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## Landscape Architecture

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- Commercial & Institutional
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# 4386 Rideau Valley Drive

## Transportation Impact Assessment



**4386 Rideau Valley Drive**  
**Transportation Impact Assessment**

Prepared By:

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October 2022

Novatech File: 121153  
Ref: R-2022-110

October 12, 2022

City of Ottawa  
Planning and Growth Management Department  
110 Laurier Ave. W., 4<sup>th</sup> Floor,  
Ottawa, Ontario K1P 1J1

**Attention: Mr. Mike Giampa**  
**Project Manager, Infrastructure Approvals**

Dear Mr. Giampa:

**Reference: 4386 Rideau Valley Drive**  
**Transportation Impact Assessment**  
**Novatech File No. 121153**

---

We are pleased to submit the following Transportation Impact Assessment (TIA) in support of Zoning By-Law Amendment and Draft Plan of Subdivision applications for the property located at 4386 Rideau Valley Drive, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

If you have any questions or comments regarding this report, please feel free to contact Brad Byvelds, or the undersigned.

Yours truly,

**NOVATECH**



Rochelle Fortier, P.Eng.  
Project Engineer | Transportation



## **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.**

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Dated at Ottawa this 12 day of October, 2022.  
(City)

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Professional Title: Project Manager, Transportation/Traffic

*B. Byvelds*

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

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## EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared in support of Zoning By-Law Amendment and Draft Plan of Subdivision applications for the property located at 4386 Rideau Valley Drive. The site is mostly farmland and is currently occupied by a dwelling and three barn structures on the southeast portion of the property with vehicular access to both Rideau Valley Drive and Bankfield Road. It is proposed that these existing structures will be demolished as part of this application. A tributary to the Rideau River, the Mud Creek, runs through the subject site. Lands to be developed will be south of the Mud Creek.

The proposed subdivision will provide a total of 147 dwellings, including 62 single detached houses, 16 semi-detached houses, and 69 townhouses. Access to the subdivision will be provided via a new roadway connection to Bankfield Road, tying in to form the fourth leg of the existing Bankfield Road/Colony Heights Road intersection. The proposed subdivision will be completed in one phase, with an anticipated buildout year of 2028.

The property to be developed is designated as a Village on Schedule A of the City of Ottawa's Official Plan. The property is also designated Village on Schedule B9 – Rural Transect in the new Official Plan adopted November 24, 2021. The current zoning for the subject site is Development Reserve (DR1). The DR Zone acts as a placeholder to limit permitted uses to those which will not preclude future development options before studies have been completed and approved. The property is located within the Manotick Secondary Plan Boundary. The subject site is identified as Residential Medium Density in the Village of Manotick Secondary Plan and a Future Park site is identified.

The main conclusions and recommendations of this report are summarized below:

### Demand Rationalization

- *Existing Intersection Operations:*
  - The Manotick Main Street/Bridge Street/Maple Avenue intersection is operating with a LOS E in the PM peak when the advanced pedestrian walk phase is actuated. Without the advanced pedestrian walk phase, this improves to a LOS D.
  - All other study area intersections are currently operating with a LOS D or better.
  - A westbound left turn lane with 15m of storage is currently warranted at the Bankfield Road/Colony Heights intersection.
  
- *Background Intersection Operations:*
  - Critical movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue intersections are expected to operate with a LOS E or F in the PM peak.
  - The Bankfield Road/Colony Heights Road and Bankfield Road/Potter Drive/Lockmaster Crescent intersections are anticipated to operate with a LOS C or better.
  - The northbound left and southbound through movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection are anticipated to operate at or near capacity. An increased cycle length to 130 seconds would improve these movements to a maximum v/c ratio of 0.92 but will not achieve the target v/c ratio of 0.90. The addition of a second southbound lane or the implementation of a roundabout with two approach lanes on each leg would achieve the target v/c ratio.
  - The westbound left movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to operate with a v/c ratio of 1.35 to 1.41 in the PM peak hour with pedestrian actuation. Without pedestrian actuation, this v/c ratio is



anticipated to improve to 1.08 to 1.13. PM peak hour traffic signal optimization maintaining the existing cycle length is anticipated to improve overall operations at this intersection to within the City's target v/c ratio of 0.90 without pedestrian actuation.

- Traffic throughout the study area could be displaced or alleviated through a combination of increased use of non-auto modes of transportation, alternate time to travel for drivers using the study area roadways to make use of off-peak capacity, and alternate routes for travel.

### Development Design

- Access to the development is provided by Street One from Bankfield Road across from the existing intersection with Colony Heights Road. Window streets are provided in segments of Street Two and Street Three along Bankfield Road and Rideau Valley Street to minimize the need for noise walls and to open up the development and present a welcoming streetscape entrance to the Village of Manotick.
- A ROW width of 18m is proposed for Street One, and double loaded portions of Streets Two and Three. ROW widths of 14.75m are proposed for the window street portions of Street Two and Street Three. A cul-de-sac with a 15m radius is proposed at the terminus of Street Two. All streets are proposed to have a roadway width of 8.5m. These widths accommodate a travel lane for each direction, along with on-street parking on one side of the street, and are appropriate given the context of the proposed development, which is a low-speed residential neighbourhood with limited opportunity for cut-through traffic.
- Sidewalks are proposed on one side of local streets and a pathway is proposed along the north side of Bankfield Road to provide a pedestrian linkage between the existing Millers Point Park and the intersection of Bankfield Road and Rideau Valley Drive.

### Boundary Streets

- Rideau Valley Drive and Bankfield Road meet the target TkLOS but do not meet the target PLOS or BLOS.
- Given the rural context of the surrounding area, the existing paved shoulders are considered appropriate pedestrian facilities even though they do not achieve the target PLOS C.
- As part of this application, a new pathway is proposed on the north side of Bankfield Road which will provide a pedestrian linkage between existing Millers Point Park and the intersection of Bankfield Road and Rideau Valley Drive. The proposed pathway will provide a PLOS D on the north side of the road.
- Given the rural context of the surrounding area, the existing paved shoulders are considered appropriate cycling facilities even though they do not achieve the target BLOS C. The target BLOS C is not achievable for paved shoulders on roadways with an operating speed of 70km/h. A reduction in the operating speed to 60km/h or a physically separated bikeway would achieve the target BLOS. This is identified for the City's consideration.

### Transportation Demand Management

- The following measures will be implemented for the proposed development:
  - Display local area maps with walking/cycling routes and key destinations (at sales centre);
  - Display relevant transit schedules and route maps (at sales centre).

### Transit

- The proposed subdivision is projected to generate 24 transit trips during the AM peak hour (7 inbound trips and 17 outbound trips) and 24 transit trips during the PM peak hour (14 inbound trips and 10 outbound trips).
- No capacity issues are anticipated for OC Transpo Routes 176 or 299.

### Intersection MMLOS

- The Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection does not meet the target PLOS C or BLOS C, but meets the target TkLOS D and Auto LOS D.
  - There is limited opportunity in improving PLOS at these approaches without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.
  - The west approach can achieve a BLOS C with the implementation of a bike lane which remains to the right of the right turn lane. This is identified for the City's consideration. The target BLOS can only be met on the south and west approaches through the implementation of two-stage left-turn bike boxes. This is identified for the City's consideration.
  - The Manotick Secondary Plan identifies this intersection as a candidate for roundabout control. A roundabout at this intersection is anticipated to improve the pedestrian and cyclist level of comfort navigating the intersection.
- The Manotick Main Street/Bridge Street/Maple Avenue intersection does not meet the target PLOS C, BLOS C, TkLOS D, or Auto LOS D.
  - There is limited opportunity in improving PLOS at each approach without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.
  - The addition of curbside bike lanes on the south and east approaches would improve the level of traffic stress for cyclists, such that the target BLOS could be met for right turns. This is identified for the City's consideration. For left turns, the target BLOS can only be met at the north, east, and west approaches through the implementation of two-stage left-turn bike boxes.
  - The south, east, and west approaches do not meet the target TkLOS, as heavy vehicles turning at these approaches are provided with one receiving lane. The target TkLOS D can be achieved by either providing an additional lane or increasing the corner radius to 15m or more. The Manotick Village & Community Association (MVCA) released a Truck Traffic Survey in September 2021 indicating their concern with the amount of heavy truck traffic travelling through the Village of Manotick, with the intersection of Bridge Street/Manotick Main Street being of particular concern. The MVCA report had three recommendations:
    - In the short term, install bollards at the northeast and southeast corners of Bridge Street/Manotick Main Street to prohibit truck encroachment on pedestrian staging areas.
    - Change the rural truck routes to exclude Bridge Street and Manotick Main Street.
    - Improve access to Earl Armstrong from the eastern industrial and warehousing facilities.

### Total Intersection Operations

- The addition of traffic generated by the proposed development is not anticipated to have a significant impact on the overall intersection operations within the study area.
- A review of the MTO left turn lane storage graphs indicates that eastbound and westbound left turn lanes with 15m of storage are warranted at the Bankfield Road/Colony Heights Road/Street One intersection under 2028 and 2033 total traffic conditions.
- No additional recommendations as a result of site traffic.

## 1.0 INTRODUCTION

This Transportation Impact Assessment (TIA) has been prepared in support of Zoning By-Law Amendment and Draft Plan of Subdivision applications for the property located at 4386 Rideau Valley Drive. The site is mostly farmland and is currently occupied by a dwelling and three barn structures on the southeast portion of the property with vehicular access to both Rideau Valley Drive and Bankfield Road. It is proposed that these existing structures will be demolished as part of this application. A tributary to the Rideau River, the Mud Creek, runs through the subject site. Lands to be developed will be south of the Mud Creek.

The subject site is surrounded by the following:

- Mud Creek to the north;
- Rideau Valley Drive and the Rideau River to the east;
- Bankfield Road, followed by residential properties to the south;
- Residential properties to the west.

The most recent aerial view of the subject site is provided in **Figure 1**.

**Figure 1: View of the Subject Site**



## 2.0 PROPOSED DEVELOPMENT

The proposed subdivision will provide a total of 147 dwellings, including 62 single detached houses, 16 semi-detached houses, and 69 townhouses. Access to the subdivision will be provided via a new roadway connection to Bankfield Road, tying in to form the fourth leg of the existing Bankfield

Road/Colony Heights Road intersection. The proposed subdivision will be completed in one phase, with an anticipated buildout year of 2028.

The property to be developed is designated as a Village on Schedule A of the City of Ottawa's Official Plan. The property is also designated Village on Schedule B9 – Rural Transect in the new Official Plan adopted November 24, 2021. The current zoning for the subject site is Development Reserve (DR1). The DR Zone acts as a placeholder to limit permitted uses to those which will not preclude future development options before studies have been completed and approved. The property is located within the Manotick Secondary Plan Boundary. The subject site is identified as Residential Medium Density in the Village of Manotick Secondary Plan and a Future Park site is identified.

A copy of the draft plan is included in **Appendix A**.

### 3.0 SCREENING

The City's 2017 TIA Guidelines identify three triggers for completing a TIA report, including trip generation, location, and safety. The criteria for each trigger are outlined in the City's TIA Screening Form, which is included in **Appendix B**. The trigger results are as follows.

- Trip Generation Trigger – The development is anticipated to generate over 60 peak hour person trips; further assessment is required based on this trigger.
- Location Triggers – The development proposes a new connection to a Spine Cycling Route (Bankfield Road); further assessment is required based on this trigger.
- Safety Triggers – A proposed connection to the subject site will be located within 300m of the signalized intersection at Bankfield Road/Rideau Valley Drive/Manotick Main Street and the vertical curvature along Bankfield Road may impede sightlines to the proposed road connection; further assessment is required based on this trigger.

### 4.0 SCOPING

#### 4.1 Existing Conditions

##### 4.1.1 Roadways

All roadways discussed below fall under the jurisdiction of the City of Ottawa. The roadway network of the greater area surrounding the subject site is illustrated in **Figure 2**.

Bankfield Road is an arterial roadway that generally runs on an east-west alignment between Rideau Valley Drive/Manotick Main Street and Highway 416, where it continues as Brophy Drive. Within the study area, Bankfield Road has a two-lane undivided rural cross-section with paved shoulders and a posted speed limit of 60km/h adjacent to the property. Bankfield Road is classified as a truck route, allowing full loads. The City of Ottawa's Official Plan identifies a right-of-way (ROW) protection on Bankfield Road of 34m between Highway 416 and 100m west of Colony Heights, and 23m between 100m west of Colony Heights and Manotick Main Street. A widening will be required along a portion of the frontage as part of this application.

**Figure 2: Roadway Network**



Rideau Valley Drive is an arterial roadway that generally runs on a north-south alignment between Prince of Wales Drive and Roger Stevens Drive. The section of Rideau Valley Drive within the limits of the Village of Manotick (between Bankfield Road and Century Road East) has been renamed Manotick Main Street. Within the study area, Rideau Valley Drive has a two-lane undivided rural cross-section with paved shoulders. The posted speed limit is 50km/h between Bankfield Road and 110m north of Bankfield Road, transitioning to 60km/h for approximately 400m northward, and then transitioning to 70km/h until its terminus at Prince of Wales Drive. Rideau Valley Drive is classified as a truck route, allowing full loads. The City of Ottawa’s Official Plan identifies a right-of-way (ROW) protection on Rideau Valley Drive of 30m. A widening will be required as part of this application.

Manotick Main Street is an arterial roadway that generally runs on a north-south alignment between Bankfield Road and Century Road East. The northern and southern limits of Manotick Main Street continue as Rideau Valley Drive. Within the study area, Manotick Main Street has a posted speed limit of 50km/h and a four-lane undivided cross-section north of Maple Avenue/Bridge Street, with a two-lane undivided cross-section south of Maple Avenue/Bridge Street. On-street parking is permitted south of Clapp Lane. Manotick Main Street is classified as a truck route, allowing full loads.

Bridge Street is an arterial roadway that generally runs on an east-west alignment between Manotick Main Street and River Road, where it continues as Mitch Owens Road. Within the study area, Bridge

Street has a two-lane undivided urban cross-section with a posted speed limit of 40km/h. Bridge Street is classified as a truck route, allowing full loads.

Maple Avenue is a local roadway with a posted speed limit of 40km/h and a two-lane undivided urban cross-section from Manotick Main Street to Ann Street, and a two-lane undivided rural cross section south of Ann Street. Colony Heights Road is a local roadway with a two-lane undivided rural cross-section and a posted speed limit of 40km/h. Lockmaster Crescent is a local roadway with a two-lane undivided rural cross-section and a regulatory speed limit of 50km/h. Potter Drive is a collector roadway with a two-lane undivided rural cross-section and a posted speed limit of 40km/h. On-street parking is generally permitted on these roadways, and they are not classified as truck routes.

### 4.1.2 Pedestrian and Cycling Facilities

The pedestrian and cycling network of the greater area surrounding the subject site is illustrated in Figure 3.

**Figure 3: Pedestrian and Cycling Network**



In the City of Ottawa’s primary cycling network, Bankfield Road, Rideau Valley Drive, Manotick Main Street, and Bridge Street are designated as Spine Routes and Potter Drive is designated as a Local Route.

Within the study area, concrete sidewalks are provided on the west side of Manotick Main Street, on the east side of Manotick Main Street between Highcroft Drive and Bridge Street and south of Clapp Lane, on both sides of Bridge Street, and on the north side of Maple Avenue between Manotick Main Street and Ann Street. Paved shoulders are provided on Rideau Valley Drive and on Bankfield Road. A bike lane is provided on Bridge Street from River Road to approximately 55m north of Dickinson Street, transitioning to shared use lanes with sharrows to Manotick Main Street.

A pedestrian crossover is provided on Manotick Main Street at Tighe Street.

### 4.1.3 Intersections

#### Bankfield Road/Rideau Valley Drive/Manotick Main Street

- Signalized T-intersection
- Northbound: one left turn lane, one through lane
- Southbound: one shared through/right turn lane
- Eastbound: one left turn lane, one channelized right turn lane
- Standard crosswalks on all approaches



#### Manotick Main Street/Bridge Street/Maple Avenue

- Signalized intersection
- Northbound: one through lane, one right turn lane. Northbound left turns are prohibited (except buses)
- Southbound: one left turn, one shared through/right turn lane
- Eastbound: one left turn lane, one shared through/right turn lane
- Westbound: one left turn lane, one through lane, one right turn lane
- Standard crosswalks on all approaches





### Bankfield Road/Potter Drive/Lockmaster Crescent

- Side street stop-controlled intersection, with free flow on Bankfield Road
- Northbound/Southbound: one shared approach lane
- Eastbound: one left turn lane, one through lane, one right turn lane
- Westbound: one left turn lane, one shared through/right turn lane



### Bankfield Road/Colony Heights Road

- Side street stop-controlled intersection, with free flow on Bankfield Road
- One shared lane on all approaches



#### **4.1.4 Driveways**

The City's 2017 TIA Guidelines requires a review of driveways on the boundary streets within 200m of any proposed access. Currently, there are five driveways along the south side of Bankfield Road leading to residential properties at 1166 Bankfield Road, 1178 Bankfield Road, 1184 Banfield Road, 1202 Bankfield Road, and 1220 Bankfield Road.

#### **4.1.5 Area Traffic Management**

There are no Area Traffic Management (ATM) studies within the study area that have been completed, or are currently in progress.

The Manotick Village & Community Association (MVCA) released a Truck Traffic Survey in September 2021 indicating their concern with the amount of heavy truck traffic travelling through the

Village of Manotick, with the intersection of Bridge Street/Manotick Main Street being of particular concern. The MVCA report had three recommendations:

- In the short term, install bollards at the northeast and southeast corners of Bridge Street/Manotick Main Street to prohibit truck encroachment on pedestrian staging areas.
- Change the rural truck routes to exclude Bridge Street and Manotick Main Street.
- Improve access to Earl Armstrong from the eastern industrial and warehousing facilities.

#### 4.1.6 Transit

The nearest transit stops to the subject site are described in the following table. Additionally, a Park & Ride Facility at the Manotick Area & Community Centre (5572 Doctor Leach Drive) has a capacity of 62 parking spaces.

**Table 1: OC Transpo Stops**

Stop Number	Location	Route(s) Serviced
2848	North side of Bridge Street, east of Manotick Main Street	176, 299, 305
2847	South side of Bridge Street, east of Manotick Main Street	176, 299, 305
1491	East side of Ann Street, south of Maple Avenue	176, 299, 305
1494	North side of Maple Street, east of Scharfield Road	176, 299, 305

Locations of the transit stops described above are shown in **Figure 4**.

OC Transpo Route 176 is a Local Route which travels between Barrhaven Centre and Manotick. The route generally operates on one-hour headways during weekday peak periods only.

OC Transpo Route 299 is a Connexion Route which travels between Manotick and Hurdman. The route operates in the peak direction on one-hour headways during weekday peak periods only.

OC Transpo Route 305 is a Shopper Route. Shopper Routes are free to ride and are a convenient way for rural residents to get into town for shopping, appointments and more. These routes offer once-a-week service from rural communities to urban shopping destinations. Route 305 travels from the communities of Kars, North Gower, and Manotick and arrives at the Barrhaven Center and Carlingwood Shopping Centres. It operates once a week (with one outbound and one inbound trip) on Fridays.

OC Transpo maps for the routes outlined above and a copy of the OC Transpo System Map is included in **Appendix C**.

Figure 4: OC Transpo Stop Locations



#### 4.1.7 Existing Traffic Volumes

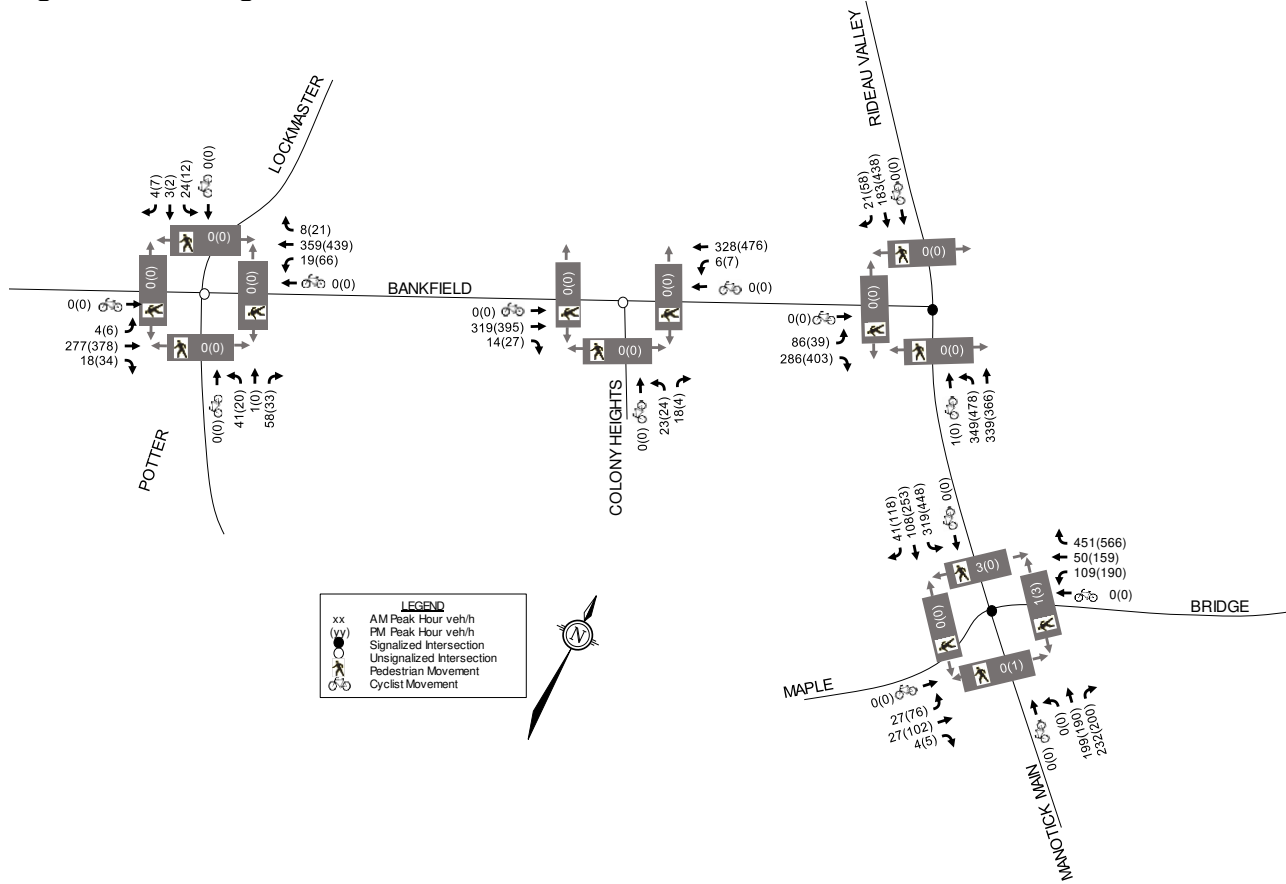
Weekday traffic counts completed by the City of Ottawa have been used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. The most recent City traffic counts were conducted on the following dates:

- Bankfield Road/Rideau Valley Drive/Manotick Main Street                     December 11, 2019
- Manotick Main Street/Bridge Street/Maple Avenue                             December 11, 2019
- Bankfield Road/Potter Drive/Lockmaster Crescent                             May 25, 2017
- Bankfield Road/Colony Heights Road   February 4, 2016

Through volumes collected on Bankfield Road at Colony Heights Road appear to be low compared to volumes at the adjacent intersections on Bankfield Road. There are no significant driveways between the intersections. For this reason, through traffic volumes at the Bankfield Road/Colony Heights Road intersection were balanced to within 10% of the higher adjacent intersection.

Traffic count data is included in **Appendix D**. Pedestrian, cyclist, and vehicular traffic volumes within the study area are shown in **Figure 5**.

Figure 5: Existing Network Traffic Volumes



### 4.1.8 Collision Records

Historical collision data from the last five years (January 1<sup>st</sup>, 2016 - December 31<sup>st</sup>, 2020) was obtained from the City’s Public Works and Service Department for each study area intersection. A copy of the collision summary records are included in **Appendix E**.

The collision data has been evaluated to determine if there are any identifiable collision patterns, defined in the 2017 TIA Guidelines as ‘more than six collisions in five years’ for any one movement. The number of collisions reported at each intersection from January 1, 2016 to December 31, 2020 is summarized in **Table 2**.

**Table 2: Reported Collisions**

Intersection	Angle	Rear End	Sideswipe	Single/ Other	Turning	Total
Manotick Main Street/Bridge Street/Maple Avenue	2	6	4	1	3	16
Bankfield Road/Rideau Valley Drive/Manotick Main Street	2	9	1	-	2	14
Bankfield Road between Fee Street and Rideau Valley Drive/Manotick Main Street	1	2	-	-	-	3
Bankfield Road between Fee Street and Colony Heights Road	-	1	-	-	-	1
Bankfield Road/Potter Drive/Lockmaster Crescent	1	-	-	-	-	1
Bankfield Road/Colony Heights Road	1	-	-	-	-	1

*Manotick Main Street/Bridge Street/Maple Avenue*

A total of 16 collisions were reported at the Manotick Main Street/Bridge Street/Maple Avenue intersection over the course of the last five years. Of these, there were six rear end collisions, four sideswipes, three turning movement collisions, two angle impacts, and one single vehicle collision. One of the collisions caused non-fatal injury and the others were classified causing as property damage only.

Of the six rear end collisions, three occurred on the southbound approach, two on the eastbound approach, and one on the westbound approach.

*Bankfield Road/Rideau Valley Drive/Manotick Main Street*

A total of 14 collisions were reported at the Bankfield Road/Rideau Valley Drive/Manotick Main Street intersection over the course of the last five years. Of these, there were nine rear end collisions, two angle impacts, two turning movement impacts, and one sideswipe. One of the collisions caused non-fatal injury and the others were classified causing as property damage only.

Of the nine rear end collisions, five occurred on the eastbound approach, three on the southbound approach, and one on the westbound approach.

*Bankfield Road between Fee Street and Rideau Valley Drive/Manotick Main Street*

Three collisions were reported at this location over the course of the last five years. Of these, there were two rear end collisions and one angle impact. One of the collisions caused a non-fatal injury and the other two were classified as causing property damage only.

*Bankfield Road between Fee Street and Colony Heights Road*

One collision was reported at this location over the course of the last five years. The reported collision was rear end impact. No injuries or fatalities were reported.

*Bankfield Road/Potter Drive/Lockmaster Crescent*

One collision was reported at this intersection over the course of the last five years. The reported collision was an angle impact between a northbound vehicle and eastbound vehicle. No injuries or fatalities were reported.

### Bankfield Road/Colony Heights Road

One collision was reported at this intersection over the course of the last five years. The reported collision was an angle impact between a northbound vehicle and a westbound vehicle. No injuries or fatalities were reported.

## **4.2 Planned Conditions**

The City of Ottawa's 2013 Transportation Master Plan (TMP) identifies the widening of Barnsdale Road, located to the north of the subject property, from two to four lanes between Highway 416 and Prince of Wales Drive, requiring a new Highway 416 interchange to serve growing Barrhaven/Nepean South. This project is not included in the Affordable Network Plan but is included in the Network Concept.

The Manotick Secondary Plan identifies the Manotick Main Street/Rideau Valley Drive/Bankfield Road intersection as a potential site for a future roundabout, subject to realignment of approach roadways.

The City's 2013 Pedestrian Plan and 2013 Cycling Plan do not identify any upcoming pedestrian or cycling infrastructure projects within the study area.

A review of the City's Development Application search tool identifies the following developments in proximity of the subject site that are under construction, approved, or in the approval process.

### Minto Mahogany Stage 2

A Transportation Impact Study (June 2017, by Parsons) was submitted in support of a Draft Plan of Subdivision application for Stage 2 of the Mahogany Subdivision by Minto, located at the southern edge of Manotick, north of Century Road between First Line Road and Rideau Valley Drive. Stage 1 of the residential development is built out and Stage 2 will consist of a total of 246 townhomes and 943 single family homes. Full buildout of the Mahogany Subdivision is anticipated by 2027.

### 5497 Manotick Main Street

A Traffic Impact Assessment (October 2021, by CastleGlenn) was submitted in support of a Site Plan application at 5497 Manotick Main Street. As part of this redevelopment, the existing building on-site would be demolished, and a new low-rise apartment building (with 21 units) would be constructed. Occupancy is anticipated to begin in 2022.

Other developments within the study area that did not include transportation reports with the submissions include:

- 1164-1166 Highcroft Drive – 10 new single detached houses fronting onto Highcroft Drive and a private road;
- 5514 Manotick Main Street – a three storey retail/office building (686m<sup>2</sup> GFA) on the northwest corner of Manotick Main Street/Bridge Street/Maple Avenue, with access to Maple Avenue;

### 4.3 Study Area and Time Periods

The study area for this report includes the boundary roadways as well as the intersections of Bankfield Road/Rideau Valley Drive/Manotick Main Street, Manotick Main Street/Bridge Street/Maple Avenue, Bankfield Road/Potter Drive/Lockmaster Crescent, and Bankfield Road/Colony Heights Road.

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the ‘worst case’ combination of site generated traffic and adjacent street traffic. As the buildout year is anticipated to be 2028, this TIA will consider the weekday AM and PM peak periods in the buildout year 2028 and the horizon year 2033.

### 4.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the TIA guidelines. The applicable exemptions for this site are shown in **Table 3**.

**Table 3: TIA Exemptions**

Module	Element	Exemption Criteria	Exemption Status
<b>Design Review Component</b>			
4.1 Development Design	4.1.2 Circulation and Access	<ul style="list-style-type: none"> <li>Only required for site plans</li> </ul>	Exempt
	4.1.3 New Street Networks	<ul style="list-style-type: none"> <li>Only required for plans of subdivision</li> </ul>	Not Exempt
4.2 Parking	4.2.1 Parking Supply	<ul style="list-style-type: none"> <li>Only required for site plans</li> </ul>	Exempt
	4.2.2 Spillover Parking	<ul style="list-style-type: none"> <li>Only required for site plans where parking supply is 15% below unconstrained demand</li> </ul>	Exempt
<b>Network Impact Component</b>			
4.5 Transportation Demand Management	<i>All elements</i>	<ul style="list-style-type: none"> <li>Not required for non-residential site plans expected to have fewer than 60 employees and/or students on location at any given time</li> </ul>	Exempt
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	<ul style="list-style-type: none"> <li>Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds</li> </ul>	Exempt
4.8 Network Concept	<i>All elements</i>	<ul style="list-style-type: none"> <li>Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by the established zoning</li> </ul>	Exempt

## 5.0 FORECASTING

### 5.1 Development-Generated Travel Demand

#### 5.1.1 Trip Generation

The proposed subdivision will provide a total of 147 dwellings, including 62 single detached houses, 16 semi-detached houses, and 69 townhouses.

Trips generated by the proposed development during the weekday AM and PM peak period have been estimated based on relevant rates presented in the City’s 2020 TRANS *Trip Generation Manual Summary Report*. Peak period person trips, based on the Single-Detached and Multi-Unit (Low-Rise) rates in Table 3 of the TRANS report, are summarized in the following table.

**Table 4: Peak Period Person Trip Generation**

Land Use	TRANS Rate	Units	AM Peak Period (ppp <sup>(1)</sup> )			PM Peak Period (ppp)		
			IN	OUT	TOT	IN	OUT	TOT
Single-Detached	AM: 2.05 PM: 2.48	62	38	89	127	95	59	154
Low-Rise Multifamily	AM: 1.35 PM:1.58	85	34	81	115	75	59	134
<b>Total</b>			<b>72</b>	<b>170</b>	<b>242</b>	<b>170</b>	<b>118</b>	<b>288</b>

1. ppp: Person Trips per Peak Period

Table 6 and 7 of the TRANS report includes data to estimate the mode shares for the AM and PM peak periods based on district. Based on the TRANS report, the residential mode shares in the Rural Southwest District are summarized in the following table.

**Table 5: Modal Shares in the Southwest District**

Dwelling Type	Period	Mode				
		Auto Driver	Auto Pass	Transit	Cycling	Walking
Single-Detached Housing	AM	60%	14%	24%	2%	0%
	PM	67%	17%	14%	2%	0%
Low-Rise Multifamily Housing	AM	66%	13%	21%	1%	0%
	PM	62%	19%	16%	3%	0%

The assumed modal shares for this analysis are taken as an average between the TRANS AM and PM period shares. A breakdown of the peak period person trips by modal share is shown in **Table 6**.



**Table 6: Peak Period Person Trips by Modal Share**

Travel Mode	Mode Share	AM Peak Period			PM Peak Period		
		IN	OUT	TOT	IN	OUT	TOT
<b>Peak Period Person Trips</b>		<b>72</b>	<b>170</b>	<b>242</b>	<b>170</b>	<b>118</b>	<b>288</b>
Auto Driver	65%	47	110	157	110	77	187
Auto Passenger	15%	11	26	37	26	18	44
Transit	18%	13	31	44	31	21	52
Cyclist	2%	1	3	4	3	2	5
Pedestrian	0%	0	0	0	0	0	0

Table 4 of the TRANS report includes adjustment factors to convert the estimated number of trips generated for each mode from peak period to peak hour. A breakdown of the peak hour trips by mode is shown in **Table 7**.

**Table 7: Peak Hour Person Trips by Mode Share**

Travel Mode	Adj. Factor		AM Peak Hour			PM Peak Hour		
	AM	PM	IN	OUT	TOT	IN	OUT	TOT
Auto Driver	0.48	0.44	22	53	75	48	34	82
Auto Passenger	0.48	0.44	5	13	18	11	8	19
Transit	0.55	0.47	7	17	24	14	10	24
Cyclist	0.58	0.48	1	1	2	1	1	2
Pedestrian	0.58	0.52	0	0	0	0	0	0
<b>Peak Hour Person Trips</b>			<b>35</b>	<b>84</b>	<b>119</b>	<b>74</b>	<b>53</b>	<b>127</b>

From the previous table, the proposed development is estimated to generate 119 person trips (including 75 vehicle trips) during the AM peak hour and 127 person trips (including 82 vehicle trips) during the PM peak hour.

### 5.1.2 Trip Distribution

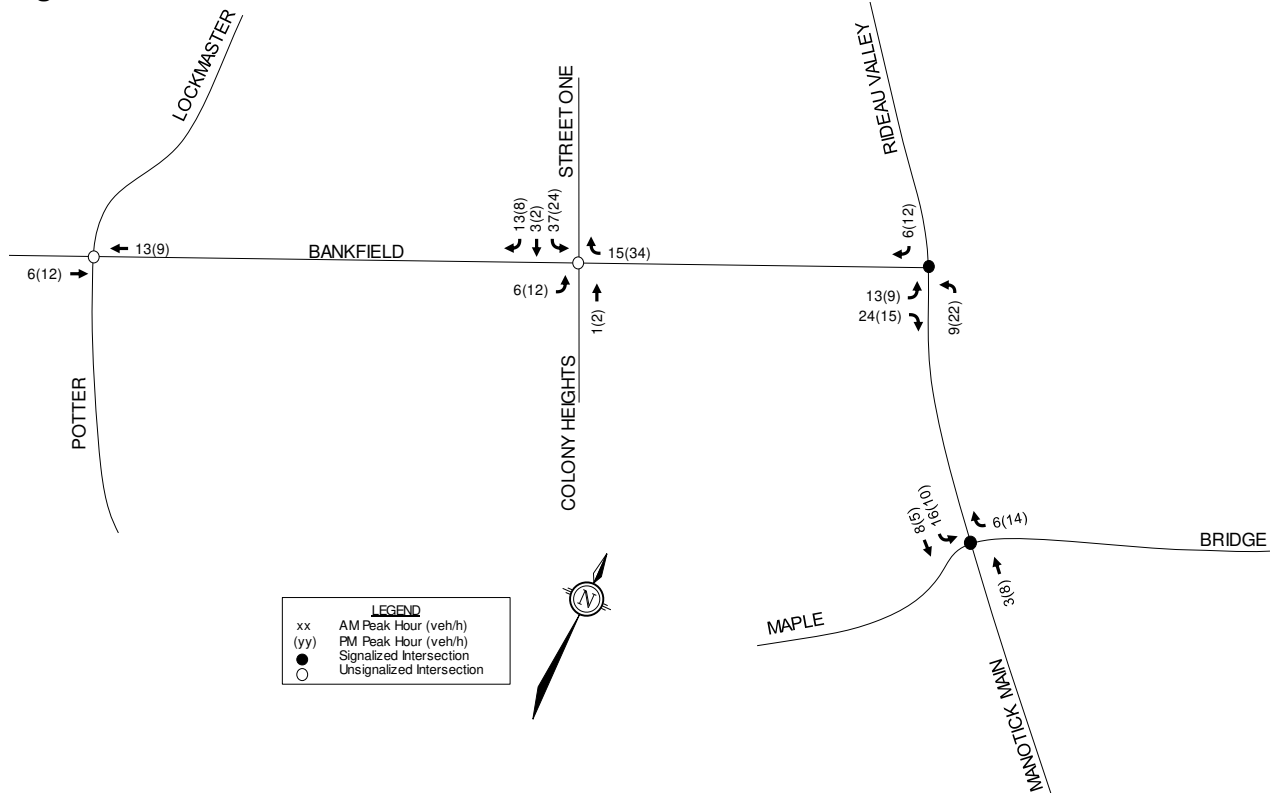
The distribution of traffic generated by the proposed subdivision to the road network has been estimated based on logical trip routing, existing outbound traffic patterns during the AM peak hour, and existing inbound traffic patterns during the PM peak hour.

The trip distribution can be described as follows:

- 25% to/from the north via Rideau Valley Drive
- 30% to/from the east via Bridge Street
- 5% to/from the south via Colony Heights Road
- 15% to/from the south via Manotick Main Street
- 25% to/from the west via Bankfield Road

Traffic volumes generated by the proposed development are shown in **Figure 6**.

**Figure 6: Site-Generated Traffic Volumes**



**5.2 Background Traffic**

**5.2.1 Other Area Developments**

A description of other study area development is included in Section 4.2.

Buildout of Stage 2 of the Minto Mahogany Subdivision is anticipated by 2027. Traffic generated by this development has been added to the 2028 buildout and 2033 horizon years, using the distribution as outlined in the 2017 TIS. Relevant excerpts from the TIS for Stage 2 of the Minto Mahogany Subdivision are included in **Appendix F**.

A review of available documents on the City’s Development Application search tool suggests that traffic generated by the following developments is expected to have a negligible impact on the adjacent roadways:

- The residential redevelopment at 5497 Manotick Main Street
- The residential development at 1164-1166 Highcroft Drive
- The retail/office development at 5514 Manotick Main Street

As the trip generation trigger for these developments was not met, traffic generated by these developments has been considered negligible and has not been explicitly added to background traffic.

## 5.2.2 General Background Growth Rate

A review of the City's *Strategic Long-Range Model* (comparing snapshots of the 2011 and 2031 AM peak hour traffic volumes), Section 2.3 of the City's 2013 TMP (comparing 2011 and 2031 population and employment projections), and historic traffic counts, was completed to establish general background growth. The long-range snapshots and Section 2.3 of the 2013 TMP are included in **Appendix G**.

A comparison of the 2011 AM and 2031 AM peak hour volumes included in the long-range model along the study area roadways indicates that:

- Traffic along Bankfield Road (west of Potter Drive) is projected to increase at a rate of 2% per year,
- Traffic along Rideau Valley Drive (north of Bankfield Road) is projected to increase at a rate of 1.3% per year,
- Traffic along Manotick Main Street is projected to grow -0.2% to +0.7% per year,
- Traffic along Bridge Street (east of Manotick Main Street) is projected to increase at a rate of 0.7% to 1.0% per year

It is noted that the Vimy Memorial Bridge (Rideau River crossing connecting Barrhaven to Riverside South) opened in 2014 which alleviated some traffic throughout Manotick. The Long-Range model includes 2011 and 2031 analysis years and as such may not be an accurate representation of future traffic growth crossing the Manotick Bridge.

Section 2.3 of the City's 2013 TMP projects a 9% growth in the population of Rural Ottawa between 2011 and 2031, which translates to an annual linear growth rate of 0.45% per annum.

Traffic counts from 2015, 2016, and 2019 were compared at the two signalized study area intersections. The results can be found in the below table. It was found that traffic counts from 2016 appear to be low compared to the 2015 and 2019 counts, as shown in the table. This is consistent with the 2016 traffic count obtained for the Bankfield Road/Colony Heights intersection, as described in Section 4.1.7. For this reason, 2016 counts have not been relied upon to determine the growth rate.

**Table 8: Historic Traffic Count Summary**

Intersection	Approach	AADT			Average Annual Growth		
		September 2015	March 2016	December 2019	2015 to 2016	2015 to 2019	2016 to 2019
Manotick Main Street/Bridge Street/Maple Avenue	Overall	23379	19136	24693	-18.1%	<b>1.4%</b>	9.7%
	North	16273	13285	17433	-18.4%	<b>1.8%</b>	10.4%
	South	9538	7457	9912	-21.8%	<b>1.0%</b>	1.0%
	East	16623	13716	17296	-17.5%	<b>1.0%</b>	8.7%
	West	4324	3814	4745	-11.8%	<b>2.4%</b>	8.1%
Bankfield Road/Rideau Valley Drive/Manotick Main Street	Overall	17608	15068	18628	-14.4%	<b>1.4%</b>	7.9%
	North	9744	-	9952	-	<b>0.5%</b>	-
	South	16113	-	17310	-	<b>1.9%</b>	-
	West	9352	-	9994	-	<b>1.7%</b>	-

Based on the above table,

- Traffic along Bridge Street grew at a rate of 1% per year from 2015 to 2019;
- Traffic along Manotick Main Street grew at a rate of 1.0% to 1.9% per year from 2015 to 2019;
- Traffic along Bankfield Road grew at a rate of 1.7% per year from 2015 to 2019; and
- Traffic along Rideau Valley Drive grew at a rate of 0.5% per year from 2015 to 2019.

Based on the foregoing, a 1.5% annual growth rate has been applied to Bankfield Road, Rideau Valley Drive, Manotick Main Street, and Bridge Street. No growth rate was applied to Potter Drive, Lockmaster Crescent, Colony Heights Road, or Maple Avenue as the background growth rate is intended to account for growth in regional traffic which is not anticipated on lower class roads. Other area developments have been accounted for separately.

### 5.3 Future Traffic Conditions

The Manotick Secondary Plan identifies the Manotick Main Street/Rideau Valley Drive/Bankfield Road intersection as a potential site for a future roundabout, subject to realignment of approach roadways. As such, sensitivity analysis will be conducted for this intersection with and without a roundabout in place for the 2033 five-year horizon.

The figures listed below present the following future traffic conditions:

- Background traffic volumes in 2028 are shown in **Figure 7**;
- Background traffic volumes in 2033 are shown in **Figure 8**;
- Total traffic volumes in 2028 are shown in **Figure 9**;
- Total traffic volumes in 2033 are shown in **Figure 10**.

**Figure 7: 2028 Background Traffic Volumes**

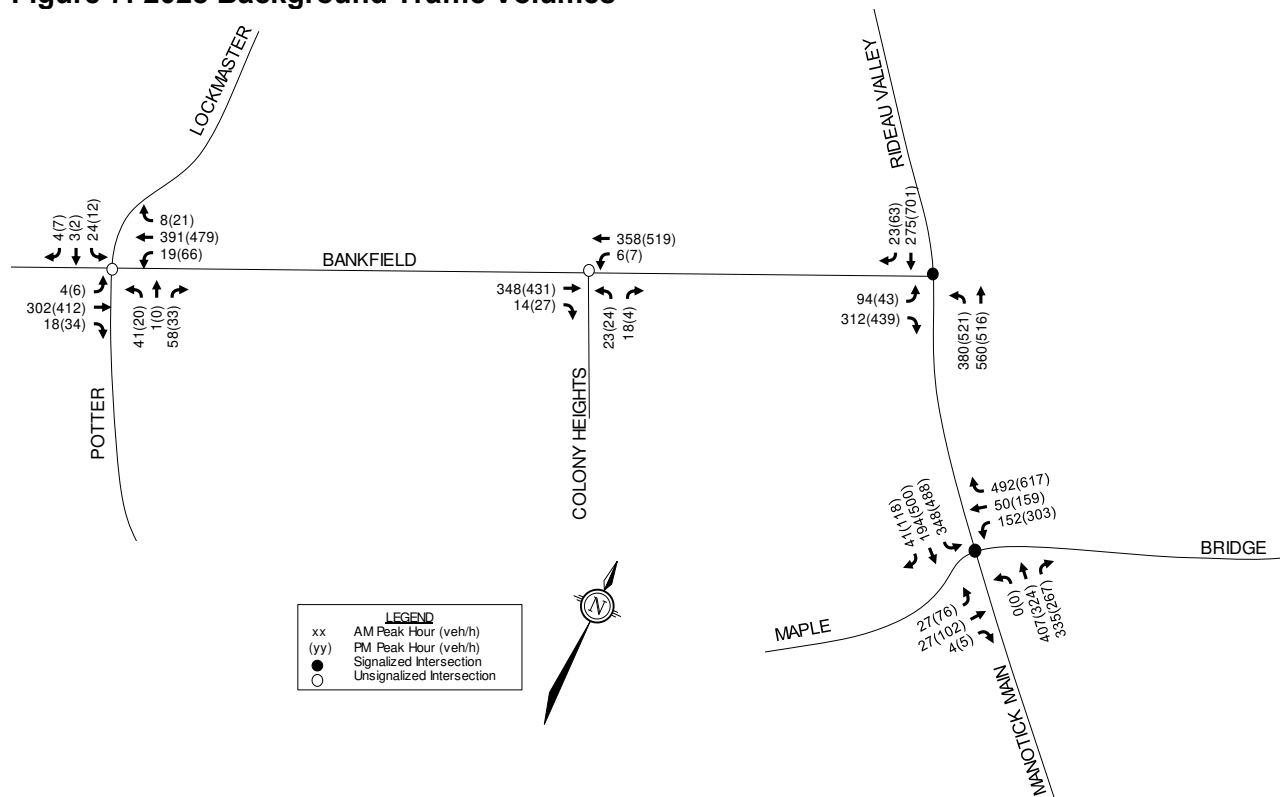


Figure 8: 2033 Background Traffic Volumes

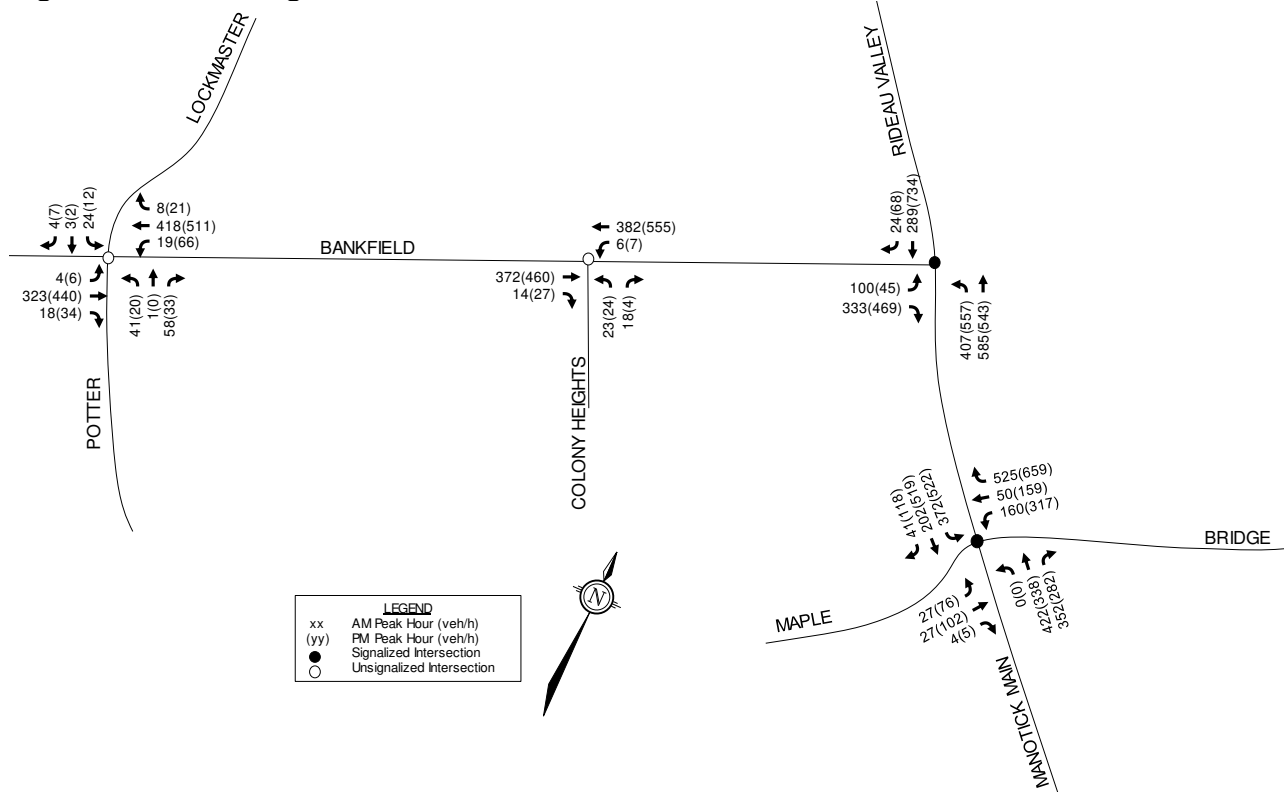
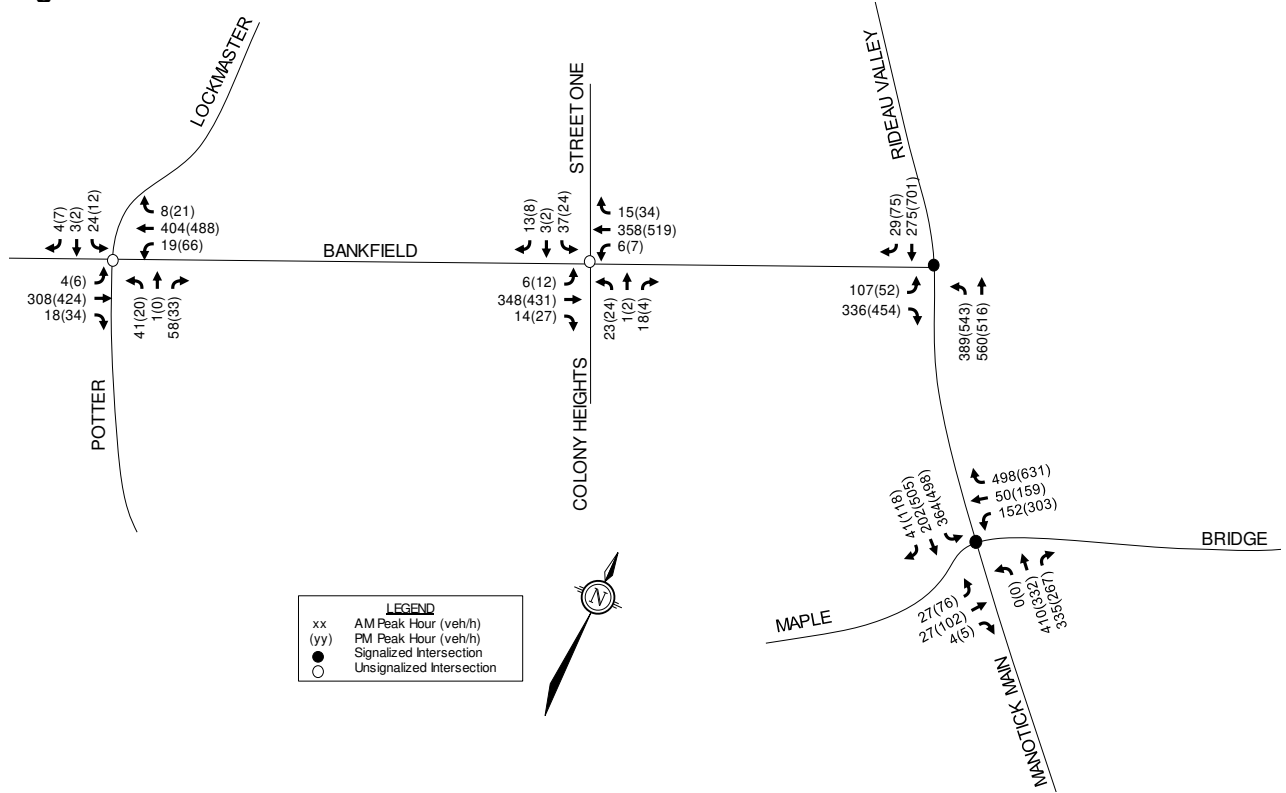
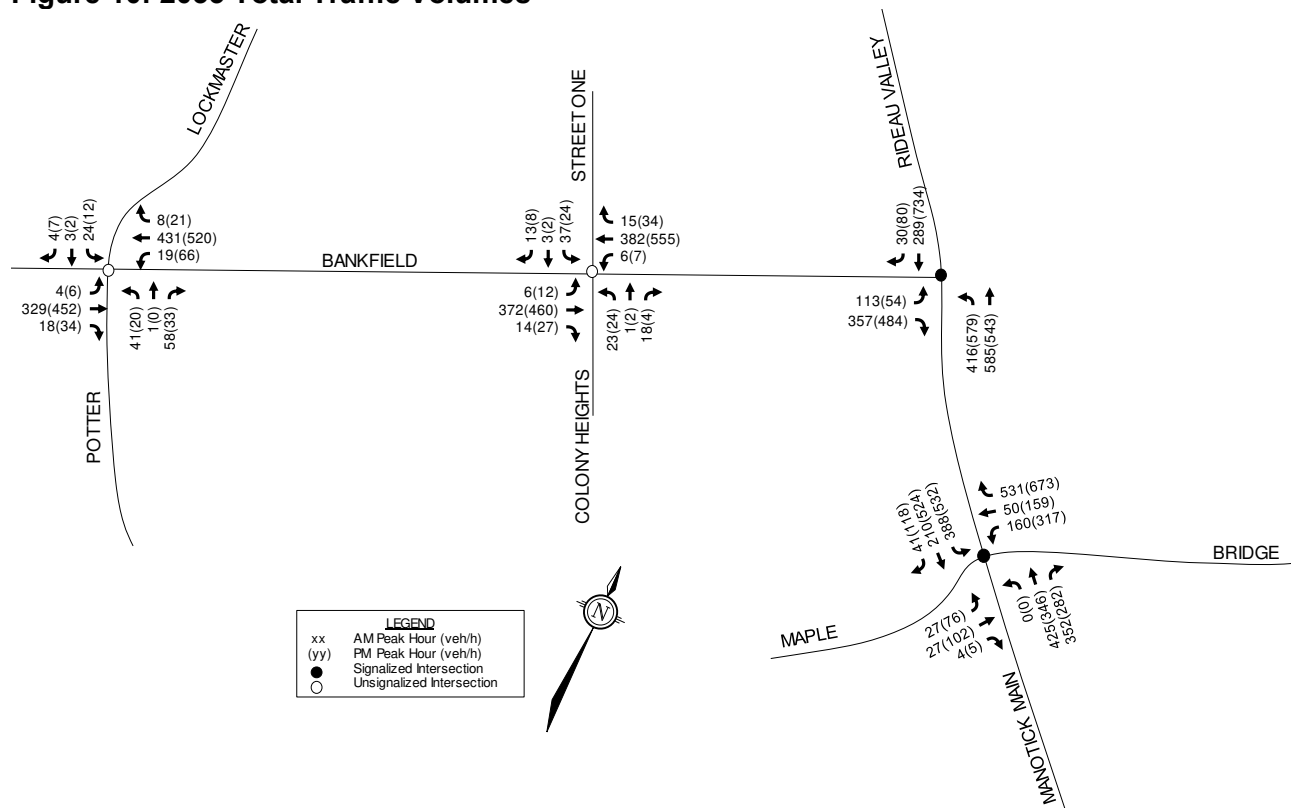


Figure 9: 2028 Total Traffic Volumes



**Figure 10: 2033 Total Traffic Volumes**



### 5.4 Demand Rationalization

A review of the existing and background intersection operations (using Synchro software) has been conducted to determine if observed traffic volumes or projected background traffic volumes will exceed capacity within the study area. The intersection parameters used in the analysis are consistent with the TIA Guidelines (Saturation Flow Rate: 1,800 vphpl, Peak Hour Factor: 0.9 for existing conditions and 1.0 for future conditions). Signal timing plans for the signalized study area intersections have been obtained from the City, and are included in **Appendix H**.

#### 5.4.1 Existing Intersection Operations

Intersection capacity analysis has been conducted for the existing traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

The 2019 weekday traffic count performed at the Manotick Main Street/Bridge Street/Maple Avenue intersection identified three pedestrians crossing on the north approach during the AM peak hour and none during the PM peak hour. Over the course of the 8-hour count, there were a total of seven pedestrians crossing on this approach. The signal timing plan obtained from the City of Ottawa identifies that the north crossing has five second actuated advanced walk phase. This intersection was modeled with and without the advanced pedestrian walk phase as not all cycles are anticipated to have this phase actuated.

**Table 9: Existing Traffic Operations**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street	0.65	B	EBR	0.89	D	NBL
Manotick Main Street/Bridge Street/Maple Avenue <sup>1</sup>	0.66	B	WBR	<b>0.98</b>	<b>E</b>	<b>WBL</b>
Manotick Main Street/Bridge Street/Maple Avenue <sup>2</sup>	0.66	B	WBR	0.82	D	WBL
Bankfield Road/Colony Heights Road	15 sec.	B	NB	23 sec.	C	NB
Bankfield Road/Potter Drive/Lockmaster Crescent	19 sec.	C	SB	23 sec.	C	SB

1. Intersection modeled with pedestrian actuation
2. Intersection modeled without pedestrian actuation

Under existing traffic conditions, the Manotick Main Street/Bridge Street/Maple Avenue intersection is operating with a LOS E in the PM peak when the advanced pedestrian walk phase is actuated. Without the advanced pedestrian walk phase, this improves to a LOS D. All other study area intersections are currently operating with a LOS D or better.

The westbound left queue at the Manotick Main Street/Bridge Street/Maple Avenue intersection is approximately 110m in the PM peak hour with pedestrian actuation. Without pedestrian actuation, this queue length improves to approximately 95m. This queue exceeds the westbound left storage length of 25m and the taper length of 35m in the PM peak hour. This is a result of heavy left turning volumes in the PM and a cycle length of 140 seconds. Per the TIA guidelines, signalized intersections must accommodate 1.5 times the average number of arrivals per cycle during the heaviest hour, assuming an average vehicle length of 7m. Using the formula  $S=1.5NL/(3600/CL)$ , the required westbound left turn storage length would be 80m in the PM peak, which would accommodate the existing queue within the storage and taper.

The northbound through queue at the Manotick Main Street/Bridge Street/Maple Street intersection is approximately 80m in the PM peak hour, which extends past the Manotick Main Street/Clapp Lane intersection. The Manotick Main Street/Clapp Lane intersection is located approximately 50m from the Manotick Main Street/Bridge Street/Maple Street intersection, measured from stop bar to nearest edge.

The southbound through queue at the Manotick Main Street/Bridge Street/Maple Street intersection is approximately 85m and the southbound left queue is approximately 120m in the PM peak hour, which extends past the Manotick Main Street/Highcroft Drive intersection. The Manotick Main Street/Highcroft Drive intersection is located approximately 80m from the Manotick Main Street/Bridge Street/Maple Street intersection, measured from stop bar to nearest edge.

A review of the MTO left turn lane storage graphs indicates that a westbound left turn lane with 15m of storage is currently warranted at the Bankfield Road/Colony Heights intersection under existing traffic conditions. Left turn lane warrants are provided in **Appendix J**.

### 5.4.2 2028 Background Intersection Operations

Intersection capacity analysis has been conducted for the 2028 background traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

Note that some critical movements appear to operate slightly better under projected conditions than under existing conditions; this is a result of the peak hour factor (PHF) of 1.0 for future conditions as per the TIA guidelines.

**Table 10: 2028 Background – Traffic Operations**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street	0.64	B	EBR	1.08	F	NBL
				0.99	E	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>1</sup>	0.70	B	WBL	1.35	F	WBL
Manotick Main Street/Bridge Street/Maple Avenue <sup>2</sup>	0.65	B	SBL	1.08	F	WBL
Bankfield Road/Colony Heights Road	13 sec.	B	NB	19 sec.	C	NB
Bankfield Road/Potter Drive/Lockmaster Crescent	19 sec.	C	SB	22 sec.	C	SB

1. Intersection modeled with pedestrian actuation
2. Intersection modeled without pedestrian actuation

Under 2028 background traffic conditions, critical movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue intersections are expected to operate with a LOS E or F in the PM peak. The Bankfield Road/Colony Heights Road and Bankfield Road/Potter Drive/Lockmaster Crescent intersections are anticipated to operate with a LOS C or better.

The northbound left and southbound through movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection are anticipated to operate at or near capacity in the PM peak under 2028 background traffic conditions. Approximately 520 vehicles are anticipated to perform the northbound left movement from a single lane and 765 vehicles are anticipated to perform the southbound through or right turn movement from a single lane in the PM peak. An increased cycle length to 130 seconds would improve these movements to a maximum v/c ratio of 0.92, as shown in the below table, but will not achieve the target v/c ratio of 0.90. The addition of a second southbound lane would achieve the target v/c ratio, as shown in the below table.

The Manotick Secondary Plan identifies the Manotick Main Street/Rideau Valley Drive/Bankfield Road intersection as a potential site for a future roundabout, subject to realignment of approach roadways. As such, sensitivity analysis has been conducted for this intersection with and without a roundabout in place. Roundabout analysis has been conducted using the Rodel software package. A single lane roundabout at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection would operate above capacity under 2028 background traffic conditions. A roundabout with two approach lanes on each leg would operate with a maximum delay of 9 seconds (LOS A) in the PM peak hour. The roundabout operations are shown in the below table.



The westbound left movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to operate with a v/c ratio of 1.35 in the PM peak hour under 2028 background traffic conditions with pedestrian actuation. Without pedestrian actuation, this v/c ratio is anticipated to improve to 1.08. PM peak hour traffic signal optimization maintaining the existing cycle length is anticipated to improve overall operations at this intersection, but will not achieve the City’s target v/c ratio of 0.90 with pedestrian actuation, as shown in the below table. PM peak hour traffic signal optimization maintaining the existing cycle length is anticipated to improve overall operations at this intersection to within the City’s target v/c ratio of 0.90 without pedestrian actuation, as shown in the below table.

Consistent with the existing traffic conditions, the 95<sup>th</sup> percentile queue length for the westbound left turn movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to exceed the existing storage length. The 95<sup>th</sup> percentile northbound and southbound through movements are anticipated to extend through and block upstream intersections.

A review of the MTO left turn lane storage graphs indicates that a westbound left turn lane with 15m of storage is warranted at the Bankfield Road/Colony Heights intersection under 2028 background traffic conditions.

**Table 11: 2028 Background – Traffic Operations (Mitigated)**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>1</sup>	60 sec. (v/c 1.01)	F	NB	60 sec. (v/c 1.02)	F	NB
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>2</sup>	7 sec. (v/c 0.56)	A	NB	9 sec. (v/c 0.61)	A	NB
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>3</sup>	-	-	-	0.91	E	NBL
				0.92	E	SBT
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>4</sup>	0.64	B	EBR	0.81	D	NBL
				0.59	A	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>5</sup>	-	-	-	0.89	D	NB
				0.91	E	SBL
Manotick Main Street/Bridge Street/Maple Avenue <sup>6</sup>	-	-	-	0.92	E	WBL
				0.86	D	NB
				0.90	D	SBL
				0.90	D	WBL

1. Roundabout (single lane on all approaches)
2. Roundabout (two lanes on all approaches)
3. Increased cycle length to 130 seconds
4. Two southbound lanes
5. Optimized signal timing – with pedestrian actuation
6. Optimized signal timing – without pedestrian actuation

The approximate required reduction in volumes to meet the target Auto LOS under existing lane configurations for each over-capacity movement is included below.

**PM Peak Hour**

- Rideau Valley Drive/Bankfield Road/Manotick Main Street
  - Northbound left turn (v/c: 1.08): reduction of 70 vehicles required.
  - Southbound through (v/c: 0.99): reduction of 70 vehicles required.

- Manotick Main Street/Bridge Street/Maple Avenue
  - Westbound left turn (v/c: 1.08): reduction of 50 vehicles required.

### 5.4.3 2033 Background Intersection Operations

Intersection capacity analysis has been conducted for the 2033 background traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

**Table 12: 2033 Background – Traffic Operations**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>1</sup>	0.66	B	EBR	1.17	F	NBL
				1.04	F	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>2</sup>	0.71	C	WBL	1.41	F	WBL
				0.86	D	SBL
Manotick Main Street/Bridge Street/Maple Avenue <sup>3</sup>	0.70	B	NBT/SBL	1.13	F	WBL
				0.90	D	SBL
Bankfield Road/Colony Heights Road	14 sec.	B	NB	20 sec.	C	NB
Bankfield Road/Potter Drive/Lockmaster Crescent	20 sec.	C	SB	24 sec.	C	SB

1. Signalized intersection
2. Intersection modeled with pedestrian actuation
3. Intersection modeled without pedestrian actuation

Under 2033 background traffic conditions, critical movements at the signalized Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue intersections are expected to operate with a LOS E or F in the PM peak. The Bankfield Road/Colony Heights Road and Bankfield Road/Potter Drive/Lockmaster Crescent intersections are anticipated to operate with a LOS C or better.

The northbound left and southbound through movements at the signalized Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection are anticipated to operate with a LOS F in the PM peak under 2033 background traffic conditions. An increased cycle length to 130 seconds would improve these movements, as shown in the below table, but will not achieve the target v/c ratio of 0.90. The addition of a second southbound lane would achieve the target v/c ratio, as shown in the below table.

A single lane roundabout at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection would operate above capacity under 2033 background traffic conditions. A roundabout with two approach lanes on each leg would operate with a maximum delay of 10 seconds (LOS B) in the PM peak hour. The roundabout operations are shown in the below table.

Under 2033 background traffic conditions, the westbound left movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to operate with a v/c ratio of 1.41 with pedestrian actuation in the PM peak hour. Without pedestrian actuation, this v/c ratio is anticipated to improve to 1.13 and the southbound left movement is anticipated to operate with a v/c ratio of 0.90 in the PM peak hour. PM peak hour traffic signal optimization maintaining the existing cycle length

is anticipated to improve overall operations at this intersection, but will not achieve the City’s target v/c ratio of 0.90, as shown in the below table.

Consistent with the 2028 background traffic conditions, the 95<sup>th</sup> percentile queue length for the westbound left turn movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to exceed the existing storage length. The 95<sup>th</sup> percentile northbound and southbound through movements are anticipated to extend through and block upstream intersections.

A review of the MTO left turn lane storage graphs indicates that a westbound left turn lane with 15m of storage is warranted at the Bankfield Road/Colony Heights intersection under 2033 background traffic conditions.

**Table 13: 2033 Background – Traffic Operations (Mitigated)**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>1</sup>	<b>60 sec.</b> <b>(v/c 1.01)</b>	<b>F</b>	<b>NB</b>	<b>60 sec.</b> <b>(v/c 1.02)</b>	<b>F</b>	<b>NB</b>
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>2</sup>	8 sec. (v/c 0.59)	A	NB	10 sec. (v/c 0.64)	B	NB
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>3</sup>	-	-	-	<b>0.96</b>	<b>E</b>	<b>NBL</b>
				<b>1.01</b>	<b>F</b>	<b>SBT</b>
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>4</sup>	0.66	B	EBR	0.85	D	NBL
				0.67	B	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>5</sup>	-	-	-	0.89	D	NB
				<b>1.00</b>	<b>F</b>	<b>SBL</b>
Manotick Main Street/Bridge Street/Maple Avenue <sup>6</sup>	-	-	-	<b>1.01</b>	<b>F</b>	<b>WBL</b>
				<b>0.95</b>	<b>E</b>	<b>NB</b>
				<b>0.95</b>	<b>E</b>	<b>SBL</b>
				<b>0.98</b>	<b>E</b>	<b>WBL</b>

- 7. Roundabout (single lane on all approaches)
- 8. Roundabout (two lanes on all approaches)
- 9. Increased cycle length to 130 seconds
- 10. Two southbound lanes
- 11. Optimized signal timing – with pedestrian actuation
- 12. Optimized signal timing – without pedestrian actuation

The approximate required reduction in volumes to meet the target Auto LOS under existing lane configurations for each over-capacity movement is included below.

**PM Peak Hour**

- Rideau Valley Drive/Bankfield Road/Manotick Main Street (signalized)
  - Northbound left turn (v/c: 1.17): reduction of 110 vehicles required.
  - Southbound through (v/c: 1.04): reduction of 100 vehicles required.
- Manotick Main Street/Bridge Street/Maple Avenue
  - Westbound left turn (v/c: 1.13): reduction of 65 vehicles required.

Traffic throughout the study area could be displaced or alleviated through a combination of increased use of non-auto modes of transportation, alternate time to travel for drivers using the study area roadways to make use of off-peak capacity, and alternate routes for travel. A further description of each option is summarized as follows.

### Increased Use of Non-Auto Modes

As congestion increases within the study area, some motorists may shift to other modes of travel such as walking, cycling, or transit use.

### Alternate Travel Times

As congestion increases within the study area, some motorists may alter their travel to occur outside of the peak hours. This shift in travel times may result in a reduction of peak hour traffic volumes. It is noted that traffic counts obtained for this study were performed prior to the COVID-19 pandemic and some peak hour commuters may have since shifted to telework and/or hybrid work plans.

### Alternate Routes of Travel

As congestion increases within the study area, some motorists may choose alternate routes of travel outside the study area. Alternative north-south routes outside of the study area include River Road, Limebank Road, Prince of Wales Drive, and Highway 416. Alternate crossings of the Rideau River include the crossing to the north at the Vimy Memorial Bridge (Strandherd Drive/Earl Armstrong Road) and the crossing to the south on Roger Stevens Drive. A review of the alternate routes in proximity of the study area is considered outside the scope of this study.

## **6.0 ANALYSIS**

### **6.1 Development and Access Design**

This section provides a review of the development design in terms of the road network and roadway cross-sections. A review of the City's *Transportation Demand Management (TDM)-Supportive Development Design and Infrastructure Checklist* is exempt from Draft Plan of Subdivision applications.

#### **6.1.1 Road Network**

Access to the development is provided by Street One from Bankfield Road across from the existing intersection with Colony Heights Road. Window streets are provided in segments of Street Two and Street Three along Bankfield Road and Rideau Valley Street to minimize the need for noise walls and to open up the development and present a welcoming streetscape entrance to the Village of Manotick.

A review of the new road network with respect to the initiatives identified in the City's Building Better and Smarter Suburbs (BBSS) report has been completed. The proposed road network is consistent with the following BBSS initiatives:

- Design the street network as an integral part and extension of the municipal grid, taking into consideration its future adjustments and evolution;
- Design the street network based on a modified or offset grid to maximize choices of travel routes and opportunities for utility connections;
- Design the street network in conjunction with the land use and open space system to ensure direct pedestrian and cycling connectivity to key destinations in the community;
- Implement traffic calming measures at the outset of road design for local and collector streets;
- Avoid reverse frontage lots (rear yards abutting public streets) within a community.

A new connection (Street One) to Bankfield Road is proposed which will tie into the existing Bankfield Road/Colony Heights Road intersection, forming the north leg. A review of sight distances was completed for the intersection of Bankfield Road/Colony Heights Road/Future Street One, using the relevant standards presented in the Transportation of Canada (TAC) *Geometric Design Guide for Canadian Roads*.

Bankfield Road has a posted speed limit of 60km/h along the site's frontage. For a design speed of 70km/h (10km/h over the posted speed), the required sight distances are as follows:

- Stopping Sight Distance (SSD): 105m
- Intersection Sight Distance (ISD):
  - Left turn from stop (looking right): 150m
  - Right turn from stop (looking left): 130m

Based on field measurements performed on July 13<sup>th</sup> 2022, the required stopping sight distance is available on the east and west approaches to the Bankfield Road/Colony Heights Road/Street One intersection and there is adequate intersection sight distance east and west of the intersection for vehicles to safely turn left and right.

### 6.1.2 Roadway Cross-Sections

A ROW width of 18m is proposed for Street One, and double loaded portions of Streets Two and Three. ROW widths of 14.75m are proposed for the window street portions of Street Two and Street Three. A cul-de-sac with a 15m radius is proposed at the terminus of Street Two. All streets are proposed to have a roadway width of 8.5m. These widths accommodate a travel lane for each direction, along with on-street parking on one side of the street, and are appropriate given the context of the proposed development, which is a low-speed residential neighbourhood with limited opportunity for cut-through traffic.

Sidewalks are proposed on one side of local streets and a pathway is proposed along the north side of Bankfield Road to provide a pedestrian linkage between the existing Millers Point Park and the intersection of Bankfield Road and Rideau Valley Drive. Additional pathway linkages between the subdivision and the new pathway along Bankfield Road will be provided through the two open space blocks. A development concept plan showing sidewalk pathway locations is provided in **Appendix A**.

A Geometric Road Design Drawing (GRDD) package outlining the proposed traffic calming measures will be provided separately as part of the detailed engineering submission.

### 6.2 Boundary Streets

A review of the boundary streets (Bankfield Road and Rideau Valley Drive) has been conducted, using complete streets principles. The *Multi-Modal Level of Service (MMLOS) Guidelines*, produced by IBI Group in October 2015, were used to evaluate the levels of service for each alternative mode of transportation. Schedule A of the City's Official Plan identifies that the boundary roadways are located within the 'Village' land use designation.

Targets for pedestrian level of service (PLOS), bicycle level of service (BLOS), transit level of service (TLOS), and truck level of service (TkLOS) adhere to those outlined in Exhibit 22 of the MMLOS Guidelines. While there are no targets for TLOS for Bankfield Road or Rideau Valley Drive, this

category has still been evaluated for Bankfield Road since transit currently operates on this roadway. As transit does not operate along Rideau Valley Drive north of Bankfield Road, the TLOS has not been reviewed along this roadway.

The boundary street review evaluates the MMLOS for the boundary roadways based on existing conditions. A detailed MMLOS review is included in **Appendix K**, and a summary of the segment MMLOS analysis is included in **Table 14**.

**Table 14: Segment MMLOS Summary**

Segment	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Rideau Valley Drive	F	C	E	C	-	-	C	D
Bankfield Road	F	C	E	C	D	-	C	D

Rideau Valley Drive and Bankfield Road meet the target TkLOS but do not meet the target PLOS and BLOS.

Exhibit 4 of the MMLOS guidelines suggests that a PLOS C is not achievable for an operating speed of 70km/h (10km/h above the posted speed) and an AADT above 3,000vpd. Given the rural context of the surrounding area, the existing paved shoulders are considered appropriate pedestrian facilities even though they do not achieve the target PLOS C. The traffic counts obtained for the Bankfield Road/Rideau Valley Drive/Manotick Main Street, Bankfield Road/Colony Heights Road, and Bankfield Road/Lockmaster Crescent/Potter Crescent intersections did not indicate any pedestrians crossing these roadways during the AM or PM peak periods. Over the course of the 8-hour traffic counts, only two pedestrians were counted crossing Potter Drive (walking on the south side of Bankfield Road) and no other pedestrian activity was recorded at the other two intersections along Bankfield Road.

As part of this application, a new pathway is proposed on the north side of Bankfield Road which will provide a pedestrian linkage between existing Millers Point Park and the intersection of Bankfield Road and Rideau Valley Drive. The proposed pathway will provide a PLOS D on the north side of the road.

Exhibit 11 of the MMLOS guidelines suggest that a BLOS C is not achievable for paved shoulders on roadways with an operating speed of 70km/h. Given the rural context of the surrounding area, the existing paved shoulders are considered appropriate cycling facilities even though they do not achieve the target BLOS C. A reduction in the operating speed to 60km/h or a physically separated bikeway would achieve the target BLOS. This is identified for the City’s consideration.

**6.3 Transportation Demand Management**

A review of the City’s *TDM Measures Checklist* has been conducted. The following measures will be implemented for the proposed development:

- Display local area maps with walking/cycling routes and key destinations (at sales centre);
- Display relevant transit schedules and route maps (at sales centre).

A copy of the completed *TDM Measures Checklist* is included in **Appendix L**.

## 6.4 Transit

Based on the trip generation estimates presented in Section 5.1.1, the proposed subdivision is projected to generate 24 transit trips during the AM peak hour (7 inbound trips and 17 outbound trips) and 24 transit trips during the PM peak hour (14 inbound trips and 10 outbound trips).

The subject site is located within the Rural Southwest district. The 2011 TRANS Origin-Destination survey indicates that of the trips from the Rural Southwest district in the AM peak period, the most popular destinations include the Rural Southwest district (34%), Kanata/Stittsville (15%), South Nepean (8%), Bayshore/Cedarview (7%), Merivale (7%), Alta Vista (6%), Ottawa Center (5%), and Ottawa Inner Area (5%).

For the purpose of this analysis, the following has been assumed:

- Trips within the Rural Southwest district and to/from the South Nepean district have been assigned to Local Route 176 (with service to/from Barrhaven Centre)
- Trips with origins/destinations outside of the Rural Southwest or South Nepean districts have been assigned to Connection Route 299 (with service to/from Hurdman)

Based on the walking distances between the subject site and the closest bus stops, the transit trips generated by the proposed subdivision have been distributed as follows:

### AM Peak Hour

- Stop #2847: seven passengers on Route 176 (boarding);
- Stop #2847: ten passengers on Route 299 (boarding);
- Stop #2848: three passengers on Route 176 (alighting);
- Stop #2848: four passengers on Route 299 (alighting);

### PM Peak Hour

- Stop #2847: four passengers on Route 176 (boarding);
- Stop #2847: six passengers on Route 299 (boarding);
- Stop #2848: six passengers on Route 176 (alighting);
- Stop #2848: eight passengers on Route 299 (alighting);

No capacity issues are anticipated for OC Transpo Routes 176 or 299, based on the above transit trip estimates.

## 6.5 Intersection Design

### 6.5.1 Intersection MMLOS Analysis

This section provides a review of the MMLOS of the study area intersections, using complete streets principles. The MMLOS Guidelines were used to evaluate the MMLOS for Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue. Per Schedule A of the City's Official Plan, both intersections are located in a Village.

The detailed intersection MMLOS review is included in **Appendix K**, and a summary of the intersection MMLOS analysis is included in the following table.

**Table 15: Intersection MMLOS Summary**

Intersection	PLOS		BLOS		TLOS		TkLOS		Auto LOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Rideau Valley Drive/Bankfield Road/Manotick Main Street	F	C	F	C	D	-	C	D	D	D
Manotick Main Street/Bridge Street/Maple Avenue	F	C	F	C	F	-	E	D	E	D

The results of the intersection MMLOS analysis can be summarized as follows:

- No study area intersections meet the target PLOS;
- No study area intersections meet the target BLOS;
- Rideau Valley Drive/Bankfield Road/Manotick Main Street meets the target TkLOS, while Manotick Main Street/Bridge Street/Maple Avenue does not.
- Rideau Valley Drive/Bankfield Road/Manotick Main Street meets the target Auto LOS, while Manotick Main Street/Bridge Street/Maple Avenue does not.

The following sections outline a further discussion for each intersection.

Rideau Valley Drive/Bankfield Road/Manotick Main Street

This intersection does not meet the target PLOS C or BLOS C, but meets the target TkLOS D and Auto LOS D.

The south and west approaches have a cross-section with a width equivalent to six or more lanes crossed. There is limited opportunity in improving PLOS at these approaches without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.

The west approach does not meet the target BLOS based on right turn characteristics, and the south and west approaches do not meet the target BLOS based on left turn characteristics. Based on Exhibit 12 of the MMLOS Guidelines, the west approach can achieve a BLOS C with the implementation of a bike lane which remains to the right of the right turn lane. This is identified for the City’s consideration. Exhibit 12 of the MMLOS Guidelines identifies that the target BLOS can only be met on the south and west approaches through the implementation of two-stage left-turn bike boxes, as the existing conditions require cyclists to cross at least one lane of traffic on roads with a speed limit of 60 km/h. This is identified for the City’s consideration.

As identified previously, the Manotick Secondary Plan identifies this intersection as a candidate for roundabout control. A roundabout at this intersection is anticipated to improve the pedestrian and cyclist level of comfort navigating the intersection.

Discussion of the vehicular level of service for this intersection in existing conditions is included in **Section 5.4.1**.

Manotick Main Street/Bridge Street/Maple Avenue

This intersection does not meet the target PLOS C, BLOS C, TkLOS D, or Auto LOS D.

All approaches have a cross-section with a width equivalent to five lanes crossed or more. There is limited opportunity in improving PLOS at each approach without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.



The south and east approaches do not meet the target BLOS based on right turn characteristics, and the north, east, and west approaches do not meet the target BLOS based on left turn characteristics. Based on Exhibit 12 of the MMLOS Guidelines, the addition of curbside bike lanes on the south and east approaches would improve the level of traffic stress for cyclists, such that the target BLOS could be met for right turns. This is identified for the City’s consideration. Exhibit 12 of the MMLOS Guidelines identifies that for left turns, the target BLOS can only be met at the north, east, and west approaches through the implementation of two-stage left-turn bike boxes, as the existing conditions require cyclists to cross at least one lane of traffic with a speed limit of 50-60 km/h.

The south, east, and west approaches do not meet the target TkLOS, as heavy vehicles turning at these approaches are provided with one receiving lane. The target TkLOS D can be achieved by either providing an additional lane or increasing the corner radius to 15m or more. The receiving lane widths are wider than a typical lane, at approximately 5.1m for the east approach, 5.6m for the south approach, and 7m for the north approach. The Manotick Village & Community Association (MVCA) released a Truck Traffic Survey in September 2021 indicating their concern with the amount of heavy truck traffic travelling through the Village of Manotick, with the intersection of Bridge Street/Manotick Main Street being of particular concern. The MVCA report had three recommendations:

- In the short term, install bollards at the northeast and southeast corners of Bridge Street/Manotick Main Street to prohibit truck encroachment on pedestrian staging areas.
- Change the rural truck routes to exclude Bridge Street and Manotick Main Street.
- Improve access to Earl Armstrong from the eastern industrial and warehousing facilities.

Discussion of the vehicular level of service for this intersection in existing conditions is included in **Section 5.4.1**.

### 6.5.2 2028 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2028 total traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix M**.

**Table 16: 2028 Total – Traffic Operations**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street	0.66	B	EBR	1.13	F	NBL
				1.01	F	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>1</sup>	0.70	B	WBL	1.35	F	WBL
Manotick Main Street/Bridge Street/Maple Avenue <sup>2</sup>	0.67	B	SBL	1.08	F	WBL
Bankfield Road/Colony Heights Road/Street 1	17 sec.	C	SB	23 sec.	C	NB
Bankfield Road/Potter Drive/Lockmaster Crescent	19 sec.	C	SB	23 sec.	C	SB

1. Intersection modeled with pedestrian actuation
2. Intersection modeled without pedestrian actuation

The addition of traffic generated by the proposed development is not anticipated to have a significant impact on the overall intersection operations within the study area.

Consistent with the 2028 background traffic conditions, critical movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue intersections are expected to operate with a LOS E or F in the PM peak. The Bankfield Road/Colony Heights Road/Street 1 and Bankfield Road/Potter Drive/Lockmaster Crescent intersections are anticipated to operate with a LOS C or better.

The northbound left and southbound through movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection are anticipated to operate at capacity in the PM peak under 2028 total traffic conditions. An increased cycle length to 130 seconds would improve these movements to a maximum v/c ratio of 0.96, as shown in the below table, but will not achieve the target v/c ratio of 0.90. The addition of a second southbound lane would achieve the target v/c ratio, as shown in the below table. This is consistent with 2028 background traffic conditions.

Consistent with 2028 background traffic conditions, a roundabout with two approach lanes on each leg at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection would operate with a maximum delay of 10 seconds (LOS A) in the PM peak hour under 2028 total traffic conditions. The roundabout operations are shown in the below table.

The westbound left movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to operate with a v/c ratio of 1.35 in the PM peak hour under 2028 total traffic conditions with pedestrian actuation. Without pedestrian actuation, this v/c ratio is anticipated to improve to 1.08. This is consistent with 2028 background traffic conditions. PM peak hour traffic signal optimization maintaining the existing cycle length is anticipated to improve overall operations at this intersection but will not achieve the City’s target v/c ratio of 0.90, as shown in the below table.

A review of the MTO left turn lane storage graphs indicates that eastbound and westbound left turn lanes with 15m of storage are warranted at the Bankfield Road/Colony Heights Road/Street 1 intersection under 2028 total traffic conditions.

**Table 17: 2028 Total – Traffic Operations (Mitigated)**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>1</sup>	8 sec. (v/c 0.57)	A	NB	10 sec. (v/c 0.62)	A	NB
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>2</sup>	-	-	-	<b>0.94</b>	<b>E</b>	<b>NBL</b>
				<b>0.96</b>	<b>E</b>	<b>SBT</b>
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>3</sup>	0.66	B	EBR	0.83	D	NBL
				0.61	B	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>4</sup>	-	-	-	<b>0.91</b>	<b>E</b>	<b>NB</b>
				<b>0.92</b>	<b>E</b>	<b>SBL</b>
				<b>0.95</b>	<b>E</b>	<b>WBL</b>
Manotick Main Street/Bridge Street/Maple Avenue <sup>5</sup>	-	-	-	<b>0.92</b>	<b>E</b>	<b>NB</b>
				<b>0.92</b>	<b>E</b>	<b>SBL</b>
				<b>0.92</b>	<b>E</b>	<b>WBL</b>

1. Roundabout (two lanes on all approaches)
2. Increased cycle length to 130 seconds
3. Two southbound lanes
4. Optimized signal timing – with pedestrian actuation
5. Optimized signal timing – without pedestrian actuation

### 6.5.3 2033 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2033 total traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed reports are included in **Appendix M**.

**Table 18: 2033 Total – Traffic Operations**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>1</sup>	0.68	B	EBR	1.23	F	NBL
				1.05	F	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>2</sup>	0.72	C	NBT	1.41	F	WBL
				0.90	D	SBL
Manotick Main Street/Bridge Street/Maple Avenue <sup>3</sup>	0.72	C	NBT/SBL	1.13	F	WBL
				0.91	E	NBT
				0.93	E	SBL
Bankfield Road/Colony Heights Road/Street 1	18 sec.	C	SB	26 sec.	D	NB
Bankfield Road/Potter Drive/Lockmaster Crescent	20 sec.	C	SB	25 sec.	C	SB

1. Signalized intersection
2. Intersection modeled with pedestrian actuation
3. Intersection modeled without pedestrian actuation

The addition of traffic generated by the proposed development is not anticipated to have a significant impact on the overall intersection operations within the study area.

Consistent with background traffic conditions, critical movements at the signalized Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue intersections are expected to operate with a LOS E or F in the PM peak. The Bankfield Road/Colony Heights Road/Street 1 and Bankfield Road/Potter Drive/Lockmaster Crescent intersections are anticipated to operate with a LOS C or better.

The northbound left and southbound through movements at the signalized Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection are anticipated to operate with a LOS F in the PM peak under 2033 total traffic conditions. An increased cycle length to 130 seconds would improve these movements, as shown in the below table, but will not achieve the target v/c ratio of 0.90. The addition of a second southbound lane would achieve the target v/c ratio, as shown in the below table. This is consistent with 2033 background traffic conditions.

Consistent with 2033 background traffic conditions, a roundabout with two approach lanes on each leg at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection would operate with a maximum delay of 10 seconds (LOS B) in the PM peak hour under 2033 total traffic conditions. The roundabout operations are shown in the below table.

Under 2033 total traffic conditions, the westbound left movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to operate with a v/c ratio of 1.41 with pedestrian actuation in the PM peak hour. Without pedestrian actuation, this v/c ratio is anticipated to improve to 1.13 and the southbound left movement is anticipated to operate with a v/c ratio of 0.93 in the PM peak hour. PM peak hour traffic signal optimization maintaining the existing cycle length is

anticipated to improve overall operations at this intersection, but will not achieve the City’s target v/c ratio of 0.90, as shown in the below table. This is consistent with 2033 background traffic conditions.

Consistent with background traffic conditions, the 95<sup>th</sup> percentile queue length for the westbound left turn movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to exceed the existing storage length. The 95<sup>th</sup> percentile northbound and southbound through movements are anticipated to extend through and block upstream intersections.

A review of the MTO left turn lane storage graphs indicates that eastbound and westbound left turn lanes with 15m of storage are warranted at the Bankfield Road/Colony Heights intersection under 2033 background traffic conditions. A functional design of the required left turn lanes is included in **Appendix N**. A Roadway Modification Approval (RMA) package will be submitted under separate cover.

**Table 19: 2033 Total – Traffic Operations (Mitigated)**

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>1</sup>	8 sec. (v/c 0.60)	A	NB	10 sec. (v/c 0.66)	B	NB
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>2</sup>	-	-	-	<b>0.97</b>	<b>E</b>	<b>NBL</b>
				<b>1.05</b>	<b>F</b>	<b>SBT</b>
Rideau Valley Drive/Bankfield Road/Manotick Main Street <sup>3</sup>	0.68	B	EBR	0.87	D	NBL
				0.71	C	SBT
Manotick Main Street/Bridge Street/Maple Avenue <sup>4</sup>	-	-	-	<b>0.91</b>	<b>E</b>	<b>NB</b>
				<b>1.03</b>	<b>F</b>	<b>SBL</b>
				<b>1.01</b>	<b>F</b>	<b>WBL</b>
Manotick Main Street/Bridge Street/Maple Avenue <sup>5</sup>	-	-	-	<b>0.98</b>	<b>E</b>	<b>NB</b>
				<b>0.97</b>	<b>E</b>	<b>SBL</b>
				<b>0.98</b>	<b>E</b>	<b>WBL</b>

1. Roundabout (two lanes on all approaches)
2. Increased cycle length to 130 seconds
3. Two southbound lanes
4. Optimized signal timing – with pedestrian actuation
5. Optimized signal timing – without pedestrian actuation

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing, the conclusions and recommendations of this TIA can be summarized as follows:

### Demand Rationalization

- *Existing Intersection Operations:*
  - The Manotick Main Street/Bridge Street/Maple Avenue intersection is operating with a LOS E in the PM peak when the advanced pedestrian walk phase is actuated. Without the advanced pedestrian walk phase, this improves to a LOS D.
  - All other study area intersections are currently operating with a LOS D or better.
  - A westbound left turn lane with 15m of storage is currently warranted at the Bankfield Road/Colony Heights intersection.

- **Background Intersection Operations:**
  - Critical movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue intersections are expected to operate with a LOS E or F in the PM peak.
  - The Bankfield Road/Colony Heights Road and Bankfield Road/Potter Drive/Lockmaster Crescent intersections are anticipated to operate with a LOS C or better.
  - The northbound left and southbound through movements at the Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection are anticipated to operate at or near capacity. An increased cycle length to 130 seconds would improve these movements to a maximum v/c ratio of 0.92 but will not achieve the target v/c ratio of 0.90. The addition of a second southbound lane or the implementation of a roundabout with two approach lanes on each leg would achieve the target v/c ratio.
  - The westbound left movement at the Manotick Main Street/Bridge Street/Maple Avenue intersection is anticipated to operate with a v/c ratio of 1.35 to 1.41 in the PM peak hour with pedestrian actuation. Without pedestrian actuation, this v/c ratio is anticipated to improve to 1.08 to 1.13. PM peak hour traffic signal optimization maintaining the existing cycle length is anticipated to improve overall operations at this intersection to within the City's target v/c ratio of 0.90 without pedestrian actuation.
  - Traffic throughout the study area could be displaced or alleviated through a combination of increased use of non-auto modes of transportation, alternate time to travel for drivers using the study area roadways to make use of off-peak capacity, and alternate routes for travel.

### Development Design

- Access to the development is provided by Street One from Bankfield Road across from the existing intersection with Colony Heights Road. Window streets are provided in segments of Street Two and Street Three along Bankfield Road and Rideau Valley Street to minimize the need for noise walls and to open up the development and present a welcoming streetscape entrance to the Village of Manotick.
- A ROW width of 18m is proposed for Street One, and double loaded portions of Streets Two and Three. ROW widths of 14.75m are proposed for the window street portions of Street Two and Street Three. A cul-de-sac with a 15m radius is proposed at the terminus of Street Two. All streets are proposed to have a roadway width of 8.5m. These widths accommodate a travel lane for each direction, along with on-street parking on one side of the street, and are appropriate given the context of the proposed development, which is a low-speed residential neighbourhood with limited opportunity for cut-through traffic.
- Sidewalks are proposed on one side of local streets and a pathway is proposed along the north side of Bankfield Road to provide a pedestrian linkage between the existing Millers Point Park and the intersection of Bankfield Road and Rideau Valley Drive.

### Boundary Streets

- Rideau Valley Drive and Bankfield Road meet the target TkLOS but do not meet the target PLOS or BLOS.
- Given the rural context of the surrounding area, the existing paved shoulders are considered appropriate pedestrian facilities even though they do not achieve the target PLOS C.
- As part of this application, a new pathway is proposed on the north side of Bankfield Road which will provide a pedestrian linkage between existing Millers Point Park and the

intersection of Bankfield Road and Rideau Valley Drive. The proposed pathway will provide a PLOS D on the north side of the road.

- Given the rural context of the surrounding area, the existing paved shoulders are considered appropriate cycling facilities even though they do not achieve the target BLOS C. The target BLOS C is not achievable for paved shoulders on roadways with an operating speed of 70km/h. A reduction in the operating speed to 60km/h or a physically separated bikeway would achieve the target BLOS. This is identified for the City's consideration.

#### Transportation Demand Management

- The following measures will be implemented for the proposed development:
  - Display local area maps with walking/cycling routes and key destinations (at sales centre);
  - Display relevant transit schedules and route maps (at sales centre).

#### Transit

- The proposed subdivision is projected to generate 24 transit trips during the AM peak hour (7 inbound trips and 17 outbound trips) and 24 transit trips during the PM peak hour (14 inbound trips and 10 outbound trips).
- No capacity issues are anticipated for OC Transpo Routes 176 or 299.

#### Intersection MMLOS

- The Rideau Valley Drive/Bankfield Road/Manotick Main Street intersection does not meet the target PLOS C or BLOS C, but meets the target TkLOS D and Auto LOS D.
  - There is limited opportunity in improving PLOS at these approaches without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.
  - The west approach can achieve a BLOS C with the implementation of a bike lane which remains to the right of the right turn lane. This is identified for the City's consideration. The target BLOS can only be met on the south and west approaches through the implementation of two-stage left-turn bike boxes. This is identified for the City's consideration.
  - The Manotick Secondary Plan identifies this intersection as a candidate for roundabout control. A roundabout at this intersection is anticipated to improve the pedestrian and cyclist level of comfort navigating the intersection.
- The Manotick Main Street/Bridge Street/Maple Avenue intersection does not meet the target PLOS C, BLOS C, TkLOS D, or Auto LOS D.
  - There is limited opportunity in improving PLOS at each approach without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.
  - The addition of curbside bike lanes on the south and east approaches would improve the level of traffic stress for cyclists, such that the target BLOS could be met for right turns. This is identified for the City's consideration. For left turns, the target BLOS can only be met at the north, east, and west approaches through the implementation of two-stage left-turn bike boxes.
  - The south, east, and west approaches do not meet the target TkLOS, as heavy vehicles turning at these approaches are provided with one receiving lane. The target TkLOS D can be achieved by either providing an additional lane or increasing the

corner radius to 15m or more. The Manotick Village & Community Association (MVCA) released a Truck Traffic Survey in September 2021 indicating their concern with the amount of heavy truck traffic travelling through the Village of Manotick, with the intersection of Bridge Street/Manotick Main Street being of particular concern. The MVCA report had three recommendations:

- In the short term, install bollards at the northeast and southeast corners of Bridge Street/Manotick Main Street to prohibit truck encroachment on pedestrian staging areas.
- Change the rural truck routes to exclude Bridge Street and Manotick Main Street.
- Improve access to Earl Armstrong from the eastern industrial and warehousing facilities.

#### Total Intersection Operations

- The addition of traffic generated by the proposed development is not anticipated to have a significant impact on the overall intersection operations within the study area.
- A review of the MTO left turn lane storage graphs indicates that eastbound and westbound left turn lanes with 15m of storage are warranted at the Bankfield Road/Colony Heights Road/Street One intersection under 2028 and 2033 total traffic conditions.
- No additional recommendations as a result of site traffic.

## NOVATECH

Prepared by:



Rochelle Fortier, P.Eng.  
Project Engineer | Transportation

Reviewed by:



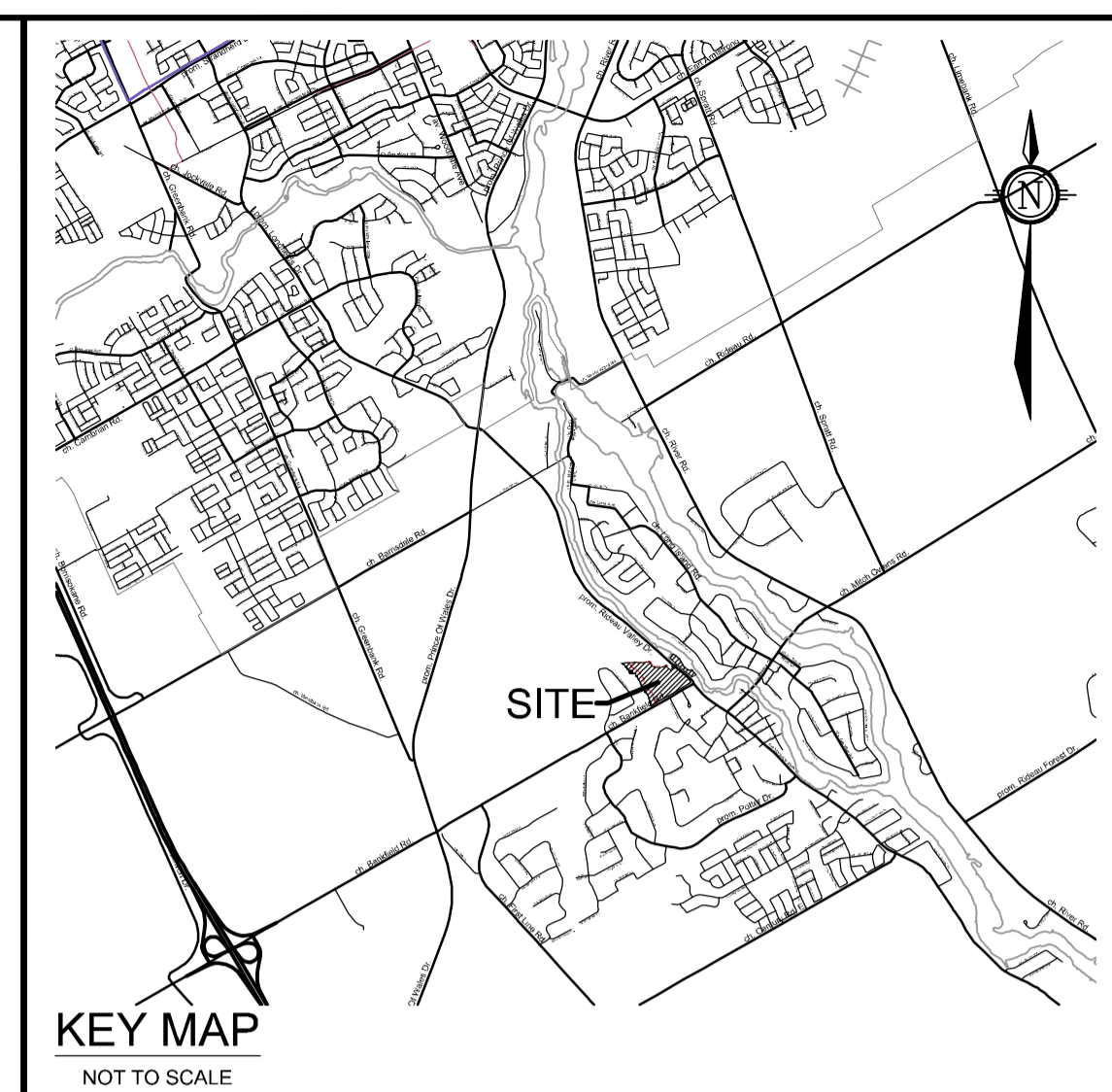
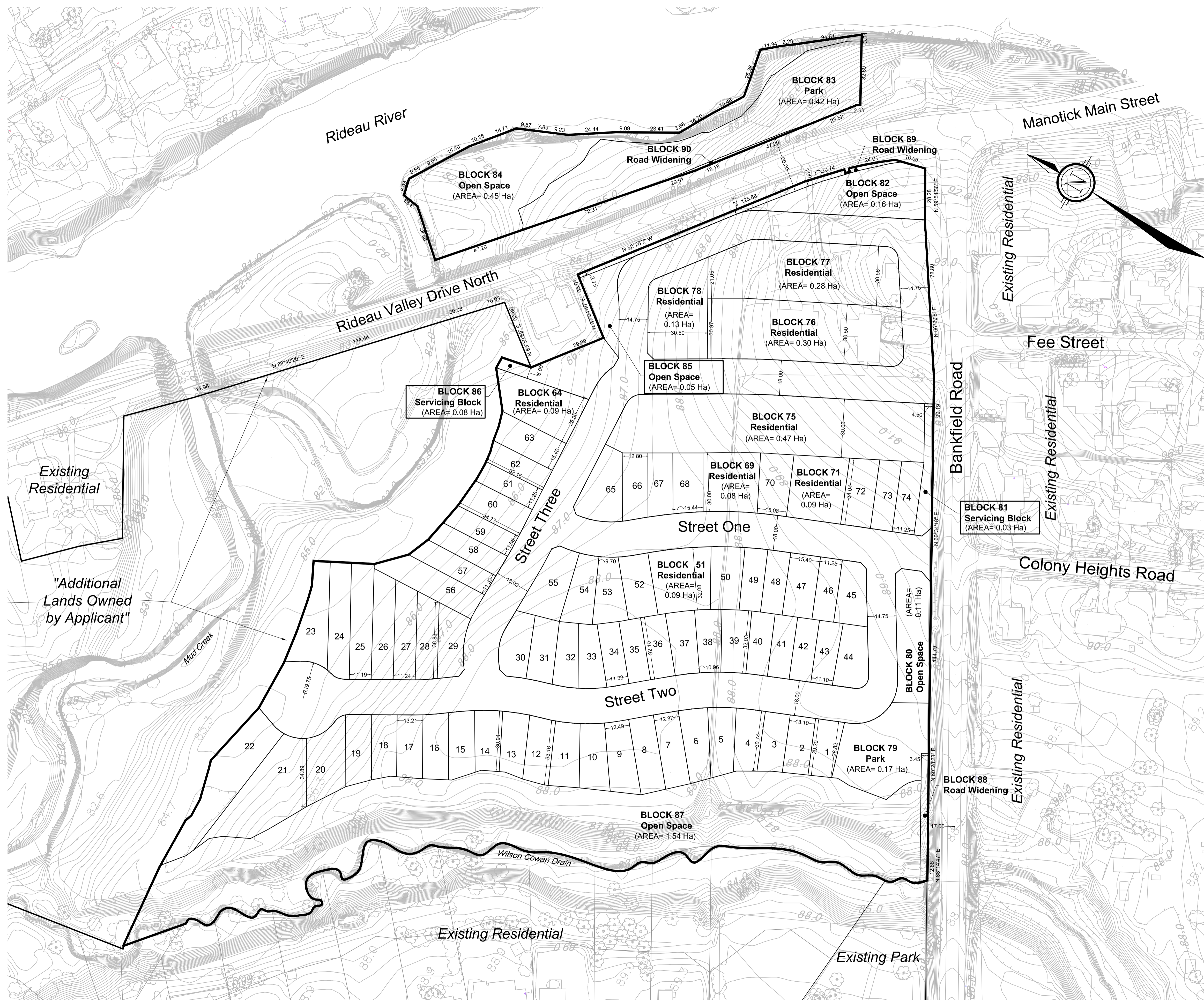
Brad Byvelds, P.Eng.  
Project Manager | Transportation

## **APPENDIX A**

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Draft Plan and Development Concept Plan





METRIC : MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

DRAFT PLAN OF SUBDIVISION OF  
**PART OF LOT 1  
 CONCESSION 1 & 2 (RIDEAU FRONT)**  
 Geographic Township of Nepean  
 CITY OF OTTAWA  
 SCALE:  
 1 : 1000  
 DATE: AUGUST, 2022

**SURVEYOR'S CERTIFICATE**

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJOINING LANDS ARE CORRECTLY SHOWN.

DATED \_\_\_\_\_ E. H. Herweyter  
 ONTARIO LAND SURVEYOR

ANNIS, O'SULLIVAN, VOLLEBEK LTD.  
 ONTARIO LAND SURVEYORS 22459-21

---

**OWNER'S CERTIFICATE**

WE, UNIFORM URBAN DEVELOPMENTS, BEING THE REGISTERED OWNER(S), HEREBY AUTHORIZE NOVATECH TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CITY OF OTTAWA FOR REVIEW AND APPROVAL.

DATED \_\_\_\_\_ John MacDougall  
 Uniform Urban Developments

- ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT.**
- A) The boundaries of the land proposed to be subdivided, certified by an Ontario Land Surveyor.  
**As shown on Draft Plan**
  - B) The locations, widths and names of the proposed Highways within the proposed subdivision & of existing highways on which the proposed subdivision abuts.  
**As shown on Draft Plan**
  - C) On a small legend, on a scale of not less than 1cm to 100m, all of the land adjacent to the proposed subdivision that is owned by the applicant or in which the applicant has an interest, every subdivision adjacent to the proposed subdivision & the relationship of the boundaries of the land to be subdivided to the boundaries of the township lot of their original grant of which the land forms the whole part.  
**As Shown on Draft Plan**
  - D) The purpose for which the proposed lots are to be used.  
**Residential, Open Space, and Park shown on Draft Plan**
  - E) The existing uses of all adjoining lands.  
**Residential, Open Space, and Park shown on Draft Plan**
  - F) The approximate dimensions & layout of the proposed lots.  
**As shown on Draft Plan**
  - G) Natural & artificial features such as buildings or other structures or installations, railways, highways, watercourses, drainage ditches, wetlands & wooded areas within or adjacent to the land proposed to be subdivided.  
**As shown on Draft Plan**
  - H) The availability and nature of domestic water supply.  
**Development will be supplied with full municipal piped water service**
  - I) The nature & porosity of the soil.  
**xxx**
  - J) Existing contours or elevations as may be required to determine the grade of the highways and the drainage of the land proposed to be subdivided.  
**Contours shown on Draft Plan**
  - K) The municipal services available or to be available to the land proposed to be subdivided.  
**Development will be supplied with full sanitary and storm water sewer services.**
  - L) The nature & extent of any restrictions affecting the land proposed to be subdivided, including restrictive covenants or easements, 1994, c. 23, s. 35, 1998, c. 4, s. 29 (3).  
**As shown on Draft Plan.**

4386 RIDEAU VALLEY DRIVE

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED \_\_\_\_\_, THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

ADAM BROWN, MANAGER  
 DEVELOPMENT REVIEW RURAL,  
 PLANNING, INFRASTRUCTURE AND ECONOMIC  
 DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

**NOVATECH**  
 Engineers, Planners & Landscape Architects  
 Suite 200, 240 Michael Cowpland Drive  
 Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643  
 Facsimile (613) 254-5867  
 Website www.novatech-eng.com

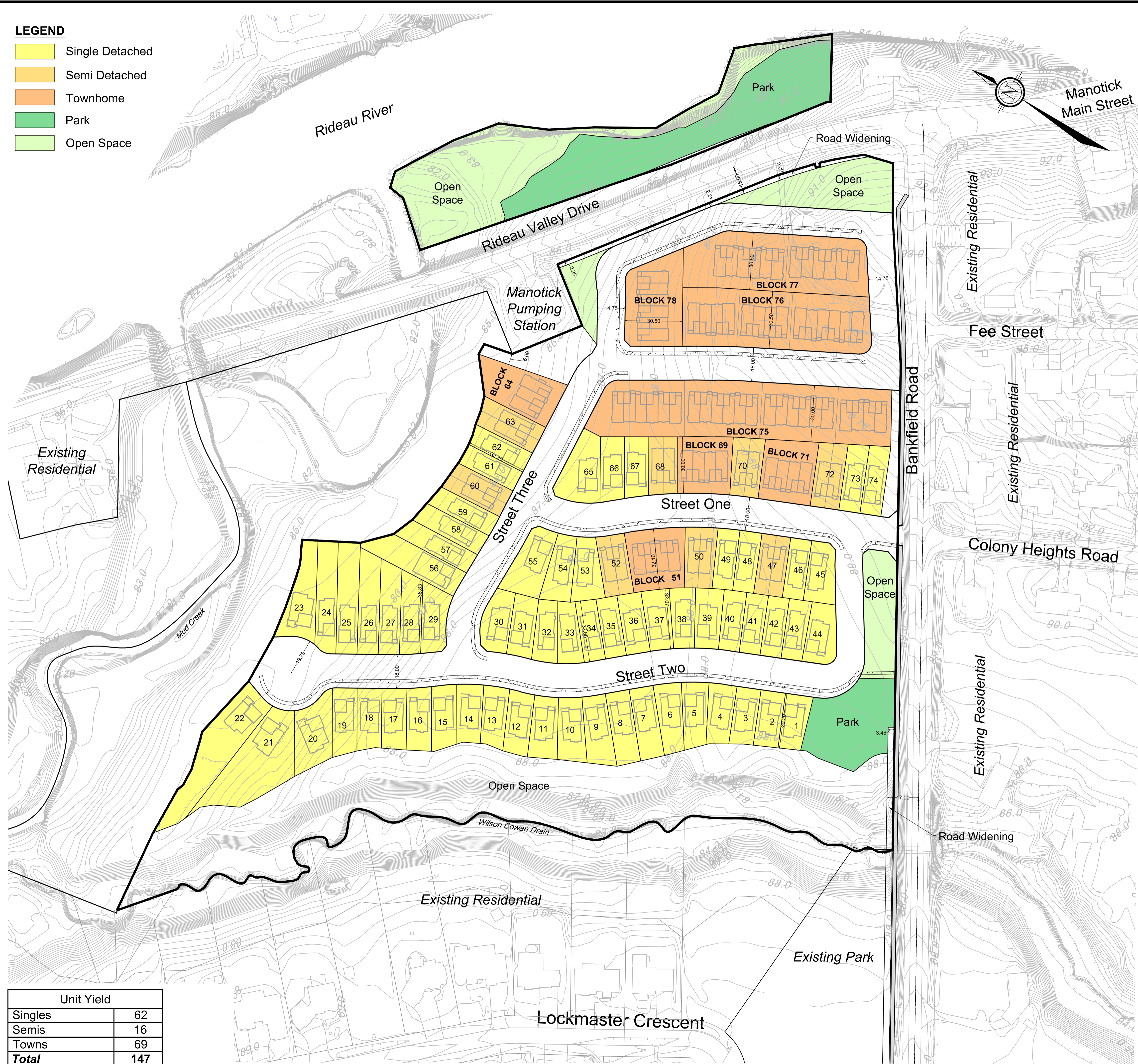
PROJECT No. 121153

#XXXXX

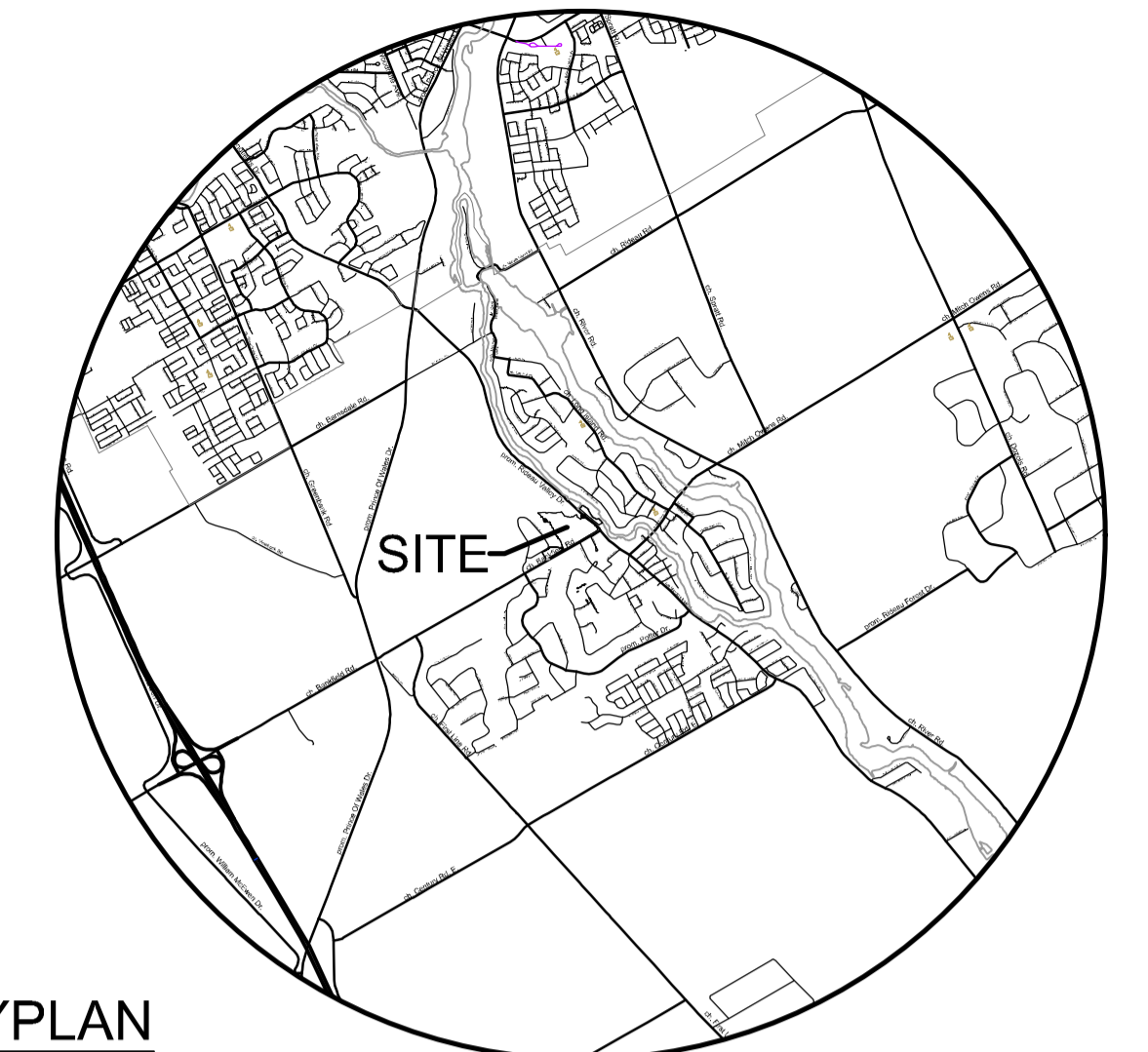
M:\2021\121153\CAD\Planning\Draft Plans\121153-CP.dwg, DP-A1, Aug 26, 2022, 2:10pm, wsls

**LEGEND**

- Single Detached
- Semi Detached
- Townhome
- Park
- Open Space



Unit Yield	
Singles	62
Semis	16
Towns	69
<b>Total</b>	<b>147</b>

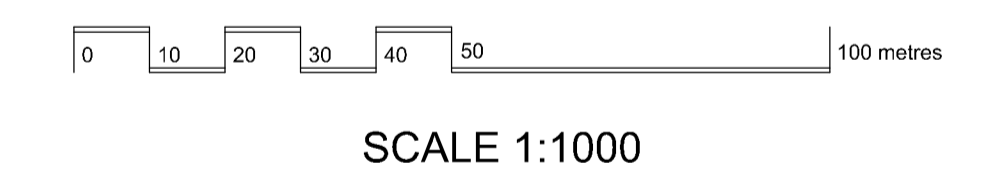


KEYPLAN  
NOT TO SCALE

# DEVELOPMENT CONCEPT PLAN

## 4386 RIDEAU VALLEY DRIVE

PART OF LOT 1  
CONCESSION 1 & 2 (RIDEAU FRONT)  
Geographic Township of Nepean  
CITY OF OTTAWA



No.	REVISION	DATE	BY
1	ISSUED FOR CITY REVIEW	SEPT 12/22	EP

**NOVATECH**  
Engineers, Planners & Landscape Architects  
Suite 200, 240 Michael Cowpland Drive  
Ottawa, Ontario, Canada K2M 1P6  
Telephone: (613) 254-9643  
Facsimile: (613) 254-5867  
Website: www.novatech-eng.com

ISSUED	SEPTEMBER, 2022
PROJECT No.	121153
DRAWING No.	121153-DCP

M:\2021\121153\DCP\Planning\Concept Plans\121153-DCP.dwg, DCP, Sep 22, 2022 - 12:26pm, wloss

DXX-XX-XX-XXXX

#XXXXX

## **APPENDIX B**

---

TIA Screening Form

## City of Ottawa 2017 TIA Guidelines Screening Form

### 1. Description of Proposed Development

Municipal Address	<b>4386 Rideau Valley Drive</b>
Description of Location	<b>Northwest corner of Rideau Valley Drive/Bankfield Road</b>
Land Use Classification	<b>Residential</b>
Development Size (units)	<b>147 units (62 singles, 16 semis, 69 towns)</b>
Development Size (m <sup>2</sup> )	
Number of Accesses and Locations	<b>One road connection to Bankfield Road, aligned with Colony Heights Road</b>
Phase of Development	<b>1</b>
Buildout Year	<b>2028</b>

If available, please attach a sketch of the development or site plan to this form.

### 2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m <sup>2</sup>
Industrial	5,000 m <sup>2</sup>
Fast-food restaurant or coffee shop	100 m <sup>2</sup>
Destination retail	1,000 m <sup>2</sup>
Gas station or convenience market	75 m <sup>2</sup>

*\* If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

**If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.**

### 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 Spine Bicycle Networks?	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).

**If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.**

### 4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street 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?		
Does the development include a drive-thru facility?		X

**If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.**

### 5. Summary

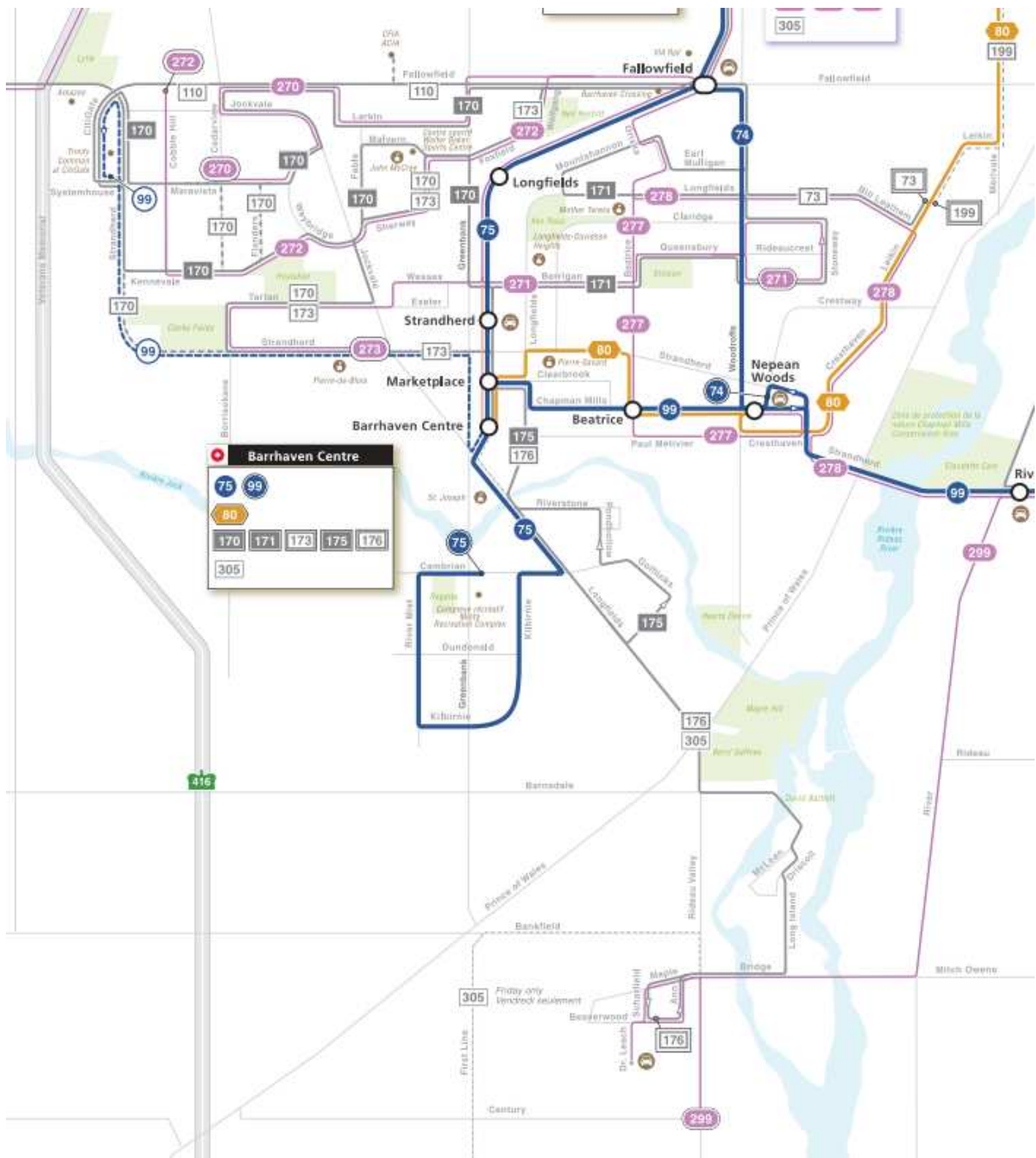
	Yes	No
Does the development satisfy the Trip Generation Trigger?	X	
Does the development satisfy the Location Trigger?	X	
Does the development satisfy the Safety Trigger?	X	

**If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).**

## **APPENDIX C**

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OC Transpo Route Maps





# 299

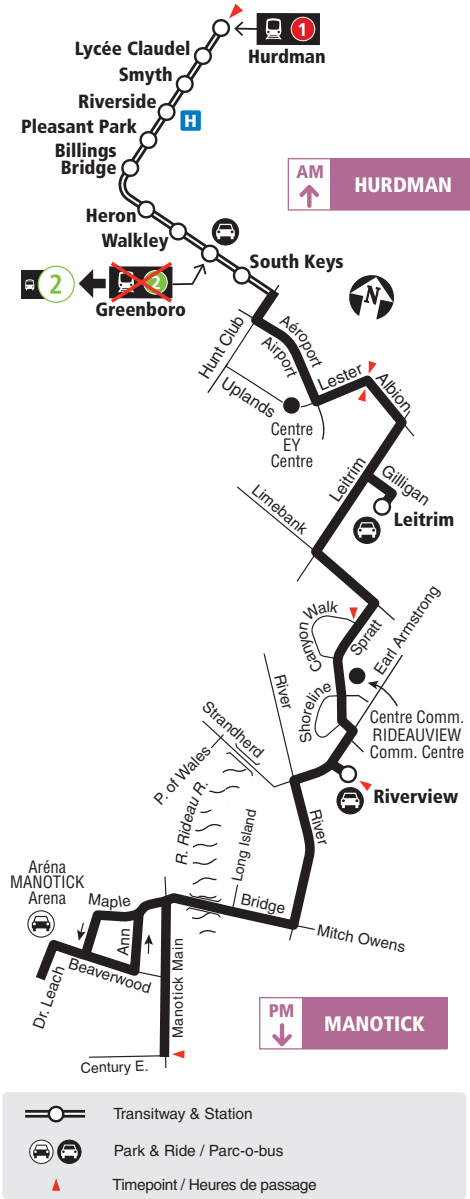
## MANOTICK HURDMAN

### Connexion

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



2020.04



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service

Service à la clientèle ..... 613-741-4390

Lost and Found / Objets perdus..... 613-563-4011

Security / Sécurité ..... 613-741-2478

**Effective May 3, 2020**

**En vigueur 3 mai 2020**



INFO 613-741-4390  
octranspo.com





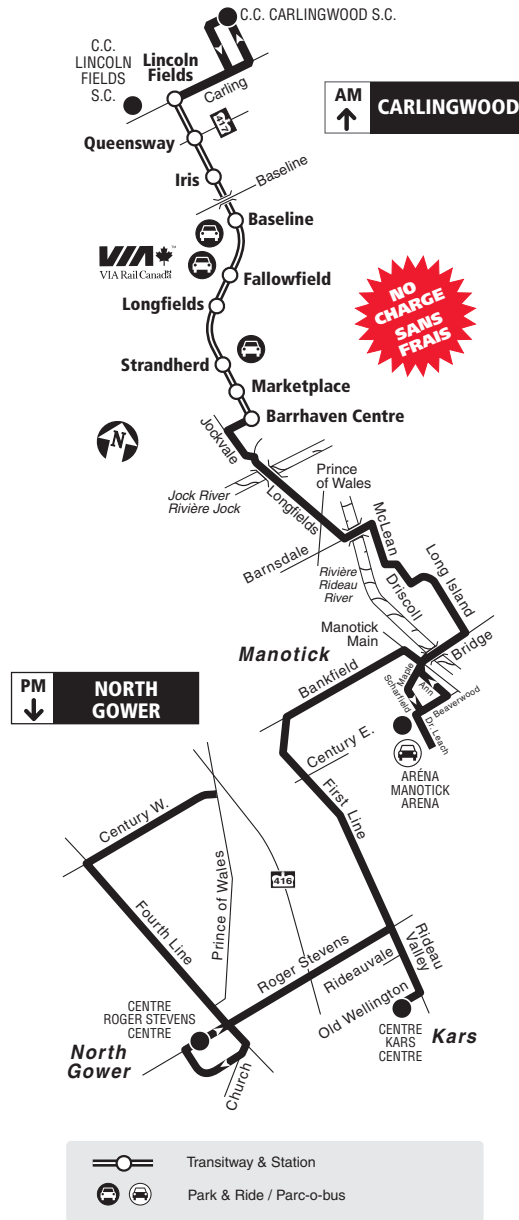
# 305

## CARLINGWOOD NORTH GOWER KARS

Local

**FRIDAY only / Vendredi seulement**

Selected time periods  
Périodes sélectionnées



2019.08



**Schedule / Horaire..... 613-560-1000**

**Text / Texto ..... 560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Relations

Service à la clientèle ..... **613-842-3600**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective December 25, 2016**

**En vigueur 25 décembre 2016**



INFO 613-741-4390  
octranspo.com

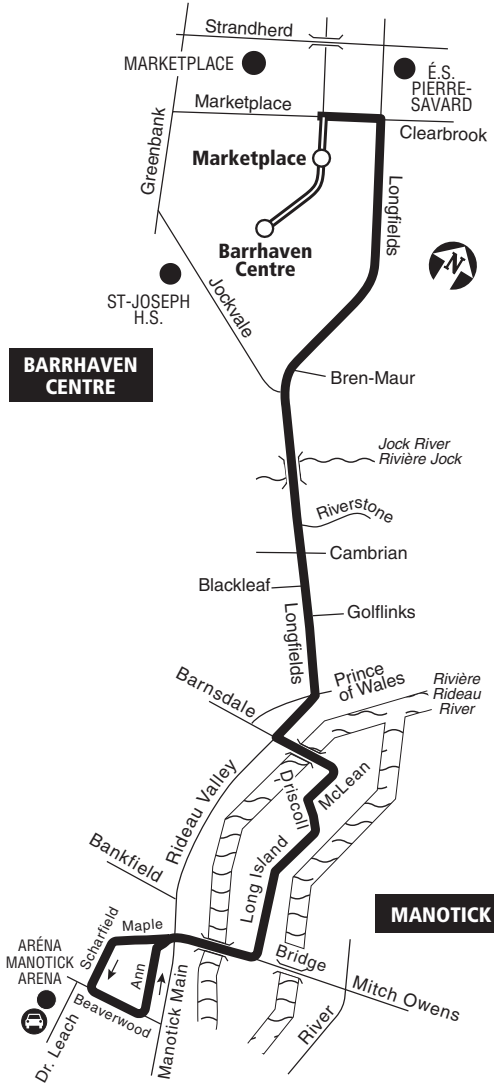




# 176

## BARRHAVEN CENTRE MANOTICK


Local

Monday to Friday / Lundi au vendredi  
Peak periods only / Périodes de pointe seulement



-  Transitway & Station
-  Park & Ride / Parc-o-bus

2019.06

 **Schedule / Horaire.....613-560-1000**  
**Text / Texto .....560560**  
*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service  
 Service à la clientèle ..... **613-741-4390**  
 Lost and Found / Objets perdus..... **613-563-4011**  
 Security / Sécurité ..... **613-741-2478**

**Effective September 3, 2017**  
**En vigueur 3 septembre 2017**

## **APPENDIX D**

---

Traffic Count Data

## Turning Movement Count - Peak Hour Diagram

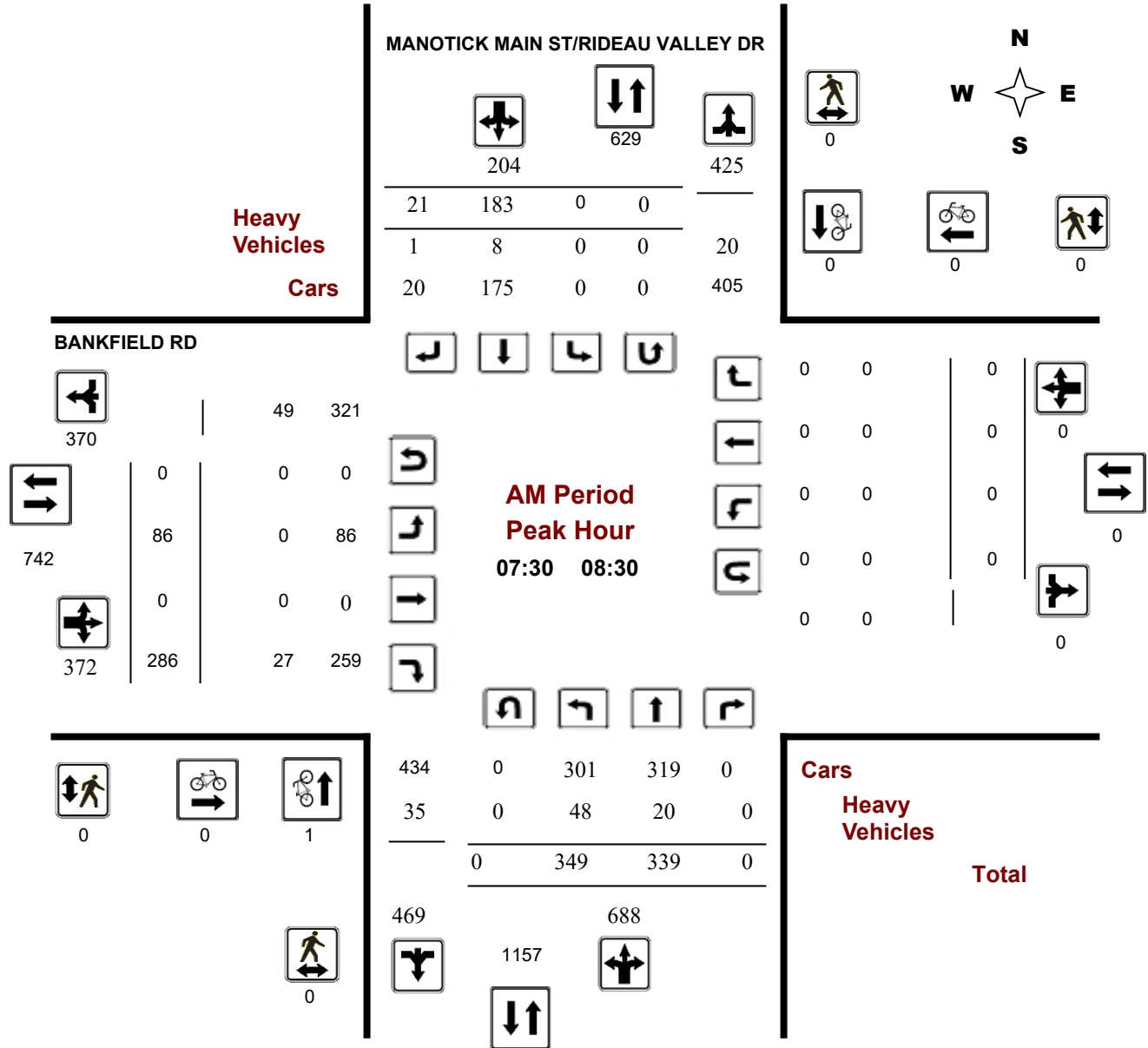
### BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

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

**Start Time:** 07:00

**WO No:** 39212

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

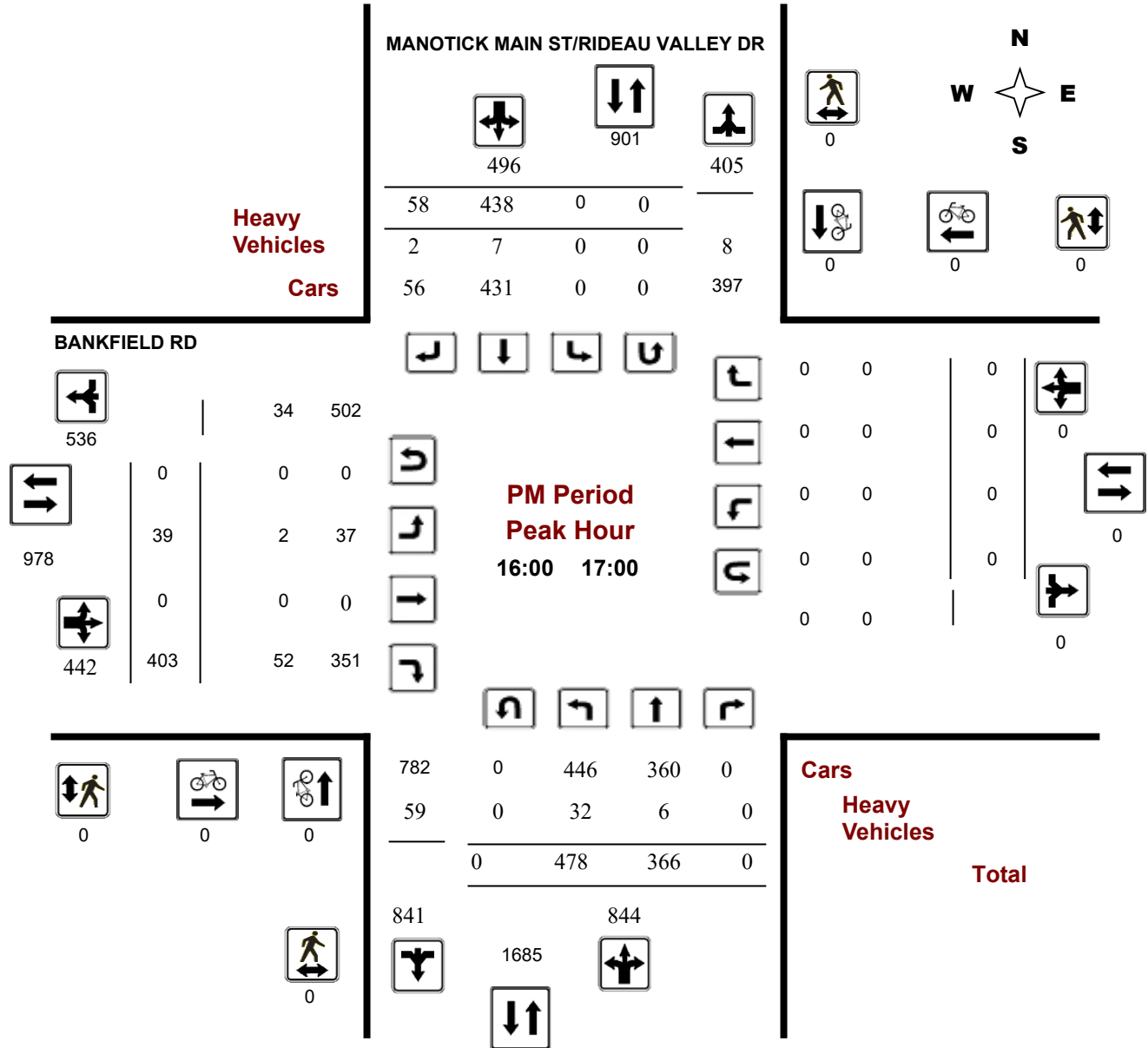
### BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

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

**Start Time:** 07:00

**WO No:** 39212

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

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

**WO No:** 39212

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

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

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

**AADT Factor**  
 1.00

#### MANOTICK MAIN ST/RIDEAU VALLEY DR

#### BANKFIELD RD

Period	Northbound				Southbound				STR TOT	Eastbound			Westbound			WB TOT	STR TOT	Grand Total	
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST				RT
07:00 08:00	302	280	0	582	0	153	24	177	759	92	0	280	372	0	0	0	0	372	1131
08:00 09:00	332	320	0	652	0	207	25	232	884	73	0	278	351	0	0	0	0	351	1235
09:00 10:00	238	268	0	506	0	225	35	260	766	42	0	247	289	0	0	0	0	289	1055
11:30 12:30	222	287	0	509	0	299	27	326	835	37	0	199	236	0	0	0	0	236	1071
12:30 13:30	230	264	0	494	0	288	35	323	817	32	0	203	235	0	0	0	0	235	1052
15:00 16:00	341	306	0	647	0	363	73	436	1083	33	0	379	412	0	0	0	0	412	1495
16:00 17:00	478	366	0	844	0	438	58	496	1340	39	0	403	442	0	0	0	0	442	1782
17:00 18:00	344	328	0	672	0	350	56	406	1078	43	0	289	332	0	0	0	0	332	1410
<b>Sub Total</b>	2487	2419	0	4906	0	2323	333	2656	7562	391	0	2278	2669	0	0	0	0	2669	10231
<b>U Turns</b>	0			0	0			0	0	0			0	0				0	0
<b>Total</b>	2487	2419	0	4906	0	2323	333	2656	7562	391	0	2278	2669	0	0	0	0	2669	10231

**EQ 12Hr** 3457 3362 0 6819 0 3229 463 3692 10511 543 0 3166 3709 0 0 0 0 0 3709 14220

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

**1.39**

**AVG 12Hr** 3457 3362 0 6819 0 3229 463 3692 10511 543 0 3166 3709 0 0 0 0 0 3709 14220

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

**1.00**

**AVG 24Hr** 4529 4404 0 8933 0 4230 607 4837 13770 711 0 4147 4858 0 0 0 0 0 4858 18628

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.

**1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

## Turning Movement Count - Peak Hour Diagram

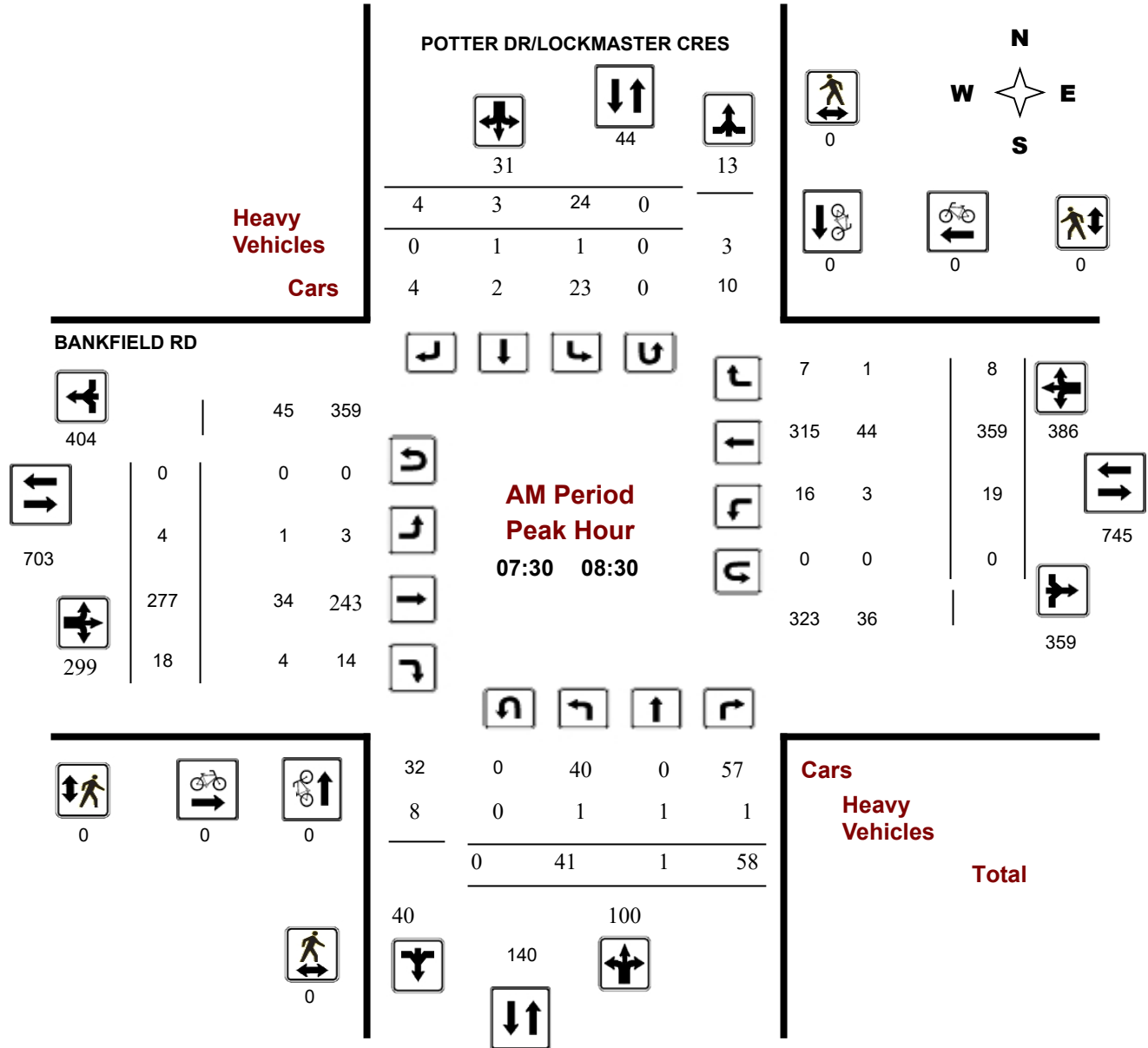
### BANKFIELD RD @ POTTER DR/LOCKMASTER CRES

**Survey Date:** Thursday, May 25, 2017

**Start Time:** 07:00

**WO No:** 37052

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

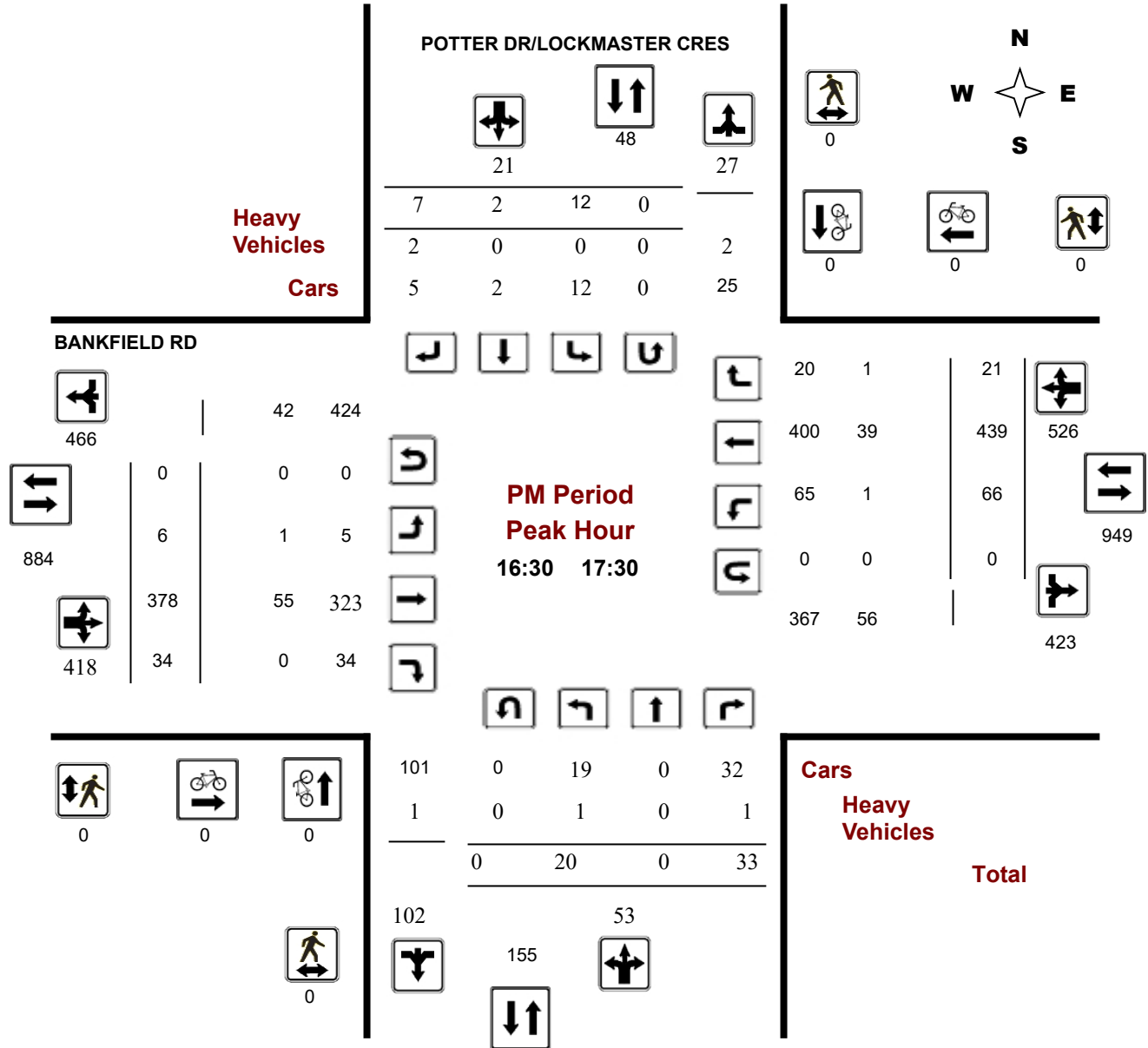
### BANKFIELD RD @ POTTER DR/LOCKMASTER CRES

**Survey Date:** Thursday, May 25, 2017

**Start Time:** 07:00

**WO No:** 37052

**Device:** Miovision



**Comments**





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BANKFIELD RD @ POTTER DR/LOCKMASTER CRES

**Survey Date:** Thursday, May 25, 2017

**WO No:** 37052

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Thursday, May 25, 2017

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 0  
 Eastbound: 1      Westbound: 0  
 .90

**POTTER DR/LOCKMASTER CRES**

**BANKFIELD RD**

Period	Northbound					Southbound					Eastbound					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	34	3	63	100	134	25	2	7	34	134	4	270	19	293	15	316	4	335	628	762	
08:00 09:00	29	1	56	86	118	21	3	8	32	118	2	271	15	288	19	321	15	355	643	761	
09:00 10:00	16	0	42	58	78	14	0	6	20	78	3	237	14	254	26	271	3	300	554	632	
11:30 12:30	29	0	42	71	87	12	1	3	16	87	7	341	16	364	35	232	10	277	641	728	
12:30 13:30	17	0	29	46	60	9	0	5	14	60	5	296	19	320	33	233	10	276	596	656	
15:00 16:00	18	0	44	62	81	11	1	7	19	81	3	356	18	377	56	394	18	468	845	926	
16:00 17:00	25	0	25	50	67	9	3	5	17	67	3	379	26	408	51	441	24	516	924	991	
17:00 18:00	19	0	34	53	77	17	1	6	24	77	4	398	35	437	63	401	24	488	925	1002	
<b>Sub Total</b>	187	4	335	526	702	118	11	47	176	702	31	2548	162	2741	298	2609	108	3015	5756	6458	
<b>U Turns</b>	0			0	0	0			0	0	1			1	0			0	1	1	
<b>Total</b>	187	4	335	526	702	118	11	47	176	702	32	2548	162	2742	298	2609	108	3015	5757	6459	

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

<b>AVG 12Hr</b>	234	5	419	658	878	148	14	58	220	878	40	3188	202	3430	373	3264	135	3772	7202	8080
-----------------	-----	---	-----	-----	-----	-----	----	----	-----	-----	----	------	-----	------	-----	------	-----	------	------	------

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**

<b>AVG 24Hr</b>	307	7	549	863	1151	194	18	76	288	1151	52	4176	265	4493	489	4276	177	4942	9435	10586
-----------------	-----	---	-----	-----	------	-----	----	----	-----	------	----	------	-----	------	-----	------	-----	------	------	-------

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

## Turning Movement Count - Peak Hour Diagram

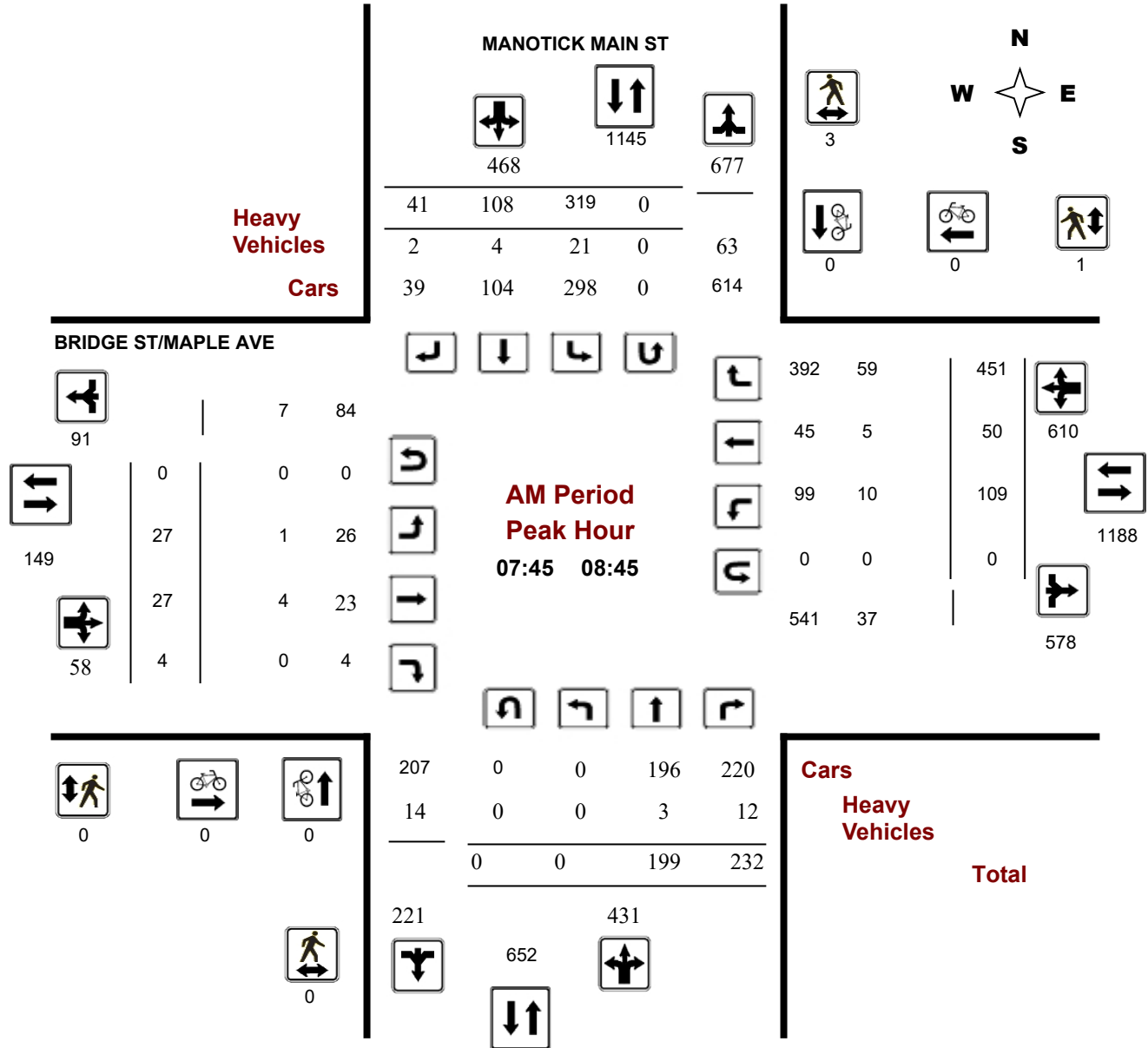
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

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

**Start Time:** 07:00

**WO No:** 39209

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

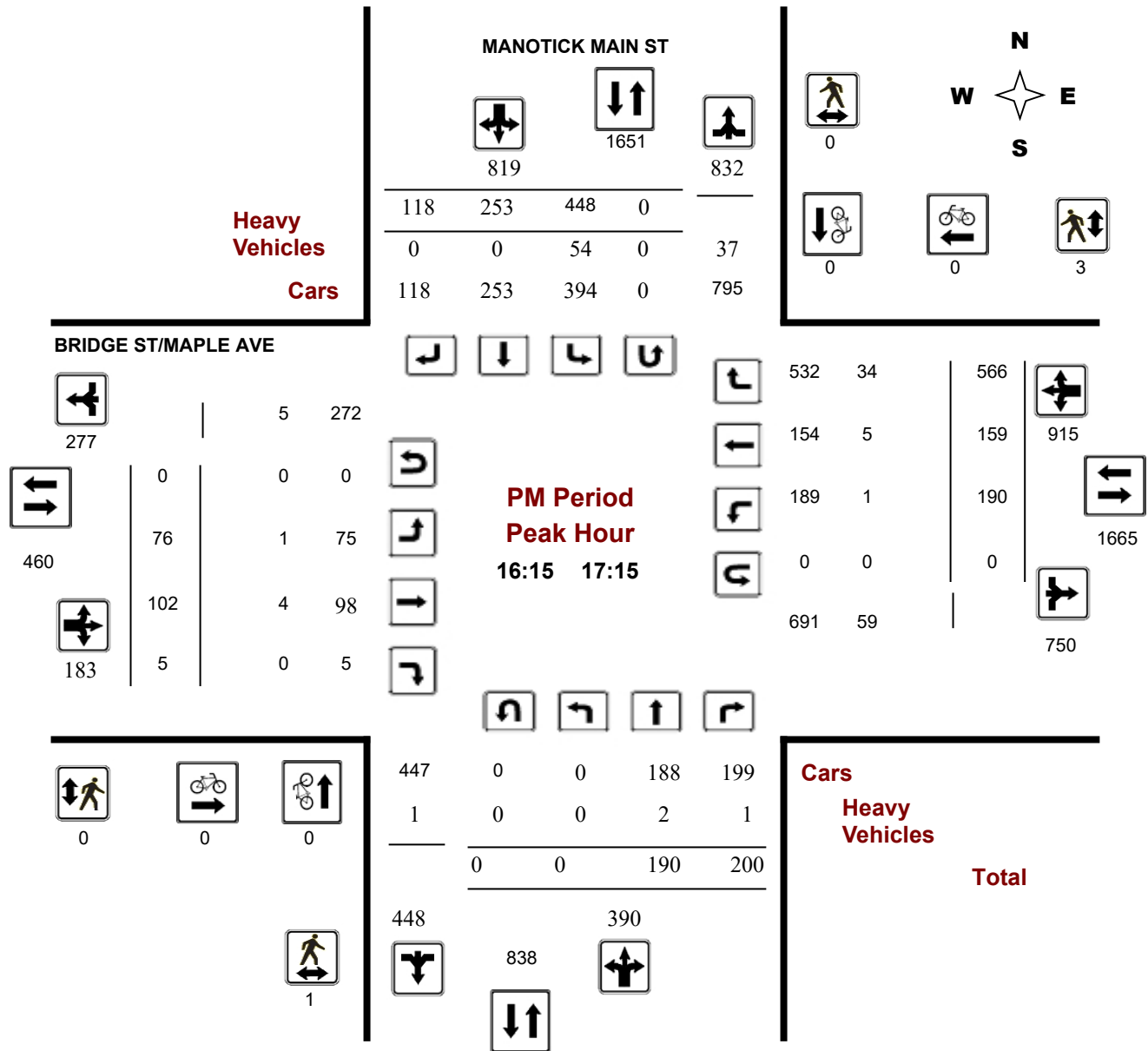
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

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

**AADT Factor**  
 1.00

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

Period	MANOTICK MAIN ST					BRIDGE ST/MAPLE AVE					STR TOT	Grand Total							
	Northbound			Southbound		Eastbound			Westbound										
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	1	164	193	358	322	79	24	425	783	17	25	0	42	77	26	401	504	546	1329
08:00 09:00	0	190	212	402	297	121	52	470	872	31	26	7	64	115	69	434	618	682	1554
09:00 10:00	3	147	147	297	275	146	55	476	773	47	34	10	91	127	96	305	528	619	1392
11:30 12:30	2	186	183	371	229	193	102	524	895	89	76	12	177	141	114	244	499	676	1571
12:30 13:30	1	164	150	315	231	180	104	515	830	73	79	18	170	125	113	266	504	674	1504
15:00 16:00	0	198	171	369	434	200	117	751	1120	80	98	13	191	160	137	363	660	851	1971
16:00 17:00	0	192	188	380	475	249	126	850	1230	83	104	8	195	177	148	553	878	1073	2303
17:00 18:00	0	177	190	367	352	243	82	677	1044	70	97	6	173	175	131	412	718	891	1935
<b>Sub Total</b>	7	1418	1434	2859	2615	1411	662	4688	7547	490	539	74	1103	1097	834	2978	4909	6012	13559
<b>U Turns</b>	0			0	0			0	0	1			1	2			2	3	3
<b>Total</b>	7	1418	1434	2859	2615	1411	662	4688	7547	491	539	74	1104	1099	834	2978	4911	6015	13562

**EQ 12Hr** 10 1971 1993 3974 3635 1961 920 6516 10490 682 749 103 1534 1528 1159 4139 6826 8360 18850  
 Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

**AVG 12Hr** 10 1971 1993 3974 3635 1961 920 6516 10490 682 749 103 1534 1528 1159 4139 6826 8360 18850  
 Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1.00**

**AVG 24Hr** 13 2582 2611 5206 4762 2569 1205 8536 13742 893 981 135 2009 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. **1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

## Turning Movement Count - Peak Hour Diagram

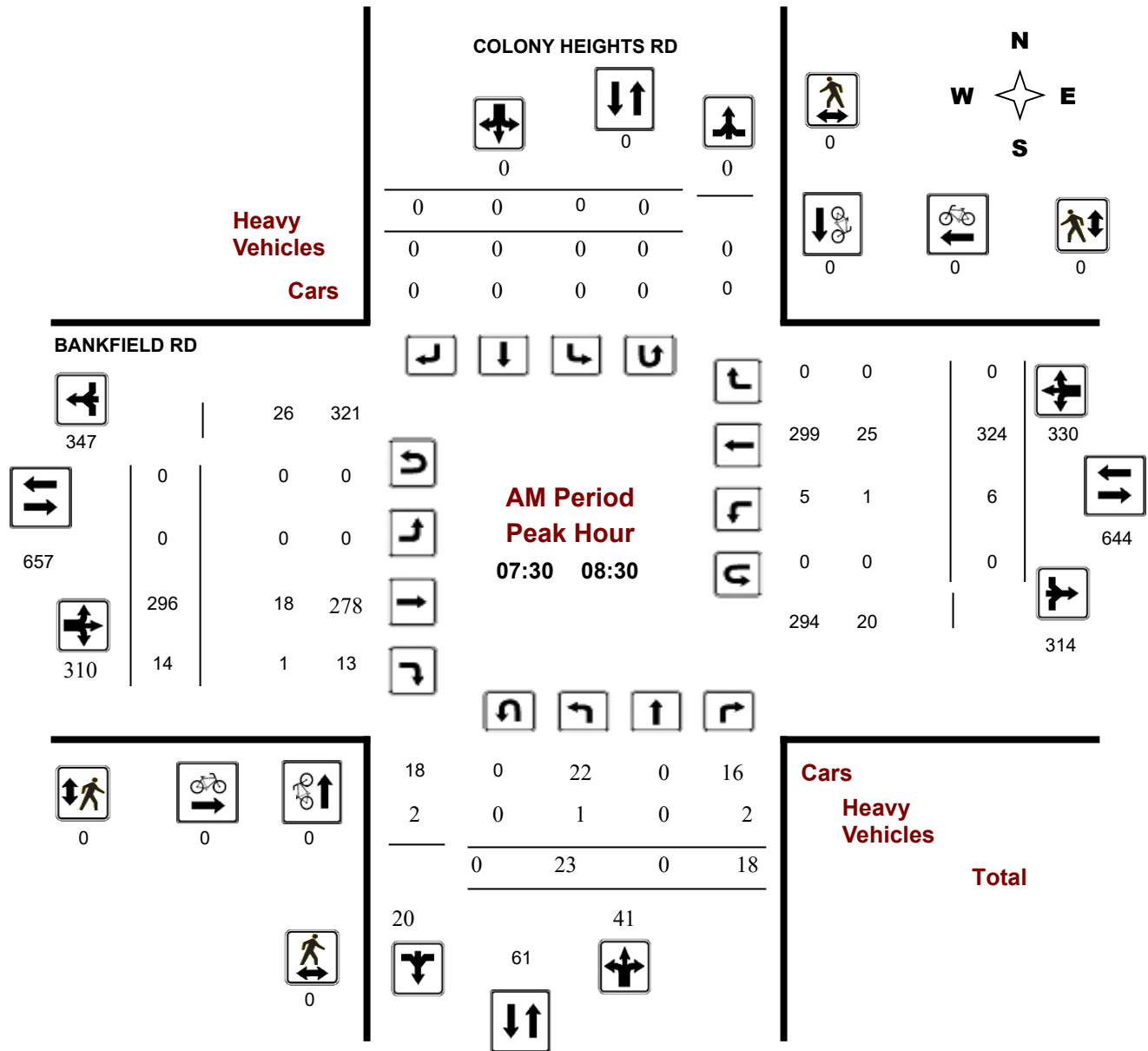
### COLONY HEIGHTS RD @ BANKFIELD RD

**Survey Date:** Thursday, February 04, 2016

**Start Time:** 07:00

**WO No:** 35691

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

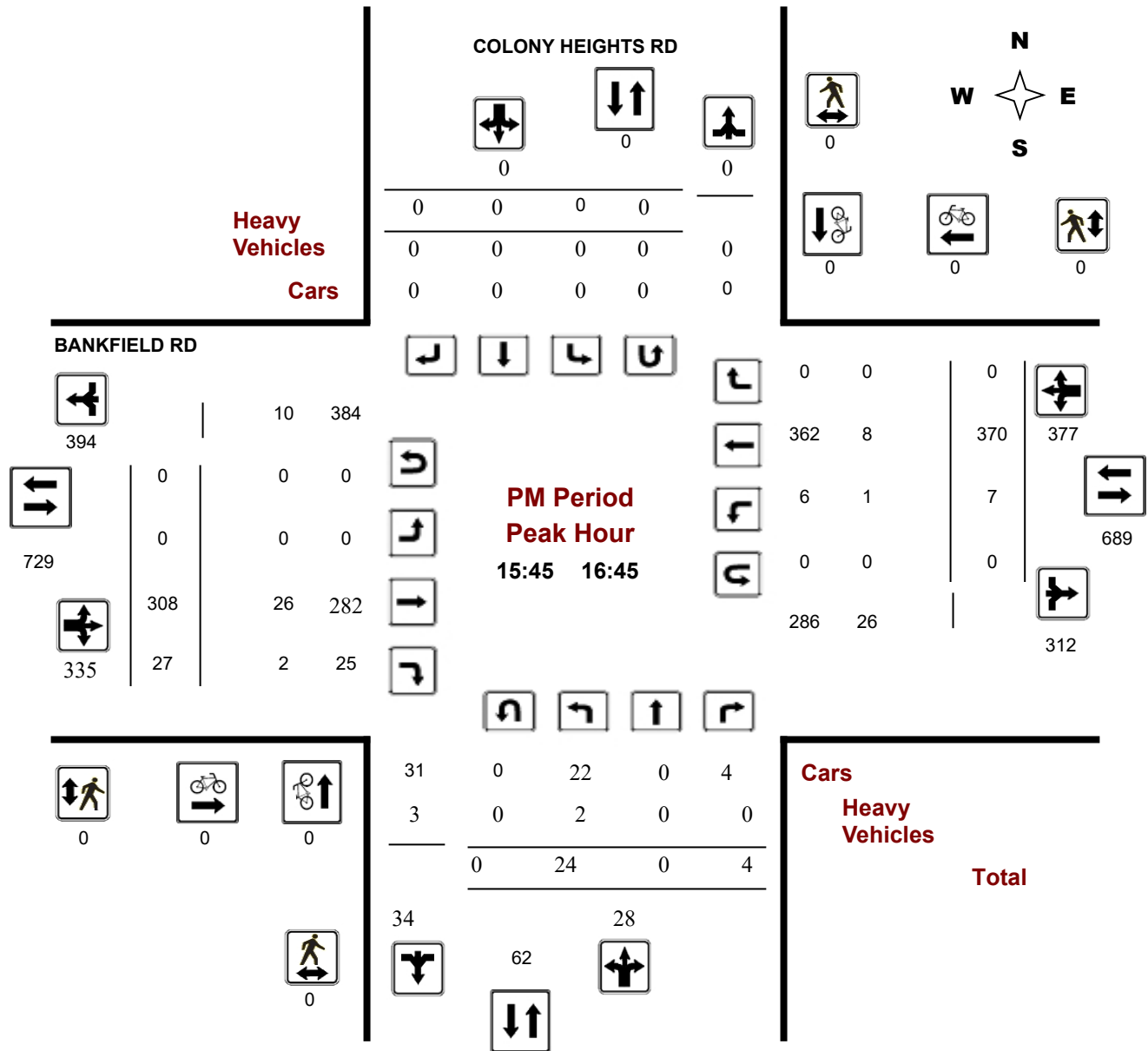
### COLONY HEIGHTS RD @ BANKFIELD RD

**Survey Date:** Thursday, February 04, 2016

**Start Time:** 07:00

**WO No:** 35691

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results COLONY HEIGHTS RD @ BANKFIELD RD

**Survey Date:** Thursday, February 04, 2016

**WO No:** 35691

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Thursday, February 04, 2016

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

**AADT Factor**  
.90

COLONY HEIGHTS RD										BANKFIELD RD										Grand Total
Northbound					Southbound					Eastbound					Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT		
07:00 08:00	23	0	17	40	0	0	0	0	40	0	311	10	321	3	292	0	295	616	656	
08:00 09:00	13	0	11	24	0	0	0	0	24	0	251	14	265	5	289	0	294	559	583	
09:00 10:00	10	0	9	19	0	0	0	0	19	0	226	11	237	2	194	0	196	433	452	
11:30 12:30	15	0	3	18	0	0	0	0	18	0	229	22	251	6	160	0	166	417	435	
12:30 13:30	14	0	3	17	0	0	0	0	17	0	203	14	217	7	165	0	172	389	406	
15:00 16:00	24	0	6	30	0	0	0	0	30	0	316	23	339	9	305	0	314	653	683	
16:00 17:00	20	0	4	24	0	0	0	0	24	0	287	22	309	11	392	0	403	712	736	
17:00 18:00	24	0	6	30	0	0	0	0	30	0	283	26	309	10	368	0	378	687	717	
<b>Sub Total</b>	143	0	59	202	0	0	0	0	202	0	2106	142	2248	53	2165	0	2218	4466	4668	
<b>U Turns</b>	0			0	0			0	0	0			0	0			0	0	0	
<b>Total</b>	143	0	59	202	0	0	0	0	202	0	2106	142	2248	53	2165	0	2218	4466	4668	
<b>EQ 12Hr</b>	199	0	82	281	0	0	0	0	281	0	2927	197	3124	74	3009	0	3083	6207	6488	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													<b>1.39</b>							
<b>AVG 12Hr</b>	179	0	74	253	0	0	0	0	253	0	2634	177	2811	67	2708	0	2775	5586	5839	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													<b>.90</b>							
<b>AVG 24Hr</b>	234	0	97	331	0	0	0	0	331	0	3451	232	3683	88	3547	0	3635	7318	7649	
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.																				

## Turning Movement Count - Peak Hour Diagram

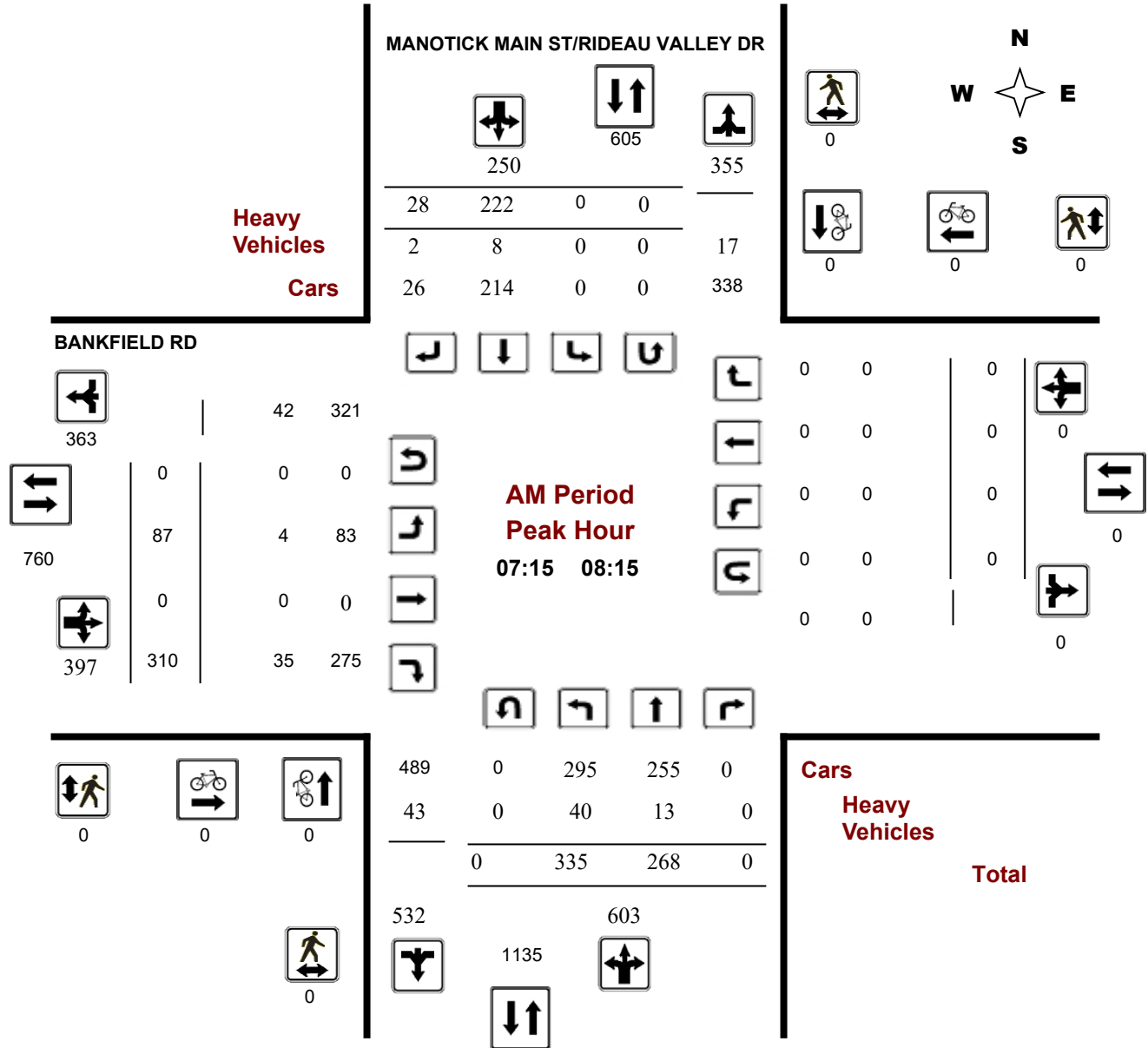
### BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

**Survey Date:** Wednesday, September 30, 2015

**Start Time:** 07:00

**WO No:** 35432

**Device:** Miovision



**Comments**



## Turning Movement Count - Peak Hour Diagram

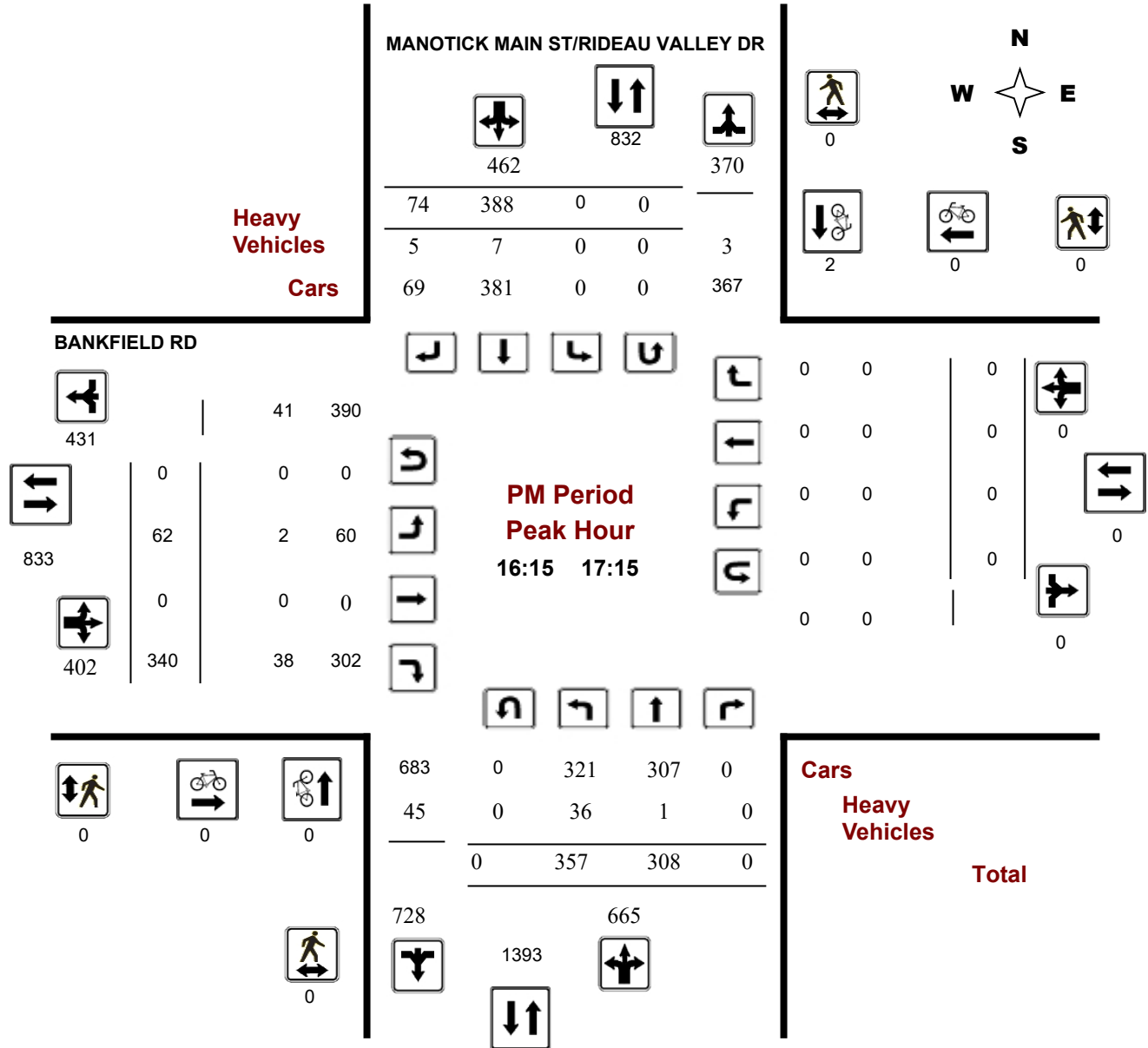
### BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

**Survey Date:** Wednesday, September 30, 2015

**Start Time:** 07:00

**WO No:** 35432

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

**Survey Date:** Wednesday, September 30, 2015

**WO No:** 35432

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Wednesday, September 30, 2015

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 0

Eastbound: 0      Westbound: 0

1.00

**MANOTICK MAIN ST/RIDEAU VALLEY DR**

**BANKFIELD RD**

Period	Northbound				Southbound				STR TOT	Eastbound				Westbound			WB TOT	STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST	RT			
07:00 08:00	296	249	0	545	0	190	25	215	760	88	0	298	386	0	0	0	0	386	1146
08:00 09:00	316	268	0	584	0	248	32	280	864	70	0	286	356	1	0	0	1	357	1221
09:00 10:00	213	229	0	442	0	223	38	261	703	51	0	207	258	1	0	0	1	259	962
11:30 12:30	187	269	0	456	0	304	40	344	800	38	0	207	245	0	0	0	0	245	1045
12:30 13:30	194	287	0	481	0	253	37	290	771	47	0	202	249	0	0	0	0	249	1020
15:00 16:00	290	276	1	567	0	369	58	427	994	39	0	288	327	0	1	0	1	328	1322
16:00 17:00	358	285	0	643	0	414	75	489	1132	60	0	334	394	0	0	0	0	394	1526
17:00 18:00	340	317	0	657	0	351	79	430	1087	42	1	298	341	0	0	0	0	341	1428
<b>Sub Total</b>	2194	2180	1	4375	0	2352	384	2736	7111	435	1	2120	2556	2	1	0	3	2559	9670
<b>U Turns</b>	0			0	0			0	0	0			0	0			0	0	0
<b>Total</b>	2194	2180	1	4375	0	2352	384	2736	7111	435	1	2120	2556	2	1	0	3	2559	9670

**EQ 12Hr** 3050 3030 1 6081 0 3269 534 3803 9884 605 1 2947 3553 3 1 0 4 3557 13441

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

**1.39**

**AVG 12Hr** 3050 3030 1 6081 0 3269 534 3803 9884 605 1 2947 3553 3 1 0 4 3557 13441

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

**1.00**

**AVG 24Hr** 3996 3969 1 7966 0 4282 700 4982 12948 793 1 3861 4655 4 1 0 5 4660 17608

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.

**1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

## Turning Movement Count - Peak Hour Diagram

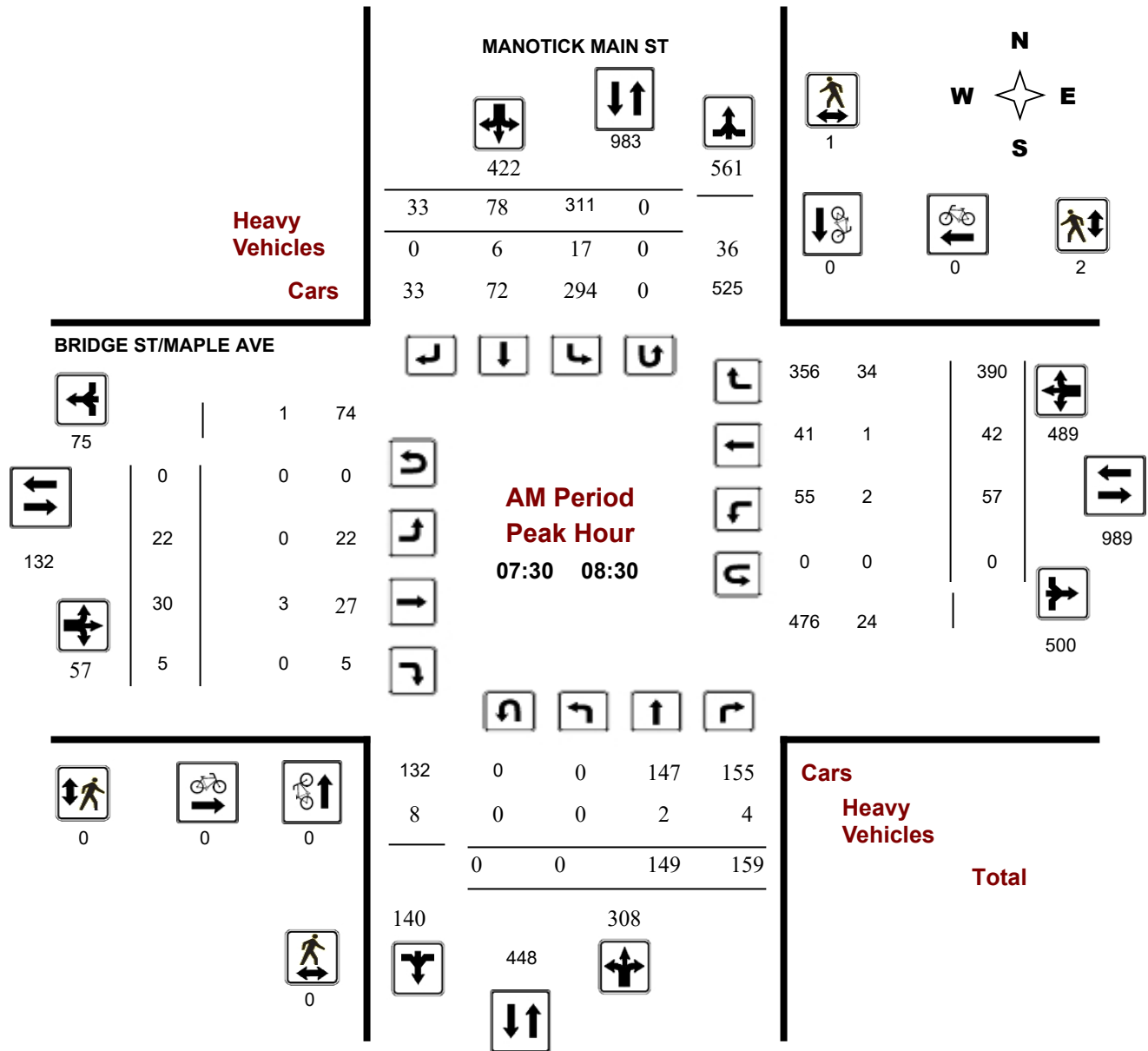
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Tuesday, March 08, 2016

**Start Time:** 07:00

**WO No:** 35737

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

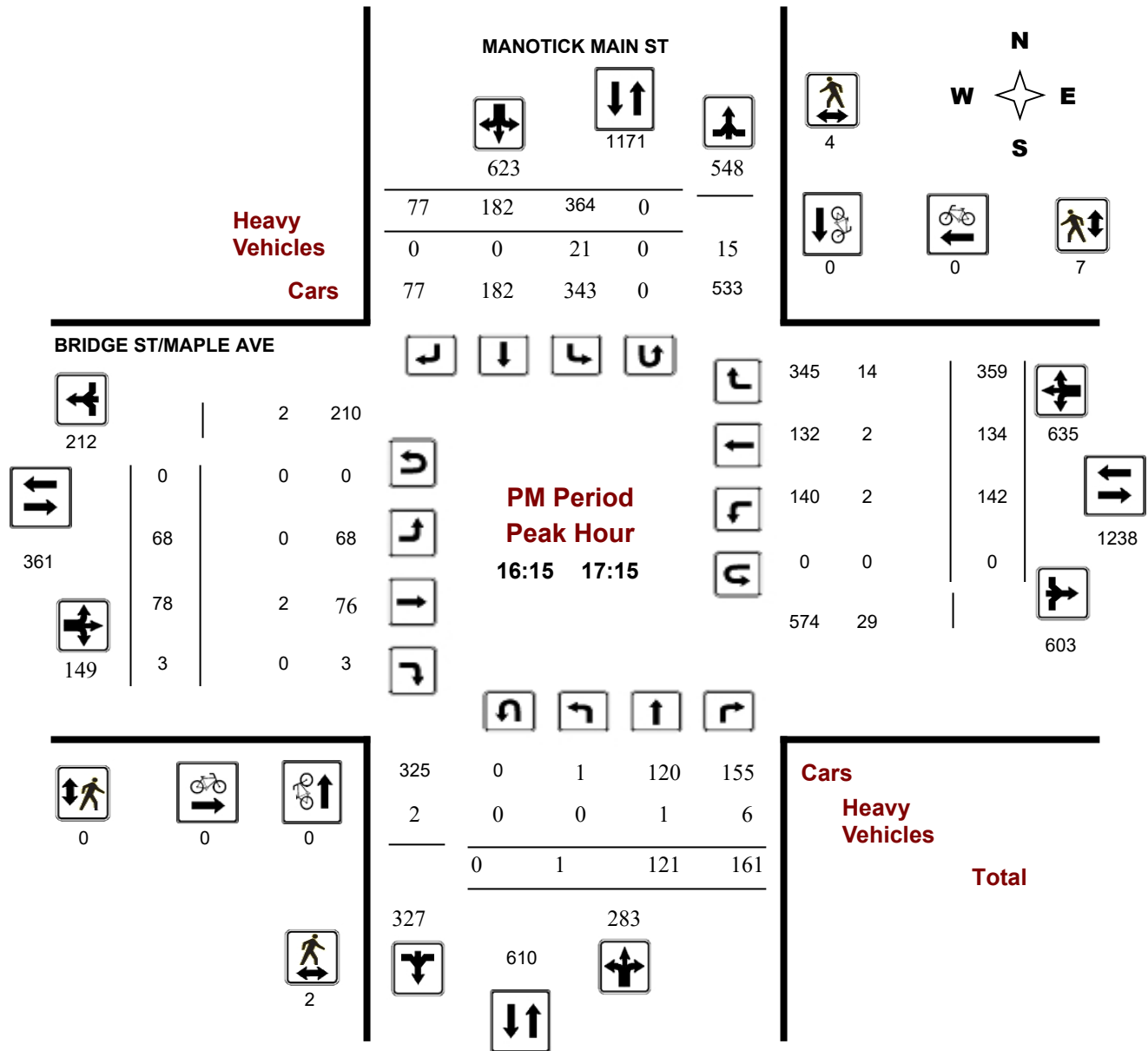
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Tuesday, March 08, 2016

**Start Time:** 07:00

**WO No:** 35737

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

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

**Survey Date:** Tuesday, March 08, 2016

**WO No:** 35737

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Tuesday, March 08, 2016

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 0

1.00

Eastbound: 0      Westbound: 0

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

Period	Northbound					Southbound					Eastbound					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	130	153	284	677	309	56	28	393	677	15	31	2	48	476	55	30	343	428	476	1153
08:00 09:00	0	148	142	290	701	270	104	37	411	701	22	31	5	58	523	61	58	346	465	523	1224
09:00 10:00	0	116	137	253	605	205	99	48	352	605	39	46	7	92	489	79	80	238	397	489	1094
11:30 12:30	0	131	142	273	702	198	146	85	429	702	63	81	9	153	534	99	111	171	381	534	1236
12:30 13:30	0	122	139	261	681	188	143	89	420	681	54	79	5	138	535	101	95	201	397	535	1216
15:00 16:00	1	123	132	256	800	320	151	73	544	800	42	73	7	122	635	124	110	279	513	635	1435
16:00 17:00	0	123	155	278	898	358	186	76	620	898	51	69	4	124	756	144	134	354	632	756	1654
17:00 18:00	2	111	153	266	822	294	201	61	556	822	54	68	5	127	674	140	113	294	547	674	1496
<b>Sub Total</b>	4	1004	1153	2161	5886	2142	1086	497	3725	5886	340	478	44	862	4622	803	731	2226	3760	4622	10508
<b>U Turns</b>	0			0	0	0			0	0	0			0	0				0	0	0
<b>Total</b>	4	1004	1153	2161	5886	2142	1086	497	3725	5886	340	478	44	862	4622	803	731	2226	3760	4622	10508

**EQ 12Hr** 6 1396 1603 3005 2977 1510 691 5178 8183 473 664 61 1198 1116 1016 3094 5226 6424 14607  
 Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

**AVG 12Hr** 6 1396 1603 3005 2977 1510 691 5178 8183 473 664 61 1198 1116 1016 3094 5226 6424 14607  
 Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1.00**

**AVG 24Hr** 8 1829 2100 3937 3900 1978 905 6783 10720 620 870 80 1570 1462 1331 4053 6846 8416 19136  
 Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

## Turning Movement Count - Peak Hour Diagram

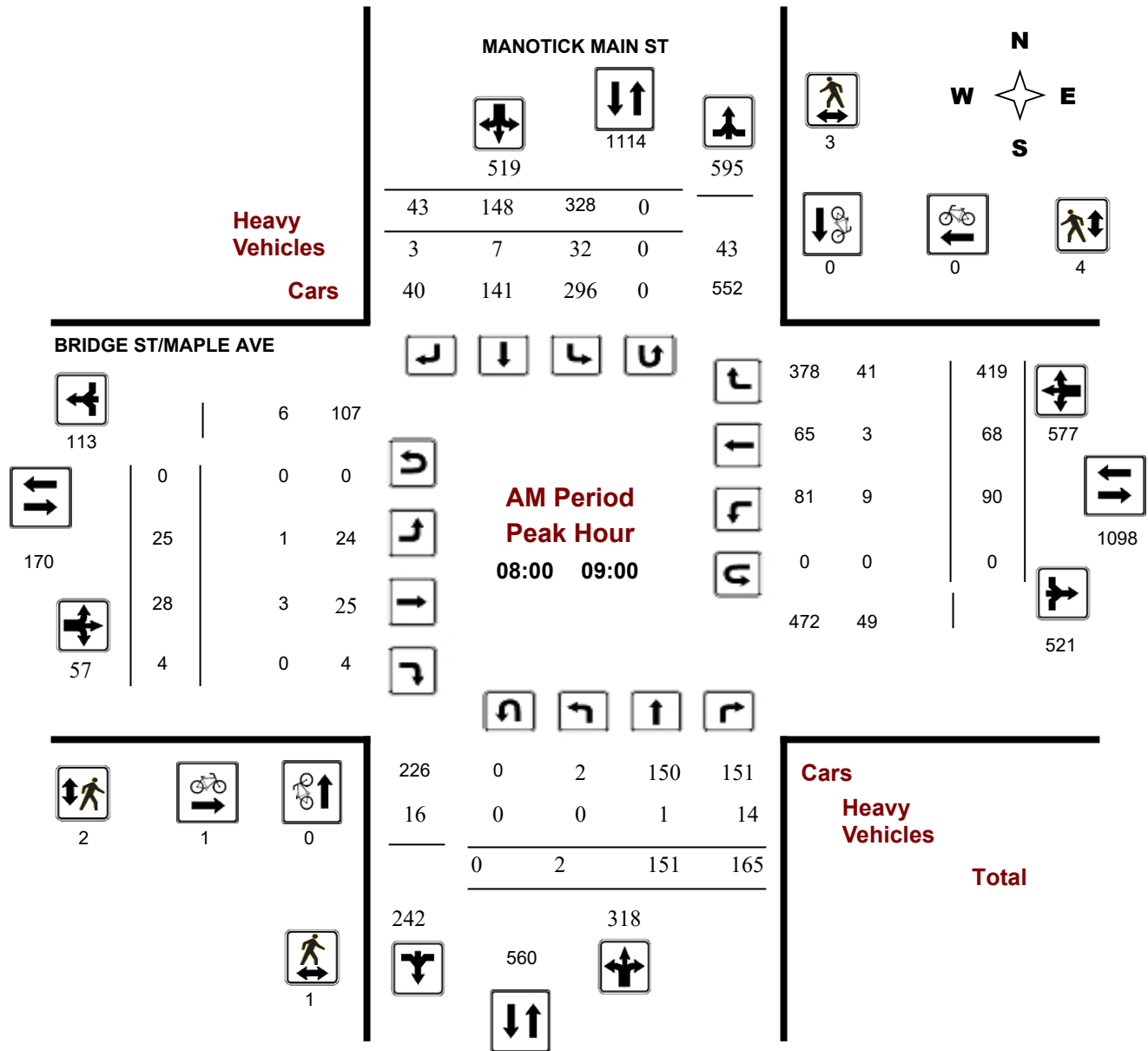
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, September 30, 2015

**Start Time:** 07:00

**WO No:** 35431

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

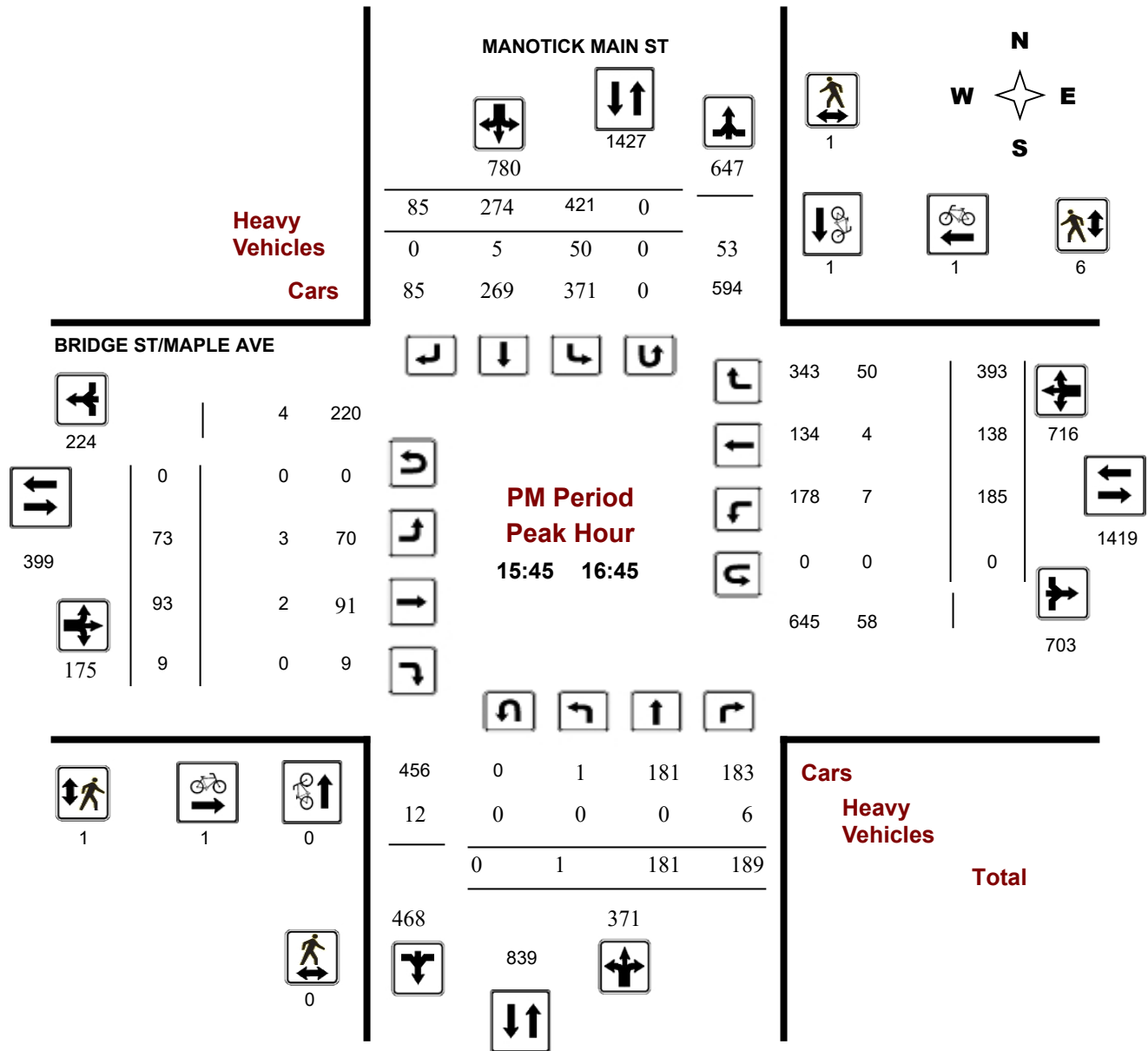
### BRIDGE ST/MAPLE AVE @ MANOTICK MAIN ST

**Survey Date:** Wednesday, September 30, 2015

**Start Time:** 07:00

**WO No:** 35431

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

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

**Survey Date:** Wednesday, September 30, 2015

**WO No:** 35431

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Wednesday, September 30, 2015

**Total Observed U-Turns**  
 Northbound: 1      Southbound: 1  
 Eastbound: 0      Westbound: 0

**AADT Factor**  
 1.00

#### MANOTICK MAIN ST

#### BRIDGE ST/MAPLE AVE

Period	MANOTICK MAIN ST					BRIDGE ST/MAPLE AVE					WB TOT	STR TOT	Grand Total						
	Northbound			Southbound		Eastbound			Westbound										
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT			
07:00 08:00	2	161	160	323	394	93	15	502	825	17	34	3	54	71	15	361	447	501	1326
08:00 09:00	2	151	165	318	328	148	43	519	837	25	28	4	57	90	68	419	577	634	1471
09:00 10:00	0	147	136	283	255	135	50	440	723	44	46	4	94	114	82	280	476	570	1293
11:30 12:30	0	138	174	312	238	193	86	517	829	70	96	10	176	145	115	242	502	678	1507
12:30 13:30	4	179	157	340	245	151	85	481	821	49	80	11	140	141	121	257	519	659	1480
15:00 16:00	1	155	204	360	388	211	80	679	1039	70	100	9	179	168	133	357	658	837	1876
16:00 17:00	1	192	190	383	394	273	91	758	1141	74	91	9	174	184	140	373	697	871	2012
17:00 18:00	0	174	201	375	365	206	78	649	1024	56	86	8	150	161	137	399	697	847	1871
<b>Sub Total</b>	10	1297	1387	2694	2607	1410	528	4545	7239	405	561	58	1024	1074	811	2688	4573	5597	12836
<b>U Turns</b>	1			1	1			1	2	0			0	0			0	0	2
<b>Total</b>	11	1297	1387	2695	2608	1410	528	4546	7241	405	561	58	1024	1074	811	2688	4573	5597	12838

**EQ 12Hr** 15 1803 1928 3746 3625 1960 734 6319 10065 563 780 81 1424 1493 1127 3736 6356 7780 17845

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

**1.39**

**AVG 12Hr** 15 1803 1928 3746 3625 1960 734 6319 10065 563 780 81 1424 1493 1127 3736 6356 7780 17845

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

**1.00**

**AVG 24Hr** 20 2362 2526 4908 4749 2568 962 8279 13187 738 1022 106 1866 1956 1476 4894 8326 10192 23379

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.

**1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



## **APPENDIX E**

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### Collision Records



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2016 To: December 31, 2020

**Location:** BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

**Traffic Control:** Traffic signal

**Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Jan-12, Tue,17:38	Snow	Turning movement	P.D. only	Loose snow	North	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Apr-24, Sun,11:34	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Dec-05, Mon,06:41	Snow	Angle	P.D. only	Loose snow	East	Turning right	Pick-up truck	Other motor vehicle	0
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2017-May-12, Fri,15:02	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Tow truck	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2017-Jul-25, Tue,17:47	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	
2018-Jul-03, Tue,15:44	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2018-Jul-03, Tue,19:32	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2019-Mar-27, Wed,07:42	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Delivery van	Other motor vehicle	
2019-Apr-15, Mon,17:00	Rain	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Nov-11, Mon,16:54	Snow	Angle	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Dec-20, Fri,15:47	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Feb-21, Fri,19:00	Clear	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2016 To: December 31, 2020

**Location:** BANKFIELD RD @ MANOTICK MAIN ST/RIDEAU VALLEY

**Traffic Control:** Traffic signal

**Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2020-Mar-31, Tue,15:53	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2020-Sep-04, Fri,15:12	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	0
					East	Turning right	Passenger van	Other motor vehicle	

**Location:** BANKFIELD RD @ POTTER DR/LOCKMASTER CRES

**Traffic Control:** Stop sign

**Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-May-25, Fri,16:35	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

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

**Traffic Control:** Traffic signal

**Total Collisions:** 16

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



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2016 To: December 31, 2020

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

**Traffic Control:** Traffic signal

**Total Collisions:** 16

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
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	
2019-May-20, Mon,13:20	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jun-06, Thu,16:35	Clear	Sideswipe	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-18, Thu,11:12	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Truck - open	Other motor vehicle	
2019-Dec-04, Wed,17:34	Clear	Rear end	P.D. only	Wet	South	Going ahead	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Sep-04, Fri,10:20	Clear	Turning movement	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Sep-14, Mon,10:17	Clear	Sideswipe	P.D. only	Dry	West	Turning right	Truck and trailer	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2016 **To:** December 31, 2020

**Location:** COLONY HEIGHTS RD @ BANKFIELD RD

**Traffic Control:** Stop sign

**Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Nov-21, Wed,11:00	Clear	Angle	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

## **APPENDIX F**

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Other Area Developments

Table 3: Projected Background 2032 Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Manotick Main/Century (unsignalized)	B(B)	11.7(14.4)	EBL(EBL)	1.9(1.8)	-	-
Century/Trestle (unsignalized)	A(A)	8.9(9.3)	SBR(SBR)	3.7(2.7)	-	-
First Line/Century (unsignalized)	A(A)	7.2(7.4)	EBT(WBT)	7.1(7.4)	-	-
Manotick Main/Bridgeport (unsignalized)	C(D)	16.3(27.0)	EBL(EBL)	2.9(5.0)	-	-
Manotick Main /Bridge	A(A)	0.50(0.55)	WBR(SBL)	14.1(20.4)	A(A)	0.45(0.47)

Notes: • Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.

The background volumes for both the 2027 and 2032 horizons are projected to operate acceptably in both the AM and PM peak hours. It is noted that the build out of Mahogany Phase1 will have over 60 veh/h making the southbound right-turn movement at Manotick Main St/Bridgeport Ave. While not recommended for the background conditions, additional volume will likely trigger the need for a right-turn lane and this will be carried forward into the future horizons analysis.

### 3.4. SITE TRIP GENERATION

Appropriate trip generation rates for the proposed development of approximate 943 single family homes and 246 residential townhome units were obtained from the 9<sup>th</sup> Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual, which are summarized in Table 4.

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more connected suburban study area context were applied to attain estimates of person trips for the proposed development. This approach is considered appropriate within the industry for more urban developments.

Table 4: ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
Single Family Homes	ITE 210	$T=0.75(du)$ $T=0.70(du)+9.74$	$T=1.00(du)$ $Ln(T)=0.90Ln(du)+0.51$
Townhomes	ITE 230	$T=0.44(du)$ $Ln(T)=0.80Ln(du)+0.26$	$T=0.52(du)$ $Ln(T)=0.82Ln(du)+0.32$

Notes: T = Average Vehicle Trip Ends  
du = dwelling units

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of available literature suggests that a combined factor of approximately 1.3 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. As such, the person trip generation for the proposed site is summarized by phase in Table 5.

Table 5: Modified Person Trip Generation

Land Use	Units	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Single Family Homes (Phase 2)	347	101	227	328	276	143	419
Townhomes (Phase 2)	99	11	56	67	52	26	78
Single Family Homes (Phase 3)	224	67	150	217	186	96	282
Townhomes (Phase 3)	93	10	53	63	49	25	74
Single Family Homes (Phase 4)	167	51	114	165	143	74	217
Single Family Homes (Phase 5)	205	61	138	199	172	89	261
Townhomes (Phase 5)	54	6	35	41	31	16	47
<b>Total Person Trips</b>		<b>307</b>	<b>773</b>	<b>1,080</b>	<b>909</b>	<b>469</b>	<b>1,378</b>
<i>Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%</i>							

The person trips for each phase shown in Table 5 for the proposed site were then reduced by modal share values (Table 6, Table 7, Table 8, and Table 9), with the total site-generated vehicle traffic summarized in Table 10.

Table 6: Phase 2 Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	70%	79	199	278	231	120	351
Auto Passenger	15%	17	44	61	50	25	75
Transit	5%	5	13	18	15	8	23
Non-motorized	10%	11	27	38	32	16	48
Total Person Trips	100%	112	283	395	328	169	497
<b>Total 'New' Auto Trips</b>		<b>79</b>	<b>199</b>	<b>278</b>	<b>231</b>	<b>120</b>	<b>351</b>

Table 7: Phase 3 Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	70%	54	143	197	166	86	252
Auto Passenger	15%	13	31	44	36	19	55
Transit	5%	3	9	12	11	5	16
Non-motorized	10%	7	20	27	22	11	33
Total Person Trips	100%	77	203	280	235	121	356
<b>Total 'New' Auto Trips</b>		<b>54</b>	<b>143</b>	<b>197</b>	<b>166</b>	<b>86</b>	<b>252</b>



Table 8: Phase 4 Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	70%	36	80	116	101	52	153
Auto Passenger	15%	8	18	26	21	12	33
Transit	5%	2	5	7	7	3	10
Non-motorized	10%	5	11	16	14	7	21
Total Person Trips	100%	51	114	165	143	74	217
<b>Total 'New' Auto Trips</b>		<b>36</b>	<b>80</b>	<b>116</b>	<b>101</b>	<b>52</b>	<b>153</b>

Table 9: Phase 5 Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	70%	48	122	170	143	75	218
Auto Passenger	15%	10	27	37	31	17	48
Transit	5%	3	8	11	9	4	13
Non-motorized	10%	6	16	22	20	9	29
Total Person Trips	100%	67	173	240	203	105	308
<b>Total 'New' Auto Trips</b>		<b>48</b>	<b>122</b>	<b>170</b>	<b>143</b>	<b>75</b>	<b>218</b>

Table 10: Total Site Vehicle Trip Generation

Phase	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Phase 2	79	199	278	231	120	351
Phase 3	54	143	197	166	86	252
Phase 4	36	80	116	101	52	153
Phase 5	48	122	170	143	75	218
<b>Total 'New' Auto Trips</b>	<b>217</b>	<b>544</b>	<b>761</b>	<b>641</b>	<b>333</b>	<b>974</b>

As shown in Table 10, the resulting number of potential 'new' two-way vehicle trips for the proposed development is approximately 761 and 974 veh/h during the weekday morning and afternoon peak hours, respectively.

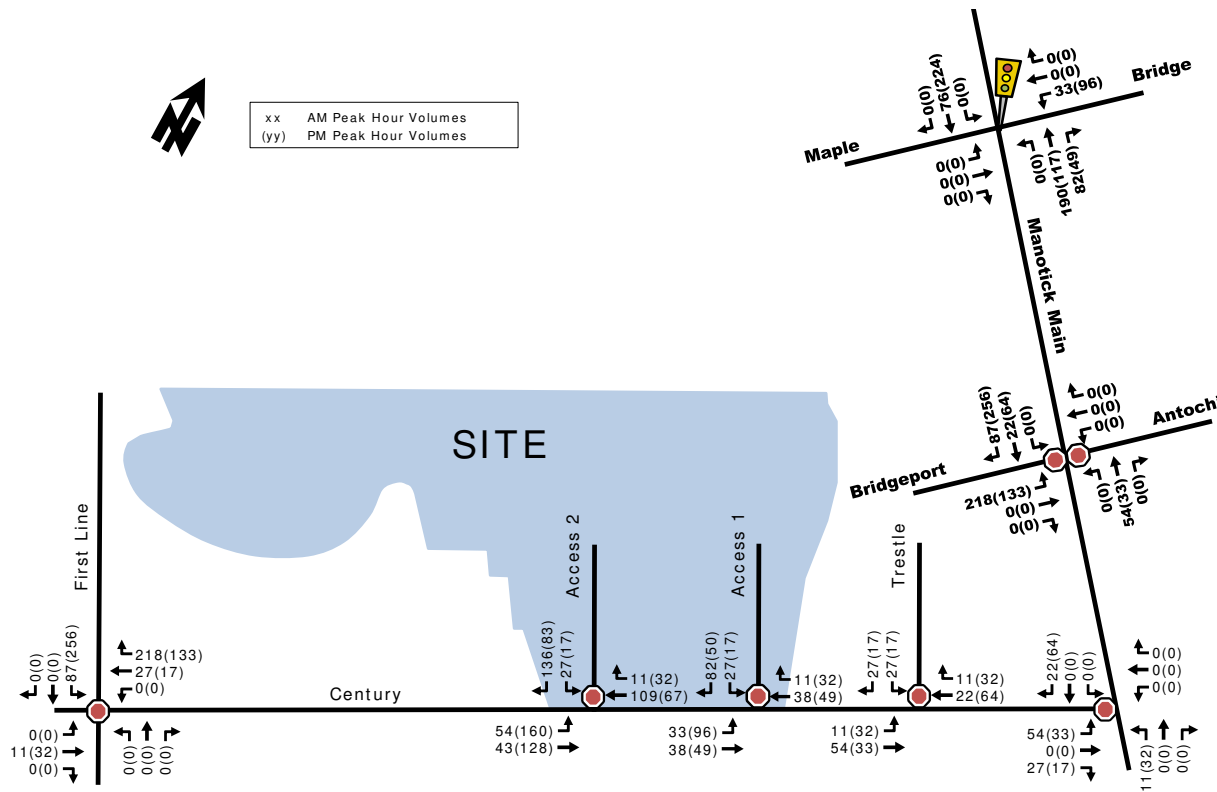
### 3.5. VEHICLE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Traffic distribution was based on the different types of land uses, existing volume splits at study area intersections and our knowledge of the surrounding area. The resultant distribution is outlined as follows.

- 5% to/from the south via Rideau Valley Dr
  - 35% to/from the north via Manotick Main St
  - 15% to/from the east via Manotick Main St and Bridge St
  - 45% to/from the west via Century Rd and First Line Rd
- 100%

Based on these distributions, 'new' site-generated trips were assigned to study area intersections, which are illustrated as Figure 7.

Figure 7: 'New' Site Generated Traffic Volumes



## 4. FUTURE TRAFFIC OPERATIONS

### 4.1. PROJECTED 2027 CONDITIONS AT FULL SITE DEVELOPMENT

The total projected 2027 volumes associated with the proposed development were derived by superimposing 'new' site-generated traffic volumes (Figure 7) onto projected 2027 background traffic volumes (Figure 5). The resulting total projected 2027 volumes are illustrated as Figure 8.

The following Table 11 provides a projected performance summary for study area intersections, based on total projected 2032 traffic volumes. The detailed SYNCHRO model output of projected conditions is provided within Appendix E.

## **APPENDIX G**

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Strategic Long-Range Model and 2013 TMP Projections

# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

## AM Peak Hour Total Traffic Volume

### Manotick Area

2011 Model - Basecase

N/A

User Initials: TIMW

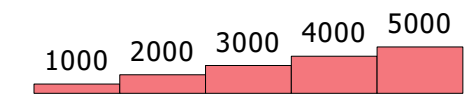
Plot Prepared: May, 2022

EMME Scenario: 21713



## Legend

AM Peak Hour Total Traffic Volume



Distance (m)



N



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

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

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

# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

## AM Peak Hour Total Traffic Volume

### Manotick Area

2031 Model - Basecase

N/A

User Initials: TIMW

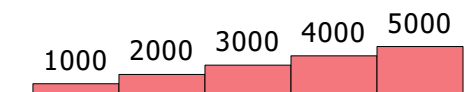
Plot Prepared: May, 2022

EMME Scenario: 21715

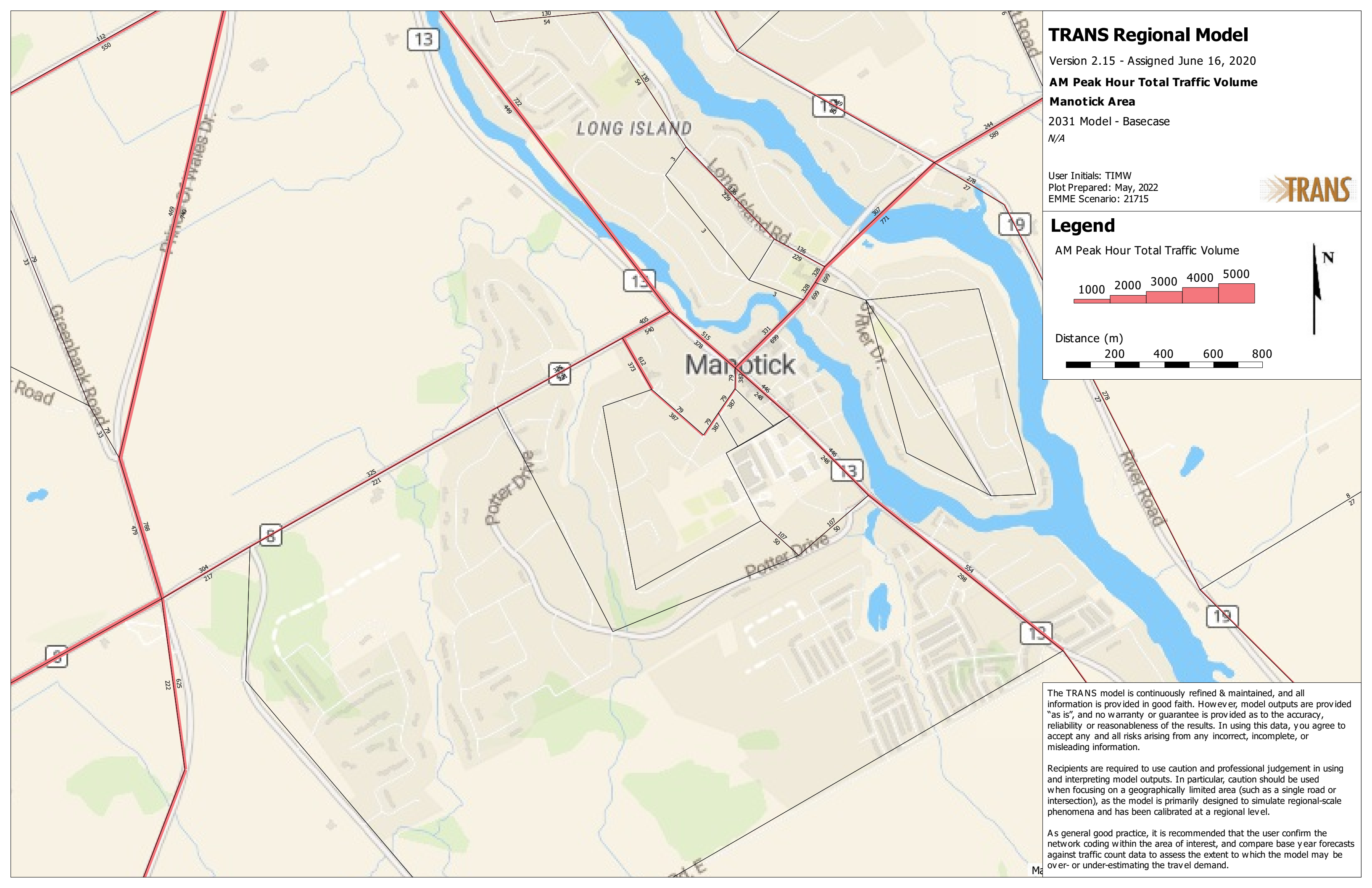
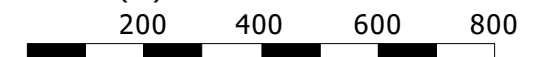


## Legend

AM Peak Hour Total Traffic Volume



Distance (m)



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

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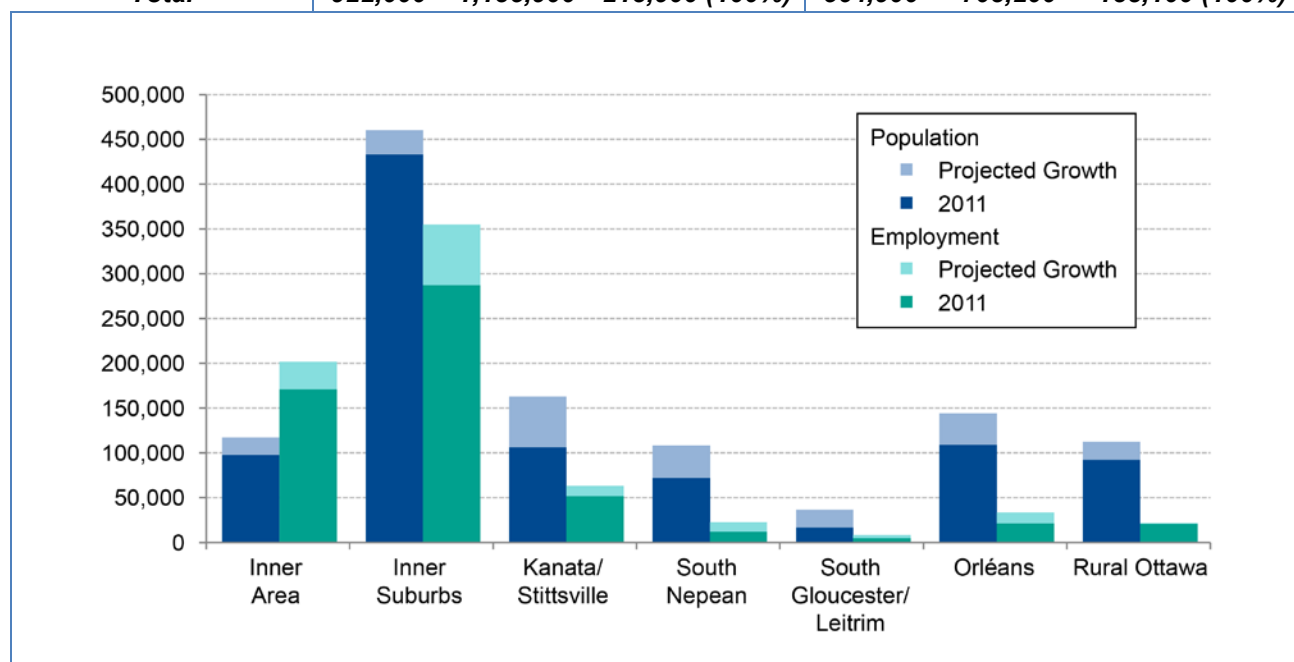
As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

## 2.3 Population and Employment in 2031

**Where growth will occur.** The City has prepared population and employment growth projections for the period from 2011 to 2031 (see Exhibit 2.10). The City expects a 23% increase in population from 922,000 to 1.14 million people, and a 24% increase in employment from 565,000 to 703,000 jobs. Although infill development and intensification are forecast to increase the population of Ottawa’s Inner Area and Inner Suburbs by about 46,000 people over the next 18 years, most growth (about 168,000 people) will occur in the Outer Suburbs. In contrast, 72% of employment growth will occur inside the Greenbelt.

**Exhibit 2.10 Population and Employment: 2011 Actual and 2031 Projections**

Area	Population			Employment		
	2011	2031	Growth and distribution	2011	2031	Growth & distribution
Inner Area	97,200	116,400	19,200 (9%)	170,600	201,800	31,200 (23%)
Inner Suburbs	432,500	459,300	26,800 (13%)	287,400	355,300	67,900 (49%)
Kanata/Stittsville	105,200	162,000	56,800 (27%)	51,300	62,500	11,200 (8%)
Barrhaven	71,200	107,400	36,200 (17%)	11,100	21,800	10,700 (8%)
Riverside South/Leitrim	15,900	35,800	19,900 (9%)	4,000	7,800	3,800 (3%)
Orléans	108,200	143,400	35,200 (16%)	20,600	33,000	12,400 (9%)
Rural Ottawa	91,400	111,700	20,300 (9%)	20,000	20,900	900 (1%)
<b>Total</b>	<b>922,000</b>	<b>1,135,900</b>	<b>213,900 (100%)</b>	<b>564,900</b>	<b>703,200</b>	<b>138,100 (100%)</b>



## **APPENDIX H**

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### Signal Timing Plans

# Traffic Signal Timing

City of Ottawa, Public Works Department

## Traffic Signal Operations Unit

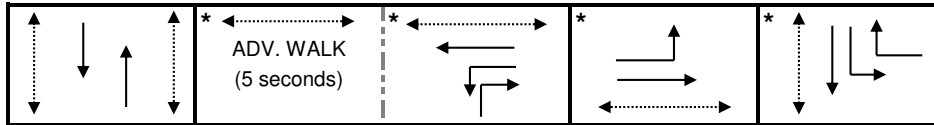
<b>Intersection:</b>	<i>Main:</i> Manotick Main	<i>Side:</i> Bridge / Maple
<b>Controller:</b>	<b>ATC 3</b>	<b>TSD: 5328</b>
<b>Author:</b>	Matthew Anderson	<b>Date:</b> 25-Apr-2022

## Existing Timing Plans†

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	130	110	140	105	110			
<b>Offset</b>	X	X	X	X	X			
NB Thru	37.7	34	34	34	34	7	19	3.3+3.0
SB Thru	74	54	84	49	54	7	19	3.3+3.0
WB Thru / LT	28	28	28	28	28	7	15	3.0+3.2
NB Right	28	28	28	28	28	-	-	3.0+3.2
EB Thru / LT	28	28	28	28	28	7	15	3.0+2.3
SB Left	36.3	20	50	15	20	-	-	3.3+3.0
WB Right	36.3	20	50	15	20	-	-	3.3+3.0

## Phasing Sequence‡

Plan: All



- Notes:** 1) The SB Left Turn has a min recall of 5s, but cannot be displayed directly following the NB Thru  
2) The NB Left Turn is prohibited with buses excepted

## Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	6:30	5	6:30	5
9:30	2	19:30	2	22:00	4
14:30	3	22:00	4		
18:30	2				
21:30	4				

## Notes

- †: Time for each direction includes amber and all red intervals  
‡: Start of first phase should be used as reference point for offset  
Asterisk (\*) Indicates actuated phase  
(fp): Fully Protected Left Turn  
◄-----► Pedestrian signal

Cost is \$61.16 (\$54.12 + HST)



# Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

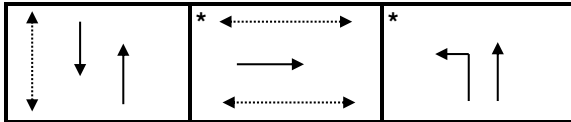
<b>Intersection:</b>	<i>Main:</i> Manotick Main / Rideau Valley	<i>Side:</i> Bankfield
<b>Controller:</b>	<b>MS 3200</b>	<b>TSD: 6682</b>
<b>Author:</b>	Matthew Anderson	<b>Date:</b> 25-Apr-2022

## Existing Timing Plans†

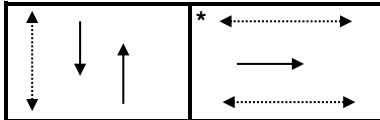
Plan	Ped Minimum Time					Walk	DW	A+R
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5			
<b>Cycle</b>	70	70	90	50	70			
<b>Offset</b>	70	70	90	X	70			
NB Thru	50	50	70	30	50	-	-	3.3+2.4
SB Thru	30	38	45	30	38	7	11	3.3+2.4
EB Thru	20	20	20	20	20	7	7	3.7+2.0
NB Left	20	12	25	-	12	-	-	3.3+2.0

## Phasing Sequence‡

Plan: 1,2,3,5



Plan: 4



## Schedule

### Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
14:30	3
18:30	2
22:00	4

### Saturday

Time	Plan
0:15	4
6:30	5
19:30	2
22:00	4

### Sunday

Time	Plan
0:15	4
6:30	5
22:00	4

## Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (\*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

Cost is \$61.16 (\$54.12 + HST)

## **APPENDIX I**

---

Capacity Analysis Reports (Existing/Background)



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	286	349	339	183	21
Future Volume (vph)	86	286	349	339	183	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.986	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	1724	0
Flt Permitted	0.950		0.523			
Satd. Flow (perm)	1695	1419	835	1717	1724	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		318			9	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	96	318	388	377	203	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	96	318	388	377	226	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



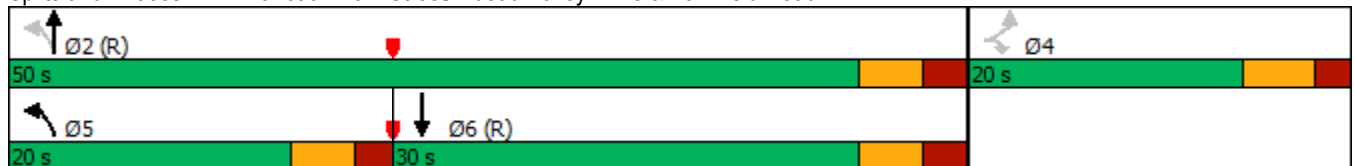
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.0	11.0	48.0	47.6	29.9	
Actuated g/C Ratio	0.16	0.16	0.69	0.68	0.43	
v/c Ratio	0.36	0.65	0.56	0.32	0.30	
Control Delay	30.0	10.3	8.4	5.8	15.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.0	10.3	8.4	5.8	15.3	
LOS	C	B	A	A	B	
Approach Delay	14.9			7.1	15.3	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	10.7	10.7	15.0	47.9	27.6	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	12.7	48.6	30.6	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	10.9	48.6	32.4	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	8.8	48.6	34.5	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	73	42	139	130	128	
Fuel Used(l)	6	9	17	16	14	
CO Emissions (g/hr)	111	169	325	300	255	
NOx Emissions (g/hr)	21	33	63	58	49	
VOC Emissions (g/hr)	26	39	75	69	59	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	11.6	0.0	16.6	15.7	17.5	
Queue Length 95th (m)	22.6	18.7	36.1	33.2	37.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	542	716	1167	741	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.59	0.54	0.32	0.30	

Intersection Summary	
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	10.7
Intersection LOS:	B
Intersection Capacity Utilization	54.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

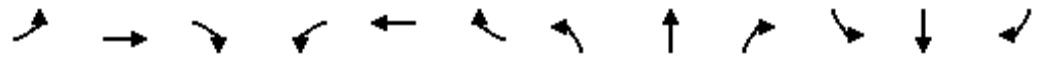


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak Existing Traffic

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	109	50	451	0	199	232	319	108	41
Future Volume (vph)	27	27	4	109	50	451	0	199	232	319	108	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	0.99					0.98			0.98	1.00		
Fr <sub>t</sub>		0.982				0.850			0.850		0.958	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1697	0	1586	1655	1369	0	1784	1473	1616	1672	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.511		
Satd. Flow (perm)	1684	1697	0	1586	1655	1343	0	1784	1438	868	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				501			258			22
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	30	30	4	121	56	501	0	221	258	354	120	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	34	0	121	56	501	0	221	258	354	166	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak Existing Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.3	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	36.3		37.7	23.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		17.7%	17.7%	27.9%		29.0%	17.7%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		16.8	16.8	30.0		31.4	16.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.3	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.3	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		13.6	13.6	31.5		43.9	57.6	68.2	68.2	
Actuated g/C Ratio	0.10	0.10		0.13	0.13	0.30		0.41	0.54	0.64	0.64	
v/c Ratio	0.19	0.21		0.60	0.26	0.66		0.30	0.29	0.52	0.15	
Control Delay	50.1	46.2		57.3	46.2	6.0		26.1	2.6	13.0	8.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	50.1	46.2		57.3	46.2	6.0		26.1	2.6	13.0	8.2	
LOS	D	D		E	D	A		C	A	B	A	
Approach Delay		48.0			18.5			13.4			11.5	
Approach LOS		D			B			B			B	
90th %ile Green (s)	10.0	10.0		17.0	17.0	26.5		34.9	17.0	26.5	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Gap		Hold	Ped	Gap	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	21.4		40.0	16.8	21.4	67.7	
70th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
50th %ile Green (s)	10.0	10.0		13.5	13.5	18.5		42.9	13.5	18.5	67.7	
50th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		11.4	11.4	15.7		45.7	11.4	15.7	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	9.1		52.3	10.0	9.1	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	25	26		100	43	35		135	17	144	51	
Fuel Used(l)	2	2		9	4	14		13	8	17	7	
CO Emissions (g/hr)	35	38		167	68	259		247	151	325	135	
NOx Emissions (g/hr)	7	7		32	13	50		48	29	63	26	
VOC Emissions (g/hr)	8	9		39	16	60		57	35	75	31	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	6.0	6.0		24.7	11.0	0.0		32.0	0.0	33.8	11.8	
Queue Length 95th (m)	15.6	16.0		43.5	22.9	13.4		59.6	11.9	55.3	22.4	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	



Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak Existing Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	364	368		253	264	855		737	940	769	1080	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.48	0.21	0.59		0.30	0.27	0.46	0.15	

Intersection Summary























Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	106.2
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	16.1
Intersection LOS:	B
Intersection Capacity Utilization	74.7%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	112.5
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	109
30th %ile Actuated Cycle:	106.9
10th %ile Actuated Cycle:	90.2

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street















Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	109	50	451	0	199	232	319	108	41
Future Volume (vph)	27	27	4	109	50	451	0	199	232	319	108	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	1.00					0.98			0.98	1.00		
Frt		0.982				0.850			0.850		0.958	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1697	0	1586	1655	1369	0	1784	1473	1616	1672	0
Flt Permitted	0.950			0.950						0.508		
Satd. Flow (perm)	1687	1697	0	1586	1655	1345	0	1784	1440	863	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				501			258			22
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	30	30	4	121	56	501	0	221	258	354	120	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	34	0	121	56	501	0	221	258	354	166	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.3	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	36.3		37.7	28.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		21.5%	21.5%	27.9%		29.0%	21.5%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		21.8	21.8	30.0		31.4	21.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.3	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.3	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		14.5	14.5	32.7		43.6	58.3	68.3	68.3	
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.31		0.41	0.54	0.64	0.64	
v/c Ratio	0.19	0.21		0.56	0.25	0.66		0.30	0.29	0.52	0.15	
Control Delay	51.2	47.2		54.7	45.1	5.7		27.5	2.6	13.7	8.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	51.2	47.2		54.7	45.1	5.7		27.5	2.6	13.7	8.7	
LOS	D	D		D	D	A		C	A	B	A	
Approach Delay		49.1			17.7			14.1			12.1	
Approach LOS		D			B			B			B	
90th %ile Green (s)	10.1	10.1		22.0	22.0	28.6		32.8	22.0	28.6	67.7	
90th %ile Term Code	Gap	Gap		Ped	Ped	Gap		Hold	Ped	Gap	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	21.9		39.5	16.8	21.9	67.7	
70th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
50th %ile Green (s)	10.0	10.0		13.5	13.5	18.3		43.1	13.5	18.3	67.7	
50th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		11.4	11.4	15.6		45.8	11.4	15.6	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	9.1		52.3	10.0	9.1	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	25	26		98	42	32		138	16	148	52	
Fuel Used(l)	2	2		9	4	14		14	8	18	7	
CO Emissions (g/hr)	36	39		163	67	256		252	151	330	136	
NOx Emissions (g/hr)	7	7		31	13	49		49	29	64	26	
VOC Emissions (g/hr)	8	9		37	15	59		58	35	76	31	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	6.0	6.0		24.7	11.0	0.0		31.9	0.0	33.8	11.8	
Queue Length 95th (m)	16.1	16.6		43.0	22.7	12.4		64.9	12.2	62.1	25.2	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

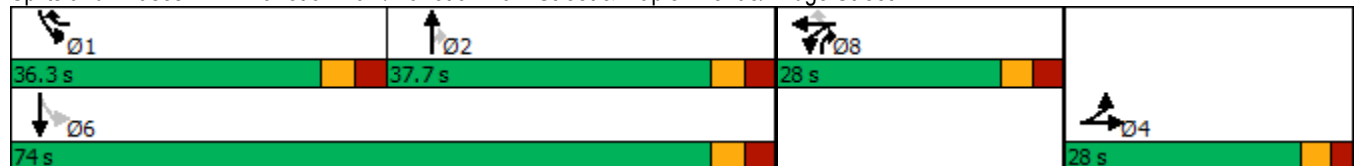
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) Existing Traffic

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	361	365		325	339	859		725	989	761	1072	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.37	0.17	0.58		0.30	0.26	0.47	0.15	

Intersection Summary

















Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	107.2
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	16.2
Intersection Capacity Utilization	74.7%
Analysis Period (min)	15
90th %ile Actuated Cycle:	117.6
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	109
30th %ile Actuated Cycle:	106.9
10th %ile Actuated Cycle:	90.2
Intersection LOS:	B
ICU Level of Service	D

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street























3: Colony Heights Road/Street 1 & Bankfield Road  
AM Peak

4386 Rideau Valley Dr  
Existing Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	319	14	6	328	0	23	0	18	0	0	0
Future Volume (Veh/h)	0	319	14	6	328	0	23	0	18	0	0	0
Sign Control		Free			Free			Stop			Stop	
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)	0	354	16	7	364	0	26	0	20	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (m)	221											
pX, platoon unblocked												
vC, conflicting volume	364			370			740	740	362	760	748	364
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	364			370			740	740	362	760	748	364
tC, single (s)	4.1			4.3			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			92	100	97	100	100	100
cM capacity (veh/h)	1195			1111			329	342	663	311	339	681
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	370	371	46	0								
Volume Left	0	7	26	0								
Volume Right	16	0	20	0								
cSH	1195	1111	421	1700								
Volume to Capacity	0.00	0.01	0.11	0.00								
Queue Length 95th (m)	0.0	0.1	2.8	0.0								
Control Delay (s)	0.0	0.2	14.6	0.0								
Lane LOS		A	B	A								
Approach Delay (s)	0.0	0.2	14.6	0.0								
Approach LOS			B	A								
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			33.3%	ICU Level of Service	A							
Analysis Period (min)			15									

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
AM Peak

4386 Rideau Valley Dr  
Existing Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	277	18	19	359	8	41	1	58	24	3	4
Future Volume (Veh/h)	4	277	18	19	359	8	41	1	58	24	3	4
Sign Control		Free			Free			Stop			Stop	
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)	4	308	20	21	399	9	46	1	64	27	3	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	408			328			762	766	308	826	782	404
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408			328			762	766	308	826	782	404
tC, single (s)	4.3			4.3			7.1	7.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.3			3.5	4.9	3.3	3.5	4.3	3.3
p0 queue free %	100			98			85	100	91	90	99	99
cM capacity (veh/h)	1037			1157			311	235	732	258	286	647
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	4	308	20	21	408	111	34					
Volume Left	4	0	0	21	0	46	27					
Volume Right	0	0	20	0	9	64	4					
cSH	1037	1700	1700	1157	1700	464	281					
Volume to Capacity	0.00	0.18	0.01	0.02	0.24	0.24	0.12					
Queue Length 95th (m)	0.1	0.0	0.0	0.4	0.0	7.0	3.1					
Control Delay (s)	8.5	0.0	0.0	8.2	0.0	15.2	19.6					
Lane LOS	A			A		C	C					
Approach Delay (s)	0.1			0.4		15.2	19.6					
Approach LOS						C	C					
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization		33.2%		ICU Level of Service	A							
Analysis Period (min)		15										





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	403	478	366	438	58
Future Volume (vph)	39	403	478	366	438	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.984	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1754	0
Flt Permitted	0.950		0.243			
Satd. Flow (perm)	1647	1369	413	1784	1754	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		448			9	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	43	448	531	407	487	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	448	531	407	551	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.4	11.4	67.6	67.2	40.4	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.45	
v/c Ratio	0.21	0.79	0.89	0.31	0.70	
Control Delay	36.9	15.3	31.2	4.7	25.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.9	15.3	31.2	4.7	25.7	
LOS	D	B	C	A	C	
Approach Delay	17.2			19.7	25.7	
Approach LOS	B			B	C	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.7	12.7	21.3	65.9	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	18.7	68.6	44.6	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	35	49	214	111	388	
Fuel Used(l)	3	14	33	16	39	
CO Emissions (g/hr)	56	261	611	306	728	
NOx Emissions (g/hr)	11	50	118	59	140	
VOC Emissions (g/hr)	13	60	141	71	168	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	6.9	0.0	41.8	17.1	74.5	
Queue Length 95th (m)	15.7	#32.4	#112.3	33.6	112.6	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	594	600	1331	791	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.75	0.89	0.31	0.70	























Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.89
Intersection Signal Delay:	20.8
Intersection LOS:	C
Intersection Capacity Utilization	78.3%
ICU Level of Service	D
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

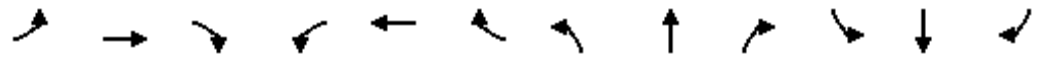


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	190	159	566	0	190	200	448	253	118
Future Volume (vph)	76	102	5	190	159	566	0	190	200	448	253	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.992				0.850			0.850		0.952	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1736	0	1695	1767	1459	0	1784	1517	1544	1699	0
Flt Permitted	0.950			0.950						0.445		
Satd. Flow (perm)	1695	1736	0	1691	1767	1459	0	1784	1468	720	1699	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				437			222			27
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	84	113	6	211	177	629	0	211	222	498	281	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	119	0	211	177	629	0	211	222	498	412	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak Existing Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	50.0		34.0	23.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		16.4%	16.4%	35.7%		24.3%	16.4%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.8	14.8		16.8	16.8	50.4		38.1	54.7	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.38		0.29	0.41	0.59	0.59	
v/c Ratio	0.44	0.61		0.98	0.79	0.76		0.41	0.30	0.79	0.41	
Control Delay	62.0	68.2		114.3	80.9	12.3		44.5	4.3	27.2	15.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	62.0	68.2		114.3	80.9	12.3		44.5	4.3	27.2	15.7	
LOS	E	E		F	F	B		D	A	C	B	
Approach Delay		65.6			45.4			23.9			22.0	
Approach LOS		E			D			C			C	
90th %ile Green (s)	22.0	22.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	16.5	16.5		16.8	16.8	41.0		30.7	16.8	41.0	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
50th %ile Green (s)	14.1	14.1		16.8	16.8	33.9		37.8	16.8	33.9	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	11.9	11.9		16.8	16.8	28.7		43.0	16.8	28.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		16.8	16.8	21.9		49.8	16.8	21.9	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	69	98		160	142	171		155	17	271	183	
Fuel Used(l)	6	9		24	16	22		16	7	31	21	
CO Emissions (g/hr)	112	168		442	297	411		297	136	576	398	
NOx Emissions (g/hr)	22	32		85	57	79		57	26	111	77	
VOC Emissions (g/hr)	26	39		102	68	95		68	31	133	92	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	20.8	29.5		55.3	45.1	25.3		44.3	0.0	74.1	50.7	
Queue Length 95th (m)	37.3	49.3		#112.5	#87.1	43.4		79.9	15.7	120.7	83.9	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Max
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	3.0
90th %ile Term Code	MaxR
70th %ile Green (s)	3.0
70th %ile Term Code	MaxR
50th %ile Green (s)	3.0
50th %ile Term Code	MaxR
30th %ile Green (s)	3.0
30th %ile Term Code	MaxR
10th %ile Green (s)	3.0
10th %ile Term Code	MaxR
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak Existing Traffic

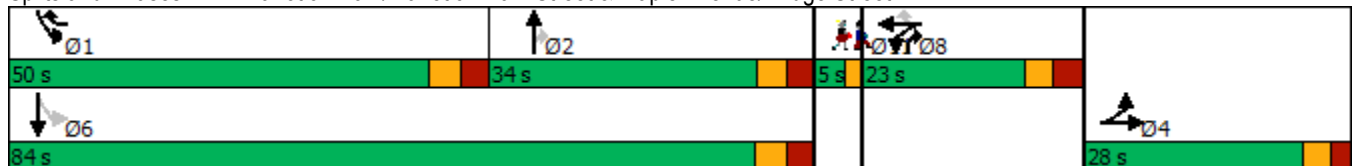


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	291	300		215	224	904		514	744	696	1010	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.29	0.40		0.98	0.79	0.70		0.41	0.30	0.72	0.41	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	132.2
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	35.1
Intersection LOS:	D
Intersection Capacity Utilization	87.5%
ICU Level of Service	E
Analysis Period (min)	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	133.8
50th %ile Actuated Cycle:	131.4
30th %ile Actuated Cycle:	129.2
10th %ile Actuated Cycle:	127.3
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	























Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street

















Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	190	159	566	0	190	200	448	253	118
Future Volume (vph)	76	102	5	190	159	566	0	190	200	448	253	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.992				0.850			0.850		0.952	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1736	0	1695	1767	1459	0	1784	1517	1544	1699	0
Flt Permitted	0.950			0.950						0.452		
Satd. Flow (perm)	1695	1736	0	1691	1767	1459	0	1784	1472	731	1699	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				398			222			27
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	84	113	6	211	177	629	0	211	222	498	281	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	119	0	211	177	629	0	211	222	498	412	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.7	14.7		19.8	19.8	52.8		38.8	58.5	77.9	77.9	
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.41		0.30	0.45	0.60	0.60	
v/c Ratio	0.44	0.60		0.82	0.66	0.76		0.40	0.28	0.77	0.40	
Control Delay	61.5	67.4		78.5	65.2	12.3		43.7	4.1	26.0	15.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.5	67.4		78.5	65.2	12.3		43.7	4.1	26.0	15.2	
LOS	E	E		E	E	B		D	A	C	B	
Approach Delay		65.0			35.3			23.4			21.1	
Approach LOS		E			D			C			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	16.5	16.5		21.8	21.8	41.0		30.7	21.8	41.0	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
50th %ile Green (s)	14.1	14.1		21.8	21.8	33.9		37.8	21.8	33.9	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	11.8	11.8		19.8	19.8	28.4		43.3	19.8	28.4	77.7	
30th %ile Term Code	Gap	Gap		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		14.4	14.4	20.0		51.7	14.4	20.0	77.7	
10th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	69	97		173	146	183		154	17	265	180	
Fuel Used(l)	6	9		19	14	22		16	7	30	21	
CO Emissions (g/hr)	112	167		349	262	414		294	136	566	395	
NOx Emissions (g/hr)	22	32		67	51	80		57	26	109	76	
VOC Emissions (g/hr)	26	38		80	60	95		68	31	130	91	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	20.8	29.5		52.7	43.0	29.0		44.3	0.0	74.1	50.7	
Queue Length 95th (m)	37.3	49.3		#95.1	71.5	43.4		79.9	15.7	120.7	83.9	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) Existing Traffic

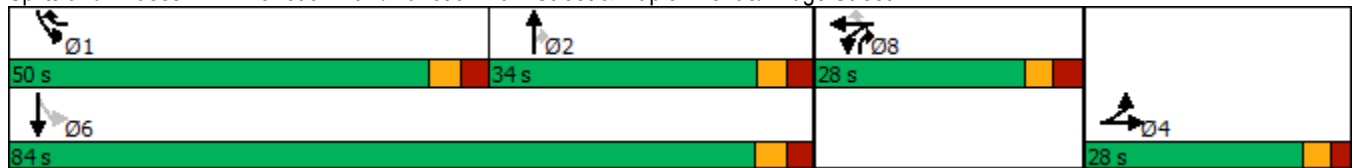


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	295	304		284	296	915		531	809	710	1026	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.28	0.39		0.74	0.60	0.69		0.40	0.27	0.70	0.40	

Intersection Summary

















Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	130.3
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	30.6
Intersection LOS:	C
Intersection Capacity Utilization	87.5%
ICU Level of Service	E
Analysis Period (min)	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	133.8
50th %ile Actuated Cycle:	131.4
30th %ile Actuated Cycle:	127.1
10th %ile Actuated Cycle:	119.9
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street























3: Colony Heights Road/Street 1 & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
Existing Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	395	27	7	476	0	24	0	4	0	0	0
Future Volume (Veh/h)	0	395	27	7	476	0	24	0	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
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)	0	439	30	8	529	0	27	0	4	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					221							
pX, platoon unblocked												
vC, conflicting volume	529			469			999	999	454	1003	1014	529
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529			469			999	999	454	1003	1014	529
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			87	100	99	100	100	100
cM capacity (veh/h)	1038			1033			215	242	606	218	237	550
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	469	537	31	0								
Volume Left	0	8	27	0								
Volume Right	30	0	4	0								
cSH	1038	1033	235	1700								
Volume to Capacity	0.00	0.01	0.13	0.00								
Queue Length 95th (m)	0.0	0.2	3.4	0.0								
Control Delay (s)	0.0	0.2	22.6	0.0								
Lane LOS		A	C	A								
Approach Delay (s)	0.0	0.2	22.6	0.0								
Approach LOS			C	A								
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			42.4%		ICU Level of Service				A			
Analysis Period (min)			15									

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
Existing Traffic

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	6	378	34	66	439	21	20	0	33	12	2	7	
Future Volume (Veh/h)	6	378	34	66	439	21	20	0	33	12	2	7	
Sign Control	Free			Free			Stop			Stop			
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)	7	420	38	73	488	23	22	0	37	13	2	8	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None			None									
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	511			458			1077	1091	420	1116	1118	500	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	511			458			1077	1091	420	1116	1118	500	
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5	
tC, 2 stage (s)													
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6	
p0 queue free %	99			93			88	100	94	92	99	98	
cM capacity (veh/h)	982			1103			179	199	631	164	192	521	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1						
Volume Total	7	420	38	73	511	59	23						
Volume Left	7	0	0	73	0	22	13						
Volume Right	0	0	38	0	23	37	8						
cSH	982	1700	1700	1103	1700	325	219						
Volume to Capacity	0.01	0.25	0.02	0.07	0.30	0.18	0.10						
Queue Length 95th (m)	0.2	0.0	0.0	1.6	0.0	5.0	2.6						
Control Delay (s)	8.7	0.0	0.0	8.5	0.0	18.5	23.3						
Lane LOS	A			A		C	C						
Approach Delay (s)	0.1			1.1		18.5	23.3						
Approach LOS						C	C						
<b>Intersection Summary</b>													
Average Delay			2.0										
Intersection Capacity Utilization			42.7%	ICU Level of Service		A							
Analysis Period (min)			15										



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	312	380	560	275	23
Future Volume (vph)	94	312	380	560	275	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	1731	0
Flt Permitted	0.950		0.455			
Satd. Flow (perm)	1695	1419	726	1717	1731	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		312			7	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	94	312	380	560	275	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	312	380	560	298	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.0	11.0	48.0	47.6	30.0	
Actuated g/C Ratio	0.16	0.16	0.69	0.68	0.43	
v/c Ratio	0.35	0.64	0.60	0.48	0.40	
Control Delay	29.8	10.2	9.2	7.3	16.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.8	10.2	9.2	7.3	16.7	
LOS	C	B	A	A	B	
Approach Delay	14.8			8.1	16.7	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	10.7	10.7	14.7	47.9	27.9	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	12.5	48.6	30.8	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	10.8	48.6	32.5	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	8.7	48.6	34.6	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	81	46	151	252	200	
Fuel Used(l)	7	10	19	28	21	
CO Emissions (g/hr)	122	185	358	524	385	
NOx Emissions (g/hr)	24	36	69	101	74	
VOC Emissions (g/hr)	28	43	83	121	89	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	11.4	0.0	16.1	27.0	24.6	
Queue Length 95th (m)	22.1	18.6	35.1	56.0	50.3	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	538	664	1167	746	



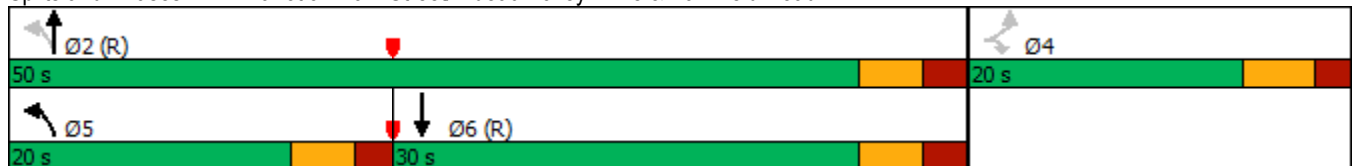


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.58	0.57	0.48	0.40	























Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	11.3
Intersection LOS:	B
Intersection Capacity Utilization	61.2%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

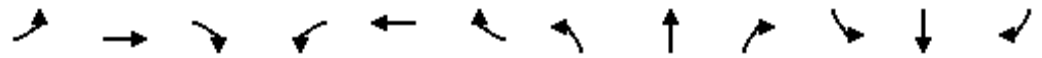


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Future Volume (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	0.99					0.98			0.98			
Frt		0.981				0.850			0.850		0.974	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1702	0
Flt Permitted	0.950			0.950						0.290		
Satd. Flow (perm)	1684	1694	0	1586	1655	1343	0	1784	1438	493	1702	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				479			335			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	152	50	492	0	407	335	348	235	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

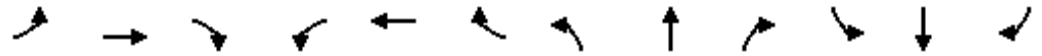
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	36.3		37.7	23.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		17.7%	17.7%	27.9%		29.0%	17.7%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		14.8	14.8	37.2		39.7	54.3	68.2	68.2	
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.35		0.37	0.51	0.64	0.64	
v/c Ratio	0.17	0.19		0.70	0.22	0.63		0.62	0.37	0.64	0.22	
Control Delay	50.2	45.8		62.5	44.8	5.2		36.9	3.1	16.1	9.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	50.2	45.8		62.5	44.8	5.2		36.9	3.1	16.1	9.7	
LOS	D	D		E	D	A		D	A	B	A	
Approach Delay		47.9			20.6			21.6			13.5	
Approach LOS		D			C			C			B	
90th %ile Green (s)	10.0	10.0		17.0	17.0	30.0		31.7	17.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	28.7		33.0	16.8	28.7	67.7	
70th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	24.4		37.3	16.8	24.4	67.7	
50th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		14.0	14.0	20.4		41.3	14.0	20.4	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	10.9		50.8	10.0	10.9	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	27	27		140	43	41		326	24	160	93	
Fuel Used(l)	2	2		13	4	15		32	12	20	12	
CO Emissions (g/hr)	36	38		244	67	278		589	221	371	223	
NOx Emissions (g/hr)	7	7		47	13	54		114	43	72	43	
VOC Emissions (g/hr)	8	9		56	15	64		136	51	86	51	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		31.8	9.8	1.2		76.8	0.0	36.2	20.9	
Queue Length 95th (m)	14.5	15.1		#53.6	21.0	13.4		#130.5	14.3	54.3	33.4	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak 2028 Background Traffic

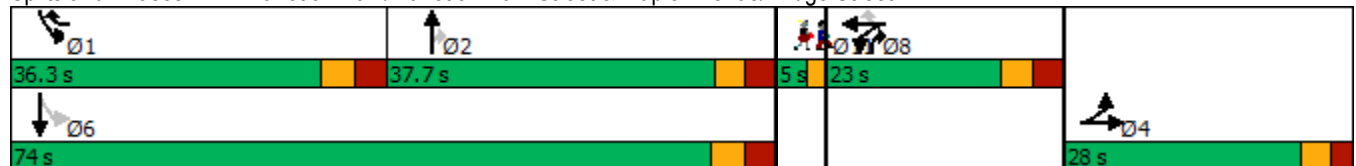


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	361	364		250	261	847		659	920	629	1085	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.07	0.09		0.61	0.19	0.58		0.62	0.36	0.55	0.22	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	107.4
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	19.7
Intersection LOS:	B
Intersection Capacity Utilization	78.1%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	112.5
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	109.5
10th %ile Actuated Cycle:	90.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street

























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Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

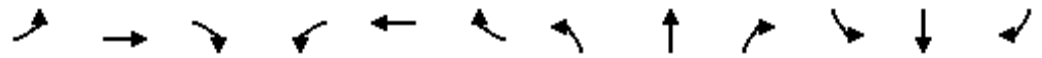
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2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Future Volume (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	1.00					0.98			0.98			
Frt		0.981				0.850			0.850		0.974	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1702	0
Flt Permitted	0.950			0.950						0.284		
Satd. Flow (perm)	1687	1694	0	1586	1655	1345	0	1784	1440	483	1702	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				445			335			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	152	50	492	0	407	335	348	235	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	36.3		37.7	28.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		21.5%	21.5%	27.9%		29.0%	21.5%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		21.8	21.8	30.0		31.7	21.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		16.3	16.3	38.8		39.6	55.7	68.4	68.4	
Actuated g/C Ratio	0.09	0.09		0.15	0.15	0.36		0.36	0.51	0.63	0.63	
v/c Ratio	0.17	0.19		0.64	0.20	0.64		0.63	0.37	0.65	0.22	
Control Delay	51.9	47.5		57.3	43.3	5.9		38.7	2.9	17.5	10.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	51.9	47.5		57.3	43.3	5.9		38.7	2.9	17.5	10.5	
LOS	D	D		E	D	A		D	A	B	B	
Approach Delay		49.5			19.9			22.6			14.7	
Approach LOS		D			B			C			B	
90th %ile Green (s)	10.0	10.0		22.0	22.0	30.0		31.7	22.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		20.5	20.5	30.0		31.7	20.5	30.0	67.7	
70th %ile Term Code	Min	Min		Gap	Gap	Max		MaxR	Gap	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	24.8		36.9	16.8	24.8	67.7	
50th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		13.3	13.3	20.1		41.6	13.3	20.1	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	10.8		50.9	10.0	10.8	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	27	27		137	42	55		325	22	165	96	
Fuel Used(l)	2	2		12	4	15		32	12	20	12	
CO Emissions (g/hr)	37	39		232	66	287		599	219	380	227	
NOx Emissions (g/hr)	7	8		45	13	55		116	42	73	44	
VOC Emissions (g/hr)	8	9		54	15	66		138	51	88	52	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		31.8	9.8	4.5		77.2	0.0	36.2	20.9	
Queue Length 95th (m)	15.0	15.7		52.9	20.8	16.6		#139.7	13.9	60.6	37.5	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) 2028 Background Traffic

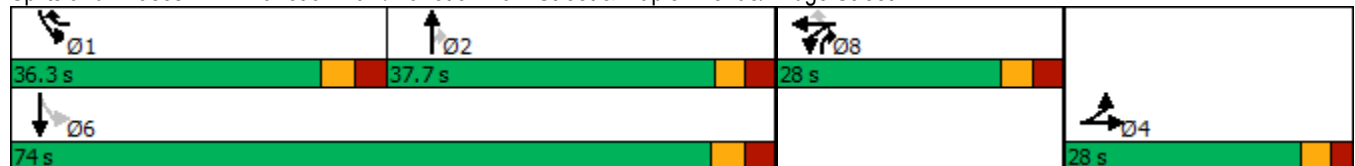


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	356	359		320	334	835		648	965	617	1071	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.47	0.15	0.59		0.63	0.35	0.56	0.22	

**Intersection Summary**

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	109
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	20.2
Intersection LOS:	C
Intersection Capacity Utilization	78.1%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	117.5
70th %ile Actuated Cycle:	116
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	108.8
10th %ile Actuated Cycle:	90.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street

























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	348	14	6	358	23	18
Future Volume (Veh/h)	348	14	6	358	23	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	348	14	6	358	23	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)				221		
pX, platoon unblocked						
vC, conflicting volume				362	725	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				362	725	355
tC, single (s)				4.3	6.4	6.3
tC, 2 stage (s)						
tF (s)				2.4	3.5	3.4
p0 queue free %				99	94	97
cM capacity (veh/h)				1118	387	669
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	362	364	41			
Volume Left	0	6	23			
Volume Right	14	0	18			
cSH	1700	1118	475			
Volume to Capacity	0.21	0.01	0.09			
Queue Length 95th (m)	0.0	0.1	2.1			
Control Delay (s)	0.0	0.2	13.3			
Lane LOS	A		B			
Approach Delay (s)	0.0	0.2	13.3			
Approach LOS	B					
Intersection Summary						
Average Delay	0.8					
Intersection Capacity Utilization	35.0%			ICU Level of Service	A	
Analysis Period (min)	15					

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
AM Peak

4386 Rideau Valley Drive  
2028 Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	302	18	19	391	8	41	1	58	24	3	4
Future Volume (Veh/h)	4	302	18	19	391	8	41	1	58	24	3	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	4	302	18	19	391	8	41	1	58	24	3	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	399			320			744	747	302	802	761	395
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	399			320			744	747	302	802	761	395
tC, single (s)	4.3			4.3			7.1	7.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.3			3.5	4.9	3.3	3.5	4.3	3.3
p0 queue free %	100			98			87	100	92	91	99	99
cM capacity (veh/h)	1045			1165			321	242	738	271	295	654
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	4	302	18	19	399	100	31					
Volume Left	4	0	0	19	0	41	24					
Volume Right	0	0	18	0	8	58	4					
cSH	1045	1700	1700	1165	1700	475	296					
Volume to Capacity	0.00	0.18	0.01	0.02	0.23	0.21	0.10					
Queue Length 95th (m)	0.1	0.0	0.0	0.4	0.0	6.0	2.6					
Control Delay (s)	8.5	0.0	0.0	8.1	0.0	14.6	18.6					
Lane LOS	A			A		B	C					
Approach Delay (s)	0.1			0.4		14.6	18.6					
Approach LOS						B	C					
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			35.0%		ICU Level of Service		A					
Analysis Period (min)			15									



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	439	521	516	701	63
Future Volume (vph)	43	439	521	516	701	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1763	0
Flt Permitted	0.950		0.090			
Satd. Flow (perm)	1647	1369	153	1784	1763	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		439			6	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	43	439	521	516	701	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	439	521	516	764	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.4	11.4	67.6	67.2	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.44	
v/c Ratio	0.21	0.79	1.08	0.39	0.99	
Control Delay	37.0	15.2	91.3	5.3	56.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	15.2	91.3	5.3	56.4	
LOS	D	B	F	A	E	
Approach Delay	17.1			48.5	56.4	
Approach LOS	B			D	E	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.6	12.6	21.4	66.0	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	39	54	343	170	639	
Fuel Used(l)	3	15	62	24	79	
CO Emissions (g/hr)	61	284	1160	442	1473	
NOx Emissions (g/hr)	12	55	224	85	284	
VOC Emissions (g/hr)	14	66	267	102	340	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	6.9	0.0	~82.7	23.7	126.2	
Queue Length 95th (m)	15.7	#31.2	#157.2	45.5	#204.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	586	482	1332	773	

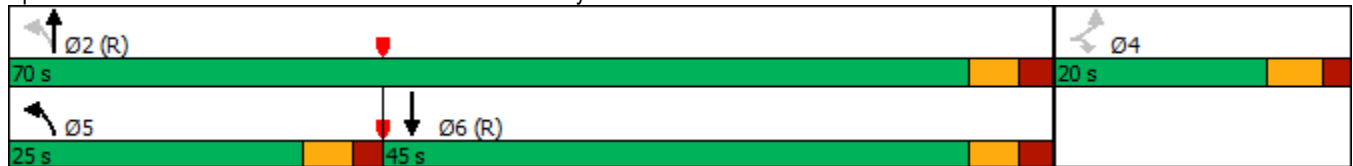


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.75	1.08	0.39	0.99	























Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.08
Intersection Signal Delay:	44.5
Intersection LOS:	D
Intersection Capacity Utilization	95.7%
ICU Level of Service	F
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Future Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Fr <sub>t</sub>		0.993				0.850			0.850		0.971	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1733	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.271		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1468	439	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				379			267			14
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	617	0	324	267	488	618	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0



Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	50.0		34.0	23.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		16.4%	16.4%	35.7%		24.3%	16.4%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.0	14.0		16.8	16.8	54.9		33.6	50.2	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.43		0.27	0.40	0.62	0.62	
v/c Ratio	0.41	0.55		1.35	0.68	0.73		0.68	0.36	0.81	0.58	
Control Delay	58.5	63.0		224.2	68.2	11.5		52.4	4.5	29.9	17.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	58.5	63.0		224.2	68.2	11.5		52.4	4.5	29.9	17.4	
LOS	E	E		F	E	B		D	A	C	B	
Approach Delay		61.1			79.6			30.8			23.0	
Approach LOS		E			E			C			C	
90th %ile Green (s)	22.0	22.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.0	15.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	12.8	12.8		16.8	16.8	42.2		29.5	16.8	42.2	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	10.8	10.8		16.8	16.8	34.6		37.1	16.8	34.6	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		16.8	16.8	27.1		44.6	16.8	27.1	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	68	97		229	144	215		275	22	294	354	
Fuel Used(l)	6	9		63	14	24		29	10	35	38	
CO Emissions (g/hr)	108	160		1175	268	448		547	182	646	700	
NOx Emissions (g/hr)	21	31		227	52	87		106	35	125	135	
VOC Emissions (g/hr)	25	37		271	62	103		126	42	149	161	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	17.9	25.1		~96.8	37.7	23.0		74.9	0.0	67.8	81.8	
Queue Length 95th (m)	32.9	43.4		#165.1	#70.7	46.5		#133.8	17.2	127.2	137.4	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak 2028 Background Traffic

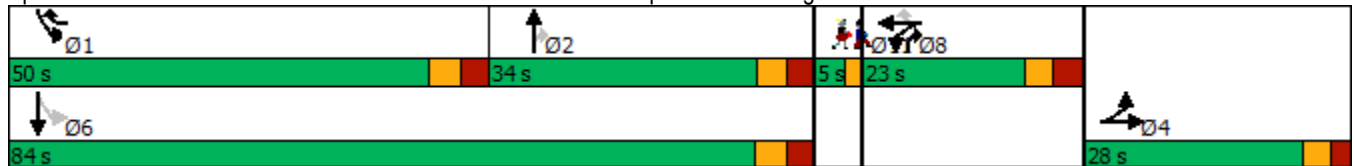


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	304	313		225	235	895		474	750	652	1071	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.25	0.34		1.35	0.68	0.69		0.68	0.36	0.75	0.58	

Intersection Summary























Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	126.4
Natural Cycle:	140
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.35
Intersection Signal Delay:	47.5
Intersection LOS:	D
Intersection Capacity Utilization	96.4%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	134.3
70th %ile Actuated Cycle:	127.3
50th %ile Actuated Cycle:	125.1
30th %ile Actuated Cycle:	123.1
10th %ile Actuated Cycle:	122.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Future Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.971	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1733	0
Flt Permitted	0.950			0.950						0.243		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	394	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				337			267			14
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	617	0	324	267	488	618	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.8	21.8	60.8		32.6	54.3	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.46		0.25	0.41	0.59	0.59	
v/c Ratio	0.42	0.57		1.08	0.54	0.72		0.73	0.35	0.85	0.60	
Control Delay	61.4	66.3		127.5	59.0	11.9		58.3	4.2	37.6	20.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		127.5	59.0	11.9		58.3	4.2	37.6	20.3	
LOS	E	E		F	E	B		E	A	D	C	
Approach Delay		64.3			51.3			33.9			28.0	
Approach LOS		E			D			C			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	36.5		35.2	21.8	36.5	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		21.8	21.8	28.5		43.2	21.8	28.5	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	69	96		250	143	236		277	21	315	378	
Fuel Used(l)	6	9		41	13	25		31	10	38	40	
CO Emissions (g/hr)	112	165		761	247	457		575	181	708	735	
NOx Emissions (g/hr)	22	32		147	48	88		111	35	137	142	
VOC Emissions (g/hr)	26	38		176	57	105		133	42	163	170	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		-86.3	37.9	27.8		80.7	0.0	80.4	92.6	
Queue Length 95th (m)	34.2	45.2		#155.1	64.7	51.4		#142.1	17.0	#152.4	149.6	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic

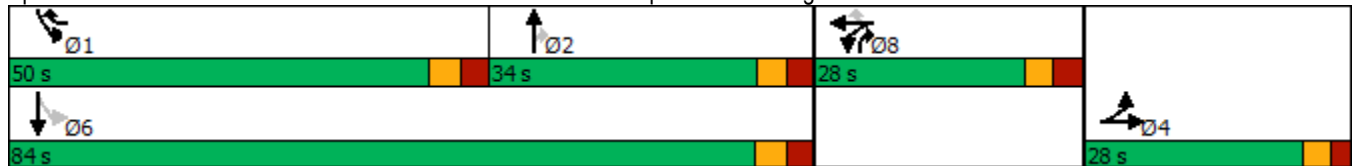


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	894		442	771	615	1029	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		1.08	0.54	0.69		0.73	0.35	0.79	0.60	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.08
Intersection Signal Delay:	39.9
Intersection LOS:	D
Intersection Capacity Utilization:	96.4%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	127.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	431	27	7	519	24	4
Future Volume (Veh/h)	431	27	7	519	24	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	431	27	7	519	24	4
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	221					
pX, platoon unblocked						
vC, conflicting volume			458	978		444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			458	978		444
tC, single (s)			4.2	6.5		6.2
tC, 2 stage (s)						
tF (s)			2.3	3.6		3.3
p0 queue free %			99	91		99
cM capacity (veh/h)			1043	269		614
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	458	526	28			
Volume Left	0	7	24			
Volume Right	27	0	4			
cSH	1700	1043	293			
Volume to Capacity	0.27	0.01	0.10			
Queue Length 95th (m)	0.0	0.2	2.4			
Control Delay (s)	0.0	0.2	18.6			
Lane LOS	A		C			
Approach Delay (s)	0.0	0.2	18.6			
Approach LOS	A		C			
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			44.7%		ICU Level of Service A	
Analysis Period (min)			15			

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
2028 Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	412	34	66	479	21	20	0	33	12	2	7
Future Volume (Veh/h)	6	412	34	66	479	21	20	0	33	12	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	6	412	34	66	479	21	20	0	33	12	2	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	500			446			1043	1056	412	1078	1080	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			446			1043	1056	412	1078	1080	490
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	99			94			90	100	95	93	99	99
cM capacity (veh/h)	991			1114			191	211	638	177	204	528
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	6	412	34	66	500	53	21					
Volume Left	6	0	0	66	0	20	12					
Volume Right	0	0	34	0	21	33	7					
cSH	991	1700	1700	1114	1700	338	231					
Volume to Capacity	0.01	0.24	0.02	0.06	0.29	0.16	0.09					
Queue Length 95th (m)	0.1	0.0	0.0	1.4	0.0	4.2	2.3					
Control Delay (s)	8.7	0.0	0.0	8.4	0.0	17.6	22.1					
Lane LOS	A			A		C	C					
Approach Delay (s)	0.1			1.0		17.6	22.1					
Approach LOS						C	C					
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			44.9%		ICU Level of Service		A					
Analysis Period (min)			15									

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak (Optimized)

4386 Rideau Valley Drive  
2028 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	439	521	516	701	63
Future Volume (vph)	43	439	521	516	701	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1763	0
Flt Permitted	0.950		0.089			
Satd. Flow (perm)	1647	1369	151	1784	1763	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		439			5	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	43	439	521	516	701	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	439	521	516	764	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	24.4	24.4	39.0	105.6	66.6	
Total Split (%)	18.8%	18.8%	30.0%	81.2%	51.2%	
Maximum Green (s)	18.7	18.7	33.7	99.9	60.9	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	12.5	12.5	106.5	106.1	60.9	
Actuated g/C Ratio	0.10	0.10	0.82	0.82	0.47	
v/c Ratio	0.27	0.83	0.91	0.35	0.92	
Control Delay	57.6	19.2	53.6	4.1	50.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	57.6	19.2	53.6	4.1	50.2	
LOS	E	B	D	A	D	
Approach Delay	22.7			29.0	50.2	
Approach LOS	C			C	D	
90th %ile Green (s)	18.7	18.7	33.7	99.9	60.9	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	13.7	13.7	38.7	104.9	60.9	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	42.4	108.6	60.9	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	42.4	108.6	60.9	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	42.4	108.6	60.9	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	39	50	358	125	658	
Fuel Used(l)	4	17	48	22	76	
CO Emissions (g/hr)	74	307	884	415	1413	
NOx Emissions (g/hr)	14	59	171	80	273	
VOC Emissions (g/hr)	17	71	204	96	326	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	10.6	0.0	101.1	23.7	178.4	
Queue Length 95th (m)	21.2	35.3	#192.3	51.0	#260.0	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	236	572	573	1456	828	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.77	0.91	0.35	0.92	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	34.7
Intersection LOS:	C
Intersection Capacity Utilization	95.7%
ICU Level of Service	F
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



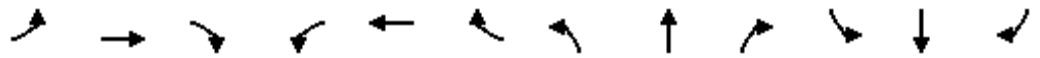
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Future Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.971	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1733	0
Flt Permitted	0.950			0.950						0.169		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1468	274	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				372			267			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	617	0	324	267	488	618	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		26.2	26.2	11.3		32.0	26.2	11.3	32.3	
Total Split (s)	27.3	27.3		31.0	31.0	44.7		32.0	31.0	44.7	76.7	
Total Split (%)	19.5%	19.5%		22.1%	22.1%	31.9%		22.9%	22.1%	31.9%	54.8%	
Maximum Green (s)	22.0	22.0		24.8	24.8	38.4		26.0	24.8	38.4	70.4	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.1	14.1		24.8	24.8	63.2		26.0	50.7	70.5	70.5	
Actuated g/C Ratio	0.11	0.11		0.19	0.19	0.50		0.20	0.40	0.55	0.55	
v/c Ratio	0.41	0.55		0.92	0.46	0.68		0.89	0.35	0.91	0.64	
Control Delay	58.8	64.0		83.1	51.2	8.9		75.8	4.0	53.0	23.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	58.8	64.0		83.1	51.2	8.9		75.8	4.0	53.0	23.7	
LOS	E	E		F	D	A		E	A	D	C	
Approach Delay		61.8			36.0			43.4			36.6	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		24.8	24.8	38.4		26.0	24.8	38.4	70.4	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.1	15.1		24.8	24.8	38.4		26.0	24.8	38.4	70.4	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.0	13.0		24.8	24.8	38.4		26.0	24.8	38.4	70.4	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.9	10.9		24.8	24.8	38.4		26.0	24.8	38.4	70.4	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		24.8	24.8	38.4		26.0	24.8	38.4	70.4	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	68	97		264	139	190		284	20	352	415	
Fuel Used(l)	6	9		31	12	22		35	10	45	42	
CO Emissions (g/hr)	109	161		573	228	418		660	180	831	780	
NOx Emissions (g/hr)	21	31		111	44	81		127	35	160	151	
VOC Emissions (g/hr)	25	37		132	53	96		152	41	192	180	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.0	25.5		74.2	35.1	20.9		78.6	0.0	95.9	98.5	
Queue Length 95th (m)	33.1	44.0		#138.5	60.8	42.5		#142.3	16.0	#179.3	159.2	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	



Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Optimized) 2028 Background Traffic

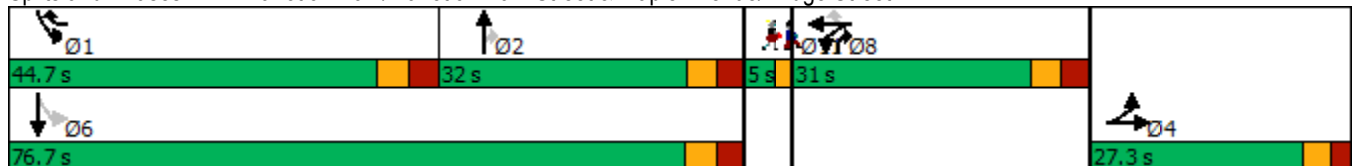


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	293	301		330	344	911		365	754	535	965	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		0.92	0.46	0.68		0.89	0.35	0.91	0.64	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	127.2
Natural Cycle:	140
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	39.3
Intersection LOS:	D
Intersection Capacity Utilization	96.4%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	135
70th %ile Actuated Cycle:	128.1
50th %ile Actuated Cycle:	126
30th %ile Actuated Cycle:	123.9
10th %ile Actuated Cycle:	123
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (Optimized - no pedestrian actuation)

4386 Rideau Valley Drive  
 2028 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	439	521	516	701	63
Future Volume (vph)	43	439	521	516	701	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1763	0
Flt Permitted	0.950		0.090			
Satd. Flow (perm)	1647	1369	153	1784	1763	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		439			6	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	43	439	521	516	701	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	439	521	516	764	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (Optimized - no pedestrian actuation)

4386 Rideau Valley Drive  
 2028 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.4	11.4	67.6	67.2	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.44	
v/c Ratio	0.21	0.79	1.08	0.39	0.99	
Control Delay	37.0	15.2	91.3	5.3	56.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	15.2	91.3	5.3	56.4	
LOS	D	B	F	A	E	
Approach Delay	17.1			48.5	56.4	
Approach LOS	B			D	E	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.6	12.6	21.4	66.0	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	39	54	343	170	639	
Fuel Used(l)	3	15	62	24	79	
CO Emissions (g/hr)	61	284	1160	442	1473	
NOx Emissions (g/hr)	12	55	224	85	284	
VOC Emissions (g/hr)	14	66	267	102	340	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	6.9	0.0	~82.7	23.7	126.2	
Queue Length 95th (m)	15.7	#31.2	#157.2	45.5	#204.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	586	482	1332	773	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.75	1.08	0.39	0.99	























**Intersection Summary**

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.08
Intersection Signal Delay:	44.5
Intersection LOS:	D
Intersection Capacity Utilization	95.7%
ICU Level of Service	F
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized - no pedestrian actuation) 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Future Volume (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.971	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1733	0
Flt Permitted	0.950			0.950						0.178		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	288	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				327			266			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	617	0	324	267	488	500	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	617	0	324	267	488	618	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized - no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	27.3	27.3		33.0	33.0	46.5		33.2	33.0	46.5	79.7	
Total Split (%)	19.5%	19.5%		23.6%	23.6%	33.2%		23.7%	23.6%	33.2%	56.9%	
Maximum Green (s)	22.0	22.0		26.8	26.8	40.2		27.2	26.8	40.2	73.4	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		26.0	26.0	65.7		27.7	53.5	73.5	73.5	
Actuated g/C Ratio	0.11	0.11		0.20	0.20	0.50		0.21	0.41	0.56	0.56	
v/c Ratio	0.42	0.57		0.90	0.46	0.69		0.86	0.35	0.90	0.64	
Control Delay	61.7	67.2		82.3	52.1	10.3		73.7	4.0	51.8	24.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.7	67.2		82.3	52.1	10.3		73.7	4.0	51.8	24.0	
LOS	E	E		F	D	B		E	A	D	C	
Approach Delay		64.9			36.7			42.2			36.3	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		26.8	26.8	40.2		27.2	26.8	40.2	73.4	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.5	15.5		26.8	26.8	40.2		27.2	26.8	40.2	73.4	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.3	13.3		26.8	26.8	40.2		27.2	26.8	40.2	73.4	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.1	11.1		26.8	26.8	40.2		27.2	26.8	40.2	73.4	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		23.0	23.0	38.1		29.3	23.0	38.1	73.4	
10th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	69	97		267	138	224		285	21	348	411	
Fuel Used(l)	6	9		31	12	24		35	10	44	42	
CO Emissions (g/hr)	112	166		570	230	440		650	180	821	781	
NOx Emissions (g/hr)	22	32		110	44	85		125	35	159	151	
VOC Emissions (g/hr)	26	38		131	53	102		150	42	189	180	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.8	26.7		76.7	36.3	28.4		82.1	0.1	98.7	102.9	
Queue Length 95th (m)	34.4	45.4		#138.3	62.3	51.3		#145.7	16.2	#181.2	163.4	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Optimized - no pedestrian actuation) 2028 Background Traffic

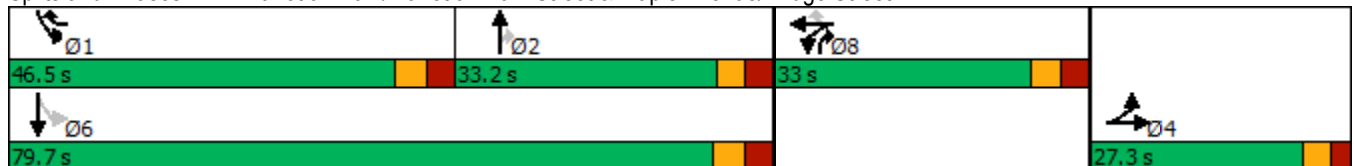


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	283	291		345	360	896		375	773	544	973	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.27	0.37		0.88	0.44	0.69		0.86	0.35	0.90	0.64	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	39.4
Intersection LOS:	D
Intersection Capacity Utilization:	96.4%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	140
70th %ile Actuated Cycle:	133.5
50th %ile Actuated Cycle:	131.3
30th %ile Actuated Cycle:	129.1
10th %ile Actuated Cycle:	124.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (no pedestrian actuation)

4386 Rideau Valley Drive  
 2028 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	439	450	516	630	63
Future Volume (vph)	43	439	450	516	630	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.988	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1761	0
Flt Permitted	0.950		0.122			
Satd. Flow (perm)	1647	1369	208	1784	1761	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		439			7	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	43	439	450	516	630	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	439	450	516	693	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.4	11.4	67.6	67.2	39.5	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.44	
v/c Ratio	0.21	0.79	0.89	0.39	0.89	
Control Delay	37.0	15.2	42.1	5.3	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	15.2	42.1	5.3	39.5	
LOS	D	B	D	A	D	
Approach Delay	17.1			22.4	39.5	
Approach LOS	B			C	D	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.6	12.6	21.4	66.0	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	23.1	68.6	40.2	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	39	54	267	170	580	
Fuel Used(l)	3	15	36	24	63	
CO Emissions (g/hr)	61	284	672	442	1169	
NOx Emissions (g/hr)	12	55	130	85	226	
VOC Emissions (g/hr)	14	66	155	102	270	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	6.9	0.0	51.6	23.7	106.6	
Queue Length 95th (m)	15.7	#31.2	#117.8	45.5	#175.8	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	586	507	1332	776	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.75	0.89	0.39	0.89	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 26.8 Intersection LOS: C  
 Intersection Capacity Utilization 87.6% ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

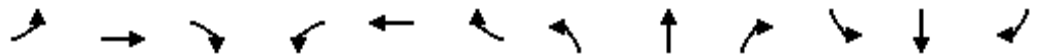


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	253	159	617	0	324	267	488	500	118
Future Volume (vph)	76	102	5	253	159	617	0	324	267	488	500	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.971	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1733	0
Flt Permitted	0.950			0.950						0.243		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	394	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				337			267			14
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	253	159	617	0	324	267	488	500	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	253	159	617	0	324	267	488	618	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic



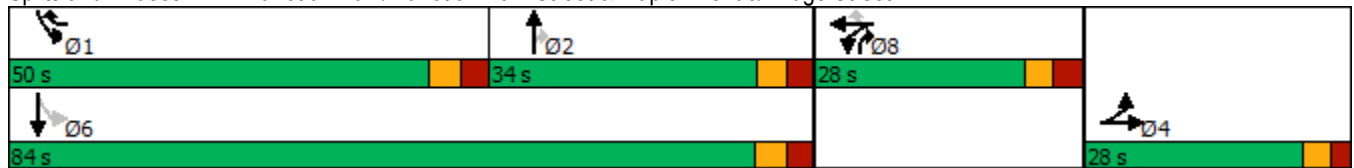
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.8	21.8	60.8		32.7	54.2	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.46		0.25	0.41	0.59	0.59	
v/c Ratio	0.42	0.57		0.90	0.54	0.72		0.73	0.35	0.85	0.60	
Control Delay	61.4	66.3		88.0	59.0	11.9		58.3	4.2	37.6	20.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		88.0	59.0	11.9		58.3	4.2	37.6	20.3	
LOS	E	E		F	E	B		E	A	D	C	
Approach Delay		64.3			37.9			33.9			27.9	
Approach LOS		E			D			C			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	36.5		35.2	21.8	36.5	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		21.6	21.6	28.5		43.2	21.6	28.5	77.7	
10th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	69	96		220	143	236		277	21	315	378	
Fuel Used(l)	6	9		27	13	25		31	10	38	40	
CO Emissions (g/hr)	112	165		496	247	457		575	181	708	735	
NOx Emissions (g/hr)	22	32		96	48	88		111	35	137	142	
VOC Emissions (g/hr)	26	38		114	57	106		133	42	163	170	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		64.5	37.9	27.8		80.7	0.0	80.4	92.6	
Queue Length 95th (m)	34.2	45.2		#122.5	64.7	51.4		#142.1	17.0	#152.4	149.6	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	894		442	771	615	1030	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		0.90	0.54	0.69		0.73	0.35	0.79	0.60	

Intersection Summary	
Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	120
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	35.0
Intersection LOS:	C
Intersection Capacity Utilization:	93.5%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	127.1
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	312	380	560	275	23
Future Volume (vph)	94	312	380	560	275	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.988	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	3283	0
Flt Permitted	0.950		0.482			
Satd. Flow (perm)	1695	1419	770	1717	3283	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		312			12	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	96.5	
Travel Time (s)	13.2			26.2	6.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	94	312	380	560	275	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	312	380	560	298	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			7.4	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	22.0	22.0	23.0	48.0	25.0	
Total Split (%)	31.4%	31.4%	32.9%	68.6%	35.7%	
Maximum Green (s)	16.3	16.3	17.7	42.3	19.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.2	11.2	47.8	47.4	29.0	
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.41	
v/c Ratio	0.35	0.64	0.57	0.48	0.22	
Control Delay	29.3	10.0	8.8	7.5	14.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.3	10.0	8.8	7.5	14.7	
LOS	C	B	A	A	B	
Approach Delay	14.5			8.1	14.7	
Approach LOS	B			A	B	
90th %ile Green (s)	15.3	15.3	18.7	43.3	19.3	
90th %ile Term Code	Gap	Gap	Max	Coord	Coord	
70th %ile Green (s)	10.7	10.7	14.7	47.9	27.9	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	12.5	48.6	30.8	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	10.8	48.6	32.5	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	8.7	48.6	34.6	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	80	45	153	256	182	
Fuel Used(l)	7	10	19	28	20	
CO Emissions (g/hr)	121	183	357	528	368	
NOx Emissions (g/hr)	23	35	69	102	71	
VOC Emissions (g/hr)	28	42	82	122	85	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	11.4	0.0	16.1	27.0	11.5	
Queue Length 95th (m)	21.6	18.1	36.9	58.9	25.2	
Internal Link Dist (m)	196.6			340.3	72.5	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	394	569	716	1162	1367	

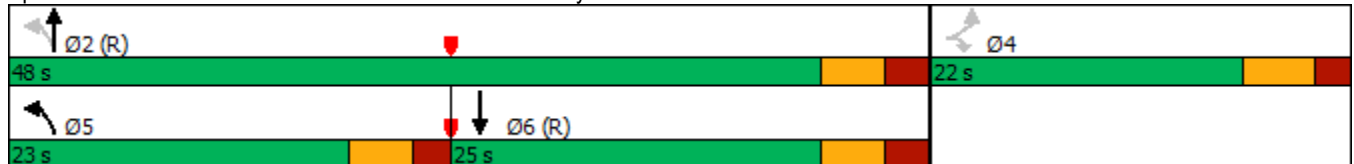


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.55	0.53	0.48	0.22	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization	53.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	439	521	516	701	63
Future Volume (vph)	43	439	521	516	701	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.988	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	3347	0
Flt Permitted	0.950		0.222			
Satd. Flow (perm)	1647	1369	378	1784	3347	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		439			10	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	96.5	
Travel Time (s)	13.2			26.2	6.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	43	439	521	516	701	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	439	521	516	764	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			7.4	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	24.2	24.2	35.5	65.8	30.3	
Total Split (%)	26.9%	26.9%	39.4%	73.1%	33.7%	
Maximum Green (s)	18.5	18.5	30.2	60.1	24.6	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	12.1	12.1	66.9	66.5	34.7	
Actuated g/C Ratio	0.13	0.13	0.74	0.74	0.39	
v/c Ratio	0.19	0.78	0.81	0.39	0.59	
Control Delay	35.3	14.0	22.6	5.8	26.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.3	14.0	22.6	5.8	26.2	
LOS	D	B	C	A	C	
Approach Delay	15.9			14.3	26.2	
Approach LOS	B			B	C	
90th %ile Green (s)	18.5	18.5	30.2	60.1	24.6	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.0	12.0	33.2	66.6	28.1	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	28.5	68.6	34.8	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	23.8	68.6	39.5	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	16.8	68.6	46.5	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	39	59	273	180	582	
Fuel Used(l)	3	15	33	24	59	
CO Emissions (g/hr)	60	280	618	450	1102	
NOx Emissions (g/hr)	12	54	119	87	213	
VOC Emissions (g/hr)	14	65	143	104	254	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	6.9	0.0	42.4	23.7	53.4	
Queue Length 95th (m)	14.7	27.3	#96.3	55.1	#92.3	
Internal Link Dist (m)	196.6			340.3	72.5	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	338	630	704	1318	1296	

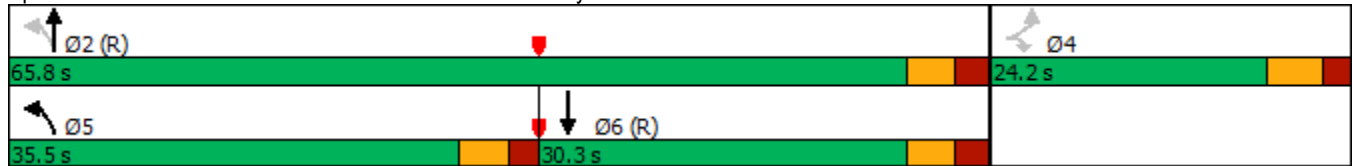


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.70	0.74	0.39	0.59	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 18.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 75.3%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

**Splits and Phases:** 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2028 PHF Flow Profile (veh)
2028 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
AM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	3.50	1	60	40.00	4.00	1
2	Bankfield Road	90	0	3.50	1	60	40.00	4.00	1
3	Manotick Main Street	180	0	3.50	1	60	40.00	4.00	1

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0

## Traffic Flow Data (veh/hr)

### 2028 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	275	23	0	5.0	1.00	1.000
2	Bankfield Road	0	94	312	0	5.0	1.00	1.000
3	Manotick Main Street	0	380	560	0	5.0	1.00	1.000



## Operational Results

### Geometry for Target Input

#### Geometry Options for 2028 AM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
1	1	3	2	3.50	0.00

#### Geometry Options for 2028 AM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
1	1	3	2	3.50	0.00

#### Geometry Options for 2028 AM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
1	1	3	1	4.26	100.00
1	1	3	2	4.30	35.38
1	1	3	2	4.40	13.95
1	1	3	2	4.50	9.40
1	1	3	1	4.60	7.42
1	1	3	2	4.70	6.31
1	1	3	2	4.80	5.60
1	1	3	2	4.90	5.11
1	1	3	1	5.00	4.75
1	1	3	2	5.10	4.47
1	1	3	2	5.20	4.25
1	1	3	2	5.30	4.08
1	1	3	1	5.40	3.93
1	1	3	2	5.50	3.81
1	1	3	2	5.60	3.70
1	1	3	2	5.70	3.61
1	1	3	1	5.80	3.53
1	1	3	2	5.90	3.46

## 2028 AM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	298		376		648	590		0.5049
2	Bankfield Road	None	406		275		399	639		0.6349
3	Manotick Main Street	None	940		94		587	929		1.0117

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	11.07		11.07	2.37		B		B
2	Bankfield Road	None	13.35		13.35	3.84		B		B
3	Manotick Main Street	None	60.00		60.00	37.16		F		F

## 2028 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	298		376		648	590		0.5049
2	Bankfield Road	None	406		275		399	639		0.6349
3	Manotick Main Street	None	940		94		587	929		1.0117

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	11.13		11.13	2.37		B		B
2	Bankfield Road	None	13.45		13.45	3.84		B		B
3	Manotick Main Street	None	68.61		68.61	37.16		F		F

## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2028 PHF Flow Profile (veh)
2028 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	3.50	1	60	40.00	4.00	1
2	Bankfield Road	90	0	3.50	1	60	40.00	4.00	1
3	Manotick Main Street	180	0	3.50	1	60	40.00	4.00	1

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0

## Traffic Flow Data (veh/hr)

### 2028 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	701	63	0	5.0	1.00	1.000
2	Bankfield Road	0	43	439	0	5.0	1.00	1.000
3	Manotick Main Street	0	521	516	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2028 PM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	4.51	100.00
1	1	1	1	4.60	29.49
1	1	1	1	4.70	17.37
1	1	1	1	4.80	12.88
1	1	1	1	4.90	10.55
1	1	1	1	5.00	9.12
1	1	1	1	5.10	8.15
1	1	1	1	5.20	7.45
1	1	1	1	5.30	6.93
1	1	1	1	5.40	6.51
1	1	1	1	5.50	6.18
1	1	1	1	5.60	5.91
1	1	1	1	5.70	5.68
1	1	1	1	5.80	5.49
1	1	1	1	5.90	5.32

#### Geometry Options for 2028 PM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	3.79	100.00
1	1	1	1	3.80	22.34
1	1	1	1	3.90	3.28
1	1	1	1	4.00	2.17
1	1	1	1	4.10	1.77
1	1	1	1	4.20	1.56
1	1	1	1	4.30	1.44
1	1	1	1	4.40	1.35
1	1	1	1	4.50	1.29
1	1	1	1	4.60	1.25
1	1	1	1	4.70	1.21

**Geometry Options for 2028 PM Peak**

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	4.80	1.18
1	1	1	1	4.90	1.16
1	1	1	1	5.00	1.14
1	1	1	1	5.10	1.12
1	1	1	1	5.20	1.11
1	1	1	1	5.30	1.10
1	1	1	1	5.40	1.08
1	1	1	1	5.50	1.08
1	1	1	1	5.60	1.07
1	1	1	1	5.70	1.06
1	1	1	1	5.80	1.05
1	1	1	1	5.90	1.05

**Geometry Options for 2028 PM Peak**

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	4.51	100.00
1	1	1	1	4.60	27.89
1	1	1	1	4.70	16.80
1	1	1	1	4.80	12.57
1	1	1	1	4.90	10.34
1	1	1	1	5.00	8.96
1	1	1	1	5.10	8.02
1	1	1	1	5.20	7.35
1	1	1	1	5.30	6.83
1	1	1	1	5.40	6.43
1	1	1	1	5.50	6.11
1	1	1	1	5.60	5.84
1	1	1	1	5.70	5.62
1	1	1	1	5.80	5.43
1	1	1	1	5.90	5.27



## 2028 PM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	764		512		550	764		0.9994	
2	Bankfield Road	None	482		696		575	501		0.9621	
3	Manotick Main Street	None	1037		43		1131	1019		1.0174	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	60.00		60.00	30.48		F		F
2	Bankfield Road	None	60.00		60.00	20.06		F		F
3	Manotick Main Street	None	60.00		60.00	41.15		F		F

## 2028 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	764		512		550	764		0.9994
2	Bankfield Road	None	482		698		575	500		0.9648
3	Manotick Main Street	None	1037		43		1136	1019		1.0175

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	68.11		68.11	30.48		F		F
2	Bankfield Road	None	67.55		67.55	20.06		F		F
3	Manotick Main Street	None	69.25		69.25	41.15		F		F

## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2028 PHF Flow Profile (veh)
2028 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
AM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2028 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	275	23	0	5.0	1.00	1.000
2	Bankfield Road	0	94	312	0	5.0	1.00	1.000
3	Manotick Main Street	0	380	560	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2028 AM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	1	7.00	0.00

#### Geometry Options for 2028 AM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	1	7.00	0.00

#### Geometry Options for 2028 AM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	1	7.00	0.00

## 2028 AM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	298		380		654	1487		0.2004	
2	Bankfield Road	None	406		275		403	1556		0.2610	
3	Manotick Main Street	None	940		94		587	1674		0.5614	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.08		3.08	0.67		A		A
2	Bankfield Road	None	3.81		3.81	1.12		A		A
3	Manotick Main Street	None	7.33		7.33	4.81		A		A

## 2028 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	298		380		654	1487		0.2004
2	Bankfield Road	None	406		275		403	1556		0.2610
3	Manotick Main Street	None	940		94		587	1674		0.5614

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.08		3.08	0.67		A		A
2	Bankfield Road	None	3.81		3.81	1.12		A		A
3	Manotick Main Street	None	7.36		7.36	4.81		A		A



## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2028 PHF Flow Profile (veh)
2028 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2028 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	701	63	0	5.0	1.00	1.000
2	Bankfield Road	0	43	439	0	5.0	1.00	1.000
3	Manotick Main Street	0	521	516	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2028 PM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

#### Geometry Options for 2028 PM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	1	7.00	0.00

#### Geometry Options for 2028 PM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

## 2028 PM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	764		521		559	1395		0.5478
2	Bankfield Road	None	482		701		584	1277		0.3776
3	Manotick Main Street	None	1037		43		1140	1708		0.6072

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	5.57		5.57	3.03		A		A
2	Bankfield Road	None	4.59		4.59	1.60		A		A
3	Manotick Main Street	None	9.37		9.37	6.64		A		A

## 2028 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	764		521		559	1395		0.5478	
2	Bankfield Road	None	482		701		584	1277		0.3776	
3	Manotick Main Street	None	1037		43		1140	1708		0.6072	

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	5.59		5.59	3.03		A		A
2	Bankfield Road	None	4.60		4.60	1.60		A		A
3	Manotick Main Street	None	9.41		9.41	6.64		A		A



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	333	407	585	289	24
Future Volume (vph)	100	333	407	585	289	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	1731	0
Flt Permitted	0.950		0.437			
Satd. Flow (perm)	1695	1419	698	1717	1731	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		333			7	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	100	333	407	585	289	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	333	407	585	313	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.0	11.0	48.0	47.6	29.4	
Actuated g/C Ratio	0.16	0.16	0.69	0.68	0.42	
v/c Ratio	0.37	0.66	0.65	0.50	0.43	
Control Delay	30.2	10.4	10.5	7.6	17.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.2	10.4	10.5	7.6	17.5	
LOS	C	B	B	A	B	
Approach Delay	15.0			8.8	17.5	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	10.9	10.9	15.8	47.7	26.6	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	13.2	48.6	30.1	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.4	48.6	31.9	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	9.1	48.6	34.2	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	85	49	165	270	216	
Fuel Used(l)	7	11	21	30	22	
CO Emissions (g/hr)	130	198	392	553	410	
NOx Emissions (g/hr)	25	38	76	107	79	
VOC Emissions (g/hr)	30	46	90	128	95	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	12.1	0.0	17.7	29.0	26.7	
Queue Length 95th (m)	23.2	19.3	38.5	60.1	53.2	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	554	652	1166	731	





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.60	0.62	0.50	0.43	























Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.9
Intersection LOS:	B
Intersection Capacity Utilization	63.6%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

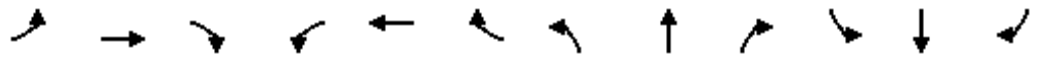


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak 2033 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	160	50	525	0	422	352	372	202	41
Future Volume (vph)	27	27	4	160	50	525	0	422	352	372	202	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	0.99					0.98			0.98			
Fr <sub>t</sub>		0.981				0.850			0.850		0.975	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1703	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.248		
Satd. Flow (perm)	1684	1694	0	1586	1655	1343	0	1784	1438	422	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				474			352			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	160	50	525	0	422	352	372	202	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	160	50	525	0	422	352	372	243	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

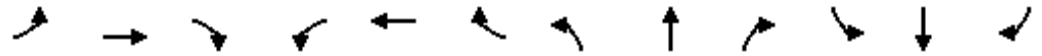
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak 2033 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	36.3		37.7	23.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		17.7%	17.7%	27.9%		29.0%	17.7%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		15.3	15.3	40.3		37.0	52.0	68.2	68.2	
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.37		0.34	0.48	0.63	0.63	
v/c Ratio	0.17	0.19		0.71	0.21	0.65		0.69	0.40	0.68	0.22	
Control Delay	50.3	45.9		63.4	44.6	6.1		41.3	3.2	19.2	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	50.3	45.9		63.4	44.6	6.1		41.3	3.2	19.2	9.8	
LOS	D	D		E	D	A		D	A	B	A	
Approach Delay		47.9			21.2			24.0			15.5	
Approach LOS		D			C			C			B	
90th %ile Green (s)	10.0	10.0		17.0	17.0	30.0		31.7	17.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
70th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	28.7		33.0	16.8	28.7	67.7	
50th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		15.8	15.8	24.4		37.3	15.8	24.4	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.5	10.5	14.4		47.3	10.5	14.4	67.7	
10th %ile Term Code	Skip	Skip		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	27	27		145	43	62		350	24	185	97	
Fuel Used(l)	2	2		14	4	17		35	12	23	12	
CO Emissions (g/hr)	36	38		259	67	308		642	232	419	231	
NOx Emissions (g/hr)	7	7		50	13	59		124	45	81	45	
VOC Emissions (g/hr)	8	9		60	15	71		148	54	97	53	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		33.6	9.8	4.4		85.6	0.0	39.4	21.8	
Queue Length 95th (m)	14.5	15.1		#59.7	21.0	18.0		#137.8	14.6	67.2	34.6	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak 2033 Background Traffic

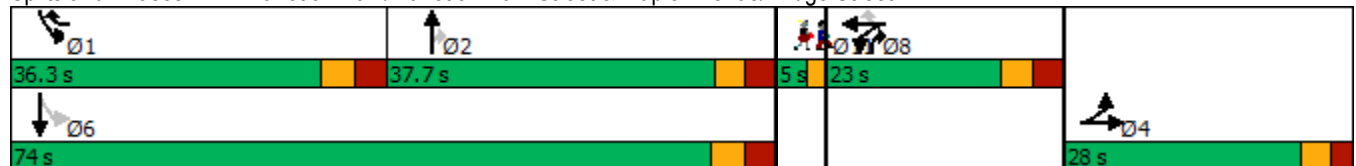


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	359	362		249	260	847		611	898	601	1081	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.64	0.19	0.62		0.69	0.39	0.62	0.22	

Intersection Summary























Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	107.8
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	21.3
Intersection LOS:	C
Intersection Capacity Utilization:	81.1%
ICU Level of Service:	D
Analysis Period (min):	15
90th %ile Actuated Cycle:	112.5
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	111.3
10th %ile Actuated Cycle:	90.7
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



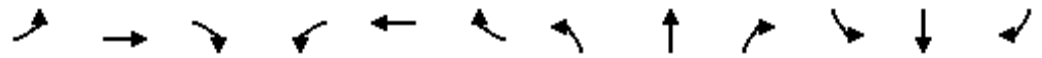
Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Future Volume (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	1.00					0.98			0.98			
Frt		0.981				0.850			0.850		0.974	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1702	0
Flt Permitted	0.950			0.950						0.284		
Satd. Flow (perm)	1687	1694	0	1586	1655	1345	0	1784	1440	483	1702	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				445			335			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	152	50	492	0	407	335	348	194	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	152	50	492	0	407	335	348	235	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	36.3		37.7	28.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		21.5%	21.5%	27.9%		29.0%	21.5%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		21.8	21.8	30.0		31.7	21.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		16.3	16.3	38.8		39.6	55.7	68.4	68.4	
Actuated g/C Ratio	0.09	0.09		0.15	0.15	0.36		0.36	0.51	0.63	0.63	
v/c Ratio	0.17	0.19		0.64	0.20	0.64		0.63	0.37	0.65	0.22	
Control Delay	51.9	47.5		57.3	43.3	5.9		38.7	2.9	17.5	10.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	51.9	47.5		57.3	43.3	5.9		38.7	2.9	17.5	10.5	
LOS	D	D		E	D	A		D	A	B	B	
Approach Delay		49.5			19.9			22.6			14.7	
Approach LOS		D			B			C			B	
90th %ile Green (s)	10.0	10.0		22.0	22.0	30.0		31.7	22.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		20.5	20.5	30.0		31.7	20.5	30.0	67.7	
70th %ile Term Code	Min	Min		Gap	Gap	Max		MaxR	Gap	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	24.8		36.9	16.8	24.8	67.7	
50th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		13.3	13.3	20.1		41.6	13.3	20.1	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	10.8		50.9	10.0	10.8	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	27	27		137	42	55		325	22	165	96	
Fuel Used(l)	2	2		12	4	15		32	12	20	12	
CO Emissions (g/hr)	37	39		232	66	287		599	219	380	227	
NOx Emissions (g/hr)	7	8		45	13	55		116	42	73	44	
VOC Emissions (g/hr)	8	9		54	15	66		138	51	88	52	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		31.8	9.8	4.5		77.2	0.0	36.2	20.9	
Queue Length 95th (m)	15.0	15.7		52.9	20.8	16.6		#139.7	13.9	60.6	37.5	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak (no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	356	359		320	334	835		648	965	617	1071	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.47	0.15	0.59		0.63	0.35	0.56	0.22	

**Intersection Summary**

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	109
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	20.2
Intersection LOS:	C
Intersection Capacity Utilization	78.1%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	117.5
70th %ile Actuated Cycle:	116
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	108.8
10th %ile Actuated Cycle:	90.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



3: Colony Heights Road & Bankfield Road  
AM Peak





















4386 Rideau Valley Dr  
2033 Background Traffic



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	372	14	6	382	23	18
Future Volume (Veh/h)	372	14	6	382	23	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	372	14	6	382	23	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	221					
pX, platoon unblocked						
vC, conflicting volume			386	773		379
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			386	773		379
tC, single (s)			4.3	6.4		6.3
tC, 2 stage (s)						
tF (s)			2.4	3.5		3.4
p0 queue free %			99	94		97
cM capacity (veh/h)			1095	363		648
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	386	388	41			
Volume Left	0	6	23			
Volume Right	14	0	18			
cSH	1700	1095	450			
Volume to Capacity	0.23	0.01	0.09			
Queue Length 95th (m)	0.0	0.1	2.3			
Control Delay (s)	0.0	0.2	13.8			
Lane LOS	A		B			
Approach Delay (s)	0.0	0.2	13.8			
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			36.3%	ICU Level of Service	A	
Analysis Period (min)			15			

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
AM Peak

4386 Rideau Valley Dr  
2033 Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	323	18	19	418	8	41	1	58	24	3	4
Future Volume (Veh/h)	4	323	18	19	418	8	41	1	58	24	3	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	4	323	18	19	418	8	41	1	58	24	3	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	426			341			792	795	323	850	809	422
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	426			341			792	795	323	850	809	422
tC, single (s)	4.3			4.3			7.1	7.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.3			3.5	4.9	3.3	3.5	4.3	3.3
p0 queue free %	100			98			86	100	92	90	99	99
cM capacity (veh/h)	1021			1144			297	225	718	251	276	632
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	4	323	18	19	426	100	31					
Volume Left	4	0	0	19	0	41	24					
Volume Right	0	0	18	0	8	58	4					
cSH	1021	1700	1700	1144	1700	448	275					
Volume to Capacity	0.00	0.19	0.01	0.02	0.25	0.22	0.11					
Queue Length 95th (m)	0.1	0.0	0.0	0.4	0.0	6.4	2.9					
Control Delay (s)	8.5	0.0	0.0	8.2	0.0	15.3	19.8					
Lane LOS	A			A		C	C					
Approach Delay (s)	0.1			0.4		15.3	19.8					
Approach LOS						C	C					
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization		36.5%		ICU Level of Service		A						
Analysis Period (min)		15										



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	469	557	543	734	68
Future Volume (vph)	45	469	557	543	734	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1763	0
Flt Permitted	0.950		0.090			
Satd. Flow (perm)	1647	1369	153	1784	1763	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		443			7	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	45	469	557	543	734	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	469	557	543	802	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.7	11.7	67.3	66.9	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.74	0.44	
v/c Ratio	0.21	0.83	1.17	0.41	1.04	
Control Delay	36.6	19.2	123.4	5.6	69.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.6	19.2	123.4	5.6	69.2	
LOS	D	B	F	A	E	
Approach Delay	20.7			65.3	69.2	
Approach LOS	C			E	E	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
70th %ile Term Code	Max	Max	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	40	67	364	187	665	
Fuel Used(l)	3	18	80	25	91	
CO Emissions (g/hr)	64	336	1494	471	1692	
NOx Emissions (g/hr)	12	65	288	91	327	
VOC Emissions (g/hr)	15	78	345	109	390	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	7.2	4.2	~96.1	25.4	~150.3	
Queue Length 95th (m)	16.3	#49.4	#172.4	48.7	#219.1	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	590	476	1325	773	

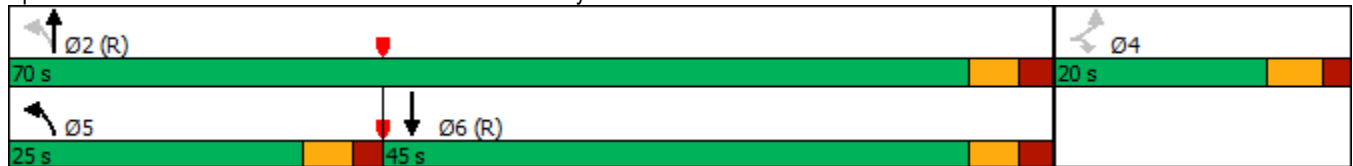


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.79	1.17	0.41	1.04	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.17
Intersection Signal Delay:	57.1
Intersection LOS:	E
Intersection Capacity Utilization	100.0%
ICU Level of Service	F
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2033 Background Traffic

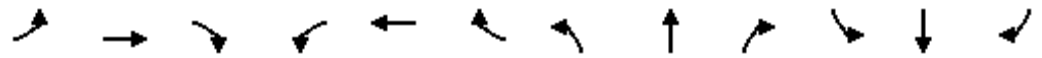


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Future Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Fr <sub>t</sub>		0.993				0.850			0.850		0.972	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.195		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1468	317	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				373			282			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	659	0	338	282	522	637	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0



Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

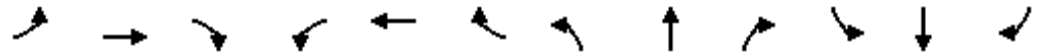
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2033 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	50.0		34.0	23.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		16.4%	16.4%	35.7%		24.3%	16.4%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.0	14.0		16.8	16.8	59.4		29.0	45.7	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.47		0.23	0.36	0.62	0.62	
v/c Ratio	0.41	0.55		1.41	0.68	0.75		0.83	0.39	0.86	0.59	
Control Delay	58.5	63.0		248.3	68.2	13.0		64.8	4.7	40.0	17.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	58.5	63.0		248.3	68.2	13.0		64.8	4.7	40.0	17.9	
LOS	E	E		F	E	B		E	A	D	B	
Approach Delay		61.1			86.4			37.5			27.9	
Approach LOS		E			F			D			C	
90th %ile Green (s)	22.0	22.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.0	15.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	12.8	12.8		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.8	10.8		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		16.8	16.8	38.8		32.9	16.8	38.8	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	68	97		236	144	281		297	23	356	372	
Fuel Used(l)	6	9		72	14	27		34	10	42	39	
CO Emissions (g/hr)	108	160		1338	268	506		635	193	783	729	
NOx Emissions (g/hr)	21	31		258	52	98		123	37	151	141	
VOC Emissions (g/hr)	25	37		309	62	117		146	45	181	168	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	17.9	25.1		~103.9	37.7	29.3		80.2	0.0	91.3	85.9	
Queue Length 95th (m)	32.9	43.4		#173.9	#70.7	68.7		#143.1	17.7	#172.4	144.3	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak 2033 Background Traffic

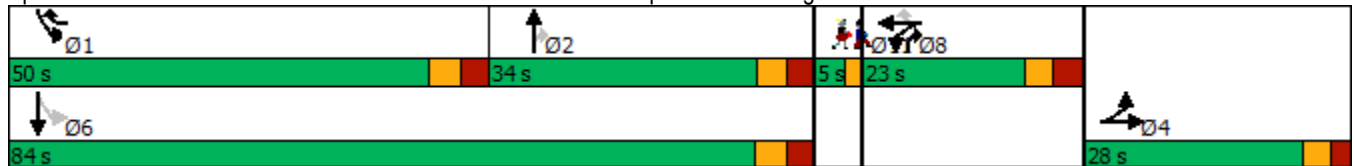


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	304	313		225	235	892		409	716	619	1071	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.25	0.34		1.41	0.68	0.74		0.83	0.39	0.84	0.59	

Intersection Summary























Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	126.4
Natural Cycle:	145
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.41
Intersection Signal Delay:	53.2
Intersection LOS:	D
Intersection Capacity Utilization:	99.2%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	134.3
70th %ile Actuated Cycle:	127.3
50th %ile Actuated Cycle:	125.1
30th %ile Actuated Cycle:	123.1
10th %ile Actuated Cycle:	122.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street

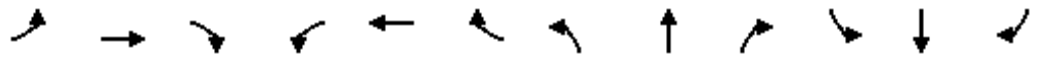


Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Future Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.170		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	276	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				330			267			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	659	0	338	282	522	637	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.8	21.8	64.8		28.7	50.3	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.49		0.22	0.38	0.59	0.59	
v/c Ratio	0.42	0.57		1.13	0.54	0.74		0.87	0.38	0.90	0.62	
Control Delay	61.4	66.3		142.1	59.0	13.4		73.0	5.3	50.4	20.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		142.1	59.0	13.4		73.0	5.3	50.4	20.9	
LOS	E	E		F	E	B		E	A	D	C	
Approach Delay		64.3			55.7			42.2			34.2	
Approach LOS		E			E			D			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		21.8	21.8	40.4		31.3	21.8	40.4	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	69	96		258	143	297		297	29	379	397	
Fuel Used(l)	6	9		46	13	28		36	11	47	41	
CO Emissions (g/hr)	112	165		862	247	514		675	198	870	766	
NOx Emissions (g/hr)	22	32		166	48	99		130	38	168	148	
VOC Emissions (g/hr)	26	38		199	57	119		156	46	201	177	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		~93.7	37.9	35.9		85.0	2.2	104.7	97.2	
Queue Length 95th (m)	34.2	45.2		#163.7	64.7	66.3		#150.7	20.1	#190.2	157.1	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2028 Background Traffic

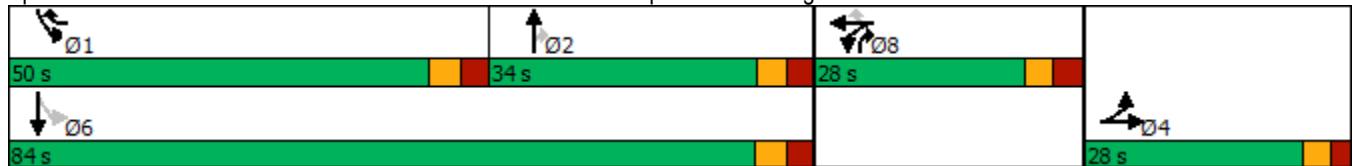


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	891		389	735	584	1029	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		1.13	0.54	0.74		0.87	0.38	0.89	0.62	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.13
Intersection Signal Delay:	45.4
Intersection LOS:	D
Intersection Capacity Utilization:	99.2%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	127.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	460	27	7	555	24	4
Future Volume (Veh/h)	460	27	7	555	24	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	460	27	7	555	24	4
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	221					
pX, platoon unblocked						
vC, conflicting volume			487	1042		474
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			487	1042		474
tC, single (s)			4.2	6.5		6.2
tC, 2 stage (s)						
tF (s)			2.3	3.6		3.3
p0 queue free %			99	90		99
cM capacity (veh/h)			1017	246		591
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	487	562	28			
Volume Left	0	7	24			
Volume Right	27	0	4			
cSH	1700	1017	268			
Volume to Capacity	0.29	0.01	0.10			
Queue Length 95th (m)	0.0	0.2	2.6			
Control Delay (s)	0.0	0.2	20.0			
Lane LOS			A	C		
Approach Delay (s)	0.0	0.2	20.0			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			46.7%	ICU Level of Service		A
Analysis Period (min)			15			

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
2033 Background Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	440	34	66	511	21	20	0	33	12	2	7
Future Volume (Veh/h)	6	440	34	66	511	21	20	0	33	12	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	6	440	34	66	511	21	20	0	33	12	2	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	532			474			1103	1116	440	1138	1140	522
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	532			474			1103	1116	440	1138	1140	522
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	99			94			88	100	95	93	99	99
cM capacity (veh/h)	964			1088			173	194	615	160	188	505
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	6	440	34	66	532	53	21					
Volume Left	6	0	0	66	0	20	12					
Volume Right	0	0	34	0	21	33	7					
cSH	964	1700	1700	1088	1700	313	211					
Volume to Capacity	0.01	0.26	0.02	0.06	0.31	0.17	0.10					
Queue Length 95th (m)	0.1	0.0	0.0	1.5	0.0	4.6	2.5					
Control Delay (s)	8.8	0.0	0.0	8.5	0.0	18.8	23.9					
Lane LOS	A			A		C	C					
Approach Delay (s)	0.1			0.9		18.8	23.9					
Approach LOS						C	C					
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			46.7%		ICU Level of Service		A					
Analysis Period (min)			15									

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
AM Peak (Optimized)

4386 Rideau Valley Drive  
2033 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	333	407	585	289	24
Future Volume (vph)	100	333	407	585	289	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	1731	0
Flt Permitted	0.950		0.437			
Satd. Flow (perm)	1695	1419	698	1717	1731	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		333			7	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	100	333	407	585	289	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	333	407	585	313	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.0	11.0	48.0	47.6	29.4	
Actuated g/C Ratio	0.16	0.16	0.69	0.68	0.42	
v/c Ratio	0.37	0.66	0.65	0.50	0.43	
Control Delay	30.2	10.4	10.5	7.6	17.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.2	10.4	10.5	7.6	17.5	
LOS	C	B	B	A	B	
Approach Delay	15.0			8.8	17.5	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	10.9	10.9	15.8	47.7	26.6	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	13.2	48.6	30.1	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.4	48.6	31.9	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	9.1	48.6	34.2	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	85	49	165	270	216	
Fuel Used(l)	7	11	21	30	22	
CO Emissions (g/hr)	130	198	392	553	410	
NOx Emissions (g/hr)	25	38	76	107	79	
VOC Emissions (g/hr)	30	46	90	128	95	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	12.1	0.0	17.7	29.0	26.7	
Queue Length 95th (m)	23.2	19.3	38.5	60.1	53.2	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	554	652	1166	731	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.60	0.62	0.50	0.43	

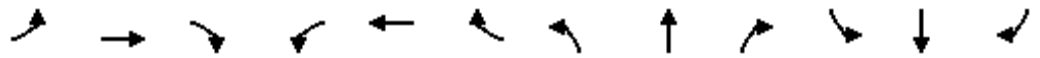
**Intersection Summary**

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.9
Intersection LOS:	B
Intersection Capacity Utilization	63.6%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



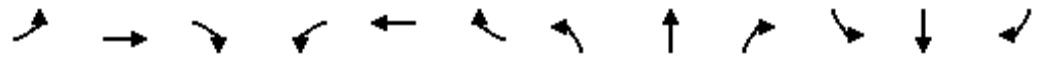
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (Optimized) 2033 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	160	50	525	0	422	352	372	202	41
Future Volume (vph)	27	27	4	160	50	525	0	422	352	372	202	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	0.98					0.97			0.97			
Fr <sub>t</sub>		0.981				0.850			0.850			0.975
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1703	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.248		
Satd. Flow (perm)	1669	1694	0	1586	1655	1330	0	1784	1430	422	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				474			352			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	160	50	525	0	422	352	372	202	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	160	50	525	0	422	352	372	243	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (Optimized) 2033 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		16.2	16.2	11.3		32.0	16.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	36.3		37.7	23.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		17.7%	17.7%	27.9%		29.0%	17.7%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		5.0	5.0			19.0	5.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		15.2	15.2	40.3		37.0	52.0	68.2	68.2	
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.37		0.34	0.48	0.63	0.63	
v/c Ratio	0.17	0.19		0.71	0.21	0.65		0.69	0.40	0.68	0.22	
Control Delay	50.2	45.9		63.5	44.6	6.1		41.2	3.2	19.2	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	50.2	45.9		63.5	44.6	6.1		41.2	3.2	19.2	9.8	
LOS	D	D		E	D	A		D	A	B	A	
Approach Delay		47.9			21.2			23.9			15.5	
Approach LOS		D			C			C			B	
90th %ile Green (s)	10.0	10.0		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
90th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
70th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	28.7		33.0	16.8	28.7	67.7	
50th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		15.8	15.8	24.4		37.3	15.8	24.4	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.5	10.5	14.4		47.3	10.5	14.4	67.7	
10th %ile Term Code	Skip	Skip		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	27	27		145	43	62		350	24	184	97	
Fuel Used(l)	2	2		14	4	17		35	12	22	12	
CO Emissions (g/hr)	36	38		259	67	308		642	232	418	231	
NOx Emissions (g/hr)	7	7		50	13	60		124	45	81	45	
VOC Emissions (g/hr)	8	9		60	15	71		148	54	96	53	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		33.6	9.8	4.4		85.6	0.0	39.4	21.8	
Queue Length 95th (m)	14.4	15.1		#60.1	21.0	18.0		#137.3	14.6	67.2	34.4	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	



Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak (Optimized) 2033 Background Traffic

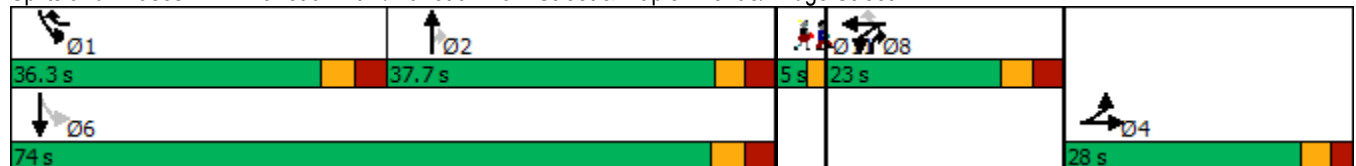


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	359	362		249	259	845		611	895	601	1081	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.64	0.19	0.62		0.69	0.39	0.62	0.22	

**Intersection Summary**

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	107.8
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	21.3
Intersection LOS:	C
Intersection Capacity Utilization:	81.1%
ICU Level of Service:	D
Analysis Period (min):	15
90th %ile Actuated Cycle:	112.3
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	111.3
10th %ile Actuated Cycle:	90.7
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak (Optimized)

4386 Rideau Valley Drive  
2033 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	469	557	543	734	68
Future Volume (vph)	45	469	557	543	734	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.989	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1763	0
Flt Permitted	0.950		0.063			
Satd. Flow (perm)	1647	1369	107	1784	1763	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		469			5	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	45	469	557	543	734	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	469	557	543	802	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (Optimized)

4386 Rideau Valley Drive  
 2033 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	21.8	21.8	44.0	108.2	64.2	
Total Split (%)	16.8%	16.8%	33.8%	83.2%	49.4%	
Maximum Green (s)	16.1	16.1	38.7	102.5	58.5	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	12.3	12.3	106.7	106.3	58.5	
Actuated g/C Ratio	0.09	0.09	0.82	0.82	0.45	
v/c Ratio	0.29	0.85	0.96	0.37	1.01	
Control Delay	58.7	19.8	64.6	4.1	69.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	58.7	19.8	64.6	4.1	69.4	
LOS	E	B	E	A	E	
Approach Delay	23.2			34.7	69.4	
Approach LOS	C			C	E	
90th %ile Green (s)	16.1	16.1	38.7	102.5	58.5	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	15.2	15.2	39.6	103.4	58.5	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	44.8	108.6	58.5	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	44.8	108.6	58.5	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	44.8	108.6	58.5	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	40	45	411	133	692	
Fuel Used(l)	4	18	56	24	92	
CO Emissions (g/hr)	78	327	1045	437	1705	
NOx Emissions (g/hr)	15	63	202	84	329	
VOC Emissions (g/hr)	18	75	241	101	393	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	11.1	0.0	120.1	25.4	~205.2	
Queue Length 95th (m)	22.4	#46.8	#209.3	48.8	#290.0	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	203	580	581	1459	796	

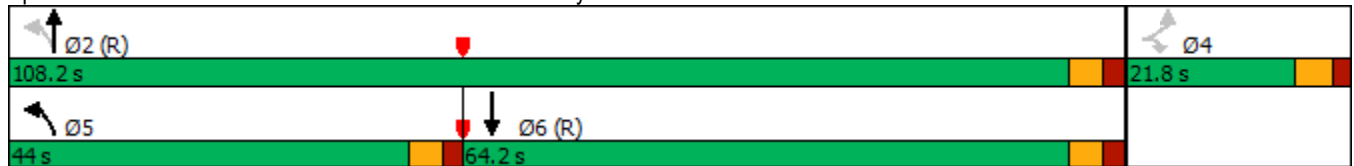


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.81	0.96	0.37	1.01	























**Intersection Summary**

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	43.8
Intersection LOS:	D
Intersection Capacity Utilization	100.0%
ICU Level of Service	F
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

**Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road**



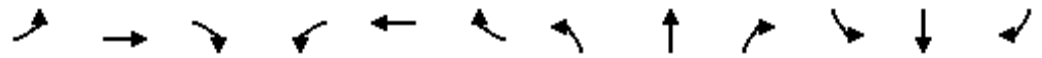
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Future Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.168		
Satd. Flow (perm)	1695	1737	0	1691	1767	1459	0	1784	1469	272	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				376			282			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	659	0	338	282	522	637	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	27.3	27.3		28.7	28.7	42.0		32.0	28.7	42.0	74.0	
Total Split (%)	20.2%	20.2%		21.3%	21.3%	31.1%		23.7%	21.3%	31.1%	54.8%	
Maximum Green (s)	22.0	22.0		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	13.8	13.8		22.5	22.5	58.2		26.0	48.4	67.8	67.8	
Actuated g/C Ratio	0.11	0.11		0.18	0.18	0.48		0.21	0.40	0.56	0.56	
v/c Ratio	0.40	0.54		1.01	0.49	0.74		0.89	0.37	1.00	0.66	
Control Delay	55.9	60.0		104.0	51.3	11.6		72.7	4.0	70.4	23.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	55.9	60.0		104.0	51.3	11.6		72.7	4.0	70.4	23.4	
LOS	E	E		F	D	B		E	A	E	C	
Approach Delay		58.3			43.0			41.4			44.5	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	14.6	14.6		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	12.6	12.6		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.6	10.6		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	68	96		268	141	256		295	22	370	434	
Fuel Used(l)	6	8		37	12	26		36	10	55	43	
CO Emissions (g/hr)	106	155		692	229	487		672	190	1016	804	
NOx Emissions (g/hr)	20	30		134	44	94		130	37	196	155	
VOC Emissions (g/hr)	24	36		160	53	112		155	44	234	185	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	17.1	24.1		~76.1	34.0	26.6		78.0	0.0	103.7	97.6	
Queue Length 95th (m)	31.9	41.9		#147.6	59.8	52.1		#143.0	16.1	#197.2	161.7	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Background Traffic

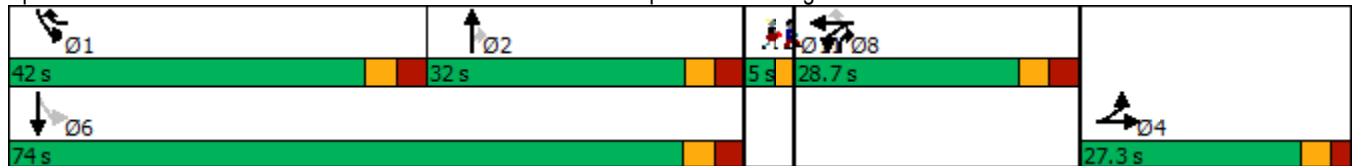


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	306	315		313	326	892		380	761	523	968	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.25	0.34		1.01	0.49	0.74		0.89	0.37	1.00	0.66	

Intersection Summary

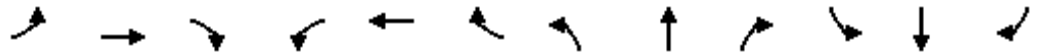
Area Type:	Other
Cycle Length:	135
Actuated Cycle Length:	122
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	44.2
Intersection LOS:	D
Intersection Capacity Utilization:	99.2%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	130
70th %ile Actuated Cycle:	122.6
50th %ile Actuated Cycle:	120.6
30th %ile Actuated Cycle:	118.6
10th %ile Actuated Cycle:	118
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



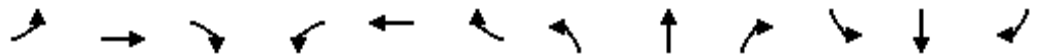
Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized - no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Future Volume (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.131		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	213	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				321			251			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	659	0	338	282	522	519	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	659	0	338	282	522	637	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized - no pedestrian actuation) 2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	27.3	27.3		31.4	31.4	49.0		32.3	31.4	49.0	81.3	
Total Split (%)	19.5%	19.5%		22.4%	22.4%	35.0%		23.1%	22.4%	35.0%	58.1%	
Maximum Green (s)	22.0	22.0		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.3	14.3		25.2	25.2	67.9		26.3	51.4	75.1	75.1	
Actuated g/C Ratio	0.11	0.11		0.19	0.19	0.51		0.20	0.39	0.57	0.57	
v/c Ratio	0.42	0.57		0.98	0.47	0.73		0.95	0.38	0.95	0.64	
Control Delay	61.8	67.5		99.5	53.9	12.3		90.1	6.0	62.6	23.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.8	67.5		99.5	53.9	12.3		90.1	6.0	62.6	23.6	
LOS	E	E		F	D	B		F	A	E	C	
Approach Delay		65.1			42.5			51.9			41.2	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.5	15.5		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.3	13.3		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.1	11.1		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	69	98		273	139	286		292	35	395	421	
Fuel Used(l)	6	9		36	13	27		41	11	52	43	
CO Emissions (g/hr)	112	167		673	234	501		755	204	969	800	
NOx Emissions (g/hr)	22	32		130	45	97		146	39	187	154	
VOC Emissions (g/hr)	26	39		155	54	115		174	47	223	185	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.8	26.7		82.4	36.9	35.1		87.2	4.5	115.7	104.5	
Queue Length 95th (m)	34.4	45.4		#153.1	63.2	60.7		#157.7	23.6	#205.9	166.8	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Optimized - no pedestrian actuation) 2028 Background Traffic

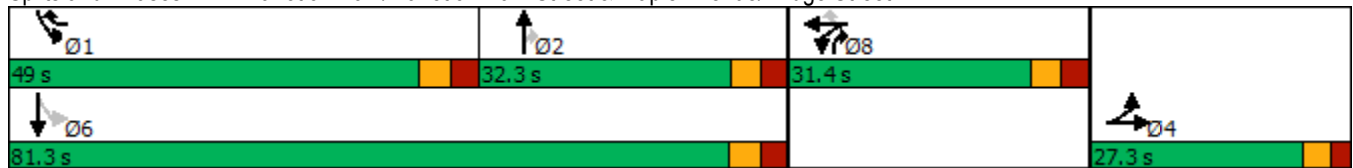


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	282	289		322	336	904		354	733	550	988	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.27	0.37		0.98	0.47	0.73		0.95	0.38	0.95	0.64	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	132.4
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	45.2
Intersection LOS:	D
Intersection Capacity Utilization:	99.2%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	140
70th %ile Actuated Cycle:	133.5
50th %ile Actuated Cycle:	131.3
30th %ile Actuated Cycle:	129.1
10th %ile Actuated Cycle:	128
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (no pedestrian actuation)

4386 Rideau Valley Drive  
 2033 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	469	447	543	634	68
Future Volume (vph)	45	469	447	543	634	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1759	0
Flt Permitted	0.950		0.114			
Satd. Flow (perm)	1647	1369	194	1784	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		469			8	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	45	469	447	543	634	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	469	447	543	702	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.5	11.5	67.5	67.1	39.4	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.44	
v/c Ratio	0.21	0.80	0.90	0.41	0.91	
Control Delay	37.0	15.4	44.3	5.5	41.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.0	15.4	44.3	5.5	41.3	
LOS	D	B	D	A	D	
Approach Delay	17.3			23.0	41.3	
Approach LOS	B			C	D	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	13.3	13.3	20.7	65.3	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	23.7	68.6	39.6	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	40	55	269	185	588	
Fuel Used(l)	3	16	37	25	65	
CO Emissions (g/hr)	64	303	684	470	1203	
NOx Emissions (g/hr)	12	59	132	91	232	
VOC Emissions (g/hr)	15	70	158	108	277	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	7.2	0.0	52.8	25.4	108.9	
Queue Length 95th (m)	16.3	#36.0	#118.9	48.7	#179.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	612	499	1329	773	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.77	0.90	0.41	0.91	























Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 27.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 88.0%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2033 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	252	159	659	0	338	282	522	519	118
Future Volume (vph)	76	102	5	252	159	659	0	338	282	522	519	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.171		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	278	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				330			267			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	252	159	659	0	338	282	522	519	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	252	159	659	0	338	282	522	637	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2033 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.7	21.7	64.7		28.7	50.2	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.49		0.22	0.38	0.59	0.59	
v/c Ratio	0.42	0.57		0.90	0.55	0.74		0.87	0.38	0.90	0.62	
Control Delay	61.4	66.3		88.0	59.1	13.4		72.8	5.3	50.0	20.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		88.0	59.1	13.4		72.8	5.3	50.0	20.9	
LOS	E	E		F	E	B		E	A	D	C	
Approach Delay		64.3			37.7			42.1			34.0	
Approach LOS		E			D			D			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		21.2	21.2	40.4		31.3	21.2	40.4	77.7	
10th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	69	96		220	143	297		297	29	377	397	
Fuel Used(l)	6	9		27	13	28		36	11	47	41	
CO Emissions (g/hr)	112	165		494	247	514		674	198	866	766	
NOx Emissions (g/hr)	22	32		95	48	99		130	38	167	148	
VOC Emissions (g/hr)	26	38		114	57	119		155	46	200	177	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		64.2	37.9	35.9		85.0	2.2	104.4	97.2	
Queue Length 95th (m)	34.2	45.2		#122.5	64.7	66.3		#150.7	20.1	#189.9	157.1	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no pedestrian actuation) 2033 Background Traffic

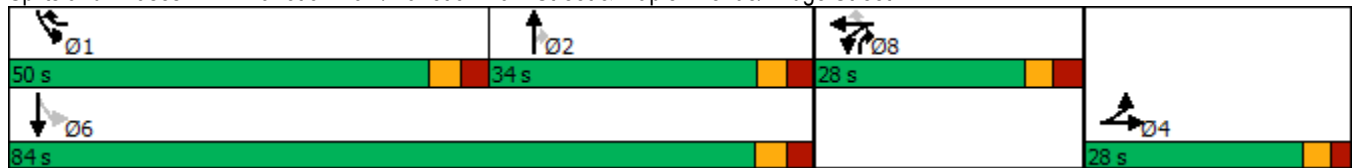


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	891		389	735	585	1030	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		0.90	0.54	0.74		0.87	0.38	0.89	0.62	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.5
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	38.8
Intersection LOS:	D
Intersection Capacity Utilization:	95.4%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	126.7
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	333	407	585	289	24
Future Volume (vph)	100	333	407	585	289	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.988	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	3283	0
Flt Permitted	0.950		0.474			
Satd. Flow (perm)	1695	1419	757	1717	3283	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		333			12	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	96.5	
Travel Time (s)	13.2			26.2	6.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	100	333	407	585	289	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	333	407	585	313	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			7.4	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	21.0	21.0	23.0	49.0	26.0	
Total Split (%)	30.0%	30.0%	32.9%	70.0%	37.1%	
Maximum Green (s)	15.3	15.3	17.7	43.3	20.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.2	11.2	47.8	47.4	28.7	
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.41	
v/c Ratio	0.37	0.66	0.62	0.50	0.23	
Control Delay	29.7	10.2	9.7	7.8	14.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.7	10.2	9.7	7.8	14.9	
LOS	C	B	A	A	B	
Approach Delay	14.7			8.6	14.9	
Approach LOS	B			A	B	
90th %ile Green (s)	15.3	15.3	17.7	43.3	20.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	10.9	10.9	15.7	47.7	26.7	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	13.2	48.6	30.1	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.3	48.6	32.0	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	9.1	48.6	34.2	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	84	48	168	274	194	
Fuel Used(l)	7	11	21	30	21	
CO Emissions (g/hr)	129	196	389	556	388	
NOx Emissions (g/hr)	25	38	75	107	75	
VOC Emissions (g/hr)	30	45	90	128	89	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	12.1	0.0	17.7	29.0	12.5	
Queue Length 95th (m)	22.8	18.7	40.4	63.1	25.8	
Internal Link Dist (m)	196.6			340.3	72.5	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	370	570	708	1162	1351	

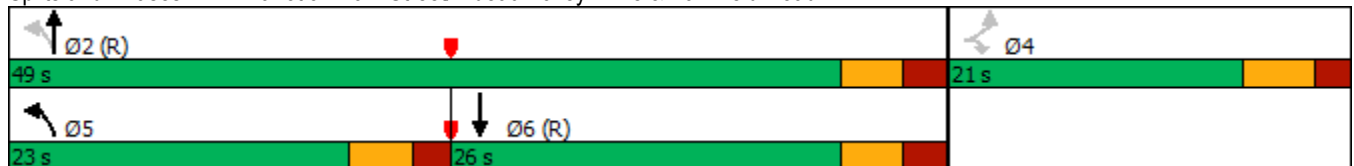


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.58	0.57	0.50	0.23	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.3
Intersection LOS:	B
Intersection Capacity Utilization	55.3%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road







Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	469	557	543	734	68
Future Volume (vph)	45	469	557	543	734	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	3343	0
Flt Permitted	0.950		0.186			
Satd. Flow (perm)	1647	1369	316	1784	3343	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		469			11	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	96.5	
Travel Time (s)	13.2			26.2	6.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	45	469	557	543	734	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	469	557	543	802	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			7.4	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	23.0	23.0	36.0	67.0	31.0	
Total Split (%)	25.6%	25.6%	40.0%	74.4%	34.4%	
Maximum Green (s)	17.3	17.3	30.7	61.3	25.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	12.0	12.0	67.0	66.6	32.0	
Actuated g/C Ratio	0.13	0.13	0.74	0.74	0.36	
v/c Ratio	0.21	0.80	0.85	0.41	0.67	
Control Delay	35.8	14.6	28.4	5.9	29.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.8	14.6	28.4	5.9	29.5	
LOS	D	B	C	A	C	
Approach Delay	16.5			17.3	29.5	
Approach LOS	B			B	C	
90th %ile Green (s)	17.3	17.3	30.7	61.3	25.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.5	12.5	35.5	66.1	25.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	32.2	68.6	31.1	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	27.7	68.6	35.6	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	20.6	68.6	42.7	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	40	64	330	191	643	
Fuel Used(l)	3	16	39	26	65	
CO Emissions (g/hr)	63	304	722	475	1204	
NOx Emissions (g/hr)	12	59	139	92	232	
VOC Emissions (g/hr)	15	70	167	110	278	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	7.2	0.0	55.6	25.4	61.1	
Queue Length 95th (m)	15.6	29.6	#122.6	56.2	#97.5	
Internal Link Dist (m)	196.6			340.3	72.5	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	316	642	697	1320	1195	

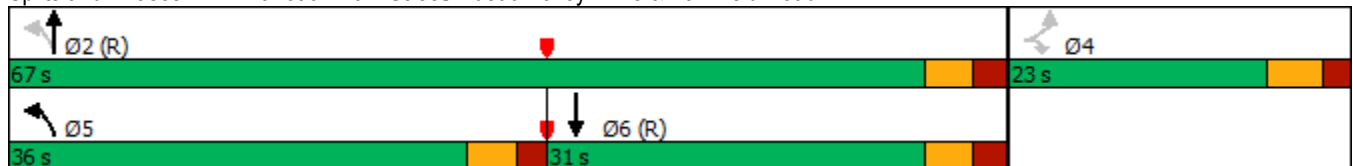


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.73	0.80	0.41	0.67	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 21.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 78.5%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2033 PHF Flow Profile (veh)
2033 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
AM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	3.50	1	60	40.00	4.00	1
2	Bankfield Road	90	0	3.50	1	60	40.00	4.00	1
3	Manotick Main Street	180	0	3.50	1	60	40.00	4.00	1

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0

## Traffic Flow Data (veh/hr)

### 2033 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	289	24	0	5.0	1.00	1.000
2	Bankfield Road	0	100	333	0	5.0	1.00	1.000
3	Manotick Main Street	0	407	585	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2033 AM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
1	1	2	1	3.50	0.00

#### Geometry Options for 2033 AM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
1	1	2	2	3.50	0.00

#### Geometry Options for 2033 AM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	2	4.47	100.00
1	1	1	2	4.50	48.12
1	1	1	2	4.60	20.33
1	1	1	2	4.70	13.72
1	1	1	2	4.80	10.76
1	1	1	2	4.90	9.09
1	1	1	2	5.00	8.00
1	1	1	2	5.10	7.25
1	1	1	2	5.20	6.69
1	1	1	2	5.30	6.26
1	1	1	2	5.40	5.92
1	1	1	2	5.50	5.65
1	1	1	2	5.60	5.42
1	1	1	2	5.70	5.23
1	1	1	2	5.80	5.07
1	1	1	2	5.90	4.92

## 2033 AM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	313		401		676	578		0.5418
2	Bankfield Road	None	433		289		425	633		0.6845
3	Manotick Main Street	None	992		100		622	977		1.0149

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	12.11		12.11	2.72		B		B
2	Bankfield Road	None	15.25		15.25	4.64		C		C
3	Manotick Main Street	None	60.00		60.00	39.27		F		F



## 2033 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	313		401		676	578		0.5418
2	Bankfield Road	None	433		289		425	633		0.6845
3	Manotick Main Street	None	992		100		622	977		1.0149

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	12.18		12.18	2.72		B		B
2	Bankfield Road	None	15.39		15.39	4.64		C		C
3	Manotick Main Street	None	68.93		68.93	39.27		F		F

## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2033 PHF Flow Profile (veh)
2033 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	3.50	1	60	40.00	4.00	1
2	Bankfield Road	90	0	3.50	1	60	40.00	4.00	1
3	Manotick Main Street	180	0	3.50	1	60	40.00	4.00	1

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	1715	0	4.00	1960	0

## Traffic Flow Data (veh/hr)

### 2033 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	734	68	0	5.0	1.00	1.000
2	Bankfield Road	0	45	469	0	5.0	1.00	1.000
3	Manotick Main Street	0	557	543	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2033 PM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	4.75	100.00
1	1	1	1	4.80	52.14
1	1	1	1	4.90	27.51
1	1	1	1	5.00	19.52
1	1	1	1	5.10	15.56
1	1	1	1	5.20	13.20
1	1	1	1	5.30	11.63
1	1	1	1	5.40	10.52
1	1	1	1	5.50	9.68
1	1	1	1	5.60	9.03
1	1	1	1	5.70	8.51
1	1	1	1	5.80	8.08
1	1	1	1	5.90	7.73

#### Geometry Options for 2033 PM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	3.99	100.00
1	1	1	1	4.00	59.20
1	1	1	1	4.10	8.26
1	1	1	1	4.20	5.12
1	1	1	1	4.30	3.98
1	1	1	1	4.40	3.39
1	1	1	1	4.50	3.04
1	1	1	1	4.60	2.79
1	1	1	1	4.70	2.62
1	1	1	1	4.80	2.49
1	1	1	1	4.90	2.39
1	1	1	1	5.00	2.31
1	1	1	1	5.10	2.24

**Geometry Options for 2033 PM Peak**

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	5.20	2.18
1	1	1	1	5.30	2.14
1	1	1	1	5.40	2.09
1	1	1	1	5.50	2.06
1	1	1	1	5.60	2.03
1	1	1	1	5.70	2.00
1	1	1	1	5.80	1.98
1	1	1	1	5.90	1.95

**Geometry Options for 2033 PM Peak**

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
1	1	1	1	4.74	100.00
1	1	1	1	4.80	47.86
1	1	1	1	4.90	26.27
1	1	1	1	5.00	18.89
1	1	1	1	5.10	15.16
1	1	1	1	5.20	12.91
1	1	1	1	5.30	11.41
1	1	1	1	5.40	10.33
1	1	1	1	5.50	9.52
1	1	1	1	5.60	8.89
1	1	1	1	5.70	8.39
1	1	1	1	5.80	7.97
1	1	1	1	5.90	7.63

## 2033 PM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	802		546		577	800		1.0027
2	Bankfield Road	None	514		729		613	530		0.9690
3	Manotick Main Street	None	1100		45		1195	1078		1.0205

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	60.00		60.00	31.95		F		F
2	Bankfield Road	None	60.00		60.00	21.43		F		F
3	Manotick Main Street	None	60.00		60.00	43.76		F		F

## 2033 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	802		546		577	800		1.0026
2	Bankfield Road	None	514		732		614	529		0.9719
3	Manotick Main Street	None	1100		45		1200	1078		1.0206

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	68.29		68.29	31.95		F		F
2	Bankfield Road	None	68.18		68.18	21.43		F		F
3	Manotick Main Street	None	69.63		69.63	43.76		F		F



## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2033 PHF Flow Profile (veh)
2033 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
AM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2033 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	289	24	0	5.0	1.00	1.000
2	Bankfield Road	0	100	333	0	5.0	1.00	1.000
3	Manotick Main Street	0	407	585	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2033 AM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	1	7.00	0.00

#### Geometry Options for 2033 AM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	1	7.00	0.00

#### Geometry Options for 2033 AM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	1	7.00	0.00

## 2033 AM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	313		407		685	1469		0.2130
2	Bankfield Road	None	433		289		431	1547		0.2800
3	Manotick Main Street	None	992		100		622	1671		0.5938

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.16		3.16	0.72		A		A
2	Bankfield Road	None	3.93		3.93	1.23		A		A
3	Manotick Main Street	None	7.94		7.94	5.46		A		A

## 2033 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	313		407		685	1469		0.2130
2	Bankfield Road	None	433		289		431	1547		0.2800
3	Manotick Main Street	None	992		100		622	1671		0.5938

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.16		3.16	0.72		A		A
2	Bankfield Road	None	3.93		3.93	1.23		A		A
3	Manotick Main Street	None	7.97		7.97	5.46		A		A

## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2033 PHF Flow Profile (veh)
2033 Background	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0



## Traffic Flow Data (veh/hr)

### 2033 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	734	68	0	5.0	1.00	1.000
2	Bankfield Road	0	45	469	0	5.0	1.00	1.000
3	Manotick Main Street	0	557	543	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2033 PM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

#### Geometry Options for 2033 PM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	1	7.00	0.00

#### Geometry Options for 2033 PM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

## 2033 PM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	802		557		588	1371		0.5850
2	Bankfield Road	None	514		734		625	1255		0.4096
3	Manotick Main Street	None	1100		45		1203	1707		0.6446

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	6.13		6.13	3.48		A		A
2	Bankfield Road	None	4.89		4.89	1.81		A		A
3	Manotick Main Street	None	10.15		10.15	7.57		B		B

## 2033 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	802		557		588	1371		0.5850
2	Bankfield Road	None	514		734		625	1255		0.4096
3	Manotick Main Street	None	1100		45		1203	1707		0.6446

### Delays, Queues and Level of Service

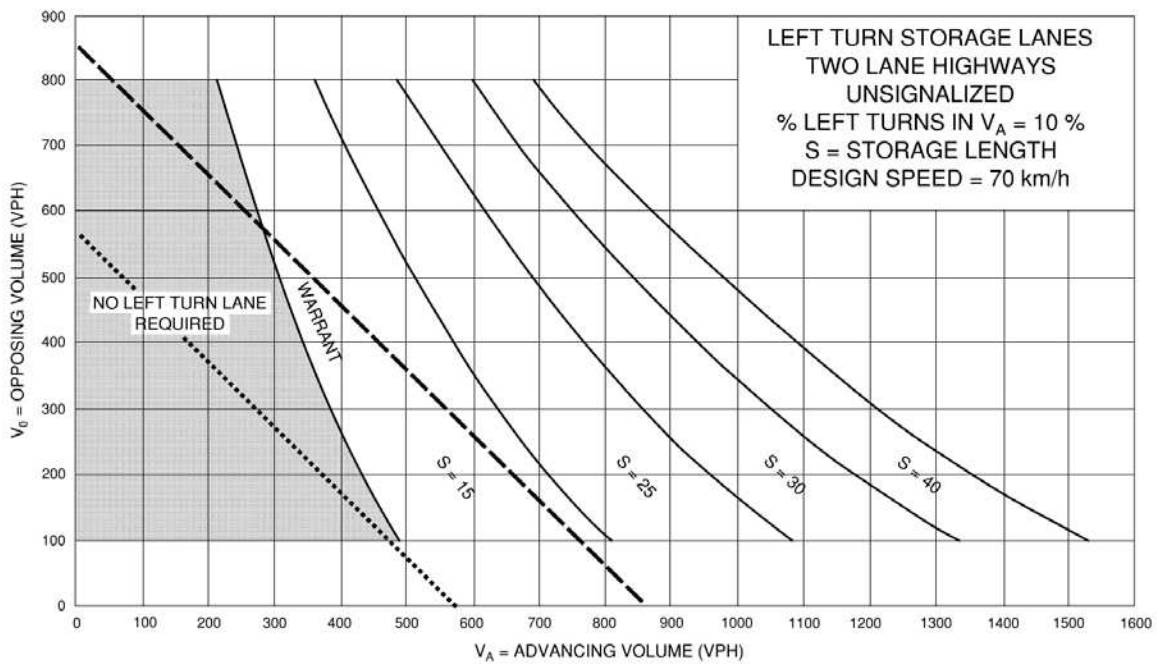
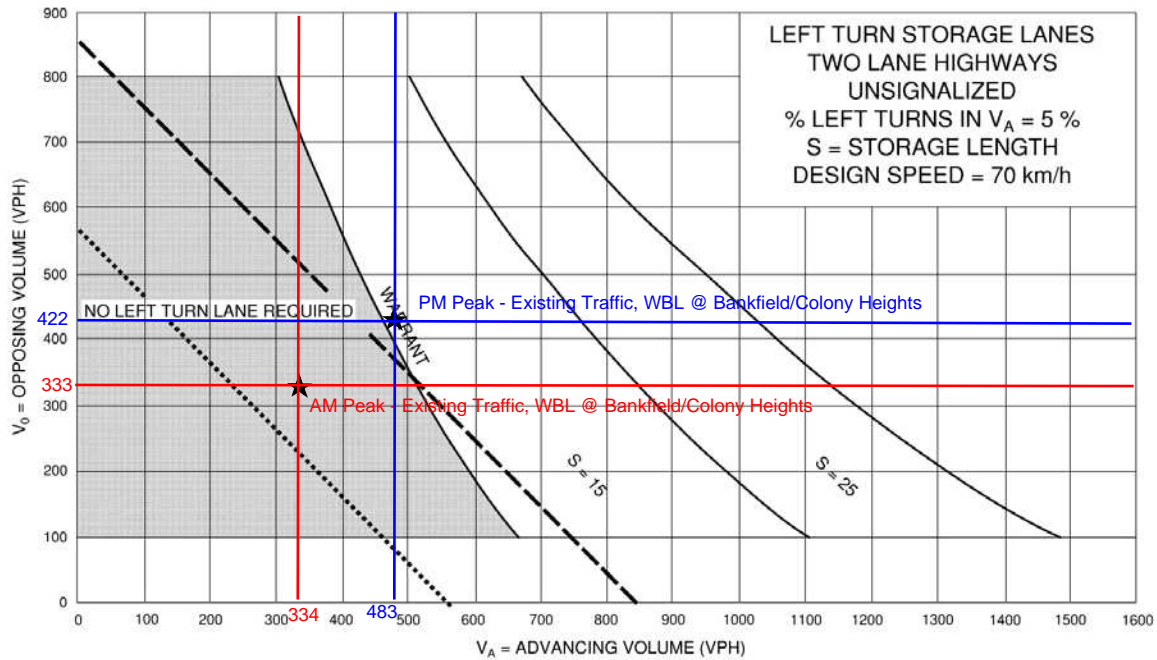
Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	6.15		6.15	3.48		A		A
2	Bankfield Road	None	4.90		4.90	1.81		A		A
3	Manotick Main Street	None	10.21		10.21	7.57		B		B

## **APPENDIX J**

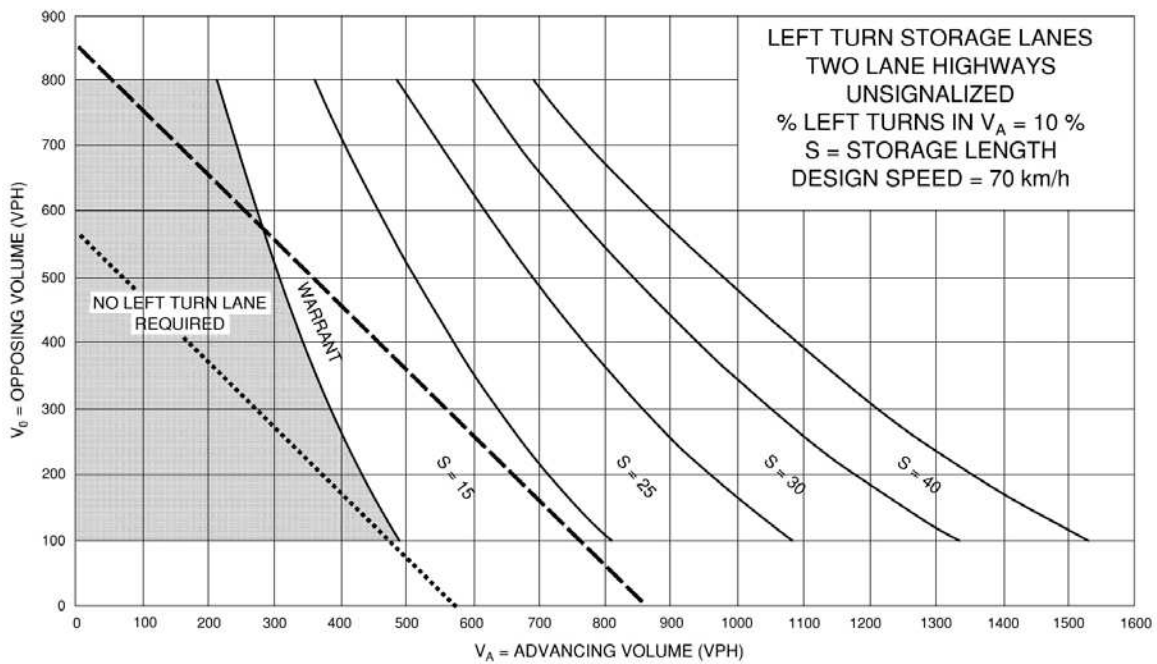
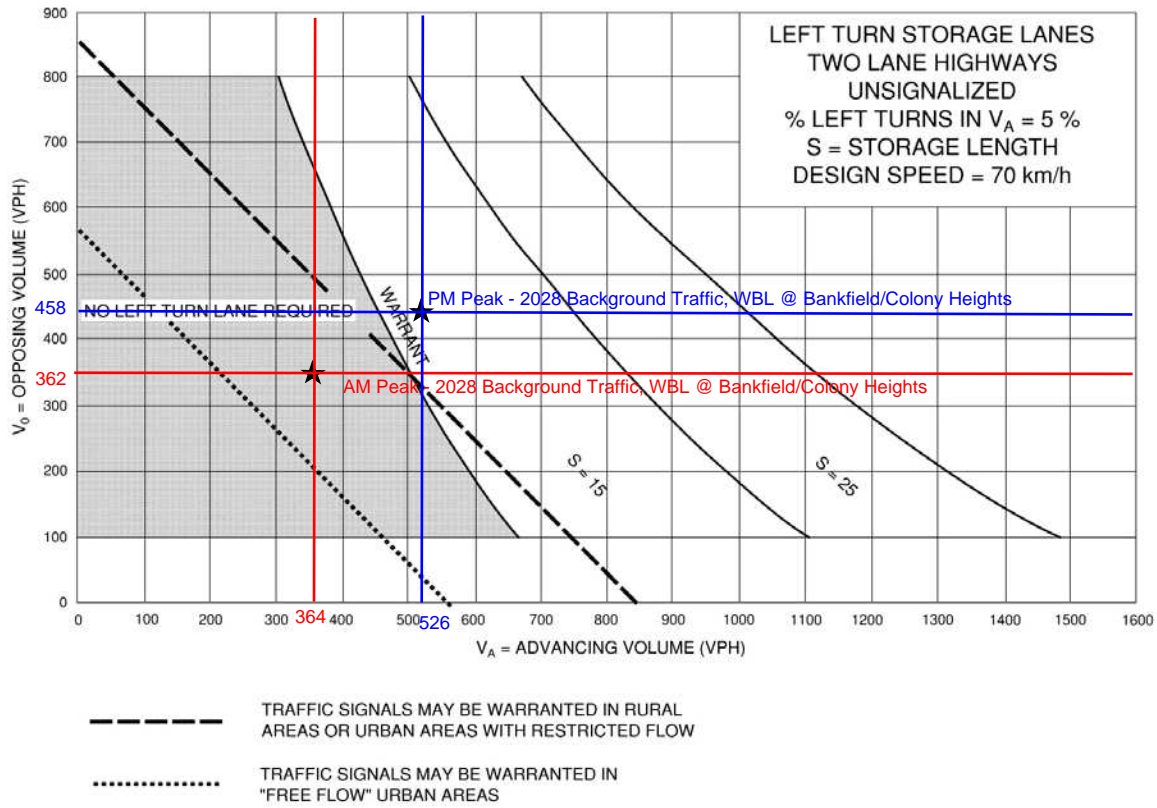
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Turn Lane Warrants

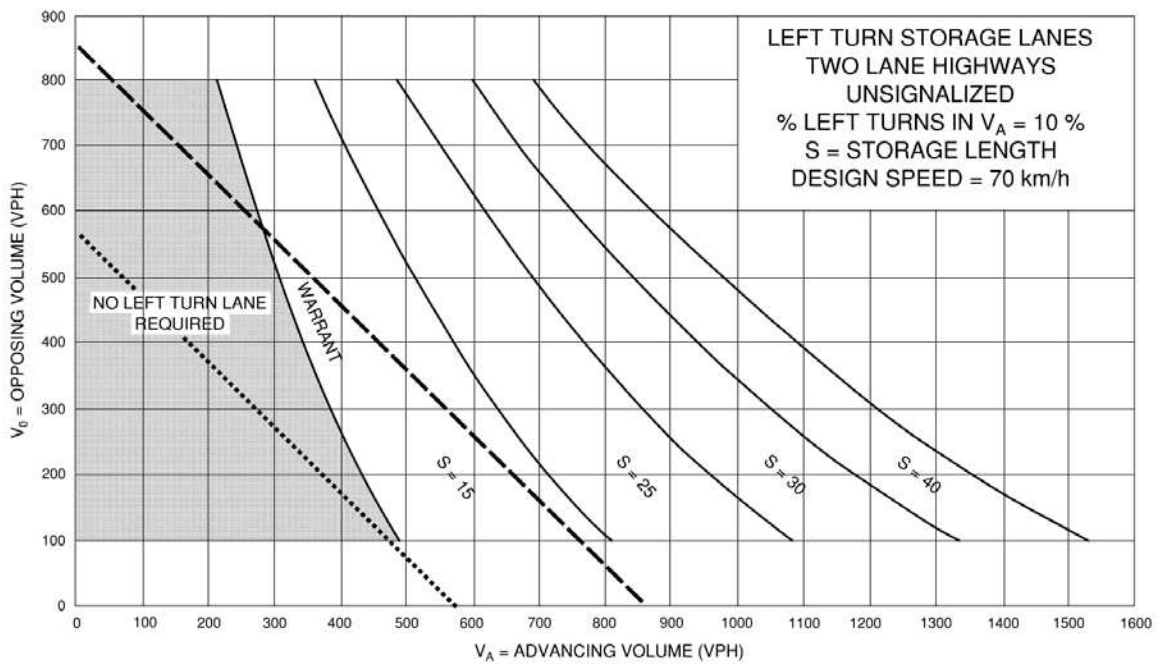
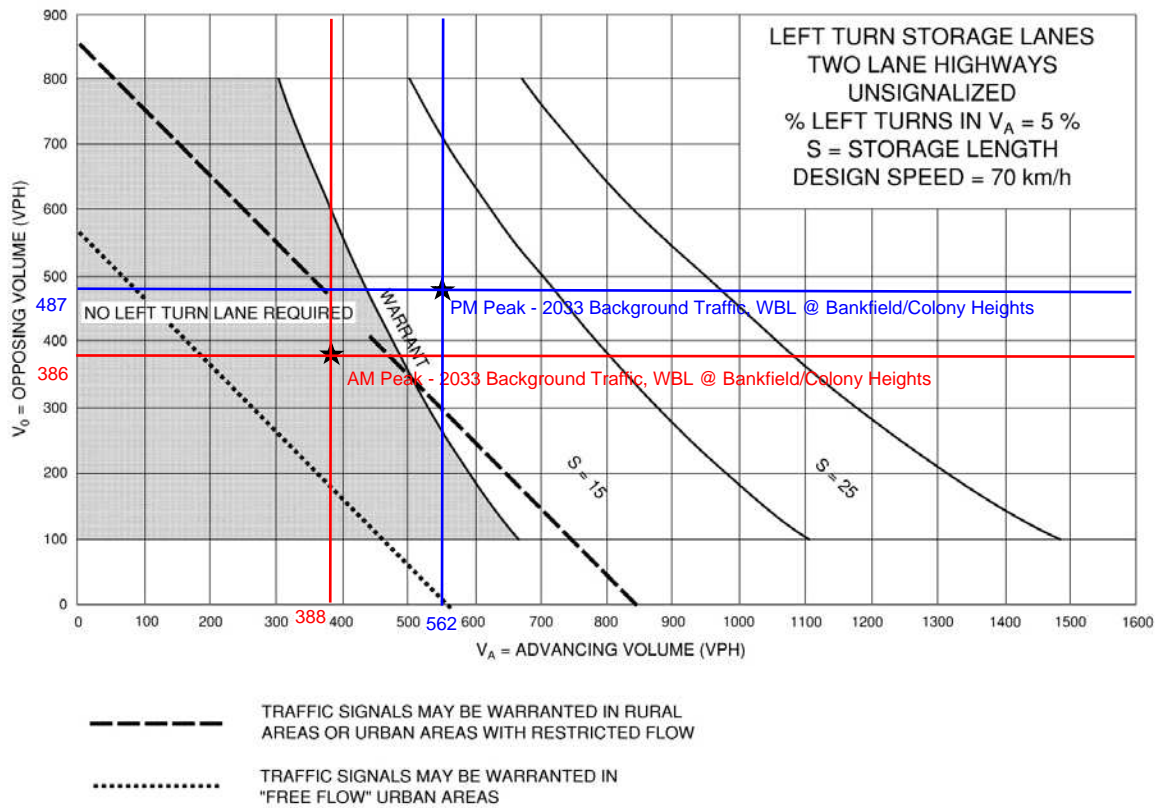
**Exhibit 9A-10**



**Exhibit 9A-10**

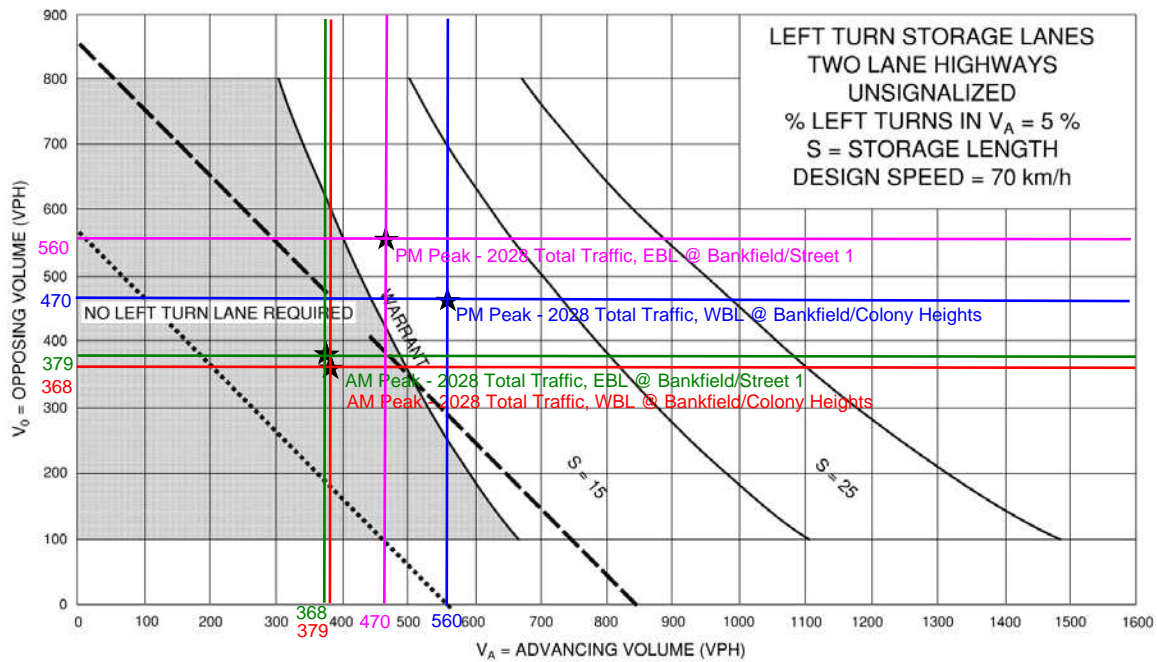


**Exhibit 9A-10**

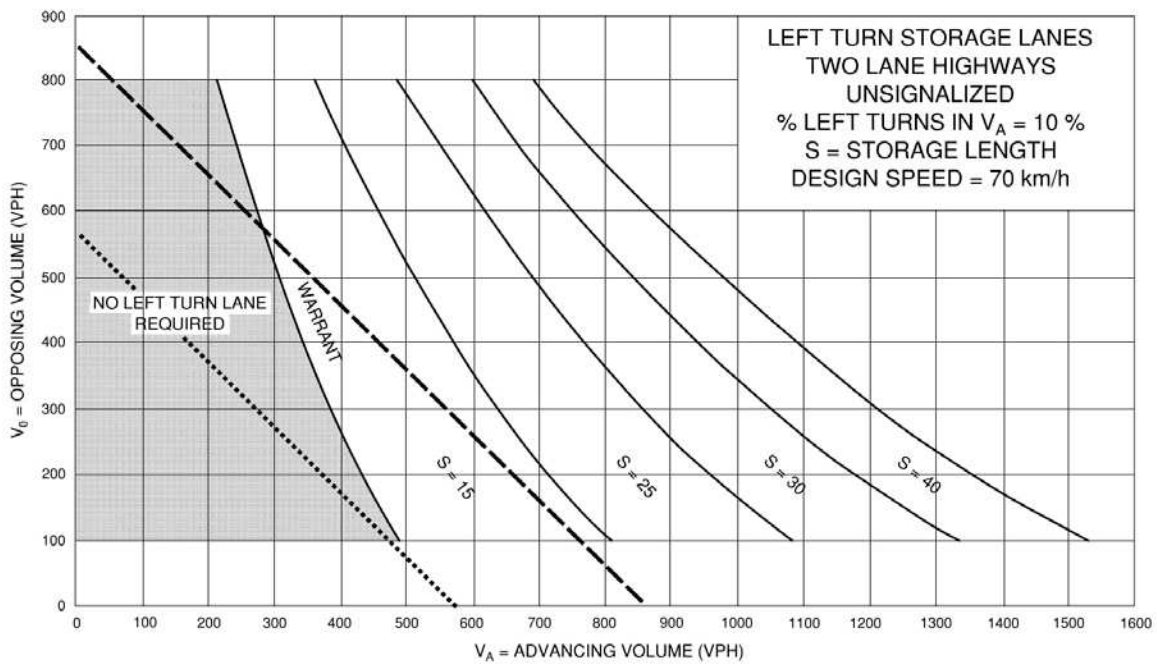




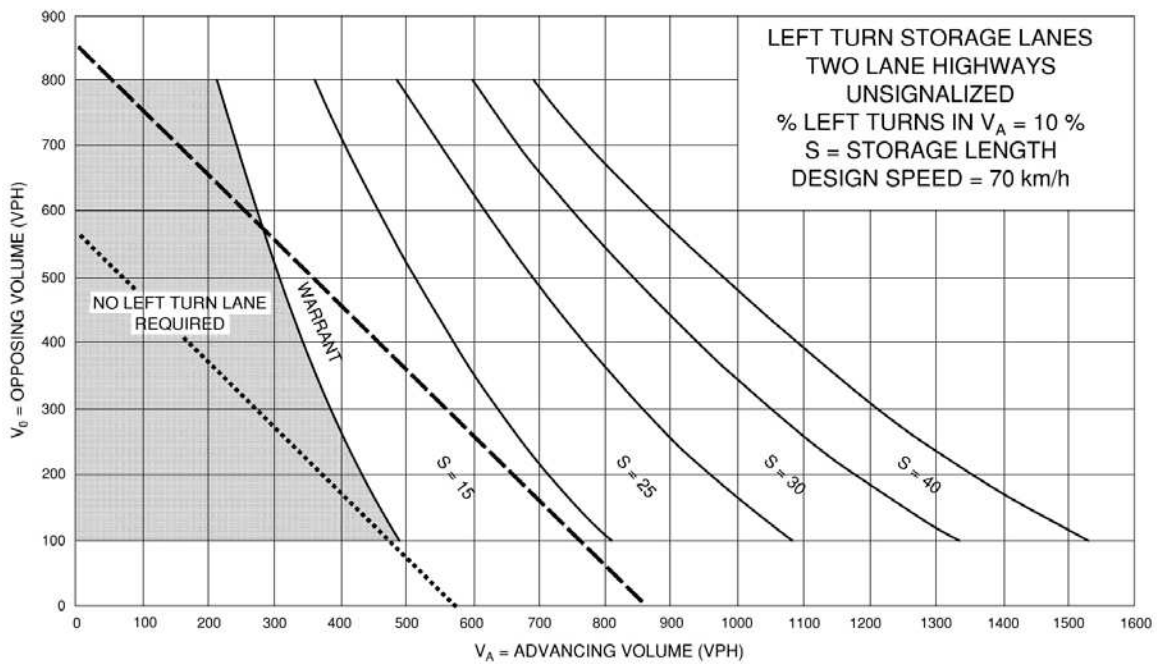
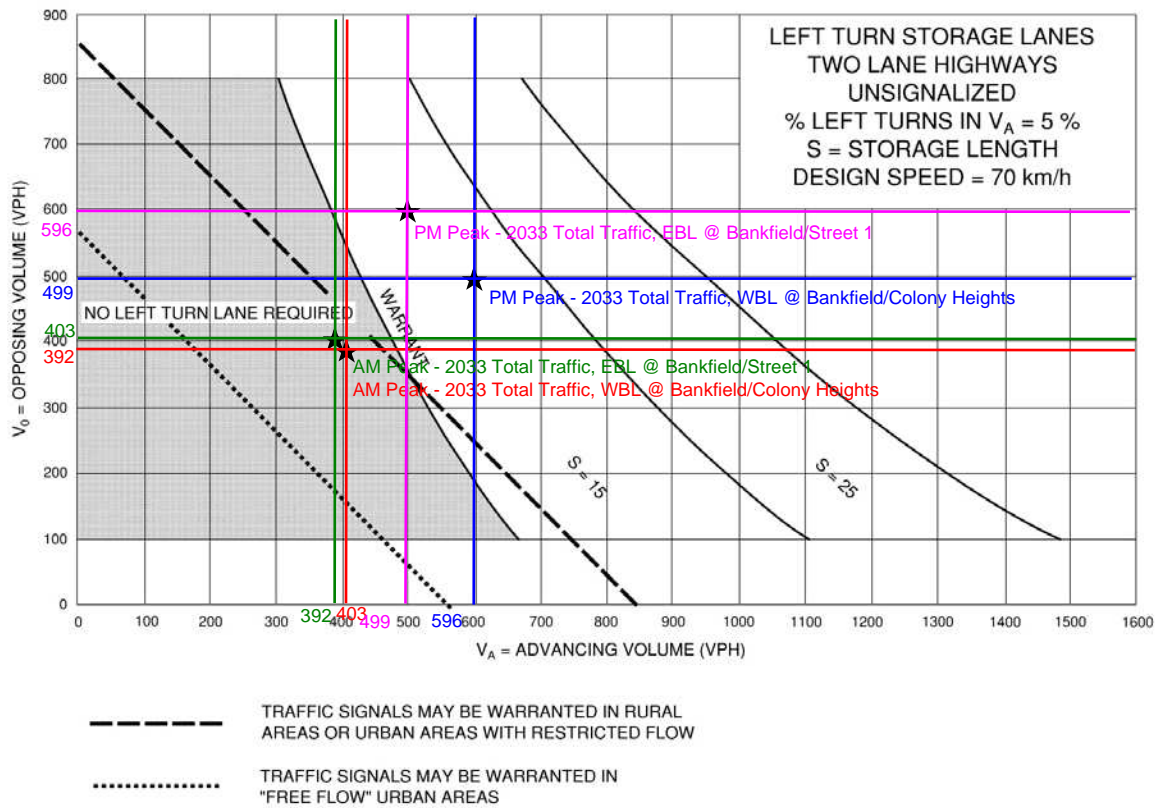
**Exhibit 9A-10**



- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW
- ..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS



**Exhibit 9A-10**



## **APPENDIX K**

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MMLOS Analysis

## Segment MMLOS Analysis

This section provides a review of the boundary streets (Bankfield Road and Rideau Valley Drive), using complete streets principles. The *Multi-Modal Level of Service (MMLOS) Guidelines*, produced by IBI Group in October 2015, were used to evaluate the levels of service for each alternative mode of transportation. Schedule A of the City's Official Plan identifies that the boundary roadways are located within the 'Village' land use designation.

Exhibit 4 of the MMLOS Guidelines has been used to evaluate the segment pedestrian level of service (PLOS). Exhibit 22 of the MMLOS Guidelines suggest a target PLOS C for all roadways within a Village. The results of the segment PLOS analysis are summarized in **Table 1**.

The MMLOS guidelines suggest that paved shoulders may be appropriate pedestrian facilities in rural settings where pedestrian volumes are low. In recognition of this, paved shoulders may be evaluated based on the existing methodology as if they are sidewalks, but it is recommended that the resulting score be adjusted down one grade to recognize their differences (maintenance, lack of physical separation, potential blockage, accessibility, etc.).

Exhibit 11 of the MMLOS Guidelines has been used to evaluate the segment bicycle level of service (BLOS). Within a Village, Exhibit 22 of the MMLOS Guidelines suggest a BLOS C for roadways classified as Spine Cycling Routes. The results of the segment BLOS analysis are summarized in **Table 2**.

Exhibit 15 of the MMLOS Guidelines has been used to evaluate the segment transit level of service (TLOS). Despite having no TLOS target, Bankfield Road has been evaluated for TLOS, as it currently has transit service. The results of the segment TLOS analysis are summarized in **Table 3**. Rideau Valley Drive does not serve transit and has not been evaluated for TLOS.

Exhibit 20 of the MMLOS Guidelines has been used to evaluate the segment truck level of service (TkLOS). Within a Village, Exhibit 22 of the MMLOS Guidelines suggest a TkLOS D for all arterial roadways classified as truck routes. The results of the segment TkLOS analysis are summarized in **Table 4**.

**Table 1: PLOS Segment Analysis**

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed <sup>(1)</sup>	PLOS
<b>Bankfield Road</b>					
> 2.0m	0m	> 3,000 vpd	No	70 km/h	F
<b>Rideau Valley Drive</b>					
> 2.0m	0m	> 3,000 vpd	No	70 km/h	F

1. Operating speed taken as the speed limit plus 10 km/h.

**Table 2: BLOS Segment Analysis**

Road Class	Type of Route	Type of Bikeway	Travel Lanes	Operating Speed	BLOS
<b>Bankfield Road</b>					
Arterial	Spine Route	Paved Shoulder <sup>1</sup>	2	70 km/h	E
<b>Rideau Valley Drive</b>					
Arterial	Spine Route	Paved Shoulder <sup>1</sup>	2	70 km/h	E

1. The MMLOS guidelines suggest that paved shoulders in a rural context may be evaluated as bike lanes. This reflects more experienced adult cyclists making use of these facilities, which may be appropriate in a rural context.

**Table 3: TLOS Segment Analysis**

Facility Type	Exposure to Congestion Delay, Friction, and Incidents			TLOS
	Congestion	Friction	Incident Potential	
<b>Bankfield Road</b>				
Mixed Traffic; Limited Parking/Driveway Friction	Yes	Low	Medium	D

**Table 4: TkLOS Segment Analysis**

Curb Lane Width	Number of Travel Lanes Per Direction	TkLOS
<b>Bankfield Road</b>		
3.5m	1	C
<b>Rideau Valley Drive</b>		
3.5m	1	C

## Intersection MMLOS Analysis

The following is a review of the MMLOS of the study area intersections, using complete streets principles. The MMLOS Guidelines were used to evaluate the MMLOS for Rideau Valley Drive/Bankfield Road/Manotick Main Street and Manotick Main Street/Bridge Street/Maple Avenue. Per Schedule B of the City's Official Plan, both intersections are located within a Village.

Exhibit 5 of the Addendum to the MMLOS Guidelines has been used to evaluate the existing PLOS at the intersections listed above. Exhibit 22 of the MMLOS Guidelines suggests a target PLOS C for all roadways within a Village. The results of the intersection PLOS analysis are summarized in **Tables 5 and 6**.

Exhibit 12 of the MMLOS Guidelines has been used to evaluate the existing BLOS at the intersections listed above. Exhibit 22 of the MMLOS Guidelines suggests a target BLOS C for Village roadways with a Spine Route designation (Rideau Valley Drive, Bankfield Road, Bridge Street, and Manotick Main Street), and a target BLOS D for Village local roadways with a no cycling designation (Maple Avenue). The results of the intersection BLOS analysis are summarized in **Table 7**.

Exhibit 16 of the MMLOS Guidelines has been used to evaluate the existing TLOS at the intersections listed above. No target TLOS is identified for any study area roadway. Regardless, all approaches that are currently utilized by transit have been evaluated. The results of the intersection TLOS analysis are summarized in **Table 8**.

Exhibit 21 of the MMLOS Guidelines has been used to evaluate the existing TkLOS at the intersections listed above. Exhibit 22 of the MMLOS Guidelines identifies a target TkLOS B for arterial roadways within a Village with a truck route designation (Rideau Valley Drive, Bankfield Road, Manotick Main Street, and Bridge Street). No target is identified for local roadways in a Village with no Truck Route designation (Maple Avenue). The results of the intersection TkLOS analysis are summarized in **Table 9**.

Auto LOS analysis is summarized in **Section 5.4.1** of the TIA report. Exhibit 22 of the MMLOS Guidelines identifies a target Auto LOS D for all roadways within a Village. Detailed Synchro reports are included in **Appendix I**.

**Table 5: PLOS Intersection Analysis – Rideau Valley Drive/Bankfield Road/Manotick Main Street**

Criteria	North Approach		South Approach		West Approach	
<b>Rideau Valley Drive/Manotick Main Street/Bankfield Road</b>						
<b>PETSI SCORE</b>						
<i>CROSSING DISTANCE CONDITIONS</i>						
Median > 2.4m in Width	No	88	No	39	No	23
Lanes Crossed (3.5m Lane Width)	4		7		8	
<i>SIGNAL PHASING AND TIMING</i>						
Left Turn Conflict	Permissive	-8	No Left Turn/Prohibited	0	Perm + Prot	-8
Right Turn Conflict	No Right Turn/Prohibited	0	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	Yes	0	No	-2	No	-2
<i>CORNER RADIUS</i>						
Parallel Radius	No Right Turn	0	> 15m to 25m	-8	> 10m to 15m	-6
Parallel Right Turn Channel	No Right Turn	0	Conventional with Receiving	-3	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	No Right Turn	0	> 15m to 25m	-8
Perpendicular Right Turn Channel	N/A	0	No Right Turn	0	Conventional with Receiving	-3
<i>CROSSING TREATMENT</i>						
Treatment	Standard	-7	Standard	-7	Standard	-7
<b>PETSI SCORE</b>		<b>73</b>			<b>14</b>	<b>-20</b>
<b>LOS</b>		<b>C</b>			<b>F</b>	<b>F</b>
<b>DELAY SCORE</b>						
Cycle Length	90		90		70	
Pedestrian Walk Time	7.3		7.3		13.3	
<b>DELAY SCORE</b>		<b>38</b>	<b>38</b>		<b>23</b>	
<b>LOS</b>		<b>D</b>	<b>D</b>		<b>C</b>	
<b>OVERALL</b>		<b>D</b>	<b>F</b>		<b>F</b>	

**Table 6: PLOS Intersection Analysis – Manotick Main Street/Bridge Street/Maple Avenue**

Criteria	North Approach		South Approach		East Approach		West Approach	
<b>Manotick Main Street/Bridge Street/Maple Avenue</b>								
<b>PETSI SCORE</b>								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	55	No	72	No	55	No	55
Lanes Crossed (3.5m Lane Width)	6		5		6		6	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	Permissive	-8	Perm + Prot	-8	Perm + Prot	-8	No Left Turn/Prohibited	0
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3
Leading Pedestrian Interval	Yes	0	No	-2	No	-2	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	> 10m to 15m	-6	> 5m to 10m	-5	> 5m to 10m	-5	> 5m to 10m	-5
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
<b>PETSI SCORE</b>		<b>22</b>			<b>38</b>			<b>29</b>
<b>LOS</b>		<b>F</b>			<b>E</b>			<b>F</b>
<b>DELAY SCORE</b>								
Cycle Length		140		140		140		130
Pedestrian Walk Time		6.8		7.7		8.7		48.7
<b>DELAY SCORE</b>		<b>63.4</b>			<b>62.5</b>			<b>25.4</b>
<b>LOS</b>		<b>F</b>			<b>F</b>			<b>C</b>
<b>OVERALL</b>		<b>F</b>			<b>F</b>			<b>F</b>



**Table 7: BLOS Intersection Analysis**

<b>Approach</b>	<b>Facility Type</b>	<b>Criteria</b>	<b>Travel Lanes and/or Speed</b>	<b>BLOS</b>
<b>Rideau Valley Drive/Bankfield Road/Manotick Main Street</b>				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	<b>A</b>
		Left Turn Accommodation	No left turns	-
South Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turns	-
		Left Turn Accommodation	One lane crossed; $\geq 60$ km/h	<b>F</b>
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane longer than 50m	<b>F</b>
		Left Turn Accommodation	One lane crossed; $\geq 60$ km/h	<b>F</b>
<b>Manotick Main Street/Bridge Street/Maple Avenue</b>				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	<b>A</b>
		Left Turn Accommodation	One lane crossed; $\geq 60$ km/h	<b>F</b>
South Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	<b>F</b>
		Left Turn Accommodation	No left turns	-
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane 25m to 50m long, turning speed <25km/h	<b>D</b>
		Left Turn Accommodation	Two lanes crossed; $\geq 50$ km/h	<b>F</b>
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	<b>A</b>
		Left Turn Accommodation	One lane crossed; $\geq 60$ km/h	<b>F</b>

**Table 8: TLOS Intersection Analysis**

Approach	Delay <sup>(1)</sup>		TLOS
	AM Peak	PM Peak	
<b>Rideau Valley Drive/Bankfield Road/Manotick Main Street</b>			
North Approach	15 sec	26 sec	D
South Approach	7 sec	20 sec	C
West Approach	15 sec	17 sec	C
<b>Manotick Main Street/Bridge Street/Maple Avenue</b>			
North Approach	12 sec	21 sec	D
South Approach	14 sec	23 sec	D
East Approach	18 sec	35 sec	E
West Approach	49 sec	65 sec	F

1. Delay based on outputs from Synchro analysis of existing conditions

**Table 9: TkLOS Intersection Analysis**

Approach	Effective Corner Radius	Number of Receiving Lanes Departing Intersection	TkLOS
<b>Rideau Valley Drive/Bankfield Road/Manotick Main Street</b>			
North Approach	> 15m	1	C
South Approach	-	-	-
West Approach	> 15m	2	A
<b>Manotick Main Street/Bridge Street/Maple Avenue</b>			
North Approach	10m to 15m	1	E
South Approach	10m to 15m	1	E
East Approach	10m to 15m	2	B
West Approach	10m to 15m	1	E

## **APPENDIX L**

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### Transportation Demand Management

**TDM Measures Checklist:**  
*Residential Developments (multi-family, condominium or subdivision)*

<b>Legend</b>	
<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
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
BASIC	★	1.1.1 Designate an internal coordinator, or contract with an external coordinator <input type="checkbox"/>
<b>1.2 Travel surveys</b>		
BETTER		1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress <input type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
BASIC		2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances ( <i>multi-family, condominium</i> ) <input checked="" type="checkbox"/> at sales centre
<b>2.2 Bicycle skills training</b>		
BETTER		2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses <input type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances ( <i>multi-family, condominium</i> )	<input checked="" type="checkbox"/> at sales centre
BETTER	3.1.2 Provide real-time arrival information display at entrances ( <i>multi-family, condominium</i> )	<input type="checkbox"/>
<b>3.2 Transit fare incentives</b>		
BASIC ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input type="checkbox"/>
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels ( <i>subdivision</i> )	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
BETTER	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input type="checkbox"/>
<b>4. CARSHARING &amp; BIKESHARING</b>		
<b>4.1 Bikeshare stations &amp; memberships</b>		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station ( <i>multi-family</i> )	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized ( <i>multi-family</i> )	<input type="checkbox"/>
<b>4.2 Carshare vehicles &amp; memberships</b>		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
<b>5. PARKING</b>		
<b>5.1 Priced parking</b>		
BASIC ★	5.1.1 Unbundle parking cost from purchase price ( <i>condominium</i> )	<input type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent ( <i>multi-family</i> )	<input type="checkbox"/>

<b>TDM measures: <i>Residential developments</i></b>		<b>Check if proposed &amp; add descriptions</b>
<b>6. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>6.1 Multimodal travel information</b>		
<b>BASIC</b> ★	6.1.1 Provide a multimodal travel option information package to new residents	<input type="checkbox"/>
<b>6.2 Personalized trip planning</b>		
<b>BETTER</b> ★	6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

## **APPENDIX M**

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Total Synchro Analysis



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	107	336	389	560	275	29
Future Volume (vph)	107	336	389	560	275	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	1726	0
Flt Permitted	0.950		0.447			
Satd. Flow (perm)	1695	1419	714	1717	1726	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		336			8	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	107	336	389	560	275	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	336	389	560	304	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.1	11.1	47.9	47.5	29.7	
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.42	
v/c Ratio	0.40	0.66	0.62	0.48	0.41	
Control Delay	30.7	10.4	9.7	7.4	17.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.7	10.4	9.7	7.4	17.1	
LOS	C	B	A	A	B	
Approach Delay	15.3			8.4	17.1	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	11.3	11.3	15.2	47.3	26.8	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	12.7	48.6	30.6	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.0	48.6	32.3	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	8.8	48.6	34.5	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	93	49	157	254	206	
Fuel Used(l)	8	11	20	28	21	
CO Emissions (g/hr)	141	199	370	526	395	
NOx Emissions (g/hr)	27	38	71	101	76	
VOC Emissions (g/hr)	32	46	85	121	91	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	13.0	0.0	16.6	27.0	25.2	
Queue Length 95th (m)	24.6	19.5	36.2	56.0	51.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	557	658	1164	736	

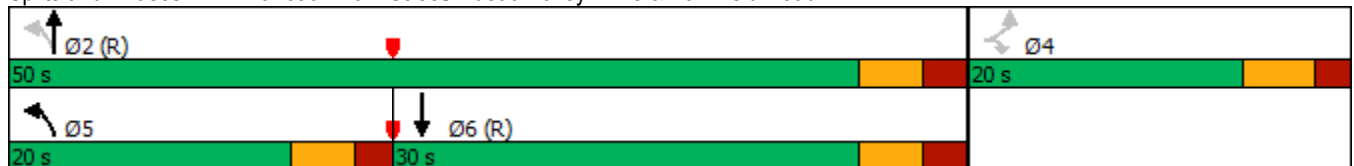


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.60	0.59	0.48	0.41	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.7
Intersection LOS:	B
Intersection Capacity Utilization	62.1%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



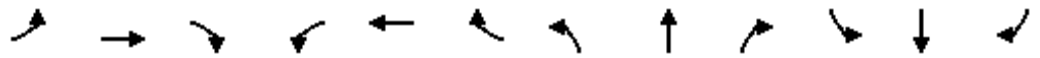
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	152	50	498	0	410	335	364	202	41
Future Volume (vph)	27	27	4	152	50	498	0	410	335	364	202	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	0.99					0.98			0.98			
Fr <sub>t</sub>		0.981				0.850			0.850		0.975	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1703	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.274		
Satd. Flow (perm)	1684	1694	0	1586	1655	1343	0	1784	1438	466	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				478			335			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	152	50	498	0	410	335	364	202	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	152	50	498	0	410	335	364	243	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

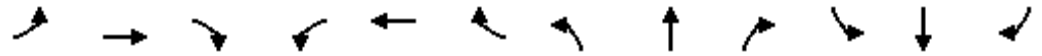
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	36.3		37.7	23.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		17.7%	17.7%	27.9%		29.0%	17.7%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		14.8	14.8	38.6		38.3	52.9	68.2	68.2	
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.36		0.36	0.49	0.64	0.64	
v/c Ratio	0.17	0.19		0.70	0.22	0.63		0.64	0.38	0.66	0.22	
Control Delay	50.2	45.8		62.5	44.8	5.2		38.7	3.1	17.4	9.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	50.2	45.8		62.5	44.8	5.2		38.7	3.1	17.4	9.7	
LOS	D	D		E	D	A		D	A	B	A	
Approach Delay		47.9			20.5			22.7			14.3	
Approach LOS		D			C			C			B	
90th %ile Green (s)	10.0	10.0		17.0	17.0	30.0		31.7	17.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
70th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	26.5		35.2	16.8	26.5	67.7	
50th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		14.0	14.0	22.2		39.5	14.0	22.2	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	12.5		49.2	10.0	12.5	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	27	27		140	43	44		333	24	173	97	
Fuel Used(l)	2	2		13	4	15		33	12	21	12	
CO Emissions (g/hr)	36	38		244	67	282		605	221	397	231	
NOx Emissions (g/hr)	7	7		47	13	55		117	43	77	45	
VOC Emissions (g/hr)	8	9		56	15	65		140	51	92	53	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		31.8	9.8	1.8		79.9	0.0	38.3	21.8	
Queue Length 95th (m)	14.5	15.1		#53.6	21.0	14.2		#131.4	14.3	59.8	34.6	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	361	364		250	261	847		636	906	620	1086	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.07	0.09		0.61	0.19	0.59		0.64	0.37	0.59	0.22	

**Intersection Summary**

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	107.4
Natural Cycle:	115
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	20.3
Intersection LOS:	C
Intersection Capacity Utilization:	78.7%
ICU Level of Service:	D
Analysis Period (min):	15
90th %ile Actuated Cycle:	112.5
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	109.5
10th %ile Actuated Cycle:	90.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	























Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



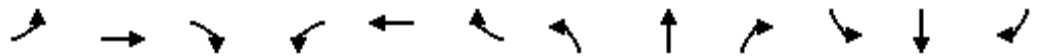
Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no peds) 2028 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	152	50	498	0	410	335	364	202	41
Future Volume (vph)	27	27	4	152	50	498	0	410	335	364	202	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	1.00					0.98			0.98			
Frt		0.981				0.850			0.850		0.975	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1703	0
Flt Permitted	0.950			0.950						0.271		
Satd. Flow (perm)	1687	1694	0	1586	1655	1345	0	1784	1440	461	1703	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				444			335			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	152	50	498	0	410	335	364	202	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	152	50	498	0	410	335	364	243	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no peds) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	36.3		37.7	28.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		21.5%	21.5%	27.9%		29.0%	21.5%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		21.8	21.8	30.0		31.7	21.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		16.3	16.3	40.0		38.5	54.6	68.4	68.4	
Actuated g/C Ratio	0.09	0.09		0.15	0.15	0.37		0.35	0.50	0.63	0.63	
v/c Ratio	0.17	0.19		0.64	0.20	0.64		0.65	0.38	0.67	0.23	
Control Delay	51.9	47.5		57.3	43.3	6.0		40.1	3.0	18.9	10.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	51.9	47.5		57.3	43.3	6.0		40.1	3.0	18.9	10.6	
LOS	D	D		E	D	A		D	A	B	B	
Approach Delay		49.5			19.8			23.4			15.6	
Approach LOS		D			B			C			B	
90th %ile Green (s)	10.0	10.0		22.0	22.0	30.0		31.7	22.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		20.5	20.5	30.0		31.7	20.5	30.0	67.7	
70th %ile Term Code	Min	Min		Gap	Gap	Max		MaxR	Gap	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	26.9		34.8	16.8	26.9	67.7	
50th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
30th %ile Green (s)	10.0	10.0		13.3	13.3	22.0		39.7	13.3	22.0	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	12.3		49.4	10.0	12.3	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	27	27		137	42	58		331	22	178	100	
Fuel Used(l)	2	2		12	4	16		33	12	22	13	
CO Emissions (g/hr)	37	39		232	66	291		613	219	407	235	
NOx Emissions (g/hr)	7	8		45	13	56		118	42	79	45	
VOC Emissions (g/hr)	8	9		54	15	67		141	51	94	54	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		31.8	9.8	4.9		80.4	0.0	38.3	21.8	
Queue Length 95th (m)	15.0	15.7		52.9	20.8	17.4		#141.1	13.9	66.6	38.8	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak (no peds) 2028 Total Traffic

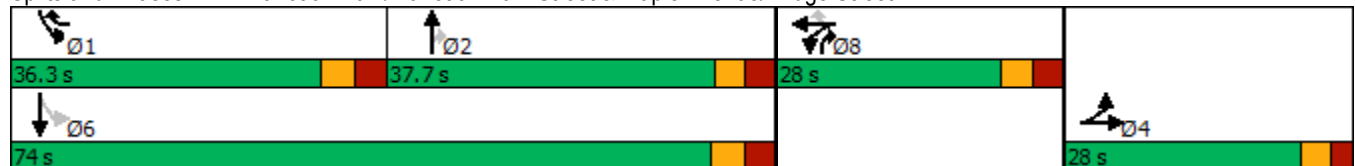


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	356	359		320	334	834		629	953	610	1072	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.47	0.15	0.60		0.65	0.35	0.60	0.23	

**Intersection Summary**




















Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	109
Natural Cycle:	110
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	20.7
Intersection LOS:	C
Intersection Capacity Utilization	78.7%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	117.5
70th %ile Actuated Cycle:	116
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	108.8
10th %ile Actuated Cycle:	90.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street























3: Colony Heights Road/Street 1 & Bankfield Road  
AM Peak

4386 Rideau Valley Drive  
2028 Total Traffic

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	6	348	14	6	358	15	23	1	18	37	3	13	
Future Volume (Veh/h)	6	348	14	6	358	15	23	1	18	37	3	13	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
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	
Hourly flow rate (vph)	6	348	14	6	358	15	23	1	18	37	3	13	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None					None							
Median storage (veh)													
Upstream signal (m)	221												
pX, platoon unblocked													
vC, conflicting volume	373			362			752	752	355	756	752	366	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	373			362			752	752	355	756	752	366	
tC, single (s)	4.1			4.3			7.1	6.5	6.3	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.4			3.5	4.0	3.4	3.5	4.0	3.3	
p0 queue free %	99			99			93	100	97	88	99	98	
cM capacity (veh/h)	1185			1118			313	336	669	313	336	680	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	6	362	6	373	42	53							
Volume Left	6	0	6	0	23	37							
Volume Right	0	14	0	15	18	13							
cSH	1185	1700	1118	1700	407	362							
Volume to Capacity	0.01	0.21	0.01	0.22	0.10	0.15							
Queue Length 95th (m)	0.1	0.0	0.1	0.0	2.6	3.9							
Control Delay (s)	8.1	0.0	8.2	0.0	14.9	16.6							
Lane LOS	A		A		B	C							
Approach Delay (s)	0.1		0.1		14.9	16.6							
Approach LOS					B	C							
Intersection Summary													
Average Delay			1.9										
Intersection Capacity Utilization			31.8%		ICU Level of Service			A					
Analysis Period (min)			15										

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
AM Peak

4386 Rideau Valley Drive  
2028 Total Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	308	18	19	404	8	41	1	58	24	3	4
Future Volume (Veh/h)	4	308	18	19	404	8	41	1	58	24	3	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	4	308	18	19	404	8	41	1	58	24	3	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	412			326			764	766	308	820	780	408
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412			326			764	766	308	820	780	408
tC, single (s)	4.3			4.3			7.1	7.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.3			3.5	4.9	3.3	3.5	4.3	3.3
p0 queue free %	100			98			87	100	92	91	99	99
cM capacity (veh/h)	1033			1159			311	235	732	263	287	643
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	4	308	18	19	412	100	31					
Volume Left	4	0	0	19	0	41	24					
Volume Right	0	0	18	0	8	58	4					
cSH	1033	1700	1700	1159	1700	465	287					
Volume to Capacity	0.00	0.18	0.01	0.02	0.24	0.22	0.11					
Queue Length 95th (m)	0.1	0.0	0.0	0.4	0.0	6.1	2.7					
Control Delay (s)	8.5	0.0	0.0	8.2	0.0	14.9	19.0					
Lane LOS	A			A		B	C					
Approach Delay (s)	0.1			0.4		14.9	19.0					
Approach LOS						B	C					
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			35.7%	ICU Level of Service	A							
Analysis Period (min)			15									



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	454	543	516	701	75
Future Volume (vph)	52	454	543	516	701	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1759	0
Flt Permitted	0.950		0.090			
Satd. Flow (perm)	1647	1369	153	1784	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		452			8	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	52	454	543	516	701	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	454	543	516	776	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.5	11.5	67.5	67.1	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.44	
v/c Ratio	0.25	0.80	1.13	0.39	1.01	
Control Delay	37.7	15.6	108.6	5.3	60.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.7	15.6	108.6	5.3	60.5	
LOS	D	B	F	A	E	
Approach Delay	17.9			58.3	60.5	
Approach LOS	B			E	E	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	13.1	13.1	20.9	65.5	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	46	56	356	171	648	
Fuel Used(l)	4	16	72	24	83	
CO Emissions (g/hr)	74	297	1342	443	1542	
NOx Emissions (g/hr)	14	57	259	85	298	
VOC Emissions (g/hr)	17	68	310	102	356	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	8.4	0.3	~90.9	23.7	~130.8	
Queue Length 95th (m)	18.0	#34.7	#166.5	45.5	#208.8	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	597	480	1330	772	

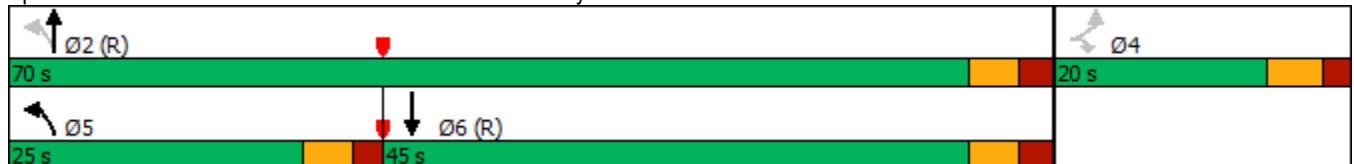


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.76	1.13	0.39	1.01	

Intersection Summary























Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.13
Intersection Signal Delay:	50.3
Intersection LOS:	D
Intersection Capacity Utilization	97.7%
ICU Level of Service	F
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road





2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2028 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Future Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.241		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1468	391	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				376			267		14	
Link Speed (k/h)		40			40			50			50	
Link Distance (m)		177.8			237.8			330.9			364.3	
Travel Time (s)		16.0			21.4			23.8			26.2	
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	631	0	332	267	498	623	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	50.0		34.0	23.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		16.4%	16.4%	35.7%		24.3%	16.4%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.0	14.0		16.8	16.8	56.5		32.0	48.6	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.45		0.25	0.38	0.62	0.62	
v/c Ratio	0.41	0.55		1.35	0.68	0.73		0.74	0.36	0.83	0.58	
Control Delay	58.5	63.0		224.2	68.2	12.0		56.2	4.6	33.3	17.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	58.5	63.0		224.2	68.2	12.0		56.2	4.6	33.3	17.6	
LOS	E	E		F	E	B		E	A	C	B	
Approach Delay		61.1			79.0			33.2			24.6	
Approach LOS		E			E			C			C	
90th %ile Green (s)	22.0	22.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.0	15.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	12.8	12.8		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.8	10.8		16.8	16.8	38.4		33.3	16.8	38.4	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		16.8	16.8	29.9		41.8	16.8	29.9	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	68	97		229	144	237		284	22	314	359	
Fuel Used(l)	6	9		63	14	25		31	10	37	38	
CO Emissions (g/hr)	108	160		1175	268	467		580	183	689	707	
NOx Emissions (g/hr)	21	31		227	52	90		112	35	133	137	
VOC Emissions (g/hr)	25	37		271	62	108		134	42	159	163	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	17.9	25.1		~96.8	37.7	24.3		78.5	0.0	75.7	82.8	
Queue Length 95th (m)	32.9	43.4		#165.1	#70.7	54.2		#138.7	17.2	#147.3	138.9	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak 2028 Total Traffic

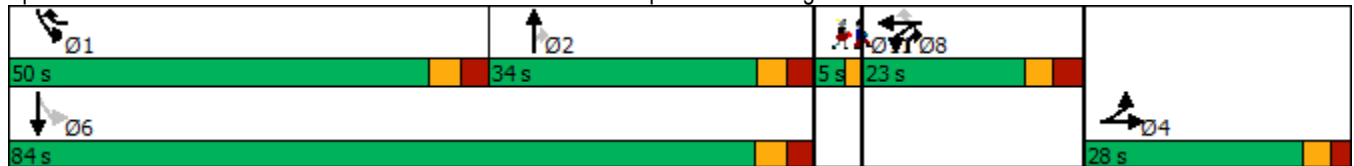


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	304	313		225	235	893		451	735	639	1072	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.25	0.34		1.35	0.68	0.71		0.74	0.36	0.78	0.58	

Intersection Summary























Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	126.4
Natural Cycle:	140
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.35
Intersection Signal Delay:	48.4
Intersection LOS:	D
Intersection Capacity Utilization	97.0%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	134.3
70th %ile Actuated Cycle:	127.3
50th %ile Actuated Cycle:	125.1
30th %ile Actuated Cycle:	123.1
10th %ile Actuated Cycle:	122.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street

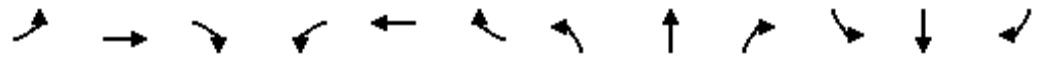


Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no peds) 2028 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Future Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.215		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	348	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				333			267			14
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	631	0	332	267	498	623	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no peds) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.8	21.8	62.2		31.2	52.9	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.47		0.24	0.40	0.59	0.59	
v/c Ratio	0.42	0.57		1.08	0.54	0.73		0.78	0.35	0.87	0.60	
Control Delay	61.4	66.3		127.5	59.0	12.4		62.7	4.3	41.7	20.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		127.5	59.0	12.4		62.7	4.3	41.7	20.5	
LOS	E	E		F	E	B		E	A	D	C	
Approach Delay		64.3			51.1			36.6			29.9	
Approach LOS		E			D			D			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	40.4		31.3	21.8	40.4	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		21.8	21.8	31.4		40.3	21.8	31.4	77.7	
10th %ile Term Code	Min	Min		Max	Max	Gap		Hold	Max	Gap	MaxR	
Stops (vph)	69	96		250	143	258		287	21	335	383	
Fuel Used(l)	6	9		41	13	26		33	10	41	40	
CO Emissions (g/hr)	112	165		761	247	477		612	181	758	743	
NOx Emissions (g/hr)	22	32		147	48	92		118	35	146	143	
VOC Emissions (g/hr)	26	38		176	57	110		141	42	175	171	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		~86.3	37.9	30.8		83.2	0.0	88.6	93.7	
Queue Length 95th (m)	34.2	45.2		#155.1	64.7	55.2		#146.7	17.0	#165.4	151.7	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no peds) 2028 Total Traffic

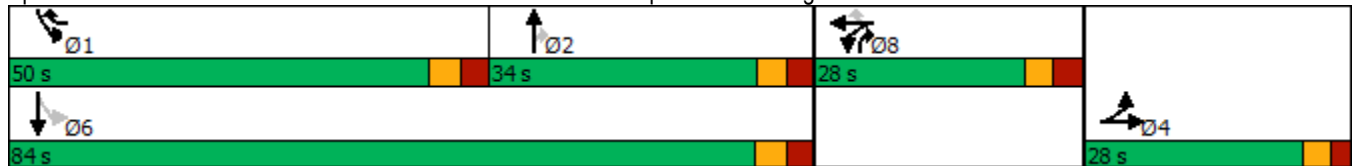


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	892		423	758	603	1030	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		1.08	0.54	0.71		0.78	0.35	0.83	0.60	

**Intersection Summary**




















Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.08
Intersection Signal Delay:	41.1
Intersection LOS:	D
Intersection Capacity Utilization	97.0%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	127.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street























3: Colony Heights Road/Street 1 & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
2028 Total Traffic























													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	12	431	27	7	519	34	24	2	4	24	2	8	
Future Volume (Veh/h)	12	431	27	7	519	34	24	2	4	24	2	8	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
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	
Hourly flow rate (vph)	12	431	27	7	519	34	24	2	4	24	2	8	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None					None							
Median storage (veh)													
Upstream signal (m)	221												
pX, platoon unblocked													
vC, conflicting volume	553			458			1010	1036	444	1010	1032	536	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	553			458			1010	1036	444	1010	1032	536	
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	99			99			88	99	99	89	99	99	
cM capacity (veh/h)	1017			1043			205	227	614	213	228	545	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	12	458	7	553	30	34							
Volume Left	12	0	7	0	24	24							
Volume Right	0	27	0	34	4	8							
cSH	1017	1700	1043	1700	227	249							
Volume to Capacity	0.01	0.27	0.01	0.33	0.13	0.14							
Queue Length 95th (m)	0.3	0.0	0.2	0.0	3.4	3.5							
Control Delay (s)	8.6	0.0	8.5	0.0	23.3	21.7							
Lane LOS	A		A		C	C							
Approach Delay (s)	0.2		0.1		23.3	21.7							
Approach LOS					C	C							
Intersection Summary													
Average Delay			1.5										
Intersection Capacity Utilization			41.0%		ICU Level of Service			A					
Analysis Period (min)			15										

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
PM Peak

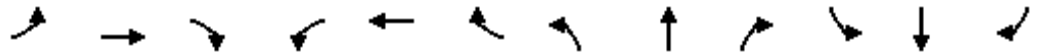
4386 Rideau Valley Drive  
2028 Total Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	424	34	66	488	21	20	0	33	12	2	7
Future Volume (Veh/h)	6	424	34	66	488	21	20	0	33	12	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	6	424	34	66	488	21	20	0	33	12	2	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	509			458			1064	1077	424	1100	1100	498
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	509			458			1064	1077	424	1100	1100	498
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	99			94			89	100	95	93	99	99
cM capacity (veh/h)	983			1103			184	205	628	171	198	521
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	6	424	34	66	509	53	21					
Volume Left	6	0	0	66	0	20	12					
Volume Right	0	0	34	0	21	33	7					
cSH	983	1700	1700	1103	1700	329	224					
Volume to Capacity	0.01	0.25	0.02	0.06	0.30	0.16	0.09					
Queue Length 95th (m)	0.1	0.0	0.0	1.4	0.0	4.3	2.3					
Control Delay (s)	8.7	0.0	0.0	8.5	0.0	18.0	22.7					
Lane LOS	A			A		C	C					
Approach Delay (s)	0.1			1.0		18.0	22.7					
Approach LOS						C	C					
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization		45.4%		ICU Level of Service		A						
Analysis Period (min)			15									

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (optimized, no peds) 2028 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Future Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.149		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	242	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				323			261			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	631	0	332	267	498	623	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (optimized, no peds) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	27.3	27.3		32.4	32.4	48.2		32.1	32.4	48.2	80.3	
Total Split (%)	19.5%	19.5%		23.1%	23.1%	34.4%		22.9%	23.1%	34.4%	57.4%	
Maximum Green (s)	22.0	22.0		26.2	26.2	41.9		26.1	26.2	41.9	74.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.3	14.3		25.8	25.8	67.1		26.7	52.3	74.1	74.1	
Actuated g/C Ratio	0.11	0.11		0.20	0.20	0.51		0.20	0.40	0.56	0.56	
v/c Ratio	0.42	0.57		0.92	0.46	0.70		0.92	0.36	0.92	0.64	
Control Delay	61.7	67.3		84.6	52.7	10.7		83.2	4.5	55.8	23.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.7	67.3		84.6	52.7	10.7		83.2	4.5	55.8	23.8	
LOS	E	E		F	D	B		F	A	E	C	
Approach Delay		65.0			37.3			48.1			38.0	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		26.2	26.2	41.9		26.1	26.2	41.9	74.0	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.5	15.5		26.2	26.2	41.9		26.1	26.2	41.9	74.0	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.3	13.3		26.2	26.2	41.9		26.1	26.2	41.9	74.0	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.1	11.1		26.2	26.2	41.9		26.1	26.2	41.9	74.0	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		24.1	24.1	39.0		29.0	24.1	39.0	74.0	
10th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	69	97		265	138	241		287	23	370	412	
Fuel Used(l)	6	9		31	12	25		38	10	47	42	
CO Emissions (g/hr)	112	166		579	231	457		709	183	873	785	
NOx Emissions (g/hr)	22	32		112	45	88		137	35	168	151	
VOC Emissions (g/hr)	26	38		134	53	105		164	42	201	181	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.8	26.7		77.2	36.5	30.0		85.5	0.9	105.3	102.9	
Queue Length 95th (m)	34.4	45.4		#140.4	62.6	53.3		#154.9	17.5	#189.6	163.5	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (optimized, no peds) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	283	290		336	351	905		361	754	549	979	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.27	0.37		0.90	0.45	0.70		0.92	0.35	0.91	0.64	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	132
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	41.4
Intersection LOS:	D
Intersection Capacity Utilization	97.0%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	140
70th %ile Actuated Cycle:	133.5
50th %ile Actuated Cycle:	131.3
30th %ile Actuated Cycle:	129.1
10th %ile Actuated Cycle:	125.9
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (optimized)

4386 Rideau Valley Drive  
 2028 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	454	543	516	701	75
Future Volume (vph)	52	454	543	516	701	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1759	0
Flt Permitted	0.950		0.070			
Satd. Flow (perm)	1647	1369	119	1784	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		454			5	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	52	454	543	516	701	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	454	543	516	776	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	19.7	19.7	45.6	110.3	64.7	
Total Split (%)	15.2%	15.2%	35.1%	84.8%	49.8%	
Maximum Green (s)	14.0	14.0	40.3	104.6	59.0	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.6	11.6	107.4	107.0	59.8	
Actuated g/C Ratio	0.09	0.09	0.83	0.82	0.46	
v/c Ratio	0.36	0.85	0.94	0.35	0.96	
Control Delay	62.0	20.5	59.4	3.7	56.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.0	20.5	59.4	3.7	56.8	
LOS	E	C	E	A	E	
Approach Delay	24.8			32.3	56.8	
Approach LOS	C			C	E	
90th %ile Green (s)	14.0	14.0	40.3	104.6	59.0	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	14.0	14.0	40.3	104.6	59.0	
70th %ile Term Code	Max	Max	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	44.3	108.6	59.0	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	44.3	108.6	59.0	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	40.2	108.6	63.1	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	49	41	404	118	663	
Fuel Used(l)	5	17	53	22	81	
CO Emissions (g/hr)	94	320	980	409	1507	
NOx Emissions (g/hr)	18	62	189	79	291	
VOC Emissions (g/hr)	22	74	226	94	348	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	12.9	0.0	113.1	23.7	189.2	
Queue Length 95th (m)	25.5	#47.5	#192.7	41.0	#274.0	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	177	552	580	1468	812	



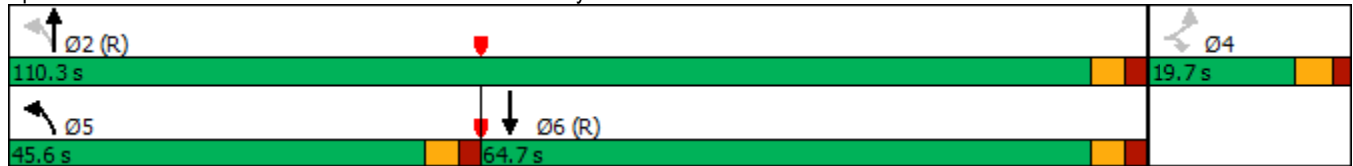


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.82	0.94	0.35	0.96	























Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 38.8  
 Intersection LOS: D  
 Intersection Capacity Utilization 97.7%  
 ICU Level of Service F  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

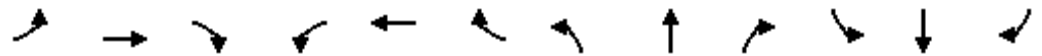


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (optimized) 2028 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Future Volume (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.158		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1468	257	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				368			267			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	303	159	631	0	332	267	498	505	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	303	159	631	0	332	267	498	623	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (optimized) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	27.3	27.3		30.2	30.2	45.4		32.1	30.2	45.4	77.5	
Total Split (%)	19.5%	19.5%		21.6%	21.6%	32.4%		22.9%	21.6%	32.4%	55.4%	
Maximum Green (s)	22.0	22.0		24.0	24.0	39.1		26.1	24.0	39.1	71.2	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.1	14.1		24.0	24.0	63.1		26.1	50.0	71.3	71.3	
Actuated g/C Ratio	0.11	0.11		0.19	0.19	0.50		0.21	0.39	0.56	0.56	
v/c Ratio	0.41	0.55		0.95	0.48	0.69		0.91	0.36	0.92	0.64	
Control Delay	58.8	64.0		90.2	52.3	9.7		78.7	4.1	55.4	23.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	58.8	64.0		90.2	52.3	9.7		78.7	4.1	55.4	23.1	
LOS	E	E		F	D	A		E	A	E	C	
Approach Delay		61.8			38.2			45.5			37.5	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		24.0	24.0	39.1		26.1	24.0	39.1	71.2	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.1	15.1		24.0	24.0	39.1		26.1	24.0	39.1	71.2	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.0	13.0		24.0	24.0	39.1		26.1	24.0	39.1	71.2	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.9	10.9		24.0	24.0	39.1		26.1	24.0	39.1	71.2	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		24.0	24.0	39.1		26.1	24.0	39.1	71.2	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	68	97		262	139	211		291	20	362	413	
Fuel Used(l)	6	9		32	12	24		37	10	47	42	
CO Emissions (g/hr)	109	161		603	231	439		689	180	866	780	
NOx Emissions (g/hr)	21	31		116	45	85		133	35	167	150	
VOC Emissions (g/hr)	25	37		139	53	101		159	42	200	180	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.0	25.5		74.8	35.4	23.5		80.9	0.0	99.9	98.1	
Queue Length 95th (m)	33.1	44.0		#141.3	61.3	46.5		#146.9	16.1	#185.4	159.1	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (optimized) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	293	301		320	333	908		366	747	539	977	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		0.95	0.48	0.69		0.91	0.36	0.92	0.64	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	127.2
Natural Cycle:	140
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	40.8
Intersection LOS:	D
Intersection Capacity Utilization	97.0%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	135
70th %ile Actuated Cycle:	128.1
50th %ile Actuated Cycle:	126
30th %ile Actuated Cycle:	123.9
10th %ile Actuated Cycle:	123
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak (Reductions)

4386 Rideau Valley Drive  
2028 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	454	458	516	616	75
Future Volume (vph)	52	454	458	516	616	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.985	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1756	0
Flt Permitted	0.950		0.121			
Satd. Flow (perm)	1647	1369	206	1784	1756	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		454			9	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	52	454	458	516	616	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	454	458	516	691	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak (Reductions)

4386 Rideau Valley Drive  
2028 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.4	11.4	67.6	67.2	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.44	
v/c Ratio	0.25	0.80	0.90	0.39	0.90	
Control Delay	37.8	15.3	44.6	5.3	39.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.8	15.3	44.6	5.3	39.8	
LOS	D	B	D	A	D	
Approach Delay	17.6			23.8	39.8	
Approach LOS	B			C	D	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.9	12.9	21.1	65.7	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	46	55	271	171	576	
Fuel Used(l)	4	16	38	24	63	
CO Emissions (g/hr)	74	294	700	443	1168	
NOx Emissions (g/hr)	14	57	135	85	225	
VOC Emissions (g/hr)	17	68	161	102	269	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	8.4	0.0	53.7	23.7	105.9	
Queue Length 95th (m)	18.0	#33.5	#121.5	45.5	#175.0	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	599	507	1331	771	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.76	0.90	0.39	0.90	























Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 27.4 Intersection LOS: C  
 Intersection Capacity Utilization 88.1% ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

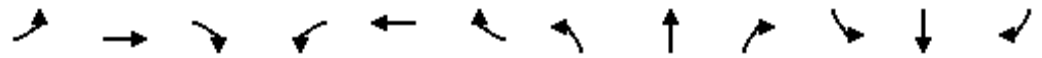
Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Reductions) 2028 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	253	159	631	0	332	267	498	505	118
Future Volume (vph)	76	102	5	253	159	631	0	332	267	498	505	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97	1.00		
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.215		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	348	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				333			267			14
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	253	159	631	0	332	267	498	505	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	253	159	631	0	332	267	498	623	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Reductions) 2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.8	21.8	62.2		31.3	52.8	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.47		0.24	0.40	0.59	0.59	
v/c Ratio	0.42	0.57		0.90	0.54	0.73		0.78	0.35	0.87	0.60	
Control Delay	61.4	66.3		88.0	59.0	12.5		62.6	4.3	41.7	20.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		88.0	59.0	12.5		62.6	4.3	41.7	20.4	
LOS	E	E		F	E	B		E	A	D	C	
Approach Delay		64.3			37.9			36.6			29.9	
Approach LOS		E			D			D			C	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	40.4		31.3	21.8	40.4	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Gap		Hold	Max	Gap	MaxR	
10th %ile Green (s)	10.0	10.0		21.6	21.6	31.4		40.3	21.6	31.4	77.7	
10th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	69	96		220	143	258		287	21	335	383	
Fuel Used(l)	6	9		27	13	26		33	10	41	40	
CO Emissions (g/hr)	112	165		496	247	477		611	181	757	743	
NOx Emissions (g/hr)	22	32		96	48	92		118	35	146	143	
VOC Emissions (g/hr)	26	38		114	57	110		141	42	175	171	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		64.5	37.9	30.8		83.2	0.0	88.6	93.7	
Queue Length 95th (m)	34.2	45.2		#122.5	64.7	55.2		#146.7	17.0	#165.4	151.7	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Reductions) 2028 Total Traffic

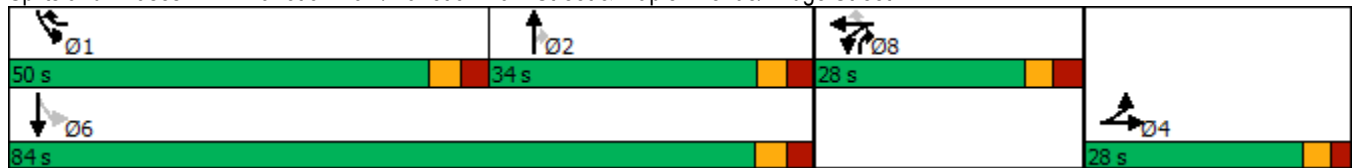


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	892		423	758	603	1030	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		0.90	0.54	0.71		0.78	0.35	0.83	0.60	

**Intersection Summary**













Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	36.2
Intersection LOS:	D
Intersection Capacity Utilization:	94.1%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	127.1
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
AM Peak

4386 Rideau Valley Drive  
2028 Total Traffic (dual SB lanes)

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	107	336	389	560	275	29
Future Volume (vph)	107	336	389	560	275	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.986	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	3275	0
Flt Permitted	0.950		0.481			
Satd. Flow (perm)	1695	1419	768	1717	3275	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		336			17	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	107	336	389	560	275	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	336	389	560	304	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.1	11.1	47.9	47.5	29.7	
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.42	
v/c Ratio	0.40	0.66	0.59	0.48	0.22	
Control Delay	30.7	10.4	9.1	7.4	13.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.7	10.4	9.1	7.4	13.6	
LOS	C	B	A	A	B	
Approach Delay	15.3			8.1	13.6	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	11.3	11.3	15.2	47.3	26.8	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	12.7	48.6	30.6	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.0	48.6	32.3	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	8.8	48.6	34.5	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	93	49	157	254	178	
Fuel Used(l)	8	11	20	28	20	
CO Emissions (g/hr)	141	199	367	526	368	
NOx Emissions (g/hr)	27	38	71	101	71	
VOC Emissions (g/hr)	32	46	85	121	85	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	13.0	0.0	16.6	27.0	11.6	
Queue Length 95th (m)	24.6	19.5	36.2	56.0	22.5	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	557	683	1164	1399	

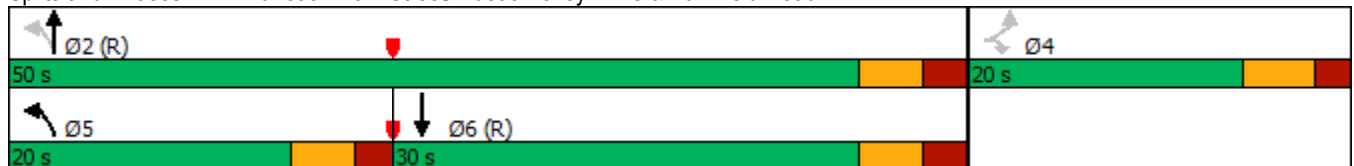


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.60	0.57	0.48	0.22	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.0
Intersection LOS:	B
Intersection Capacity Utilization	54.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road





1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
2028 Total Traffic (dual SB lanes)



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	454	543	516	701	75
Future Volume (vph)	52	454	543	516	701	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.986	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	3340	0
Flt Permitted	0.950		0.210			
Satd. Flow (perm)	1647	1369	357	1784	3340	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		454			13	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	52	454	543	516	701	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	454	543	516	776	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	23.0	23.0	35.0	67.0	32.0	
Total Split (%)	25.6%	25.6%	38.9%	74.4%	35.6%	
Maximum Green (s)	17.3	17.3	29.7	61.3	26.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.9	11.9	67.1	66.7	33.8	
Actuated g/C Ratio	0.13	0.13	0.75	0.74	0.38	
v/c Ratio	0.24	0.79	0.83	0.39	0.61	
Control Delay	36.6	14.5	25.6	5.7	26.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.6	14.5	25.6	5.7	26.8	
LOS	D	B	C	A	C	
Approach Delay	16.8			15.9	26.8	
Approach LOS	B			B	C	
90th %ile Green (s)	17.3	17.3	29.7	61.3	26.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.2	12.2	34.8	66.4	26.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	30.0	68.6	33.3	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	25.3	68.6	38.0	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	18.0	68.6	45.3	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	45	61	294	178	614	
Fuel Used(l)	4	16	36	24	62	
CO Emissions (g/hr)	73	293	671	448	1153	
NOx Emissions (g/hr)	14	57	130	87	223	
VOC Emissions (g/hr)	17	68	155	103	266	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	8.4	0.0	49.0	23.7	55.8	
Queue Length 95th (m)	17.3	28.8	#113.2	52.4	85.0	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	316	629	696	1322	1263	

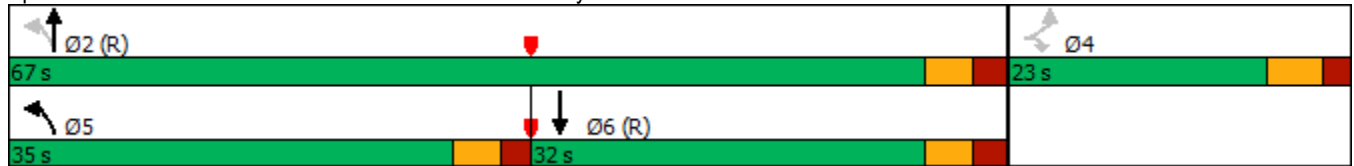


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.72	0.78	0.39	0.61	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 19.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 77.0%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2028 PHF Flow Profile (veh)
2028 Total	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
AM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2028 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	275	29	0	5.0	1.00	1.000
2	Bankfield Road	0	107	336	0	5.0	1.00	1.000
3	Manotick Main Street	0	389	560	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2028 AM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	1	7.00	0.00

#### Geometry Options for 2028 AM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	2	7.00	0.00

#### Geometry Options for 2028 AM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

## 2028 AM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	304		389		667	1481		0.2053
2	Bankfield Road	None	443		275		418	1556		0.2847
3	Manotick Main Street	None	949		107		611	1666		0.5697

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.17		3.17	0.70		A		A
2	Bankfield Road	None	3.98		3.98	1.28		A		A
3	Manotick Main Street	None	7.57		7.57	5.00		A		A



## 2028 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	304		389		667	1481		0.2053
2	Bankfield Road	None	443		275		418	1556		0.2847
3	Manotick Main Street	None	949		107		611	1666		0.5697

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.18		3.18	0.70		A		A
2	Bankfield Road	None	3.99		3.99	1.28		A		A
3	Manotick Main Street	None	7.60		7.60	5.00		A		A

## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2028 PHF Flow Profile (veh)
2028 Total	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2028 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	701	75	0	5.0	1.00	1.000
2	Bankfield Road	0	52	454	0	5.0	1.00	1.000
3	Manotick Main Street	0	543	516	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2028 PM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

#### Geometry Options for 2028 PM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	1	7.00	0.00

#### Geometry Options for 2028 PM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

## 2028 PM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	776		543		568	1380		0.5623
2	Bankfield Road	None	506		701		618	1277		0.3964
3	Manotick Main Street	None	1059		52		1155	1702		0.6222

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	5.88		5.88	3.24		A		A
2	Bankfield Road	None	4.79		4.79	1.75		A		A
3	Manotick Main Street	None	9.53		9.53	6.89		A		A

## 2028 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	776		543		568	1380		0.5623
2	Bankfield Road	None	506		701		618	1277		0.3964
3	Manotick Main Street	None	1059		52		1155	1702		0.6222

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	5.90		5.90	3.24		A		A
2	Bankfield Road	None	4.80		4.80	1.75		A		A
3	Manotick Main Street	None	9.58		9.58	6.89		A		A



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	113	357	416	585	289	30
Future Volume (vph)	113	357	416	585	289	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	1726	0
Flt Permitted	0.950		0.426			
Satd. Flow (perm)	1695	1419	680	1717	1726	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		357			8	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	113	357	416	585	289	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	357	416	585	319	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.2	11.2	47.8	47.4	28.9	
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.41	
v/c Ratio	0.42	0.68	0.67	0.50	0.45	
Control Delay	31.1	10.5	11.1	7.7	18.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.1	10.5	11.1	7.7	18.1	
LOS	C	B	B	A	B	
Approach Delay	15.5			9.1	18.1	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	11.5	11.5	16.7	47.1	25.1	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	13.7	48.6	29.6	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.8	48.6	31.5	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	9.5	48.6	33.8	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	97	52	173	272	223	
Fuel Used(l)	8	11	22	30	23	
CO Emissions (g/hr)	149	212	406	555	422	
NOx Emissions (g/hr)	29	41	78	107	81	
VOC Emissions (g/hr)	34	49	94	128	97	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	13.8	0.0	18.2	29.0	27.6	
Queue Length 95th (m)	25.7	20.3	39.5	60.1	54.2	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	573	645	1163	716	

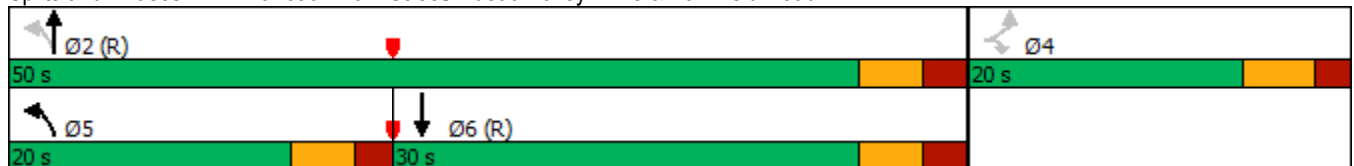


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.62	0.64	0.50	0.45	























Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	12.4
Intersection LOS:	B
Intersection Capacity Utilization	64.6%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

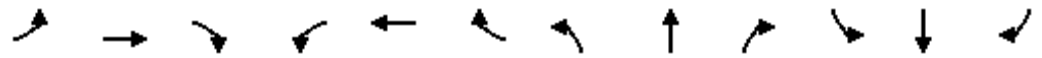


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak 2033 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	160	50	531	0	425	352	388	210	41
Future Volume (vph)	27	27	4	160	50	531	0	425	352	388	210	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	0.99					0.98			0.98			
Frt		0.981				0.850			0.850		0.975	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1704	0
Flt Permitted	0.950			0.950						0.233		
Satd. Flow (perm)	1684	1694	0	1586	1655	1343	0	1784	1438	396	1704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				473			352			11
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	160	50	531	0	425	352	388	210	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	160	50	531	0	425	352	388	251	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	36.3		37.7	23.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		17.7%	17.7%	27.9%		29.0%	17.7%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		15.3	15.3	41.5		35.8	50.9	68.2	68.2	
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.38		0.33	0.47	0.63	0.63	
v/c Ratio	0.17	0.19		0.71	0.21	0.65		0.72	0.41	0.71	0.23	
Control Delay	50.3	45.9		63.4	44.6	6.1		43.1	3.2	21.4	10.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	50.3	45.9		63.4	44.6	6.1		43.1	3.2	21.4	10.0	
LOS	D	D		E	D	A		D	A	C	A	
Approach Delay		47.9			21.1			25.1			16.9	
Approach LOS		D			C			C			B	
90th %ile Green (s)	10.0	10.0		17.0	17.0	30.0		31.7	17.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
70th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	10.0	10.0		16.8	16.8	30.0		31.7	16.8	30.0	67.7	
50th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.0	10.0		15.8	15.8	26.8		34.9	15.8	26.8	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.5	10.5	16.3		45.4	10.5	16.3	67.7	
10th %ile Term Code	Skip	Skip		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
Stops (vph)	27	27		145	43	66		355	24	204	102	
Fuel Used(l)	2	2		14	4	17		35	12	24	13	
CO Emissions (g/hr)	36	38		259	67	313		659	232	454	240	
NOx Emissions (g/hr)	7	7		50	13	60		127	45	88	46	
VOC Emissions (g/hr)	8	9		60	15	72		152	54	105	55	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		33.6	9.8	4.9		88.0	0.0	41.6	22.8	
Queue Length 95th (m)	14.5	15.1		#59.7	21.0	19.5		#139.2	14.6	75.5	35.8	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street 4386 Rideau Valley Dr  
 AM Peak 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	359	362		249	260	846		592	886	592	1081	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.64	0.19	0.63		0.72	0.40	0.66	0.23	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	107.8
Natural Cycle:	125
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	22.0
Intersection LOS:	C
Intersection Capacity Utilization	81.6%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	112.5
70th %ile Actuated Cycle:	112.3
50th %ile Actuated Cycle:	112.3
30th %ile Actuated Cycle:	111.3
10th %ile Actuated Cycle:	90.7
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 AM Peak (no peds) 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	27	4	160	50	531	0	425	352	388	210	41
Future Volume (vph)	27	27	4	160	50	531	0	425	352	388	210	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor	1.00					0.98			0.98			
Fr <sub>t</sub>		0.981				0.850			0.850		0.975	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1694	0	1586	1655	1369	0	1784	1473	1616	1704	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.229		
Satd. Flow (perm)	1687	1694	0	1586	1655	1345	0	1784	1440	390	1704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				438			352			11
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)	3					3			1	1		
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%	4%	15%	9%	10%	13%	2%	2%	5%	7%	4%	5%
Adj. Flow (vph)	27	27	4	160	50	531	0	425	352	388	210	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	31	0	160	50	531	0	425	352	388	251	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive

AM Peak (no peds)

2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	36.3		37.7	28.0	36.3	74.0	
Total Split (%)	21.5%	21.5%		21.5%	21.5%	27.9%		29.0%	21.5%	27.9%	56.9%	
Maximum Green (s)	22.7	22.7		21.8	21.8	30.0		31.7	21.8	30.0	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	0	0		3	3			1	3		0	
Act Effct Green (s)	10.1	10.1		16.8	16.8	42.9		36.1	52.7	68.3	68.3	
Actuated g/C Ratio	0.09	0.09		0.15	0.15	0.39		0.33	0.48	0.62	0.62	
v/c Ratio	0.17	0.19		0.66	0.20	0.66		0.72	0.40	0.72	0.24	
Control Delay	52.1	47.6		57.7	43.0	7.0		44.6	3.1	23.4	10.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	52.1	47.6		57.7	43.0	7.0		44.6	3.1	23.4	10.9	
LOS	D	D		E	D	A		D	A	C	B	
Approach Delay		49.7			20.4			25.8			18.5	
Approach LOS		D			C			C			B	
90th %ile Green (s)	10.0	10.0		22.0	22.0	30.0		31.7	22.0	30.0	67.7	
90th %ile Term Code	Min	Min		Ped	Ped	Max		MaxR	Ped	Max	MaxR	
70th %ile Green (s)	10.0	10.0		21.2	21.2	30.0		31.7	21.2	30.0	67.7	
70th %ile Term Code	Min	Min		Gap	Gap	Max		MaxR	Gap	Max	MaxR	
50th %ile Green (s)	10.0	10.0		17.4	17.4	30.0		31.7	17.4	30.0	67.7	
50th %ile Term Code	Min	Min		Gap	Gap	Max		MaxR	Gap	Max	MaxR	
30th %ile Green (s)	10.0	10.0		14.8	14.8	26.5		35.2	14.8	26.5	67.7	
30th %ile Term Code	Min	Min		Gap	Gap	Gap		Hold	Gap	Gap	MaxR	
10th %ile Green (s)	0.0	0.0		10.0	10.0	16.1		45.6	10.0	16.1	67.7	
10th %ile Term Code	Skip	Skip		Min	Min	Gap		Hold	Min	Gap	MaxR	
Stops (vph)	27	27		145	42	84		352	23	209	105	
Fuel Used(l)	2	2		13	4	17		36	12	25	13	
CO Emissions (g/hr)	37	39		246	65	325		667	231	467	245	
NOx Emissions (g/hr)	7	8		47	13	63		129	45	90	47	
VOC Emissions (g/hr)	8	9		57	15	75		154	53	108	56	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	5.6	5.6		33.6	9.8	8.0		88.6	0.0	42.2	23.1	
Queue Length 95th (m)	15.0	15.7		55.6	20.8	25.0		#149.3	14.2	82.9	40.2	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 AM Peak (no peds) 2033 Total Traffic

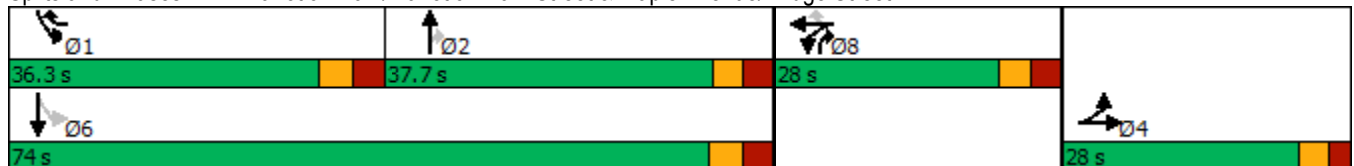


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	354	357		319	333	834		587	934	582	1067	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.08	0.09		0.50	0.15	0.64		0.72	0.38	0.67	0.24	

**Intersection Summary**




















Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	109.5
Natural Cycle:	120
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	22.5
Intersection LOS:	C
Intersection Capacity Utilization	81.6%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	117.5
70th %ile Actuated Cycle:	116.7
50th %ile Actuated Cycle:	112.9
30th %ile Actuated Cycle:	110.3
10th %ile Actuated Cycle:	90.2
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street























3: Colony Heights Road/Street 1 & Bankfield Road  
AM Peak

4386 Rideau Valley Dr  
2033 Total Traffic

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	6	372	14	6	382	15	23	1	18	37	3	13	
Future Volume (Veh/h)	6	372	14	6	382	15	23	1	18	37	3	13	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
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	
Hourly flow rate (vph)	6	372	14	6	382	15	23	1	18	37	3	13	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None					None							
Median storage (veh)													
Upstream signal (m)	221												
pX, platoon unblocked													
vC, conflicting volume	397			386			800	800	379	804	800	390	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	397			386			800	800	379	804	800	390	
tC, single (s)	4.1			4.3			7.1	6.5	6.3	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.4			3.5	4.0	3.4	3.5	4.0	3.3	
p0 queue free %	99			99			92	100	97	87	99	98	
cM capacity (veh/h)	1162			1095			291	315	648	290	315	659	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	6	386	6	397	42	53							
Volume Left	6	0	6	0	23	37							
Volume Right	0	14	0	15	18	13							
cSH	1162	1700	1095	1700	381	338							
Volume to Capacity	0.01	0.23	0.01	0.23	0.11	0.16							
Queue Length 95th (m)	0.1	0.0	0.1	0.0	2.8	4.2							
Control Delay (s)	8.1	0.0	8.3	0.0	15.6	17.6							
Lane LOS	A		A		C	C							
Approach Delay (s)	0.1		0.1		15.6	17.6							
Approach LOS					C	C							
Intersection Summary													
Average Delay			1.9										
Intersection Capacity Utilization			33.1%		ICU Level of Service			A					
Analysis Period (min)			15										

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
AM Peak

4386 Rideau Valley Dr  
2033 Total Traffic

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	4	329	18	19	431	8	41	1	58	24	3	4						
Future Volume (Veh/h)	4	329	18	19	431	8	41	1	58	24	3	4						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			0%			0%							
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						
Hourly flow rate (vph)	4	329	18	19	431	8	41	1	58	24	3	4						
Pedestrians																		
Lane Width (m)																		
Walking Speed (m/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None					None												
Median storage (veh)																		
Upstream signal (m)																		
pX, platoon unblocked																		
vC, conflicting volume	439			347			812		814		329		868		828		435	
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	439			347			812		814		329		868		828		435	
tC, single (s)	4.3			4.3			7.1		7.5		6.2		7.1		6.8		6.2	
tC, 2 stage (s)																		
tF (s)	2.4			2.3			3.5		4.9		3.3		3.5		4.3		3.3	
p0 queue free %	100			98			86		100		92		90		99		99	
cM capacity (veh/h)	1009			1138			289		218		712		244		268		621	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1											
Volume Total	4	329	18	19	439	100	31											
Volume Left	4	0	0	19	0	41	24											
Volume Right	0	0	18	0	8	58	4											
cSH	1009	1700	1700	1138	1700	439	267											
Volume to Capacity	0.00	0.19	0.01	0.02	0.26	0.23	0.12											
Queue Length 95th (m)	0.1	0.0	0.0	0.4	0.0	6.6	3.0											
Control Delay (s)	8.6	0.0	0.0	8.2	0.0	15.6	20.3											
Lane LOS	A			A			C		C									
Approach Delay (s)	0.1			0.3			15.6		20.3									
Approach LOS							C		C									
Intersection Summary																		
Average Delay				2.5														
Intersection Capacity Utilization				37.2%			ICU Level of Service				A							
Analysis Period (min)				15														



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	54	484	579	543	734	80
Future Volume (vph)	54	484	579	543	734	80
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1759	0
Flt Permitted	0.950		0.090			
Satd. Flow (perm)	1647	1369	153	1784	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		443			8	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	54	484	579	543	734	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	484	579	543	814	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.9	11.9	67.1	66.7	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.74	0.44	
v/c Ratio	0.25	0.86	1.23	0.41	1.05	
Control Delay	37.2	21.7	145.6	5.7	74.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.2	21.7	145.6	5.7	74.4	
LOS	D	C	F	A	E	
Approach Delay	23.3			77.9	74.4	
Approach LOS	C			E	E	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
70th %ile Term Code	Max	Max	Max	Coord	Coord	
50th %ile Green (s)	11.1	11.1	22.9	67.5	39.3	
50th %ile Term Code	Gap	Gap	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	47	76	378	189	673	
Fuel Used(l)	4	20	93	25	95	
CO Emissions (g/hr)	76	369	1737	473	1776	
NOx Emissions (g/hr)	15	71	335	91	343	
VOC Emissions (g/hr)	18	85	401	109	410	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	8.6	6.5	~108.0	27.2	~154.9	
Queue Length 95th (m)	18.5	#55.7	#181.0	48.7	#224.0	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	590	472	1321	772	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.82	1.23	0.41	1.05	

Intersection Summary

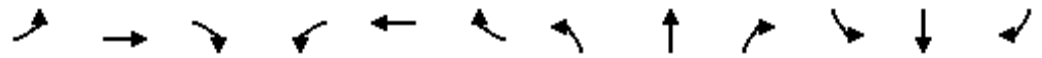
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.23
Intersection Signal Delay:	64.8
Intersection LOS:	E
Intersection Capacity Utilization	102.0%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road





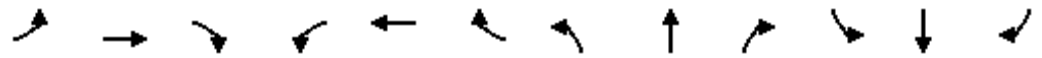
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Future Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.169		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1468	275	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				370			282			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	673	0	346	282	532	642	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

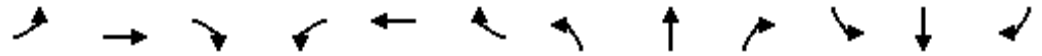
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	28.0	28.0		23.0	23.0	50.0		34.0	23.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		16.4%	16.4%	35.7%		24.3%	16.4%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.0	14.0		16.8	16.8	60.5		28.0	44.6	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.13	0.13	0.48		0.22	0.35	0.62	0.62	
v/c Ratio	0.41	0.55		1.41	0.68	0.76		0.88	0.40	0.88	0.60	
Control Delay	58.5	63.0		248.3	68.2	13.8		71.2	4.8	44.1	18.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	58.5	63.0		248.3	68.2	13.8		71.2	4.8	44.1	18.1	
LOS	E	E		F	E	B		E	A	D	B	
Approach Delay		61.1			86.0			41.4			29.9	
Approach LOS		E			F			D			C	
90th %ile Green (s)	22.0	22.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.0	15.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	12.8	12.8		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.8	10.8		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		16.8	16.8	43.7		28.0	16.8	43.7	77.7	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	68	97		236	144	308		305	23	379	378	
Fuel Used(l)	6	9		72	14	28		37	10	45	40	
CO Emissions (g/hr)	108	160		1338	268	530		682	194	836	737	
NOx Emissions (g/hr)	21	31		258	52	102		132	37	161	142	
VOC Emissions (g/hr)	25	37		309	62	122		157	45	193	170	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	17.9	25.1		~103.9	37.7	32.1		82.6	0.0	99.2	87.1	
Queue Length 95th (m)	32.9	43.4		#173.9	#70.7	77.4		#147.5	17.7	#184.0	145.9	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak 2033 Total Traffic

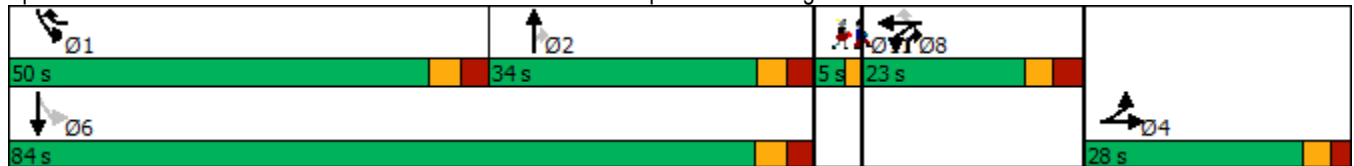


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	304	313		225	235	890		395	707	608	1071	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.25	0.34		1.41	0.68	0.76		0.88	0.40	0.88	0.60	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	126.4
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.41
Intersection Signal Delay:	54.6
Intersection LOS:	D
Intersection Capacity Utilization	99.8%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	134.3
70th %ile Actuated Cycle:	127.3
50th %ile Actuated Cycle:	125.1
30th %ile Actuated Cycle:	123.1
10th %ile Actuated Cycle:	122.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street

























Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

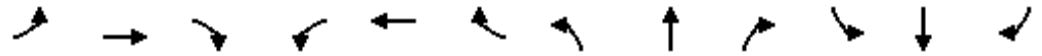
2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive

PM Peak (no peds)

2033 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Future Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.149		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	242	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				327			260			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	673	0	346	282	532	642	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (no peds) 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.8	21.8	65.5		28.0	49.6	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.50		0.21	0.38	0.59	0.59	
v/c Ratio	0.42	0.57		1.13	0.54	0.76		0.91	0.39	0.93	0.62	
Control Delay	61.4	66.3		142.1	59.0	14.2		79.7	5.7	55.3	21.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		142.1	59.0	14.2		79.7	5.7	55.3	21.1	
LOS	E	E		F	E	B		E	A	E	C	
Approach Delay		64.3			55.7			46.5			36.6	
Approach LOS		E			E			D			D	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	69	96		258	143	325		302	32	393	403	
Fuel Used(l)	6	9		46	13	29		39	11	50	42	
CO Emissions (g/hr)	112	165		862	247	539		723	201	927	775	
NOx Emissions (g/hr)	22	32		166	48	104		140	39	179	150	
VOC Emissions (g/hr)	26	38		199	57	124		167	46	214	179	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		~93.7	37.9	38.9		87.5	3.2	112.0	98.5	
Queue Length 95th (m)	34.2	45.2		#163.7	64.7	74.7		#155.9	21.8	#201.5	159.3	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (no peds) 2033 Total Traffic

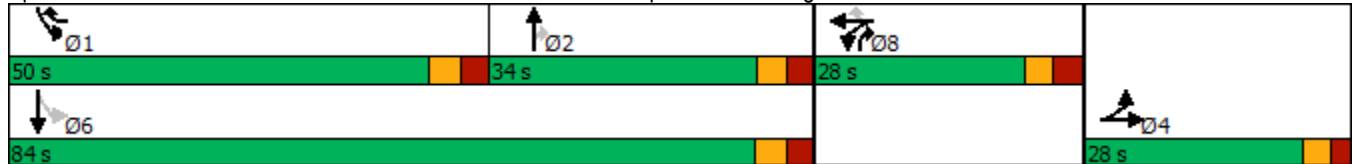


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	890		379	724	575	1029	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		1.13	0.54	0.76		0.91	0.39	0.93	0.62	

**Intersection Summary**




















Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.6
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.13
Intersection Signal Delay:	47.2
Intersection LOS:	D
Intersection Capacity Utilization	99.8%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	127.3
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street























3: Colony Heights Road/Street 1 & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
2033 Total Traffic























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	460	27	7	555	34	24	2	4	24	2	8
Future Volume (Veh/h)	12	460	27	7	555	34	24	2	4	24	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	12	460	27	7	555	34	24	2	4	24	2	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)					221							
pX, platoon unblocked												
vC, conflicting volume	589			487			1076	1100	474	1075	1097	572
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	589			487			1076	1100	474	1075	1097	572
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			87	99	99	87	99	98
cM capacity (veh/h)	986			1017			185	208	591	192	209	520
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	12	487	7	589	30	34						
Volume Left	12	0	7	0	24	24						
Volume Right	0	27	0	34	4	8						
cSH	986	1700	1017	1700	205	226						
Volume to Capacity	0.01	0.29	0.01	0.35	0.15	0.15						
Queue Length 95th (m)	0.3	0.0	0.2	0.0	3.8	3.9						
Control Delay (s)	8.7	0.0	8.6	0.0	25.5	23.7						
Lane LOS	A		A		D	C						
Approach Delay (s)	0.2		0.1		25.5	23.7						
Approach LOS					D	C						
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			43.0%	ICU Level of Service	A							
Analysis Period (min)			15									

4: Potter Drive/Lockmaster Crescent & Bankfield Road  
PM Peak

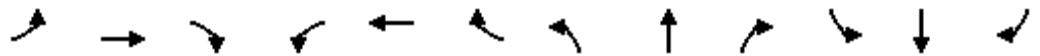
4386 Rideau Valley Drive  
2033 Total Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	452	34	66	520	21	20	0	33	12	2	7
Future Volume (Veh/h)	6	452	34	66	520	21	20	0	33	12	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	6	452	34	66	520	21	20	0	33	12	2	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	541			486			1124	1137	452	1160	1160	530
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	541			486			1124	1137	452	1160	1160	530
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	99			94			88	100	95	92	99	99
cM capacity (veh/h)	956			1077			167	188	605	155	182	499
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1					
Volume Total	6	452	34	66	541	53	21					
Volume Left	6	0	0	66	0	20	12					
Volume Right	0	0	34	0	21	33	7					
cSH	956	1700	1700	1077	1700	304	205					
Volume to Capacity	0.01	0.27	0.02	0.06	0.32	0.17	0.10					
Queue Length 95th (m)	0.1	0.0	0.0	1.5	0.0	4.7	2.6					
Control Delay (s)	8.8	0.0	0.0	8.6	0.0	19.3	24.6					
Lane LOS	A			A		C	C					
Approach Delay (s)	0.1			0.9		19.3	24.6					
Approach LOS						C	C					
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization		47.2%		ICU Level of Service		A						
Analysis Period (min)			15									

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized - no peds) 2033 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Future Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Fr <sub>t</sub>		0.993				0.850			0.850		0.972	
Fl <sub>t</sub> Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Fl <sub>t</sub> Permitted	0.950			0.950						0.123		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	200	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				318			247			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	673	0	346	282	532	642	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized - no peds) 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	27.3	27.3		31.4	31.4	49.0		32.3	31.4	49.0	81.3	
Total Split (%)	19.5%	19.5%		22.4%	22.4%	35.0%		23.1%	22.4%	35.0%	58.1%	
Maximum Green (s)	22.0	22.0		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.3	14.3		25.2	25.2	67.9		26.3	51.4	75.1	75.1	
Actuated g/C Ratio	0.11	0.11		0.19	0.19	0.51		0.20	0.39	0.57	0.57	
v/c Ratio	0.42	0.57		0.98	0.47	0.75		0.98	0.39	0.97	0.65	
Control Delay	61.8	67.5		99.5	53.9	13.2		95.0	6.3	68.3	23.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.8	67.5		99.5	53.9	13.2		95.0	6.3	68.3	23.8	
LOS	E	E		F	D	B		F	A	E	C	
Approach Delay		65.1			42.6			55.2			44.0	
Approach LOS		E			D			E			D	
90th %ile Green (s)	22.0	22.0		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.5	15.5		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.3	13.3		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.1	11.1		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		25.2	25.2	42.7		26.3	25.2	42.7	75.0	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	69	98		273	139	310		298	37	405	428	
Fuel Used(l)	6	9		36	13	28		43	11	55	44	
CO Emissions (g/hr)	112	167		673	234	525		797	206	1031	810	
NOx Emissions (g/hr)	22	32		130	45	101		154	40	199	156	
VOC Emissions (g/hr)	26	39		155	54	121		184	47	238	187	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.8	26.7		82.4	36.9	38.0		89.7	5.1	120.7	106.0	
Queue Length 95th (m)	34.4	45.4		#153.1	63.2	64.5		#162.8	24.5	#213.5	168.9	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Optimized - no peds) 2033 Total Traffic

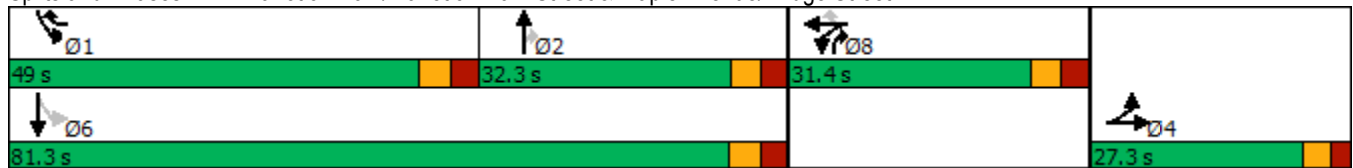


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	282	289		322	336	903		354	730	547	988	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.27	0.37		0.98	0.47	0.75		0.98	0.39	0.97	0.65	

**Intersection Summary**

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	132.4
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	46.9
Intersection LOS:	D
Intersection Capacity Utilization:	99.8%
ICU Level of Service:	F
Analysis Period (min):	15
90th %ile Actuated Cycle:	140
70th %ile Actuated Cycle:	133.5
50th %ile Actuated Cycle:	131.3
30th %ile Actuated Cycle:	129.1
10th %ile Actuated Cycle:	128
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (Optimized)

4386 Rideau Valley Drive  
 2033 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	54	484	579	543	734	80
Future Volume (vph)	54	484	579	543	734	80
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1759	0
Flt Permitted	0.950		0.064			
Satd. Flow (perm)	1647	1369	109	1784	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		484			5	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	54	484	579	543	734	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	484	579	543	814	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (Optimized)

4386 Rideau Valley Drive  
 2033 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	23.4	23.4	44.0	106.6	62.6	
Total Split (%)	18.0%	18.0%	33.8%	82.0%	48.2%	
Maximum Green (s)	17.7	17.7	38.7	100.9	56.9	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	12.6	12.6	106.4	106.0	56.9	
Actuated g/C Ratio	0.10	0.10	0.82	0.82	0.44	
v/c Ratio	0.34	0.85	0.97	0.37	1.05	
Control Delay	59.6	19.6	66.2	4.3	83.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.6	19.6	66.2	4.3	83.4	
LOS	E	B	E	A	F	
Approach Delay	23.6			36.2	83.4	
Approach LOS	C			D	F	
90th %ile Green (s)	17.7	17.7	38.7	100.9	56.9	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	15.2	15.2	41.2	103.4	56.9	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	46.4	108.6	56.9	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	46.4	108.6	56.9	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	46.4	108.6	56.9	
10th %ile Term Code	Min	Min	Max	Coord	Coord	
Stops (vph)	49	48	427	135	695	
Fuel Used(l)	5	18	59	24	102	
CO Emissions (g/hr)	95	337	1099	439	1890	
NOx Emissions (g/hr)	18	65	212	85	365	
VOC Emissions (g/hr)	22	78	254	101	436	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	13.4	0.0	125.4	25.4	~227.2	
Queue Length 95th (m)	25.4	#39.9	#221.9	52.5	#303.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	224	604	597	1454	772	



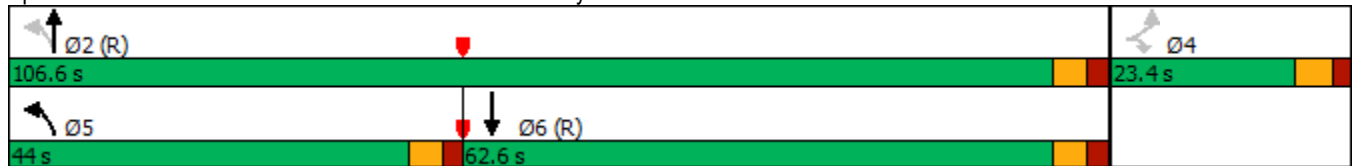


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.80	0.97	0.37	1.05	























Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	49.0
Intersection LOS:	D
Intersection Capacity Utilization	102.0%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road

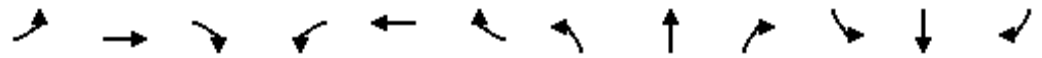


2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Future Volume (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.155		
Satd. Flow (perm)	1695	1737	0	1691	1767	1459	0	1784	1469	252	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				374			282			12
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	317	159	673	0	346	282	532	524	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	317	159	673	0	346	282	532	642	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		23.2	23.2	11.3		32.0	23.2	11.3	32.3	
Total Split (s)	27.3	27.3		28.7	28.7	42.0		32.0	28.7	42.0	74.0	
Total Split (%)	20.2%	20.2%		21.3%	21.3%	31.1%		23.7%	21.3%	31.1%	54.8%	
Maximum Green (s)	22.0	22.0		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		2.0	2.0			7.0	2.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	13.8	13.8		22.5	22.5	58.2		26.0	48.4	67.8	67.8	
Actuated g/C Ratio	0.11	0.11		0.18	0.18	0.48		0.21	0.40	0.56	0.56	
v/c Ratio	0.40	0.54		1.01	0.49	0.76		0.91	0.37	1.03	0.66	
Control Delay	55.9	60.0		104.0	51.3	12.6		75.8	4.0	78.8	23.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	55.9	60.0		104.0	51.3	12.6		75.8	4.0	78.8	23.6	
LOS	E	E		F	D	B		E	A	E	C	
Approach Delay		58.3			43.2			43.6			48.6	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	14.6	14.6		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	12.6	12.6		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	10.6	10.6		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		22.5	22.5	35.7		26.0	22.5	35.7	67.7	
10th %ile Term Code	Min	Min		Max	Max	Max		MaxR	Max	Max	MaxR	
Stops (vph)	68	96		268	141	280		301	22	381	439	
Fuel Used(l)	6	8		37	12	27		38	10	59	44	
CO Emissions (g/hr)	106	155		692	229	511		703	190	1101	813	
NOx Emissions (g/hr)	20	30		134	44	99		136	37	213	157	
VOC Emissions (g/hr)	24	36		160	53	118		162	44	254	187	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	17.1	24.1		~76.1	34.0	29.1		80.3	0.0	~112.5	98.9	
Queue Length 95th (m)	31.9	41.9		#147.6	59.8	55.8		#147.7	16.1	#205.8	163.8	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Total Traffic

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Lane Group	Ø11
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	3.0
Total Split (s)	5.0
Total Split (%)	4%
Maximum Green (s)	3.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	0.0
90th %ile Term Code	Skip
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Stops (vph)	
Fuel Used(l)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Optimized) 2033 Total Traffic

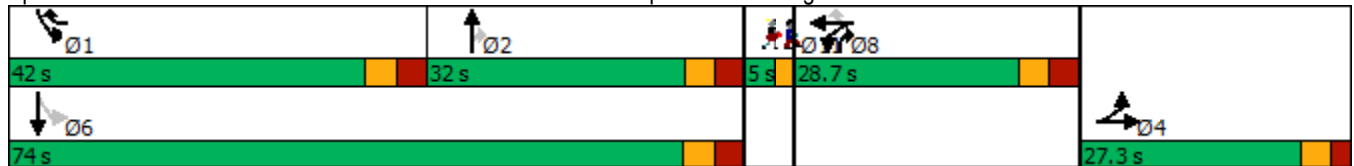


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	306	315		313	326	891		380	761	518	968	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.25	0.34		1.01	0.49	0.76		0.91	0.37	1.03	0.66	

Intersection Summary

Area Type:	Other
Cycle Length:	135
Actuated Cycle Length:	122
Natural Cycle:	150
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.03
Intersection Signal Delay:	46.2
Intersection LOS:	D
Intersection Capacity Utilization	99.8%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	130
70th %ile Actuated Cycle:	122.6
50th %ile Actuated Cycle:	120.6
30th %ile Actuated Cycle:	118.6
10th %ile Actuated Cycle:	118
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



Lane Group	Ø11
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak (Reductions)

4386 Rideau Valley Drive  
2033 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	54	484	454	543	609	80
Future Volume (vph)	54	484	454	543	609	80
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.984	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	1754	0
Flt Permitted	0.950		0.125			
Satd. Flow (perm)	1647	1369	213	1784	1754	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		481			9	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	54	484	454	543	609	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	484	454	543	689	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
 PM Peak (Reductions)

4386 Rideau Valley Drive  
 2033 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	25.0	70.0	45.0	
Total Split (%)	22.2%	22.2%	27.8%	77.8%	50.0%	
Maximum Green (s)	14.3	14.3	19.7	64.3	39.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.6	11.6	67.4	67.0	39.5	
Actuated g/C Ratio	0.13	0.13	0.75	0.74	0.44	
v/c Ratio	0.25	0.81	0.90	0.41	0.89	
Control Delay	37.6	15.9	43.8	5.6	39.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.6	15.9	43.8	5.6	39.1	
LOS	D	B	D	A	D	
Approach Delay	18.1			23.0	39.1	
Approach LOS	B			C	D	
90th %ile Green (s)	14.3	14.3	19.7	64.3	39.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	13.9	13.9	20.1	64.7	39.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
50th %ile Term Code	Min	Min	Max	Coord	Coord	
30th %ile Green (s)	10.0	10.0	24.0	68.6	39.3	
30th %ile Term Code	Min	Min	Max	Coord	Coord	
10th %ile Green (s)	10.0	10.0	23.1	68.6	40.2	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	48	56	263	186	575	
Fuel Used(l)	4	17	37	25	62	
CO Emissions (g/hr)	77	316	686	471	1158	
NOx Emissions (g/hr)	15	61	132	91	223	
VOC Emissions (g/hr)	18	73	158	109	267	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	8.7	0.5	51.9	25.4	105.6	
Queue Length 95th (m)	18.5	#43.6	#118.3	48.7	#174.4	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	261	622	505	1327	774	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.78	0.90	0.41	0.89	























Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	26.8
Intersection LOS:	C
Intersection Capacity Utilization	87.8%
ICU Level of Service	E
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

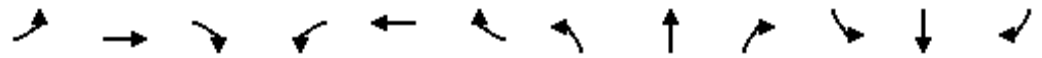
Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road



2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Reductions) 2033 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	102	5	252	159	673	0	346	282	532	524	118
Future Volume (vph)	76	102	5	252	159	673	0	346	282	532	524	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	20.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	1		0
Taper Length (m)	30.0			40.0			30.0			30.0		
Lane Util. 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
Ped Bike Factor		1.00		1.00					0.97			
Frt		0.993				0.850			0.850		0.972	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1695	1737	0	1695	1767	1459	0	1784	1517	1544	1734	0
Flt Permitted	0.950			0.950						0.149		
Satd. Flow (perm)	1695	1737	0	1690	1767	1459	0	1784	1472	242	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				327			260			13
Link Speed (k/h)		40			40			50				50
Link Distance (m)		177.8			237.8			330.9				364.3
Travel Time (s)		16.0			21.4			23.8				26.2
Confl. Peds. (#/hr)			1	1					3	3		
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%	4%	2%	2%	3%	6%	2%	2%	2%	12%	2%	2%
Adj. Flow (vph)	76	102	5	252	159	673	0	346	282	532	524	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	107	0	252	159	673	0	346	282	532	642	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1		2	1	1		2
Detector Template	Left	Thru		Left	Thru	Right		Thru	Right	Left		Thru
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1		30.5	6.1	6.1		30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1		1.8	6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#4386 Rideau Valley Drive  
 PM Peak (Reductions) 2033 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA		Split	NA	pm+ov		NA	pm+ov	pm+pt	NA	
Protected Phases	4	4		8	8	1		2	8	1	6	
Permitted Phases						8			2	6		
Detector Phase	4	4		8	8	1		2	8	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	27.3	27.3		28.2	28.2	11.3		32.0	28.2	11.3	32.3	
Total Split (s)	28.0	28.0		28.0	28.0	50.0		34.0	28.0	50.0	84.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%	35.7%		24.3%	20.0%	35.7%	60.0%	
Maximum Green (s)	22.7	22.7		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.3		3.0	3.0	3.3	3.3	
All-Red Time (s)	2.3	2.3		3.2	3.2	3.0		3.0	3.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3		6.2	6.2	6.3		6.0	6.2	6.3	6.3	
Lead/Lag						Lead		Lag		Lead		
Lead-Lag Optimize?						Yes		Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Min		Max	None	Min	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			19.0	15.0		19.0	
Pedestrian Calls (#/hr)	1	1		0	0			3	0		0	
Act Effct Green (s)	14.2	14.2		21.7	21.7	65.3		28.0	49.5	77.8	77.8	
Actuated g/C Ratio	0.11	0.11		0.17	0.17	0.50		0.21	0.38	0.59	0.59	
v/c Ratio	0.42	0.57		0.90	0.55	0.76		0.91	0.39	0.92	0.62	
Control Delay	61.4	66.3		88.0	59.1	14.3		79.5	5.7	55.1	21.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	61.4	66.3		88.0	59.1	14.3		79.5	5.7	55.1	21.0	
LOS	E	E		F	E	B		E	A	E	C	
Approach Delay		64.3			38.0			46.4			36.4	
Approach LOS		E			D			D			D	
90th %ile Green (s)	22.0	22.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
90th %ile Term Code	Ped	Ped		Max	Max	Max		MaxR	Max	Max	MaxR	
70th %ile Green (s)	15.4	15.4		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
70th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
50th %ile Green (s)	13.2	13.2		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
50th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
30th %ile Green (s)	11.0	11.0		21.8	21.8	43.7		28.0	21.8	43.7	77.7	
30th %ile Term Code	Gap	Gap		Max	Max	Max		MaxR	Max	Max	MaxR	
10th %ile Green (s)	10.0	10.0		21.2	21.2	43.7		28.0	21.2	43.7	77.7	
10th %ile Term Code	Min	Min		Gap	Gap	Max		MaxR	Gap	Max	MaxR	
Stops (vph)	69	96		220	143	325		302	32	392	402	
Fuel Used(l)	6	9		27	13	29		39	11	50	42	
CO Emissions (g/hr)	112	165		494	247	539		722	201	925	774	
NOx Emissions (g/hr)	22	32		95	48	104		139	39	179	149	
VOC Emissions (g/hr)	26	38		114	57	124		166	46	213	179	
Dilemma Vehicles (#)	0	0		0	0	0		0	0	0	0	
Queue Length 50th (m)	18.7	26.3		64.2	37.9	38.9		87.5	3.2	112.0	98.5	
Queue Length 95th (m)	34.2	45.2		#122.5	64.7	74.7		#155.9	21.8	#201.5	159.3	
Internal Link Dist (m)		153.8			213.8			306.9			340.3	

2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street#386 Rideau Valley Drive  
 PM Peak (Reductions) 2033 Total Traffic

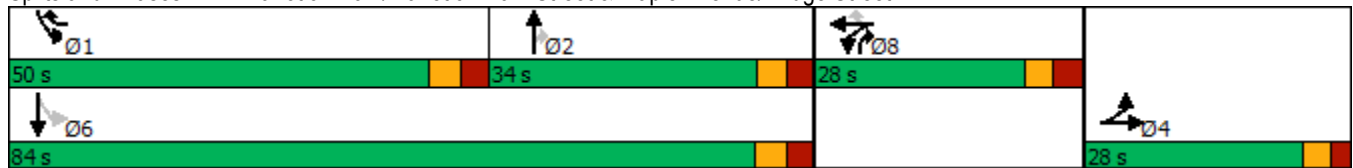


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	15.0			20.0		20.0						
Base Capacity (vph)	292	301		281	293	889		380	725	576	1030	
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	
Reduced v/c Ratio	0.26	0.36		0.90	0.54	0.76		0.91	0.39	0.92	0.62	

**Intersection Summary**













Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	131.5
Natural Cycle:	130
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	40.7
Intersection LOS:	D
Intersection Capacity Utilization	96.0%
ICU Level of Service	F
Analysis Period (min)	15
90th %ile Actuated Cycle:	139.3
70th %ile Actuated Cycle:	132.7
50th %ile Actuated Cycle:	130.5
30th %ile Actuated Cycle:	128.3
10th %ile Actuated Cycle:	126.7
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Manotick Main/Manotick Main Street & Maple Avenue/Bridge Street



1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
AM Peak

4386 Rideau Valley Dr  
2033 Total Traffic (dual SB lanes)

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	113	357	416	585	289	30
Future Volume (vph)	113	357	416	585	289	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.986	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1695	1419	1517	1717	3275	0
Flt Permitted	0.950		0.472			
Satd. Flow (perm)	1695	1419	754	1717	3275	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		357			17	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	9%	14%	6%	4%	5%
Adj. Flow (vph)	113	357	416	585	289	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	357	416	585	319	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	20.0	20.0	20.0	50.0	30.0	
Total Split (%)	28.6%	28.6%	28.6%	71.4%	42.9%	
Maximum Green (s)	14.3	14.3	14.7	44.3	24.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	11.2	11.2	47.8	47.4	29.1	
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.42	
v/c Ratio	0.42	0.68	0.63	0.50	0.23	
Control Delay	31.1	10.5	10.1	7.7	14.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.1	10.5	10.1	7.7	14.0	
LOS	C	B	B	A	B	
Approach Delay	15.5			8.7	14.0	
Approach LOS	B			A	B	
90th %ile Green (s)	14.3	14.3	14.7	44.3	24.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	11.5	11.5	16.3	47.1	25.5	
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	
50th %ile Green (s)	10.0	10.0	13.4	48.6	29.9	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	11.5	48.6	31.8	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	9.2	48.6	34.1	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	97	52	173	272	191	
Fuel Used(l)	8	11	22	30	21	
CO Emissions (g/hr)	149	212	400	555	390	
NOx Emissions (g/hr)	29	41	77	107	75	
VOC Emissions (g/hr)	34	49	92	128	90	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	13.8	0.0	18.2	29.0	12.6	
Queue Length 95th (m)	25.7	20.3	39.5	60.1	23.6	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	346	573	679	1163	1372	

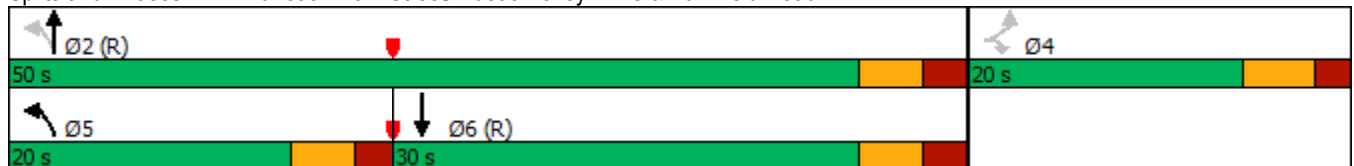


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.62	0.61	0.50	0.23	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	11.4
Intersection LOS:	B
Intersection Capacity Utilization	56.0%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Manotick Main Street/Rideau Valley Drive & Bankfield Road





1: Manotick Main Street/Rideau Valley Drive & Bankfield Road  
PM Peak

4386 Rideau Valley Drive  
2033 Total Traffic (dual SB lanes)



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	54	484	579	543	734	80
Future Volume (vph)	54	484	579	543	734	80
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0	0.0	0.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	60.0		30.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850			0.985	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1647	1369	1616	1784	3336	0
Flt Permitted	0.950		0.170			
Satd. Flow (perm)	1647	1369	289	1784	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		484			13	
Link Speed (k/h)	60			50	50	
Link Distance (m)	220.6			364.3	437.3	
Travel Time (s)	13.2			26.2	31.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	13%	7%	2%	2%	3%
Adj. Flow (vph)	54	484	579	543	734	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	484	579	543	814	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	
Protected Phases			5	2	6	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	4	4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	
Minimum Split (s)	19.7	19.7	10.3	23.7	23.7	
Total Split (s)	23.0	23.0	36.0	67.0	31.0	
Total Split (%)	25.6%	25.6%	40.0%	74.4%	34.4%	
Maximum Green (s)	17.3	17.3	30.7	61.3	25.3	
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.7	5.7	5.3	5.7	5.7	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	C-Max	C-Max	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	7.0	7.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	12.0	12.0	67.0	66.6	30.6	
Actuated g/C Ratio	0.13	0.13	0.74	0.74	0.34	
v/c Ratio	0.25	0.80	0.87	0.41	0.71	
Control Delay	36.6	14.7	31.9	5.9	31.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.6	14.7	31.9	5.9	31.3	
LOS	D	B	C	A	C	
Approach Delay	16.9			19.3	31.3	
Approach LOS	B			B	C	
90th %ile Green (s)	17.3	17.3	30.7	61.3	25.3	
90th %ile Term Code	Max	Max	Max	Coord	Coord	
70th %ile Green (s)	12.9	12.9	35.1	65.7	25.3	
70th %ile Term Code	Gap	Gap	Max	Coord	Coord	
50th %ile Green (s)	10.0	10.0	34.4	68.6	28.9	
50th %ile Term Code	Min	Min	Gap	Coord	Coord	
30th %ile Green (s)	10.0	10.0	30.2	68.6	33.1	
30th %ile Term Code	Min	Min	Gap	Coord	Coord	
10th %ile Green (s)	10.0	10.0	23.1	68.6	40.2	
10th %ile Term Code	Min	Min	Gap	Coord	Coord	
Stops (vph)	47	63	361	192	667	
Fuel Used(l)	4	17	42	26	68	
CO Emissions (g/hr)	76	312	787	476	1272	
NOx Emissions (g/hr)	15	60	152	92	246	
VOC Emissions (g/hr)	17	72	182	110	293	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (m)	8.7	0.0	61.7	25.4	64.8	
Queue Length 95th (m)	17.7	30.4	#134.7	56.2	#99.9	
Internal Link Dist (m)	196.6			340.3	413.3	
Turn Bay Length (m)	50.0					
Base Capacity (vph)	316	654	691	1319	1141	



## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2033 PHF Flow Profile (veh)
2033 Total	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
AM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2033 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	289	30	0	5.0	1.00	1.000
2	Bankfield Road	0	113	357	0	5.0	1.00	1.000
3	Manotick Main Street	0	416	585	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2033 AM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	1	7.00	0.00

#### Geometry Options for 2033 AM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	2	7.00	0.00

#### Geometry Options for 2033 AM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

## 2033 AM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	319		416		698	1463		0.2180
2	Bankfield Road	None	470		289		446	1547		0.3039
3	Manotick Main Street	None	1001		113		646	1662		0.6023

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.25		3.25	0.76		A		A
2	Bankfield Road	None	4.10		4.10	1.39		A		A
3	Manotick Main Street	None	8.21		8.21	5.68		A		A



## 2033 AM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	319		416		698	1463		0.2180
2	Bankfield Road	None	470		289		446	1547		0.3039
3	Manotick Main Street	None	1001		113		646	1662		0.6023

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	3.25		3.25	0.76		A		A
2	Bankfield Road	None	4.10		4.10	1.39		A		A
3	Manotick Main Street	None	8.25		8.25	5.68		A		A

## Scheme Summary

### Control Data

#### Control Data and Model Parameters

121153	2033 PHF Flow Profile (veh)
2033 Total	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
AVERAGE DELAY to Geometry	Output flows: Vehicles
Metric Units (m)	85% Confidence Level

#### Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	No
Bypass Calibration	No
Global Results	Yes

## Operational Data

### Main Geometry (m)

#### Geometry and Design Target

Leg	Leg Names	Approach Geometry (m)				Target	Circulating and Exit Geom		
		Bearing (deg)	Grade Sep G	Half Width V	Lanes n	Average Delay (sec/veh)	Inscribed Diameter D	Half Width Vx	Lanes n
1	Rideau Valley Drive	0	0	7.00	2	60	50.00	4.00	1
2	Bankfield Road	90	0	7.00	2	60	50.00	4.00	1
3	Manotick Main Street	180	0	7.00	2	60	50.00	8.00	2

#### Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Rideau Valley Drive	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
2	Bankfield Road	0	1.000	0	1.000	4.00	3430	0	4.00	1960	0
3	Manotick Main Street	0	1.000	0	1.000	4.00	3430	0	8.00	3920	0

## Traffic Flow Data (veh/hr)

### 2033 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows				Flow Modifiers		
		U-Turn	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Rideau Valley Drive	0	734	80	0	5.0	1.00	1.000
2	Bankfield Road	0	54	484	0	5.0	1.00	1.000
3	Manotick Main Street	0	579	543	0	5.0	1.00	1.000

## Operational Results

### Geometry for Target Input

#### Geometry Options for 2033 PM Peak

				Leg 1 - Rideau Valley Drive	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

#### Geometry Options for 2033 PM Peak

				Leg 2 - Bankfield Road	
nv	ne	nc	nx	E (m)	L' (m)
2	2	2	1	7.00	0.00

#### Geometry Options for 2033 PM Peak

				Leg 3 - Manotick Main Street	
nv	ne	nc	nx	E (m)	L' (m)
2	2	1	2	7.00	0.00

## 2033 PM Peak - 60 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	814		579		597	1357		0.6000
2	Bankfield Road	None	538		734		659	1255		0.4287
3	Manotick Main Street	None	1122		54		1218	1701		0.6597

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	6.49		6.49	3.73		A		A
2	Bankfield Road	None	5.11		5.11	1.98		A		A
3	Manotick Main Street	None	10.38		10.38	7.87		B		B

## 2033 PM Peak - 15 minutes

### Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)				Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass	Entry	Bypass	Entry	Bypass
1	Rideau Valley Drive	None	814		579		597	1357		0.6001
2	Bankfield Road	None	538		734		659	1255		0.4287
3	Manotick Main Street	None	1122		54		1218	1701		0.6597

### Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rideau Valley Drive	None	6.52		6.52	3.73		A		A
2	Bankfield Road	None	5.12		5.12	1.98		A		A
3	Manotick Main Street	None	10.44		10.44	7.87		B		B

## **APPENDIX N**

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Functional Design



