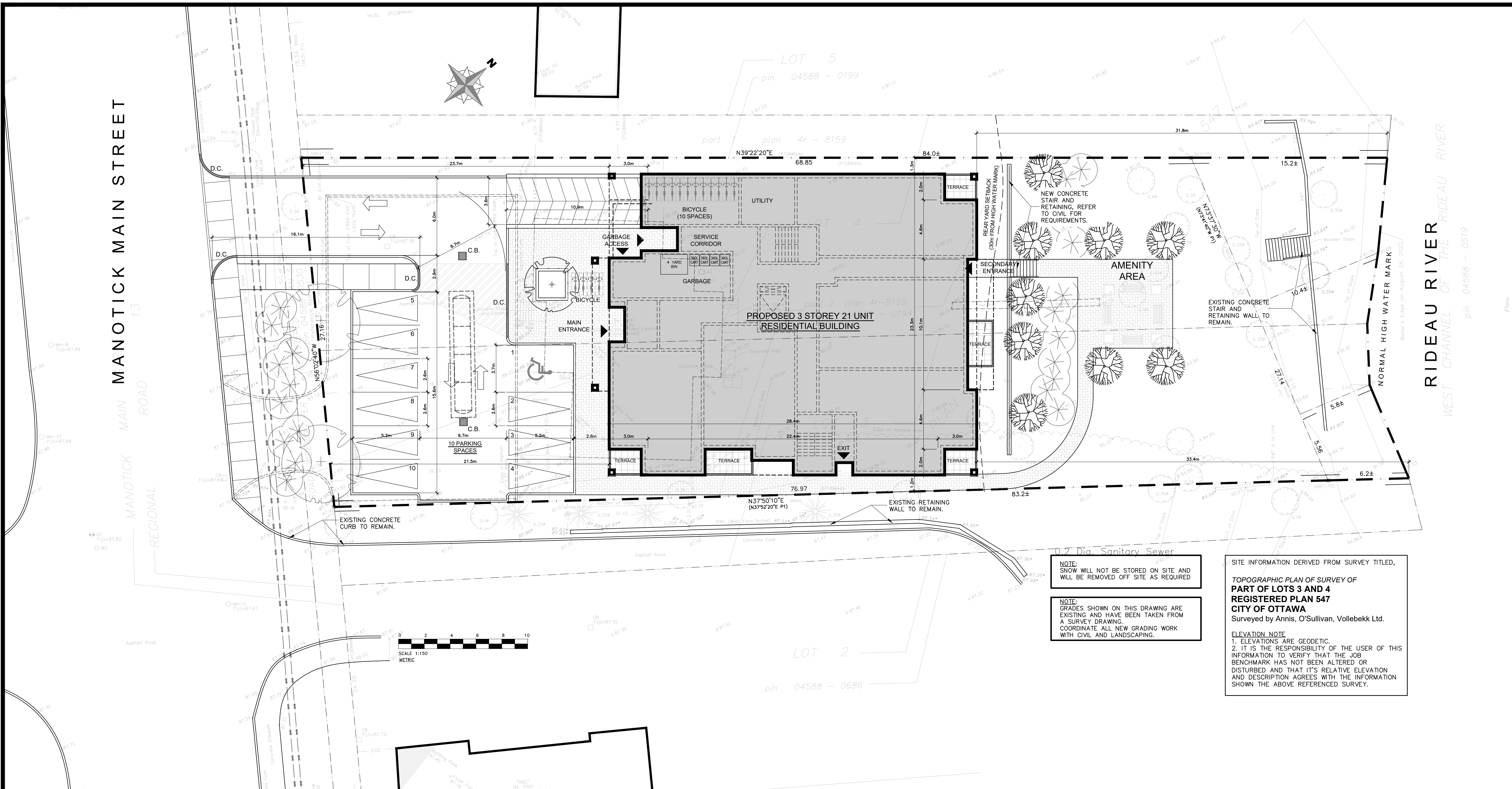
DESIGNED BY: P.E.  
DRAWN BY: P.E.  
APPROVED BY: B.K.

PROJECT  
4977 MANOTICK MAIN

DRAWING TITLE  
SITE PLAN

PROJECT NO.  
0387  
DATE  
OCT. 23, 2020

SP-01



NOTE:  
SNOW WILL NOT BE STORED ON SITE AND WILL BE REMOVED OFF SITE AS REQUIRED

NOTE:  
GRADES SHOWN ON THIS DRAWING ARE EXISTING AND HAVE BEEN TAKEN FROM A SURVEY DRAWING. COORDINATE ALL NEW GRADING WORK WITH CIVIL AND LANDSCAPING.

SITE INFORMATION DERIVED FROM SURVEY TITLED,  
**TOPOGRAPHIC PLAN OF SURVEY OF PART OF LOTS 3 AND 4 REGISTERED PLAN 547 CITY OF OTTAWA**  
Surveyed by Annis, O'Sullivan, Vollebek Ltd.

ELEVATION NOTE  
1. ELEVATIONS ARE GEODETIC.  
2. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN THE ABOVE REFERENCED SURVEY.

1 SITE PLAN  
SP-01

SCALE = 1:150

SITE STATISTICS 5497 MANOTICK MAIN		
ITEM	REQUIRED	PROVIDED
Zone	VM9 Village Mixed Use	VM9 - EXCEPTION
Lot Area	1350 SQ. M.	2169 SQ. M.
Lot Width	20 M. MIN.	27.2 M.
Maximum Building Height	6.7 M MIN. - 11.0M MAX	10.9 M - 3 STOREYS
Front Yard	3.0 M MAX	VARY (21.1m AT CLOSEST)
Side Yard	Corner 3.5M MIN. - 4.0M MAX Interior NO MIN.	N/A 1.2M
Rear Yard	7.5M MIN. (30.0 M FROM WATER MARK)	(30.0 M FROM WATER MARK)
Building Footprint		608 SQ. M.
Lot Coverage	NO MAX	
Number of Dwelling units		21 UNITS (10 ONE BEDROOM, 11 TWO BEDROOMS)
PARKING SPACES REQUIRED RESIDENTIAL	1.2 PER x 21 = 25 SPACES	(10 SURFACE) (16 UNDERGROUND) 26 SPACES
Required Bike Racks	10.5 REQUIRED (0.5 SPACES/DWELLING)	10 INTERIOR and 4 EXTERIOR
Landscaping	Hard Soft	

## APPENDIX E: EXISTING TRAFFIC ANALYSIS

HCM Unsignalized Intersection Capacity Analysis  
 2: Manotick Main St & Highcroft Drive/Access #1

5497 Manotick Main  
 AM Peak Hour - Existing Conditions (2020)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	5	5	0	25	5	648	15	20	471	5
Future Volume (Veh/h)	5	0	5	5	0	25	5	648	15	20	471	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	6	0	6	6	0	28	6	720	17	22	523	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	970	1319	264	1052	1314	368	529			737		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	970	1319	264	1052	1314	368	529			737		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	97	100	96	99			97		
cM capacity (veh/h)	194	151	734	175	152	629	1034			865		
Direction, Lane #												
	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	12	34	366	377	284	268						
Volume Left	6	6	6	0	22	0						
Volume Right	6	28	0	17	0	6						
cSH	306	431	1034	1700	865	1700						
Volume to Capacity	0.04	0.08	0.01	0.22	0.03	0.16						
Queue Length 95th (m)	0.9	1.9	0.1	0.0	0.6	0.0						
Control Delay (s)	17.2	14.1	0.2	0.0	1.0	0.0						
Lane LOS	C	B	A		A							
Approach Delay (s)	17.2	14.1	0.1		0.5							
Approach LOS	C	B										
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			39.4%		ICU Level of Service					A		
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 2: Manotick Main St & Highcroft Drive/Access #1

5497 Manotick Main  
 PM Peak Hour - Existing Conditions (2020)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	5	0	5	5	0	25	5	811	15	20	809	5
Future Volume (vph)	5	0	5	5	0	25	5	811	15	20	809	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.932			0.889			0.997			0.999	
Flt Protected		0.976			0.991						0.999	
Satd. Flow (prot)	0	1623	0	0	1572	0	0	3380	0	0	3290	0
Flt Permitted		0.976			0.991						0.999	
Satd. Flow (perm)	0	1623	0	0	1572	0	0	3380	0	0	3290	0
Link Speed (k/h)		48			50			50			50	
Link Distance (m)		66.6			46.4			87.7			101.8	
Travel Time (s)		5.0			3.3			6.3			7.3	
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%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%
Adj. Flow (vph)	6	0	6	6	0	28	6	901	17	22	899	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	34	0	0	924	0	0	927	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.9%
ICU Level of Service	A
Analysis Period (min)	15

APPENDIX F: RESIDENTIAL TDM-SUPPORTIVE DEVELOPMENT DESIGN  
AND INFRASTRUCTURE CHECKLIST

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

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

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
<b>BASIC</b>	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input type="checkbox"/> Parking area is located between the building and street front. Pedestrian connection is provided
<b>BASIC</b>	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/> Direct pedestrian connection to sidewalk is provided
<b>BASIC</b>	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/> Building front door oriented to street
<b>1.2 Facilities for walking &amp; cycling</b>		
<b>REQUIRED</b>	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations ( <i>see Official Plan policy 4.3.3</i> )	<input checked="" type="checkbox"/> Sidewalk to be provided fronting to site and crossing site access. Sidewalk connects to a hard surface which allows pedestrian access from development Disjointed sidewalk at adjacent access is noted
<b>REQUIRED</b>	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and	<input checked="" type="checkbox"/> Pedestrian connectivity is maintained throughout the site, street sidewalk access is provided

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
	other design elements wherever possible ( <i>see Official Plan policy 4.3.12</i> )	
<b>REQUIRED</b>	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks ( <i>see Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/> On-site pedestrian areas designated by interlock pavers. Amenity area is provided pavers at the rear of the property Development proponent is recommended to maintain landscaping pavers/asphalt along future pedestrian connection to sidewalk
<b>REQUIRED</b>	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps ( <i>see Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/> Sidewalks / hard surfaces connect building entrances to accessible parking stall.
<b>REQUIRED</b>	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians ( <i>see Official Plan policy 4.3.11</i> )	<input checked="" type="checkbox"/> Sidewalk to be continuous across site access
<b>BASIC</b>	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
<b>BASIC</b>	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
<b>BASIC</b>	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/> N/A
<b>1.3 Amenities for walking &amp; cycling</b>		
<b>BASIC</b>	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input checked="" type="checkbox"/>
<b>BASIC</b>	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/> N/A

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	<input type="checkbox"/> 4 Outside cycle stalls provided for retail <input checked="" type="checkbox"/> 10 indoor and secure cycle stalls provided for residents Recommended cycle stalls to be located at rear of building
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	<input type="checkbox"/>
<b>2.2 Secure bicycle parking</b>		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/> 10 stalls within a secure area
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input type="checkbox"/>
<b>2.3 Bicycle repair station</b>		
BETTER	2.3.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/>
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/> N/A
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/> N/A
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>



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