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Proposed Commercial Development

3493-3499 Innes Road, Ottawa

Transportation Impact Assessment

Engineering excellence. Planning progress. Liveable landscapes.

Proposed Commercial Development
3493-3499 Innes Road

Transportation Impact Assessment

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

Dated: December 2022
Revised: November 2023
Revised: January 2024

Novatech File: 118204
Ref: R-2021-105

NOVATECH
Engineers, Planners & Landscape Architects

January 17, 2024

City of Ottawa
Planning, Real Estate, and Economic Development Department
110 Laurier Ave. W., 4th Floor
Ottawa, Ontario K1P 1J1

Attention: **Mr. Mike Giampa**
Senior Engineer, Infrastructure Applications

Dear Mr. Giampa:

Reference: **3493-3499 Innes Road**
Revised Transportation Impact Assessment
Novatech File No. 118204

We are pleased to submit the following revised Transportation Impact Assessment (TIA), in support of Zoning By-Law Amendment and Site Plan Control applications at 3493-3499 Innes Road, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa's *2023 Revised Transportation Impact Assessment (TIA) Guidelines*.

The original TIA in support of this development was submitted in December 2022 and November 2023, and has since been revised to address the latest City comments.

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

Yours truly,

NOVATECH

Joshua Audia, P.Eng.
Project Engineer | Transportation

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

Certification Form for Transportation Impact Assessment (TIA) Study Program Manager

TIA Plan Reports

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

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

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

Certification

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

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

☑ I am either a licensed or registered[1] professional in good standing, whose field of expertise [check ✓ appropriate field(s)]:

☑ is either transportation engineering

☐ or transportation planning.

Dated at Ottawa (City) this 17th day of January, 20 24.

Name: Jennifer Luong, P.Eng.

Professional Title: Senior Project Manager

Jennifer Luong

Signature of Individual certifier that they meet the above four criteria

Office Contact Information (Please Print)	
Address:	240 Michael Cowpland Drive, Suite 200
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Stamp

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

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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared for the property located at 3493-3499 Innes Road, in support of Zoning By-Law Amendment and Site Plan Control applications for the site. The subject site is approximately 0.61 hectares in size and is currently occupied by a former sales centre and garage. The subject site is currently served by one driveway to Innes Road.

The subject site is surrounded by the following:

- Residences, followed by Thornecrest Street to the north,
- Innes Road, followed by planned residential development to the south,
- Residences to the east, and
- Commercial uses, followed by Pagé Road to the west.

The proposed development consists of two single-storey commercial buildings, with gross floor areas (GFAs) of 841 m^2 and 806 m^2 (i.e. 1,647 m^2 GFA in total). A total of 69 surface parking spaces will be provided. Access to the development will be provided through a single access to Innes Road approximately in the centre of the subject site, which will have left turns out restricted with the construction of the planned Innes Road/Lamarche Avenue traffic signal and raised median.

The development will be constructed in two phases, with buildout years of 2024 for Building A and 2025 for Building B.

The subject site is designated as 'Corridor – Mainstreet (Innes Road)' on Schedule B8 of the City of Ottawa's Official Plan (2022, Ministry Approved). The current zoning for the properties is 'Residential First Density' R1WW, and therefore a rezoning is required to allow for the proposed development. The site is not located within any Community Design Plan or Secondary Plan areas.

The study area for this report includes the boundary roadway Innes Road, as well as the following intersections:

- Innes Road/Orléans Boulevard;
- Innes Road/Pagé Road;
- Innes Road/Lamarche Avenue;
- Innes Road/473m East of Pagé 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. Analysis will be completed for the ultimate buildout year 2025 and the horizon year 2030.

The conclusions and recommendations of this TIA can be summarized as follows:

Roadway Modifications to Innes Road/Lamarche Avenue

- Signalization of the Innes Road/Lamarche Avenue intersection is anticipated to be in place by the buildout year 2025, per discussions with City staff. The functional design of the roadway modifications at Innes Road/Lamarche Avenue includes auxiliary eastbound right turn, westbound left turn, northbound left turn, and northbound right turn lanes.

- The planned signalization of Innes Road/Lamarche Avenue, which would include a raised median on Innes Road between Pagé Road and Lamarche Avenue, would restrict access to the proposed development to right-in/right-out (RIRO). Passenger car trips arriving to the site from the west and departing to the east would then be required to perform U-turn manoeuvres on Innes Road at Pagé Road and Lamarche Avenue. Larger vehicles will be unable to perform an eastbound U-turn at Innes Road/Lamarche Avenue, and would therefore be required to either make an eastbound right turn onto Lamarche Avenue and turn around within the Orléans Village subdivision, or do a large loop 'around the block' using the arterial road network and come back to the site via the neighbourhood collectors.

- It is proposed that a median break is provided at the proposed access to Innes Road, which would permit eastbound left turns, but restrict outbound left turns from the proposed development. This median break would include an auxiliary eastbound left turn lane, with 20m of storage length and a 55m taper. The maximum eastbound left turn queue lengths at the proposed site access are less than 1m during the peak hours. Therefore, the proposed storage length of 20m is sufficient.

- The signal and raised median related to the 270 Lamarche Avenue application includes a westbound left turn lane at Innes Road/Pagé Road with 90m of storage. Implementing the proposed median break and auxiliary eastbound left turn lane will require a reduction of the westbound left turn storage at Innes Road/Pagé Road from 90m to approximately 50m. The reduced storage length is still anticipated to accommodate the 95th-percentile queue lengths for this movement during the peak hours.

- The Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads* includes a storage length equation for signalized intersections. The equation recommends a storage length of 40m for the westbound left turn lane at Innes Road/Pagé Road, and therefore reducing the westbound left turn storage from 90m to 50m will maintain a sufficient storage length.

Forecasting

- The proposed development is estimated to generate 31 person trips (including 23 vehicle trips) during the AM peak hour, and 80 person trips (including 60 vehicle trips) during the PM peak hour.

Development Design and Parking

- Pedestrian walkways will connect the front of each proposed building to the existing sidewalk on the north side of Innes Road. These pathways will be approximately 2.5m in width.

- Four bicycle parking spaces are proposed adjacent to the accessible parking spaces in front of each proposed building, for a total of eight bicycle parking spaces on-site.

- OC Transpo's service design guidelines for peak period service is to provide service within a five-minute (400m) walk of home, work, or school, for 95% of urban residents. The main entrances to each proposed building will be within 400m of stops on Innes Road that are served by OC Route 25.

- Any required Transportation Demand Management-supportive design and infrastructure measures in the TDM checklist for non-residential developments have been met.

- Garbage collection will take place at the northeast corner of Building A and northwest corner of Building B. Loading and deliveries will occur at the back of each proposed building (i.e. at the northern end of the subject site). The fire route for the subject site will be located along Innes Road.

- The minimum parking and loading requirements of the City's *Zoning By-Law* will be met.

Boundary Streets

- Innes Road does not meet the target pedestrian level of service (PLOS) or bicycle level of service (BLOS), and meets the target transit level of service (TLOS) and truck level of service (TkLOS).

- Both sides of Innes Road currently include a 2.0m sidewalk with a boulevard width of approximately 3.5m. The best-possible PLOS D is achieved.

- Both directions of Innes Road currently include curbside bike lanes with an approximate width of 2.0m. For roadways with an operating speed of 70 km/h and AADT volumes greater than 10,000 vehicles per day, the *Ontario Traffic Manual (OTM) – Book 18* identifies that separated facilities are appropriate. This is identified for the City's consideration.

Access Design

- The proposed access meets all relevant provisions of the City's *Private Approach By-Law* (PABL) except for Section 25(u). A waiver to Section 25(u) of the PABL is requested.

- TAC's *Geometric Design Guide* identifies a minimum corner clearance of 70m between a driveway and a signalized intersection, measuring from the nearest edge of a private approach and the nearest edge of the intersecting street. The western edge of the proposed access is approximately 140m from the nearest edge of Pagé Road, meeting this requirement. The eastern edge of the proposed access is approximately 68m from the nearest edge of Lamarche Avenue, which is marginally short of the requirement. Locating the proposed access within 70m of Lamarche Avenue can be justified, as the access will only be downstream of Lamarche Avenue, and the proposed development is not anticipated to generate queues backing onto Innes Road at the access.

Transit

- The proposed development is projected to generate two transit trips during the AM peak hour and four transit trips during the PM peak hour. No capacity issues are anticipated for OC Routes 25, 131, or 231, based on transit trips generated by the proposed development.

Intersection MMLOS

- The results of the intersection MMLOS analysis can be summarized as follows:
    - No signalized intersections meet the target PLOS;
    - No signalized intersections meet the target BLOS;
    - Innes Road/Pagé Road and Innes Road/473m East of Pagé Road meet the target TLOS, while Innes Road/Orléans Boulevard does not;
    - Innes Road/Orléans Boulevard meets the target TkLOS, while Innes Road/Pagé Road and Innes Road/473m East of Pagé Road do not.

- For any approaches that do not meet the target PLOS, there is limited opportunity in improving any approach to the target without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians crossing Innes Road without incurring major delays for vehicles.

- All approaches of Innes Road/Orléans Boulevard do not achieve the target BLOS, based on both left turn and right turn characteristics. To achieve this target, a protected intersection would be required, and would involve the removal of all right turn channels. This is identified for the City's consideration.

- The east and west approaches at Innes Road/Pagé Road and the south, east, and west approaches at Innes Road/473m East of Pagé Road, do not meet the target BLOS based on left turn characteristics. Two-stage left-turn bike boxes would be required to achieve the target, and would therefore require restriction to right turns on red (RTOR). It is recommended that if bike boxes are pursued, that they are implemented holistically along the Innes Road where applicable, rather than at only select intersections.

- All approaches at Innes Road/Orléans Boulevard do not meet the target TLOS. It is anticipated that transit delays will improve once isolated transit priority measures are implemented on Innes Road.

- The east and west approaches at Innes Road/Pagé Road and the east approach at Innes Road/473m East of Pagé Road do not achieve the target TkLOS. No modifications to the curb radii are recommended, as Pagé Road is primarily a residential street with low truck volumes, and it is anticipated that large trucks do not enter and exit 3615 Innes Road for loading and deliveries, given the layout and size.

Existing Intersection Operations

- During the AM peak hour, the southbound right turn and eastbound left turn movements at Innes Road/Orléans Boulevard operate at a failing vehicular level of service. To meet the target, a reduction of approximately 140 southbound right turning vehicles and 10 eastbound left turning vehicles would be required. The average (50^{th}-percentile) and maximum (95^{th}-percentile) queue lengths of the southbound right turn movement at Innes Road/Orléans Boulevard exceed the storage length provided.

- During the PM peak hour, the eastbound through movement at Innes Road/Orléans Boulevard operate at a failing vehicular level of service. To meet the target, a reduction of approximately 100 eastbound through vehicles would be required. The maximum queue length of the southbound left turn movement at Innes Road/Orléans Boulevard exceeds the storage length provided.

Background Intersection Operations

- During the AM peak hour, the southbound right turn and westbound through movements at Innes Road/Orléans Boulevard operate at a failing vehicular level of service. To meet the target, a reduction of approximately 150 southbound right turning vehicles and 30 westbound through vehicles would be required. The average and maximum queue lengths of the southbound right turn movements exceed the storage length provided.

- During the PM peak hour, the southbound left turn and eastbound through movements at Innes Road/Orléans Boulevard, and the westbound left turn movements at Innes Road/ Pagé Road and Innes Road/Lamarche Avenue operate at a failing vehicular level of service. To meet the target, a reduction of approximately 30 southbound right turning vehicles and 280 eastbound through vehicles at Innes Road/Orléans Boulevard would be required. The maximum queue length of the southbound left turn movement at Innes Road/Orléans Boulevard exceeds the storage length provided.

- To mitigate failing movements at Innes Road/Orléans Boulevard, seven seconds of green time for the northbound/southbound phases have been reallocated to the eastbound/ westbound through phases in the AM peak hour. For the PM peak hour, the cycle length of all study area intersections has been increased from 110 to 130 seconds, with most or all of this additional green time added to the eastbound/westbound phases.

- To mitigate failing westbound left turn movements at Innes Road/Pagé Road and Innes Road/Lamarche Avenue in the PM peak hour, protected plus permitted left turn phasing is identified for the City's consideration. With this phasing, a reduction of approximately 140 eastbound through vehicles at Innes Road/Lamarche Avenue in the PM peak hour would be required to meet the target vehicular level of service. It is understood that this type of phasing is typically implemented after the City reviews the actual performance of the intersections being studied.

Total Intersection Operations

- The addition of site-generated traffic is anticipated to have a marginal impact to peak hour traffic operations within the study area. During the peak hours, the maximum westbound through queue lengths at Innes Road/Pagé Road do not extend upstream to the proposed site access. The maximum eastbound through queue at Innes Road/Lamarche Avenue extends upstream through the Innes Road/Pagé Road intersection during the PM peak hour.

- The proposed development is recommended from a transportation perspective.

1.0 SCREENING

1.1 Introduction

This Transportation Impact Assessment (TIA) has been prepared for the property located at 3493-3499 Innes Road, in support of Zoning By-Law Amendment and Site Plan Control applications for the site. The subject site is approximately 0.61 hectares in size and is currently occupied by a former sales centre and garage. The subject site is currently served by one driveway to Innes Road.

The subject site is surrounded by the following:

- Residences, followed by Thornecrest Street to the north,
- Innes Road, followed by planned residential development to the south,
- Residences to the east, and
- Commercial uses, followed by Pagé Road to the west.

An aerial of the vicinity around the subject site is provided in **Figure 1**.

1.2 Proposed Development

The proposed development consists of two single-storey commercial buildings, with gross floor areas (GFAs) of 841 m^2 and 806 m^2 (i.e. 1,647 m^2 GFA in total). A total of 69 surface parking spaces will be provided. Access to the development will be provided through a single access to Innes Road approximately in the centre of the subject site, which will have left turns out restricted with the construction of the planned Innes Road/Lamarche Avenue traffic signal and raised median.

The development will be constructed in two phases, with buildout years of 2024 for Building A and 2025 for Building B.

The subject site is designated as 'Corridor – Mainstreet (Innes Road)' on Schedule B8 of the City of Ottawa's Official Plan (2022, Ministry Approved). The current zoning for the properties is 'Residential First Density' R1WW, and therefore a rezoning is required to allow for the proposed development. The site is not located within any Community Design Plan or Secondary Plan areas.

A copy of the preliminary site plan is included in **Appendix A**.

1.3 Screening Form

The City's *2023 Revised 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 expected to generate over 60 peak hour person trips; further assessment is **required** based on this trigger.

- Location Triggers – The development proposes a new access to Innes Road, which is a designated Crosstown Bikeway and Transit Priority Corridor, and the development is located within a Design Priority Area; further assessment is **required** based on this trigger.

- Safety Triggers – The proposed driveway is located within the area of influence of an adjacent traffic signal; further assessment is **required** based on this trigger.

Figure 1: View of the Subject Site

2.0 SCOPING

2.1 Existing Conditions

2.1.1 Roadways

All roadways within the study area fall under the jurisdiction of the City of Ottawa.

Innes Road is an arterial roadway that generally runs on an east-west alignment between St. Laurent Boulevard and Dunning Road. West of St. Laurent Boulevard, the roadway continues as Industrial Avenue. Between the western and eastern intersections with the Blackburn Hamlet Bypass, Innes Road acts as a major collector. Within the study area, Innes Road has a five-lane urban cross-section with a centre two-way left turn lane (TWLTL) between Pagé Road and Frank Bender Street, and a four-lane divided urban cross-section with turn lanes at intersections west of Pagé Road. Bike lanes and sidewalks are provided on both sides of the roadway, and the roadway has a posted speed limit of 60 km/h. Innes Road is classified as a truck route, allowing full loads. Street parking is not permitted. The City of Ottawa's Official Plan identifies a right-of-way (ROW) protection of 37.5m at Innes Road within the study area, and therefore a widening is required along the site frontage.

Orléans Boulevard is an arterial roadway that generally runs on a north-south alignment between St. Joseph Boulevard and Navan Road. North of St. Joseph Boulevard, Orléans Boulevard operates as a major collector, collector, or local roadway. Within the study area, Orléans Boulevard has a four-lane divided urban cross-section, sidewalks on both sides of the roadway, and a posted speed limit of 50 km/h. The speed limit increases to 60 km/h approximately 90m north of Innes Road. Orléans Boulevard is classified as a truck route with restricted loads north of Innes Road, and is not classified as a truck route south of Innes Road. Street parking is not permitted.

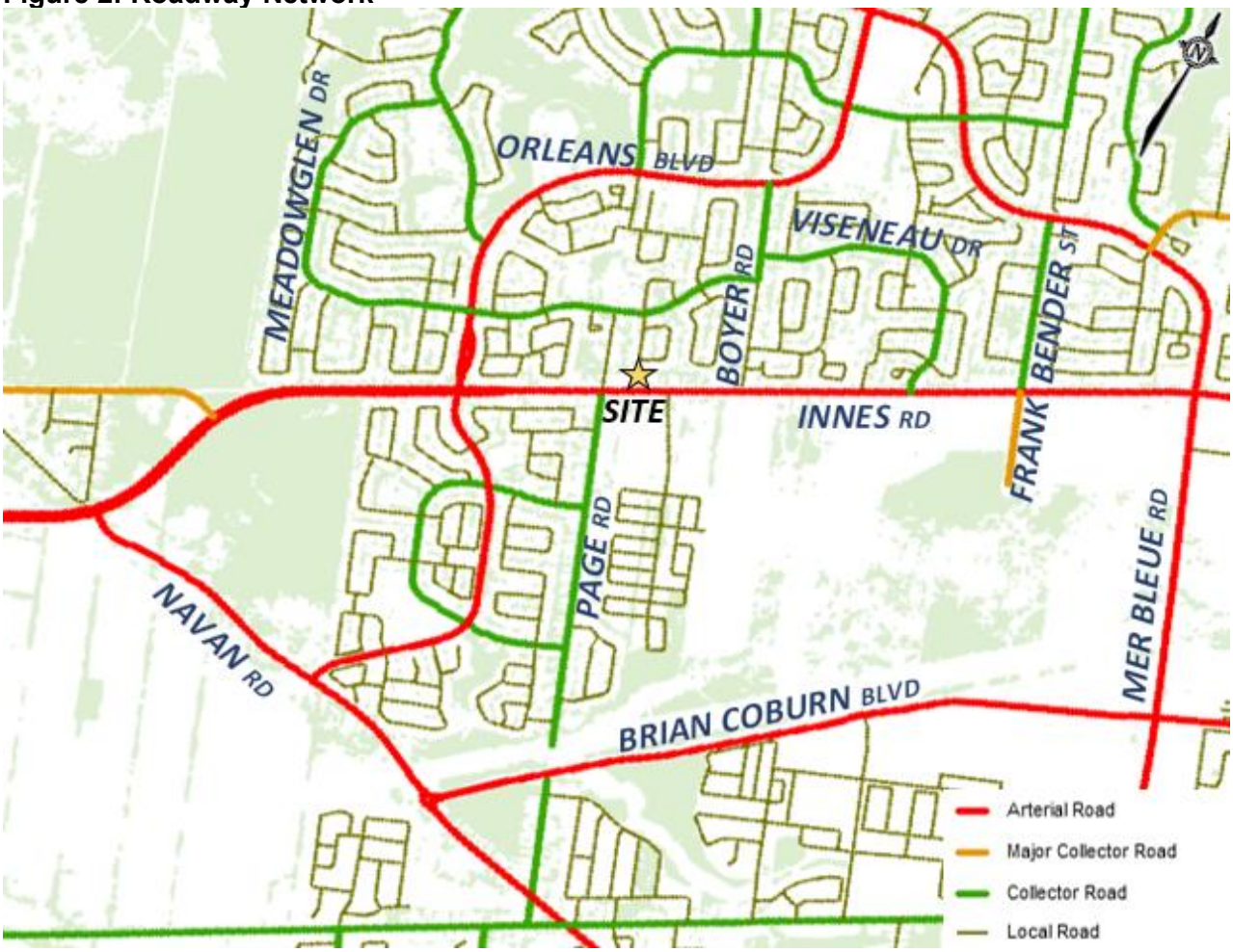
Pagé Road runs on a north-south alignment between Innes Road and Renaud Road, and has a posted speed limit of 40 km/h. North of Innes Road, Pagé Road is a local roadway with a two-lane undivided rural cross-section and an at-grade sidewalk on the west side. South of Innes Road, Pagé Road is a collector roadway with a two-lane undivided urban cross-section and sidewalks on both sides of the roadway. Pagé Road is not classified as a truck route. Street parking is permitted on one side of the roadway.

Lamarche Avenue is a collector roadway that runs on a north-south alignment between Innes Road and Ponthieu Crescent/Beaugency Street. Within the study area, Lamarche Avenue has a two-lane undivided urban cross-section, a multi-use pathway on the west side, and an unposted speed limit of 50 km/h. Lamarche Avenue is not classified as a truck route. Street parking is permitted on one side of the roadway.

Boyer Road is a local roadway north of Innes Road, and runs on a north-south alignment between Innes Road and Meadowglen Drive. The roadway terminates in a cul-de-sac immediately north of Innes Road. North of Meadowglen Drive, Boyer Road is a collector roadway which runs on a north-south alignment between Meadowglen Drive and Orléans Boulevard. Within the study area, Boyer Road has a two-lane undivided urban cross-section, with no sidewalks, and a posted speed limit of 40 km/h. Boyer Road is not classified as a truck route. Street parking is permitted on one side of the roadway.

The roadway network of the greater area surrounding the subject site is illustrated in **Figure 2**.

Figure 2: Roadway Network



2.1.2 Intersections

Innes Road/Orléans Boulevard

- Signalized four-legged intersection
- North/South Approaches (Orléans Boulevard): one left turn lane, two through lanes, and one channelized right turn lane
- East Approach (Innes Road): one left turn lane, two through lanes, one transit queue jump lane, and one channelized right turn lane
- West Approach (Innes Road): two left turn lanes, two through lanes, and one channelized right turn lane
- Eastbound bike lanes provided on east leg; westbound bike lanes provided on east/west legs

Innes Road/Pagé Road

- Signalized four-legged intersection
- North/South Approaches (Pagé Road): one shared left turn/through/right turn lane
- East/West Approaches (Innes Road): one left turn lane, one through lane, and one shared through/right turn lane
- Bike lanes on east and west approaches

Innes Road/Lamarche Avenue

- Unsignalized three-legged intersection
- South Approach (Lamarche Avenue): one shared left turn/right turn lane
- East Approach (Innes Road): one two-way left turn lane and two through lanes
- West Approach (Innes Road): one two-way left turn lane, one through lane, and one shared through/right turn lane
- Bike lanes on east and west approaches

Innes Road/473m East of Pagé Road

- Signalized four-legged intersection
- North/South Approaches (accesses to 3604-3636 or 3615 Innes Road): one shared left turn/through/right turn lane
- East/West Approaches (Innes Road): one left turn lane, one through lane, and one shared through/right turn lane
- Bike lanes on east and west approaches

2.1.3 Driveways

In accordance with the *2017 TIA Guidelines*, a review of adjacent driveways along the boundary roads are provided as follows:

Innes Road, North Side

- Two driveways to commercial uses and a gas station at 3469 Innes Road
- Ten driveways to residences at 3437, 3443, 3519, 3523, 3533, 3543, 3555, 3565, and 3581 Innes Road

Innes Road, South Side

- Three driveways to residences at 3484, 3554, and 3564 Innes Road
- One driveway to a former driving range at 240 Lamarche Avenue
- Two driveways to commercial uses at 3534 and 3544 Innes Road

2.1.4 Pedestrian and Cycling Facilities

Concrete sidewalks are provided on both sides of Orléans Boulevard, Innes Road east of Orléans Boulevard, and Pagé Road south of Innes Road. Sidewalks are also provided on the west side of Pagé Road north of Innes Road, and on the north side of Innes Road west of Orléans Boulevard. An asphalt multi-use pathway is provided on the west side of Lamarche Avenue. On-street bike lanes are provided in both directions on Innes Road east of Orléans Boulevard. West of Orléans Boulevard, the westbound bike lane on Innes Road continues before connecting to a multi-use pathway west of the study area.

In the City of Ottawa's primary cycling network, Innes Road is designated as both a Spine Route and Crosstown Bikeway, Pagé Road is designated as a Spine Route, and Orléans Boulevard and Boyer Road are designated as Local Routes.

2.1.5 Transit

The locations of bus stops in the vicinity of the subject site are described in **Table 1** and shown in **Figure 3**, and a summary of the routes which serve the study area is included in **Table 2**. Detailed route information and an excerpt from the OC Transpo System Map are included in **Appendix C**.

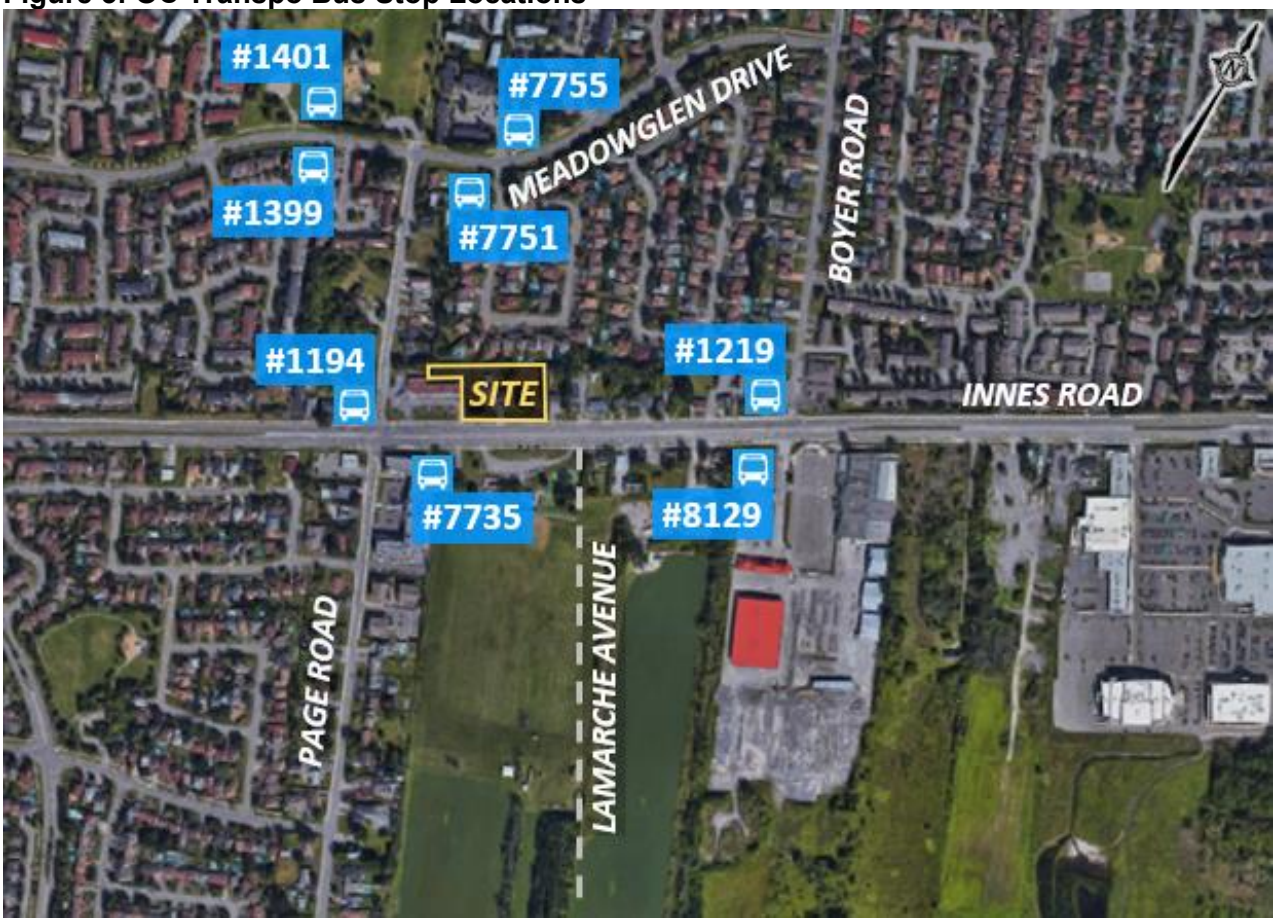
Table 1: OC Transpo Transit Stops

Stop	Location	Routes Serviced
#1194	North side of Innes Road, west of Pagé Road	25, 612, 648
#1219	North side of Innes Road, west of Boyer Road	25, 612, 648
#1399	South side of Meadowglen Drive, west of Loranger Court	131, 231, 611, 631, 648
#1401	North side of Meadowglen Drive, west of Loranger Court	131, 231, 611, 631, 648
#7735	South side of Innes Road, east of Pagé Road	25, 612, 648
#7751	South side of Meadowglen Drive, between Pagé Road and Thornecrest Street	131, 231, 611, 631, 648
#7755	North side of Meadowglen Drive, east of Aspenview Way	131, 231, 611, 631, 648
#8129	South side of Innes Road, west of Boyer Road	25, 612, 648

Table 2: OC Transpo Route Information

Route	From ↔ To	Frequency
25	Millennium ↔ La Cité/Blair	All day service, seven days a week; 7- to 30-minute headways
131	Fallingbrook ↔ Chapel Hill	All day service, seven days a week; 30-minute headways
231	Meadowglen ↔ Blair	Peak period service, weekdays only; 30-minute headways in peak direction only
611	Orléans ↔ Gisèle Lalonde H.S.	Service at select times on school days only
612	Renaud ↔ Beatrice Desloges H.S./ Gisèle Lalonde H.S.	Service at select times on school days only
631	Chapel Hill ↔ Colonel By H.S./Gloucester H.S.	Service at select times on school days only
648	Orléans ↔ Louis Riel H.S.	Service at select times on school days only

Figure 3: OC Transpo Bus Stop Locations



2.1.6 Area Traffic Management

Within the study area, there are no Area Traffic Management (ATM) studies that are in progress.

Additionally, three speed humps have been implemented on Pagé Road between Innes Road and Meadowglen Drive. Signage at each speed bump indicate that vehicles are intended to slow to 30 km/h at those points, where Pagé Road otherwise has a posted speed limit of 40 km/h.

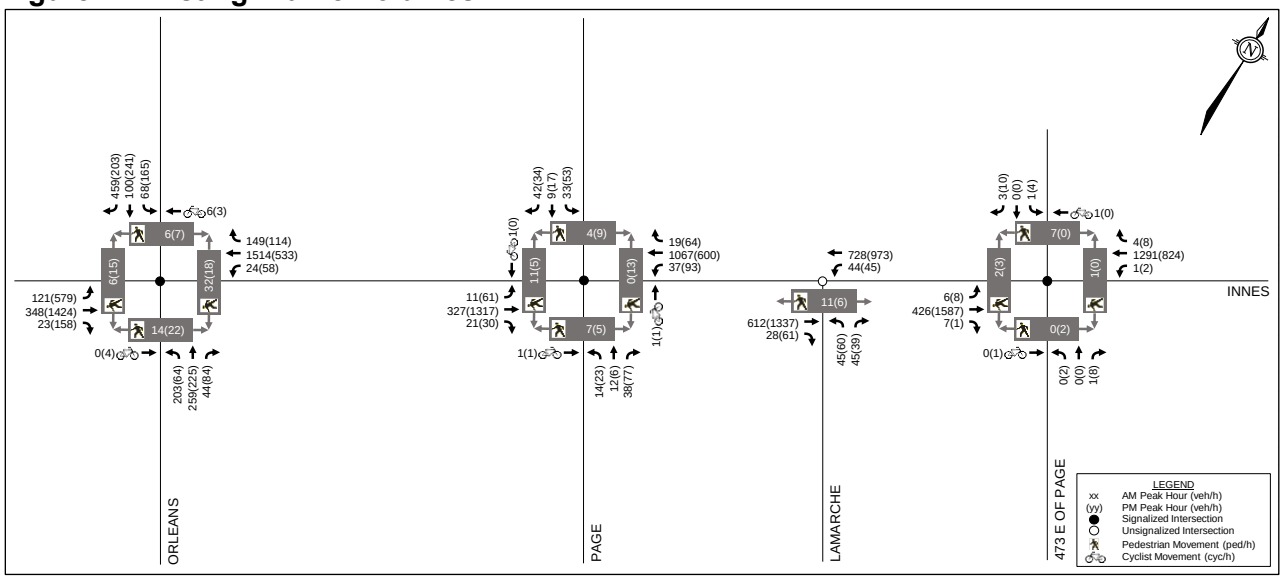
2.1.7 Existing Traffic Volumes

Weekday traffic counts completed by the City or coordinated by Parsons in support of a different development application at 270 Lamarche Avenue (formerly 3490 Innes Road), which is discussed further in Section 2.2.2. These counts have been used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. These counts were completed on the following dates.

- Innes Road/Orléans Boulevard May 3, 2017 (City)
- Innes Road/Pagé Road January 8, 2019 (City)
- Innes Road/Lamarche Avenue August 5, 2021 (Parsons)
- Innes Road/473m East of Pagé Road January 31, 2019 (City)

Traffic count data for the study area intersections are included in **Appendix D**. Peak hour pedestrian, cyclist, and vehicular traffic volumes within the study area are shown in **Figure 4**.

Figure 4: Existing Traffic Volumes



2.1.8 Collision Records

Historical collision data from the last six years available has been obtained from the City's Public Works and Service Department for the study area. Copies of the collision summary reports are included in **Appendix E**.

The collision data has been evaluated to determine if there are any identifiable collision patterns, which are defined in the City's *2017 TIA Guidelines* as 'more than six collisions in five years for any one movement.' Due to the COVID-19 pandemic, it is anticipated that reduced traffic volumes in 2020 resulted in fewer collisions than a typical year. Therefore, the number of collisions at each intersection from January 1, 2015 through December 31, 2020 have been reviewed, and is summarized in **Table 3**.

Table 3: Reported Collisions

Intersection or Street Segment	Impact Types					Total
	Angle	Rear End	Sideswipe	Turn Mvmt	SMV[(1)]/Other	
Innes Road/ Orléans Boulevard	7	40	5	18	5	**75**
Innes Road/ Pagé Road	4	14	2	7	6	**33**
Innes Road/ Lamarche Avenue	-	-	-	-	-	**0**
Innes Road/ 473m East of Pagé Road	1	4	-	-	2	**7**
Innes Road btwn Orléans Boulevard & Pagé Road	-	7	2	-	-	**9**
Innes Road btwn Pagé Road & 473m East of Pagé Road	5	6	3	1	3	**18**
Innes Road btwn 473m East of Pagé Road & Viseneau Drive	2	3	2	-	-	**7**

1. SMV = Single Motor Vehicle

Innes Road/Orléans Boulevard

A total of 75 collisions were reported at this intersection over the last six years, of which there were seven angle impacts, 40 rear-end impacts, five sideswipe impacts, 18 turning movement impacts, and five single vehicle/other impacts. Nineteen collisions resulted in injuries, but none caused fatalities. Thirty-four of the 75 collisions (45%) occurred in poor driving conditions. Three collisions involved pedestrians and no collisions involved cyclists.

Of the seven angle impacts, all involved a southbound vehicle and a westbound vehicle. Five of the seven impacts involved a southbound right-turning vehicle and a westbound through vehicle, and were the result of southbound drivers improperly yielding the right-of-way to westbound drivers.

Of the 40 rear-end impacts, five involved northbound vehicles (one unknown incident and four right-turn incidents), eight involved southbound vehicles (one left-turn incident, three through incidents, and four right-turn incidents), 16 involved eastbound vehicles (three left-turn incidents, 12 through incidents, and one right-turn incident), and 11 involved westbound vehicles (one unknown incident, nine through incidents, and one right-turn incident). The number of rear-end collisions are likely a function of high traffic volumes at this intersection.

Of the 18 turning movement impacts, 11 involved a northbound left-turning vehicle and a southbound through vehicle, five involved a southbound left-turning vehicle and a northbound through vehicle, and two involved a westbound left-turning vehicle and an eastbound through vehicle. The northbound left turn has protected plus permitted phasing during the peak hours, and a fully protected left turn phase would likely reduce this type of collision.

Of the five single vehicle/other impacts, three involved pedestrians. Of these three impacts, two involved a northbound left turning vehicle failing to yield the right-of-way and one involved an eastbound through vehicle disobeying the traffic control.

Innes Road/Pagé Road
A total of 33 collisions were reported at this intersection over the last six years, of which there were four angle impacts, 14 rear-end impacts, two sideswipe impacts, seven turning movement impacts, and six single vehicle/other impacts. Ten collisions resulted in injuries, but none caused fatalities. Twenty of the 33 collisions (61%) occurred in poor driving conditions. Three collisions involved pedestrians and one collision involved a cyclist.

Of the 14 rear-end impacts, five involved eastbound through vehicles and nine involved westbound through vehicles. The number of rear-end collisions are likely a function of high traffic volumes on Innes Road.

Of the six single vehicle/other impacts, three involved pedestrians. Of these three impacts, two involved a northbound left turning vehicle failing to yield the right-of-way and one involved a northbound through vehicle (unknown circumstances).

Innes Road/473m East of Pagé Road
A total of seven collisions were reported at this intersection over the last six years, of which there was one angle impact, four rear-end impacts, and two single vehicle/other impacts. Two collision resulted in injuries, and none caused fatalities. Two of the seven collisions (28%) occurred in poor driving conditions. One collision involved a pedestrian, and none involved cyclists.

Innes Road between Orléans Boulevard and Pagé Road
A total of nine collisions were reported along this segment over the last six years, of which there were seven rear-end impacts and two sideswipe impacts. One collision resulted in injuries, but none caused fatalities. Three of the nine collisions (33%) occurred in poor driving conditions. No collisions involved pedestrians or cyclists.

Innes Road between Pagé Road and 473m East of Pagé Road
A total of 18 collisions were reported along this segment over the last six years, of which there were five angle impacts, six rear-end impacts, three sideswipe impacts, one turning movement impact, and three single vehicle/other impacts. Four collisions resulted in injuries, but none caused fatalities. Six of the 18 collisions (33%) occurred in poor driving conditions. No collisions involved pedestrians or cyclists.

Innes Road between 473m East of Pagé Road and Viseneau Drive
A total of seven collisions were reported along this segment over the last six years, of which there were two angle impacts, three rear-end impacts, and two sideswipe impacts. Two collisions resulted in injuries, but none caused fatalities. Three of the seven collisions (43%) occurred in poor driving conditions. No collisions involved pedestrians or cyclists.

2.2 Planned Conditions

2.2.1 Planned Roadway and Transit Projects

The City's 2013 Transportation Master Plan (TMP) identifies future roadway projects within the study area in its Affordable Road Network and Network Concepts. The Network Concept includes a widening of the existing Blackburn Hamlet Bypass from four to six lanes, between the western intersection with Innes Road and Navan Road. In the Affordable Network, the Blackburn Hamlet Bypass Extension was identified as a Phase 2 (2020-2025) project, and would include a new four-lane roadway between Innes Road and Navan Road.

However, due to feasibility concerns, the Environmental Assessment (EA) process was reinitiated for the Brian Coburn Boulevard/Cumberland Transitway Extension. The study produced interim and ultimate conditions for a new alignment of the Brian Coburn Boulevard/Cumberland Transitway Extension. In the interim condition, bus lanes will be provided in both directions on Innes Road at Anderson Road, and in both directions on the Blackburn Hamlet Bypass at the western intersection with Innes Road and at Navan Road. In the ultimate condition, the Brian Coburn Boulevard extension will generally follow the alignment of Renaud Road south of the Blackburn Hamlet Bypass, with the Cumberland Transitway running immediately north of the extension.

Signalization of the Innes Road/Lamarche Avenue intersection is anticipated to be in place by the buildout year 2025, per discussions with City staff. As part of the development at 270 Lamarche Avenue (formerly 3490 Innes Road), which is described in Sections 2.2.2 and 3.2.2, Road Modification Approval (RMA) support documents were submitted for the future Innes Road/Lamarche Avenue signal, which is eligible for funding under the Development Charges By-Law. The functional design of the proposed signalized intersection at Innes Road/Lamarche Avenue includes auxiliary eastbound right turn, westbound left turn, northbound left turn, and northbound right turn lanes. A screenshot of the functional design is included in **Figure 5**.

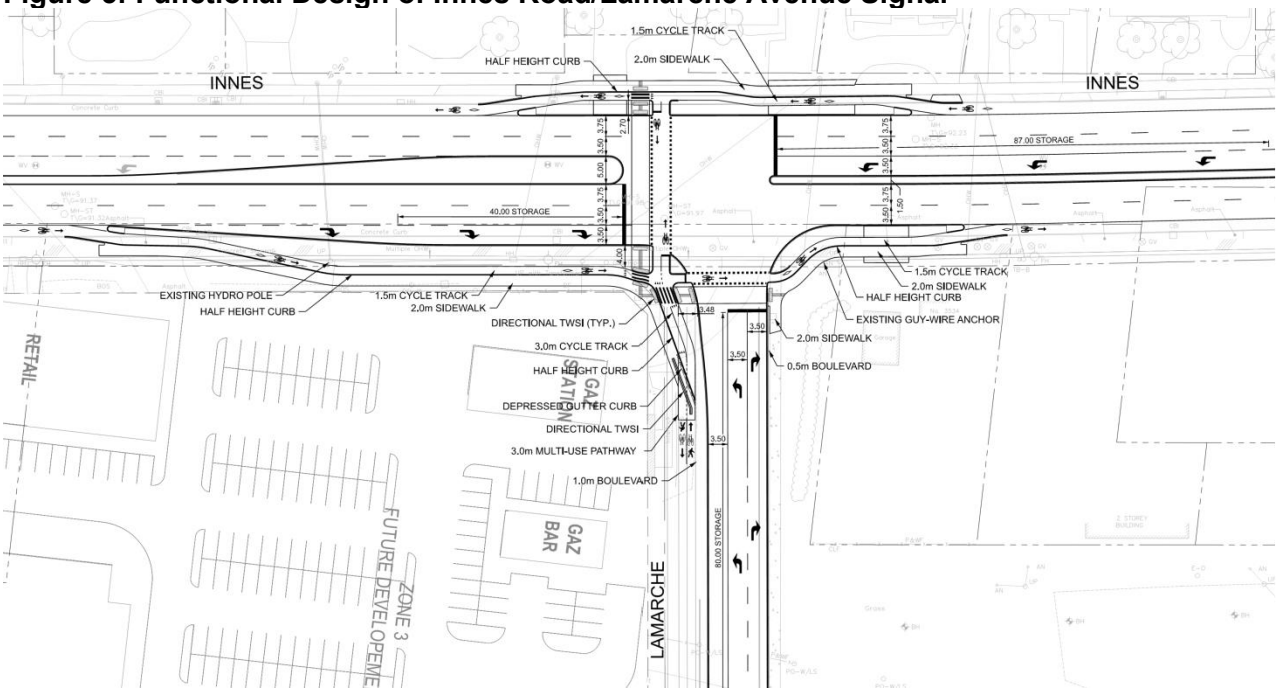
The Affordable Rapid Transit and Transit Priority (RTTP) Network identifies Innes Road and Brian Coburn Boulevard west of Tenth Line Road as Transit Priority Corridors with Isolated Measures. Transit signal priority and queue jump lanes will be implemented at select intersections. The TMP envisioned peak period bus lanes and transit signal priority measures for the Blackburn Hamlet Bypass between Innes Road and Brian Coburn Boulevard, which may have included the repurposing of general purpose lanes.

The 2031 RTTP Network Concept includes the Cumberland Transitway, which will run between Blair Road and Frank Kenny Road. A corridor for the future transitway has been reserved by the City, immediately north of Brian Coburn Boulevard (south of the study area).

The 2013 Ottawa Cycling Plan identifies a Phase 3 (2026-2031) project north of the study area. The Orléans East-West Neighbourhood Bikeway project will include shared use lanes on Viseneau Drive and Meadowglen Drive. Additionally, a major pathway link between Innes Road and Brian Coburn Boulevard is identified within the East Urban Community, which is anticipated to be constructed beyond the timeline of this study.

The 2013 Ottawa Pedestrian Plan identifies a Phase 3 (2026-2031) project north of the study area. A new sidewalk will be provided along the entire south/west side of Meadowglen Drive between Forest Valley Drive and Boyer Road, in addition to the existing sidewalk on the entire north/east side of Meadowglen Drive.

Figure 5: Functional Design of Innes Road/Lamarche Avenue Signal



Source: 3490 Innes Road TIA, Appendix I (Parsons, 2023)

2.2.2 Other Area Developments

In proximity of the proposed development, there are multiple other developments that have recently been completed, are under construction, approved, or are in the approval process. These developments are summarized as follows.

Orléans Village Subdivision
A Transportation Impact Study (TIS) was prepared by Parsons in December 2016 and later revised in April 2017 and August 2017, in support of a subdivision that will be accessed via Innes Road/ Lamarche Avenue. The development consists of 534 residential dwellings. Per the TIS, buildout of Phase 1 of the development was anticipated to occur in 2021, and full buildout was anticipated to occur in 2024. The TIS also recommended signalization of the Innes Road/Lamarche Avenue intersection, as well as a westbound left turn lane and an eastbound right turn lane. It is understood that these improvements will now be implemented as part of the 270 Lamarche Avenue (formerly 3490 Innes Road) Draft Plan.

245-275 Lamarche Avenue
A TIA was prepared by CGH Transportation in April 2022 and revised in July 2022, in support of a residential development. The development includes 103 townhouse dwellings and 68 back-to-back dwellings. Per the TIA, buildout of the development is anticipated to occur in 2025.

3437 and 3443 Innes Road
A TIA was prepared by Novatech in April 2022, in support of a mixed-use development. The development includes a single six-storey building, with approximately 5,530 ft^2 of ground-floor commercial space and 123 residential dwellings. Per the TIA, buildout of the development is anticipated to occur in 2023.

270 Lamarche Avenue (formerly 3490 Innes Road)
A TIA was prepared by Parsons in October 2021 and revised in April 2023, in support of a mixed-use development. Four options are currently being considered, and the TIA included analysis for the option that would generate the most traffic during the weekday peak hours. This option includes five mid-rise buildings with 525 residential dwellings and approximately 41,300 ft^2 of ground-floor commercial/retail uses. Buildout of the development is anticipated to occur in three phases, with an ultimate buildout year of 2031.

3598 Innes Road
A TIA was prepared by Tranplan Associates in September 2018, in support of an automatic car wash facility. This facility is now open, but was not completed prior to the traffic counts included in Section 2.1.7.

3610 Innes Road
A TIA was prepared by Novatech in October 2019 and later revised in April 2020, in support of a subdivision. The development consists of 456 residential dwellings. Per the TIA, buildout of the development was anticipated to occur in 2023.

3817-3843 Innes Road
A TIA was prepared by D.J. Halpenny & Associates Ltd. in March 2021, in support of a residential development. The development includes three low- or mid-rise buildings, with a total of 97 residential dwellings. Per the TIA, buildout of the development is anticipated to occur in 2024.

Richcraft Trailsedge North
A TIA was prepared by Castleglenn Consultants in April 2021, in support of a subdivision. The development consists of 2,040 residential dwellings and an employment area that will support approximately 830 jobs. Per the TIA, buildout of the residential portion is anticipated to occur in 2047, and the buildout year of the employment portion is unknown at the time of writing.

A figure outlining the location of all the developments above is included in **Figure 6**.

2.3 Study Area and Time Periods

The study area for this report includes the boundary roadway Innes Road, as well as the following intersections:

- Innes Road/Orléans Boulevard;
- Innes Road/Pagé Road;
- Innes Road/Lamarche Avenue;
- Innes Road/473m East of Pagé 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. Analysis will be completed for the ultimate buildout year 2025 and the horizon year 2030.

Figure 6: Other Area Developments

2.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the *2023 Revised TIA Guidelines*. The applicable exemptions for this site are shown in **Table 4**.

Table 4: TIA Exemptions

Module	Element	Exemption Criteria	Status
Design Review Component			
4.1 Development Design	*4.1.2* Circulation and Access	• Required for site plans	Not Exempt
	4.1.3 New Street Networks	• Required for plans of subdivision	Exempt
4.2 Parking	*4.2.1* Parking Supply	• Required for site plans	Not Exempt
Network Impact Component			
4.5 Transportation Demand Management	*All elements*	• Not required for non-residential site plans expected to have fewer than 60 employees and/or students on location at any given time	Exempt
4.6 Neighbourhood Traffic Calming	*All elements*	Required if the development meets all of the following criteria: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: ○ School (within 250m walking distance); ○ Park; ○ Retirement / Older Adult Facility (i.e. long-term care and retirement homes); ○ Licenced Child Care Centre; ○ Community Centre; or ○ 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site trip infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	Exempt
4.8 Network Concept	*All elements*	• 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	Exempt

Based on the foregoing, the following modules will be included in the TIA report:

Design Review Component
- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design

Network Impact Component
- Module 4.7: Transit
- Module 4.9: Intersection Design

3.0 FORECASTING

3.1 Development-Generated Travel Demand

3.1.1 Trip Generation

The existing development is conservatively assumed to generate no trips during the weekday peak hours. The proposed development will consist of approximately 17,736 ft^2 GFA of commercial space. Building A is known to be a mattress store, while Building B is anticipated to have office or retail tenants. For the purposes of this review, Building B is assumed to be occupied by one or more retail uses, as this is a higher trip generator than office uses.

Using the *ITE Trip Generation Manual, 11th Edition*, trips generated by Building A have been estimated using the rates corresponding to the Furniture Store land use (code 890), and trips generated by Building B have been estimated using the rates corresponding to the Strip Retail Plaza land use (code 822). Trips have been converted to person trips using an adjustment factor of 1.28, consistent with the City's *2017 TIA Guidelines*.

The estimated number of person trips generated by the proposed development is summarized in **Table 5**.

Table 5: Proposed Development – Peak Hour Trip Generation

Land Use	ITE Code	GFA	AM Peak Hour (pph)			PM Peak Hour (pph)		
			IN	OUT	TOT	IN	OUT	TOT
Furniture Store	890	9,056 ft^2	3	1	*4*	3	3	*6*
Strip Retail Plaza	822	8,680 ft^2	16	11	*27*	37	37	*74*
		Total	**19**	**12**	***31***	**40**	**40**	***80***

1. pph: Person Trips per Peak Hour

The *TRANS Trip Generation Manual Summary Report*, prepared in October 2020 by WSP, includes peak hour mode share data for commercial trips in the Orléans district. The mode shares during the peak hours for commercial generators in Orléans can be summarized as follows:

- Auto Driver: 77% in AM peak, 71% in PM peak;
- Auto Passenger: 14% in AM peak, 20% in PM peak;
- Transit: 3% in AM peak, 2% in PM peak;
- Cyclist: 0% in AM peak, 1% in PM peak;
- Pedestrian: 6% in AM peak, 6% in PM peak.

The mode shares for the proposed development have been assumed to be equal in both weekday peak hours, but generally follow the observed mode shares described above. Therefore, the assumed peak hour mode shares for trips generated by the proposed development can be summarized as 75% auto driver, 15% auto passenger, 5% transit, 0% cyclist, and 5% pedestrian.

A breakdown of the above person trips by mode share is shown in **Table 6**.

Table 6: Proposed Development – Peak Hour Trips by Mode Share

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOT	IN	OUT	TOT
Furniture Store Person Trips		**3**	**1**	***4***	**3**	**3**	***6***
Auto Driver	75%	3	-	*3*	2	2	*4*
Auto Passenger	15%	-	1	*1*	1	1	*2*
Transit	5%	-	-	*0*	-	-	*0*
Cyclist	0%	-	-	*0*	-	-	*0*
Pedestrian	5%	-	-	*0*	-	-	*0*
Retail Person Trips		**16**	**11**	***27***	**37**	**37**	***74***
Auto Driver	75%	12	8	*20*	28	28	*56*
Auto Passenger	15%	2	2	*4*	5	5	*10*
Transit	5%	1	1	*2*	2	2	*4*
Cyclist	0%	-	-	*0*	-	-	*0*
Pedestrian	5%	1	-	*1*	2	2	*4*
Total Person Trips		**19**	**12**	***31***	**40**	**40**	***80***
Auto Driver		15	8	*23*	30	30	*60*
Auto Passenger		2	3	*5*	6	6	*12*
Transit		1	1	*2*	2	2	*4*
Cyclist		-	-	*0*	-	-	*0*
Pedestrian		1	-	*1*	2	2	*4*

From the previous table, the proposed development is estimated to generate 31 person trips (including 23 vehicle trips) during the AM peak hour, and 80 person trips (including 60 vehicle trips) during the PM peak hour.

Peak hour pass-by trips have been estimated based on the average rates identified in the *ITE Trip Generation Manual, 11th Edition*. Using these average rates, the assumed pass-by rates for the development are 0% during the AM peak hour for both land uses, and 53% and 40% during the PM peak hour for the furniture store and retail uses respectively. These rates have been applied to the vehicle trips identified above.

The primary and pass-by trip generation for the proposed development is presented in **Table 7**.

Table 7: Primary and Pass-by Trips

Trip Type	AM Peak Hour (vph)			PM Peak Hour (vph)		
	IN	OUT	TOT	IN	OUT	TOT
Furniture Store Trips	3	-	*3*	2	2	*4*
Pass-by (0% AM, 53% PM)	-	-	*0*	1	1	*2*
Primary Furniture Store Trips	**3**	**-**	***3***	**1**	**1**	***2***
Retail Trips	12	8	*20*	28	28	*56*
Pass-by (0% AM, 40% PM)	-	-	*0*	12	12	*24*
Primary Retail Trips	**12**	**8**	***20***	**16**	**16**	***32***

From the previous table, the proposed development is estimated to generate 23 primary vehicle trips during the AM peak hour and 34 primary vehicle trips during the PM peak hour.

3.1.2 Trip Distribution and Assignment

The assumed distributions of primary and pass-by trips generated by the proposed development have been derived from existing traffic patterns within the study area. Since the proposed development will be commercial in nature, the two-way midday peak hour volumes have been considered for the primary trip distribution.

Therefore, the assumed trip distributions for the proposed development can be summarized as follows:

Primary Trip Distribution

- To/from the north via Orléans Boulevard: 15%;
- To/from the south via Orléans Boulevard: 10%;
- To/from the east via Innes Road: 35%;
- To/from the west via Innes Road: 40%.

Pass-by Trip Distribution

- Westbound via Innes Road: 100%.

All trips will enter and exit the subject site via the access to Innes Road. Based on the planned modifications to the Innes Road/Lamarche Avenue intersection shown in **Figure 5**, a raised median would be constructed on Innes Road between Pagé Road and Lamarche Avenue, and it is this modification that would restrict left turns in and out in the future. To accommodate the subject site access, a median break for eastbound left turns has been considered in the analysis of this TIA. Further analysis and justification of a median break at the proposed access is included in Section 4.4.

Based on the above, for the purposes of this report, it is assumed that trips exiting to the east will perform a U-turn at Innes Road/Pagé Road. Due to this, it is assumed that all pass-by trips will arrive from the east and depart to the west.

3.2 Background Traffic

3.2.1 General Background Growth Rate

A rate of background growth has been established through a review of the City's 2013 TMP and Strategic Long-Range Model, comparing snapshots of 2011 and 2031 AM peak hour volumes. Section 2.3 of the TMP projects a 33% growth in population for the Orléans area between 2011 and 2031, translating to an annual growth rate of approximately 1.4%. The snapshots indicate traffic volume reductions on Innes Road due to the opening of Brian Coburn Boulevard, which acts as an alternate east-west arterial route. The snapshots do not consistently identify traffic increases or reductions on Orléans Boulevard between 2011 and 2031. To account for potential developments in the area that are not discussed below, a 1% background growth has been applied to the through volumes on the arterial roadways within the study area (i.e. Innes Road and Orléans Boulevard).

Relevant excerpts of the 2013 TMP and Strategic Long-Range Model are included in **Appendix F**.

3.2.2 Other Area Developments

In proximity of the proposed development, there are multiple other developments that have recently been completed, are under construction, approved, or are in the approval process. These developments are summarized as follows. Relevant excerpts of the transportation studies that are considered in the 2025 and 2030 background conditions are included in **Appendix G**.

Orléans Village Subdivision
This subdivision consists of 534 residential dwellings, and is currently under construction. In the TIS, 50% of the development was anticipated to be built out in 2020, and full buildout is anticipated to occur in 2024. Traffic generated by Phase 1 is assumed to have been captured by the existing traffic count at Innes Road/Lamarche Avenue, but not at the other study area intersections. To represent ultimate buildout of this development in the 2025 and 2030 background conditions, projected traffic generated by only Phase 2 has been added to the volumes at Innes Road/ Lamarche Avenue and traffic generated by both Phase 1 (observed) and Phase 2 (projected) has been added to the volumes at all other study area intersections.

245-275 Lamarche Avenue
The development includes 103 townhouse dwellings and 68 back-to-back dwellings. Per the TIA, buildout of the development is anticipated to occur in 2025. Therefore, volumes generated by this development have been added to the 2025 and 2030 background conditions.

3437 and 3443 Innes Road
The development includes approximately 5,530 ft^2 of ground-floor commercial space and 123 residential dwellings. Per the TIA, buildout of the development is anticipated to occur in 2023. Therefore, volumes generated by this development have been added to the 2025 and 2030 background conditions.

3490 Innes Road
Five mid-rise buildings with 525 residential dwellings and approximately 41,300 ft^2 of ground-floor commercial/retail uses are proposed, and this application is currently in the approval process. Buildout of the development is anticipated to occur in 2031. Traffic generated by this development has conservatively been added to the 2030 background conditions.

3598 Innes Road
An automatic car wash facility is now open, but was not operational prior to the traffic counts included in Section 2.1.7. Traffic generated by this development has been added to the 2025 and 2030 background conditions, based on the TIA prepared by Tranplan Associates.

3610 Innes Road
This development consists of 456 residential dwellings, and is now approved. Per the TIA, buildout of Phase 1 was anticipated to occur in 2021 and buildout of Phase 2 was anticipated to occur in 2023. Therefore, traffic generated by this development has been added to the 2025 and 2030 background conditions.

3817-3843 Innes Road
This proposed development includes three low- or mid-rise buildings with a total of 97 residential dwellings, and this application is currently in the approval process. Per the TIA, buildout of the development is anticipated to occur in 2024. Therefore, traffic generated by this development has been added to the 2025 and 2030 background conditions.

Richcraft Trailsedge North
Approximately 2,040 residential dwellings and an employment area that will support 830 jobs are proposed. Per the TIA, buildout of the residential portion is anticipated to occur in 2047 (with buildout of Phase 1 occurring in 2037), and the buildout year of the employment portion is unknown at the time of writing. Since this buildout year is beyond the horizon year of this study, traffic generated by this development has not been added to the 2025 or 2030 background conditions.

3.2.3 Existing Traffic Volume Balancing

To account for discrepancies in the different traffic counts conducted, the existing through traffic volumes have been balanced throughout the study area for any through movements with discrepancies greater than 10%. The balanced existing traffic volumes are shown in **Figure 7**.

3.3 Future Traffic Conditions

The figures below present the following traffic conditions:

- Proposed site-generated primary traffic volumes are shown in **Figure 8**;
- Proposed site-generated pass-by traffic volumes are shown in **Figure 9**;
- Other area development-generated traffic volumes in 2025 are shown in **Figure 10**;
- Other area development-generated traffic volumes in 2030 are shown in **Figure 11**;
- Background traffic volumes in 2025 are shown in **Figure 12**;
- Background traffic volumes in 2030 are shown in **Figure 13**;
- Total traffic volumes in 2025 are shown in **Figure 14**;
- Total traffic volumes in 2030 are shown in **Figure 15**.

Figure 7: Balanced Existing Traffic Volumes

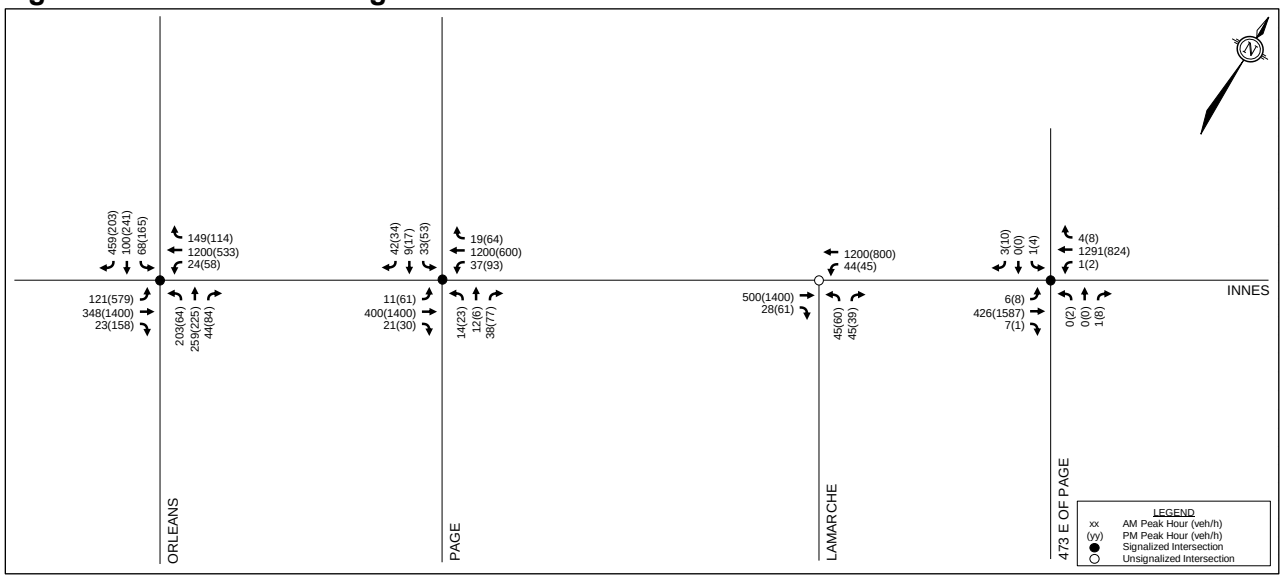


Figure 8: Proposed Site-Generated Primary Traffic Volumes

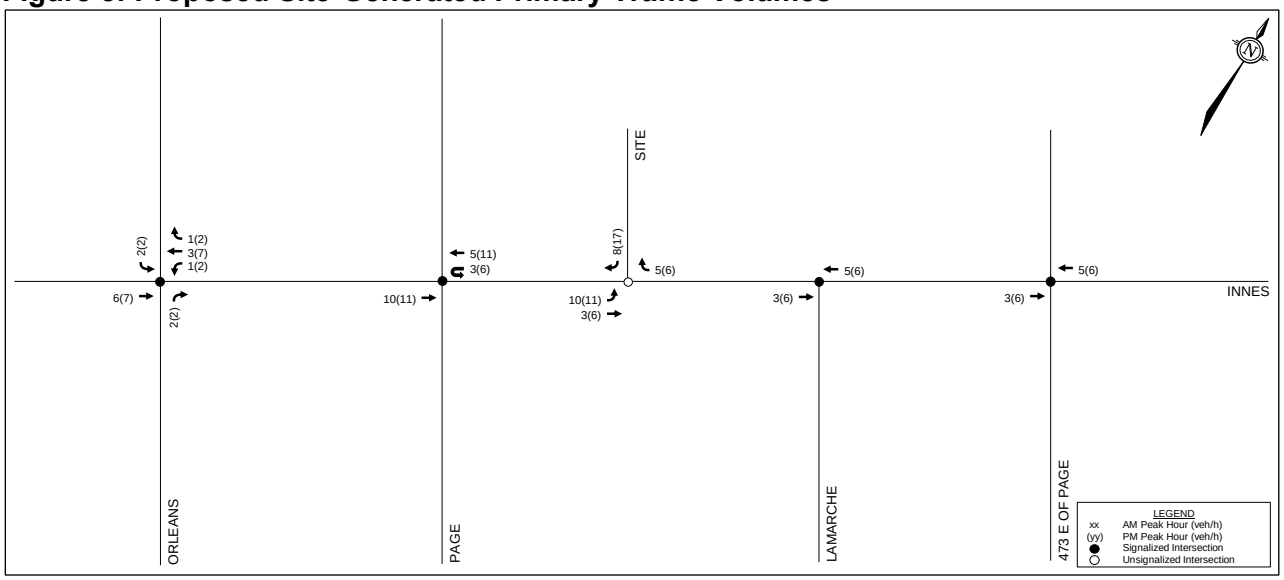


Figure 9: Proposed Site-Generated Pass-by Traffic Volumes

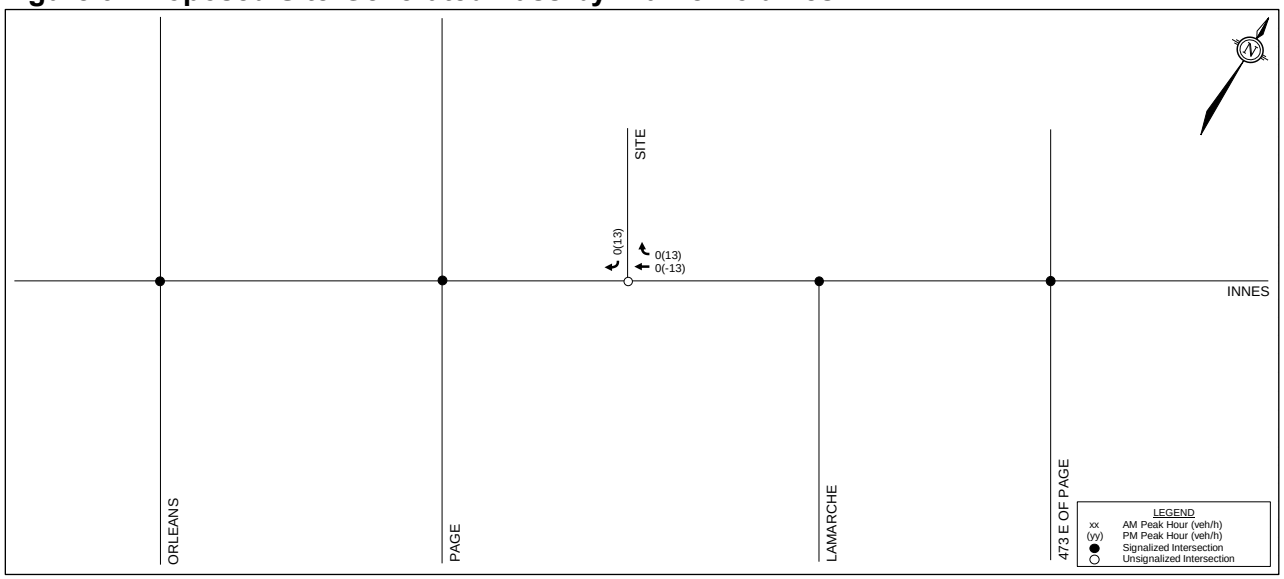


Figure 10: 2025 Other Area Development-Generated Traffic Volumes

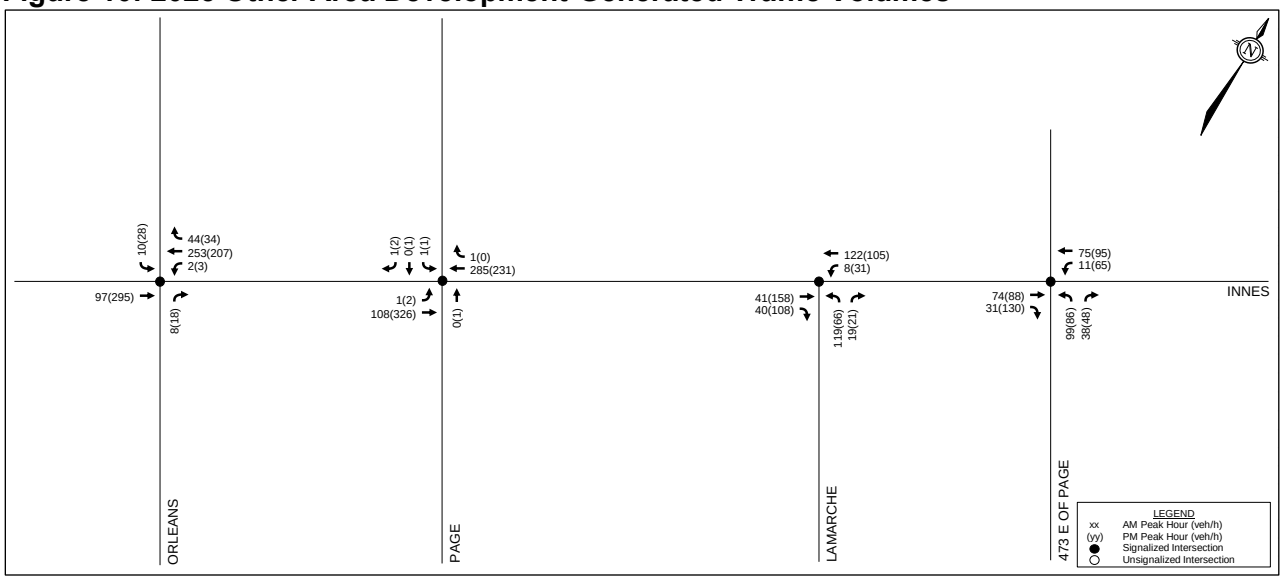


Figure 11: 2030 Other Area Development-Generated Traffic Volumes

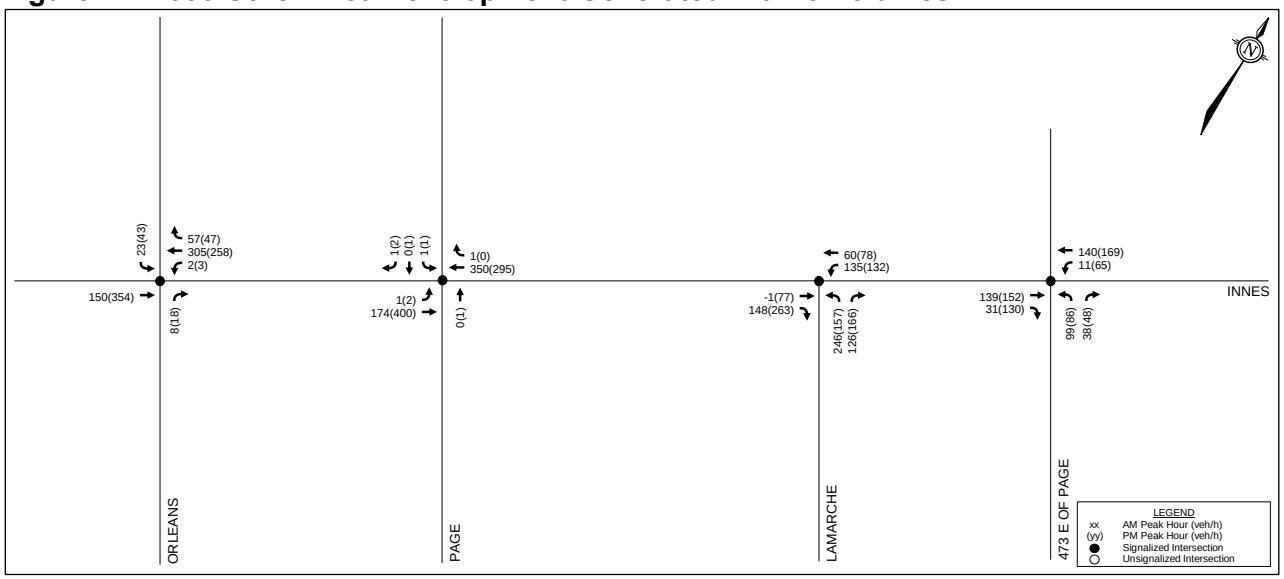


Figure 12: 2025 Background Traffic Volumes

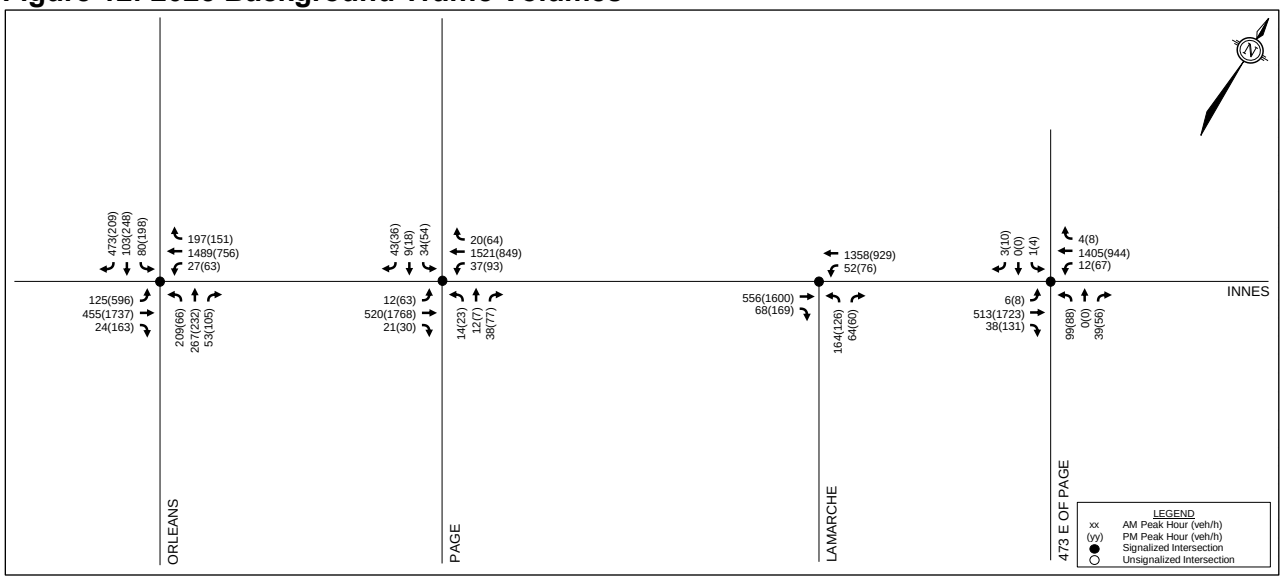


Figure 13: 2030 Background Traffic Volumes

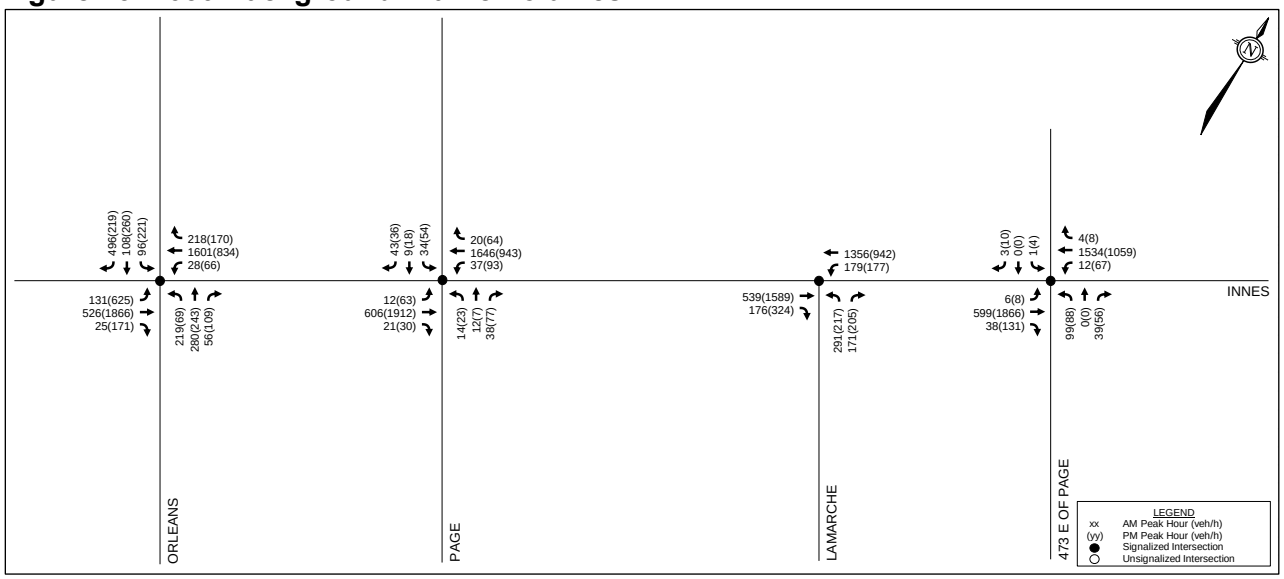


Figure 14: 2025 Total Traffic Volumes

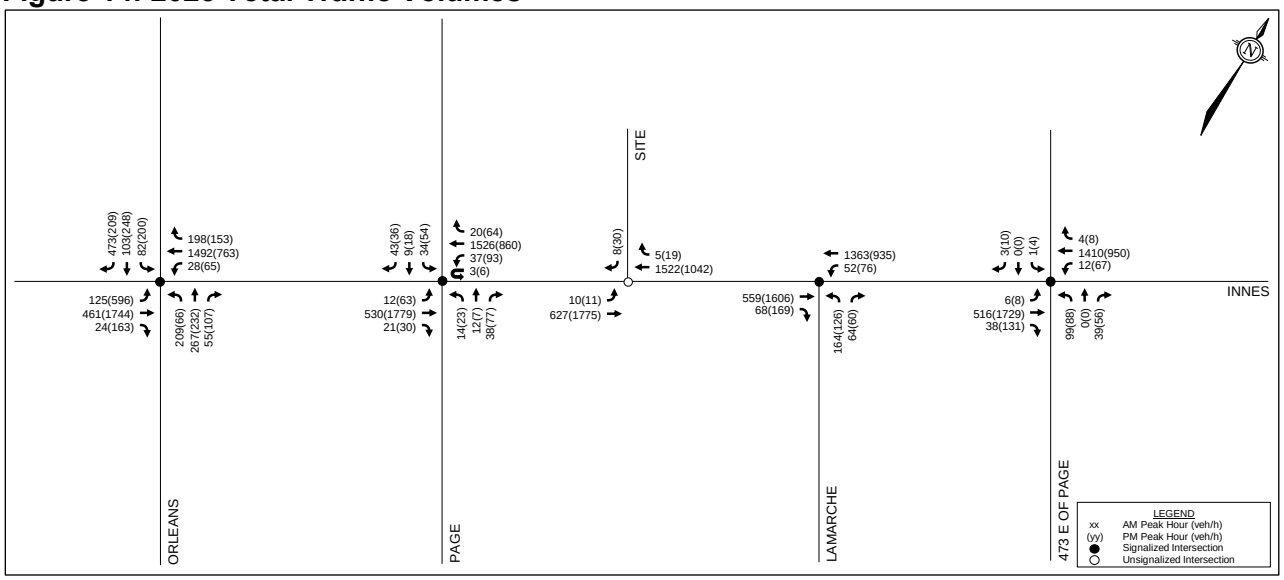
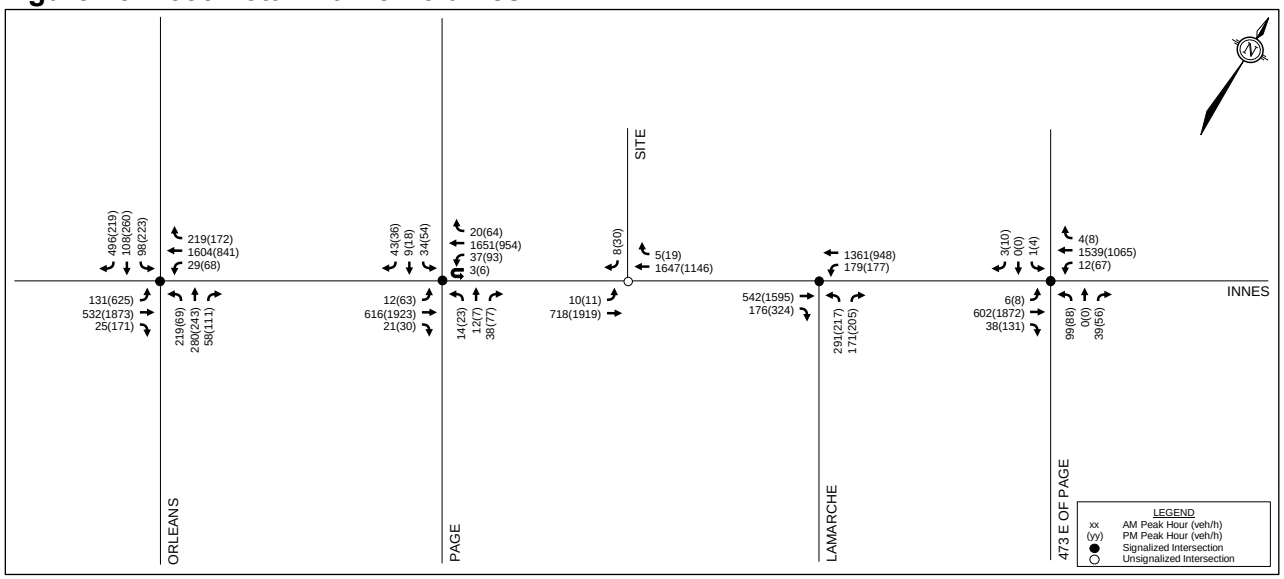


Figure 15: 2030 Total Traffic Volumes



3.4 Demand Rationalization

A review of the existing and background intersection operations has been conducted to determine if/when traffic volumes exceed capacity within the study area. The intersection parameters used in the analysis are consistent with the *2017 TIA Guidelines* (Saturated Flow Rate: 1,800 vphpl, Peak Hour Factor: 0.9 in existing conditions and 1.0 in future conditions). Per Exhibit 22 of the *Multi-Modal Level of Service (MMLOS) Guidelines*, the target vehicular level of service (Auto LOS) at all study area intersections is an Auto LOS D, which equates to a maximum vehicle-to-capacity (v/c) ratio of 0.90. Signal timing plans have been obtained from the City, and are included in **Appendix H**.

3.4.1 Existing Intersection Operations

Intersection capacity analysis has been conducted for the existing traffic conditions. The results of the analysis are summarized in **Table 8** and **Table 9** for the weekday AM and PM peak hours. Detailed Synchro reports are included in **Appendix I**.

Table 8: Existing Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Innes Road/ Orléans Boulevard[1]	**1.19**	**F**	**SBR**	**1.00**	**E**	**EBT**
	0.91	**E**	**EBL**			
Innes Road/ Pagé Road[1]	0.55	A	WBT/R	0.72	C	WBL
Innes Road/ Lamarche Avenue[2]	14 sec	B	NBL/R	27 sec	D	NBL/R
Innes Road/ 473m East of Pagé Road[1]	0.46	A	WBT/R	0.59	A	EBT/R

1. Signalized intersection
2. Unsignalized intersection

Table 9: Existing Queues

Intersection	Mvmt	Storage/ Spacing[1]	AM Peak			PM Peak		
			v/c [LOS]	50th % Queue (m)	95th % Queue (m)	v/c [LOS]	50th % Queue (m)	95th % Queue (m)
Innes Road/ Orléans Boulevard	SBL	50m	0.38 [A]	16	30	0.79 [C]	34	#63
	SBR	60m	**1.19 [F]**	**~115**	**#177**	0.45 [A]	0	17
	EBL	140m	**0.91 [E]**	**17**	**#35**	0.90 [D]	64	#91
	EBT	820m	0.25 [A]	29	40	**1.00 [E]**	**~195**	**#235**
	WBT	450m	0.88 [D]	148	178	0.60 [A]	45	82

1: Indicates the storage length for auxiliary lanes or the spacing to the nearest upstream intersection/access for through lanes
#: Volume for the 95th percentile cycle exceeds capacity
~: Approach is above capacity

From the previous tables, there are several movements at Innes Road/Orléans Boulevard that exceed the target v/c ratio during the weekday peak hours. During the AM peak hour, the average (50th-percentile) and maximum (95th-percentile) queue lengths of the southbound right turn movement exceed the storage length provided. During the PM peak hour, the maximum queue length of the southbound left turn movement at Innes Road/Orléans Boulevard exceeds the storage length provided.

The approximate required reduction in volumes to meet the target Auto LOS D for each over-capacity movement is included below. Detailed Synchro reports of an alternative scenario with these reduced volumes is included in **Appendix I**.

<u>Innes Road/Orléans Boulevard</u>

- AM Peak Hour
  - Southbound right turn (v/c: 1.19): reduction of 140 vehicles required;
  - Eastbound left turn (v/c: 0.91): reduction of 10 vehicles required.
- PM Peak Hour
  - Eastbound through (v/c: 1.00): reduction of 140 vehicles required.

3.4.2 2025 Background Intersection Operations

Intersection capacity analysis has been conducted for the 2025 background traffic conditions. Signalization of the Innes Road/Lamarche Avenue intersection is anticipated to be in place by the buildout year 2025. This intersection has therefore been modelled as a signal, with auxiliary eastbound right turn, westbound left turn, northbound left turn, and northbound right turn lanes, as shown in **Figure 5**.

The results of the analysis are summarized in **Table 10** and **Table 11** for the weekday AM and PM peak hours. Detailed Synchro reports are included in **Appendix J**.

Table 10: 2025 Background Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Innes Road/ Orléans Boulevard(1)	**1.10**	**F**	**SBR**	**1.12**	**F**	**EBT**
	0.98	**E**	**WBT**			
Innes Road/ Pagé Road(1)	0.62	B	WBT/R	**0.92**	**E**	**WBL**
Innes Road/ Lamarche Avenue(1)	0.70	B	NBL	0.70	B	EBT
Innes Road/ 473m East of Pagé Road(1)	0.56	A	NBL	0.70	B	EBT/R

1. Signalized intersection
2. Unsignalized intersection

Table 11: 2025 Background Queues

Intersection	Mvmt	Storage/ Spacing(1)	AM Peak			PM Peak		
			v/c [LOS]	50th % Queue (m)	95th % Queue (m)	v/c [LOS]	50th % Queue (m)	95th % Queue (m)
Innes Road/ Orléans Boulevard	SBL	50m	0.39 [A]	17	31	0.84 [D]	37	#69
	SBR	60m	**1.10 [F]**	**~96**	**#157**	0.42 [A]	0	14
	EBL	140m	0.85 [D]	15	#32	0.86 [D]	58	#80
	EBT	820m	0.29 [A]	36	47	**1.12 [F]**	**~234**	**#274**
	WBT	450m	**0.98 [E]**	**179**	**#228**	0.75 [C]	63	#112

1: Indicates the storage length for auxiliary lanes or the spacing to the nearest upstream intersection/access for through lanes
#: Volume for the 95th percentile cycle exceeds capacity
~: Approach is above capacity

From the previous tables, there are multiple movements within the study area that are not anticipated to meet the target Auto LOS D.

During the AM peak hour, the southbound right turn (v/c: 1.10) and westbound through (v/c: 0.98) at Innes Road/Orléans Boulevard operate at an Auto LOS E or F. The average and maximum queue lengths of the southbound right turn movement exceed the storage length provided.

During the PM peak hour, the eastbound through (v/c: 1.12) at Innes Road/Orléans Boulevard and westbound left turn (v/c: 0.92) at Innes Road/Pagé Road operates at an Auto LOS E or F. The maximum queue length of the southbound left turn movement at Innes Road/Orléans Boulevard exceeds the storage length provided.

An alternate scenario with optimized signal timings at Innes Road/Orléans Boulevard during the AM peak hour, and optimized signal timings and offsets at all study area intersections during the PM peak hour has been generated for the 2025 background conditions.

During the AM peak hour, seven seconds of green time for the northbound/southbound phases have been reallocated to the eastbound/westbound through phases at Innes Road/Orléans Boulevard.

During the PM peak hour, the cycle length of all study area intersections has been increased from 110 seconds to 130 seconds. At Innes Road/Orléans Boulevard, three seconds have been added to the northbound/southbound phases and 17 seconds have been added to the eastbound/ westbound phases. At all other intersections, 20 seconds have been added to the eastbound/ westbound phases. It is noted that the increased cycle length will result in delays of up to 20 seconds for pedestrians crossing Innes Road within the study area. To mitigate the failing westbound left turn movement at Innes Road/Pagé Road in the PM peak hour, the alternate scenario also includes protected plus permitted westbound left turn phasing at this intersection. The westbound left turn improves to an Auto LOS A, while the opposing eastbound through/right turn movement downgrades from an Auto LOS C (v/c: 0.75) to an Auto LOS D (v/c: 0.82). It is understood that this type of phasing is typically implemented after the City reviews the actual performance of the intersections being studied.

In this scenario, there is still a required reduction in volumes to meet the target Auto LOS D. The required reduction for each over-capacity movement at Innes Road/Orléans Boulevard is included below. Detailed Synchro reports of this alternate scenario is included in **Appendix J**.

Innes Road/Orléans Boulevard

- AM Peak Hour
  - Southbound right turn (v/c: 1.10): reduction of 130 vehicles required.
- PM Peak Hour
  - Eastbound through (v/c: 1.12): reduction of 150 vehicles required.

3.4.3 2030 Background Intersection Operations

Intersection capacity analysis has been conducted for the 2030 background traffic conditions. The adjusted signal timings and offsets as described in the previous section have been assumed for this scenario. The results of the analysis are summarized in **Table 12** and **Table 13** for the weekday AM and PM peak hours. Detailed Synchro reports are included in **Appendix J**.

Table 12: 2030 Background Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Innes Road/ Orléans Boulevard[1]	**1.20**	**F**	**SBR**	**1.09**	**F**	**EBT**
	0.94	**E**	**WBT**	**0.95**	**E**	**SBL**
Innes Road/ Pagé Road[1]	0.67	B	WBT/R	0.88	D	EBT/R
Innes Road/ Lamarche Avenue[1]	0.75	C	NBL	**1.81**	**F**	**WBL**
Innes Road/ 473m East of Pagé Road[1]	0.60	A	WBT/R	0.76	C	EBT/R

1. Signalized intersection

Table 13: 2030 Background Queues

Intersection	Mvmt	Storage/ Spacing(1)	AM Peak			PM Peak		
			v/c [LOS]	50th % Queue (m)	95th % Queue (m)	v/c [LOS]	50th % Queue (m)	95th % Queue (m)
Innes Road/ Orléans Boulevard	SBL	50m	0.48 [A]	20	37	**0.95 [E]**	**52**	**#98**
	SBR	60m	**1.20 [F]**	**~115**	**#176**	0.44 [A]	0	19
	EBL	140m	0.89 [D]	16	#34	0.90 [D]	74	#101
	EBT	820m	0.31 [A]	38	49	**1.09 [F]**	**~266**	**#304**
	WBT	450m	**0.94 [E]**	**182**	**#233**	0.73 [C]	88	114
Innes Road/ Pagé Road	EBT	450m	0.27 [A]	14	39	0.88 [D]	34	m33
	WBL	100m	0.08 [A]	1	m2	0.65 [B]	9	m#33
Innes Road/ Lamarche Avenue	EBT	210m	0.28 [A]	30	21	0.75 [C]	16	12
	WBL	90m	0.43 [A]	21	25	**1.81 [F]**	**~63**	**#106**
Innes Road/473m East of Pagé Road	EBT	210m	0.27 [A]	14	23	0.76 [C]	29	36
	WBL	40m	0.02 [A]	1	3	0.68 [B]	6	#39

1: Indicates the storage length for auxiliary lanes or the spacing to the nearest upstream intersection/access for through lanes
m: Volume for the 95th percentile queue is metered by an upstream signal
#: Volume for the 95th percentile cycle exceeds capacity
~: Approach is above capacity

From the previous tables, there are multiple movements within the study area that are not anticipated to meet the target Auto LOS D.

During the AM peak hour, the southbound right turn (v/c: 1.20) and westbound through (v/c: 0.94) at Innes Road/Orléans Boulevard operate at an Auto LOS E or F. The average and maximum queue lengths of the southbound right turn movement exceed the storage length provided.

During the PM peak hour, the southbound left turn (v/c: 0.95) and eastbound through (v/c: 1.09) at Innes Road/Orléans Boulevard, and the westbound left turn (v/c: 1.81) at Innes Road/Lamarche Avenue operate at an Auto LOS E or F. The maximum queue lengths of the southbound left turn movement at Innes Road/Orléans Boulevard and the westbound left turn movement at Innes Road/ Lamarche Avenue exceeds the storage lengths provided.

To mitigate failing westbound left turn movements at Innes Road/Lamarche Avenue in the PM peak hour, an alternate scenario with protected plus permitted left turn phasing has been conducted. At Innes Road/Lamarche Avenue, the westbound left turn improves to an Auto LOS D (v/c: 0.82), while the opposing eastbound through movement downgrades from an Auto LOS C (v/c: 0.75) to an Auto LOS E (v/c: 0.99). It is understood that this type of phasing is typically implemented after the City reviews the actual performance of the intersections being studied. Detailed Synchro reports of this alternate scenario is included in **Appendix J**.

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

<u>Innes Road/Orléans Boulevard</u>

- AM Peak Hour
  - Southbound right turn (v/c: 1.20): reduction of 150 vehicles required;
  - Westbound through (v/c: 0.94): reduction of 30 vehicles required.
- PM Peak Hour
  - Southbound left turn (v/c: 0.95): reduction of 30 vehicles required;
  - Eastbound through (v/c: 1.09): reduction of 280 vehicles required.

Innes Road/Lamarche Avenue (protected plus permitted westbound left turn phasing)

- PM Peak Hour
    - Eastbound through (v/c: 0.99): reduction of 140 vehicles required.

Detailed Synchro reports of an alternative scenario with these reduced volumes is also included in **Appendix J**.

Traffic throughout the study area could be displaced or alleviated through a combination of increased use of non-auto modes of transportation, alternate times of travel for drivers using the study area to make use of off-peak capacity, and alternate routes of travel. Further descriptions of these options are described below.

Increased Use of Non-Auto Modes
As discussed in Section 2.2.1, future improvements to the transit, cyclist, and pedestrian networks are anticipated within proximity of the study area. These improvements will include transit priority measures on Innes Road, Brian Coburn Boulevard, and the Blackburn Hamlet Bypass, the future Cumberland Transitway, and improved cyclist and pedestrian connectivity north of the study area.

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.

Alternate Travel Routes
As congestion increases within the study area, some motorists may choose alternate routes of travel outside of the study area. North-south routes that are alternative to Orléans Boulevard include Mer Bleue Road/Jeanne d'Arc Boulevard, Tenth Line Road, and Trim Road. East-west routes that are alternative to Innes Road include Ottawa Road 174, St. Joseph Boulevard, and Brian Coburn Boulevard.

4.0 ANALYSIS

4.1 Development Design

4.1.1 Design for Sustainable Modes

Pedestrian walkways will connect the front of each proposed building to the existing sidewalk on the north side of Innes Road. These pathways will be approximately 2.5m in width.

Bicycle parking is proposed adjacent to the accessible parking spaces in front of each proposed building. A total of eight bicycle parking spaces are proposed on-site. A review of the parking requirements per the City's *Zoning By-Law* (ZBL) is included in Section 4.2.

The nearest bus stops to the subject site are discussed in Section 2.1.5. OC Transpo's service design guidelines for peak period service is to provide service within a five-minute (400m) walk of home, work, or school, for 95% of urban residents. The main entrances to each proposed building will be within 400m of stops on Innes Road that are served by OC Route 25.

A review of the City's *Transportation Demand Management (TDM)-Supportive Development Design and Infrastructure Checklist* has been conducted. Any required TDM-supportive design and infrastructure measures in the TDM checklist for non-residential developments have been met. A copy of this checklist is included in **Appendix K**. In addition to the required measures, the proposed development also meets the following 'basic' or 'better' measures as defined in the *TDM-Supportive Development Design and Infrastructure Checklist*.

- Locate buildings close to the street, and do not locate parking areas between the street and building entrances;
- Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations;
- Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort;
- Provide safe, direct, and attractive walking routes from building entrances to nearby transit stops;
- Provide lighting, landscaping, and benches along walking and cycling routes between building entrances and streets, sidewalks, and trails.

4.1.2 Circulation and Access

Garbage collection will take place at the northeast corner of Building A and northwest corner of Building B. Loading and deliveries will occur at the back of each proposed building (i.e. at the northern end of the subject site). It has been estimated that a Medium Single Unit (MSU) design vehicle will be the largest vehicle to traverse the site. Therefore, truck turning movements for an MSU design vehicle have been prepared to enter and exit the site and each loading zone. The turning movement figures are included in **Figure 16** through **Figure 19**.

The fire route for the subject site will be located along Innes Road.

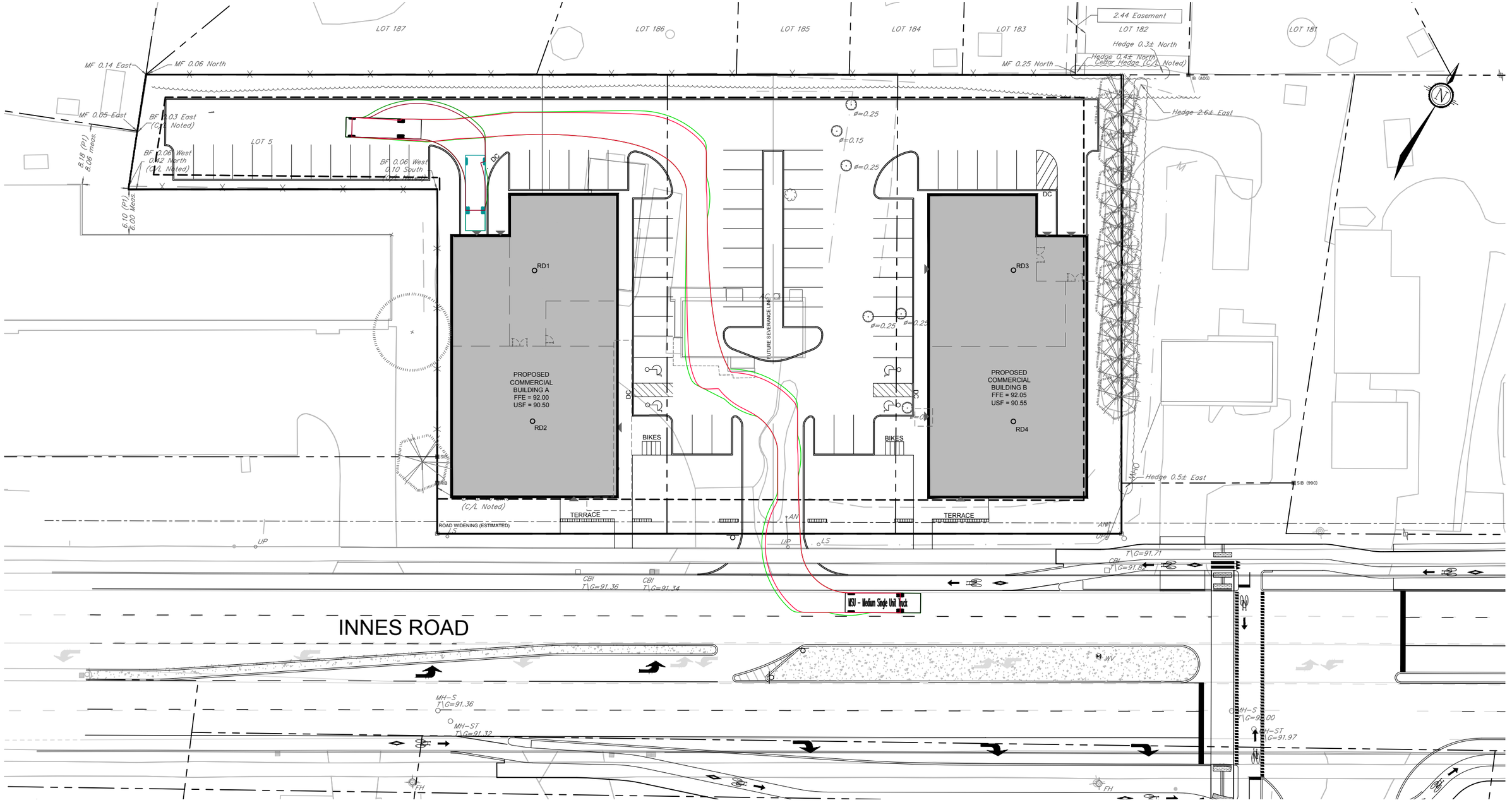
4.2 Parking

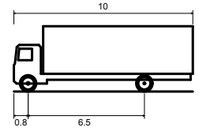
The subject site is located in Area C of Schedule 1 and Schedule 1A of the City's ZBL. Minimum vehicle parking rates, accessible parking rates, bicycle parking rates, and loading space rates for the proposed development are identified in Sections 101, 111, and 113 of the ZBL, and the City's *Accessibility Design Standards*. The results of this parking review are summarized in **Table 14**.

Table 14: Required and Proposed Parking

Land Use	Rate	Units	Required	Provided
Minimum Vehicle Parking				
Retail Store	3.4 spaces per 100 m^2 GFA	1,647 m^2	56	69
Minimum Accessible Parking				
-	3 spaces required when 51 to 75 spaces are provided	69 spaces	3	4
Minimum Bicycle Parking				
Retail Store	1.0 spaces per 250 m^2 GFA	1,647 m^2	7	8
Minimum Loading Spaces				
Retail Store	0 spaces required when total GFA is 1,000 to 1,999 m^2	1,647 m^2	0	2

Based on the previous table, the minimum parking/loading requirements will be met.





MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

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

3493-3499 INNES

MSU TURNING MOVEMENT (INTO BUILDING A LOADING DOCK)

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2024 | JOB 118204 | FIGURE FIGURE 16

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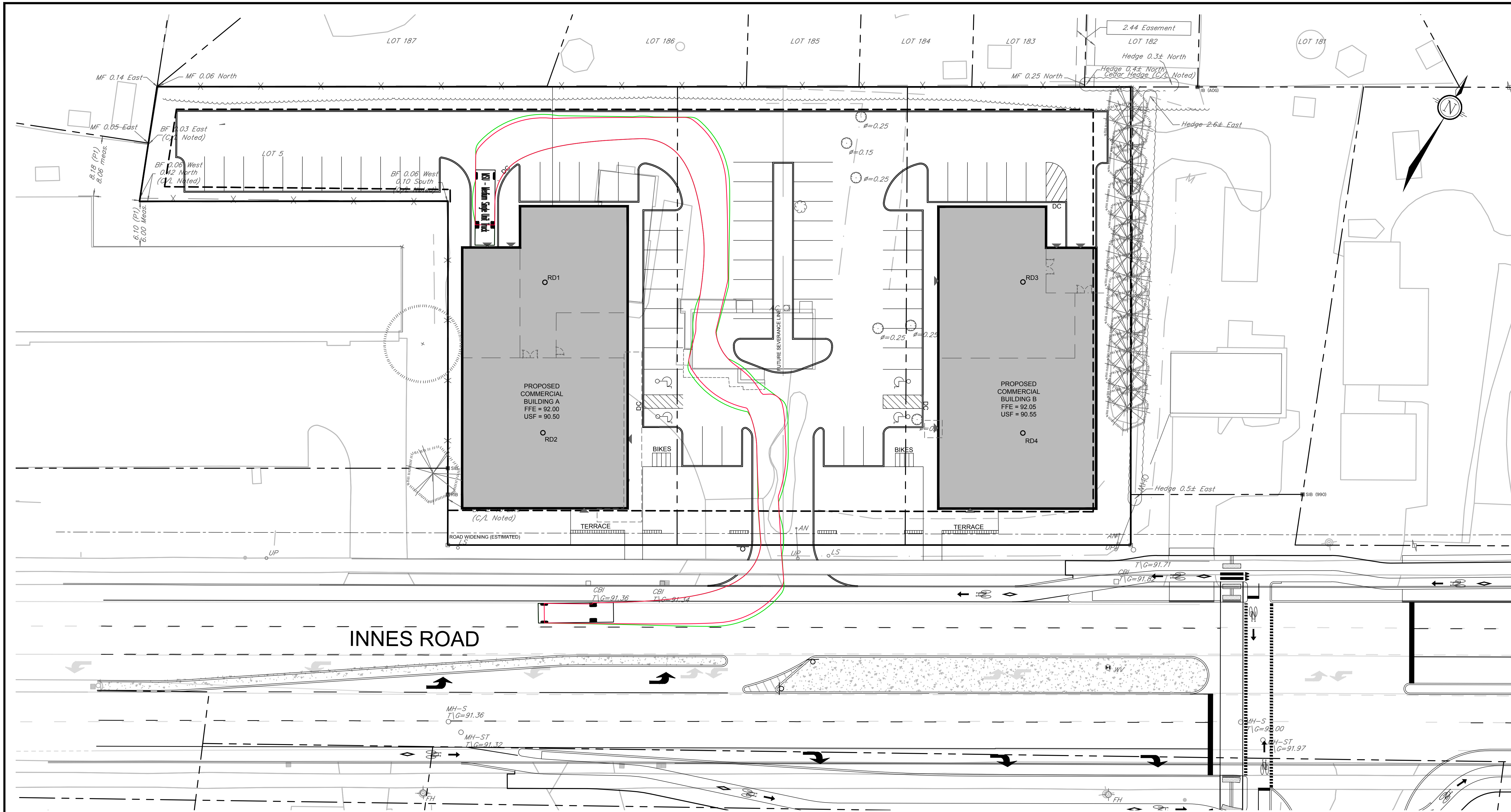

LOT 187
LOT 186
LOT 185
LOT 184
LOT 183
LOT 182
LOT 181
2.44 Easement
Hedge 0.3± North
MF 0.14 East
MF 0.06 North
MF 0.05 East
MF 0.25 North
LOT 5
INNES ROAD
PROPOSED COMMERCIAL BUILDING A FFE = 92.00 USF = 90.50
PROPOSED COMMERCIAL BUILDING B FFE = 92.05 USF = 90.55
RD1
RD2
RD3
RD4
TERRACE
BIKES
FUTURE SEVERANCE LINE
ROAD WIDENING (ESTIMATED)
MSU - Medium Single Unit Truck
Hedge 2.6± East
Hedge 0.5± East

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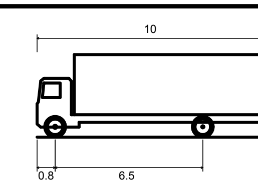

MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

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Website www.novatech-eng.com

3493-3499 INNES

MSU TURNING MOVEMENT (OUT OF BUILDING A LOADING DOCK)

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2024 | JOB 118204 | FIGURE FIGURE 17

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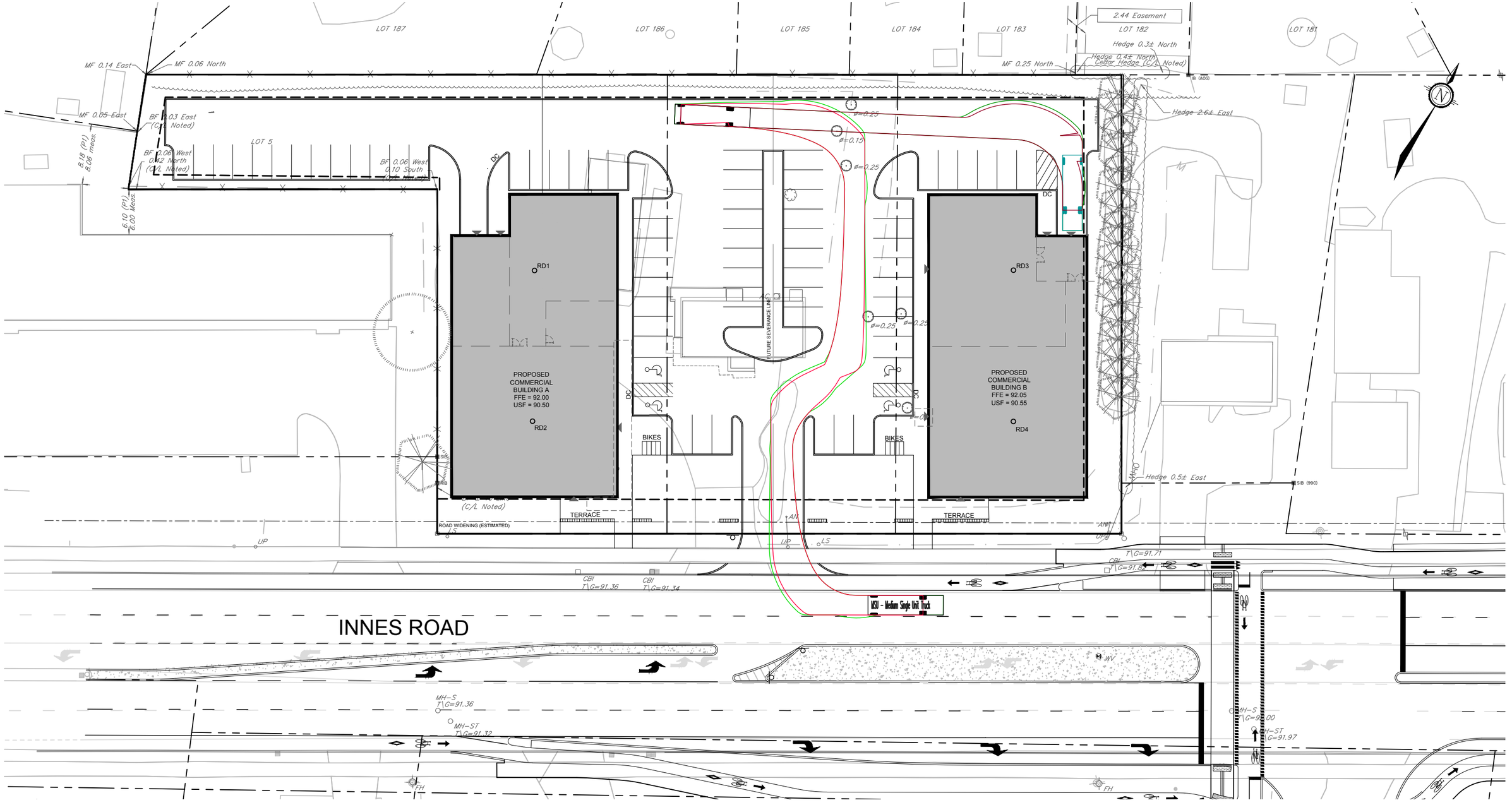

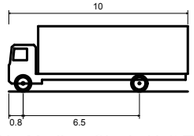

MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

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3493-3499 INNES

MSU TURNING MOVEMENT (INTO BUILDING B LOADING DOCK)

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE JAN 2024 | JOB 118204 | FIGURE FIGURE 18

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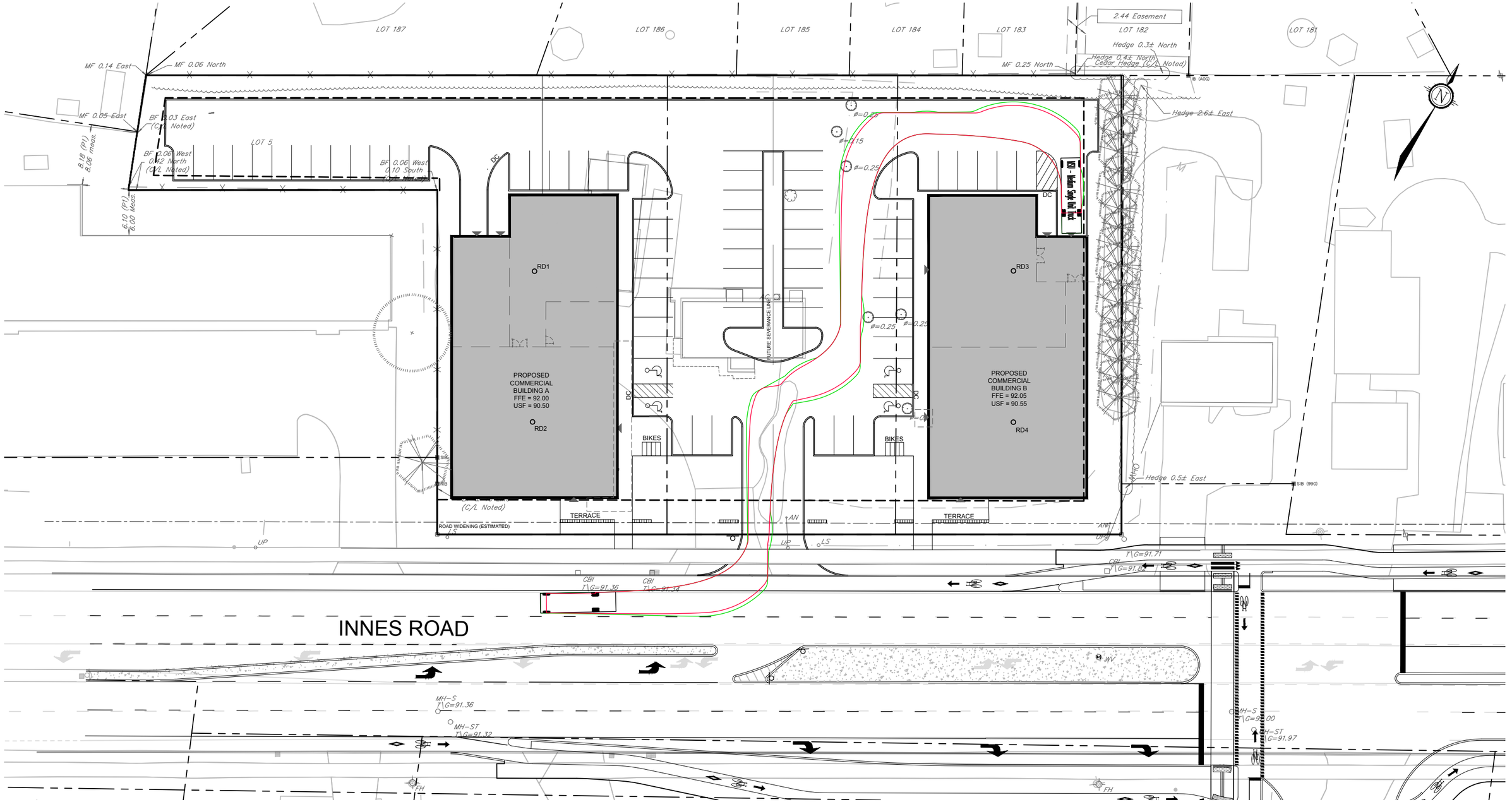

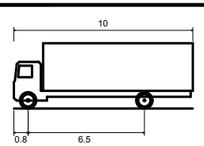

MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

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3493-3499 INNES

MSU TURNING MOVEMENT (OUT OF BUILDING B LOADING DOCK)

SCALE 1 : 500 (0, 5m, 10m, 20m)
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JOB 118204
FIGURE FIGURE 19

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4.3 Boundary Streets

This section provides a review of the boundary street Innes Road, using complete streets principles. The *MMLOS Guidelines*, produced by IBI Group in October 2015, were used to evaluate the levels of service for each alternative mode of transportation, based on existing conditions. Innes Road has been evaluated based on the targets associated with an 'Arterial Mainstreet' (as Innes Road is designated as such on Schedule B of the City's previous Official Plan, which is referenced by the *MMLOS Guidelines*).

A detailed segment MMLOS review of Innes Road is included in **Appendix L**. A summary of the segment MMLOS analysis is provided below in **Table 15**.

Table 15: Segment MMLOS Summary

Segment	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Innes Road	**D**	C	**E**	B	D	D	A	D

Innes Road does not meet the target pedestrian level of service (PLOS) or bicycle level of service (BLOS).

Both sides of Innes Road currently include a 2.0m sidewalk with a boulevard width of approximately 3.5m. Per Exhibit 4 of the *MMLOS Guidelines*, the target PLOS C cannot be achieved on this segment on Innes Road without reducing the operating speed. Therefore, the best-possible PLOS D is achieved.

Both directions of Innes Road currently include curbside bike lanes with an approximate width of 2.0m. Based on Exhibit 11 of the *MMLOS Guidelines*, a physically separated bikeway (such as cycle tracks or multi-use pathways) are required to achieve the target BLOS B for Innes Road, given the current operating speed. The *Ontario Traffic Manual (OTM) – Book 18* includes a desirable cycling facility pre-selection tool, based on the operating speed and AADT of a roadway. For roadways with an operating speed of 70 km/h and AADT volumes greater than 10,000 vehicles per day, OTM Book 18 identifies that separated facilities are appropriate. This is identified for the City's consideration. The pre-selection tool is included in **Figure 20**.

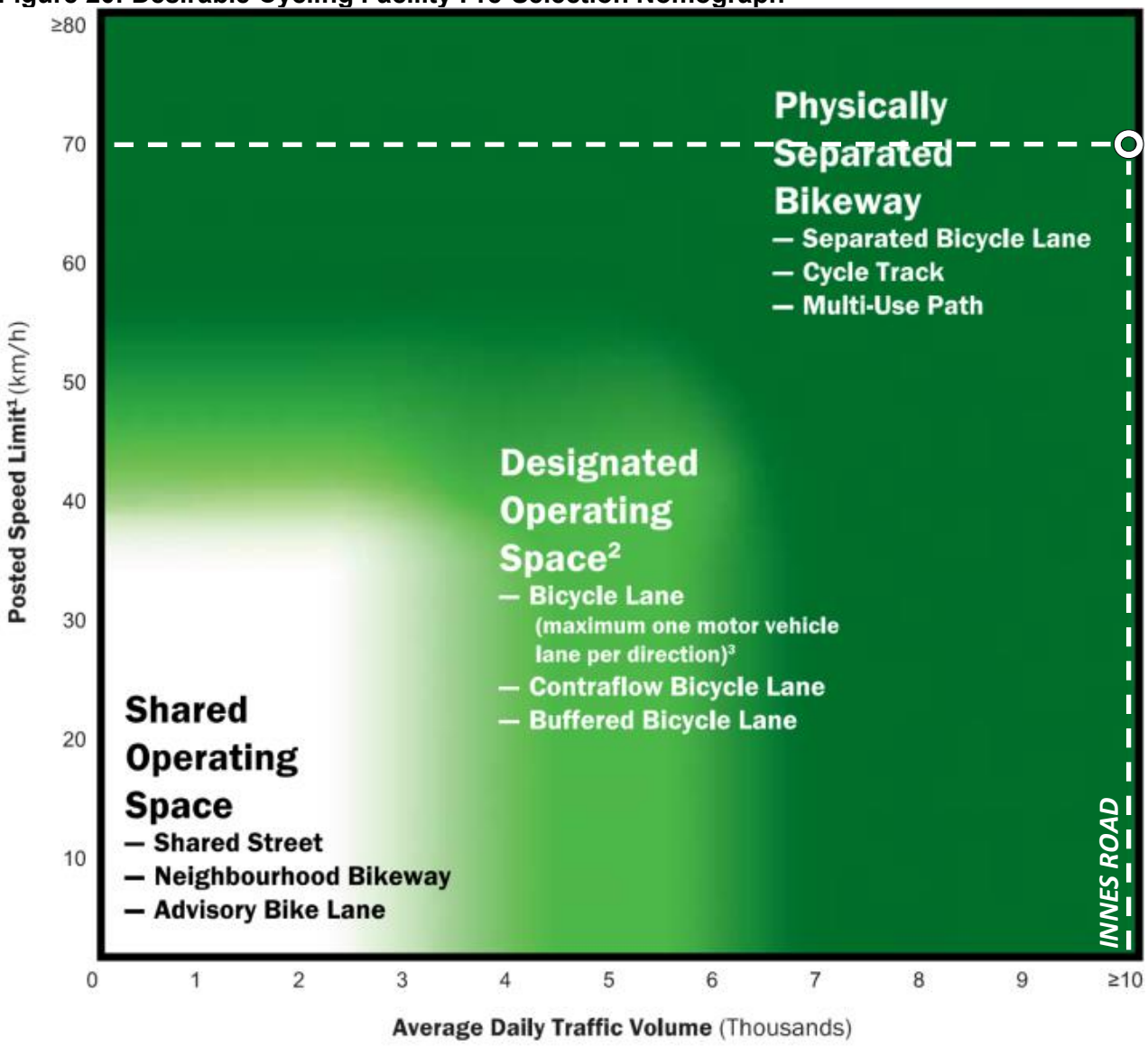
4.4 Access Intersections

The proposed development includes one access to Innes Road. The access has been evaluated based on the relevant provisions of the City's *Private Approach By-Law* (PABL) and the Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads*. Based on the planned Innes Road/Lamarche Avenue signal and raised median, the access would be restricted to RIRO. City staff have confirmed that a median break and eastbound left turn lane at the proposed access can be considered, and therefore this section also includes a justification for a median break that maintains the inbound left turn movement but restricts the outbound left turn movement.

Private Approach By-Law

Section 25(a) of the PABL identifies that a maximum of two two-way private approaches can be provided for a site with 46m to 150m of frontage to a given roadway. Therefore, the single proposed access meets this requirement.

Figure 20: Desirable Cycling Facility Pre-Selection Nomograph



1 Operating speeds are assumed to be similar to posted speeds. If evidence suggests this is not the case, practitioners may consider using 85th percentile speeds or implementing measures to reduce operating speeds.
2 Physically separated bikeways may always be considered in the designated operating space area of the nomograph.
3 On roadways with two or more lanes per direction (including multi-lane one-way roadways), a buffered bicycle lane should be considered the minimum with a typical facility being a physically separated bikeway.

Section 25(c) of the PABL identifies a maximum width of 9m for any two-way private approach, as measured at the street line. The proposed access is approximately 8.3m at the future widened ROW for Innes Road. Therefore, this requirement is met.

Section 25(m)(i) of the PABL identifies a minimum distance between the nearest edge of a private approach and the nearest intersecting street line, based on the land use and number of parking spaces proposed. Since the proposed development includes a parking lot for the use of customers of a retail or wholesale business, and the total number of parking spaces falls between 50 and 99, this section identifies a minimum distance of 30m between the private approach and the nearest intersecting street line. Since the proposed access is approximately 60m west of the Lamarche Avenue ROW and 135m east of the Pagé Road ROW, this requirement is met.

Section 25(p) of the PABL identifies a minimum distance of 3m between the nearest edge of a private approach and the property line. Since the proposed access is approximately 42m from the eastern property limit and approximately 40m from the western property limit, this requirement is met.

Section 25(u) of the PABL identifies a requirement that any private approach serving a parking area with more than 50 parking spaces shall not have a grade exceeding 2% for the first 9m inside the property line. The proposed access has a maximum grade of 2.8% for the first 9m (descending towards the roadway), which marginally exceeds the requirement. It is anticipated that drivers exiting the subject site will still have adequate sightlines to pedestrians walking along Innes Road. Therefore, it is requested that the requirement of Section 25(u) of the PABL be waived.

Geometric Design Guide for Canadian Roads

For commercial developments that are less than 25,000 m^2 in size, TAC's *Geometric Design Guide* identifies a minimum clear throat length requirement of 15m for any access to an arterial roadway. This requirement is met by the proposed access.

TAC's *Geometric Design Guide* also identifies a minimum corner clearance of 70m between a driveway and a signalized intersection, measuring from the nearest edge of a private approach and the nearest edge of the intersecting street. The western edge of the proposed access is approximately 140m from the nearest edge of Pagé Road, meeting this requirement. The eastern edge of the proposed access is approximately 68m from the nearest edge of Lamarche Avenue, which is marginally short of the requirement. Locating the proposed access within 70m of Lamarche Avenue can be justified, as the access will only be downstream of Lamarche Avenue and the proposed development is not anticipated to generate queues backing onto Innes Road at the access.

Based on the above, the proposed access meets the clear throat requirement outlined in TAC's *Geometric Design Guide* and all relevant provisions of the City's PABL, except for Section 25(u).

Proposed Median Break at Access

The planned signalization of Innes Road/Lamarche Avenue, which would include a raised median on Innes Road between Pagé Road and Lamarche Avenue, would restrict access to the proposed development to RIRO. Passenger car trips arriving to the site from the west and departing to the east would then be required to perform U-turn manoeuvres on Innes Road at Pagé Road and Lamarche Avenue. Larger vehicles, such as delivery or garbage trucks arriving to the subject site, will be unable to perform an eastbound U-turn at Innes Road/Lamarche Avenue, and would therefore be required to either make an eastbound right turn onto Lamarche Avenue and turn around within the Orléans Village subdivision, or do a large loop 'around the block' using the arterial road network and come back to the site via the neighbourhood collectors.

Therefore, it is proposed that a median break is provided at the proposed access to Innes Road, which would permit eastbound left turns, but restrict outbound left turns from the proposed development. This median break would include an auxiliary eastbound left turn lane. The Ministry of Transportation of Ontario (MTO)'s supplement to the *Geometric Design Guide* includes a left turn lane storage graph for four-lane divided highways, which identifies that a turn lane is warranted, and falls 'on-the-line' between 15m and 25m. Per comments from City staff, a 20m eastbound left turn lane with a 55m taper is recommended. A copy of the MTO left turn lane storage graph is included in **Appendix M**.

The RMA for the signal and raised median related to the 270 Lamarche Avenue application includes a westbound left turn lane at Innes Road/Pagé Road with 90m of storage. Implementing the proposed median break and auxiliary eastbound left turn lane will require a reduction of the westbound left turn storage at Innes Road/Pagé Road from 90m to approximately 50m.

Based on the 2030 total traffic analysis included in Section 4.6.3, the reduced storage length is still anticipated to accommodate the 95th-percentile queue lengths for this movement during the peak hours. TAC's *Geometric Design Guide* includes a storage length equation for signalized intersections (S = 1.5 * N * L / [3600 / CL], where S is storage length, N is number of vehicles during the peak hour, L is an assumed vehicle length of 7m, and CL is the cycle length in seconds). The equation recommends a storage length of 40m for the westbound left turn lane at Innes Road/Pagé Road, and therefore reducing the westbound left turn storage from 90m to 50m will maintain a sufficient storage length.

A functional design of the proposed median break is included in **Appendix N**. The appendix also includes a turning movement for an MSU and passenger vehicle making an eastbound left turn into the site.

4.5 Transit

Based on the trip generation estimates presented in Section 3.1.1, the proposed development is projected to generate two transit trips during the AM peak hour and four transit trips during the PM peak hour. No capacity issues are anticipated for OC Routes 25, 131, or 231, based on transit trips generated by the proposed development.

4.6 Intersection Design

4.6.1 Intersection MMLOS Review

This section provides a review of the existing signalized study area intersections, using complete streets principles. The MMLOS targets associated with the 'General Urban Area' have been used to evaluate Innes Road/Orléans Boulevard, and the MMLOS targets associated with the 'Arterial Mainstreet' have been used to evaluate Innes Road/Pagé Road and Innes Road/473m East of Pagé Road. All intersections have been evaluated based on existing conditions.

The full intersection MMLOS analysis is included in **Appendix L**. A summary of the results is shown in **Table 16**.

Table 16: Intersection MMLOS Summary

Intersection	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Innes Road/Orléans Boulevard	**F**	C	**F**	B	**F**	D	A	D
Innes Road/Pagé Road	**F**		**F**		C		**E**	
Innes Road/473m East of Pagé Road	**F**		**F**		B		**F**	

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

- No signalized intersections meet the target PLOS;
- No signalized intersections meet the target BLOS;
- Innes Road/Pagé Road and Innes Road/473m East of Pagé Road meet the target TLOS, while Innes Road/Orléans Boulevard does not;
- Innes Road/Orléans Boulevard meets the target TkLOS, while Innes Road/Pagé Road and Innes Road/473m East of Pagé Road does not.

Innes Road/Orléans Boulevard
This intersection does not meet the target PLOS C, BLOS B, or TLOS D.

All approaches have a divided cross-section with a width equivalent to ten lanes crossed or more (assuming a lane width equals 3.5m, per the *MMLOS Guidelines*). There is limited opportunity in improving any approach to the target PLOS C without reducing the number of travel lanes or restricting turning movements. All approaches meet the City's vehicle/pedestrian conflict threshold for zebra-striped crosswalks (greater than 400,000 vehicle/pedestrian conflicts over an eight-hour period), and the east and west approaches have had zebra-striped crosswalks implemented. There is limited opportunity in improving the delay score for pedestrians crossing at the east and west approaches, without incurring major delays for vehicles.

All approaches do not achieve the target BLOS B, based on both left turn and right turn characteristics. To achieve this target, a protected intersection would be required, and would involve the removal of all right turn channels. This is identified for the City's consideration.

All approaches do not achieve the target TLOS D. It is anticipated that transit delays will improve once the isolated transit priority measures described in Section 2.2.1 are implemented.

Innes Road/Pagé Road
This intersection does not meet the target PLOS C, BLOS B, or TkLOS D.

All approaches have a cross-section with a width equivalent to six lanes crossed or more. There is limited opportunity in improving any approach to the target PLOS C. The east and west approaches meet the City's vehicle/pedestrian conflict threshold for zebra-striped crosswalks, which could be considered to improve the level of comfort for pedestrians. There is limited opportunity in improving the delay score for pedestrians crossing at the east and west approaches, without incurring major delays for vehicles.

The east and west approaches do not achieve the target BLOS B, based on left turn characteristics. Per Exhibit 12 of the *MMLOS Guidelines*, two-stage left-turn bike boxes would be required to achieve the target, and would therefore require a restriction to right turns on red (RTOR) for northbound and southbound vehicles. It is recommended that if bike boxes are pursued, that they are implemented holistically along the Innes Road where applicable, rather than at only select intersections.

The east and west approaches do not achieve the target TkLOS D. Given that Pagé Road is primarily a residential street, and the volume of heavy vehicles turning onto Pagé Road is anticipated to be low, no modifications to the curb radii are recommended.

Innes Road/473m East of Pagé Road
This intersection does not meet the target PLOS C, BLOS B, or TkLOS D.

The south, east, and west approaches have a cross-section with a width equivalent to six lanes crossed or more. There is limited opportunity in improving these approaches to the target PLOS C. The north approach could be improved to the target PLOS C by reducing the width from an equivalent of four lanes crossed to three. No other modifications are identified.

The south, east, and west approaches do not achieve the target BLOS B, based on left turn characteristics. Per Exhibit 12 of the *MMLOS Guidelines*, two-stage left-turn bike boxes would be required to achieve the target, and would therefore require RTOR restrictions for northbound, southbound, and westbound vehicles. It is recommended that if bike boxes are pursued, that they are implemented holistically along the Innes Road where applicable, rather than at select intersections.

The east approach does not achieve the target TkLOS D. Given the layout and size of the commercial site at 3615 Innes Road, it is anticipated that large trucks do not enter and exit the site for loading and deliveries. Therefore, no modifications are recommended.

4.6.2 2025 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2025 total traffic conditions. The optimized signal timings, phasing, and offsets as described in Section 3.4.2 has been assumed for this scenario.

The results of the analysis are summarized in **Table 17** and **Table 18** for the weekday AM and PM peak hours. Detailed Synchro reports are included in **Appendix O**.

Table 17: 2025 Total Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Innes Road/ Orléans Boulevard(1)	**1.15**	**F**	**SBR**	**0.99**	**E**	**EBT**
Innes Road/ Pagé Road(1)	0.63	B	WBT/R	0.83	D	EBT/R
Innes Road/ Lamarche Avenue(1)	0.70	B	NBL	0.70	B	EBT
Innes Road/ 473m East of Pagé Road(1)	0.56	A	NBL	0.71	C	EBT/R
Innes Road/ Site Access(2)	13 sec	B	EBL	11 sec	B	SBR

1. Signalized intersection
2. Unsignalized intersection

Table 18: 2025 Total Queues

Intersection	Mvmt	Storage/ Spacing(1)	AM Peak			PM Peak		
			v/c [LOS]	50th % Queue (m)	95th % Queue (m)	v/c [LOS]	50th % Queue (m)	95th % Queue (m)
Innes Road/ Orléans Boulevard	SBL	50m	0.41 [A]	17	32	0.90 [D]	46	#85
	SBR	60m	**1.15 [F]**	**~103**	**#164**	0.44 [A]	0	19
	EBL	140m	0.85 [D]	15	#32	0.88 [D]	70	#91
	EBT	820m	0.27 [A]	32	43	**0.99 [E]**	**~234**	**#273**
	WBT	450m	0.88 [D]	160	192	0.64 [B]	78	106

1: Indicates the storage length for auxiliary lanes or the spacing to the nearest upstream intersection/access for through lanes
m: Volume for the 95th percentile queue is metered by an upstream signal
#: Volume for the 95th percentile cycle exceeds capacity
~: Approach is above capacity

Compared to the 2025 background conditions, the addition of site-generated traffic is anticipated to have a marginal impact to peak hour traffic operations within the study area. The maximum westbound through queue lengths at Innes Road/Pagé Road are approximately 13m in the AM peak hour and 26m in the PM peak hour, and therefore do not extend upstream to the proposed site access.

4.6.3 2030 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2030 total traffic conditions. The optimized signal timings, phasing, and offsets as described in Section 3.4.3 has been assumed for this scenario.

The results of the analysis are summarized in **Table 19** and **Table 20** for the weekday AM and PM peak hours. Detailed Synchro reports are included in **Appendix O**.

Table 19: 2030 Total Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Innes Road/ Orléans Boulevard[1]	**1.20**	**F**	**SBR**	**1.09**	**F**	**EBT**
	0.94	**E**	**WBT**	**0.95**	**E**	**SBL**
Innes Road/ Pagé Road[1]	0.68	B	WBT/R	0.89	D	EBT/R
Innes Road/ Lamarche Avenue[1]	0.75	C	NBL	**0.99**	**E**	**EBT**
Innes Road/ 473m East of Pagé Road[1]	0.60	A	WBT/R	0.76	C	EBT/R
Innes Road/ Site Access[2]	13 sec	B	EBL	11 sec	B	EBL

1. Signalized intersection
2. Unsignalized intersection

Table 20: 2030 Total Queues

Intersection	Mvmt	Storage/ Spacing[1]	AM Peak			PM Peak		
			v/c [LOS]	50th % Queue (m)	95th % Queue (m)	v/c [LOS]	50th % Queue (m)	95th % Queue (m)
Innes Road/ Orléans Boulevard	SBL	50m	0.49 [A]	21	38	**0.95 [E]**	**53**	**#99**
	SBR	60m	**1.20 [F]**	**~115**	**#176**	0.44 [A]	0	19
	EBL	140m	0.89 [D]	16	#34	0.90 [D]	74	#101
	EBT	820m	0.31 [A]	38	50	**1.09 [F]**	**~267**	**#306**
	WBT	450m	**0.94 [E]**	**183**	**#234**	0.74 [C]	85	114
Innes Road/ Pagé Road	EBT	450m	0.28 [A]	14	40	0.89 [D]	35	m33
	WBL	50m	0.08 [A]	1	m1	0.68 [B]	9	m#39
Innes Road/ Lamarche Avenue	EBT	210m	0.29 [A]	30	21	**0.99 [E]**	**114**	**#241**
	WBL	90m	0.43 [A]	21	22	0.83 [D]	29	#72
Innes Road/473m East of Pagé Road	EBT	210m	0.27 [A]	8	16	0.76 [C]	16	30
	WBL	40m	0.02 [A]	1	3	0.68 [B]	6	#39

1: Indicates the storage length for auxiliary lanes or the spacing to the nearest upstream intersection/access for through lanes
m: Volume for the 95th percentile queue is metered by an upstream signal
#: Volume for the 95th percentile cycle exceeds capacity
~: Approach is above capacity

Compared to the 2030 background conditions, the addition of site-generated traffic is anticipated to have a marginal impact to peak hour traffic operations within the study area. The maximum westbound through queue lengths at Innes Road/Pagé Road are approximately 13m in the AM peak hour and 27m in the PM peak hour, and therefore do not extend upstream to the proposed site access. The maximum eastbound through queue length at Innes Road/Lamarche Avenue is approximately 241m, and therefore extends upstream through the Innes Road/Pagé Road intersection during the PM peak hour.

The maximum westbound left turn queue lengths at Innes Road/Pagé Road are approximately 1m in the AM peak hour and 38m in the PM peak hour. Reducing the storage length of the westbound left turn lane to 50m therefore accommodates the maximum westbound left turn queue lengths during the peak hours.

The maximum eastbound left turn queue lengths at the proposed site access are less than 1m during the peak hours. Therefore, the proposed storage length of 20m is sufficient.

5.0 CONCLUSIONS AND RECOMMENDATIONS

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

Roadway Modifications to Innes Road/Lamarche Avenue

- Signalization of the Innes Road/Lamarche Avenue intersection is anticipated to be in place by the buildout year 2025, per discussions with City staff. The functional design of the roadway modifications at Innes Road/Lamarche Avenue includes auxiliary eastbound right turn, westbound left turn, northbound left turn, and northbound right turn lanes.

- The planned signalization of Innes Road/Lamarche Avenue, which would include a raised median on Innes Road between Pagé Road and Lamarche Avenue, would restrict access to the proposed development to right-in/right-out (RIRO). Passenger car trips arriving to the site from the west and departing to the east would then be required to perform U-turn manoeuvres on Innes Road at Pagé Road and Lamarche Avenue. Larger vehicles will be unable to perform an eastbound U-turn at Innes Road/Lamarche Avenue, and would therefore be required to either make an eastbound right turn onto Lamarche Avenue and turn around within the Orléans Village subdivision, or do a large loop 'around the block' using the arterial road network and come back to the site via the neighbourhood collectors.

- It is proposed that a median break is provided at the proposed access to Innes Road, which would permit eastbound left turns, but restrict outbound left turns from the proposed development. This median break would include an auxiliary eastbound left turn lane, with 20m of storage length and a 55m taper. The maximum eastbound left turn queue lengths at the proposed site access are less than 1m during the peak hours. Therefore, the proposed storage length of 20m is sufficient.

- The signal and raised median related to the 270 Lamarche Avenue application includes a westbound left turn lane at Innes Road/Pagé Road with 90m of storage. Implementing the proposed median break and auxiliary eastbound left turn lane will require a reduction of the westbound left turn storage at Innes Road/Pagé Road from 90m to approximately 50m. The reduced storage length is still anticipated to accommodate the 95th-percentile queue lengths for this movement during the peak hours.

- The Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads* includes a storage length equation for signalized intersections. The equation recommends a storage length of 40m for the westbound left turn lane at Innes Road/Pagé Road, and therefore reducing the westbound left turn storage from 90m to 50m will maintain a sufficient storage length.

Forecasting

- The proposed development is estimated to generate 31 person trips (including 23 vehicle trips) during the AM peak hour, and 80 person trips (including 60 vehicle trips) during the PM peak hour.

Development Design and Parking

- Pedestrian walkways will connect the front of each proposed building to the existing sidewalk on the north side of Innes Road. These pathways will be approximately 2.5m in width.

- Four bicycle parking spaces are proposed adjacent to the accessible parking spaces in front of each proposed building, for a total of eight bicycle parking spaces on-site.

- OC Transpo's service design guidelines for peak period service is to provide service within a five-minute (400m) walk of home, work, or school, for 95% of urban residents. The main entrances to each proposed building will be within 400m of stops on Innes Road that are served by OC Route 25.

- Any required Transportation Demand Management-supportive design and infrastructure measures in the TDM checklist for non-residential developments have been met.

- Garbage collection will take place at the northeast corner of Building A and northwest corner of Building B. Loading and deliveries will occur at the back of each proposed building (i.e. at the northern end of the subject site). The fire route for the subject site will be located along Innes Road.

- The minimum parking and loading requirements of the City's *Zoning By-Law* will be met.

Boundary Streets

- Innes Road does not meet the target pedestrian level of service (PLOS) or bicycle level of service (BLOS), and meets the target transit level of service (TLOS) and truck level of service (TkLOS).

- Both sides of Innes Road currently include a 2.0m sidewalk with a boulevard width of approximately 3.5m. The best-possible PLOS D is achieved.

- Both directions of Innes Road currently include curbside bike lanes with an approximate width of 2.0m. For roadways with an operating speed of 70 km/h and AADT volumes greater than 10,000 vehicles per day, the *Ontario Traffic Manual (OTM) – Book 18* identifies that separated facilities are appropriate. This is identified for the City's consideration.

Access Design

- The proposed access meets all relevant provisions of the City's *Private Approach By-Law* (PABL) except for Section 25(u). A waiver to Section 25(u) of the PABL is requested.

- TAC's *Geometric Design Guide* identifies a minimum corner clearance of 70m between a driveway and a signalized intersection, measuring from the nearest edge of a private approach and the nearest edge of the intersecting street. The western edge of the proposed access is approximately 140m from the nearest edge of Pagé Road, meeting this requirement. The eastern edge of the proposed access is approximately 68m from the nearest edge of Lamarche Avenue, which is marginally short of the requirement. Locating the proposed access within 70m of Lamarche Avenue can be justified, as the access will only be downstream of Lamarche Avenue, and the proposed development is not anticipated to generate queues backing onto Innes Road at the access.

Transit

- The proposed development is projected to generate two transit trips during the AM peak hour and four transit trips during the PM peak hour. No capacity issues are anticipated for OC Routes 25, 131, or 231, based on transit trips generated by the proposed development.

Intersection MMLOS

- The results of the intersection MMLOS analysis can be summarized as follows:
    - No signalized intersections meet the target PLOS;
    - No signalized intersections meet the target BLOS;
    - Innes Road/Pagé Road and Innes Road/473m East of Pagé Road meet the target TLOS, while Innes Road/Orléans Boulevard does not;
    - Innes Road/Orléans Boulevard meets the target TkLOS, while Innes Road/Pagé Road and Innes Road/473m East of Pagé Road do not.

- For any approaches that do not meet the target PLOS, there is limited opportunity in improving any approach to the target without reducing the number of travel lanes or restricting turning movements. There is also limited opportunity in improving the delay score for pedestrians crossing Innes Road without incurring major delays for vehicles.

- All approaches of Innes Road/Orléans Boulevard do not achieve the target BLOS, based on both left turn and right turn characteristics. To achieve this target, a protected intersection would be required, and would involve the removal of all right turn channels. This is identified for the City's consideration.

- The east and west approaches at Innes Road/Pagé Road and the south, east, and west approaches at Innes Road/473m East of Pagé Road, do not meet the target BLOS based on left turn characteristics. Two-stage left-turn bike boxes would be required to achieve the target, and would therefore require restriction to right turns on red (RTOR). It is recommended that if bike boxes are pursued, that they are implemented holistically along the Innes Road where applicable, rather than at only select intersections.

- All approaches at Innes Road/Orléans Boulevard do not meet the target TLOS. It is anticipated that transit delays will improve once isolated transit priority measures are implemented on Innes Road.

- The east and west approaches at Innes Road/Pagé Road and the east approach at Innes Road/473m East of Pagé Road do not achieve the target TkLOS. No modifications to the curb radii are recommended, as Pagé Road is primarily a residential street with low truck volumes, and it is anticipated that large trucks do not enter and exit 3615 Innes Road for loading and deliveries, given the layout and size.

Existing Intersection Operations

- During the AM peak hour, the southbound right turn and eastbound left turn movements at Innes Road/Orléans Boulevard operate at a failing vehicular level of service. To meet the target, a reduction of approximately 140 southbound right turning vehicles and 10 eastbound left turning vehicles would be required. The average (50^{th}-percentile) and maximum (95^{th}-percentile) queue lengths of the southbound right turn movement at Innes Road/Orléans Boulevard exceed the storage length provided.

- During the PM peak hour, the eastbound through movement at Innes Road/Orléans Boulevard operate at a failing vehicular level of service. To meet the target, a reduction of approximately 100 eastbound through vehicles would be required. The maximum queue length of the southbound left turn movement at Innes Road/Orléans Boulevard exceeds the storage length provided.

Background Intersection Operations

- During the AM peak hour, the southbound right turn and westbound through movements at Innes Road/Orléans Boulevard operate at a failing vehicular level of service. To meet the target, a reduction of approximately 150 southbound right turning vehicles and 30 westbound through vehicles would be required. The average and maximum queue lengths of the southbound right turn movements exceed the storage length provided.

- During the PM peak hour, the southbound left turn and eastbound through movements at Innes Road/Orléans Boulevard, and the westbound left turn movements at Innes Road/ Pagé Road and Innes Road/Lamarche Avenue operate at a failing vehicular level of service. To meet the target, a reduction of approximately 30 southbound right turning vehicles and 280 eastbound through vehicles at Innes Road/Orléans Boulevard would be required. The maximum queue length of the southbound left turn movement at Innes Road/Orléans Boulevard exceeds the storage length provided.

- To mitigate failing movements at Innes Road/Orléans Boulevard, seven seconds of green time for the northbound/southbound phases have been reallocated to the eastbound/ westbound through phases in the AM peak hour. For the PM peak hour, the cycle length of all study area intersections has been increased from 110 to 130 seconds, with most or all of this additional green time added to the eastbound/westbound phases.

- To mitigate failing westbound left turn movements at Innes Road/Pagé Road and Innes Road/Lamarche Avenue in the PM peak hour, protected plus permitted left turn phasing is identified for the City's consideration. With this phasing, a reduction of approximately 140 eastbound through vehicles at Innes Road/Lamarche Avenue in the PM peak hour would be required to meet the target vehicular level of service. It is understood that this type of phasing is typically implemented after the City reviews the actual performance of the intersections being studied.

Total Intersection Operations

- The addition of site-generated traffic is anticipated to have a marginal impact to peak hour traffic operations within the study area. During the peak hours, the maximum westbound through queue lengths at Innes Road/Pagé Road do not extend upstream to the proposed site access. The maximum eastbound through queue at Innes Road/Lamarche Avenue extends upstream through the Innes Road/Pagé Road intersection during the PM peak hour.

Based on the foregoing, the proposed development is recommended from a transportation perspective.

NOVATECH

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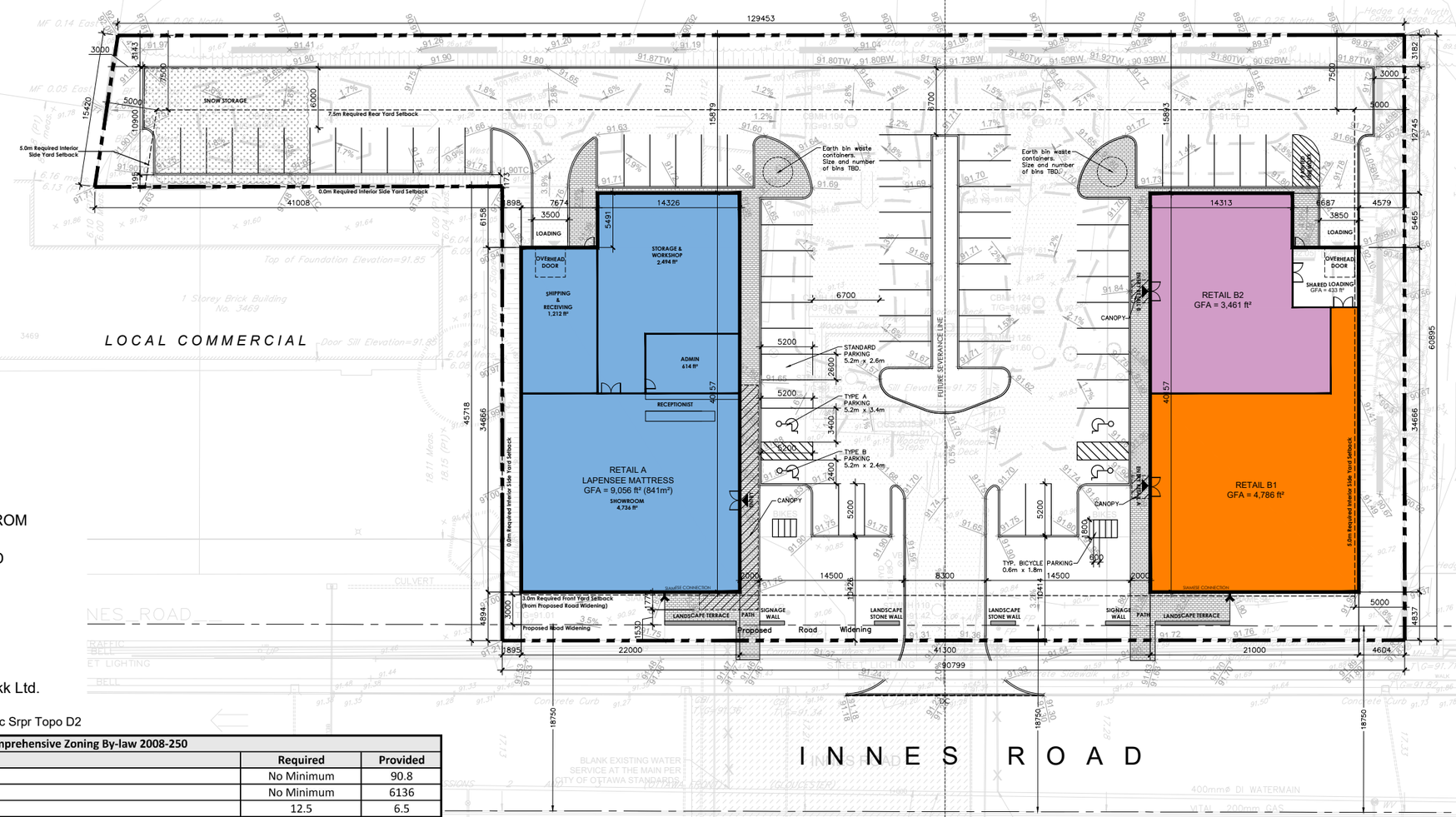
Reviewed by:

Jennifer Luong, P.Eng.
Senior Project Manager | Transportation

APPENDIX A

Preliminary Site Plan



3493, 3497, 3499
INNES ROAD

CONCEPT PLAN

RETAIL A

LAPENSEE MATTRESS:
GFA = 9,056 ft² (841m²)

RETAIL B

RETAIL B1:
GFA = 4,786 ft²
RETAIL B2:
GFA = 3,461 ft²
SHARED LOADING = 433 ft²

TOTAL
GFA = 8,680 ft² (806 m²)

Note:
PROPERTY BOUNDARY DERIVED FROM OFFICIAL SURVEY AND PLAN OF ANNIS, O'SULLIVAN VOLLEBEKK LTD

PART 1 Plan of
PART OF LOT 5
CONCESSION 2 (OTTAWA FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Job No. 18187-18 Frami Pt Lt 5 Con 2 (OF) Glouc Srpr Topo D2

Comprehensive Zoning By-law 2008-250		
LC Zone Provisions (Section 189)	**Required**	**Provided**
Minimum Lot Width (m)	No Minimum	90.8
Minimum Lot Area (m²)	No Minimum	6136
Maximum Building Height (m)	12.5	6.5
Minimum Front Yard Setback (m)	3	4.8
Minimum Interior Side Yard Setback - Abutting Residential Zone (m) [East Lot Line]	5	4.5
Minimum Interior Side Yard Setback - Other Cases (m) [West Lot Line]	No Minimum	1.8
Minimum Rear Yard Setback (m)	7.5	15.8
Minimum Width of Landscaped Area - Abutting Street (m)	3	4.8
Minimum Width of Landscaped Area - Abutting Residential (m)	3	3
Parking Provisions (Sections 101, 110, 111 & 113)	**Required**	**Provided**
Minimum Bicycle Parking Rate - Retail Store [1 per 250m² of GFA]	7	8
Minimum Vehicle Parking Rate - Retail Store [3.4 per 100m² of GFA]	56	69
Minimum Loading Space Rate - Retail Store [350-999m² GFA]	0	2
Minimum Width of Landscaped Area Around Parking Lot - Abutting a Street (m)	3	10.5
Minimum Width of Landscaped Area Around Parking Lot - Not Abutting a Street (m)	1.5	1.1

HOBIN

Lapensée Mattress

GROUND FLOOR

SCALE 1:500
JULY 12, 2023

DWG _ _ _ _ _ _ _

D07-12-22-0189

APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines TIA Screening

1. Description of Proposed Development

Municipal Address	3493-3499 Innes Road
Description of Location	North side of Innes Road, 90m east of Page Road
Land Use Classification	Destination retail
Development Size (units)	
Development Size square metre (m^2)	1,647 sq.m. GFA
Number of Accesses and Locations	One proposed access to Innes Road
Phase of Development	2
Buildout Year	2024 (Phase 1); 2025 (Phase 2)

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.

Table notes:

1. Table 2, Table 3 & Table 4 TRANS Trip Generation Manual
2. Institute of Transportation Engineers (ITE) Trip Generation Manual 11.1 Ed.

Land Use Type	Minimum Development Size
Single-family homes	**60 units**
Multi-Use Family (Low-Rise)[1]	**90 units**
Multi-Use Family (High-Rise)[1]	**150 units**
Office[2]	**1,400 m^2**
Industrial[2]	**7,000 m^2**
Fast-food restaurant or coffee shop[2]	**110 m^2**
Destination retail[2]	**1,800 m^2**
Gas station or convenience market[2]	**90 m^2**

If the proposed development size is equal to or 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 Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	☑	☐
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?[2]	☑	☐

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 are 80 kilometers per hour (km/h) or greater?	☐	☑
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	☐	☑
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 metre [m] of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	☑	☐
Is the proposed driveway within auxiliary lanes of an intersection?	☐	☑
Does the proposed driveway make use of an existing median break that serves an existing site?	☐	☑

[2] Hubs are identified in Schedules B1 to B8 of the City of Ottawa Official Plan. PMTSAs are identified in Schedule C1 of the Official Plan. DPAs are identified in Schedule C7A and C7B of the Official. See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA.

	Yes	No
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?	☐	☑

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

5. Summary

Results of Screening	Yes	No
Does the development satisfy the Trip Generation Trigger?	☑	☐
Does the development satisfy the Location Trigger?	☑	☐
Does the development satisfy the Safety Trigger?	☑	☐

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

OC Transpo Route Maps

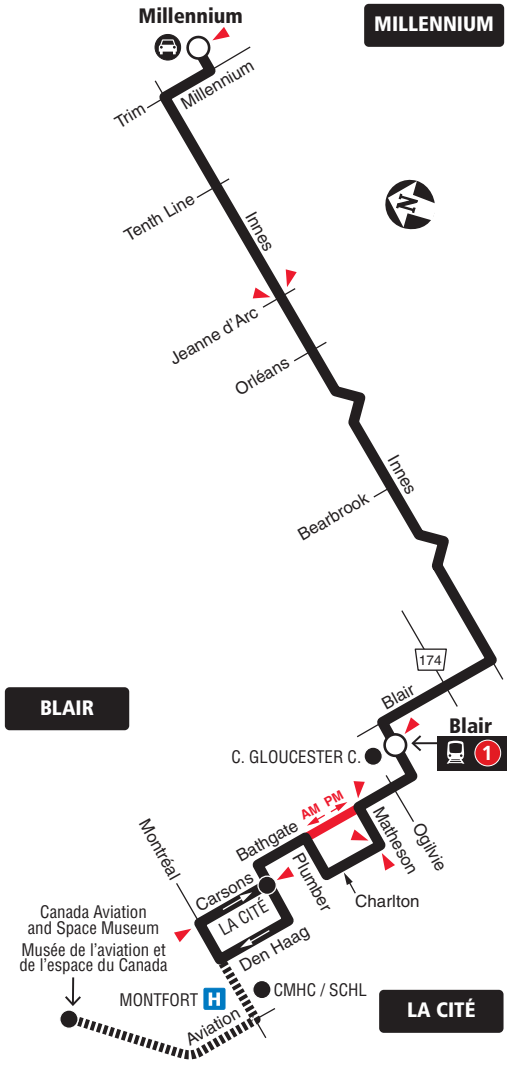
25

MILLENNIUM
LA CITÉ
BLAIR

Fréquent

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Station
Selected time periods
Périodes de temps sélectionnées
Park & Ride / Parc-o-bus
Timepoint / Heures de passage

2020.07

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**

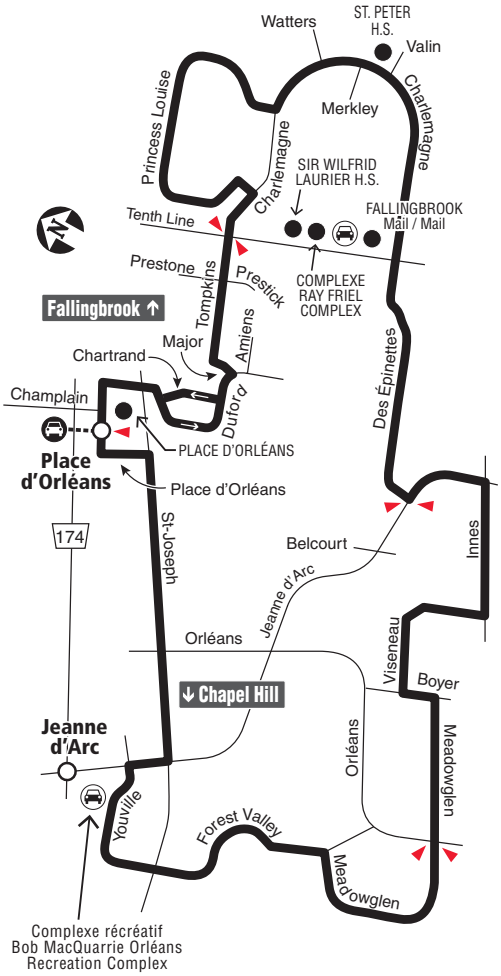
Effective August 8, 2020
En vigueur 8 août 2020

OC Transpo
INFO 613-741-4390
octranspo.com

131 FALLINGBROOK / CHAPEL HILL

Local

7 days a week / 7 jours par semaine
All day service
Service toute la journée



Station
Park & Ride / Parc-o-bus
Timepoint / Heures de passage

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 2, 2018
En vigueur 2 septembre 2018

OC Transpo
INFO 613-741-4390
octranspo.com

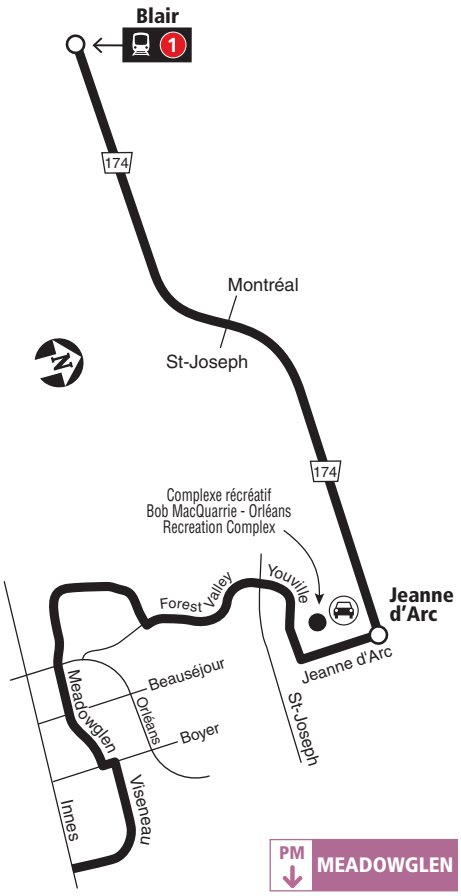
231 Connexion

MEADOWGLEN
BLAIR

Monday to Friday / Lundi au vendredi

Peak periods only
Périodes de pointe seulement

AM ↑ BLAIR



PM ↓ MEADOWGLEN

○ Station

Park & Ride / Parc-o-bus

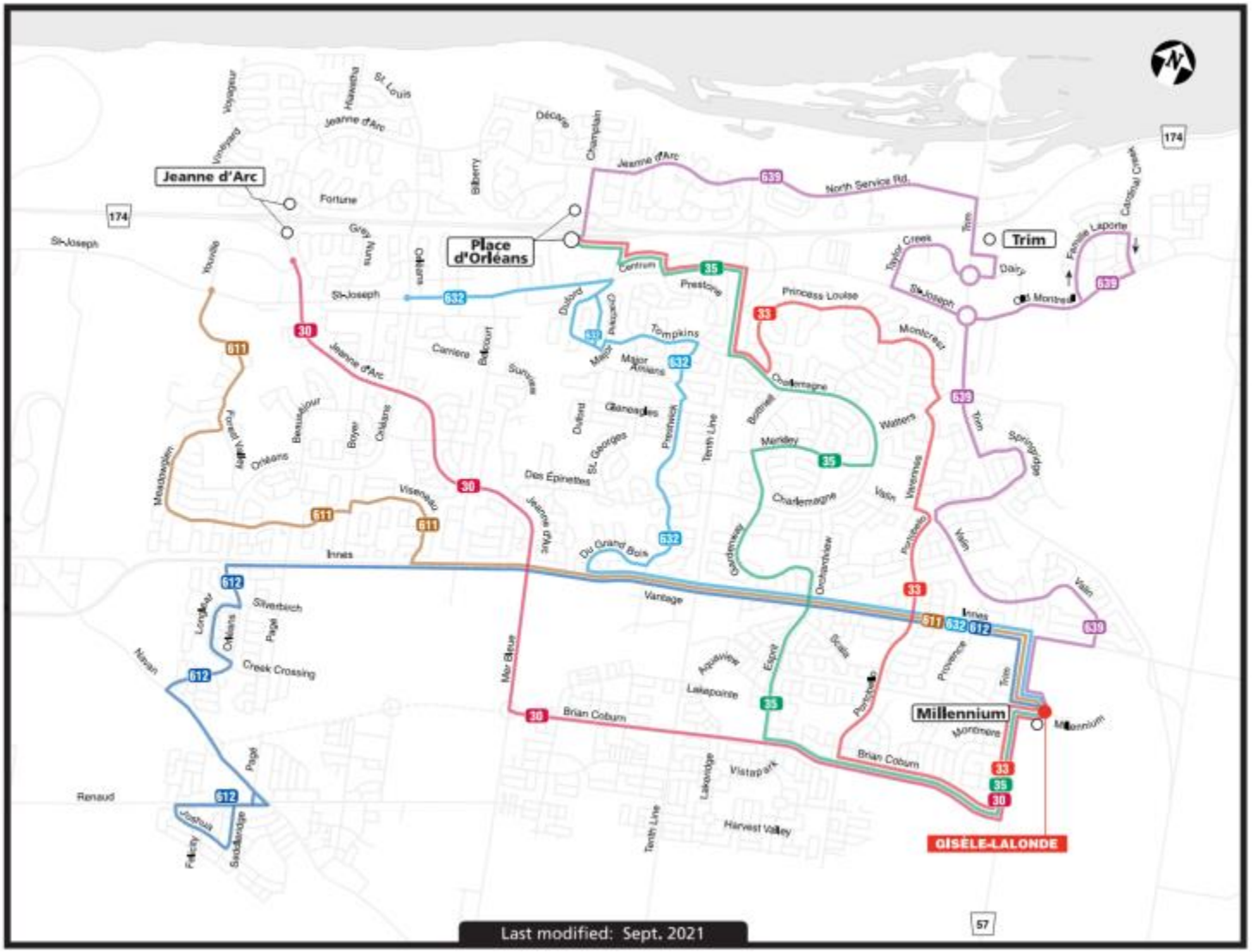
2019.07

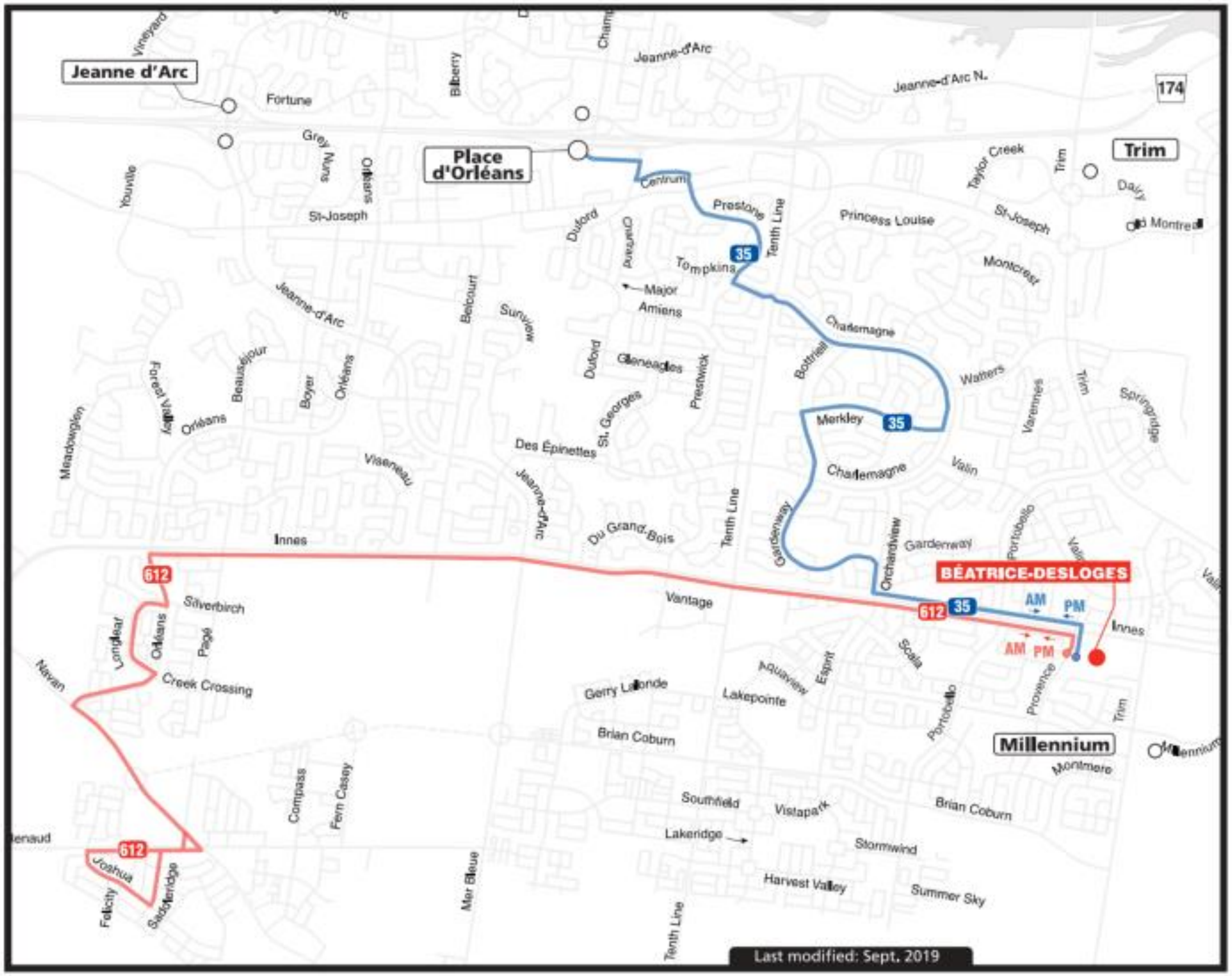
1

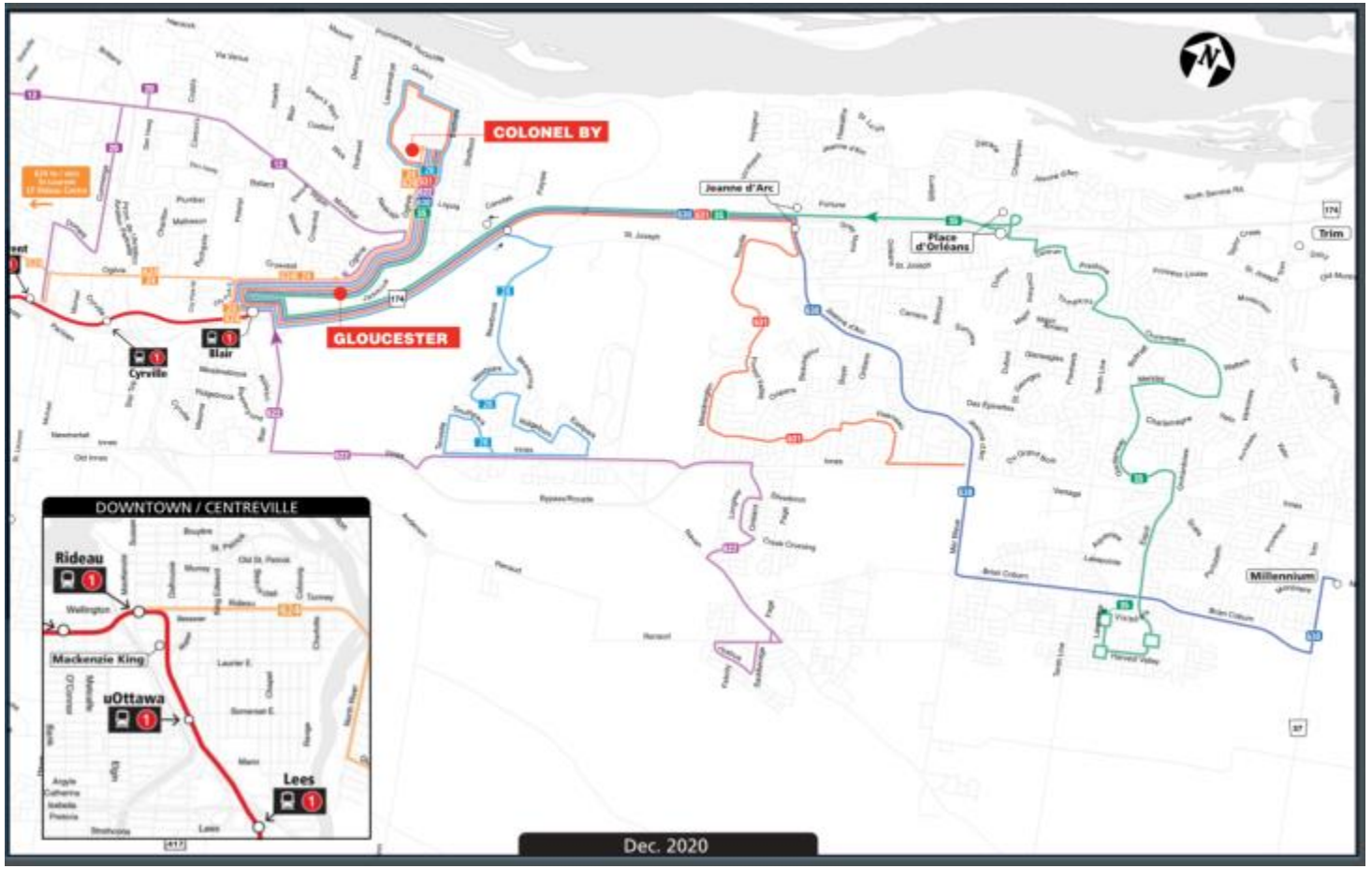
Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

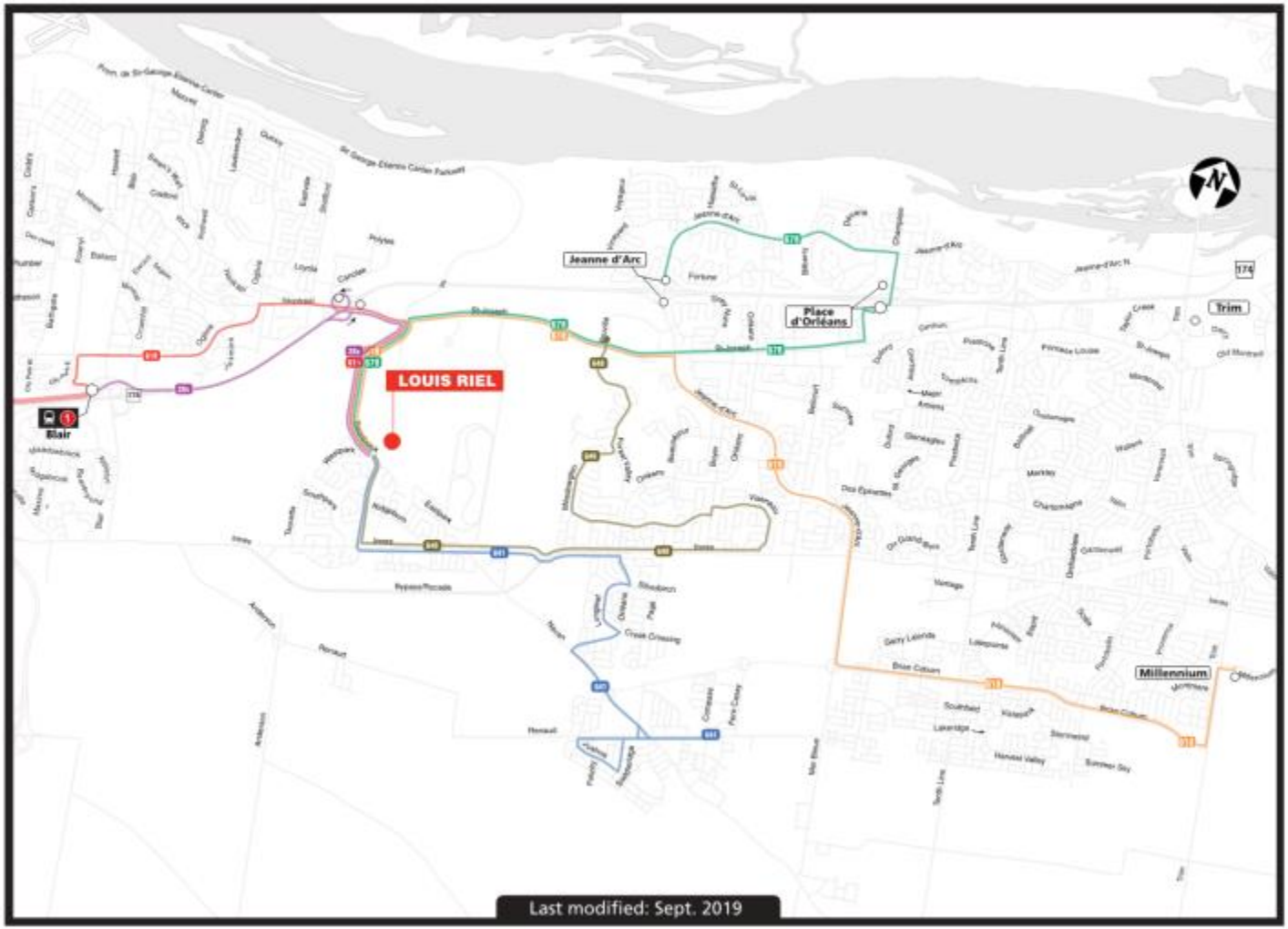
Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

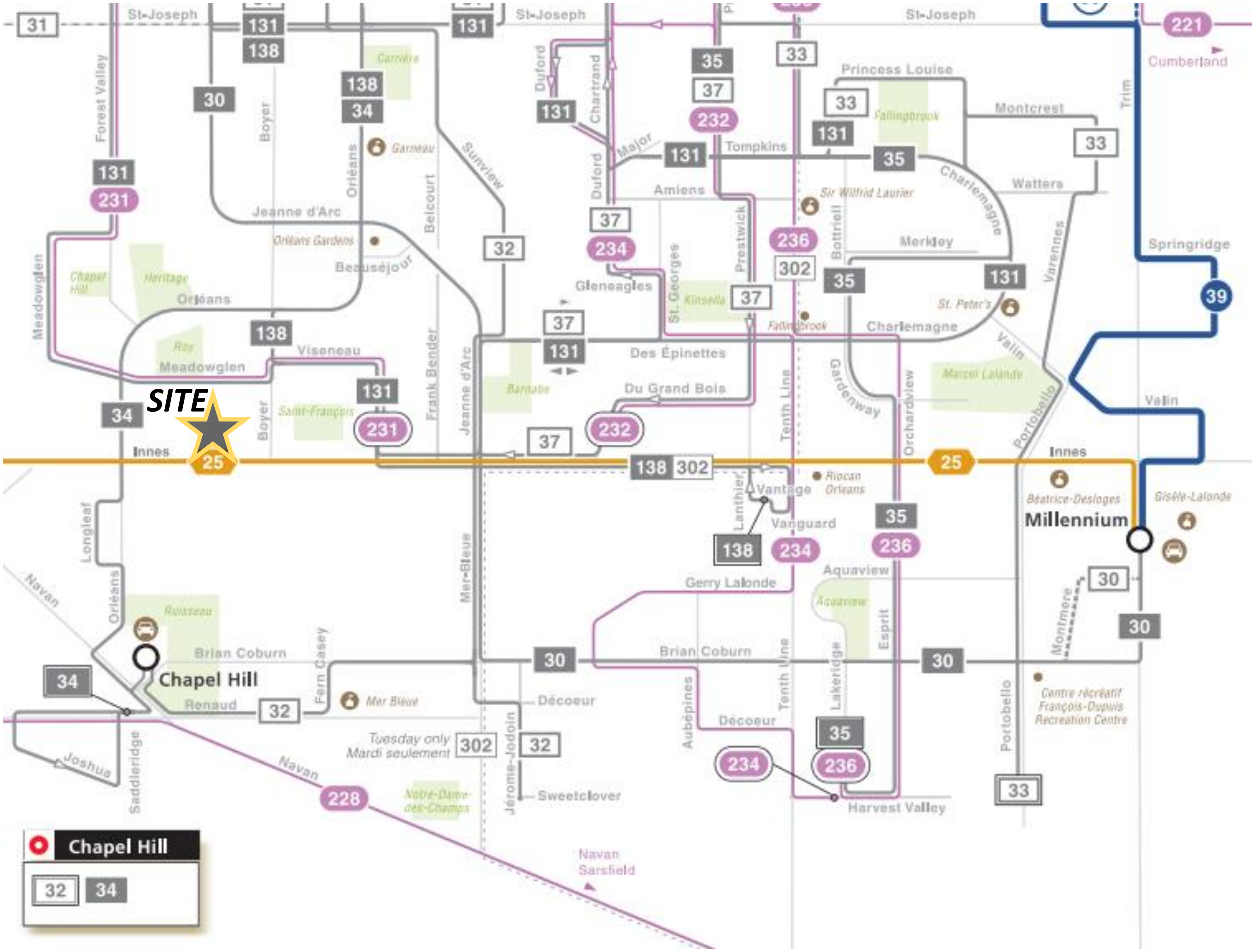
OC Transpo
INFO 613-741-4390
octranspo.com


Jeanne d'Arc
Place d'Orléans
Trim
Millennium
GISÈLE-LALONDE
Last modified: Sept. 2021


Jeanne d'Arc
Place d'Orléans
Trim
Millennium
BÉATRICE-DESLOGES
35
612
AM
PM
174
Fortune
Jeanne-d'Arc
Jeanne-d'Arc N.
Centrum
Prestone
Tenth Line
Princess Louise
St-Joseph
Montcrest
Tompkins
Charlemagne
Merkley
Valin
Gardenway
Orchardview
Innes
Vantage
Silverbirch
Creek Crossing
Navan
Gerry Lalonde
Lakepointe
Brian Coburn
Southfield
Vistapark
Lakeridge
Stormwind
Harvest Valley
Summer Sky
Montmere
Provence
Portobello
Scala
Esprit
Aquaview
Compass
Fern Casey
Mer Bleue
Joshua
Saddleridge
Felicity
Dufford
Amiens
Major
Gleneagles
Prestwick
St. Georges
Des Épinettes
Du Grand-Bois
Sunview
Belcourt
Boyer
Orléans
Beausejour
Forest Valley
Meadowglen
Youville
Grey Nuns
Bilberry
Taylor Creek
Watters
Varennes
Springridge
Last modified: Sept. 2019


COLONEL BY
GLOUCESTER
Jeanne d'Arc
Place d'Orléans
Trim
Millennium
Cyrville
Blair
DOWNTOWN / CENTREVILLE
Rideau
Mackenzie King
uOttawa
Lees
Dec. 2020


LOUIS RIEL
Blair
Jeanne d'Arc
Place d'Orléans
Trim
Millennium
Last modified: Sept. 2019


SITE
St-Joseph
Forest Valley
Meadowglen
Chapel Hill
Heritage
Orléans
Roy
Meadowglen
Boyer
Jeanne d'Arc
Orléans Gardens
Beauséjour
Carrière
Garneau
Orléans
Belcourt
Sunview
Viseneau
Saint-François
Frank Bender
Jeanne d'Arc
Barnabé
Duford
Chartrand
Major
Amiens
Gleneagles
Des Épinettes
Du Grand Bois
St. Georges
Kinsella
Prestwick
Tompkins
Princess Louise
Fallingbrook
Montcrest
Watters
Charlemagne
Sir Wilfrid Laurier
Bottriell
Merkley
St. Peter's
Charlemagne
Valin
Marcel Lalande
Gardenway
Orchardview
Tenth Line
Portobello
Varennes
Trim
Cumberland
Springridge
Valin
Innes
Vantage
Riocan Orleans
Lanthier
Vanguard
Béatrice-Desloges
Millennium
Gisèle-Lalonde
Gerry Lalonde
Aquaview
Esprit
Montmere
Longleaf
Navan
Ruisseau
Brian Coburn
Chapel Hill
Renaud
Fern Casey
Mer Bleue
Mer-Bleue
Décoeur
Jérôme-Jodoin
Sweetclover
Tuesday only
Mardi seulement
Aubépines
Lakeridge
Tenth Line
Harvest Valley
Portobello
Centre récréatif François-Dupuis Recreation Centre
Joshua
Saddleridge
Navan
Notre-Dame-des-Champs
Navan Sarsfield
31
131
138
30
34
32
37
35
33
221
231
232
234
236
302
25
39
228
Chapel Hill
32
34

APPENDIX D

Traffic Count Data

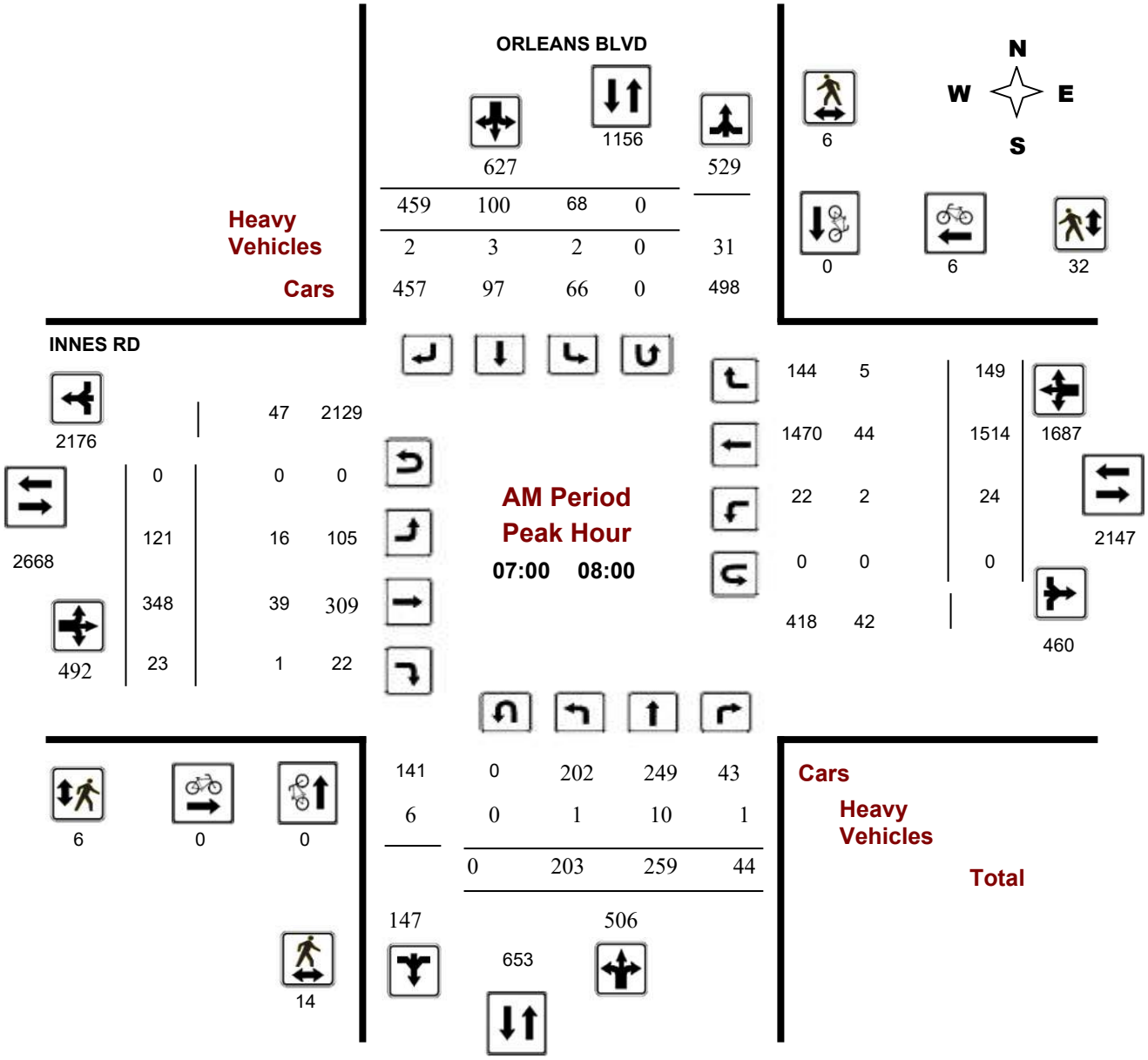
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ ORLEANS BLVD

Survey Date: Wednesday, May 03, 2017 **WO No:** 36978

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



Comments

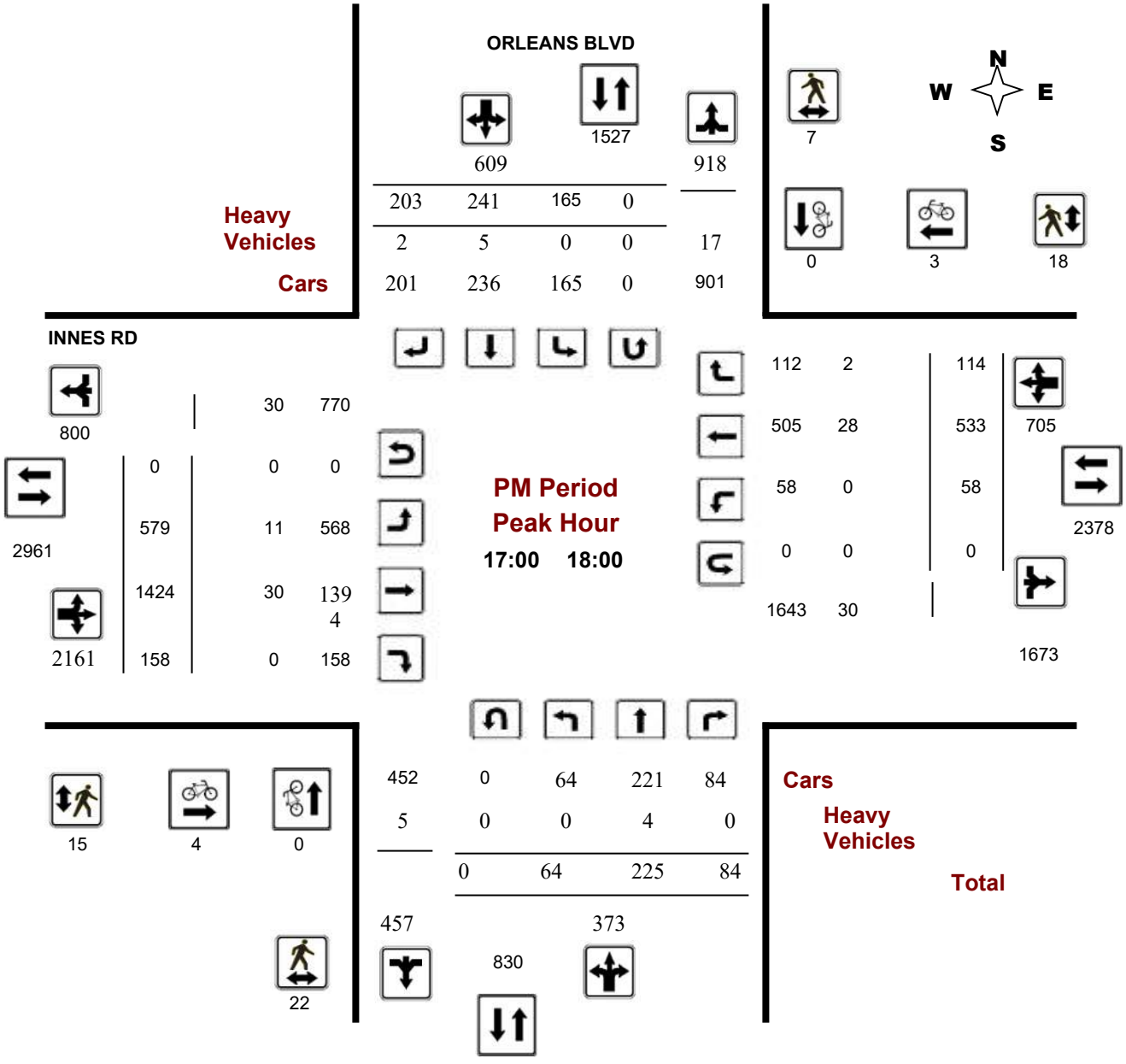
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ ORLEANS BLVD

Survey Date: Wednesday, May 03, 2017 **WO No:** 36978

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



Comments

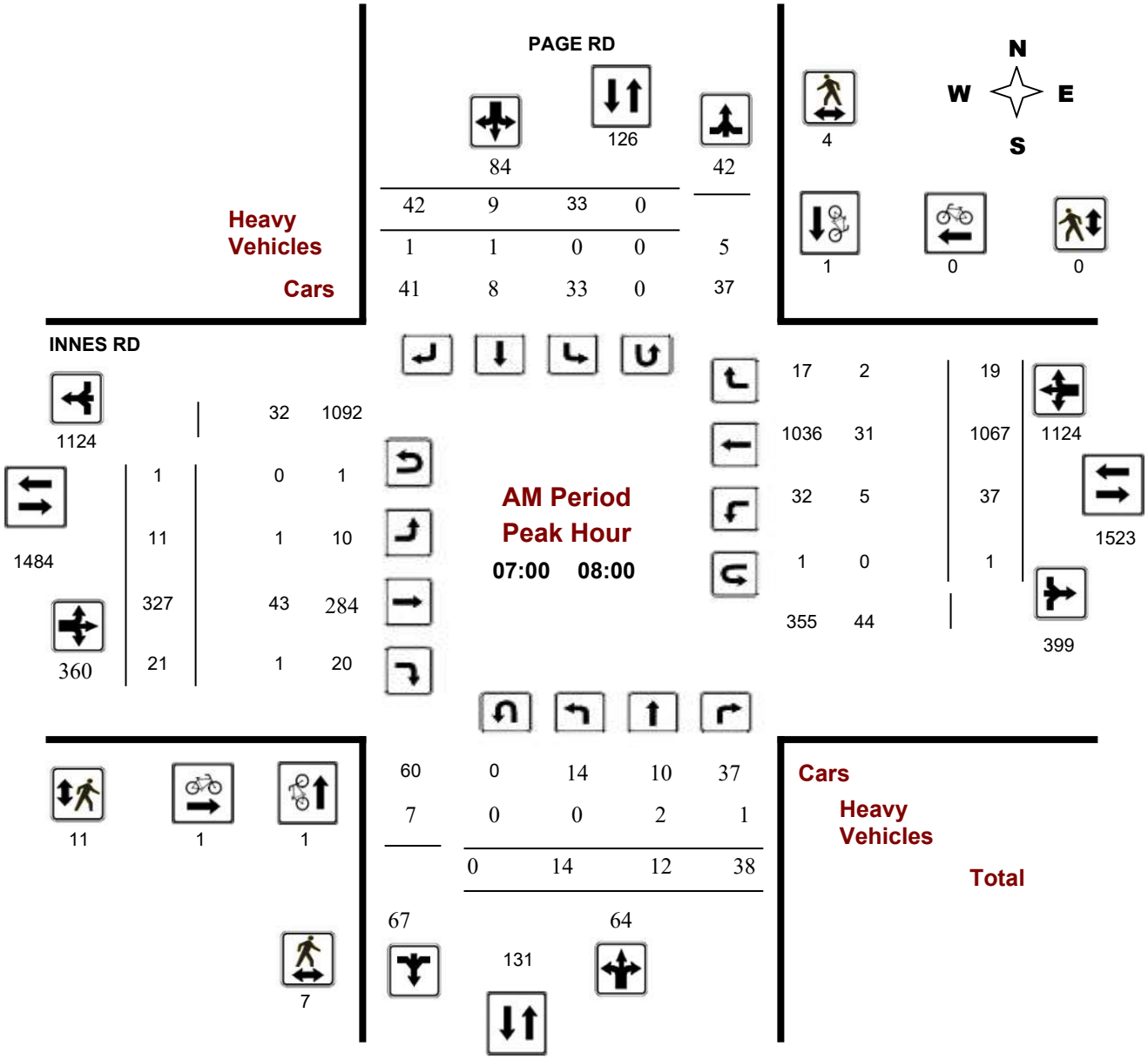
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ PAGE RD

Survey Date: Tuesday, January 08, 2019 **WO No:** 38221

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



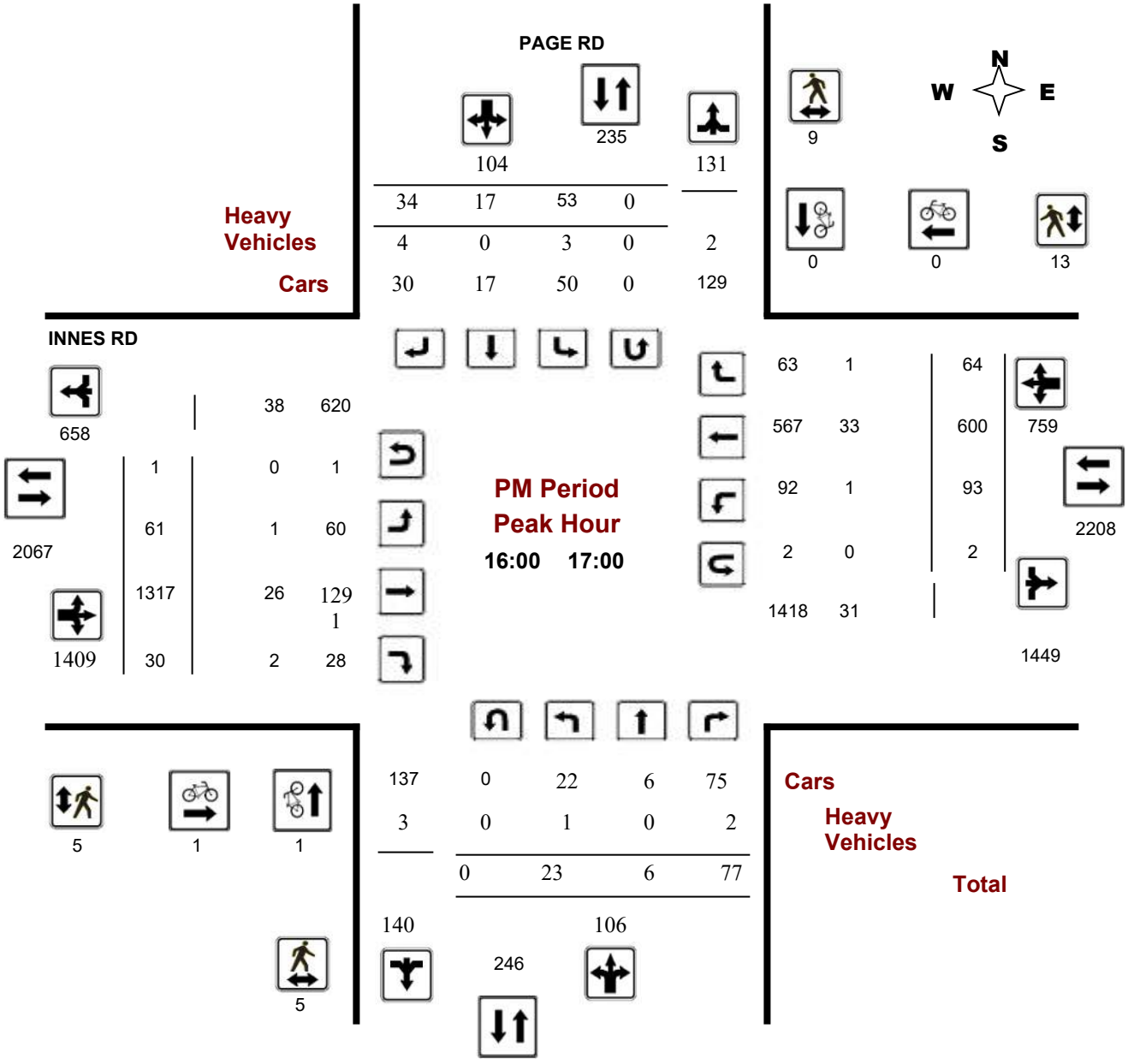
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ PAGE RD

Survey Date: Tuesday, January 08, 2019 **WO No:** 38221

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



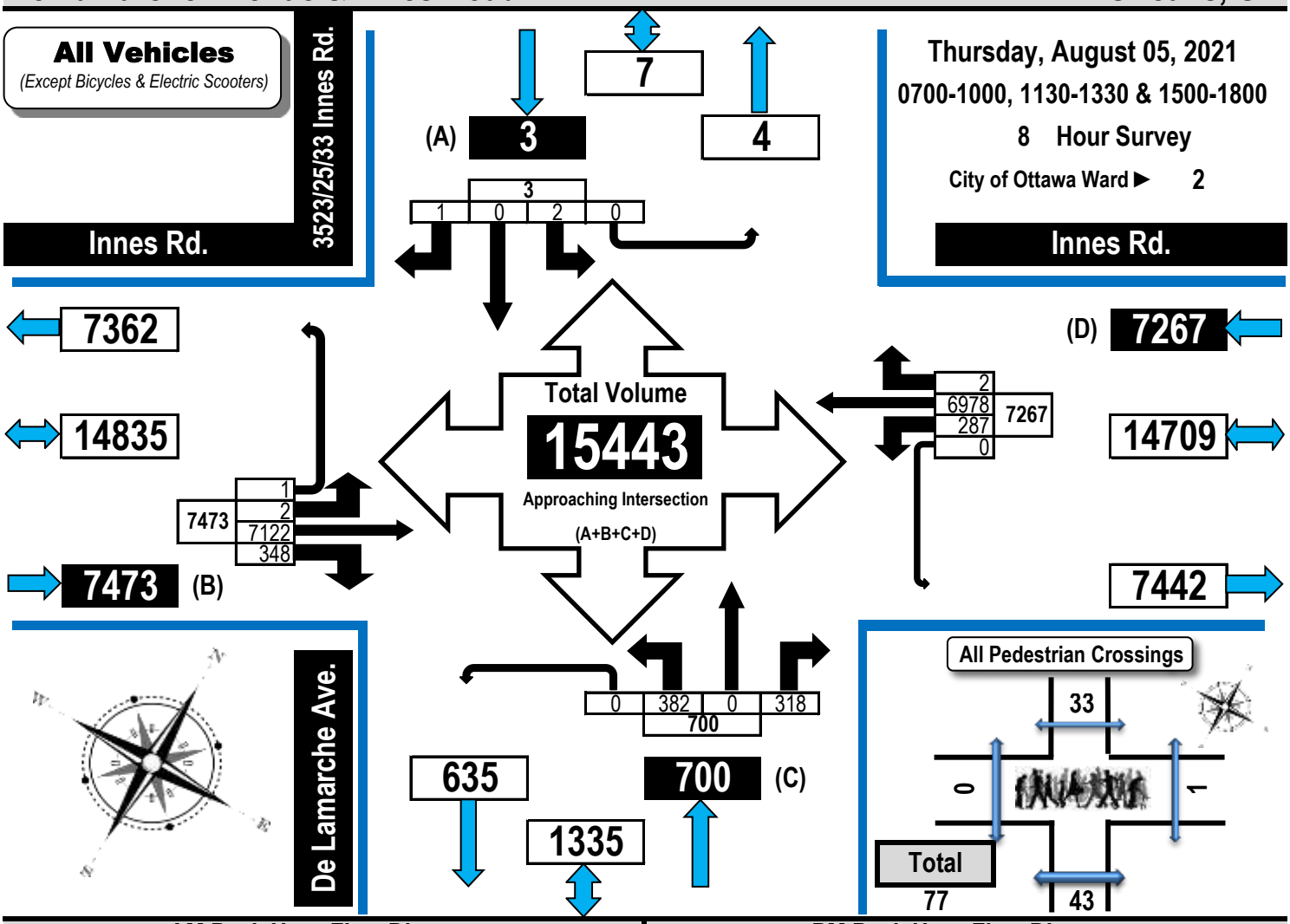
Comments

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

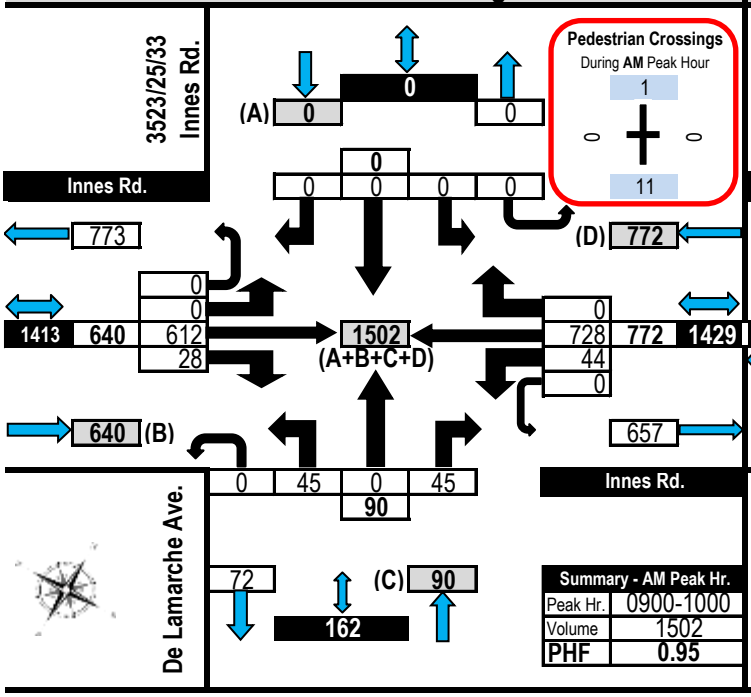
De Lamarche Avenue & Innes Road — Orléans, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Thursday, August 05, 2021
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 2

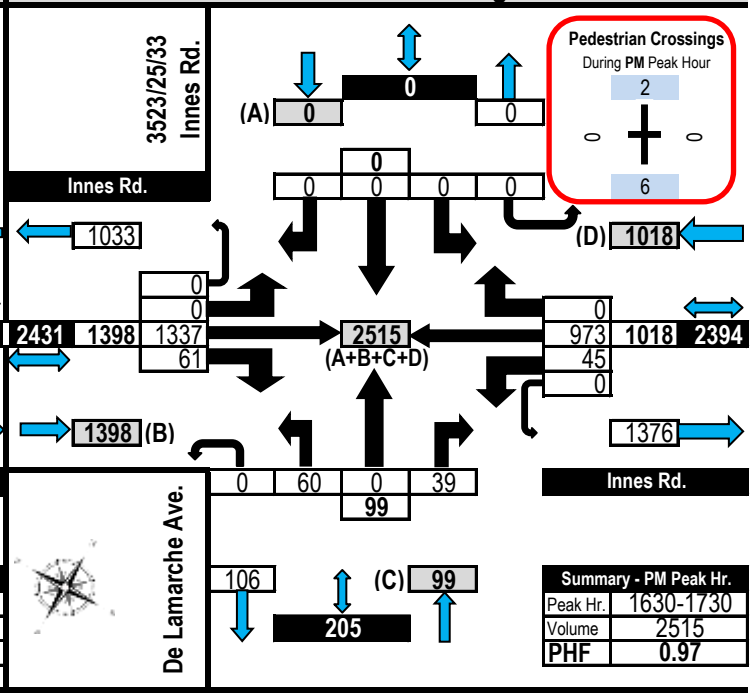


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0900-1000
Volume	1502
PHF	0.95

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	2515
PHF	0.97

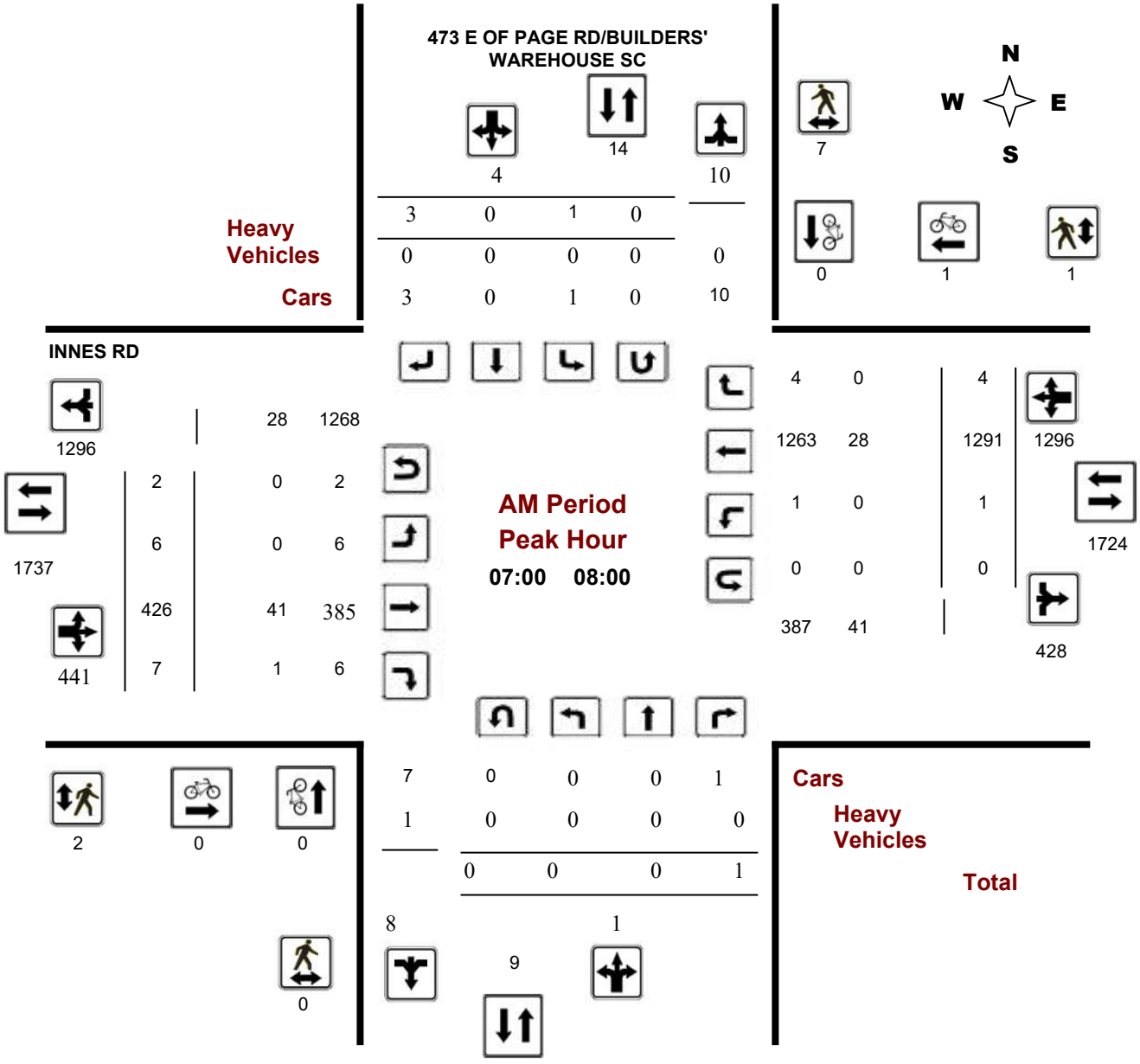
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ 473 E OF PAGE RD/BUILDERS' WAREHOUS

Survey Date: Thursday, January 31, 2019 **WO No:** 38223

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



Comments

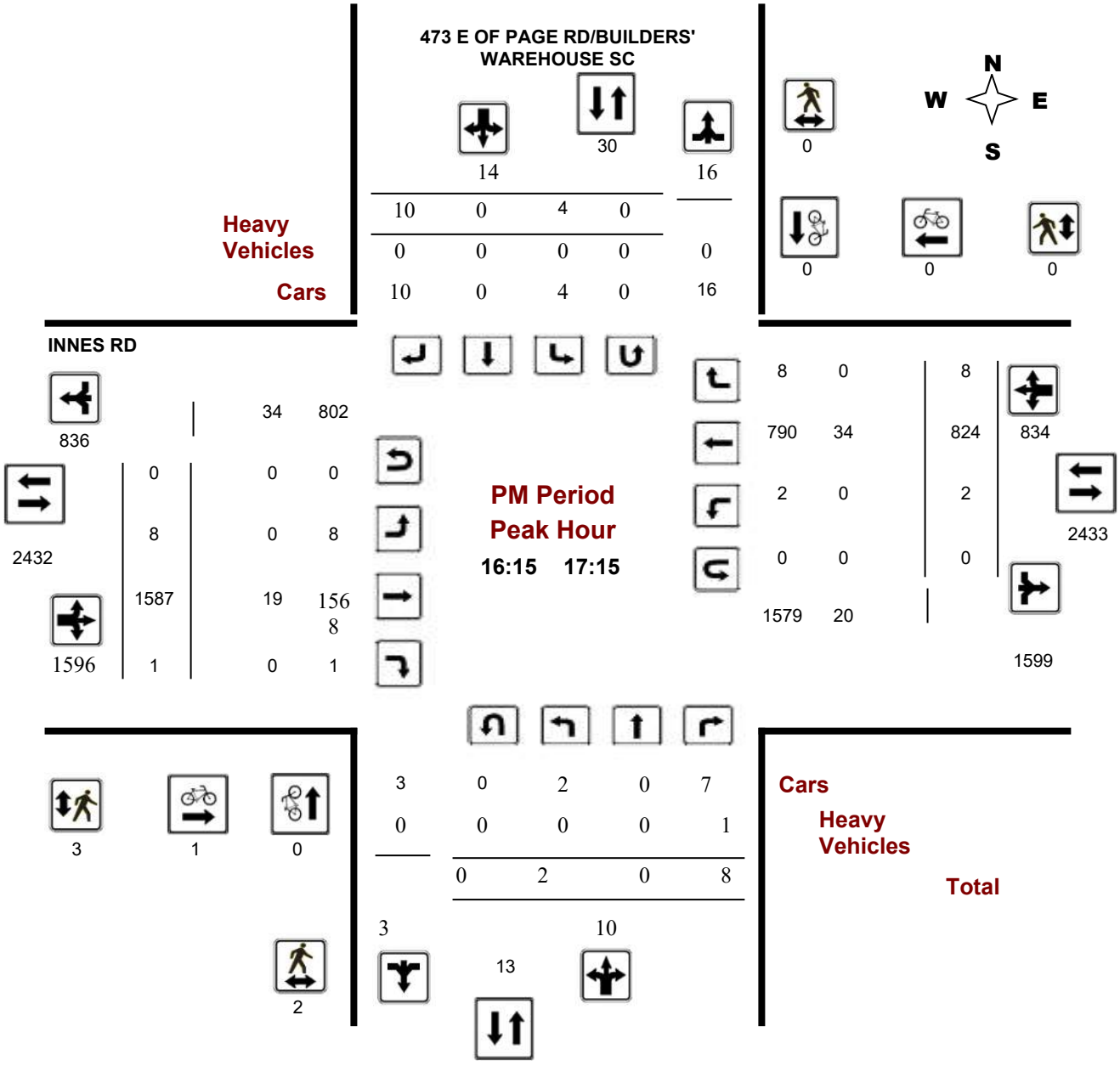
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ 473 E OF PAGE RD/BUILDERS' WAREHOUS

Survey Date: Thursday, January 31, 2019 **WO No:** 38223

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



Comments

APPENDIX E

Collision Records

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ 473 E OF PAGE RD/BUILDERS' WAREHOUS

Traffic Control: Traffic signal **Total Collisions:** 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-21, Wed,08:18	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2016-Jun-30, Thu,06:35	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Motorcycle	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-05, Wed,15:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2018-Jan-02, Tue,11:15	Snow	SMV other	P.D. only	Ice	East	Making "U" turn	Automobile, station wagon	Snowbank/drift	0
2018-May-28, Mon,12:27	Clear	Angle	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-06, Tue,08:51	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Jan-27, Tue,11:59	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-31, Sat,14:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2015-May-03, Sun,17:07	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-May-22, Fri,16:27	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jul-09, Thu,17:10	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jul-14, Tue,08:10	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Aug-27, Thu,18:04	Clear	SMV other	P.D. only	Dry	South	Turning right	Automobile, station wagon	Pole (sign, parking meter)	0
2015-Sep-01, Tue,11:55	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2015-Oct-18, Sun,09:49	Clear	Angle	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2015-Oct-21, Wed,15:45	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Passenger van	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-Oct-28, Wed,13:51	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jan-19, Tue,18:45	Clear	Rear end	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2016-Jan-25, Mon,18:40	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-23, Tue,19:59	Clear	Rear end	Non-fatal injury	Packed snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Passenger van	Other motor vehicle	
2016-Mar-12, Sat,21:07	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Apr-12, Tue,18:41	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Apr-28, Thu,10:30	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	
2016-May-22, Sun,11:04	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	
2016-Jun-09, Thu,19:16	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Passenger van	Other motor vehicle	
2016-Jul-10, Sun,21:52	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jul-21, Thu,13:08	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Jul-28, Thu,16:00	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Oct-13, Thu,09:41	Rain	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-14, Fri,08:16	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2016-Oct-22, Sat,01:34	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Passenger van	Other motor vehicle	
2016-Oct-26, Wed,11:22	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Nov-02, Wed,17:03	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Pick-up truck	Other motor vehicle	
2016-Dec-08, Thu,19:01	Snow	Turning movement	Non-fatal injury	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Jan-02, Mon,13:43	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jan-13, Fri,14:41	Clear	Rear end	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	
2017-Jan-22, Sun,16:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Passenger van	Other motor vehicle	
2017-Feb-15, Wed,09:00	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-06, Mon,16:38	Freezing Rain	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-30, Thu,18:22	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Apr-02, Sun,11:32	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-May-18, Thu,08:47	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Pedestrian	1
2017-Jun-02, Fri,13:39	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jun-22, Thu,16:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2017-Jun-29, Thu,16:10	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Delivery van	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Sep-07, Thu,07:24	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Nov-16, Thu,18:28	Rain	Turning movement	P.D. only	Wet	East	Going ahead	Unknown	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Nov-22, Wed,16:17	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-05, Fri,17:49	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-16, Tue,17:54	Freezing Rain	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-27, Sat,14:15	Clear	Rear end	Non-fatal injury	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-11, Sun,19:15	Snow	Turning movement	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-13, Tue,15:15	Snow	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-15, Fri,16:03	Clear	Rear end	P.D. only	Dry	West	Going ahead	Truck - closed	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-23, Sun,19:56	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-25, Tue,12:23	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-13, Sat,14:17	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Nov-16, Fri,06:26	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Dec-02, Sun,15:02	Rain	SMV other	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Pedestrian	1
2018-Dec-09, Sun,16:49	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Dec-29, Sat,17:52	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-26, Sat,20:02	Clear	Turning movement	P.D. only	Ice	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-31, Thu,15:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Unknown	Unknown	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-May-02, Thu,09:00	Rain	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jun-25, Tue,19:45	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2019-Jul-26, Fri,15:43	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 68

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Aug-01, Thu,10:20	Clear	Turning movement	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-08, Thu,15:02	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Delivery van	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Oct-17, Thu,05:49	Rain	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-03, Sun,16:10	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-15, Fri,21:26	Clear	Turning movement	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Nov-27, Wed,17:16	Rain	SMV other	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Pedestrian	1
2019-Dec-03, Tue,23:30	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Unknown	Other motor vehicle	

Location: INNES RD @ PAGE RD

Traffic Control: Traffic signal **Total Collisions:** 31

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-14, Wed,08:40	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-Feb-20, Fri,07:15	Clear	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ PAGE RD

Traffic Control: Traffic signal **Total Collisions:** 31

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jul-14, Tue,18:58	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jul-21, Tue,13:20	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jul-30, Thu,20:45	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-28, Mon,08:12	Clear	Angle	P.D. only	Dry	West	Turning right	School bus	Other motor vehicle	0
					North	Stopped	Construction equipment	Other motor vehicle	
2015-Oct-11, Sun,17:24	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-04, Fri,17:43	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Mar-23, Wed,10:52	Clear	Rear end	P.D. only	Dry	West	Going ahead	Delivery van	Other motor vehicle	0
					West	Stopped	Truck - closed	Other motor vehicle	
2016-Oct-22, Sat,11:07	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Nov-03, Thu,07:05	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Pick-up truck	Pedestrian	1
2016-Nov-04, Fri,21:47	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-23, Wed,06:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2017-Feb-01, Wed,13:36	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ PAGE RD

Traffic Control: Traffic signal **Total Collisions:** 31

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jun-01, Thu,12:22	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2017-Nov-03, Fri,18:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-20, Mon,08:01	Freezing Rain	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Nov-23, Thu,16:52	Snow	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Nov-29, Wed,16:51	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Truck - dump	Other motor vehicle	
2018-Jan-26, Fri,16:54	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-May-14, Mon,18:39	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2018-Jun-04, Mon,00:00	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Unknown	Pedestrian	1
2018-Jul-16, Mon,21:34	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Debris on road	0
2018-Oct-01, Mon,17:10	Clear	Other	P.D. only	Dry	South	Reversing	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-13, Tue,08:12	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-13, Tue,14:54	Rain	Rear end	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ PAGE RD

Traffic Control: Traffic signal **Total Collisions:** 31

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-28, Mon,07:30	Clear	Rear end	P.D. only	Packed snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-08, Fri,20:50	Clear	Turning movement	P.D. only	Dry	West	Turning left	Unknown	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-06, Thu,23:42	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jun-18, Tue,06:21	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Municipal transit bus	Other motor vehicle	
2019-Sep-13, Fri,19:43	Clear	SMV other	P.D. only	Dry	West	Turning left	Automobile, station wagon	Curb	0

Location: INNES RD @ VISENEAU DR

Traffic Control: Traffic signal **Total Collisions:** 41

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-02, Fri,18:19	Clear	Rear end	P.D. only	Dry	West	Turning left	Unknown	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jan-16, Fri,20:09	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jan-30, Fri,19:35	Clear	Rear end	P.D. only	Wet	South	Going ahead	Passenger van	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2015-Apr-30, Thu,14:06	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jun-10, Wed,08:20	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ VISENEAU DR

Traffic Control: Traffic signal **Total Collisions:** 41

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Oct-08, Thu,15:32	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Feb-05, Fri,18:00	Clear	Other	P.D. only	Dry	Unknown	Unknown	Unknown	Other motor vehicle	0
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Feb-27, Sat,12:30	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Apr-04, Mon,13:34	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Apr-06, Wed,20:10	Snow	Angle	P.D. only	Loose snow	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Apr-30, Sat,11:41	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-21, Tue,15:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Aug-24, Wed,18:35	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2016-Nov-01, Tue,11:00	Clear	Angle	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Nov-26, Sat,11:30	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-23, Fri,11:55	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ VISENEAU DR

Traffic Control: Traffic signal **Total Collisions:** 41

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Dec-29, Thu,18:05	Snow	Turning movement	P.D. only	Packed snow	South	Turning right	Municipal transit bus	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jan-04, Wed,18:00	Snow	Turning movement	P.D. only	Slush	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-10, Tue,21:06	Freezing Rain	Turning movement	P.D. only	Loose snow	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-20, Mon,10:17	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-05, Sun,16:39	Rain	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-05, Fri,17:31	Snow	Rear end	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Jan-15, Mon,15:54	Clear	Sideswipe	P.D. only	Packed snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Bus (other)	Other motor vehicle	
2018-Jan-20, Sat,14:22	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-19, Mon,17:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-25, Fri,16:41	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ VISENEAU DR

Traffic Control: Traffic signal **Total Collisions:** 41

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jun-02, Sat,19:10	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-17, Tue,16:09	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-10, Wed,14:05	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-12, Fri,09:45	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-21, Mon,12:30	Clear	Rear end	P.D. only	Ice	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Feb-02, Sat,13:50	Snow	Angle	P.D. only	Loose snow	East	Turning right	Passenger van	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-09, Tue,06:39	Snow	SMV other	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Ran off road	0
2019-Jul-05, Fri,23:55	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Pulling onto shoulder or toward curb	Municipal transit bus	Other motor vehicle	
2019-Jul-28, Sun,10:24	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Sep-06, Fri,14:00	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Sep-17, Tue,17:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Passenger van	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD @ VISENEAU DR

Traffic Control: Traffic signal **Total Collisions:** 41

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Sep-30, Mon,19:33	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Unknown	Other motor vehicle	
2019-Oct-01, Tue,21:35	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-27, Wed,17:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Dec-13, Fri,17:10	Clear	SMV other	Fatal injury	Dry	West	Going ahead	Automobile, station wagon	Pedestrian	1

Location: INNES RD btwn 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC & GREENVALE LANE

Traffic Control: No control **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-02, Mon,13:53	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-22, Mon,16:37	Snow	Sideswipe	P.D. only	Loose snow	East	Overtaking	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Snow plow	Other motor vehicle	

Location: INNES RD btwn GREENVALE LANE & VISENEAU DR

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Dec-21, Mon,11:07	Freezing Rain	Sideswipe	P.D. only	Ice	West	Changing lanes	Pick-up truck	Skidding/sliding	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jun-18, Sat,14:50	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Changing lanes	Passenger van	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD btwn GREENVALE LANE & VISENEAU DR

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Aug-26, Fri,17:09	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Feb-17, Sun,22:06	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: INNES RD btwn INNES RD & PAGE RD

Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-22, Thu,08:53	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-May-05, Tue,07:24	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-May-13, Wed,07:45	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-16, Thu,08:07	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Municipal transit bus	Other motor vehicle	
2015-Oct-03, Sat,15:49	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Oct-08, Thu,15:19	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Changing lanes	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD btwn INNES RD & PAGE RD

Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Nov-19, Sat,18:49	Clear	Rear end	Non-reportable	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Oct-20, Fri,06:12	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	

Location: INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC

Traffic Control: No control **Total Collisions:** 15

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-14, Wed,09:38	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-Nov-30, Mon,09:51	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-17, Wed,20:46	Clear	Angle	P.D. only	Packed snow	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Apr-20, Wed,16:58	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Sep-30, Fri,18:25	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Passenger van	Other motor vehicle	
2016-Oct-19, Wed,17:00	Clear	Angle	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-31, Tue,16:38	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2017-Feb-01, Wed,06:49	Clear	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC

Traffic Control: No control **Total Collisions:** 15

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jun-01, Thu,01:16	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-14, Tue,16:12	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Police vehicle	Other motor vehicle	
2018-Apr-26, Thu,18:06	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Making "U" turn	Automobile, station wagon	Other motor vehicle	
2018-Nov-22, Thu,14:37	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Dec-31, Mon,21:30	Snow	Angle	P.D. only	Packed snow	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-21, Sun,19:26	Clear	SMV other	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Ran off road	0
2019-Jul-10, Wed,07:15	Clear	Angle	P.D. only	Dry	South	Turning right	Truck - closed	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: INNES RD EB btwn ORLEANS BLVD & INNES RD

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Oct-05, Mon,18:56	Clear	Sideswipe	Non-fatal injury	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-07, Mon,17:05	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Mar-20, Sun,16:55	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: INNES RD EB btwn ORLEANS BLVD & INNES RD

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-05, Thu,09:44	Clear	Sideswipe	P.D. only	Wet	West	Merging	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	

Location: INNES RD WB btwn ORLEANS BLVD & INNES RD

Traffic Control: No control **Total Collisions:** 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-19, Tue,18:20	Snow	Rear end	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Changing lanes	Pick-up truck	Other motor vehicle	
2016-May-21, Sat,16:15	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Dec-04, Sun,06:02	Clear	SMV other	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Ran off road	0
2019-Jan-21, Mon,16:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-05, Tue,16:38	Snow	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS

Traffic Control: No control **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jan-25, Sat,17:00	Snow	SMV other	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Snowbank/drift	0
2020-Apr-20, Mon,19:59	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	
2020-Jul-06, Mon,07:05	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Motorcycle	Skidding/sliding	0

Location: INNES RD @ 473 E OF PAGE RD/BUILDERS' WAREHOUS

Traffic Control: Traffic signal **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jan-10, Fri,11:00	Clear	Rear end	P.D. only	Dry	West	Unknown	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-23, Thu,12:57	Clear	SMV other	Non-fatal injury	Wet	South	Turning left	Pick-up truck	Pedestrian	1

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Feb-15, Sat,09:29	Clear	Rear end	P.D. only	Slush	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Feb-25, Tue,11:45	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Jun-15, Mon,13:05	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2020-Jun-18, Thu,08:52	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Fire vehicle	Other motor vehicle	0
					East	Turning left	Municipal transit bus	Other motor vehicle	
2020-Aug-25, Tue,10:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Oct-02, Fri,10:55	Rain	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2020-Nov-22, Sun,17:45	Snow	SMV other	P.D. only	Ice	South	Turning right	Automobile, station wagon	Skidding/sliding	0

Location: INNES RD @ PAGE RD

Traffic Control: Traffic signal **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Feb-08, Sat,16:29	Clear	Angle	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2020-May-13, Wed,00:13	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: INNES RD @ VISENEAU DR

Traffic Control: Traffic signal **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Feb-24, Mon,15:46	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jul-06, Mon,17:55	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Other school vehicle/bus	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Dec-30, Wed,21:39	Snow	Other	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	

Location: INNES RD btwn GREENVALE LANE & VISENEAU DR

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

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

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: INNES RD btwn GREENVALE LANE & VISENEAU DR

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Nov-08, Sun,13:24	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	

Location: INNES RD btwn INNES RD & PAGE RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Sep-28, Mon,18:59	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Passenger van	Other motor vehicle	

APPENDIX F

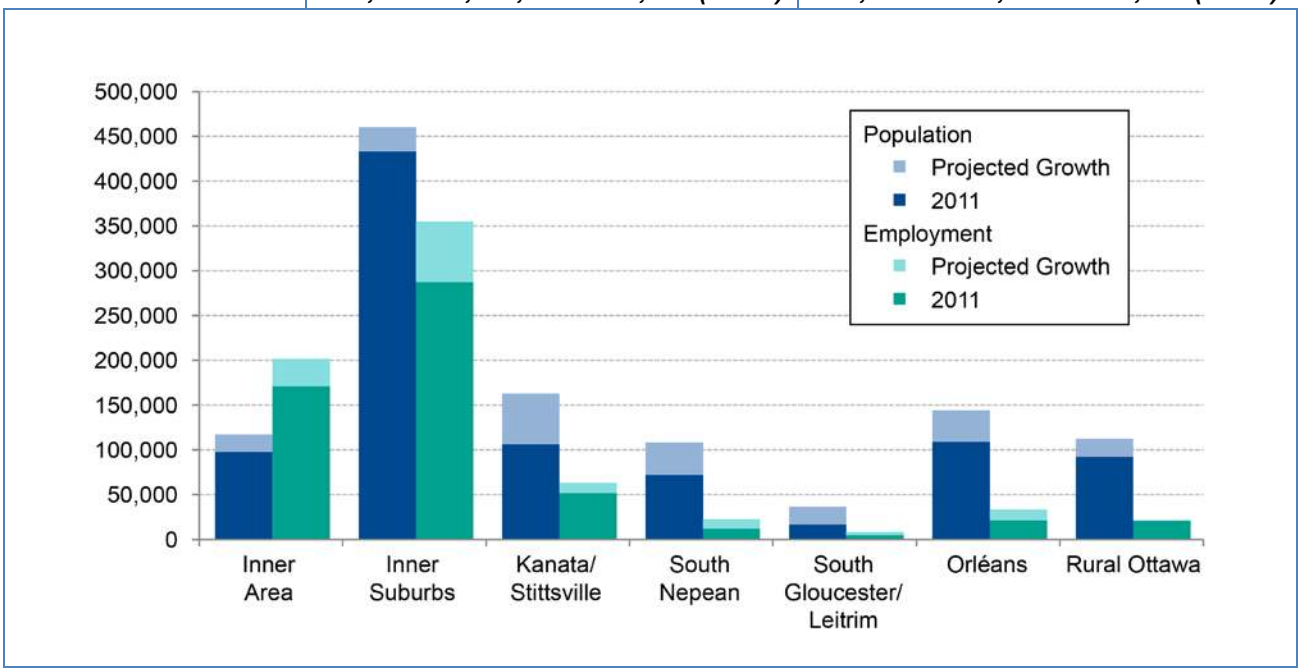
Strategic Long-Range Model Snapshots and Excerpt of 2013 TMP

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%)
Total	***922,000***	***1,135,900***	***213,900 (100%)***	***564,900***	***703,200***	***138,100 (100%)***



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Network Mapping

2011 Model - Base case

N/A

User Initials: TIMW
Plot Prepared: May 31, 2021
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 1000

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

Network Mapping

2031 Model - Base case

N/A

User Initials: TIMW
Plot Prepared: May 31, 2021
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 1000

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.

APPENDIX G

Other Area Developments

Transportation Impact Study

1 INTRODUCTION

From the information provided, a residential development consisting of approximately 534 residential units (single family homes and town homes) is being proposed on the property municipally known as 3490 Innes Road. These lands are currently zoned for employment land use, therefore a rezoning is required to develop the site as residential. The property in its entirety extends south of Innes Road for approximately 1 km and from approximately 50 to 400 m east of Pagé Road. The land is currently occupied by a golf range/mini-putt and farmland. As shown in Figure 1: Site Context, the proposed residential development is planned on the southern end of the site located approximately 325 m south of Innes Road. Future development is planned on the lands north of the planned residential community, which is not included in the analysis herein. The proposed Site Plan is provided as Figure 2.

Figure 1: Site Context

As part of the Rezoning and Draft Plan of Subdivision Application processes, the City of Ottawa requires submission of a formal Transportation Impact Assessment (TIA) consistent with their guidelines dated October 2006. With respect to these guidelines and through discussions with the City of Ottawa, a Transportation Impact Study (TIS) is considered the appropriate type of study for the subject rezoning.

The proposed development is expected to be constructed in two phases. For the purpose of this assessment, Phase 1 will consist of half of the units (approximately 267 units) and is expected to be built by 2020, and Phase 2, consisting of the remainder of units (267 units) is expected to be constructed by 2024.

Figure 6: Phase 1 'New' Site-Generated Traffic Volumes

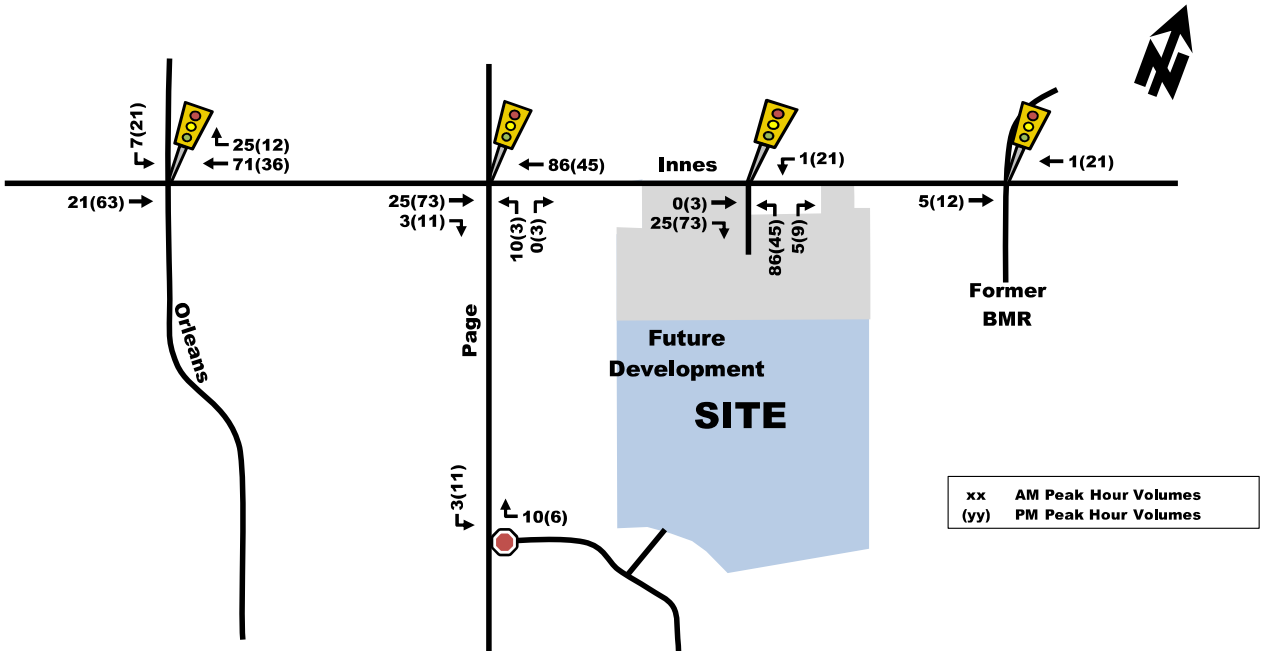
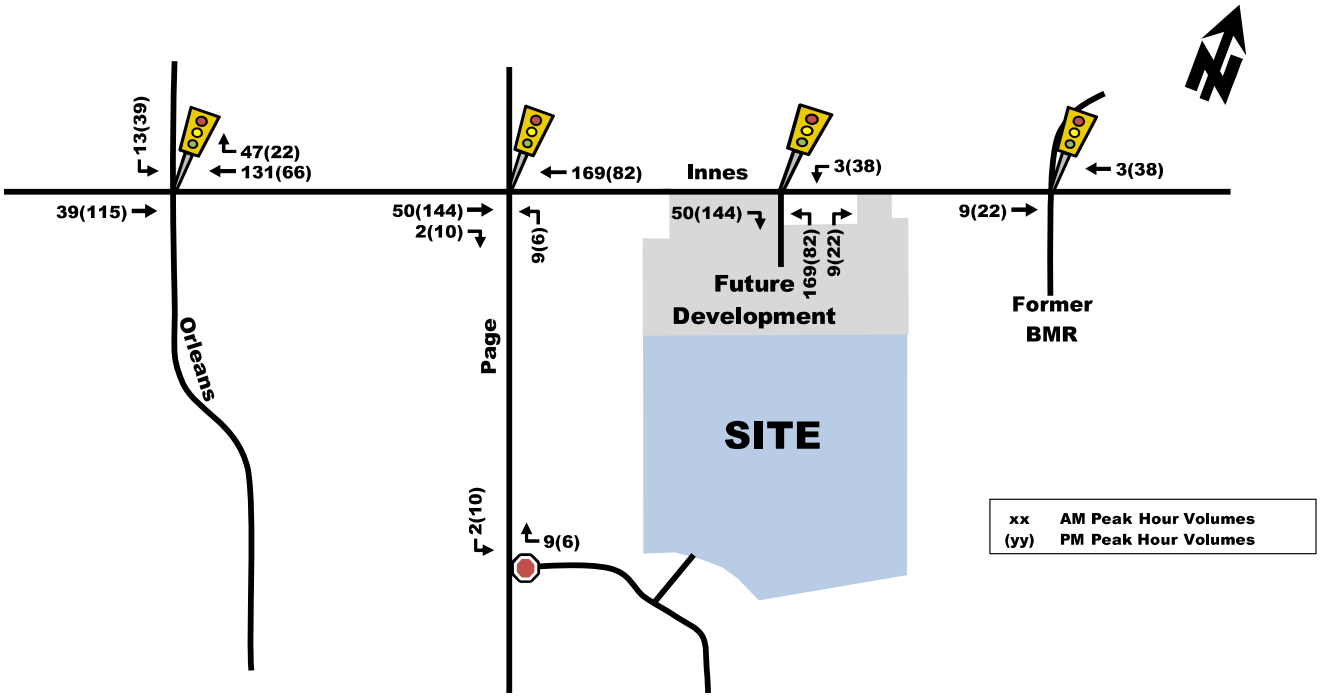


Figure 7: Phases 1 and 2 'New' Site-Generated Traffic Volumes



1 Screening

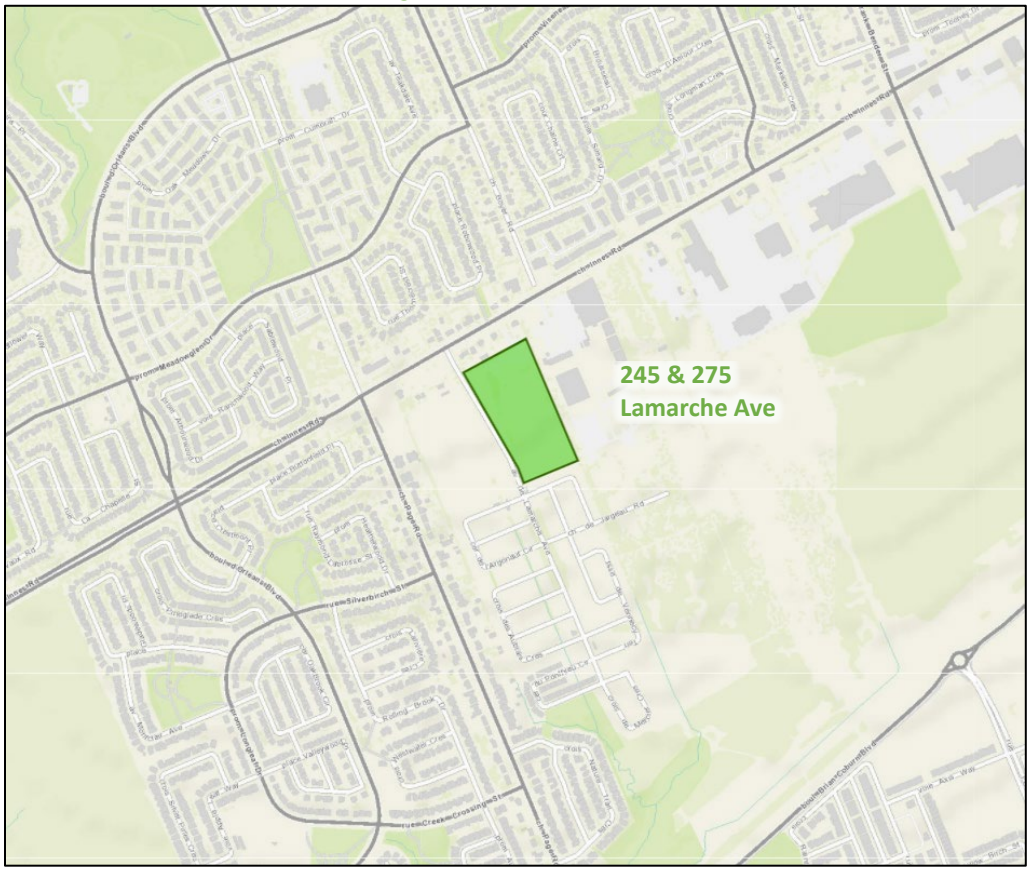
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is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

2 Existing and Planned Conditions

2.1 Proposed Development

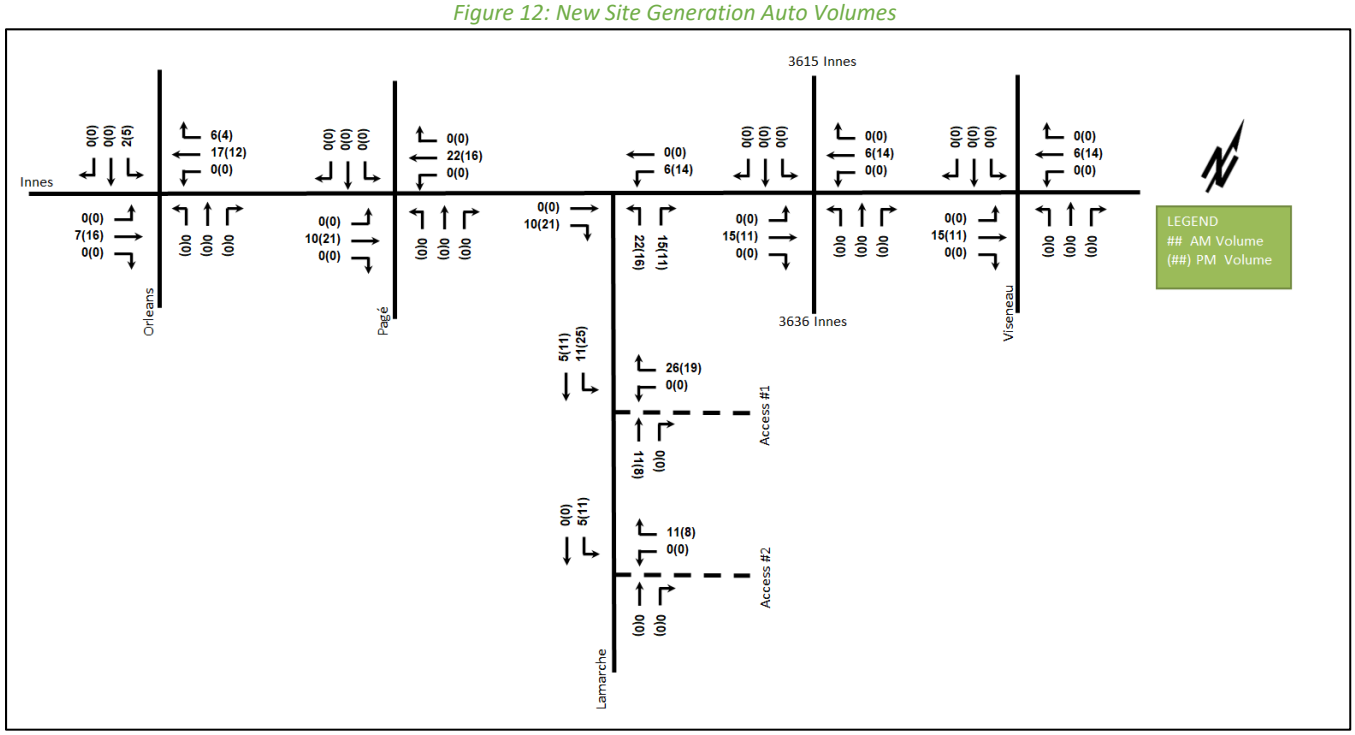
The existing site, located at 245 and 275 Lamarche Avenue, is zoned as Development Reserve (DR). The proposed development consists of 103 townhomes, 72 back-to-backs dwellings. The new development will constitute the second phase of the Orleans Village subdivision. The concept plan includes two full-movement accesses onto Lamarche Avenue. The anticipated full build-out and occupancy horizon is 2025 with construction occurring in a single phase. The site is located within the Innes Arterial Mainstreet area. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: March 21, 2022

Figure 12: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3 and no impacts on the study area traffic volumes and travel patterns are anticipated within the study horizons.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The background TRANS model growth rates are summarized in Table 11 and the TRANS model plots are provided in Appendix E.

Table 11: TRANS Regional Model Projections – Study Area Growth Rates

Street	TRANS Rate		Existing to 2031	
	Eastbound	Westbound	Eastbound	Westbound
Innes Road	-0.28%	-1.64%	-3.14%	-5.02%
	Northbound	**Southbound**	**Northbound**	**Southbound**
Orleans Boulevard	4.02%	-0.95%	0.45%	1.92%

In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be negative along Innes Road in the eastbound and westbound directions and slightly positive along Orleans Boulevard in the northbound direction. The existing volumes are noted to be exceed the TRANS 2031 model forecasts for Innes Road.

As the continued development is expected in Orleans and result in additional volumes along the area road network, beyond the developments considered in Section 6.3, it is assumed that a 1.00% growth rate will be applied to Innes Road and a 2.00% growth rate will be applied on Orleans Boulevard in peak directions. The modified growth rates have been applied to the study area network, and it is summarized in Table 12.

- Safety Triggers – The proposed access to Innes Road is within the area of influence of a signalized intersection, located within an auxiliary lane for that intersection, and makes use of an existing median break; further assessment is **required** based on this trigger.

Figure 1: View of the Subject Site

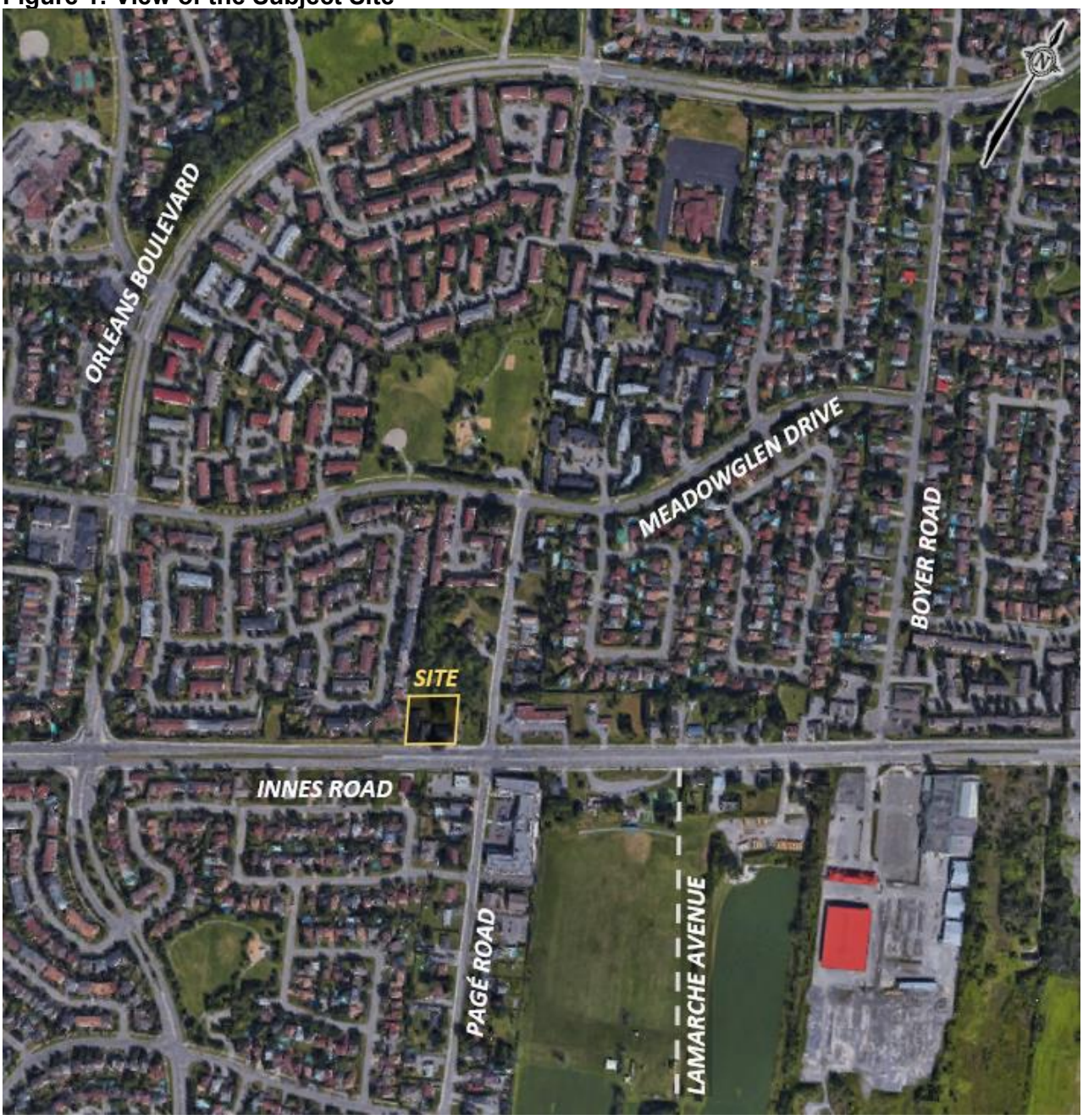


Figure 5: Balanced Existing Traffic Volumes

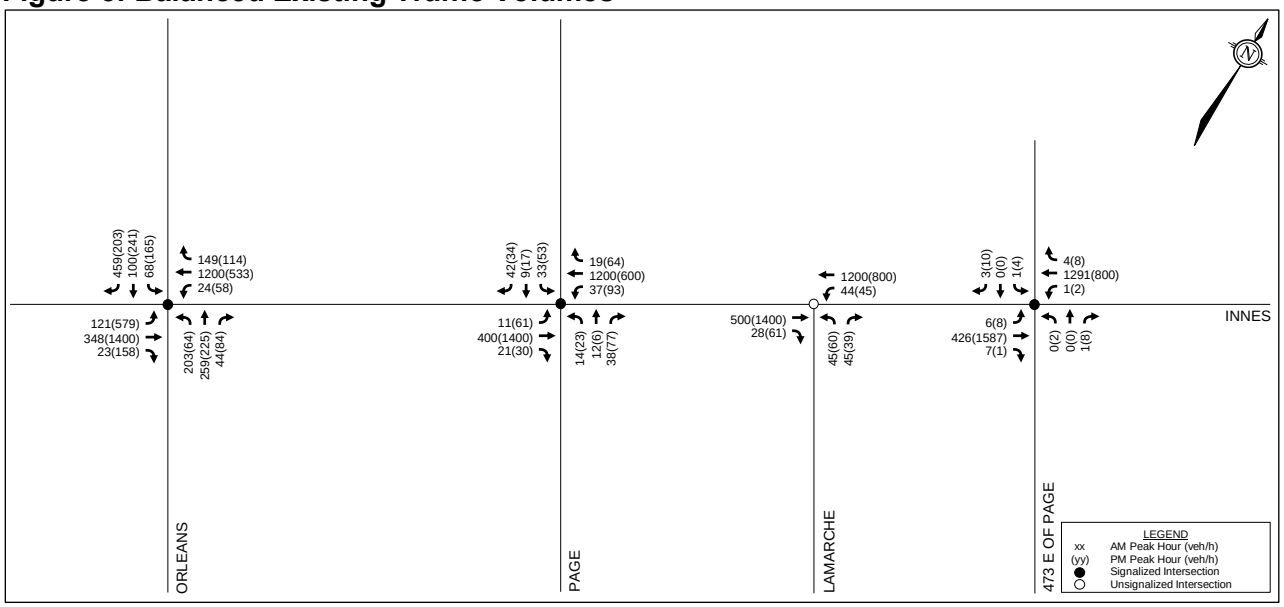
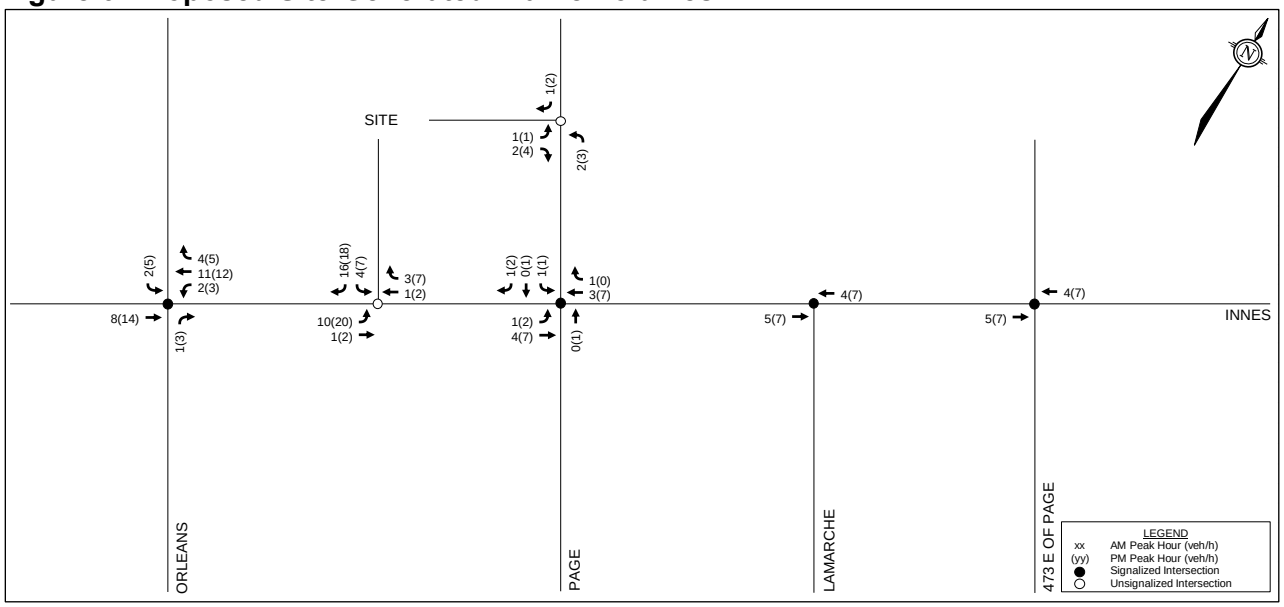


Figure 6: Proposed Site-Generated Traffic Volumes



TIA Strategy Report

Parsons has been retained by Lépine Corp. (Lépine) to prepare a Transportation Impact Assessment (TIA) in support of a Zoning By-Law Amendment (ZBLA) and Plan of Subdivision Application for a new residential focused development located at 3490 Innes Road in the Orléans Ward. This document follows the new TIA process, as outlined in the City Transportation Impact Assessment (TIA) Guidelines (2017).

The applicant previously submitted a TIA in support of a ZBLA on February 13, 2020. Since that time, Lépine has developed four (4) different development proposals that significantly reduce the scale and density to better align with the ultimate vision for the property. This report represents Step 4 – Strategy Report that details the transportation implications related to these potential development proposals by Lépine.

1. Screening Form

The screening form confirmed the need for a TIA Report based on the Trip Generation trigger, given that the proposed development consists of more than 89 residential apartment units; the Location trigger given that the development is located within a future cycling spine route, transit priority corridor with isolated measures and is within the Innes Arterial Mainstreet Design Priority Area (DPA); and the Safety trigger given that the proposed driveway is within the influence of potential future signalized intersection at Lamarche/Innes and one of the development proposals includes a drive-thru facility. The Screening Form has been provided in **Appendix A**.

2. Scoping Report

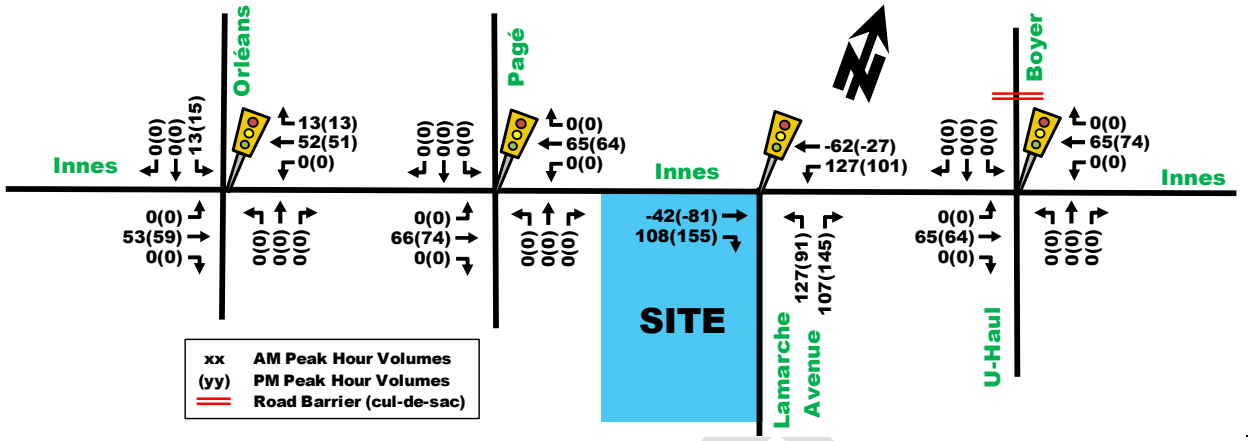
2.1. Existing and Planned Conditions

2.1.1. PROPOSED DEVELOPMENT

The proposed development is located at the municipal addresses of 3490 Innes Road, on the southwest corner of the Lamarche/Innes intersection. The site is currently occupied by small scale commercial properties, including an insurance company, food truck, mini-put facility and driving range. The proposed study area includes the intersections of Orléans/Innes, Pagé/Innes, Lamarche/Innes, Boyer/Innes and roadway segments adjacent to site or between intersections as shown in **Figure 1**. More details regarding the study area elements can be found in **Section 2.1.2**.

Figure 1: Local Context

Figure 15: 'New' Site-Generated Peak Hour Traffic



Note that negative trips reflect pass-by deviated trips

3.2. Background Network Travel Demands

3.2.1. TRANSPORTATION NETWORK PLANS

Refer to section 2.1.3 Planned Conditions – Planned Study Area Transportation Network Changes.

3.2.2. BACKGROUND GROWTH

The background traffic growth through the immediate study area, summarized in **Table 22,** was calculated based on historical traffic count data (years 2003, 2004, 2014, and 2017) provided by the City of Ottawa at the Orléans/Innes intersection. Detailed analysis of the background growth is included in **Appendix F**.

Table 22: Orléans/Innes Historical Background Growth (2003 – 2017)

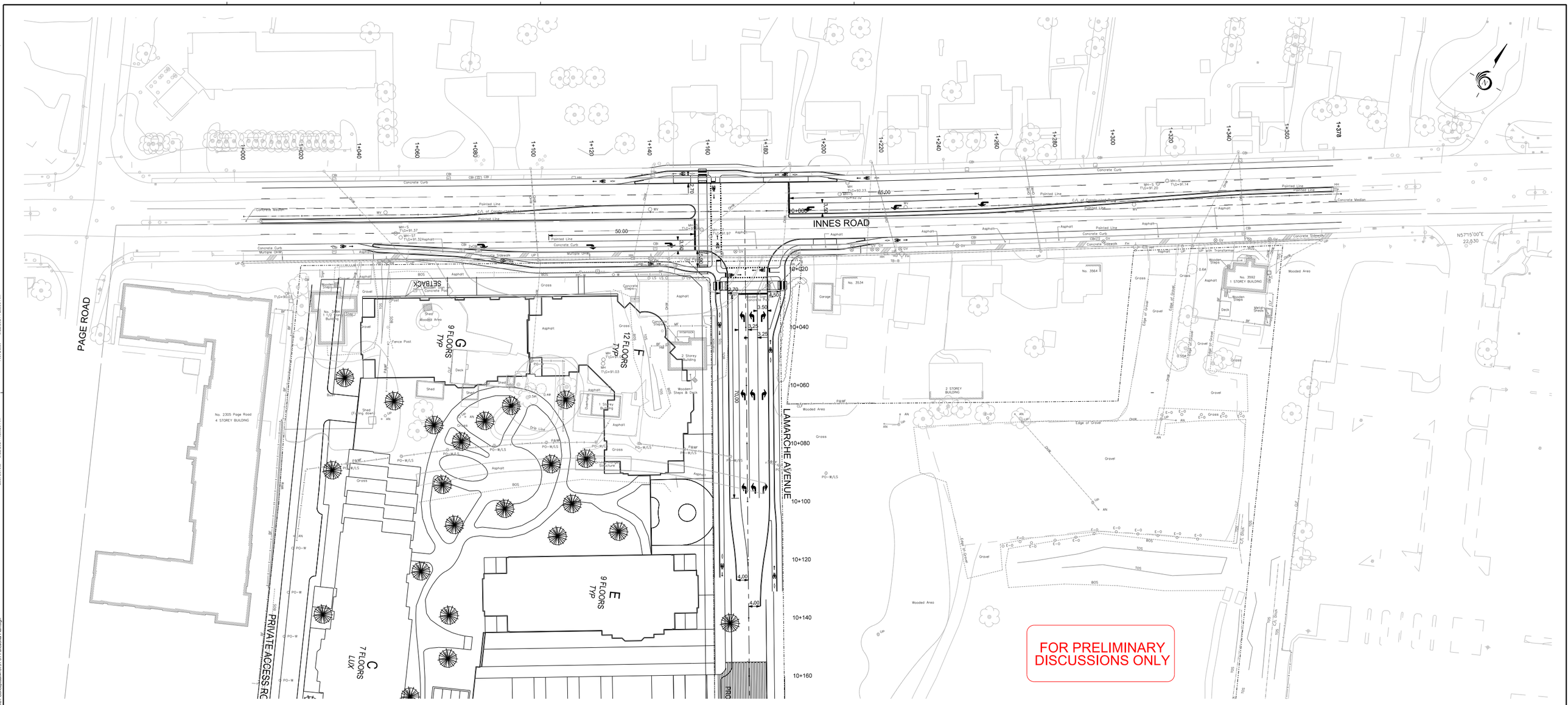
Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	1.35%	-0.20%	4.38%	2.53%	**2.70%**
AM Peak	0.69%	0.14%	3.81%	1.75%	**2.08%**
PM Peak	0.01%	-0.68%	3.45%	1.60%	**1.66%**

As shown in **Table 22,** in past years Innes Road and Orléans Boulevard has experienced an average annual growth ranging from +1.66% to +2.70%. Overall, minimal growth was observed on north-south movement and growth rates ranging from +1.6% to +4.38% were observed on Innes Road on east-west travel. These high traffic growth rates were a direct result of urban expansion along the Innes corridor towards Trim Road since 2003. Today, there are few undeveloped areas left along Innes Road to fuel significant traffic growth. The few nearby developments that are expected to contribute traffic within the study area were accounted for independently. This process is discussed in further detail in the following section.

Additionally, the City is planning to construct and has already constructed some adjacent road network connections (e.g. to Brian Coburn) and alternate mode infrastructure (e.g. transit priority measures and pedestrian/cycling facilities) to reduce the reliance and traffic pressures on Innes Road. Therefore, a 1% annual growth rate for traffic on Innes Road east-west through movement was considered appropriate to estimate future traffic growth.

3.2.3. OTHER AREA DEVELOPMENTS

Trips generated by other area developments were accounted within the study area. A summary of each development was provided in **Section 2.1.3**.



PARSONS

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

INNES ROAD AND LAMARCHE AVENUE

CONCEPTUAL INTERSECTION DESIGN

Client:	Project Number: 476731	Dwn. M.J.P.	Dwg. No. 001
	Date: June 16, 2020	Sheet 1 of 1	
	Scale: HORIZONTAL 0m 5 10 20		

Exhibit 2.1: Existing Traffic Control and Lane Configurations

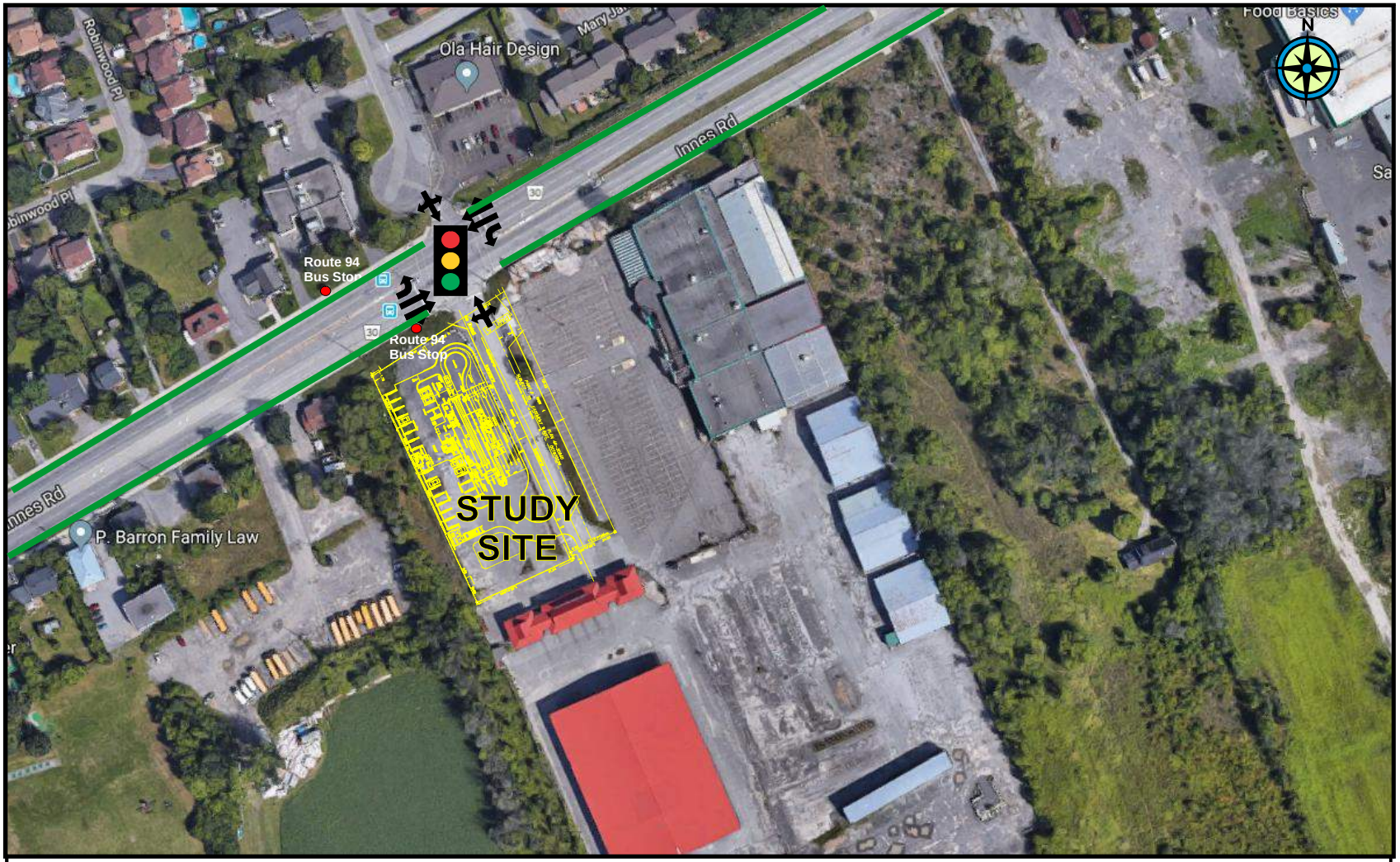


Exhibit 3.1: Site and Total Traffic Volumes

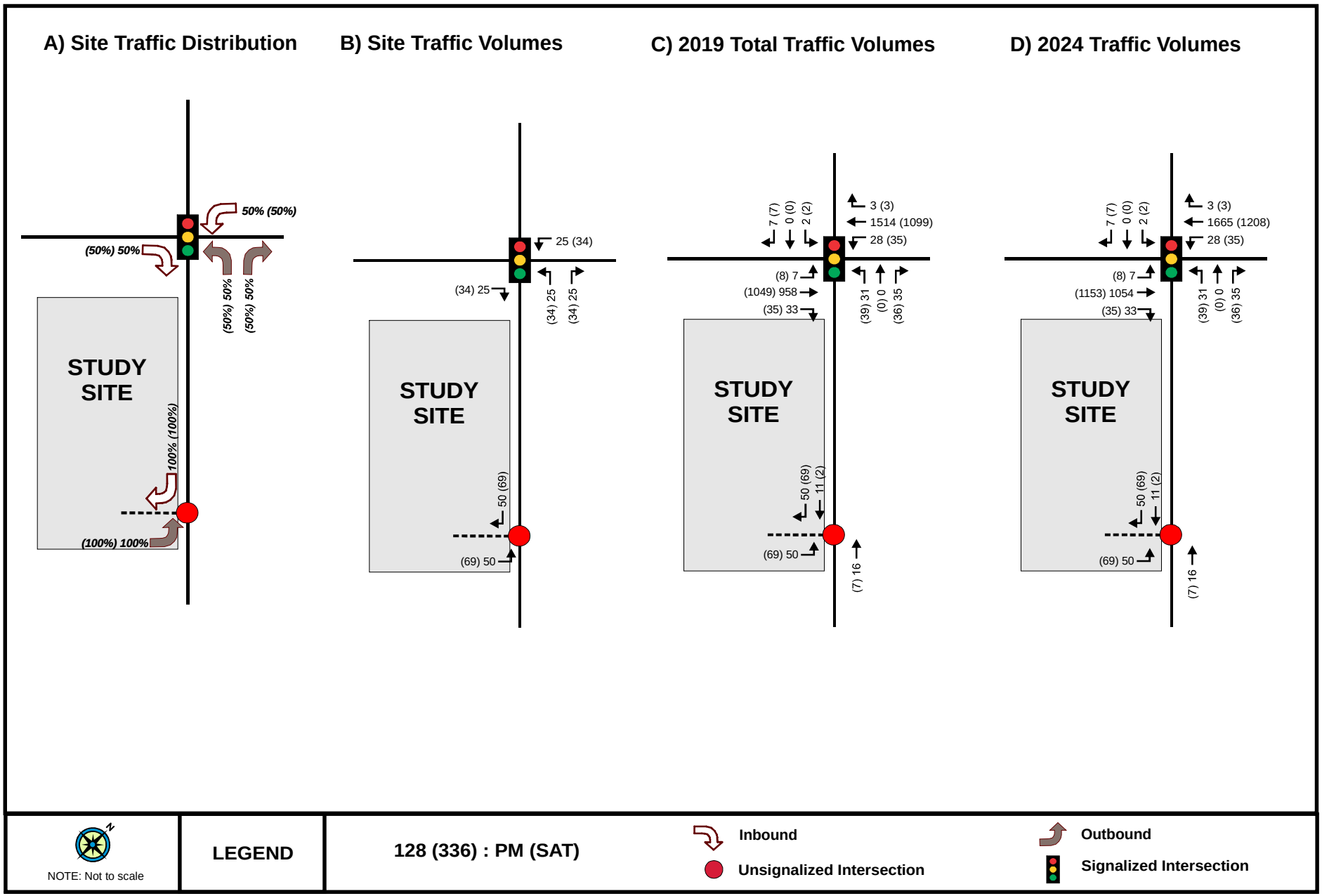


Figure 1: View of the Subject Site

In 2023 and 2028, trips to/from the east generated by the lower-density units and all trips generated by the medium-density units have all been assigned to the Innes Road/473m East of Pagé Road connection. Trips to/from the west generated by the lower-density units have been assigned to the Innes Road/Caivan Access and Innes Road/473m East of Pagé Road connections, with a majority of trips assigned to Innes Road/473m East of Pagé Road. The assumed trip assignment by 2023 and 2028 is described as follows:

Lower-Density Portion

- Innes Road/Caivan Access: 20% of trips to/from the west;
- Innes Road/473m East of Pagé Road: 100% of trips to/from the east and 80% of trips to/from the west.

Medium-Density Portion

- Innes Road/473m East of Pagé Road: 100% of trips to/from the east and west.

The EUC MTS identifies that any lands owned by Richcraft will not be developed by 2031. As such, while a connection to the future Richcraft Subdivision will be constructed, no trips have been assigned to this connection.

The EUC CDP identifies a future conceptual access from the Richcraft Subdivision to Innes Road via a right-in/right-out local connection, as well as a connection to Brian Coburn Boulevard south of the study area, via an extension of Fern Casey Boulevard. These connections are considered in the analysis of the EUC, but are not considered in the analysis of this TIA.

Trips generated by the proposed subdivision in the 2021 Phase 1 year, 2023 buildout year, and 2028 horizon year are shown in **Figure 5** and **Figure 6**.

Figure 5: 2021 Site-Generated Traffic

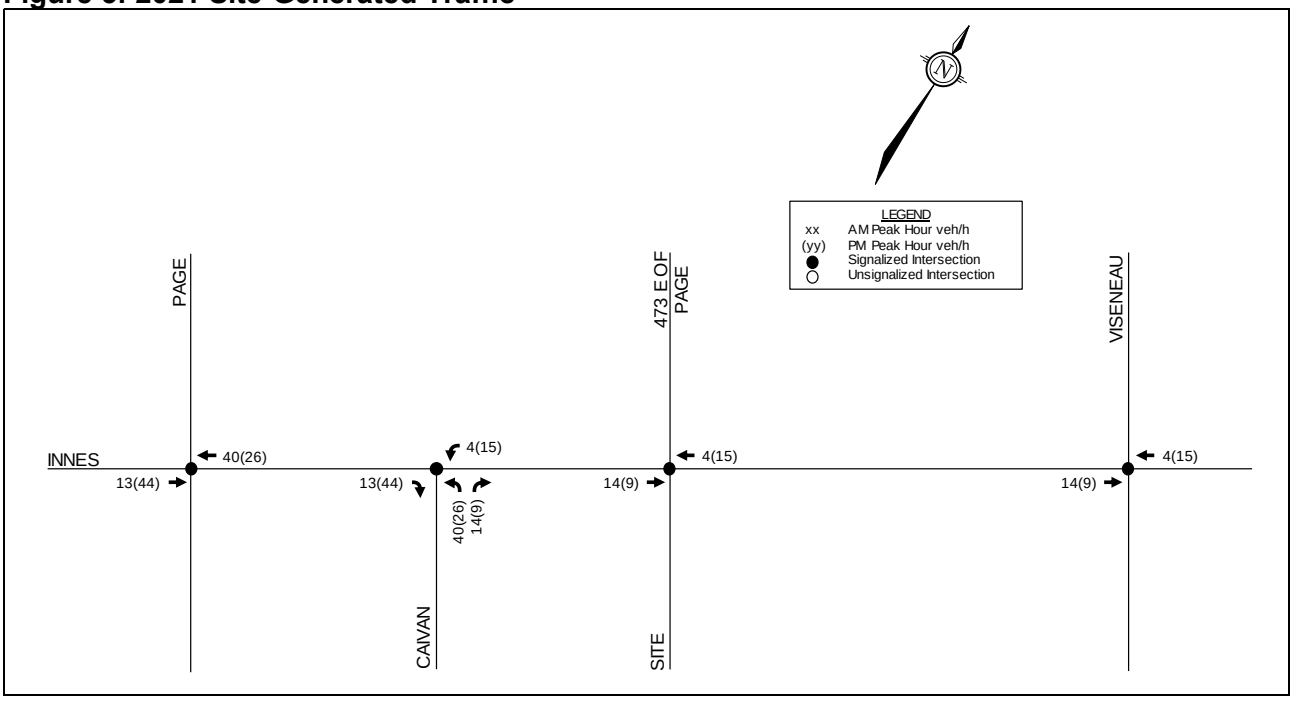
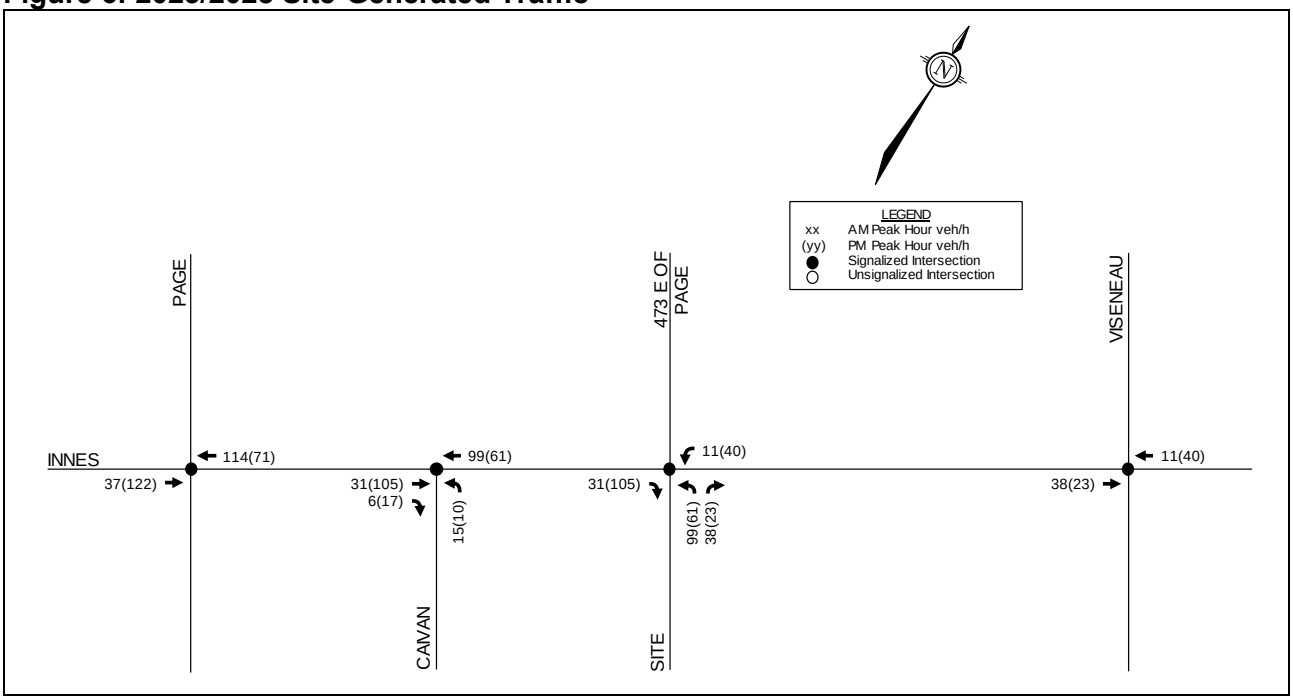


Figure 6: 2023/2028 Site-Generated Traffic



5.2 Background Traffic

5.2.1 General Background Growth Rate

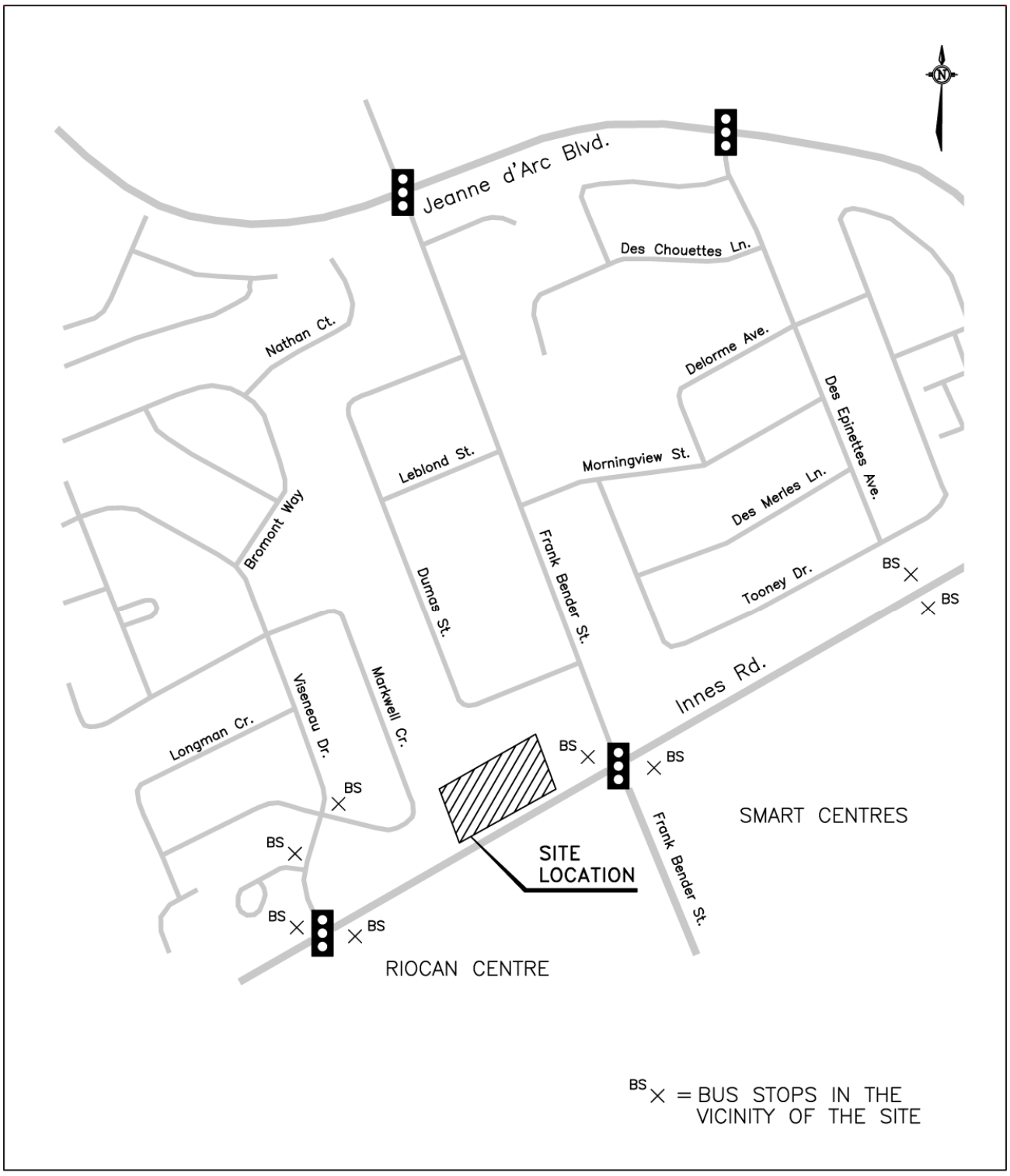
A rate of background growth has been established through a review of the City of Ottawa's 2013 Transportation Master Plan (TMP) and the City's Strategic Long Range Model (comparing snapshots of 2011 and 2031 AM peak hour volumes). Section 2.3 of the TMP projects a 33% growth in the population of the Orléans area between 2011 and 2031, which translates to an annual growth rate of approximately 1.4% per annum. The snapshots indicate traffic volume reductions on Innes Road due to the opening of Brian Coburn Boulevard, which acts as an alternate east-west arterial route. To account for potential developments in the area that are not discussed below, a 1% background growth has been applied to the eastbound and westbound through volumes on Innes Road throughout the study area.

5.2.2 Other Area Developments

Within the study area, multiple developments are anticipated or are in the approval process. The following developments will be added to the background traffic to maintain a conservative analysis. Relevant excerpts of the studies associated with the following developments are included in **Appendix F**. Trips generated by the below developments have been assigned based on the trip distributions described in their respective studies, unless otherwise noted.

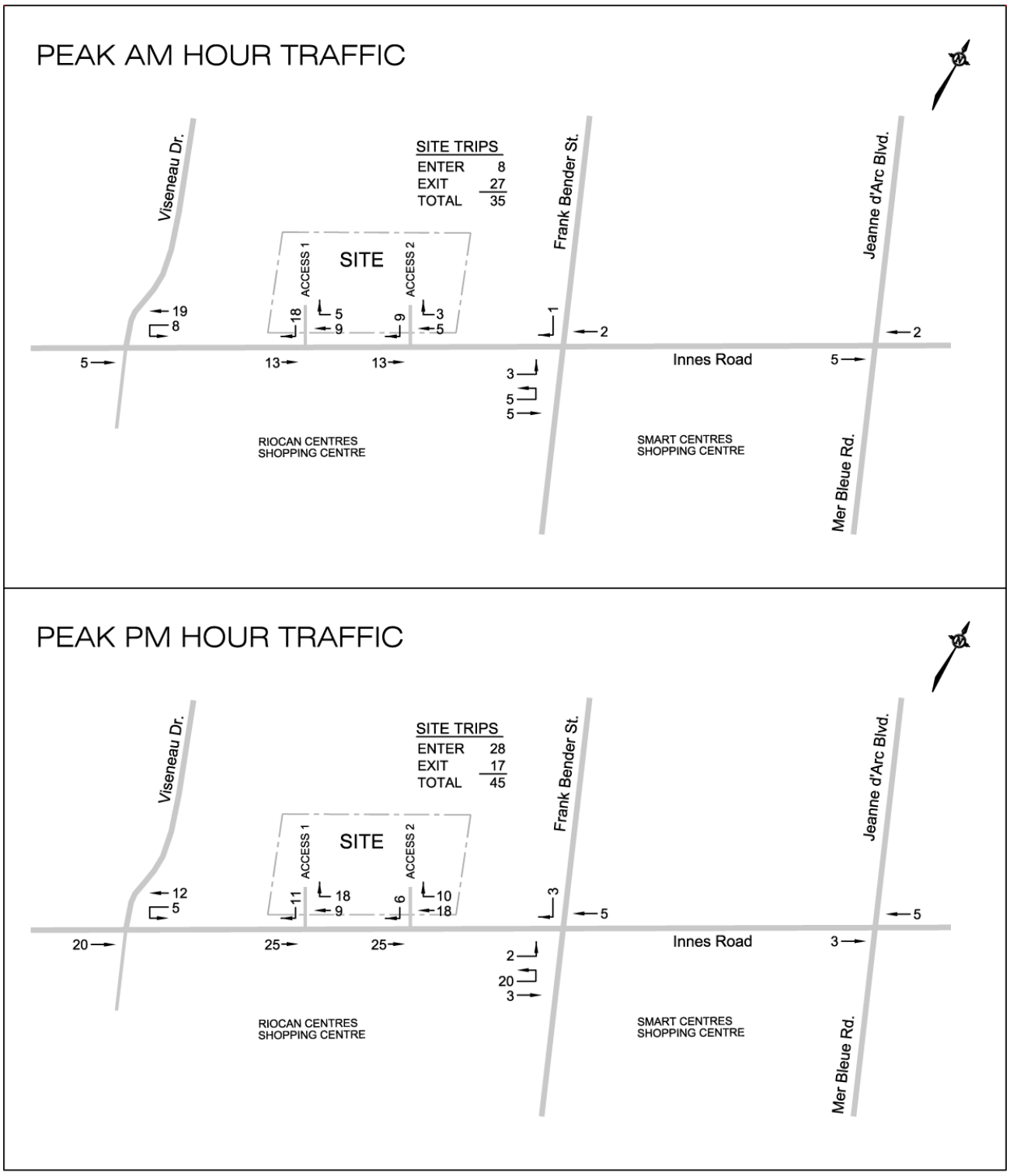
3443 Innes Road (Six-Storey Mixed-Use Building)
A TIA was prepared by Novatech in December 2017 and later revised in June 2018, in support of a six-storey mixed-use development (Site Plan Application D07-12-17-0169). The development consists of 35 residential units and ground floor commercial units. All trips generated by the development have been added to the background traffic in 2021, 2023, and 2028.

FIGURE 2.1
SITE LOCATION PLAN



NOT TO SCALE

FIGURE 3.1
PEAK AM AND PM HOUR SITE GENERATED TRIPS



APPENDIX H

Signal Timing Plans

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

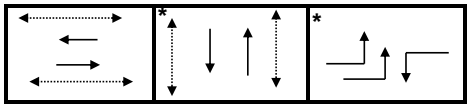
Intersection:	**Main:**	Innes	**Side:**	Orleans	
Controller:	**ATC 3**			**TSD:**	**5916**
Author:	Matthew Anderson			**Date:**	06-Jul-2021

Existing Timing Plans†

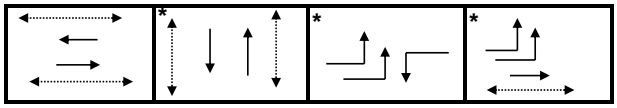
	Plan						**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	**AM Heavy** 11	***Walk***	***DW***	***A+R***
Cycle	110	90	110	80	90	130			
Offset	79	10	0	X	10	99			
EB Thru	45	42	49	29	42	65	7	13	3.7 + 2.5
WB Thru	45	39	34	29	39	65	7	13	3.7 + 2.5
NB Left	19	-	12	-	-	19	-	-	3.3 + 3.4
NB Thru	52	33	45	33	33	52	7	19	3.3 + 3.4
SB Thru	33	33	33	33	33	33	7	19	3.3 + 3.4
EB Left (fp)	13	18	31	18	18	13	-	-	3.7 + 2.9
WB Left (fp)	13	15	16	18	15	13	-	-	3.7 + 2.5

Phasing Sequence‡

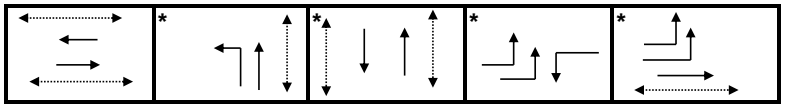
Plan: 4



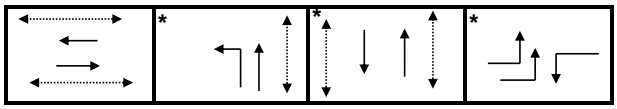
Plan: 2, 5



Plan: 3



Plan: 1, 11



Schedule

Weekday

Time	Plan
0:10	4
6:00	11
9:00	1
9:30	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:10	4
7:00	2
9:00	5
19:00	2
20:00	4

Sunday

Time	Plan
0:10	4
7:00	2
10:00	5
18:00	2
19:00	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 $59.96 ($53.06 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

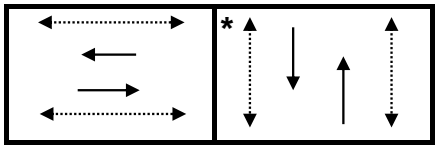
Intersection:	**Main:** Innes	**Side:**	Pagé
Controller:	**ATC3**	**TSD:**	**6676**
Author:	Matthew Anderson	**Date:**	06-Jul-2021

Existing Timing Plans†

	Plan						Ped Minimum Time		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	**AM Rush** 11	***Walk***	***DW***	***A+R***
Cycle	110	90	110	80	90	120			
Offset	26	43	2	X	43	26			
EB Thru	72	52	72	42	52	82	15	18	3.7 + 2.5
WB Thru	72	52	72	42	52	82	15	18	3.7 + 2.5
NB Thru	38	38	38	38	38	38	7	24	3.0 + 3.8
SB Thru	38	38	38	38	38	38	7	24	3.0 + 3.8

Phasing Sequence‡

Plan: All



Schedule

Weekday

Time	Plan
0:10	4
6:00	11
9:00	1
9:30	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:10	4
7:00	2
9:00	5
19:00	2
20:00	4

Sunday

Time	Plan
0:10	4
7:00	2
10:00	5
18:00	2
19:00	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 $59.96 ($53.06 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

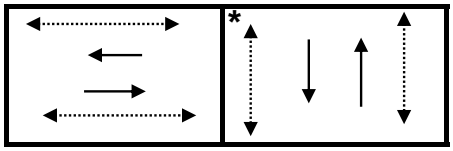
Intersection:	**Main:**	Innes	**Side:**	Boyer/Builders Warehouse	
Controller:	**MS-3200**			**TSD:**	**6370**
Author:	Jon Pach			**Date:**	05-Dec-2018

Existing Timing Plans†

	Plan						**Ped Minimum Time**		
	AM Peak	**Off Peak**	**PM Peak**	**Night**	**Weekend**	**AM Rush**	***Walk***	***DW***	***A+R***
	1	2	3	4	5	11			
Cycle	110	90	110	70	90	120			
Offset	0	43	36	X	43	0			
EB Thru	77	57	77	37	57	87	12	14	3.7 + 2.4
WB Thru	77	57	77	37	57	87	12	14	3.7 + 2.4
NB Thru	33	33	33	33	33	33	7	19	3.3 + 3.0
SB Thru	33	33	33	33	33	33	7	19	3.3 + 3.0

Phasing Sequence‡

Plan: All



Schedule

Weekday

Time	Plan
0:10	4
6:00	11
9:00	1
9:30	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:10	4
7:00	2
9:00	5
20:00	2
22:00	4

Sunday

Time	Plan
0:10	4
7:00	2
10:00	5
19:00	2
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

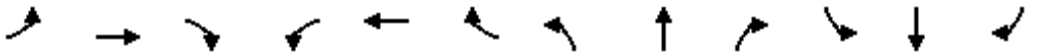
(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $56.50 ($50 + HST)

APPENDIX I

Existing Synchro Analysis



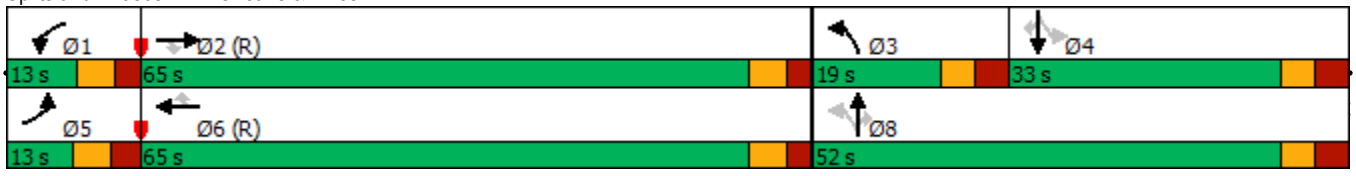
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	348	23	24	1200	149	203	259	44	68	100	459
Future Volume (vph)	121	348	23	24	1200	149	203	259	44	68	100	459
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.98		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.543			0.575		
Satd. Flow (perm)	2986	3144	1416	1547	3357	1462	972	3357	1413	983	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			155
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	134	387	26	27	1333	166	226	288	49	76	111	510
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	387	26	27	1333	166	226	288	49	76	111	510
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

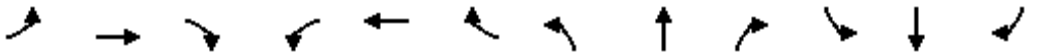
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	65.0	65.0	13.0	65.0	65.0	19.0	52.0	52.0	33.0	33.0	33.0
Total Split (%)	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%	14.6%	40.0%	40.0%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	58.8	58.8	6.8	58.8	58.8	12.3	45.3	45.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	6.4	64.0	64.0	6.5	58.8	58.8	45.3	45.3	45.3	26.3	26.3	26.3
Actuated g/C Ratio	0.05	0.49	0.49	0.05	0.45	0.45	0.35	0.35	0.35	0.20	0.20	0.20
v/c Ratio	0.91	0.25	0.03	0.35	0.88	0.22	0.55	0.25	0.09	0.38	0.16	1.19
Control Delay	114.9	20.6	0.1	71.8	40.3	5.5	38.0	30.9	1.9	51.5	43.5	139.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.9	20.6	0.1	71.8	40.3	5.5	38.0	30.9	1.9	51.5	43.5	139.2
LOS	F	C	A	E	D	A	D	C	A	D	D	F
Approach Delay		42.8			37.1			31.2			114.4	
Approach LOS		D			D			C			F	
Queue Length 50th (m)	16.5	29.4	0.0	6.3	147.5	3.0	39.9	25.3	0.0	15.6	11.4	~114.7
Queue Length 95th (m)	#34.6	39.7	0.0	15.5	177.6	14.6	60.2	35.7	2.6	30.0	19.2	#176.9
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	147	1548	769	82	1518	739	408	1169	545	198	680	427
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.25	0.03	0.33	0.88	0.22	0.55	0.25	0.09	0.38	0.16	1.19

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 53.2 Intersection LOS: D
Intersection Capacity Utilization 93.9% 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: Orleans & Innes





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	400	21	37	1200	19	14	12	38	33	9	42
Future Volume (vph)	11	400	21	37	1200	19	14	12	38	33	9	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	35.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00			0.99			0.99	
Frt		0.993			0.998			0.920			0.932	
Flt Protected	0.950			0.950				0.989			0.981	
Satd. Flow (prot)	1586	3124	0	1503	3348	0	0	1569	0	0	1596	0
Flt Permitted	0.168			0.484				0.915			0.862	
Satd. Flow (perm)	280	3124	0	761	3348	0	0	1448	0	0	1402	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			2			42			41	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		491.4			236.7			212.5			273.4	
Travel Time (s)		29.5			14.2			19.1			24.6	
Confl. Peds. (#/hr)	4		7	7		4	11					11
Confl. Bikes (#/hr)			1						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 (%)	9%	10%	5%	15%	3%	5%	1%	15%	3%	1%	10%	3%
Adj. Flow (vph)	12	444	23	41	1333	21	16	13	42	37	10	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	467	0	41	1354	0	0	71	0	0	94	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			5.0			5.0	
Two way Left Turn Lane					Yes							
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	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0		18.6	93.0	
Trailing Detector (m)	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	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5		18.6	5.5	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	39.2	39.2		39.2	39.2		37.8	37.8		37.8	37.8	
Total Split (s)	82.0	82.0		82.0	82.0		38.0	38.0		38.0	38.0	
Total Split (%)	68.3%	68.3%		68.3%	68.3%		31.7%	31.7%		31.7%	31.7%	
Maximum Green (s)	75.8	75.8		75.8	75.8		31.2	31.2		31.2	31.2	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.8	3.8		3.8	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.8			6.8	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	7	7		4	4		1	1		11	11	
Act Effct Green (s)	88.6	88.6		88.6	88.6			18.4			18.4	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.15			0.15	
v/c Ratio	0.06	0.20		0.07	0.55			0.28			0.38	
Control Delay	8.3	6.2		4.6	6.7			21.4			28.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	8.3	6.2		4.6	6.7			21.4			28.3	
LOS	A	A		A	A			C			C	
Approach Delay		6.3			6.6			21.4			28.3	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.4	9.3		1.5	39.5			6.0			11.1	
Queue Length 95th (m)	3.3	28.2		1.6	14.2			15.5			21.7	
Internal Link Dist (m)		467.4			212.7			188.5			249.4	
Turn Bay Length (m)	100.0			100.0								
Base Capacity (vph)	206	2308		561	2472			407			394	
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	0.06	0.20		0.07	0.55			0.17			0.24	

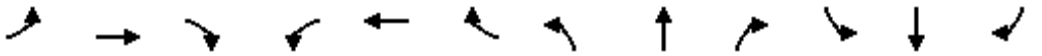
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 61.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Page & Innes

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	500	28	44	1200	45	45
Future Volume (vph)	500	28	44	1200	45	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	30.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			20.0		20.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.932	
Flt Protected			0.950		0.976	
Satd. Flow (prot)	3330	0	1679	3357	1607	0
Flt Permitted			0.950		0.976	
Satd. Flow (perm)	3330	0	1679	3357	1607	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	236.7			238.7	204.5	
Travel Time (s)	14.2			14.3	14.7	
Confl. Peds. (#/hr)		11	11			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	556	31	49	1333	50	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	587	0	49	1333	100	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	L NA	R NA
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	9.0			9.0	9.0	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	426	7	1	1291	4	0	0	1	1	0	3
Future Volume (vph)	6	426	7	1	1291	4	0	0	1	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00				0.99		0.99	
Frt		0.998							0.850		0.899	
Flt Protected	0.950			0.950							0.988	
Satd. Flow (prot)	1712	3137	0	1712	3357	0	0	1802	1532	0	1583	0
Flt Permitted	0.173			0.477							0.914	
Satd. Flow (perm)	311	3137	0	860	3357	0	0	1802	1511	0	1464	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3							442		28	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)	7					7	2		1	1		2
Confl. Bikes (#/hr)						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 (%)	1%	10%	10%	1%	3%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	7	473	8	1	1434	4	0	0	1	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	481	0	1	1438	0	0	0	1	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
Two way Left Turn Lane		Yes										
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA				Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	80.9	80.9		80.9	80.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	1	1		7	7		1	1	1	2	2	
Act Effct Green (s)	112.3	112.3		112.3	112.3				13.2		13.2	
Actuated g/C Ratio	0.94	0.94		0.94	0.94				0.11		0.11	
v/c Ratio	0.02	0.16		0.00	0.46				0.00		0.02	
Control Delay	3.7	1.9		4.0	3.4				0.0		0.2	
Queue Delay	0.0	0.0		0.0	0.0				0.0		0.0	
Total Delay	3.7	1.9		4.0	3.4				0.0		0.2	
LOS	A	A		A	A				A		A	
Approach Delay		1.9			3.4						0.3	
Approach LOS		A			A						A	
Queue Length 50th (m)	0.0	0.0		0.0	0.0				0.0		0.0	
Queue Length 95th (m)	1.7	22.4		0.6	101.7				0.0		0.0	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	30.0			40.0								
Base Capacity (vph)	291	2936		805	3142				679		347	
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	0.02	0.16		0.00	0.46				0.00		0.01	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 3.1 Intersection LOS: A
Intersection Capacity Utilization 57.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: 473 E of Page & Innes

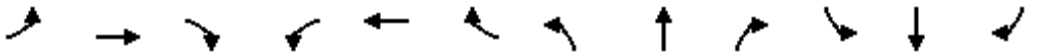
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	348	23	24	1200	149	203	259	44	68	100	319
Future Volume (vph)	111	348	23	24	1200	149	203	259	44	68	100	319
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.98		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.530			0.575		
Satd. Flow (perm)	2986	3144	1416	1547	3357	1462	949	3357	1413	983	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			154
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	123	387	26	27	1333	166	226	288	49	76	111	354
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	387	26	27	1333	166	226	288	49	76	111	354
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	65.0	65.0	13.0	65.0	65.0	19.0	52.0	52.0	33.0	33.0	33.0
Total Split (%)	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%	14.6%	40.0%	40.0%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	58.8	58.8	6.8	58.8	58.8	12.3	45.3	45.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	7.4	66.9	66.9	6.5	60.8	60.8	42.4	42.4	42.4	23.4	23.4	23.4
Actuated g/C Ratio	0.06	0.51	0.51	0.05	0.47	0.47	0.33	0.33	0.33	0.18	0.18	0.18
v/c Ratio	0.73	0.24	0.03	0.35	0.85	0.22	0.59	0.26	0.10	0.43	0.18	0.89
Control Delay	84.3	19.7	0.1	71.8	37.6	5.5	40.7	32.4	2.0	54.3	44.8	54.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.3	19.7	0.1	71.8	37.6	5.5	40.7	32.4	2.0	54.3	44.8	54.1
LOS	F	B	A	E	D	A	D	C	A	D	D	D
Approach Delay		33.6			34.7			33.1			52.3	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	15.1	29.4	0.0	6.3	147.5	3.0	39.9	25.3	0.0	15.6	11.4	47.4
Queue Length 95th (m)	#31.1	39.7	0.0	15.5	177.6	14.6	60.2	35.7	2.6	30.0	19.2	#92.7
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	169	1619	798	82	1569	759	381	1169	545	198	679	426
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.24	0.03	0.33	0.85	0.22	0.59	0.25	0.09	0.38	0.16	0.83

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 37.2 Intersection LOS: D
Intersection Capacity Utilization 86.4% 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: Orleans & Innes



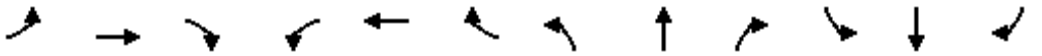
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1400	158	58	533	114	64	225	84	165	241	203
Future Volume (vph)	579	1400	158	58	533	114	64	225	84	165	241	203
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	1.00		0.97	0.99		0.97	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.447			0.597		
Satd. Flow (perm)	3261	3357	1456	1705	3293	1477	796	3390	1479	1058	3390	1485
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165			230			159			226
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	643	1556	176	64	592	127	71	250	93	183	268	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	643	1556	176	64	592	127	71	250	93	183	268	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	31.0	49.0	49.0	16.0	34.0	34.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	28.2%	44.5%	44.5%	14.5%	30.9%	30.9%	10.9%	40.9%	40.9%	30.0%	30.0%	30.0%
Maximum Green (s)	24.4	42.8	42.8	9.8	27.8	27.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	23.9	51.0	51.0	8.6	32.9	32.9	33.7	33.7	33.7	24.1	24.1	24.1
Actuated g/C Ratio	0.22	0.46	0.46	0.08	0.30	0.30	0.31	0.31	0.31	0.22	0.22	0.22
v/c Ratio	0.90	1.00	0.23	0.48	0.60	0.21	0.25	0.24	0.17	0.79	0.36	0.45
Control Delay	58.9	55.6	4.9	56.3	47.0	10.0	27.3	27.9	0.9	64.6	37.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	55.6	4.9	56.3	47.0	10.0	27.3	27.9	0.9	64.6	37.3	7.6
LOS	E	E	A	E	D	B	C	C	A	E	D	A
Approach Delay		52.7			41.8			21.8			34.8	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	63.8	~195.0	1.3	12.5	44.9	0.0	9.5	18.1	0.0	33.5	23.1	0.0
Queue Length 95th (m)	#91.2	#234.6	13.6	26.3	82.3	21.8	18.7	27.0	0.9	#62.9	34.0	16.9
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	732	1557	763	152	985	603	288	1180	618	252	810	527
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	1.00	0.23	0.42	0.60	0.21	0.25	0.21	0.15	0.73	0.33	0.43

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 44.8 Intersection LOS: D
Intersection Capacity Utilization 90.5% ICU Level of Service E
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: Orleans & Innes



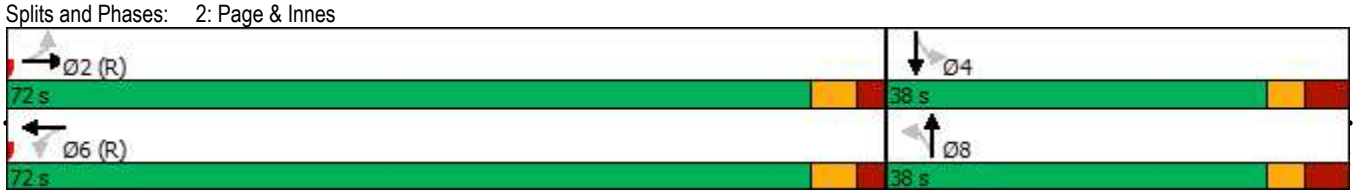
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	1400	30	93	600	64	23	6	77	53	17	34
Future Volume (vph)	61	1400	30	93	600	64	23	6	77	53	17	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	35.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.98			0.99	
Frt		0.997			0.986			0.902			0.956	
Flt Protected	0.950			0.950				0.989			0.975	
Satd. Flow (prot)	1695	3375	0	1695	3245	0	0	1542	0	0	1579	0
Flt Permitted	0.359			0.114				0.917			0.765	
Satd. Flow (perm)	637	3375	0	203	3245	0	0	1428	0	0	1232	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			18			32			22	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		491.4			236.7			212.5			273.4	
Travel Time (s)		29.5			14.2			19.1			24.6	
Confl. Peds. (#/hr)	9		5	5		9	5		13	13		5
Confl. Bikes (#/hr)			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%	2%	6%	2%	5%	2%	5%	1%	3%	6%	1%	11%
Adj. Flow (vph)	68	1556	33	103	667	71	26	7	86	59	19	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	1589	0	103	738	0	0	119	0	0	116	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			5.0			5.0	
Two way Left Turn Lane					Yes							
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	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0		18.6	93.0	
Trailing Detector (m)	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	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5		18.6	5.5	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	39.2	39.2		39.2	39.2		37.8	37.8		37.8	37.8	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	65.8	65.8		65.8	65.8		31.2	31.2		31.2	31.2	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.8	3.8		3.8	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.8			6.8	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	5	5		9	9		13	13		5	5	
Act Effct Green (s)	77.8	77.8		77.8	77.8			19.2			19.2	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.17			0.17	
v/c Ratio	0.15	0.67		0.72	0.32			0.43			0.50	
Control Delay	2.6	4.9		52.7	11.5			31.5			37.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	2.6	4.9		52.7	11.5			31.5			37.8	
LOS	A	A		D	B			C			D	
Approach Delay		4.8			16.5			31.5			37.8	
Approach LOS		A			B			C			D	
Queue Length 50th (m)	1.2	18.6		8.2	19.4			16.3			18.0	
Queue Length 95th (m)	m1.9	m21.8		#46.9	82.0			27.3			28.9	
Internal Link Dist (m)		467.4			212.7			188.5			249.4	
Turn Bay Length (m)	100.0			100.0								
Base Capacity (vph)	450	2386		143	2299			427			365	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.15	0.67		0.72	0.32			0.28			0.32	

Intersection Summary

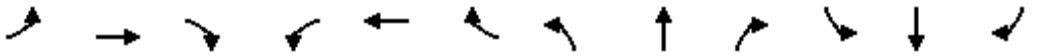
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 11.0 Intersection LOS: B
Intersection Capacity Utilization 81.2% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1400	61	45	800	60	39
Future Volume (vph)	1400	61	45	800	60	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	30.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			20.0		20.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.947	
Flt Protected			0.950		0.970	
Satd. Flow (prot)	3337	0	1679	3357	1623	0
Flt Permitted			0.950		0.970	
Satd. Flow (perm)	3337	0	1679	3357	1623	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	236.7			238.7	204.5	
Travel Time (s)	14.2			14.3	14.7	
Confl. Peds. (#/hr)		6	6			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1556	68	50	889	67	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1624	0	50	889	110	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	L NA	R NA
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	9.0			9.0	9.0	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			



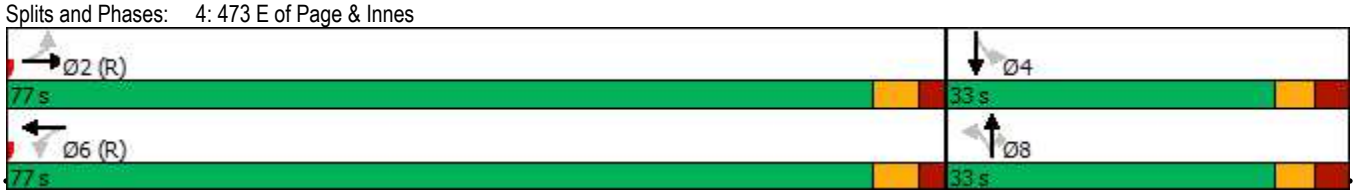
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1587	1	2	824	8	2	0	8	4	0	10
Future Volume (vph)	8	1587	1	2	824	8	2	0	8	4	0	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00			0.99	
Frt					0.999				0.850		0.901	
Flt Protected	0.950			0.950				0.950			0.987	
Satd. Flow (prot)	1712	3390	0	1712	3323	0	0	1712	1381	0	1584	0
Flt Permitted	0.305			0.111				0.748			0.908	
Satd. Flow (perm)	550	3390	0	200	3323	0	0	1343	1381	0	1457	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2				31		31	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)			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 (%)	1%	2%	1%	1%	4%	1%	1%	1%	12%	1%	1%	1%
Adj. Flow (vph)	9	1763	1	2	916	9	2	0	9	4	0	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1764	0	2	925	0	0	2	9	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
Two way Left Turn Lane		Yes										
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%	30.0%	30.0%	30.0%	
Maximum Green (s)	70.9	70.9		70.9	70.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	2	2		1	1		1	1	1	3	3	
Act Effct Green (s)	97.8	97.8		97.8	97.8			13.2	13.2		13.2	
Actuated g/C Ratio	0.89	0.89		0.89	0.89			0.12	0.12		0.12	
v/c Ratio	0.02	0.59		0.01	0.31			0.01	0.05		0.07	
Control Delay	1.8	2.7		5.0	3.5			38.0	0.5		5.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	1.8	2.7		5.0	3.5			38.0	0.5		5.1	
LOS	A	A		A	A			D	A		A	
Approach Delay		2.7			3.5			7.3			5.1	
Approach LOS		A			A			A			A	
Queue Length 50th (m)	0.0	0.0		0.0	0.0			0.4	0.0		0.0	
Queue Length 95th (m)	m0.3	44.4		1.0	53.7			2.2	0.3		2.3	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	30.0			40.0								
Base Capacity (vph)	489	3015		178	2956			325	358		377	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.02	0.59		0.01	0.31			0.01	0.03		0.04	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 36 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 3.0 Intersection LOS: A
Intersection Capacity Utilization 79.9% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1260	158	58	533	114	64	225	84	165	241	203
Future Volume (vph)	579	1260	158	58	533	114	64	225	84	165	241	203
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.97	0.99		0.97	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.447			0.597		
Satd. Flow (perm)	3261	3357	1456	1703	3293	1477	796	3390	1479	1058	3390	1485
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165			230			159			226
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	643	1400	176	64	592	127	71	250	93	183	268	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	643	1400	176	64	592	127	71	250	93	183	268	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	31.0	49.0	49.0	16.0	34.0	34.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	28.2%	44.5%	44.5%	14.5%	30.9%	30.9%	10.9%	40.9%	40.9%	30.0%	30.0%	30.0%
Maximum Green (s)	24.4	42.8	42.8	9.8	27.8	27.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	23.9	51.0	51.0	8.6	32.9	32.9	33.7	33.7	33.7	24.1	24.1	24.1
Actuated g/C Ratio	0.22	0.46	0.46	0.08	0.30	0.30	0.31	0.31	0.31	0.22	0.22	0.22
v/c Ratio	0.90	0.90	0.23	0.48	0.60	0.21	0.25	0.24	0.17	0.79	0.36	0.45
Control Delay	58.9	39.7	4.9	56.3	47.0	10.0	27.3	27.9	0.9	64.6	37.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	39.7	4.9	56.3	47.0	10.0	27.3	27.9	0.9	64.6	37.3	7.6
LOS	E	D	A	E	D	B	C	C	A	E	D	A
Approach Delay		42.5			41.8			21.8			34.8	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	63.8	~161.1	1.3	12.5	44.9	0.0	9.5	18.1	0.0	33.5	23.1	0.0
Queue Length 95th (m)	#91.2	#200.5	13.6	26.3	82.3	21.8	18.7	27.0	0.9	#62.9	34.0	16.9
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	732	1557	763	152	985	603	288	1180	618	252	810	527
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.90	0.23	0.42	0.60	0.21	0.25	0.21	0.15	0.73	0.33	0.43

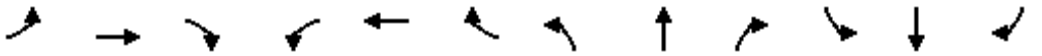
Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 39.0 Intersection LOS: D
Intersection Capacity Utilization 86.4% ICU Level of Service E
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: Orleans & Innes

APPENDIX J

Background Synchro Analysis



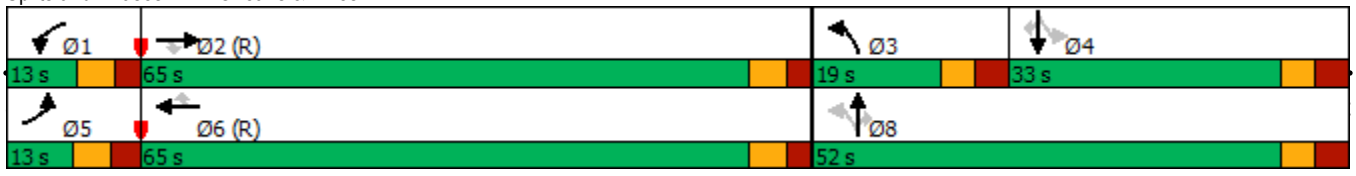
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	455	24	27	1489	197	209	267	53	80	103	473
Future Volume (vph)	125	455	24	27	1489	197	209	267	53	80	103	473
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.548			0.587		
Satd. Flow (perm)	2987	3144	1416	1549	3357	1462	981	3357	1413	1003	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			155
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	125	455	24	27	1489	197	209	267	53	80	103	473
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	455	24	27	1489	197	209	267	53	80	103	473
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

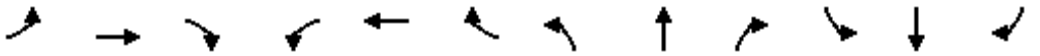
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	65.0	65.0	13.0	65.0	65.0	19.0	52.0	52.0	33.0	33.0	33.0
Total Split (%)	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%	14.6%	40.0%	40.0%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	58.8	58.8	6.8	58.8	58.8	12.3	45.3	45.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	6.4	64.0	64.0	6.5	58.8	58.8	45.3	45.3	45.3	26.5	26.5	26.5
Actuated g/C Ratio	0.05	0.49	0.49	0.05	0.45	0.45	0.35	0.35	0.35	0.20	0.20	0.20
v/c Ratio	0.85	0.29	0.03	0.35	0.98	0.27	0.51	0.23	0.10	0.39	0.15	1.10
Control Delay	103.8	21.2	0.1	71.9	54.2	7.6	36.7	30.6	2.5	51.6	43.3	106.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.8	21.2	0.1	71.9	54.2	7.6	36.7	30.6	2.5	51.6	43.3	106.5
LOS	F	C	A	E	D	A	D	C	A	D	D	F
Approach Delay		37.5			49.1			30.2			89.9	
Approach LOS		D			D			C			F	
Queue Length 50th (m)	15.3	35.5	0.0	6.3	178.5	7.1	36.4	23.3	0.0	16.5	10.6	~96.3
Queue Length 95th (m)	#31.9	47.0	0.0	15.5	#227.5	20.7	55.9	33.1	3.4	31.2	18.1	#157.0
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	147	1548	769	82	1518	739	411	1169	545	204	684	429
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.29	0.03	0.33	0.98	0.27	0.51	0.23	0.10	0.39	0.15	1.10

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 51.9 Intersection LOS: D
Intersection Capacity Utilization 103.6% 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: Orleans & Innes





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	520	21	37	1521	20	14	12	38	34	9	43
Future Volume (vph)	12	520	21	37	1521	20	14	12	38	34	9	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	35.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00			0.99			0.99	
Frt		0.994			0.998			0.920			0.932	
Flt Protected	0.950			0.950				0.989			0.981	
Satd. Flow (prot)	1586	3126	0	1503	3349	0	0	1568	0	0	1596	0
Flt Permitted	0.130			0.450				0.922			0.851	
Satd. Flow (perm)	217	3126	0	708	3349	0	0	1458	0	0	1384	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			38			41	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		491.4			236.7			212.5			273.4	
Travel Time (s)		29.5			14.2			19.1			24.6	
Confl. Peds. (#/hr)	4		7	7		4	11					11
Confl. Bikes (#/hr)			1						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 (%)	9%	10%	5%	15%	3%	5%	1%	15%	3%	1%	10%	3%
Adj. Flow (vph)	12	520	21	37	1521	20	14	12	38	34	9	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	541	0	37	1541	0	0	64	0	0	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			5.0			5.0	
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	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0		18.6	93.0	
Trailing Detector (m)	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	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5		18.6	5.5	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	39.2	39.2		39.2	39.2		37.8	37.8		37.8	37.8	
Total Split (s)	82.0	82.0		82.0	82.0		38.0	38.0		38.0	38.0	
Total Split (%)	68.3%	68.3%		68.3%	68.3%		31.7%	31.7%		31.7%	31.7%	
Maximum Green (s)	75.8	75.8		75.8	75.8		31.2	31.2		31.2	31.2	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.8	3.8		3.8	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.8			6.8	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	7	7		4	4		1	1		11	11	
Act Effct Green (s)	88.6	88.6		88.6	88.6			18.4			18.4	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.15			0.15	
v/c Ratio	0.07	0.23		0.07	0.62			0.25			0.35	
Control Delay	8.9	6.5		1.1	2.4			21.2			26.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	8.9	6.5		1.1	2.4			21.2			26.5	
LOS	A	A		A	A			C			C	
Approach Delay		6.5			2.3			21.2			26.5	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.4	11.2		0.9	20.4			5.4			9.4	
Queue Length 95th (m)	3.5	33.2		m0.6	19.7			14.4			19.8	
Internal Link Dist (m)		467.4			212.7			188.5			249.4	
Turn Bay Length (m)	100.0			100.0								
Base Capacity (vph)	160	2310		522	2473			407			390	
Starvation Cap Reductn	0	0		0	25			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.07	0.23		0.07	0.63			0.16			0.22	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 4.8 Intersection LOS: A
Intersection Capacity Utilization 70.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes

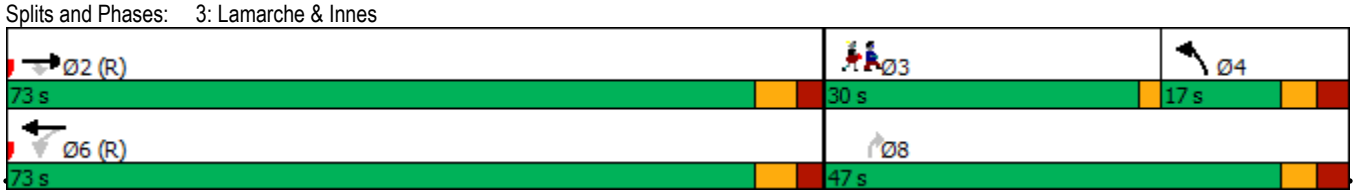
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	556	68	52	1358	164	64	
Future Volume (vph)	556	68	52	1358	164	64	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.95	0.99				
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.432		0.950		
Satd. Flow (perm)	3357	1433	755	3357	1679	1502	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		68				64	
Link Speed (k/h)	60			60	50		
Link Distance (m)	236.7			238.7	204.5		
Travel Time (s)	14.2			14.3	14.7		
Confl. Peds. (#/hr)		11	11				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	556	68	52	1358	164	64	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	556	68	52	1358	164	64	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	3.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	37.3	30.0
Total Split (s)	73.0	73.0	73.0	73.0	17.0	47.0	30.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	14.2%	39.2%	25%
Maximum Green (s)	66.8	66.8	66.8	66.8	10.7	40.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	78.8	78.8	78.8	78.8	16.7	28.7	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.14	0.24	
v/c Ratio	0.25	0.07	0.11	0.62	0.70	0.16	
Control Delay	8.2	1.8	6.2	10.9	67.5	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	8.2	1.8	6.2	10.9	67.5	7.5	
LOS	A	A	A	B	E	A	
Approach Delay	7.5			10.8	50.6		
Approach LOS	A			B	D		
Queue Length 50th (m)	16.0	0.0	1.6	22.0	33.1	0.0	
Queue Length 95th (m)	26.8	2.4	m4.1	140.4	#79.5	8.6	
Internal Link Dist (m)	212.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	2203	963	495	2203	233	551	
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	0.25	0.07	0.11	0.62	0.70	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 13.9 Intersection LOS: B
Intersection Capacity Utilization 59.6% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	513	38	12	1405	4	99	0	39	1	0	3
Future Volume (vph)	6	513	38	12	1405	4	99	0	39	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00			1.00	0.99		0.99	
Frt		0.990							0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1712	3112	0	1712	3357	0	0	1712	1532	0	1583	0
Flt Permitted	0.162			0.446				0.755			0.942	
Satd. Flow (perm)	292	3112	0	804	3357	0	0	1357	1511	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14							39		28	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)	7					7	2		1	1		2
Confl. Bikes (#/hr)						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 (%)	1%	10%	10%	1%	3%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	6	513	38	12	1405	4	99	0	39	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	551	0	12	1409	0	0	99	39	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	80.9	80.9		80.9	80.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	1	1		7	7		1	1	1	2	2	
Act Effct Green (s)	92.0	92.0		92.0	92.0			15.6	15.6		15.6	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.13	0.13		0.13	
v/c Ratio	0.03	0.23		0.02	0.55			0.56	0.17		0.02	
Control Delay	4.3	3.6		4.9	7.4			59.7	14.0		0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	4.3	3.6		4.9	7.4			59.7	14.0		0.2	
LOS	A	A		A	A			E	B		A	
Approach Delay		3.6			7.3			46.8			0.3	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.2	10.7		0.5	51.0			20.8	0.0		0.0	
Queue Length 95th (m)	m1.0	15.6		2.6	98.2			33.3	8.3		0.0	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	223	2387		615	2572			301	366		357	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.03	0.23		0.02	0.55			0.33	0.11		0.01	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 8.9 Intersection LOS: A
Intersection Capacity Utilization 64.2% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	455	24	27	1489	197	209	267	53	80	103	343
Future Volume (vph)	125	455	24	27	1489	197	209	267	53	80	103	343
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.535			0.587		
Satd. Flow (perm)	2987	3144	1416	1549	3357	1463	958	3357	1413	1003	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			138
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	125	455	24	27	1489	197	209	267	53	80	103	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	455	24	27	1489	197	209	267	53	80	103	343
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	72.0	72.0	13.0	72.0	72.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	10.0%	55.4%	55.4%	10.0%	55.4%	55.4%	9.2%	34.6%	34.6%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	65.8	65.8	6.8	65.8	65.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	7.3	73.7	73.7	6.5	67.6	67.6	35.6	35.6	35.6	23.6	23.6	23.6
Actuated g/C Ratio	0.06	0.57	0.57	0.05	0.52	0.52	0.27	0.27	0.27	0.18	0.18	0.18
v/c Ratio	0.74	0.26	0.03	0.35	0.85	0.24	0.72	0.29	0.12	0.44	0.17	0.89
Control Delay	86.0	16.2	0.0	71.9	33.5	6.1	55.0	37.5	3.0	54.5	44.5	55.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.0	16.2	0.0	71.9	33.5	6.1	55.0	37.5	3.0	54.5	44.5	55.9
LOS	F	B	A	E	C	A	E	D	A	D	D	E
Approach Delay		30.0			30.9			41.0			53.5	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	15.3	31.6	0.0	6.3	159.3	6.4	39.7	25.4	0.0	16.5	10.6	48.4
Queue Length 95th (m)	#31.9	42.0	0.0	15.5	191.2	18.2	60.8	36.1	3.7	31.2	18.1	#93.2
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	168	1783	865	82	1745	829	292	989	474	202	679	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.26	0.03	0.33	0.85	0.24	0.72	0.27	0.11	0.40	0.15	0.83

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 35.9 Intersection LOS: D
Intersection Capacity Utilization 95.1% 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: Orleans & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	596	1737	163	63	756	151	66	232	105	198	248	209
Future Volume (vph)	596	1737	163	63	756	151	66	232	105	198	248	209
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	1.00		0.97	0.99		0.97	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.469			0.607		
Satd. Flow (perm)	3266	3357	1456	1706	3293	1477	835	3390	1479	1076	3390	1485
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			165			230			159			225
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	596	1737	163	63	756	151	66	232	105	198	248	209
Shared Lane Traffic (%)												
Lane Group Flow (vph)	596	1737	163	63	756	151	66	232	105	198	248	209
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	31.0	49.0	49.0	16.0	34.0	34.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	28.2%	44.5%	44.5%	14.5%	30.9%	30.9%	10.9%	40.9%	40.9%	30.0%	30.0%	30.0%
Maximum Green (s)	24.4	42.8	42.8	9.8	27.8	27.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	23.1	50.9	50.9	8.5	33.5	33.5	33.9	33.9	33.9	24.3	24.3	24.3
Actuated g/C Ratio	0.21	0.46	0.46	0.08	0.30	0.30	0.31	0.31	0.31	0.22	0.22	0.22
v/c Ratio	0.86	1.12	0.21	0.48	0.75	0.25	0.22	0.22	0.19	0.84	0.33	0.42
Control Delay	55.5	94.0	4.1	51.6	49.6	11.2	26.7	27.6	1.7	69.2	36.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	94.0	4.1	51.6	49.6	11.2	26.7	27.6	1.7	69.2	36.8	6.3
LOS	E	F	A	D	D	B	C	C	A	E	D	A
Approach Delay		78.9			43.7			20.7			36.9	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	58.0	~233.9	0.0	10.8	63.5	1.6	8.8	16.7	0.0	36.7	21.3	0.0
Queue Length 95th (m)	#80.4	#274.1	11.4	26.5	#111.7	20.5	17.7	25.2	2.9	#69.4	31.6	13.8
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	729	1552	762	152	1003	610	299	1180	618	257	810	526
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	1.12	0.21	0.41	0.75	0.25	0.22	0.20	0.17	0.77	0.31	0.40

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 60.1 Intersection LOS: E
Intersection Capacity Utilization 102.3% 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: Orleans & Innes

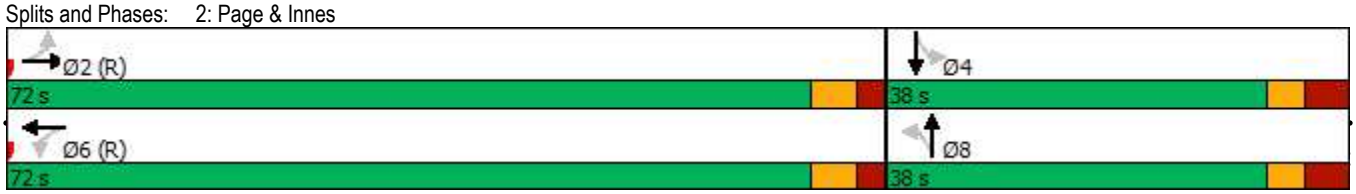
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	1768	30	93	849	64	23	7	77	54	18	36
Future Volume (vph)	63	1768	30	93	849	64	23	7	77	54	18	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	35.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			1.00			0.98			0.99	
Frt		0.997			0.989			0.903			0.955	
Flt Protected	0.950			0.950				0.989			0.976	
Satd. Flow (prot)	1695	3376	0	1695	3256	0	0	1544	0	0	1579	0
Flt Permitted	0.291			0.080				0.918			0.790	
Satd. Flow (perm)	517	3376	0	143	3256	0	0	1431	0	0	1270	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13			19			23	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		491.4			236.7			212.5			273.4	
Travel Time (s)		29.5			14.2			19.1			24.6	
Confl. Peds. (#/hr)	9		5	5		9	5		13	13		5
Confl. Bikes (#/hr)			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%	2%	6%	2%	5%	2%	5%	1%	3%	6%	1%	11%
Adj. Flow (vph)	63	1768	30	93	849	64	23	7	77	54	18	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	1798	0	93	913	0	0	107	0	0	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			5.0			5.0	
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	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0		18.6	93.0	
Trailing Detector (m)	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	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5		18.6	5.5	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	39.2	39.2		39.2	39.2		37.8	37.8		37.8	37.8	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	65.8	65.8		65.8	65.8		31.2	31.2		31.2	31.2	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.8	3.8		3.8	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.8			6.8	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	5	5		9	9		13	13		5	5	
Act Effct Green (s)	78.1	78.1		78.1	78.1			18.9			18.9	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.17			0.17	
v/c Ratio	0.17	0.75		0.92	0.39			0.41			0.46	
Control Delay	2.3	7.8		93.5	8.2			35.0			35.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	2.3	7.8		93.5	8.2			35.0			35.4	
LOS	A	A		F	A			D			D	
Approach Delay		7.6			16.1			35.0			35.4	
Approach LOS		A			B			D			D	
Queue Length 50th (m)	1.0	27.7		7.9	18.8			16.7			16.2	
Queue Length 95th (m)	m1.5	m21.8		#49.8	53.8			26.6			26.6	
Internal Link Dist (m)		467.4			212.7			188.5			249.4	
Turn Bay Length (m)	100.0			100.0								
Base Capacity (vph)	366	2396		101	2314			419			376	
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	0.75		0.92	0.39			0.26			0.29	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 12.3 Intersection LOS: B
Intersection Capacity Utilization 92.2% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes



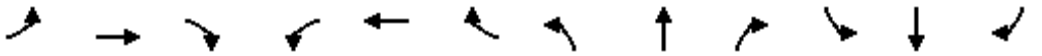
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	1600	169	76	929	126	60	
Future Volume (vph)	1600	169	76	929	126	60	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.97					
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.101		0.950		
Satd. Flow (perm)	3357	1452	178	3357	1679	1502	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		122				22	
Link Speed (k/h)	60			60	50		
Link Distance (m)	236.7			238.7	204.5		
Travel Time (s)	14.2			14.3	14.7		
Confl. Peds. (#/hr)		6	6				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	1600	169	76	929	126	60	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1600	169	76	929	126	60	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	3.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	37.3	30.0
Total Split (s)	68.0	68.0	68.0	68.0	12.0	42.0	30.0
Total Split (%)	61.8%	61.8%	61.8%	61.8%	10.9%	38.2%	27%
Maximum Green (s)	61.8	61.8	61.8	61.8	5.7	35.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	74.8	74.8	74.8	74.8	16.7	22.7	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.15	0.21	
v/c Ratio	0.70	0.16	0.63	0.41	0.49	0.18	
Control Delay	5.9	0.5	37.6	7.6	53.0	24.9	
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.0	0.5	37.6	7.6	53.0	24.9	
LOS	A	A	D	A	D	C	
Approach Delay	5.5			9.9	43.9		
Approach LOS	A			A	D		
Queue Length 50th (m)	29.6	0.1	5.1	28.1	22.9	6.6	
Queue Length 95th (m)	74.1	m0.0	#38.2	47.8	#68.3	13.9	
Internal Link Dist (m)	212.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	2282	1026	121	2282	255	502	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	50	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.72	0.16	0.63	0.41	0.49	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 22 (20%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 9.4 Intersection LOS: A
Intersection Capacity Utilization 78.0% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes



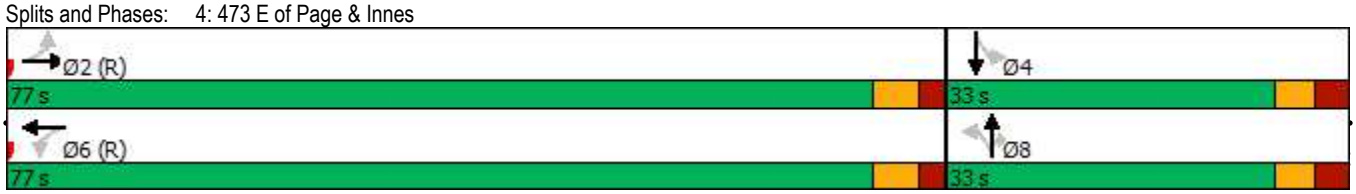
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1723	131	67	944	8	88	0	56	4	0	10
Future Volume (vph)	8	1723	131	67	944	8	88	0	56	4	0	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00			0.99	
Frt		0.989			0.999				0.850		0.904	
Flt Protected	0.950			0.950				0.950			0.986	
Satd. Flow (prot)	1712	3349	0	1712	3322	0	0	1712	1381	0	1588	0
Flt Permitted	0.288			0.087				0.748			0.911	
Satd. Flow (perm)	519	3349	0	157	3322	0	0	1343	1381	0	1467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			1				31		31	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)			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 (%)	1%	2%	1%	1%	4%	1%	1%	1%	12%	1%	1%	1%
Adj. Flow (vph)	8	1723	131	67	944	8	88	0	56	4	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1854	0	67	952	0	0	88	56	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	77.0	77.0		77.0	77.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%	30.0%	30.0%	30.0%	
Maximum Green (s)	70.9	70.9		70.9	70.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	2	2		1	1		1	1	1	3	3	
Act Effct Green (s)	87.4	87.4		87.4	87.4			14.7	14.7		14.7	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.13	0.13		0.13	
v/c Ratio	0.02	0.70		0.54	0.36			0.49	0.27		0.06	
Control Delay	1.1	3.3		29.6	5.4			51.9	24.4		4.4	
Queue Delay	0.0	0.2		0.0	0.0			0.0	0.0		0.0	
Total Delay	1.1	3.6		29.6	5.4			51.9	24.4		4.4	
LOS	A	A		C	A			D	C		A	
Approach Delay		3.6			7.0			41.2			4.4	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.1	4.9		4.3	25.7			16.8	4.5		0.0	
Queue Length 95th (m)	m0.2	11.8		#32.5	55.8			27.2	13.2		2.0	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	412	2663		124	2639			325	358		379	
Starvation Cap Reductn	0	222		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.02	0.76		0.54	0.36			0.27	0.16		0.04	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 36 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 6.5 Intersection LOS: A
Intersection Capacity Utilization 88.2% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	596	1587	163	63	756	151	66	232	105	198	248	209
Future Volume (vph)	596	1587	163	63	756	151	66	232	105	198	248	209
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.94	1.00		0.97	0.99		0.96	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.456			0.607		
Satd. Flow (perm)	3262	3357	1446	1704	3293	1475	811	3390	1473	1072	3390	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			195			134			209
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	596	1587	163	63	756	151	66	232	105	198	248	209
Shared Lane Traffic (%)												
Lane Group Flow (vph)	596	1587	163	63	756	151	66	232	105	198	248	209
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	35.0	71.0	71.0	12.0	48.0	48.0	12.0	47.0	47.0	35.0	35.0	35.0
Total Split (%)	26.9%	54.6%	54.6%	9.2%	36.9%	36.9%	9.2%	36.2%	36.2%	26.9%	26.9%	26.9%
Maximum Green (s)	28.4	64.8	64.8	5.8	41.8	41.8	5.3	40.3	40.3	28.3	28.3	28.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	26.9	68.1	68.1	6.1	47.0	47.0	36.7	36.7	36.7	27.1	27.1	27.1
Actuated g/C Ratio	0.21	0.52	0.52	0.05	0.36	0.36	0.28	0.28	0.28	0.21	0.21	0.21
v/c Ratio	0.88	0.90	0.20	0.79	0.64	0.23	0.25	0.24	0.21	0.89	0.35	0.44
Control Delay	64.9	37.4	4.7	103.7	46.1	10.5	35.4	35.6	3.3	87.3	45.2	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.9	37.4	4.7	103.7	46.1	10.5	35.4	35.6	3.3	87.3	45.2	8.6
LOS	E	D	A	F	D	B	D	D	A	F	D	A
Approach Delay		42.1			44.3			27.2			46.2	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	69.7	182.3	2.8	15.2	78.0	1.9	11.2	21.3	0.0	45.2	26.2	0.0
Queue Length 95th (m)	#90.5	#232.7	13.4	#40.1	105.1	18.1	21.4	31.1	6.9	#84.0	37.7	18.5
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	718	1758	823	80	1189	657	265	1050	549	233	737	485
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.90	0.20	0.79	0.64	0.23	0.25	0.22	0.19	0.85	0.34	0.43

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 125 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 41.8 Intersection LOS: D
Intersection Capacity Utilization 97.9% 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: Orleans & Innes

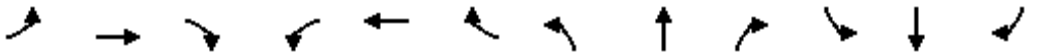
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	526	25	28	1601	218	219	280	56	96	108	496
Future Volume (vph)	131	526	25	28	1601	218	219	280	56	96	108	496
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.545			0.580		
Satd. Flow (perm)	2989	3144	1416	1551	3357	1463	975	3357	1413	992	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			138
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	131	526	25	28	1601	218	219	280	56	96	108	496
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	526	25	28	1601	218	219	280	56	96	108	496
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	72.0	72.0	13.0	72.0	72.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	10.0%	55.4%	55.4%	10.0%	55.4%	55.4%	9.2%	34.6%	34.6%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	65.8	65.8	6.8	65.8	65.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	6.4	71.0	71.0	6.5	65.8	65.8	38.3	38.3	38.3	26.3	26.3	26.3
Actuated g/C Ratio	0.05	0.55	0.55	0.05	0.51	0.51	0.29	0.29	0.29	0.20	0.20	0.20
v/c Ratio	0.89	0.31	0.03	0.36	0.94	0.27	0.69	0.28	0.12	0.48	0.16	1.20
Control Delay	110.9	17.6	0.1	72.6	42.6	7.3	51.9	36.2	3.3	55.0	43.5	143.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	17.6	0.1	72.6	42.6	7.3	51.9	36.2	3.3	55.0	43.5	143.8
LOS	F	B	A	E	D	A	D	D	A	E	D	F
Approach Delay		34.8			38.9			39.1			116.2	
Approach LOS		C			D			D			F	
Queue Length 50th (m)	16.1	37.5	0.0	6.5	182.4	9.0	41.8	26.7	0.0	20.2	11.1	~114.6
Queue Length 95th (m)	#33.6	49.1	0.0	16.0	#232.8	22.0	63.6	37.9	4.6	37.0	18.7	#176.3
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	147	1717	838	82	1699	811	317	989	474	200	679	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.31	0.03	0.34	0.94	0.27	0.69	0.28	0.12	0.48	0.16	1.20

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 52.5 Intersection LOS: D
Intersection Capacity Utilization 108.9% 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: Orleans & Innes



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	606	21	37	1646	20	14	12	38	34	9	43
Future Volume (vph)	12	606	21	37	1646	20	14	12	38	34	9	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	35.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	1.00			0.99			0.99	
Frt		0.995			0.998			0.920			0.932	
Flt Protected	0.950			0.950				0.989			0.981	
Satd. Flow (prot)	1586	3129	0	1503	3349	0	0	1568	0	0	1596	0
Flt Permitted	0.107			0.410				0.922			0.851	
Satd. Flow (perm)	179	3129	0	646	3349	0	0	1458	0	0	1384	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			38			32	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		491.4			236.7			212.5			273.4	
Travel Time (s)		29.5			14.2			19.1			24.6	
Confl. Peds. (#/hr)	4		7	7		4	11					11
Confl. Bikes (#/hr)			1						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 (%)	9%	10%	5%	15%	3%	5%	1%	15%	3%	1%	10%	3%
Adj. Flow (vph)	12	606	21	37	1646	20	14	12	38	34	9	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	627	0	37	1666	0	0	64	0	0	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			5.0			5.0	
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	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0		18.6	93.0	
Trailing Detector (m)	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	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5		18.6	5.5	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	39.2	39.2		39.2	39.2		37.8	37.8		37.8	37.8	
Total Split (s)	82.0	82.0		82.0	82.0		38.0	38.0		38.0	38.0	
Total Split (%)	68.3%	68.3%		68.3%	68.3%		31.7%	31.7%		31.7%	31.7%	
Maximum Green (s)	75.8	75.8		75.8	75.8		31.2	31.2		31.2	31.2	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.8	3.8		3.8	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.8			6.8	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	15.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	7	7		4	4		1	1		11	11	
Act Effct Green (s)	88.6	88.6		88.6	88.6			18.4			18.4	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.15			0.15	
v/c Ratio	0.09	0.27		0.08	0.67			0.25			0.36	
Control Delay	9.7	6.7		2.3	3.8			21.2			30.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	9.7	6.7		2.3	3.8			21.2			30.6	
LOS	A	A		A	A			C			C	
Approach Delay		6.8			3.8			21.2			30.6	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.4	13.5		0.7	32.0			5.4			11.4	
Queue Length 95th (m)	3.7	39.3		m0.8	14.0			14.4			21.6	
Internal Link Dist (m)		467.4			212.7			188.5			249.4	
Turn Bay Length (m)	100.0			100.0								
Base Capacity (vph)	132	2311		477	2473			407			383	
Starvation Cap Reductn	0	0		0	3			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.09	0.27		0.08	0.67			0.16			0.22	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22 (18%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 5.9 Intersection LOS: A
Intersection Capacity Utilization 74.3% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	539	176	179	1356	291	171	
Future Volume (vph)	539	176	179	1356	291	171	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.95	0.99		0.98	0.98	
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.426		0.950		
Satd. Flow (perm)	3357	1433	744	3357	1650	1477	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		176				171	
Link Speed (k/h)	60			60	50		
Link Distance (m)	236.7			238.7	204.5		
Travel Time (s)	14.2			14.3	14.7		
Confl. Peds. (#/hr)		11	11		5	5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	539	176	179	1356	291	171	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	539	176	179	1356	291	171	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	16.3	30.0
Total Split (s)	73.0	73.0	73.0	73.0	17.0	47.0	30.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	14.2%	39.2%	25%
Maximum Green (s)	66.8	66.8	66.8	66.8	10.7	40.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	67.8	67.8	67.8	67.8	27.7	39.7	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.23	0.33	
v/c Ratio	0.28	0.20	0.43	0.72	0.75	0.28	
Control Delay	10.6	1.3	13.1	17.1	58.2	5.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.6	1.3	13.1	17.1	58.2	5.4	
LOS	B	A	B	B	E	A	
Approach Delay	8.3			16.7	38.7		
Approach LOS	A			B	D		
Queue Length 50th (m)	30.1	0.0	21.1	105.1	53.6	0.0	
Queue Length 95th (m)	20.7	2.1	24.6	128.3	#147.2	13.5	
Internal Link Dist (m)	212.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	1896	886	420	1896	387	613	
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	0.20	0.43	0.72	0.75	0.28	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 18.2 Intersection LOS: B
Intersection Capacity Utilization 67.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Lamarche & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	599	38	12	1534	4	99	0	39	1	0	3
Future Volume (vph)	6	599	38	12	1534	4	99	0	39	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00			1.00	0.99		0.99	
Frt		0.991							0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1712	3115	0	1712	3357	0	0	1712	1532	0	1583	0
Flt Permitted	0.136			0.409				0.755			0.942	
Satd. Flow (perm)	245	3115	0	737	3357	0	0	1357	1511	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12							39		28	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)	7					7	2		1	1		2
Confl. Bikes (#/hr)						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 (%)	1%	10%	10%	1%	3%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	6	599	38	12	1534	4	99	0	39	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	637	0	12	1538	0	0	99	39	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	80.9	80.9		80.9	80.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	1	1		7	7		1	1	1	2	2	
Act Effct Green (s)	92.0	92.0		92.0	92.0			15.6	15.6		15.6	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.13	0.13		0.13	
v/c Ratio	0.03	0.27		0.02	0.60			0.56	0.17		0.02	
Control Delay	4.7	4.0		4.9	8.1			59.7	14.0		0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	4.7	4.0		4.9	8.1			59.7	14.0		0.2	
LOS	A	A		A	A			E	B		A	
Approach Delay		4.0			8.0			46.8			0.3	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.2	14.0		0.5	59.7			20.8	0.0		0.0	
Queue Length 95th (m)	m1.2	23.0		2.6	114.5			33.3	8.3		0.0	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	187	2389		564	2572			301	366		357	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.03	0.27		0.02	0.60			0.33	0.11		0.01	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 3 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 9.2 Intersection LOS: A
Intersection Capacity Utilization 68.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes

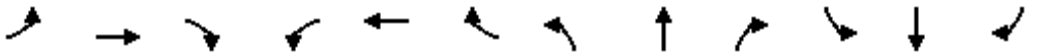
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	526	25	28	1571	218	219	280	56	96	108	346
Future Volume (vph)	131	526	25	28	1571	218	219	280	56	96	108	346
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.533			0.580		
Satd. Flow (perm)	2988	3144	1416	1551	3357	1463	954	3357	1413	992	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			138
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	131	526	25	28	1571	218	219	280	56	96	108	346
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	526	25	28	1571	218	219	280	56	96	108	346
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	72.0	72.0	13.0	72.0	72.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	10.0%	55.4%	55.4%	10.0%	55.4%	55.4%	9.2%	34.6%	34.6%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	65.8	65.8	6.8	65.8	65.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	7.4	73.6	73.6	6.5	67.4	67.4	35.7	35.7	35.7	23.7	23.7	23.7
Actuated g/C Ratio	0.06	0.57	0.57	0.05	0.52	0.52	0.27	0.27	0.27	0.18	0.18	0.18
v/c Ratio	0.78	0.30	0.03	0.36	0.90	0.26	0.75	0.30	0.12	0.53	0.18	0.90
Control Delay	89.3	16.7	0.1	72.6	37.4	7.2	57.6	37.7	3.4	58.6	44.5	56.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.3	16.7	0.1	72.6	37.4	7.2	57.6	37.7	3.4	58.6	44.5	56.6
LOS	F	B	A	E	D	A	E	D	A	E	D	E
Approach Delay		30.1			34.3			42.1			54.6	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	16.1	37.5	0.0	6.5	176.0	9.0	41.8	26.7	0.0	20.2	11.1	49.2
Queue Length 95th (m)	#33.6	49.1	0.0	16.0	#217.1	22.0	#63.6	37.9	4.6	37.0	18.7	#94.7
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	169	1779	863	82	1740	827	292	989	474	200	679	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.30	0.03	0.34	0.90	0.26	0.75	0.28	0.12	0.48	0.16	0.84

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 37.8 Intersection LOS: D
Intersection Capacity Utilization 98.2% 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: Orleans & Innes



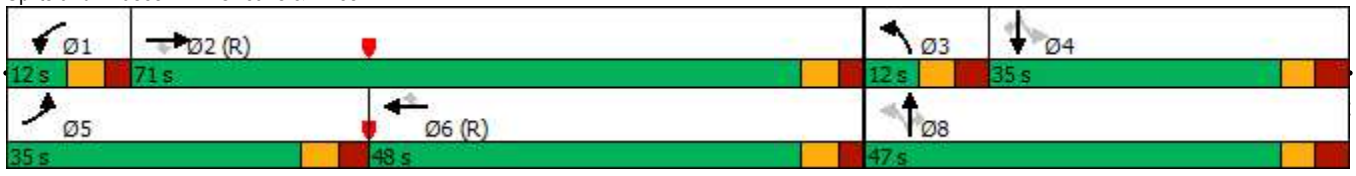
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	625	1866	171	66	834	170	69	243	109	221	260	219
Future Volume (vph)	625	1866	171	66	834	170	69	243	109	221	260	219
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.94	1.00		0.97	0.99		0.96	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.450			0.601		
Satd. Flow (perm)	3265	3357	1446	1706	3293	1475	800	3390	1473	1062	3390	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			195			134			219
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	625	1866	171	66	834	170	69	243	109	221	260	219
Shared Lane Traffic (%)												
Lane Group Flow (vph)	625	1866	171	66	834	170	69	243	109	221	260	219
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	35.0	71.0	71.0	12.0	48.0	48.0	12.0	47.0	47.0	35.0	35.0	35.0
Total Split (%)	26.9%	54.6%	54.6%	9.2%	36.9%	36.9%	9.2%	36.2%	36.2%	26.9%	26.9%	26.9%
Maximum Green (s)	28.4	64.8	64.8	5.8	41.8	41.8	5.3	40.3	40.3	28.3	28.3	28.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	27.4	66.6	66.6	6.3	45.1	45.1	38.0	38.0	38.0	28.4	28.4	28.4
Actuated g/C Ratio	0.21	0.51	0.51	0.05	0.35	0.35	0.29	0.29	0.29	0.22	0.22	0.22
v/c Ratio	0.90	1.09	0.21	0.80	0.73	0.27	0.25	0.25	0.21	0.95	0.35	0.44
Control Delay	67.5	80.2	5.1	106.0	54.9	13.2	35.3	35.1	3.8	98.5	44.6	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.5	80.2	5.1	106.0	54.9	13.2	35.3	35.1	3.8	98.5	44.6	8.3
LOS	E	F	A	F	D	B	D	D	A	F	D	A
Approach Delay		72.4			51.5			27.0			50.3	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	73.9	~265.5	3.8	16.0	108.1	8.3	11.7	22.4	0.0	51.9	27.5	0.0
Queue Length 95th (m)	#100.5	#304.2	14.7	#42.2	114.4	20.8	22.3	32.3	7.6	#97.8	39.4	18.7
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	718	1719	808	82	1142	639	271	1050	549	232	741	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.09	0.21	0.80	0.73	0.27	0.25	0.23	0.20	0.95	0.35	0.44

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 125 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 60.7 Intersection LOS: E
Intersection Capacity Utilization 107.4% 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: Orleans & Innes



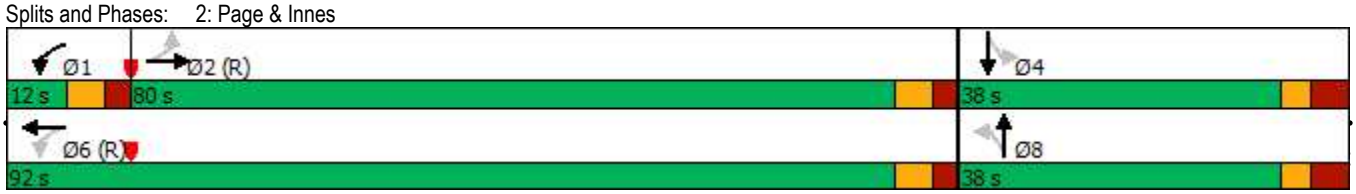
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	1912	30	93	943	64	23	7	77	54	18	36
Future Volume (vph)	63	1912	30	93	943	64	23	7	77	54	18	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0	100.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	35.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			1.00			0.98			0.99	
Frt		0.998			0.990			0.903			0.955	
Flt Protected	0.950			0.950				0.989			0.976	
Satd. Flow (prot)	1695	3380	0	1695	3259	0	0	1541	0	0	1578	0
Flt Permitted	0.285			0.044				0.917			0.754	
Satd. Flow (perm)	506	3380	0	79	3259	0	0	1427	0	0	1211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			11			77			18	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		491.4			236.7			212.5			273.4	
Travel Time (s)		29.5			14.2			19.1			24.6	
Confl. Peds. (#/hr)	9		5	5		9	5		13	13		5
Confl. Bikes (#/hr)			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%	2%	6%	2%	5%	2%	5%	1%	3%	6%	1%	11%
Adj. Flow (vph)	63	1912	30	93	943	64	23	7	77	54	18	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	1942	0	93	1007	0	0	107	0	0	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			5.0			5.0	
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	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0		18.6	93.0	
Trailing Detector (m)	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	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5		18.6	5.5	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	39.2	39.2		11.2	39.2		37.8	37.8		37.8	37.8	
Total Split (s)	80.0	80.0		12.0	92.0		38.0	38.0		38.0	38.0	
Total Split (%)	61.5%	61.5%		9.2%	70.8%		29.2%	29.2%		29.2%	29.2%	
Maximum Green (s)	73.8	73.8		5.8	85.8		31.2	31.2		31.2	31.2	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.8	3.8		3.8	3.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.8			6.8	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	15.0	15.0			15.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0			18.0		24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	5	5			9		13	13		5	5	
Act Effct Green (s)	84.5	84.5		97.4	97.4			19.6			19.6	
Actuated g/C Ratio	0.65	0.65		0.75	0.75			0.15			0.15	
v/c Ratio	0.19	0.88		0.65	0.41			0.38			0.55	
Control Delay	3.1	6.5		57.8	4.3			18.9			50.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.1	6.5		57.8	4.3			18.9			50.4	
LOS	A	A		E	A			B			D	
Approach Delay		6.4			8.9			18.9			50.4	
Approach LOS		A			A			B			D	
Queue Length 50th (m)	1.5	33.6		8.7	21.2			6.5			20.8	
Queue Length 95th (m)	m2.1	m33.1		m#32.6	25.6			19.7			33.7	
Internal Link Dist (m)		467.4			212.7			188.5			249.4	
Turn Bay Length (m)	100.0			100.0								
Base Capacity (vph)	328	2196		143	2444			401			304	
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	0.19	0.88		0.65	0.41			0.27			0.36	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 122 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 9.1 Intersection LOS: A
Intersection Capacity Utilization 93.5% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	1589	324	177	942	217	205	
Future Volume (vph)	1589	324	177	942	217	205	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.96					
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.088		0.950		
Satd. Flow (perm)	3357	1449	155	3357	1679	1502	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		236				35	
Link Speed (k/h)	60			60	50		
Link Distance (m)	236.7			238.7	204.5		
Travel Time (s)	14.2			14.3	14.7		
Confl. Peds. (#/hr)		6	6				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	1589	324	177	942	217	205	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1589	324	177	942	217	205	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	37.3	30.0
Total Split (s)	88.0	88.0	88.0	88.0	12.0	42.0	30.0
Total Split (%)	67.7%	67.7%	67.7%	67.7%	9.2%	32.3%	23%
Maximum Green (s)	81.8	81.8	81.8	81.8	5.7	35.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	82.4	82.4	82.4	82.4	23.1	35.1	
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.18	0.27	
v/c Ratio	0.75	0.32	1.81	0.44	0.73	0.48	
Control Delay	3.4	0.6	420.9	9.9	65.2	37.0	
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.7	0.6	420.9	9.9	65.2	37.0	
LOS	A	A	F	A	E	D	
Approach Delay	3.2			74.9	51.5		
Approach LOS	A			E	D		
Queue Length 50th (m)	16.0	0.1	~62.8	35.1	44.3	34.6	
Queue Length 95th (m)	12.1	m0.0	#106.3	39.8	#134.4	55.3	
Internal Link Dist (m)	212.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	2128	1005	98	2128	297	437	
Starvation Cap Reductn	124	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	0.79	0.32	1.81	0.44	0.73	0.47	

Intersection Summary

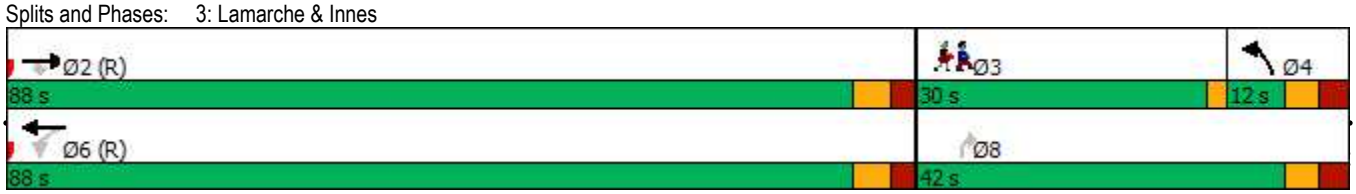
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 129 (99%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.81
Intersection Signal Delay: 32.3 Intersection LOS: C
Intersection Capacity Utilization 85.0% ICU Level of Service E
Analysis Period (min) 15

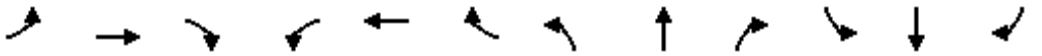
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 3: Lamarche & Innes





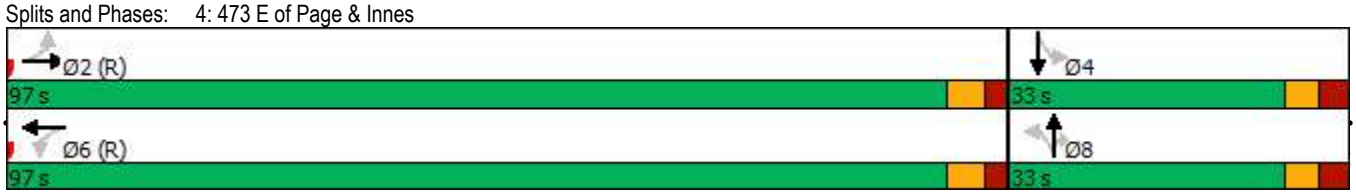
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1866	131	67	1059	8	88	0	56	4	0	10
Future Volume (vph)	8	1866	131	67	1059	8	88	0	56	4	0	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00			0.99	
Frt		0.990			0.999				0.850		0.904	
Flt Protected	0.950			0.950				0.950			0.986	
Satd. Flow (prot)	1712	3353	0	1712	3322	0	0	1712	1381	0	1587	0
Flt Permitted	0.251			0.070				0.748			0.920	
Satd. Flow (perm)	452	3353	0	126	3322	0	0	1342	1381	0	1481	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			1				29		26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)			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 (%)	1%	2%	1%	1%	4%	1%	1%	1%	12%	1%	1%	1%
Adj. Flow (vph)	8	1866	131	67	1059	8	88	0	56	4	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1997	0	67	1067	0	0	88	56	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	97.0	97.0		97.0	97.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	74.6%	74.6%		74.6%	74.6%		25.4%	25.4%	25.4%	25.4%	25.4%	
Maximum Green (s)	90.9	90.9		90.9	90.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	2	2		1	1		1	1	1	3	3	
Act Effct Green (s)	102.1	102.1		102.1	102.1			15.5	15.5		15.5	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.12	0.12		0.12	
v/c Ratio	0.02	0.76		0.68	0.41			0.55	0.29		0.07	
Control Delay	2.1	3.6		47.6	5.5			65.5	31.1		7.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	2.1	3.6		47.6	5.5			65.5	31.1		7.4	
LOS	A	A		D	A			E	C		A	
Approach Delay		3.6			8.0			52.1			7.4	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.2	27.4		5.6	32.4			20.2	5.9		0.0	
Queue Length 95th (m)	m0.4	36.3		#39.0	63.5			32.7	16.2		2.9	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	355	2636		98	2609			275	306		324	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.02	0.76		0.68	0.41			0.32	0.18		0.04	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 4 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 7.3 Intersection LOS: A
Intersection Capacity Utilization 92.4% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	625	1586	171	66	834	170	69	243	109	191	260	219
Future Volume (vph)	625	1586	171	66	834	170	69	243	109	191	260	219
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.94	1.00		0.97	0.99		0.96	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.442			0.601		
Satd. Flow (perm)	3265	3357	1446	1704	3293	1475	786	3390	1473	1062	3390	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			141			195			134			219
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	625	1586	171	66	834	170	69	243	109	191	260	219
Shared Lane Traffic (%)												
Lane Group Flow (vph)	625	1586	171	66	834	170	69	243	109	191	260	219
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	35.0	71.0	71.0	12.0	48.0	48.0	12.0	47.0	47.0	35.0	35.0	35.0
Total Split (%)	26.9%	54.6%	54.6%	9.2%	36.9%	36.9%	9.2%	36.2%	36.2%	26.9%	26.9%	26.9%
Maximum Green (s)	28.4	64.8	64.8	5.8	41.8	41.8	5.3	40.3	40.3	28.3	28.3	28.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	27.4	68.2	68.2	6.3	46.7	46.7	36.5	36.5	36.5	26.9	26.9	26.9
Actuated g/C Ratio	0.21	0.52	0.52	0.05	0.36	0.36	0.28	0.28	0.28	0.21	0.21	0.21
v/c Ratio	0.90	0.90	0.21	0.80	0.71	0.26	0.27	0.26	0.21	0.87	0.37	0.46
Control Delay	67.5	37.3	5.0	108.7	38.6	6.1	35.8	36.0	3.8	84.8	45.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.5	37.3	5.0	108.7	38.6	6.1	35.8	36.0	3.8	84.8	45.6	8.6
LOS	E	D	A	F	D	A	D	D	A	F	D	A
Approach Delay		42.9			37.7			27.6			44.7	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	73.9	182.0	3.5	15.9	76.2	2.4	11.7	22.4	0.0	43.4	27.5	0.0
Queue Length 95th (m)	#100.5	#232.5	14.4	#42.3	107.5	11.9	22.3	32.3	7.6	#80.6	39.4	18.7
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	718	1760	825	82	1182	654	258	1050	549	231	737	493
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.90	0.21	0.80	0.71	0.26	0.27	0.23	0.20	0.83	0.35	0.44

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 125 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 40.5 Intersection LOS: D
Intersection Capacity Utilization 97.5% 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: Orleans & Innes

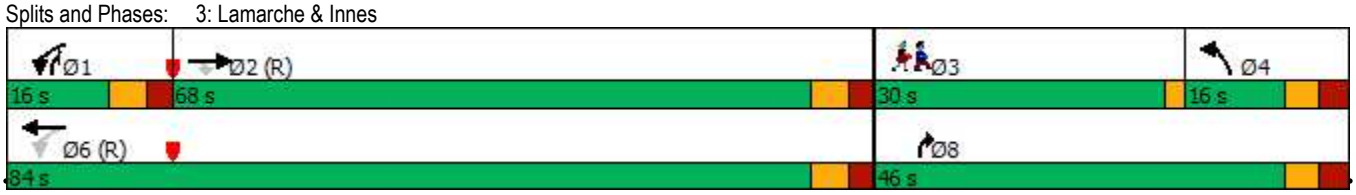
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3	Ø8
Lane Configurations								
Traffic Volume (vph)	1589	324	177	942	217	205		
Future Volume (vph)	1589	324	177	942	217	205		
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800		
Storage Length (m)		50.0	65.0		70.0	70.0		
Storage Lanes		1	1		1	0		
Taper Length (m)			80.0		20.0			
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor		0.96			0.98			
Frt		0.850				0.850		
Flt Protected			0.950		0.950			
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502		
Flt Permitted			0.060		0.950			
Satd. Flow (perm)	3357	1449	106	3357	1645	1502		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		167				11		
Link Speed (k/h)	60			60	50			
Link Distance (m)	236.7			238.7	204.5			
Travel Time (s)	14.2			14.3	14.7			
Confl. Peds. (#/hr)		6	6		5	5		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	1589	324	177	942	217	205		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	1589	324	177	942	217	205		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	L NA	R NA		
Median Width(m)	5.0			5.0	3.7			
Link Offset(m)	0.0			0.0	0.0			
Crosswalk Width(m)	9.0			9.0	9.0			
Two way Left Turn Lane								
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06		
Turning Speed (k/h)		14	24		24	14		
Number of Detectors	2	1	1	2	1	1		
Detector Template	Thru	Right	Left	Thru	Left	Right		
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6		
Trailing Detector (m)	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		
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6		
Detector 1 Type	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		
Detector 1 Queue (s)	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		
Detector 2 Position(m)	87.5			87.5				
Detector 2 Size(m)	5.5			5.5				
Detector 2 Type	Cl+Ex			Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)	0.0			0.0				
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov		
Protected Phases	2		1	6	4	1 8	3	8
Permitted Phases		2	6					
Detector Phase	2	2	1	6	4	1 8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0		3.0	10.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3	Ø8
Minimum Split (s)	31.2	31.2	11.2	31.2	11.3		30.0	16.3
Total Split (s)	68.0	68.0	16.0	84.0	16.0		30.0	46.0
Total Split (%)	52.3%	52.3%	12.3%	64.6%	12.3%		23%	35%
Maximum Green (s)	61.8	61.8	9.8	77.8	9.7		28.0	39.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3		2.0	3.3
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0		0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3			
Lead/Lag	Lag	Lag	Lead		Lag		Lead	
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None		None	None
Walk Time (s)	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	18.0	18.0		18.0			21.0	
Pedestrian Calls (#/hr)	10	10		10			10	
Act Effct Green (s)	62.2	62.2	80.8	80.8	24.7	55.4		
Actuated g/C Ratio	0.48	0.48	0.62	0.62	0.19	0.43		
v/c Ratio	0.99	0.42	0.82	0.45	0.68	0.32		
Control Delay	36.4	7.3	67.2	11.9	61.9	25.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	36.4	7.3	67.2	11.9	61.9	25.1		
LOS	D	A	E	B	E	C		
Approach Delay	31.4			20.6	44.0			
Approach LOS	C			C	D			
Queue Length 50th (m)	106.4	12.2	28.9	43.2	45.6	30.6		
Queue Length 95th (m)	#239.6	m16.7	#71.4	55.9	#121.7	46.9		
Internal Link Dist (m)	212.7			214.7	180.5			
Turn Bay Length (m)		50.0	65.0		70.0	70.0		
Base Capacity (vph)	1606	780	216	2087	318	643		
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	0.99	0.42	0.82	0.45	0.68	0.32		

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 129 (99%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 29.5 Intersection LOS: C
Intersection Capacity Utilization 85.0% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3	Ø8
Lane Configurations								
Traffic Volume (vph)	1449	324	177	942	217	205		
Future Volume (vph)	1449	324	177	942	217	205		
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800		
Storage Length (m)		50.0	65.0		70.0	70.0		
Storage Lanes		1	1		1	0		
Taper Length (m)			80.0		20.0			
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor		0.96			0.98			
Frt		0.850				0.850		
Flt Protected			0.950		0.950			
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502		
Flt Permitted			0.060		0.950			
Satd. Flow (perm)	3357	1449	106	3357	1645	1502		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		183				16		
Link Speed (k/h)	60			60	50			
Link Distance (m)	236.7			238.7	204.5			
Travel Time (s)	14.2			14.3	14.7			
Confl. Peds. (#/hr)		6	6		5	5		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	1449	324	177	942	217	205		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	1449	324	177	942	217	205		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	L NA	R NA		
Median Width(m)	5.0			5.0	3.7			
Link Offset(m)	0.0			0.0	0.0			
Crosswalk Width(m)	9.0			9.0	9.0			
Two way Left Turn Lane								
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06		
Turning Speed (k/h)		14	24		24	14		
Number of Detectors	2	1	1	2	1	1		
Detector Template	Thru	Right	Left	Thru	Left	Right		
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6		
Trailing Detector (m)	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		
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6		
Detector 1 Type	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		
Detector 1 Queue (s)	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		
Detector 2 Position(m)	87.5			87.5				
Detector 2 Size(m)	5.5			5.5				
Detector 2 Type	Cl+Ex			Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)	0.0			0.0				
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov		
Protected Phases	2		1	6	4	1 8	3	8
Permitted Phases		2	6					
Detector Phase	2	2	1	6	4	1 8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0		3.0	10.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3	Ø8
Minimum Split (s)	31.2	31.2	11.2	31.2	11.3		30.0	16.3
Total Split (s)	68.0	68.0	16.0	84.0	16.0		30.0	46.0
Total Split (%)	52.3%	52.3%	12.3%	64.6%	12.3%		23%	35%
Maximum Green (s)	61.8	61.8	9.8	77.8	9.7		28.0	39.7
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3		2.0	3.3
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0		0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3			
Lead/Lag	Lag	Lag	Lead		Lag		Lead	
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None		None	None
Walk Time (s)	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	18.0	18.0		18.0			21.0	
Pedestrian Calls (#/hr)	10	10		10			10	
Act Effct Green (s)	62.2	62.2	80.8	80.8	24.7	55.4		
Actuated g/C Ratio	0.48	0.48	0.62	0.62	0.19	0.43		
v/c Ratio	0.90	0.41	0.82	0.45	0.68	0.32		
Control Delay	25.4	6.6	67.2	11.9	61.9	24.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	25.4	6.6	67.2	11.9	61.9	24.4		
LOS	C	A	E	B	E	C		
Approach Delay	21.9			20.6	43.7			
Approach LOS	C			C	D			
Queue Length 50th (m)	81.5	11.6	28.9	43.2	45.6	29.8		
Queue Length 95th (m)	#139.1	m15.9	#71.4	55.9	#121.7	46.0		
Internal Link Dist (m)	212.7			214.7	180.5			
Turn Bay Length (m)		50.0	65.0		70.0	70.0		
Base Capacity (vph)	1606	788	216	2087	318	646		
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	0.90	0.41	0.82	0.45	0.68	0.32		

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 129 (99%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 24.3 Intersection LOS: C
Intersection Capacity Utilization 80.9% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes

APPENDIX K

Transportation Demand Management

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐ - N/A
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☐ - N/A
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☐
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

APPENDIX L

MMLOS Analysis

Segment MMLOS Analysis

This section provides a review of the boundary street Innes Road, using complete streets principles. The *Multi-Modal Level of Service (MMLOS) Guidelines* were used to evaluate the levels of service for each alternative mode of transportation on Innes Road between Pagé Road and Lamarche Avenue. The targets associated with the Arterial Mainstreet designation have been considered.

Exhibit 4 of the *MMLOS Guidelines* has been used to evaluate the segment pedestrian level of service (PLOS) of Innes Road. Exhibit 22 of the *MMLOS Guidelines* identifies a target PLOS C for all Arterial Roadways. The results of the segment PLOS analysis are summarized in **Table 1**.

Exhibit 11 of the *MMLOS Guidelines* has been used to evaluate the segment bicycle level of service (BLOS) of Innes Road. For Arterial Mainstreets, Exhibit 22 of the *MMLOS Guidelines* identifies a target BLOS B for roadways with a Crosstown Bikeway designation. 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) of Innes Road. For Arterial Mainstreets, Exhibit 22 of the *MMLOS Guidelines* identifies a target TLOS D for roadways with a Transit Priority with Isolated Measures designation. The results of the segment TLOS analysis are summarized in **Table 3**.

Exhibit 20 of the *MMLOS Guidelines* has been used to evaluate the segment truck level of service (TkLOS) of Innes Road. For Arterial Mainstreets, Exhibit 22 of the *MMLOS Guidelines* identifies a target TkLOS D for roadways with a truck route designation. The results of the segment TkLOS analysis are summarized in **Table 4**.

Table 1: PLOS Segment Analysis – Innes Road

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed[1]	PLOS
North side					
≥ 2.0m	0.5m to 2.0m	> 3,000 vpd	No	70 km/h	**E**
South side					
≥ 2.0m	0.5m to 2.0m	> 3,000 vpd	No	70 km/h	**E**

1. Operating speed taken as posted speed plus 10 km/h

Table 2: BLOS Segment Analysis – Innes Road

Road Class	Route Type	Bikeway Type	Travel Lanes	Operating Speed	Bike Lane Width	Bike Lane Blockage	BLOS
Arterial	Crosstown Bikeway	Curbside Bike Lane	4	70 km/h	≥ 1.8m	Rare	**E**

Table 3: TLOS Segment Analysis – Innes Road

Facility Type	Exposure to Congestion Delay, Friction, and Incidents			TLOS
	Congestion	Friction	Incident Potential	
Mixed Traffic – Limited Parking/Driveway Friction	Yes	Low	Medium	D

Table 4: TkLOS Segment Analysis – Innes Road

Curb Lane Width	Number of Travel Lanes Per Direction	TkLOS
≤ 3.5m	2	A

Intersection MMLOS Analysis

The following is a review of the MMLOS of the signalized intersections within the study area, using complete streets principles. All of these intersections have been evaluated based on existing conditions. Innes Road/Orléans Boulevard has been evaluated using the targets for the General Urban Area, and Innes Road/Pagé Road and Innes Road/473m East of Pagé Road have been evaluated using the targets for Arterial Mainstreets.

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* suggest a target PLOS C for Arterial Mainstreets (Innes Road east of Pagé Road) or all roadways within the General Urban Area (Innes Road west of Pagé Road, Orléans Boulevard, Pagé Road, Boyer Road). The results of the intersection PLOS analysis are summarized in **Table 5** through **Table 7**.

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* suggest a target BLOS B for Crosstown Bikeways on Arterial Mainstreets or in the General Urban Area (Innes Road), a target BLOS B for Local Routes in the General Urban Area (Orléans Boulevard, Boyer Road), and a target BLOS C for Spine Routes in the General Urban Area (Pagé Road). The results of the intersection BLOS analysis are summarized in **Table 8**.

Exhibit 16 of the *MMLOS Guidelines* has been used to evaluate the existing TLOS at the intersections listed above. Exhibit 22 of the *MMLOS Guidelines* suggest a target TLOS D for Transit Priority Corridors with Isolated Measures (Innes Road). Orléans Boulevard has also been evaluated for TLOS, as transit service is provided on this roadway. The results of the intersection TLOS analysis are summarized in **Table 9**.

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* suggest a target TkLOS D for arterial roadways with a truck route designation (Innes Road, Orléans Boulevard north of Innes Road), and a target TkLOS E for arterial roadways without a truck route designation (Orléans Boulevard south of Innes Road). The results of the intersection TkLOS analysis are summarized in **Table 10**.

Table 5: PLOS Intersection Analysis – Innes Road/Orléans Boulevard

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	-10	No	-10	No	-10	No	-10
Lanes Crossed (3.5m Lane Width)	10 +		10 +		10 +		10 +	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Protected	0	Protected	0	Permissive	-8	Perm + Prot	-8
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	N/A	0	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	> 15m to 25m	-8	> 15m to 25m	-8	> 15m to 25m	-8	> 15m to 25m	-8
Parallel Right Turn Channel	Conventional without Receiving	0	Conventional without Receiving	0	Conventional without Receiving	0	Conventional without Receiving	0
Perpendicular Radius	> 15m to 25m	-8	> 15m to 25m	-8	> 15m to 25m	-8	> 15m to 25m	-8
Perpendicular Right Turn Channel	Conventional without Receiving	0	Conventional without Receiving	0	Conventional without Receiving	0	Conventional without Receiving	0
CROSSING TREATMENT								
Treatment	Standard	-7	Standard	-7	Zebra Stripe	-4	Zebra Stripe	-4
PETSI SCORE		**-40**		**-40**		**-45**		**-45**
LOS		**F**		**F**		**F**		**F**
DELAY SCORE								
Cycle Length		130		130		130		130
Pedestrian Walk Time		45.8		45.8		26.3		7.3
DELAY SCORE		**27.3**		**27.3**		**41.4**		**57.9**
LOS		**C**		**C**		**E**		**E**
OVERALL		**F**		**F**		**F**		**F**

Table 6: PLOS Intersection Analysis – Innes Road/Pagé Road

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	55	No	55	No	23	No	39
Lanes Crossed (3.5m Lane Width)	6		6		8		7	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8
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	No	-2	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	> 10m to 15m	-6	> 10m to 15m	-6	> 10m to 15m	-6	> 10m to 15m	-6
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
CROSSING TREATMENT								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
PETSI SCORE		**20**		**20**		**-12**		**4**
LOS		**F**		**F**		**F**		**F**
DELAY SCORE								
Cycle Length		110		110		120		120
Pedestrian Walk Time		47.8		47.8		7.2		7.2
DELAY SCORE		**17.6**		**17.6**		**53.0**		**53.0**
LOS		**B**		**B**		**E**		**E**
OVERALL		**F**		**F**		**F**		**F**

Table 7: PLOS Intersection Analysis – Innes Road/473m East of Pagé Road

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	88	No	55	No	39	No	39
Lanes Crossed (3.5m Lane Width)	4		6		7		7	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8
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	No	-2	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	> 5m to 10m	-5	> 10m to 15m	-6	> 10m to 15m	-6	> 10m to 15m	-6
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
CROSSING TREATMENT								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
PETSI SCORE		**54**		**20**		**4**		**4**
LOS		**D**		**F**		**F**		**F**
DELAY SCORE								
Cycle Length		110		110		120		120
Pedestrian Walk Time		56.9		56.9		7.7		7.7
DELAY SCORE		**12.8**		**12.8**		**52.5**		**52.5**
LOS		**B**		**B**		**E**		**E**
OVERALL		**D**		**F**		**F**		**F**

Table 8: BLOS Intersection Analysis

Approach	Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
Innes Road/Orléans Boulevard				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	**F**
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**
South Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	**F**
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**
East Approach	Pocket Bike Lane	Right Turn Lane Characteristics	Right turn lane > 50m, turning speed ≤ 30 km/h	**D**
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	**F**
		Left Turn Accommodation	Dual left turn lanes	**F**
Innes Road/Pagé Road				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No lanes crossed, ≤ 50 km/h	B
South Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No lanes crossed, ≤ 50 km/h	B
East Approach	Curbside Bike Lane	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**
West Approach	Curbside Bike Lane	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**
Innes Road/473m East of Pagé Road				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No lanes crossed, ≤ 50 km/h	B
South Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No lanes crossed, ≥ 60 km/h	**D**
East Approach	Curbside Bike Lane	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**
West Approach	Curbside Bike Lane	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed, ≥ 50 km/h	**F**

Table 9: TLOS Intersection Analysis

Approach	Delay[1]		TLOS
	AM Peak	PM Peak	
Innes Road/Orléans Boulevard			
North Approach	114 sec	35 sec	**F**
South Approach	31 sec	22 sec	**E**
East Approach	37 sec	42 sec	**F**
West Approach	43 sec	53 sec	**F**
Innes Road/Pagé Road			
East Approach	7 sec	17 sec	C
West Approach	6 sec	5 sec	B
Innes Road/473m East of Pagé Road			
East Approach	6 sec	4 sec	B
West Approach	2 sec	3 sec	B

1. Delay based on outputs from Synchro analysis of existing conditions

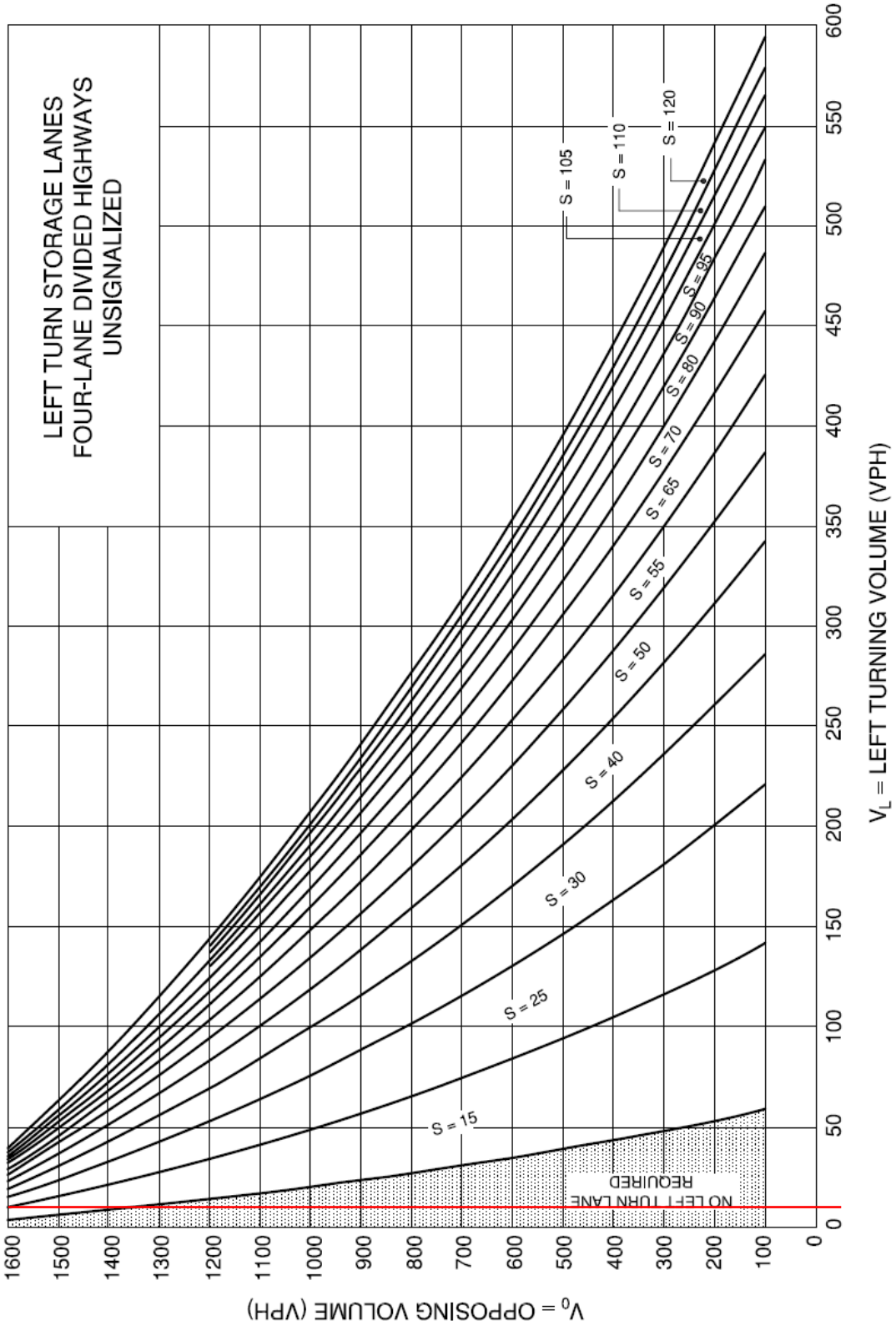
Table 10: TkLOS Intersection Analysis

Approach	Effective Corner Radius	Number of Receiving Lanes Departing Intersection	TkLOS
Innes Road/Orléans Boulevard			
North Approach	> 15m	3	A
South Approach	> 15m	2	A
East Approach	> 15m	2	A
West Approach	> 15m	2	A
Innes Road/Pagé Road			
East Approach	10m to 15m	1	**E**
West Approach	10m to 15m	1	**E**
Innes Road/473m East of Pagé Road			
East Approach	< 10m	1	**F**
West Approach	> 15m	1	C

APPENDIX M

MTO Left Turn Lane Storage Graph

Exhibit 9A-32



APPENDIX N

Functional Design of Median Break

LEGEND

- MH~S — EX. SANITARY MANHOLE
- MH~ST — EX. STORM MANHOLE
- CBF — EX. CATCH BASIN
- UP — EX. UTILITY POLE
- LS — EX. LIGHT STANDARD

PROPOSED COMMERCIAL BUILDING A
FFE = 92.00
USF = 90.50
RD1
RD2

PROPOSED COMMERCIAL BUILDING B
FFE = 92.05
USF = 90.55
RD3
RD4

RB-11 / Ra-1
NO LEFT AND STOP SIGNS

RELOCATE EXISTING UTILITY POLE

EXISTING ISLAND WARNING SIGNS INSTALLED ON TRAFFIC POLE

50.00m LEFT TURN STORAGE
55.00m TAPER
INNES ROAD
10.50m
2.0m
3.50m
3.75m
3.5m
RELOCATE EXISTING ISLAND WARNING SIGNS
55.00m TAPER
20.00m LEFT TURN STORAGE
3.75m
3.50m
3.50m

EXISTING BUS STOP

MAXIMUM 60 km/h

EXISTING SPEED LIMIT (60km/h) SIGN INSTALLED ON POLE

MOUNTABLE CONCRETE APRON

Rb-11
NO LEFT SIGN

RELOCATED R-25 & Wa-33L ISLAND WARNING SIGNS

PAGE RD

LAMARCHE AVE

* PROPERTY LINES ARE APPROXIMATED FROM GEO OTTAWA

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
2.	WORK IN PROGRESS	JAN 16/24	RCH
1.	ISSUED FOR CITY REVIEW	NOV 30/23	JLL

SCALE 1:500

1:500
0 5 10 15 20

DESIGN RCH
CHECKED JRA
DRAWN RCH
CHECKED JRA
APPROVED JLL

FOR REVIEW ONLY

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

LOCATION
CITY of OTTAWA
3493 INNES ROAD

DRAWING NAME
FUNCTIONAL DESIGN

PROJECT No. 118204
REV REV # 1
DRAWING No. 118204-FD

C:\temp\AcPublish_24440\118204-FD.dwg, FD, Jan 17, 2024 - 10:59am, rhillier

PLAN1.DWG - 341mmx594mm

PROPOSED COMMERCIAL BUILDING A
FFE = 92.00
USF = 90.50
RD2

PROPOSED COMMERCIAL BUILDING B
FFE = 92.05
USF = 90.55
RD4

BIKES

BIKES

FUTURE SEVERANCE LINE

TERRACE

TERRACE

ROAD WIDENING (ESTIMATED)

(C/L Noted)

Hedge 0.5± East

SIB (990)

IB (OTT)

CBI T\G=91.36

CBI T\G=91.34

CBI T\G=91.71

CBI T\G=91.82

INNES ROAD

MSU - Medium Single Unit Truck

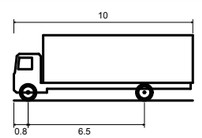
MH-S T\G=91.36

MH-ST T\G=91.32

MH-S T\G=91.00

MH-ST T\G=91.97

LAMARCHE AVE



MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

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3493 INNES ROAD

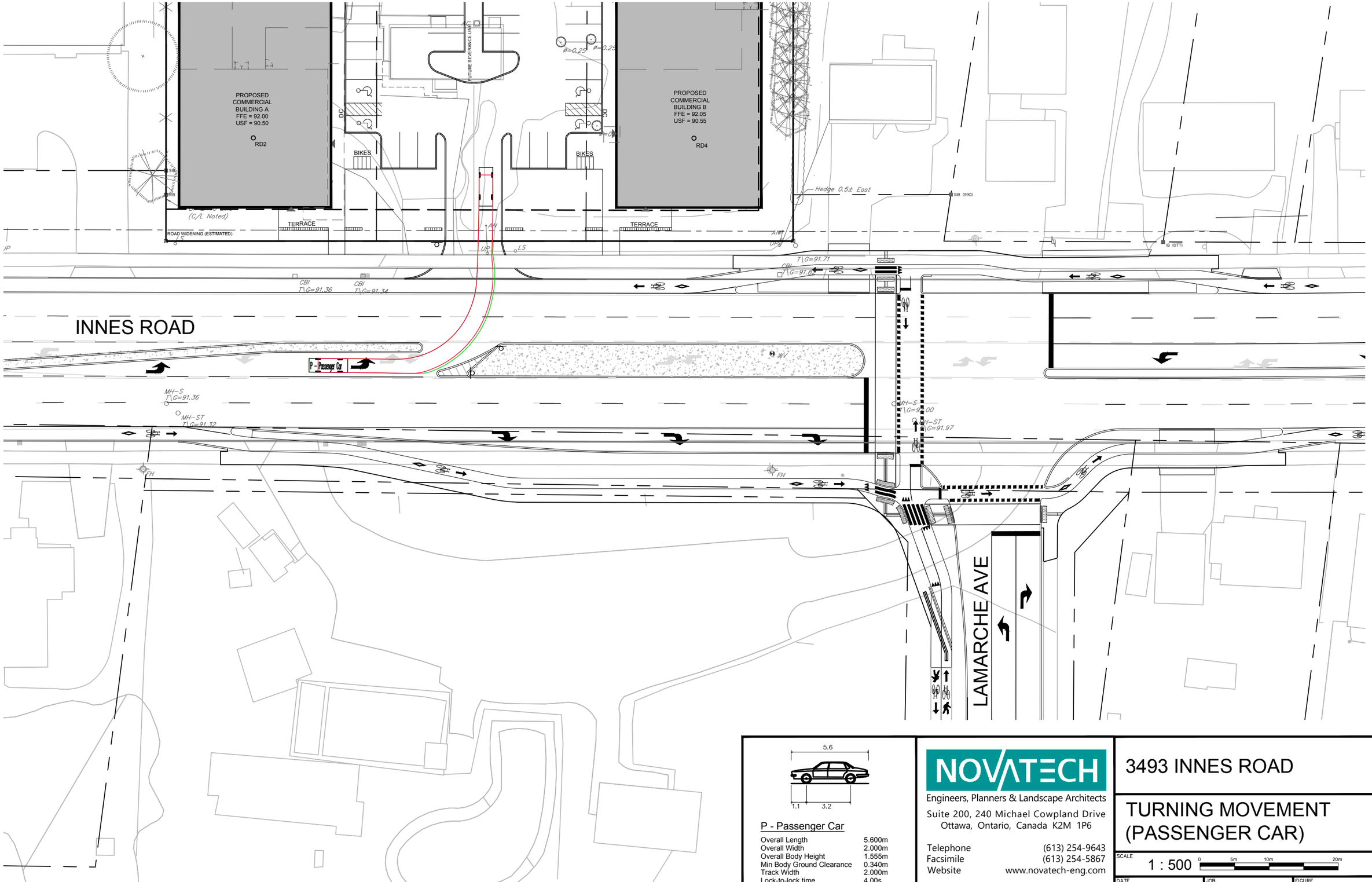
TURNING MOVEMENT (MSU)

SCALE 1 : 500 (0 5m 10m 20m)

DATE JAN 2024 | JOB 118204 | FIGURE TM-1

C:\temp\AcPublish_24440\118204-FD.dwg, TM1, Jan 17, 2024 - 10:59am, rhillier

SHT11X17.DWG - 279mmX432mm



P - Passenger Car

Overall Length	5.600m
Overall Width	2.000m
Overall Body Height	1.555m
Min Body Ground Clearance	0.340m
Track Width	2.000m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.300m

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3493 INNES ROAD

TURNING MOVEMENT (PASSENGER CAR)

SCALE 1 : 500 (0, 5m, 10m, 20m)

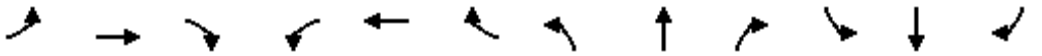
DATE JAN 2024 | JOB 118204 | FIGURE TM-2

C:\temp\AcPublish_24440\118204-FD.dwg, TM2, Jan 17, 2024 - 10:59am, rhillier

SHT11X17.DWG - 279mmX432mm

APPENDIX O

Total Synchro Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	461	24	28	1492	198	209	267	55	82	103	473
Future Volume (vph)	125	461	24	28	1492	198	209	267	55	82	103	473
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.548			0.587		
Satd. Flow (perm)	2988	3144	1416	1549	3357	1463	981	3357	1413	1003	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			138
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	125	461	24	28	1492	198	209	267	55	82	103	473
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	461	24	28	1492	198	209	267	55	82	103	473
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	72.0	72.0	13.0	72.0	72.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	10.0%	55.4%	55.4%	10.0%	55.4%	55.4%	9.2%	34.6%	34.6%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	65.8	65.8	6.8	65.8	65.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	6.4	71.0	71.0	6.5	65.8	65.8	38.3	38.3	38.3	26.3	26.3	26.3
Actuated g/C Ratio	0.05	0.55	0.55	0.05	0.51	0.51	0.29	0.29	0.29	0.20	0.20	0.20
v/c Ratio	0.85	0.27	0.03	0.36	0.88	0.24	0.66	0.27	0.12	0.41	0.15	1.15
Control Delay	103.8	17.1	0.1	72.6	35.9	6.2	49.8	36.0	3.3	52.1	43.4	123.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.8	17.1	0.1	72.6	35.9	6.2	49.8	36.0	3.3	52.1	43.4	123.2
LOS	F	B	A	E	D	A	D	D	A	D	D	F
Approach Delay		34.2			33.0			38.1			101.9	
Approach LOS		C			C			D			F	
Queue Length 50th (m)	15.3	32.2	0.0	6.5	159.9	6.5	39.7	25.4	0.0	17.0	10.6	~103.1
Queue Length 95th (m)	#31.9	42.5	0.0	16.0	191.7	18.4	60.8	36.1	4.2	31.9	18.1	#163.9
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	147	1717	838	82	1699	811	318	989	474	202	679	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.27	0.03	0.34	0.88	0.24	0.66	0.27	0.12	0.41	0.15	1.15

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 103.6% 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: Orleans & Innes

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	12	530	21	3	37	1526	20	14	12	38	34	9
Future Volume (vph)	12	530	21	3	37	1526	20	14	12	38	34	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0		45.0		0.0	0.0		0.0	0.0	
Storage Lanes	1		0		1		0	0		0	0	
Taper Length (m)	35.0				55.0			2.5			2.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			0.99	1.00			0.99			0.99
Frt		0.994				0.998			0.920			0.932
Flt Protected	0.950				0.950				0.989			0.981
Satd. Flow (prot)	1586	3126	0	0	1515	3349	0	0	1568	0	0	1596
Flt Permitted	0.129				0.446				0.922			0.851
Satd. Flow (perm)	215	3126	0	0	707	3349	0	0	1458	0	0	1384
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		6				2			38			41
Link Speed (k/h)		60				60			40			40
Link Distance (m)		491.4				142.1			212.5			273.4
Travel Time (s)		29.5				8.5			19.1			24.6
Confl. Peds. (#/hr)	4		7		7		4	11				
Confl. Bikes (#/hr)			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 (%)	9%	10%	5%	3%	15%	3%	5%	1%	15%	3%	1%	10%
Adj. Flow (vph)	12	530	21	3	37	1526	20	14	12	38	34	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	551	0	0	40	1546	0	0	64	0	0	86
Enter Blocked Intersection	No	No	No	No	No	Yes	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	L NA	Left	R NA	L NA	Left
Median Width(m)		5.0				5.0			0.0			0.0
Link Offset(m)		0.0				0.0			0.0			0.0
Crosswalk Width(m)		10.0				10.0			5.0			5.0
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	14	24		14	24		14	24	
Number of Detectors	1	2		1	1	2		1	2		1	2
Detector Template	Left	Thru		Left	Left	Thru		Left	Thru		Left	Thru
Leading Detector (m)	18.6	93.0		18.6	18.6	93.0		18.6	93.0		18.6	93.0
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)	18.6	5.5		18.6	18.6	5.5		18.6	5.5		18.6	5.5
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)		87.5				87.5			87.5			87.5
Detector 2 Size(m)		5.5				5.5			5.5			5.5
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
Turn Type	Perm	NA		Perm	Perm	NA		Perm	NA		Perm	NA
Protected Phases		2				6			8			4
Permitted Phases	2			6	6			8			4	
Detector Phase	2	2		6	6	6		8	8		4	4

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	43
Future Volume (vph)	43
Ideal Flow (vphpl)	1800
Storage Length (m)	0.0
Storage Lanes	0
Taper Length (m)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	11
Confl. Bikes (#/hr)	1
Peak Hour Factor	1.00
Heavy Vehicles (%)	3%
Adj. Flow (vph)	43
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	R NA
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	1.06
Turning Speed (k/h)	14
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)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0		10.0	10.0		10.0	10.0
Minimum Split (s)	39.2	39.2		39.2	39.2	39.2		37.8	37.8		37.8	37.8
Total Split (s)	82.0	82.0		82.0	82.0	82.0		38.0	38.0		38.0	38.0
Total Split (%)	68.3%	68.3%		68.3%	68.3%	68.3%		31.7%	31.7%		31.7%	31.7%
Maximum Green (s)	75.8	75.8		75.8	75.8	75.8		31.2	31.2		31.2	31.2
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7		3.0	3.0		3.0	3.0
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5		3.8	3.8		3.8	3.8
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0			0.0
Total Lost Time (s)	6.2	6.2			6.2	6.2			6.8			6.8
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max		None	None		None	None
Walk Time (s)	15.0	15.0		15.0	15.0	15.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)	7	7		4	4	4		1	1		11	11
Act Effct Green (s)	88.6	88.6			88.6	88.6			18.4			18.4
Actuated g/C Ratio	0.74	0.74			0.74	0.74			0.15			0.15
v/c Ratio	0.08	0.24			0.08	0.63			0.25			0.35
Control Delay	9.0	6.5			2.3	3.3			21.2			26.5
Queue Delay	0.0	0.0			0.0	0.0			0.0			0.0
Total Delay	9.0	6.5			2.3	3.3			21.2			26.5
LOS	A	A			A	A			C			C
Approach Delay		6.5				3.3			21.2			26.5
Approach LOS		A				A			C			C
Queue Length 50th (m)	0.4	11.5			0.9	28.8			5.4			9.4
Queue Length 95th (m)	3.5	33.8			m1.0	13.0			14.4			19.8
Internal Link Dist (m)		467.4				118.1			188.5			249.4
Turn Bay Length (m)	100.0				45.0							
Base Capacity (vph)	158	2310			521	2473			407			390
Starvation Cap Reductn	0	0			0	6			0			0
Spillback Cap Reductn	0	0			0	0			0			0
Storage Cap Reductn	0	0			0	0			0			0
Reduced v/c Ratio	0.08	0.24			0.08	0.63			0.16			0.22

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22 (18%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 5.5 Intersection LOS: A
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes

Lane Group	SBR
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
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	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

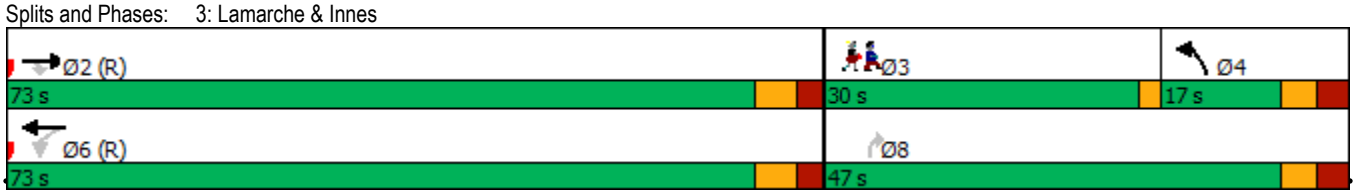
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	559	68	52	1363	164	64	
Future Volume (vph)	559	68	52	1363	164	64	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.95	0.99		0.98	0.98	
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.431		0.950		
Satd. Flow (perm)	3357	1433	753	3357	1650	1477	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		68				64	
Link Speed (k/h)	60			60	50		
Link Distance (m)	94.7			238.7	204.5		
Travel Time (s)	5.7			14.3	14.7		
Confl. Peds. (#/hr)		11	11		5	5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	559	68	52	1363	164	64	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	559	68	52	1363	164	64	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	3.0

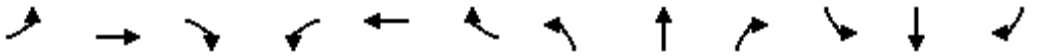
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	37.3	30.0
Total Split (s)	73.0	73.0	73.0	73.0	17.0	47.0	30.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	14.2%	39.2%	25%
Maximum Green (s)	66.8	66.8	66.8	66.8	10.7	40.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	78.8	78.8	78.8	78.8	16.7	28.7	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.14	0.24	
v/c Ratio	0.25	0.07	0.11	0.62	0.70	0.16	
Control Delay	7.3	1.3	6.2	11.0	67.5	7.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.3	1.3	6.2	11.0	67.5	7.5	
LOS	A	A	A	B	E	A	
Approach Delay	6.7			10.8	50.6		
Approach LOS	A			B	D		
Queue Length 50th (m)	15.6	0.0	1.6	22.1	33.1	0.0	
Queue Length 95th (m)	22.6	1.6	m4.0	141.2	#79.5	8.6	
Internal Link Dist (m)	70.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	2203	963	494	2203	233	543	
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	0.25	0.07	0.11	0.62	0.70	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 13.7 Intersection LOS: B
Intersection Capacity Utilization 59.8% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes





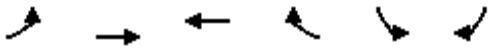
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	516	38	12	1410	4	99	0	39	1	0	3
Future Volume (vph)	6	516	38	12	1410	4	99	0	39	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00			1.00	0.99		0.99	
Frt		0.990							0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1712	3112	0	1712	3357	0	0	1712	1532	0	1583	0
Flt Permitted	0.161			0.445				0.755			0.942	
Satd. Flow (perm)	290	3112	0	802	3357	0	0	1357	1511	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14							39		28	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)	7					7	2		1	1		2
Confl. Bikes (#/hr)						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 (%)	1%	10%	10%	1%	3%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	6	516	38	12	1410	4	99	0	39	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	554	0	12	1414	0	0	99	39	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	80.9	80.9		80.9	80.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	1	1		7	7		1	1	1	2	2	
Act Effct Green (s)	92.0	92.0		92.0	92.0			15.6	15.6		15.6	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.13	0.13		0.13	
v/c Ratio	0.03	0.23		0.02	0.55			0.56	0.17		0.02	
Control Delay	4.3	3.6		4.9	7.4			59.7	14.0		0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	4.3	3.6		4.9	7.4			59.7	14.0		0.2	
LOS	A	A		A	A			E	B		A	
Approach Delay		3.6			7.4			46.8			0.3	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.2	10.8		0.5	51.3			20.8	0.0		0.0	
Queue Length 95th (m)	m1.0	15.7		2.6	98.8			33.3	8.3		0.0	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	222	2387		614	2572			301	366		357	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.03	0.23		0.02	0.55			0.33	0.11		0.01	

Intersection Summary

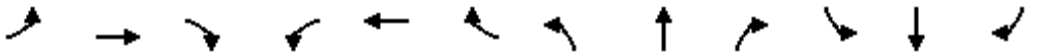
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 8.9 Intersection LOS: A
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	627	1522	5	0	8
Future Volume (vph)	10	627	1522	5	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	25.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	1712	3357	3357	0	0	1559
Flt Permitted	0.950					
Satd. Flow (perm)	1712	3357	3357	0	0	1559
Link Speed (k/h)		60	60		30	
Link Distance (m)		142.1	94.7		74.6	
Travel Time (s)		8.5	5.7		9.0	
Confl. Peds. (#/hr)	5			5		
Confl. Bikes (#/hr)				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	3%	1%	1%	1%
Adj. Flow (vph)	10	627	1522	5	0	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	627	1527	0	0	8
Enter Blocked Intersection	No	Yes	Yes	No	No	No
Lane Alignment	L NA	Left	Left	R NA	L NA	R NA
Median Width(m)		5.0	5.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		9.0	9.0		9.0	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			



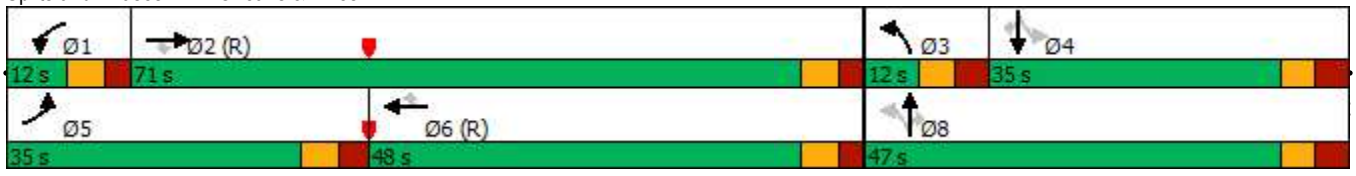
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	596	1744	163	65	763	153	66	232	107	200	248	209
Future Volume (vph)	596	1744	163	65	763	153	66	232	107	200	248	209
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.94	1.00		0.97	0.99		0.96	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.456			0.607		
Satd. Flow (perm)	3263	3357	1446	1705	3293	1475	811	3390	1473	1072	3390	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			195			134			209
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	596	1744	163	65	763	153	66	232	107	200	248	209
Shared Lane Traffic (%)												
Lane Group Flow (vph)	596	1744	163	65	763	153	66	232	107	200	248	209
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	35.0	71.0	71.0	12.0	48.0	48.0	12.0	47.0	47.0	35.0	35.0	35.0
Total Split (%)	26.9%	54.6%	54.6%	9.2%	36.9%	36.9%	9.2%	36.2%	36.2%	26.9%	26.9%	26.9%
Maximum Green (s)	28.4	64.8	64.8	5.8	41.8	41.8	5.3	40.3	40.3	28.3	28.3	28.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	26.9	67.9	67.9	6.2	46.9	46.9	36.7	36.7	36.7	27.1	27.1	27.1
Actuated g/C Ratio	0.21	0.52	0.52	0.05	0.36	0.36	0.28	0.28	0.28	0.21	0.21	0.21
v/c Ratio	0.88	0.99	0.20	0.79	0.64	0.23	0.25	0.24	0.21	0.90	0.35	0.44
Control Delay	64.9	51.9	4.7	105.6	46.0	10.3	35.3	35.6	3.6	88.3	45.1	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.9	51.9	4.7	105.6	46.0	10.3	35.3	35.6	3.6	88.3	45.1	8.6
LOS	E	D	A	F	D	B	D	D	A	F	D	A
Approach Delay		51.9			44.4			27.1			46.7	
Approach LOS		D			D			C			D	
Queue Length 50th (m)	69.7	~234.1	2.8	15.6	78.9	1.9	11.2	21.3	0.0	45.8	26.2	0.0
Queue Length 95th (m)	#90.5	#273.0	13.4	#41.7	106.2	18.1	21.4	31.1	7.2	#85.0	37.7	18.5
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	718	1754	822	82	1187	656	266	1050	549	233	737	485
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.99	0.20	0.79	0.64	0.23	0.25	0.22	0.19	0.86	0.34	0.43

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 125 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 47.3 Intersection LOS: D
Intersection Capacity Utilization 102.6% 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: Orleans & Innes



Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	63	1779	30	6	93	860	64	23	7	77	54	18
Future Volume (vph)	63	1779	30	6	93	860	64	23	7	77	54	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0		45.0		0.0	0.0		0.0	0.0	
Storage Lanes	1		0		1		0	0		0	0	
Taper Length (m)	35.0				55.0			2.5			2.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00				1.00			0.98			0.99
Frt		0.998				0.990			0.903			0.955
Flt Protected	0.950				0.950				0.989			0.976
Satd. Flow (prot)	1695	3380	0	0	1694	3258	0	0	1541	0	0	1578
Flt Permitted	0.309				0.054				0.917			0.754
Satd. Flow (perm)	549	3380	0	0	96	3258	0	0	1427	0	0	1211
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		2				12			68			18
Link Speed (k/h)		60				60			40			40
Link Distance (m)		491.4				142.1			212.5			273.4
Travel Time (s)		29.5				8.5			19.1			24.6
Confl. Peds. (#/hr)	9		5		5		9	5		13	13	
Confl. Bikes (#/hr)			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%	2%	6%	3%	2%	5%	2%	5%	1%	3%	6%	1%
Adj. Flow (vph)	63	1779	30	6	93	860	64	23	7	77	54	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	1809	0	0	99	924	0	0	107	0	0	108
Enter Blocked Intersection	No	No	No	No	No	Yes	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	L NA	Left	R NA	L NA	Left
Median Width(m)		5.0				5.0			0.0			0.0
Link Offset(m)		0.0				0.0			0.0			0.0
Crosswalk Width(m)		10.0				10.0			5.0			5.0
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	14	24		14	24		14	24	
Number of Detectors	1	2		1	1	2		1	2		1	2
Detector Template	Left	Thru		Left	Left	Thru		Left	Thru		Left	Thru
Leading Detector (m)	18.6	93.0		18.6	18.6	93.0		18.6	93.0		18.6	93.0
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)	18.6	5.5		18.6	18.6	5.5		18.6	5.5		18.6	5.5
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)		87.5				87.5			87.5			87.5
Detector 2 Size(m)		5.5				5.5			5.5			5.5
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
Turn Type	Perm	NA		pm+pt	pm+pt	NA		Perm	NA		Perm	NA
Protected Phases		2		1	1	6			8			4
Permitted Phases	2			6	6			8			4	
Detector Phase	2	2		1	1	6		8	8		4	4

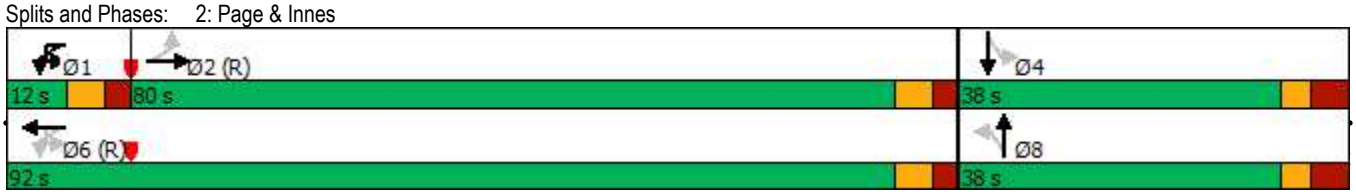
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	36
Future Volume (vph)	36
Ideal Flow (vphpl)	1800
Storage Length (m)	0.0
Storage Lanes	0
Taper Length (m)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	5
Confl. Bikes (#/hr)	
Peak Hour Factor	1.00
Heavy Vehicles (%)	11%
Adj. Flow (vph)	36
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	R NA
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	1.06
Turning Speed (k/h)	14
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)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	10.0		10.0	10.0		10.0	10.0
Minimum Split (s)	39.2	39.2		11.2	11.2	39.2		37.8	37.8		37.8	37.8
Total Split (s)	80.0	80.0		12.0	12.0	92.0		38.0	38.0		38.0	38.0
Total Split (%)	61.5%	61.5%		9.2%	9.2%	70.8%		29.2%	29.2%		29.2%	29.2%
Maximum Green (s)	73.8	73.8		5.8	5.8	85.8		31.2	31.2		31.2	31.2
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7		3.0	3.0		3.0	3.0
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5		3.8	3.8		3.8	3.8
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0			0.0
Total Lost Time (s)	6.2	6.2			6.2	6.2			6.8			6.8
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		None	None	C-Max		None	None		None	None
Walk Time (s)	15.0	15.0				15.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	18.0	18.0				18.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)	5	5				9		13	13		5	5
Act Effct Green (s)	84.2	84.2			97.4	97.4			19.6			19.6
Actuated g/C Ratio	0.65	0.65			0.75	0.75			0.15			0.15
v/c Ratio	0.18	0.83			0.63	0.38			0.39			0.55
Control Delay	3.4	5.6			49.2	4.5			22.5			50.4
Queue Delay	0.0	0.0			0.0	0.0			0.0			0.0
Total Delay	3.4	5.6			49.2	4.5			22.5			50.4
LOS	A	A			D	A			C			D
Approach Delay		5.6				8.8			22.5			50.4
Approach LOS		A				A			C			D
Queue Length 50th (m)	1.6	28.8			7.6	20.9			8.6			20.8
Queue Length 95th (m)	m2.3	m32.8			#35.0	26.0			21.6			33.7
Internal Link Dist (m)		467.4				118.1			188.5			249.4
Turn Bay Length (m)	100.0				45.0							
Base Capacity (vph)	355	2188			158	2444			394			304
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	0.83			0.63	0.38			0.27			0.36

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 122 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 90.0% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes



Lane Group	SBR
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
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	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

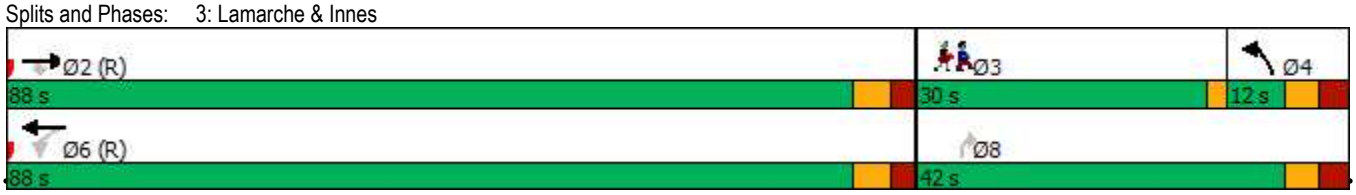
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	1606	169	76	935	126	60	
Future Volume (vph)	1606	169	76	935	126	60	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.96			0.97	0.98	
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.099		0.950		
Satd. Flow (perm)	3357	1449	175	3357	1621	1476	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		122				34	
Link Speed (k/h)	60			60	50		
Link Distance (m)	94.7			238.7	204.5		
Travel Time (s)	5.7			14.3	14.7		
Confl. Peds. (#/hr)		6	6		5	5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	1606	169	76	935	126	60	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	1606	169	76	935	126	60	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	3.0

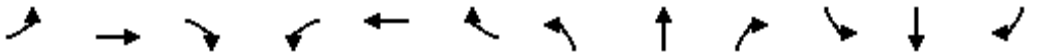
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	37.3	30.0
Total Split (s)	88.0	88.0	88.0	88.0	12.0	42.0	30.0
Total Split (%)	67.7%	67.7%	67.7%	67.7%	9.2%	32.3%	23%
Maximum Green (s)	81.8	81.8	81.8	81.8	5.7	35.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	88.3	88.3	88.3	88.3	17.2	29.2	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.13	0.22	
v/c Ratio	0.70	0.17	0.64	0.41	0.57	0.17	
Control Delay	2.8	0.2	39.2	8.0	64.9	20.8	
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.0	0.2	39.2	8.0	64.9	20.8	
LOS	A	A	D	A	E	C	
Approach Delay	2.7			10.4	50.6		
Approach LOS	A			B	D		
Queue Length 50th (m)	9.8	0.2	5.5	24.9	27.4	5.3	
Queue Length 95th (m)	13.6	m0.0	#39.4	40.5	#80.5	14.5	
Internal Link Dist (m)	70.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	2279	1022	118	2279	222	429	
Starvation Cap Reductn	127	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	0.75	0.17	0.64	0.41	0.57	0.14	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 129 (99%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 78.1% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes





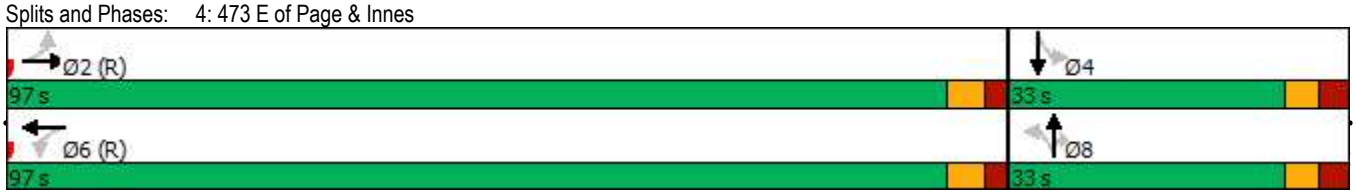
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1729	131	67	950	8	88	0	56	4	0	10
Future Volume (vph)	8	1729	131	67	950	8	88	0	56	4	0	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00			0.99	
Frt		0.989			0.999				0.850		0.904	
Flt Protected	0.950			0.950				0.950			0.986	
Satd. Flow (prot)	1712	3349	0	1712	3322	0	0	1712	1381	0	1587	0
Flt Permitted	0.285			0.088				0.748			0.920	
Satd. Flow (perm)	514	3349	0	159	3322	0	0	1342	1381	0	1481	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			1				39		26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)			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 (%)	1%	2%	1%	1%	4%	1%	1%	1%	12%	1%	1%	1%
Adj. Flow (vph)	8	1729	131	67	950	8	88	0	56	4	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1860	0	67	958	0	0	88	56	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

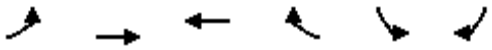
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	97.0	97.0		97.0	97.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	74.6%	74.6%		74.6%	74.6%		25.4%	25.4%	25.4%	25.4%	25.4%	
Maximum Green (s)	90.9	90.9		90.9	90.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	2	2		1	1		1	1	1	3	3	
Act Effct Green (s)	102.1	102.1		102.1	102.1			15.5	15.5		15.5	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.12	0.12		0.12	
v/c Ratio	0.02	0.71		0.54	0.37			0.55	0.28		0.07	
Control Delay	1.1	2.0		27.3	5.2			65.5	24.1		7.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	1.1	2.0		27.3	5.2			65.5	24.1		7.4	
LOS	A	A		C	A			E	C		A	
Approach Delay		2.0			6.6			49.4			7.4	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.1	8.5		4.6	27.8			20.2	3.7		0.0	
Queue Length 95th (m)	m0.2	14.0		#33.3	54.7			32.7	14.1		2.9	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	403	2633		124	2609			275	314		324	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.02	0.71		0.54	0.37			0.32	0.18		0.04	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 4 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 5.8 Intersection LOS: A
Intersection Capacity Utilization 88.4% 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.
m Volume for 95th percentile queue is metered by upstream signal.

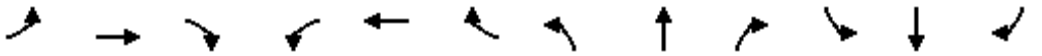
Splits and Phases: 4: 473 E of Page & Innes





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	1775	1042	19	0	30
Future Volume (vph)	11	1775	1042	19	0	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	25.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.997			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1712	3357	3348	0	0	1559
Flt Permitted	0.950					
Satd. Flow (perm)	1712	3357	3348	0	0	1559
Link Speed (k/h)		60	60		30	
Link Distance (m)		142.1	94.7		74.6	
Travel Time (s)		8.5	5.7		9.0	
Confl. Peds. (#/hr)	5			5		
Confl. Bikes (#/hr)				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	3%	1%	1%	1%
Adj. Flow (vph)	11	1775	1042	19	0	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	1775	1061	0	0	30
Enter Blocked Intersection	No	Yes	Yes	No	No	No
Lane Alignment	L NA	Left	Left	R NA	L NA	R NA
Median Width(m)		5.0	5.0		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		9.0	9.0		9.0	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	532	25	29	1604	219	219	280	58	98	108	496
Future Volume (vph)	131	532	25	29	1604	219	219	280	58	98	108	496
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.97	0.99		0.94	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2995	3144	1473	1572	3357	1502	1712	3357	1502	1679	3357	1532
Flt Permitted	0.950			0.950			0.545			0.580		
Satd. Flow (perm)	2989	3144	1416	1551	3357	1463	975	3357	1413	992	3357	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			143			82			138
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	6		14	14		6	6		32	32		6
Confl. Bikes (#/hr)						6						
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 (%)	12%	10%	5%	10%	3%	3%	1%	3%	3%	3%	3%	1%
Adj. Flow (vph)	131	532	25	29	1604	219	219	280	58	98	108	496
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	532	25	29	1604	219	219	280	58	98	108	496
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	13.0	72.0	72.0	13.0	72.0	72.0	12.0	45.0	45.0	33.0	33.0	33.0
Total Split (%)	10.0%	55.4%	55.4%	10.0%	55.4%	55.4%	9.2%	34.6%	34.6%	25.4%	25.4%	25.4%
Maximum Green (s)	6.4	65.8	65.8	6.8	65.8	65.8	5.3	38.3	38.3	26.3	26.3	26.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		14	14		6	6		32	32	6	6	6
Act Effct Green (s)	6.4	71.0	71.0	6.5	65.8	65.8	38.3	38.3	38.3	26.3	26.3	26.3
Actuated g/C Ratio	0.05	0.55	0.55	0.05	0.51	0.51	0.29	0.29	0.29	0.20	0.20	0.20
v/c Ratio	0.89	0.31	0.03	0.37	0.94	0.27	0.69	0.28	0.12	0.49	0.16	1.20
Control Delay	110.9	17.6	0.1	73.2	42.9	7.3	51.9	36.2	3.6	55.4	43.5	143.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	17.6	0.1	73.2	42.9	7.3	51.9	36.2	3.6	55.4	43.5	143.8
LOS	F	B	A	E	D	A	D	D	A	E	D	F
Approach Delay		34.7			39.1			39.0			116.0	
Approach LOS		C			D			D			F	
Queue Length 50th (m)	16.1	38.1	0.0	6.7	183.1	9.1	41.8	26.7	0.0	20.6	11.1	~114.6
Queue Length 95th (m)	#33.6	49.6	0.0	16.2	#233.8	22.2	63.6	37.9	5.1	37.9	18.7	#176.3
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	147	1717	838	82	1699	811	317	989	474	200	679	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.31	0.03	0.35	0.94	0.27	0.69	0.28	0.12	0.49	0.16	1.20

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 52.5 Intersection LOS: D
Intersection Capacity Utilization 109.0% 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: Orleans & Innes

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	12	616	21	3	37	1651	20	14	12	38	34	9
Future Volume (vph)	12	616	21	3	37	1651	20	14	12	38	34	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0		45.0		0.0	0.0		0.0	0.0	
Storage Lanes	1		0		1		0	0		0	0	
Taper Length (m)	35.0				55.0			2.5			2.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00	1.00			0.99			0.99
Frt		0.995				0.998			0.920			0.932
Flt Protected	0.950				0.950				0.989			0.981
Satd. Flow (prot)	1586	3129	0	0	1515	3349	0	0	1568	0	0	1596
Flt Permitted	0.107				0.405				0.922			0.851
Satd. Flow (perm)	179	3129	0	0	643	3349	0	0	1458	0	0	1384
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		5				2			38			31
Link Speed (k/h)		60				60			40			40
Link Distance (m)		491.4				142.1			212.5			273.4
Travel Time (s)		29.5				8.5			19.1			24.6
Confl. Peds. (#/hr)	4		7		7		4	11				
Confl. Bikes (#/hr)			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 (%)	9%	10%	5%	3%	15%	3%	5%	1%	15%	3%	1%	10%
Adj. Flow (vph)	12	616	21	3	37	1651	20	14	12	38	34	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	637	0	0	40	1671	0	0	64	0	0	86
Enter Blocked Intersection	No	No	No	No	No	Yes	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	L NA	Left	R NA	L NA	Left
Median Width(m)		5.0				5.0			0.0			0.0
Link Offset(m)		0.0				0.0			0.0			0.0
Crosswalk Width(m)		10.0				10.0			5.0			5.0
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	14	24		14	24		14	24	
Number of Detectors	1	2		1	1	2		1	2		1	2
Detector Template	Left	Thru		Left	Left	Thru		Left	Thru		Left	Thru
Leading Detector (m)	18.6	93.0		18.6	18.6	93.0		18.6	93.0		18.6	93.0
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)	18.6	5.5		18.6	18.6	5.5		18.6	5.5		18.6	5.5
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)		87.5				87.5			87.5			87.5
Detector 2 Size(m)		5.5				5.5			5.5			5.5
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
Turn Type	Perm	NA		Perm	Perm	NA		Perm	NA		Perm	NA
Protected Phases		2				6			8			4
Permitted Phases	2			6	6			8			4	
Detector Phase	2	2		6	6	6		8	8		4	4

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	43
Future Volume (vph)	43
Ideal Flow (vphpl)	1800
Storage Length (m)	0.0
Storage Lanes	0
Taper Length (m)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	11
Confl. Bikes (#/hr)	1
Peak Hour Factor	1.00
Heavy Vehicles (%)	3%
Adj. Flow (vph)	43
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	R NA
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	1.06
Turning Speed (k/h)	14
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)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0		10.0	10.0		10.0	10.0
Minimum Split (s)	39.2	39.2		39.2	39.2	39.2		37.8	37.8		37.8	37.8
Total Split (s)	82.0	82.0		82.0	82.0	82.0		38.0	38.0		38.0	38.0
Total Split (%)	68.3%	68.3%		68.3%	68.3%	68.3%		31.7%	31.7%		31.7%	31.7%
Maximum Green (s)	75.8	75.8		75.8	75.8	75.8		31.2	31.2		31.2	31.2
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7		3.0	3.0		3.0	3.0
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5		3.8	3.8		3.8	3.8
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0			0.0
Total Lost Time (s)	6.2	6.2			6.2	6.2			6.8			6.8
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max		None	None		None	None
Walk Time (s)	15.0	15.0		15.0	15.0	15.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)	7	7		4	4	4		1	1		11	11
Act Effct Green (s)	88.6	88.6			88.6	88.6			18.4			18.4
Actuated g/C Ratio	0.74	0.74			0.74	0.74			0.15			0.15
v/c Ratio	0.09	0.28			0.08	0.68			0.25			0.36
Control Delay	9.7	6.7			2.2	3.7			21.2			31.1
Queue Delay	0.0	0.0			0.0	0.0			0.0			0.0
Total Delay	9.7	6.7			2.2	3.7			21.2			31.1
LOS	A	A			A	A			C			C
Approach Delay		6.8				3.7			21.2			31.1
Approach LOS		A				A			C			C
Queue Length 50th (m)	0.4	13.7			0.8	33.2			5.4			11.6
Queue Length 95th (m)	3.7	39.9			m0.7	12.9			14.4			21.8
Internal Link Dist (m)		467.4				118.1			188.5			249.4
Turn Bay Length (m)	100.0				45.0							
Base Capacity (vph)	132	2311			474	2473			407			382
Starvation Cap Reductn	0	0			0	5			0			0
Spillback Cap Reductn	0	0			0	0			0			0
Storage Cap Reductn	0	0			0	0			0			0
Reduced v/c Ratio	0.09	0.28			0.08	0.68			0.16			0.23

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22 (18%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 5.9 Intersection LOS: A
Intersection Capacity Utilization 74.4% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes

Lane Group	SBR
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
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	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	542	176	179	1361	291	171	
Future Volume (vph)	542	176	179	1361	291	171	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		50.0	65.0		70.0	70.0	
Storage Lanes		1	1		1	0	
Taper Length (m)			80.0		20.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Ped Bike Factor		0.95	0.99		0.98	0.98	
Frt		0.850				0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502	
Flt Permitted			0.424		0.950		
Satd. Flow (perm)	3357	1433	741	3357	1650	1477	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		176				171	
Link Speed (k/h)	60			60	50		
Link Distance (m)	94.7			238.7	204.5		
Travel Time (s)	5.7			14.3	14.7		
Confl. Peds. (#/hr)		11	11		5	5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	542	176	179	1361	291	171	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	542	176	179	1361	291	171	
Enter Blocked Intersection	Yes	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	L NA	R NA	
Median Width(m)	5.0			5.0	3.7		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	9.0			9.0	9.0		
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)		14	24		24	14	
Number of Detectors	2	1	1	2	1	1	
Detector Template	Thru	Right	Left	Thru	Left	Right	
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6	
Trailing Detector (m)	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	
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Detector 2 Position(m)	87.5			87.5			
Detector 2 Size(m)	5.5			5.5			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	4		3
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	4	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	3.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Minimum Split (s)	31.2	31.2	31.2	31.2	11.3	16.3	30.0
Total Split (s)	73.0	73.0	73.0	73.0	17.0	47.0	30.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	14.2%	39.2%	25%
Maximum Green (s)	66.8	66.8	66.8	66.8	10.7	40.7	28.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5	3.0	3.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.3	6.3	
Lead/Lag					Lag		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	18.0	18.0			21.0
Pedestrian Calls (#/hr)	10	10	10	10			10
Act Effct Green (s)	67.8	67.8	67.8	67.8	27.7	39.7	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.23	0.33	
v/c Ratio	0.29	0.20	0.43	0.72	0.75	0.28	
Control Delay	10.6	1.3	13.1	17.1	58.2	5.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.6	1.3	13.1	17.1	58.2	5.4	
LOS	B	A	B	B	E	A	
Approach Delay	8.3			16.6	38.7		
Approach LOS	A			B	D		
Queue Length 50th (m)	30.2	0.0	20.6	105.7	53.6	0.0	
Queue Length 95th (m)	21.4	2.2	22.4	116.8	#147.2	13.5	
Internal Link Dist (m)	70.7			214.7	180.5		
Turn Bay Length (m)		50.0	65.0		70.0	70.0	
Base Capacity (vph)	1896	886	418	1896	387	613	
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	0.20	0.43	0.72	0.75	0.28	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 18.2 Intersection LOS: B
Intersection Capacity Utilization 67.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Lamarche & Innes

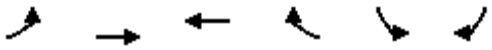
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	602	38	12	1539	4	99	0	39	1	0	3
Future Volume (vph)	6	602	38	12	1539	4	99	0	39	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			1.00	0.99		0.99	
Frt		0.991							0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1712	3115	0	1712	3357	0	0	1712	1532	0	1583	0
Flt Permitted	0.135			0.407				0.755			0.942	
Satd. Flow (perm)	243	3115	0	733	3357	0	0	1357	1511	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12							39		28	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)	7					7	2		1	1		2
Confl. Bikes (#/hr)						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 (%)	1%	10%	10%	1%	3%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	6	602	38	12	1539	4	99	0	39	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	640	0	12	1543	0	0	99	39	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	80.9	80.9		80.9	80.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	1	1		7	7		1	1	1	2	2	
Act Effct Green (s)	92.0	92.0		92.0	92.0			15.6	15.6		15.6	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.13	0.13		0.13	
v/c Ratio	0.03	0.27		0.02	0.60			0.56	0.17		0.02	
Control Delay	4.7	3.9		5.0	8.1			59.7	14.0		0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	4.7	3.9		5.0	8.1			59.7	14.0		0.2	
LOS	A	A		A	A			E	B		A	
Approach Delay		3.9			8.1			46.8			0.3	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.2	13.1		0.5	59.9			20.8	0.0		0.0	
Queue Length 95th (m)	m1.1	22.1		2.6	115.3			33.3	8.3		0.0	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	186	2389		561	2572			301	366		357	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.03	0.27		0.02	0.60			0.33	0.11		0.01	

Intersection Summary

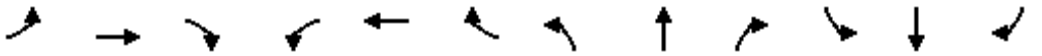
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 9.2 Intersection LOS: A
Intersection Capacity Utilization 68.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	718	1647	5	0	8
Future Volume (vph)	10	718	1647	5	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	25.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	1712	3357	3357	0	0	1559
Flt Permitted	0.950					
Satd. Flow (perm)	1712	3357	3357	0	0	1559
Link Speed (k/h)		60	60		30	
Link Distance (m)		142.1	94.7		74.6	
Travel Time (s)		8.5	5.7		9.0	
Confl. Peds. (#/hr)	5			5		
Confl. Bikes (#/hr)				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	3%	1%	1%	1%
Adj. Flow (vph)	10	718	1647	5	0	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	718	1652	0	0	8
Enter Blocked Intersection	No	Yes	Yes	No	No	No
Lane Alignment	L NA	Left	Left	R NA	L NA	R NA
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		9.0	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	625	1873	171	68	841	172	69	243	111	223	260	219
Future Volume (vph)	625	1873	171	68	841	172	69	243	111	223	260	219
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			10.0			20.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.94	1.00		0.97	0.99		0.96	0.98		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3357	1532	1712	3293	1517	1712	3390	1532	1712	3390	1532
Flt Permitted	0.950			0.950			0.452			0.601		
Satd. Flow (perm)	3265	3357	1446	1706	3293	1475	804	3390	1473	1062	3390	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			195			134			219
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		264.5			491.4			387.7			301.9	
Travel Time (s)		15.9			29.5			27.9			21.7	
Confl. Peds. (#/hr)	7		22	22		7	15		18	18		15
Confl. Bikes (#/hr)			4			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%	3%	1%	1%	5%	2%	1%	2%	1%	1%	2%	1%
Adj. Flow (vph)	625	1873	171	68	841	172	69	243	111	223	260	219
Shared Lane Traffic (%)												
Lane Group Flow (vph)	625	1873	171	68	841	172	69	243	111	223	260	219
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		9.0			7.4			6.0			6.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		5.0			5.0			5.0			5.0	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	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	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	4	4	4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	32.7
Total Split (s)	35.0	71.0	71.0	12.0	48.0	48.0	12.0	47.0	47.0	35.0	35.0	35.0
Total Split (%)	26.9%	54.6%	54.6%	9.2%	36.9%	36.9%	9.2%	36.2%	36.2%	26.9%	26.9%	26.9%
Maximum Green (s)	28.4	64.8	64.8	5.8	41.8	41.8	5.3	40.3	40.3	28.3	28.3	28.3
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.2	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)		22	22		7	7		32	32	15	15	15
Act Effct Green (s)	27.4	66.3	66.3	6.3	44.9	44.9	38.3	38.3	38.3	28.7	28.7	28.7
Actuated g/C Ratio	0.21	0.51	0.51	0.05	0.35	0.35	0.29	0.29	0.29	0.22	0.22	0.22
v/c Ratio	0.90	1.09	0.21	0.82	0.74	0.27	0.25	0.24	0.21	0.95	0.35	0.44
Control Delay	67.5	83.7	5.1	107.9	53.5	11.3	35.2	35.0	4.0	98.3	44.5	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.5	83.7	5.1	107.9	53.5	11.3	35.2	35.0	4.0	98.3	44.5	8.3
LOS	E	F	A	F	D	B	D	D	A	F	D	A
Approach Delay		74.8			50.2			26.9			50.3	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	73.9	~267.3	3.8	16.4	109.3	4.3	11.7	22.4	0.0	52.5	27.5	0.0
Queue Length 95th (m)	#100.5	#306.0	14.7	#42.1	116.2	19.3	22.3	32.3	8.1	#98.7	39.4	18.7
Internal Link Dist (m)		240.5			467.4			363.7			277.9	
Turn Bay Length (m)	140.0		80.0	105.0		60.0	50.0		50.0	55.0		60.0
Base Capacity (vph)	718	1712	805	83	1136	636	273	1050	549	234	747	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.09	0.21	0.82	0.74	0.27	0.25	0.23	0.20	0.95	0.35	0.44

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 4 (3%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 61.7 Intersection LOS: E
Intersection Capacity Utilization 107.7% 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: Orleans & Innes

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	63	1923	30	6	93	954	64	23	7	77	54	18
Future Volume (vph)	63	1923	30	6	93	954	64	23	7	77	54	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		0.0		45.0		0.0	0.0		0.0	0.0	
Storage Lanes	1		0		1		0	0		0	0	
Taper Length (m)	35.0				55.0			2.5			2.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00				1.00			0.98			0.99
Frt		0.998				0.991			0.903			0.955
Flt Protected	0.950				0.950				0.989			0.976
Satd. Flow (prot)	1695	3380	0	0	1694	3262	0	0	1541	0	0	1578
Flt Permitted	0.282				0.044				0.917			0.754
Satd. Flow (perm)	501	3380	0	0	78	3262	0	0	1427	0	0	1211
Right Turn on Red			Yes				Yes			Yes		
Satd. Flow (RTOR)		2				11			63			18
Link Speed (k/h)		60				60			40			40
Link Distance (m)		491.4				142.1			212.5			273.4
Travel Time (s)		29.5				8.5			19.1			24.6
Confl. Peds. (#/hr)	9		5		5		9	5		13	13	
Confl. Bikes (#/hr)			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%	2%	6%	3%	2%	5%	2%	5%	1%	3%	6%	1%
Adj. Flow (vph)	63	1923	30	6	93	954	64	23	7	77	54	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	1953	0	0	99	1018	0	0	107	0	0	108
Enter Blocked Intersection	No	No	No	No	No	Yes	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	R NA	Left	Left	Right	L NA	Left	R NA	L NA	Left
Median Width(m)		5.0				5.0			0.0			0.0
Link Offset(m)		0.0				0.0			0.0			0.0
Crosswalk Width(m)		10.0				10.0			5.0			5.0
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	14	24		14	24		14	24	
Number of Detectors	1	2		1	1	2		1	2		1	2
Detector Template	Left	Thru		Left	Left	Thru		Left	Thru		Left	Thru
Leading Detector (m)	18.6	93.0		18.6	18.6	93.0		18.6	93.0		18.6	93.0
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)	18.6	5.5		18.6	18.6	5.5		18.6	5.5		18.6	5.5
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)		87.5				87.5			87.5			87.5
Detector 2 Size(m)		5.5				5.5			5.5			5.5
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
Turn Type	Perm	NA		pm+pt	pm+pt	NA		Perm	NA		Perm	NA
Protected Phases		2		1	1	6			8			4
Permitted Phases	2			6	6			8			4	
Detector Phase	2	2		1	1	6		8	8		4	4

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	36
Future Volume (vph)	36
Ideal Flow (vphpl)	1800
Storage Length (m)	0.0
Storage Lanes	0
Taper Length (m)	
Lane Util. Factor	1.00
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	5
Confl. Bikes (#/hr)	
Peak Hour Factor	1.00
Heavy Vehicles (%)	11%
Adj. Flow (vph)	36
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Enter Blocked Intersection	No
Lane Alignment	R NA
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	1.06
Turning Speed (k/h)	14
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)	
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	10.0		10.0	10.0		10.0	10.0
Minimum Split (s)	39.2	39.2		11.2	11.2	39.2		37.8	37.8		37.8	37.8
Total Split (s)	80.0	80.0		12.0	12.0	92.0		38.0	38.0		38.0	38.0
Total Split (%)	61.5%	61.5%		9.2%	9.2%	70.8%		29.2%	29.2%		29.2%	29.2%
Maximum Green (s)	73.8	73.8		5.8	5.8	85.8		31.2	31.2		31.2	31.2
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7		3.0	3.0		3.0	3.0
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5		3.8	3.8		3.8	3.8
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0			0.0
Total Lost Time (s)	6.2	6.2			6.2	6.2			6.8			6.8
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		None	None	C-Max		None	None		None	None
Walk Time (s)	15.0	15.0				15.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)	18.0	18.0				18.0		24.0	24.0		24.0	24.0
Pedestrian Calls (#/hr)	5	5				9		13	13		5	5
Act Effct Green (s)	84.2	84.2			97.4	97.4			19.6			19.6
Actuated g/C Ratio	0.65	0.65			0.75	0.75			0.15			0.15
v/c Ratio	0.19	0.89			0.68	0.42			0.40			0.55
Control Delay	3.2	7.6			58.1	4.3			24.5			50.4
Queue Delay	0.0	0.0			0.0	0.0			0.0			0.0
Total Delay	3.2	7.6			58.1	4.3			24.5			50.4
LOS	A	A			E	A			C			D
Approach Delay		7.4				9.1			24.5			50.4
Approach LOS		A				A			C			D
Queue Length 50th (m)	1.6	30.8			10.4	20.4			9.7			20.8
Queue Length 95th (m)	m2.0	m31.8			m#37.8	27.1			22.7			33.7
Internal Link Dist (m)		467.4				118.1			188.5			249.4
Turn Bay Length (m)	100.0				45.0							
Base Capacity (vph)	324	2188			146	2447			390			304
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	0.19	0.89			0.68	0.42			0.27			0.36

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 4 (3%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 9.9 Intersection LOS: A
Intersection Capacity Utilization 94.2% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page & Innes

Lane Group	SBR
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
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	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

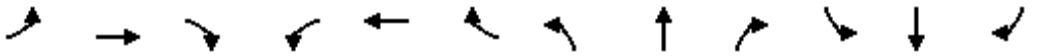
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3	Ø8
Lane Configurations								
Traffic Volume (vph)	1595	324	177	948	217	205		
Future Volume (vph)	1595	324	177	948	217	205		
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800		
Storage Length (m)		50.0	65.0		70.0	70.0		
Storage Lanes		1	1		1	0		
Taper Length (m)			80.0		20.0			
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00		
Ped Bike Factor		0.96			0.98			
Frt		0.850				0.850		
Flt Protected			0.950		0.950			
Satd. Flow (prot)	3357	1502	1679	3357	1679	1502		
Flt Permitted			0.059		0.950			
Satd. Flow (perm)	3357	1449	104	3357	1645	1502		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)		166				10		
Link Speed (k/h)	60			60	50			
Link Distance (m)	94.7			238.7	204.5			
Travel Time (s)	5.7			14.3	14.7			
Confl. Peds. (#/hr)		6	6		5	5		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	1595	324	177	948	217	205		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	1595	324	177	948	217	205		
Enter Blocked Intersection	Yes	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	L NA	R NA		
Median Width(m)	5.0			5.0	3.7			
Link Offset(m)	0.0			0.0	0.0			
Crosswalk Width(m)	9.0			9.0	9.0			
Two way Left Turn Lane								
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06		
Turning Speed (k/h)		14	24		24	14		
Number of Detectors	2	1	1	2	1	1		
Detector Template	Thru	Right	Left	Thru	Left	Right		
Leading Detector (m)	93.0	18.6	18.6	93.0	18.6	18.6		
Trailing Detector (m)	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		
Detector 1 Size(m)	5.5	18.6	18.6	5.5	18.6	18.6		
Detector 1 Type	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		
Detector 1 Queue (s)	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		
Detector 2 Position(m)	87.5			87.5				
Detector 2 Size(m)	5.5			5.5				
Detector 2 Type	Cl+Ex			Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)	0.0			0.0				
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov		
Protected Phases	2		1	6	4	1 8	3	8
Permitted Phases		2	6					
Detector Phase	2	2	1	6	4	1 8		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0		3.0	10.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3	Ø8
Minimum Split (s)	31.2	31.2	11.3	31.2	11.3		30.0	16.3
Total Split (s)	68.0	68.0	16.0	84.0	16.0		30.0	46.0
Total Split (%)	52.3%	52.3%	12.3%	64.6%	12.3%		23%	35%
Maximum Green (s)	61.8	61.8	9.7	77.8	9.7		28.0	39.7
Yellow Time (s)	3.7	3.7	3.3	3.7	3.3		2.0	3.3
All-Red Time (s)	2.5	2.5	3.0	2.5	3.0		0.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	6.2	6.2	6.3	6.2	6.3			
Lead/Lag	Lag	Lag	Lead		Lag		Lead	
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	None		None	None
Walk Time (s)	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	18.0	18.0		18.0			21.0	
Pedestrian Calls (#/hr)	10	10		10			10	
Act Effct Green (s)	62.2	62.2	80.7	80.8	24.7	55.3		
Actuated g/C Ratio	0.48	0.48	0.62	0.62	0.19	0.43		
v/c Ratio	0.99	0.42	0.83	0.45	0.68	0.32		
Control Delay	27.9	1.9	70.3	11.6	61.9	25.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	27.9	1.9	70.3	11.6	61.9	25.2		
LOS	C	A	E	B	E	C		
Approach Delay	23.5			20.8	44.1			
Approach LOS	C			C	D			
Queue Length 50th (m)	114.0	2.9	29.1	39.0	45.6	30.8		
Queue Length 95th (m)	#241.0	m4.8	#72.2	54.6	#121.7	47.2		
Internal Link Dist (m)	70.7			214.7	180.5			
Turn Bay Length (m)		50.0	65.0		70.0	70.0		
Base Capacity (vph)	1605	779	213	2087	318	642		
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	0.99	0.42	0.83	0.45	0.68	0.32		

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 28 (22%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 25.1 Intersection LOS: C
Intersection Capacity Utilization 85.2% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lamarche & Innes



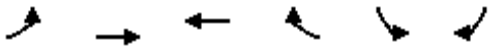
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1872	131	67	1065	8	88	0	56	4	0	10
Future Volume (vph)	8	1872	131	67	1065	8	88	0	56	4	0	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	65.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	80.0			30.0			20.0			20.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00			0.99	
Frt		0.990			0.999				0.850		0.904	
Flt Protected	0.950			0.950				0.950			0.986	
Satd. Flow (prot)	1712	3353	0	1712	3322	0	0	1712	1381	0	1587	0
Flt Permitted	0.249			0.070				0.748			0.920	
Satd. Flow (perm)	449	3353	0	126	3322	0	0	1342	1381	0	1481	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			1				29		26	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		238.7			292.8			151.9			62.6	
Travel Time (s)		14.3			17.6			13.7			5.6	
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)			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 (%)	1%	2%	1%	1%	4%	1%	1%	1%	12%	1%	1%	1%
Adj. Flow (vph)	8	1872	131	67	1065	8	88	0	56	4	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	2003	0	67	1073	0	0	88	56	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(m)		5.0			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		9.0			9.0			9.0			9.0	
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		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
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)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
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)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
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	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.1	32.1		35.1	35.1		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	97.0	97.0		97.0	97.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	74.6%	74.6%		74.6%	74.6%		25.4%	25.4%	25.4%	25.4%	25.4%	
Maximum Green (s)	90.9	90.9		90.9	90.9		26.7	26.7	26.7	26.7	26.7	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		19.0	19.0	19.0	19.0	19.0	
Pedestrian Calls (#/hr)	2	2		1	1		1	1	1	3	3	
Act Effct Green (s)	102.1	102.1		102.1	102.1			15.5	15.5		15.5	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.12	0.12		0.12	
v/c Ratio	0.02	0.76		0.68	0.41			0.55	0.29		0.07	
Control Delay	1.9	5.7		47.6	5.5			65.5	31.1		7.4	
Queue Delay	0.0	0.7		0.0	0.0			0.0	0.0		0.0	
Total Delay	1.9	6.4		47.6	5.5			65.5	31.1		7.4	
LOS	A	A		D	A			E	C		A	
Approach Delay		6.4			8.0			52.1			7.4	
Approach LOS		A			A			D			A	
Queue Length 50th (m)	0.1	13.6		5.6	32.7			20.2	5.9		0.0	
Queue Length 95th (m)	m0.2	m24.6		#39.0	64.0			32.7	16.2		2.9	
Internal Link Dist (m)		214.7			268.8			127.9			38.6	
Turn Bay Length (m)	65.0			40.0								
Base Capacity (vph)	352	2636		98	2609			275	306		324	
Starvation Cap Reductn	0	296		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.02	0.86		0.68	0.41			0.32	0.18		0.04	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 28 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 8.9 Intersection LOS: A
Intersection Capacity Utilization 92.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: 473 E of Page & Innes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	1919	1146	19	0	30
Future Volume (vph)	11	1919	1146	19	0	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	25.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	55.0				20.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1712	3357	3352	0	0	1559
Flt Permitted	0.950					
Satd. Flow (perm)	1712	3357	3352	0	0	1559
Link Speed (k/h)		60	60		30	
Link Distance (m)		142.1	94.7		74.6	
Travel Time (s)		8.5	5.7		9.0	
Confl. Peds. (#/hr)	5			5		
Confl. Bikes (#/hr)				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	3%	3%	1%	1%	1%
Adj. Flow (vph)	11	1919	1146	19	0	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	1919	1165	0	0	30
Enter Blocked Intersection	No	Yes	Yes	No	No	No
Lane Alignment	L NA	Left	Left	R NA	L NA	R NA
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		9.0	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97			97	97	97
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.3%		ICU Level of Service B	
Analysis Period (min) 15			