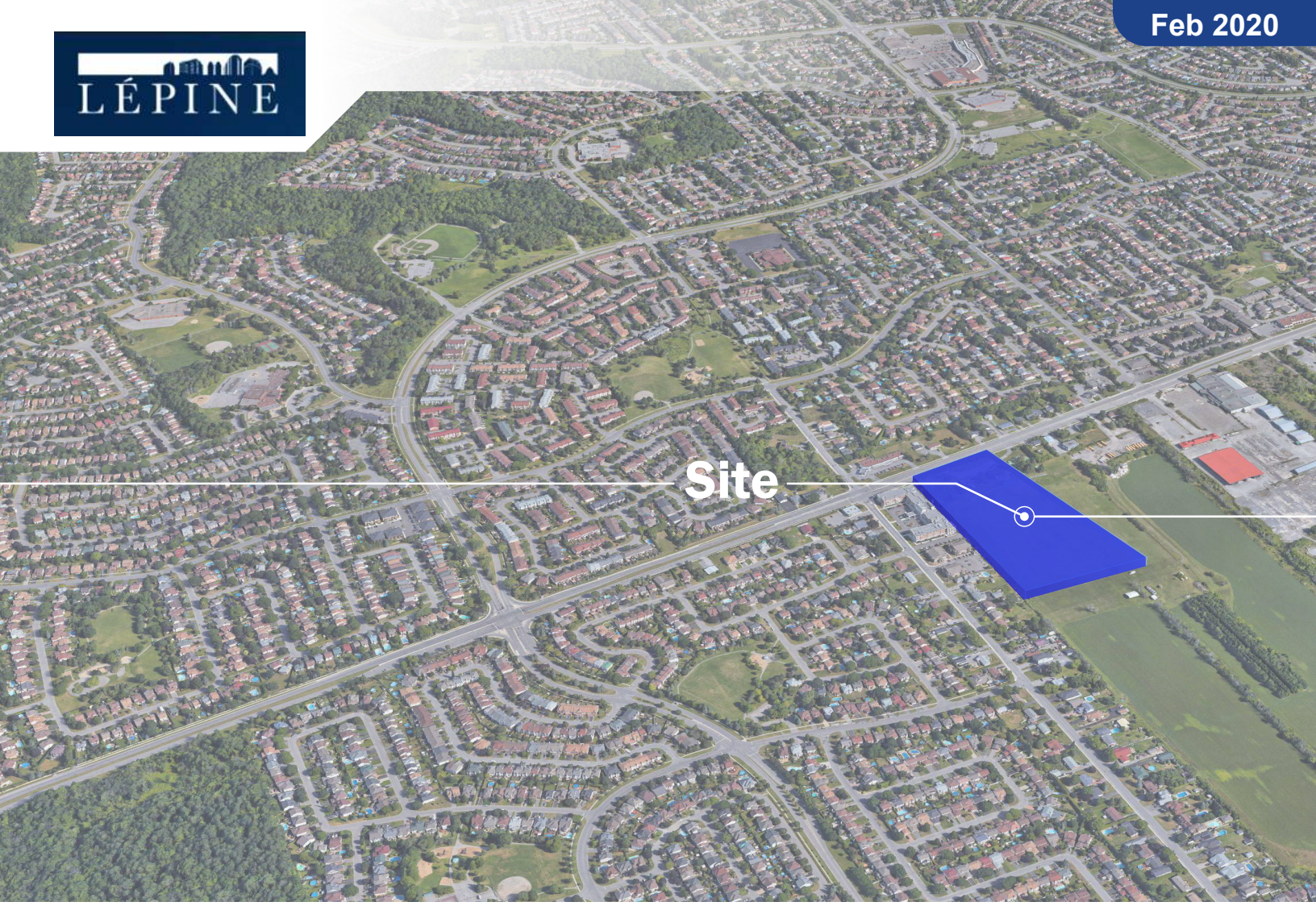
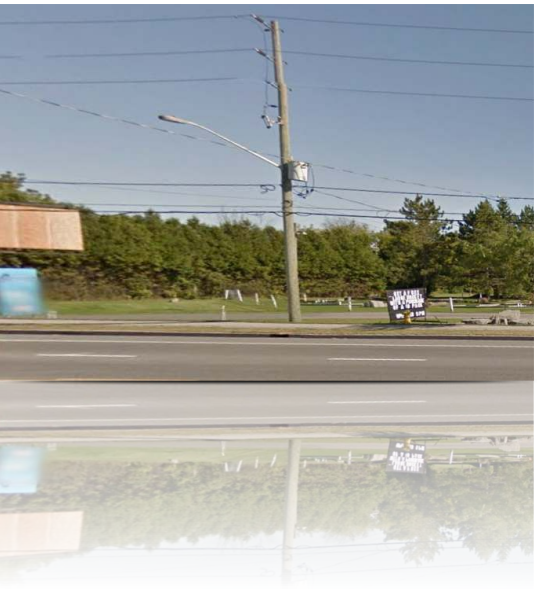
LÉPINE

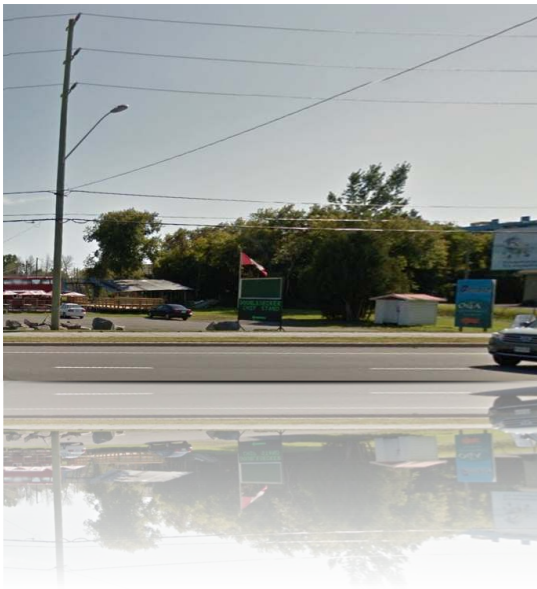
Feb 2020



Transportation Impact Study Rev 1

3490 Innes Road





PARSONS

3490 Innes Road

Transportation Impact Assessment Report – Rev1

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February 13, 2020

476731 – 01000

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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Table of Contents

List of Figures

List of Tables

List of Appendices

Transportation Impact Assessment Report Rev1

Parsons has been retained by Lépine Corp. to prepare a TIA in support of a Zoning By-Law Amendment application for a residential development located at 3490 Innes Road. The following report represents Step 5 – Final Report, of the TIA process. City comments from the previous submission have been provided in Appendix A.

1. SCREENING FORM

The screening form confirmed the need for a TIA based on the Trip Generation, Location and Safety triggers, given that the proposed development consists of eight buildings with a total of 1,320 apartment units, located in a Design Priority Area (DPA) and proposed new access to Lamarche Avenue which is in close proximity to a proposed/planned signalized intersection. The screening form has been provided in Appendix B.

2. SCOPING REPORT

2.1. EXISTING AND PLANNED CONDITIONS

2.1.1. PROPOSED DEVELOPMENT

It is our understanding that Lépine is proposing a residential development with supportive ground floor local service retail space located at 3490 Innes Road, as shown in **Figure 1**. The site is bound by Innes Road to the north, existing developments to the east and west and low-density residential subdivision to the south. It is zoned as DR – Development Reserve Zone and is currently occupied by an insurance company, food truck, mini-put facility and driving range.

Figure 1: Local Context

The current Site Plan is provided in **Figure 2**. The proposed development includes eight residential buildings ranging from nine to sixteen storeys with 1,320 units total and approximately 2,700 m² of local service retail space. The site is expected be phased in gradually, Phase 1 is anticipated by 2022 and full buildout is currently estimated by 2031.

Figure 2: Proposed Site Plan

Phase 1 will include Buildings D and E (436 units) and approximately 2,700 m² of local service retail space. The remaining six buildings (884 units) will consist only of residential use. A unit breakdown of the proposed development has been provided in **Table 1**.

Table 1: Unit Breakdown

Building	# of Storeys	# of Units	Size of Retail (m²)	Buildout Horizon
Building D	12	207	1,395	2022
Building E	12	229	1,312	
Phase 1 Subtotal	-	**436**	**2,707**	-
Building A	16	263	-	2024 - 2031
Building B	9	125	-	
Building C	9	105	-	
Building F	9	97	-	
Building G	9	150	-	
Building H	9	144	-	
Future Phases Subtotal	-	**884**	-	-
Full Buildout Total	-	**1320**	**2,707**	-

The main access to the site is proposed via Lamarche Avenue. A second access is proposed approximately 200m to the west that is intended for emergency and service access only.

2.1.2. EXISTING CONDITIONS

Area Road Network

Innes Road is an east-west arterial roadway with a 4-lane cross-section and auxiliary turn lanes at major intersections. It extends from St. Laurent Boulevard in the west to Dunning Road in the east. Beyond St. Laurent Boulevard, Innes Road continues as Industrial Avenue, and beyond Dunning Road, it continues as Beaton Road. Within the study area, the posted speed limit is 60 km/h.

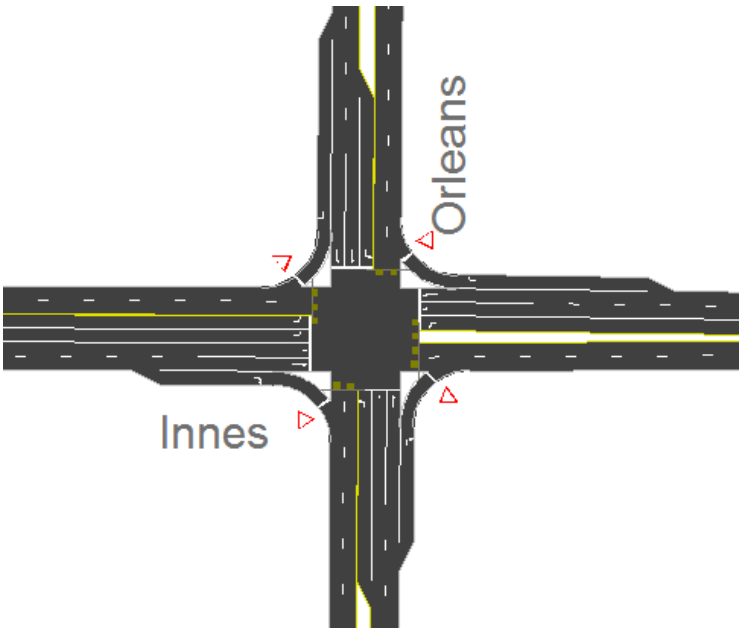
Orléans Boulevard is a north-south arterial roadway that extends from Navan Road in the south to Cairine Wilson Secondary School in the north. The posted speed limit is 50 km/h south of Innes Road and 60 km/h north of Innes Road. Within the study area, Orléans Boulevard has a four-lane cross-section with auxiliary turn lanes provided at major intersections. South of Silverbirch Street, Orléans Boulevard has a two-lane cross-section.

Pagé Road is a north-south collector roadway south of Innes Road and a local roadway north of Innes Road. Within the study area, it has a two-lane cross-section with auxiliary turn lanes provided at major intersections. The posted speed limit is 40 km/h.

Existing Study Area Intersections

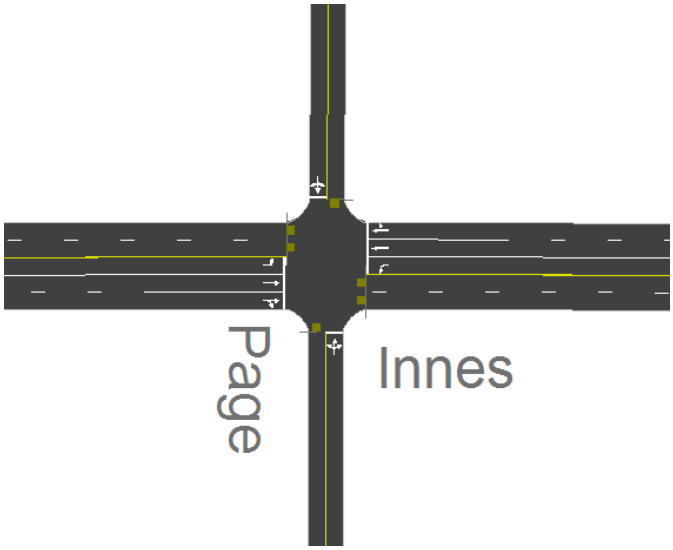
Orléans/Innes

The Orléans/ Innes intersection is a signalized four-legged intersection. The eastbound approach consists of dual left-turn lanes, two through lanes and a channelized right-turn lane. The westbound approach consists of a single left-turn lane, two through lanes, and a channelized right-turn lane. The north and southbound approaches both consist of a single left-turn lane, two through lanes and a channelized right-turn lane. All movements are permitted at this location.



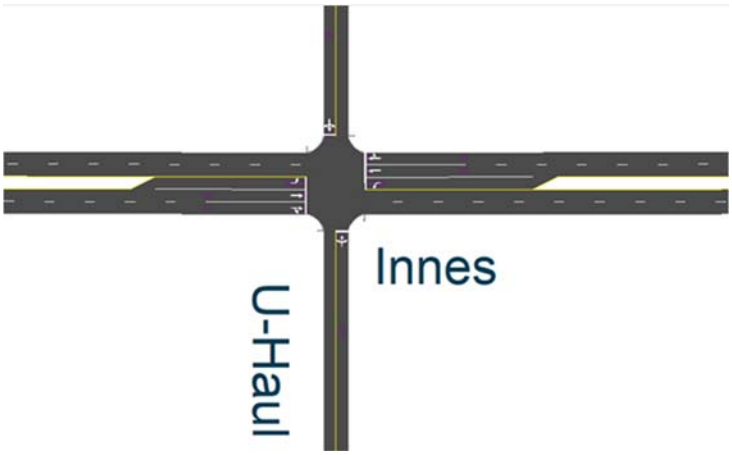
Pagé/Innes

The Pagé/Innes intersection is a signalized four-legged intersection. The west and eastbound approaches both consist of a single left-turn lane, a through lane and a shared through/right-turn lane. The north and southbound approaches both consist of a single full-movement lane. All movements are permitted at this location.



U-Haul/Innes

The U-Haul/Innes access (former BMR access) intersection is a signalized four-legged intersection. The west and eastbound approaches both consist of a single left-turn lane, a through lane and a shared through/right-turn lane. The north and southbound approaches both consist of a single full-movement lane. All movements are permitted at this location.



Existing Driveways to Adjacent Developments

There are six private driveways located on the south side of Innes Road between the proposed site and the U-Haul/Innes intersection. There are no existing driveways between the proposed site and the Pagé/Innes intersection. There are three existing full-movement driveways to the existing land uses on the subject property (one for the insurance office, and two for the golf range/food truck). Along the north side of Innes Road, there are approximately 14 private driveways between Pagé Road and the U-Haul intersection.

Pedestrian/Cycling Network

Sidewalk facilities in the vicinity of the site are provided along the both sides of Innes Road, Orléans Boulevard and Pagé Road (north of Innes Road, sidewalks are provided along the west side of Pagé Road only).

According to the City's Cycling Plan, Pagé Road and Innes Road are classified as "Spine Routes" and Orléans Boulevard and Boyer Road are classified as "Local Routes". Dedicated bicycle facilities are currently provided in the form of bike lanes in both directions along Innes Road. Pagé Road and Boyer Road, north of Innes Road, are "suggested routes".

Transit Network

The current transit area network is provided as **Figure 3**. Transit service within the vicinity of the site is currently provided by OC Transpo Route #25 (former #94) which provides scheduled all-day service at 15-minute headways on weekdays. Bus stops for Routes #25 are located at the Innes/Pagé and Innes/U-Haul intersections, all within 300m of the subject site and provides connectivity to Confederation Line 1 LRT at Blair Rapid Transit Station.

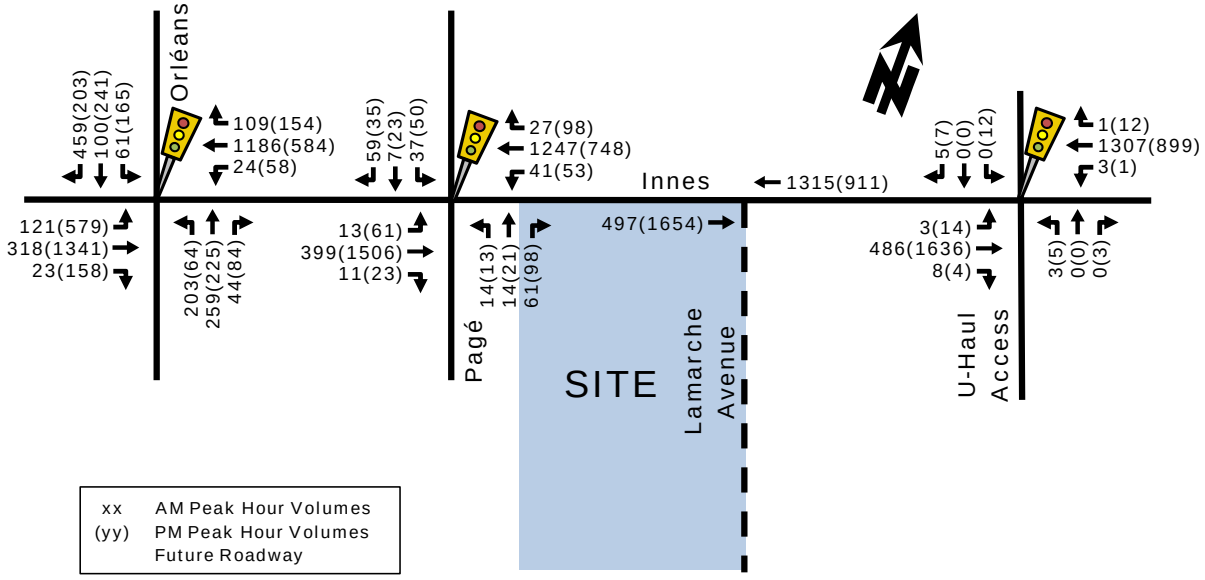
Isolated transit priority measures are currently provided along Innes Road within the study area, e.g. queue jumps at Innes/Orléans.

Figure 3: Area Transit Network

Peak hour travel demands

The existing peak hour traffic volumes within the study area are shown in **Figure 4**. The Innes/Orléans count was completed in 2017, obtained from the City of Ottawa. The remaining intersections were collected by Parsons in May 2019. The raw count data has been included in Appendix C. Note: traffic volumes on Innes were balanced to the 2019 counts.

Figure 4: Existing Peak Hour Traffic Volumes



Existing Road Safety Conditions

Collision history for study area intersections and roads (2012 to 2016, inclusive) was obtained from the City of Ottawa and most collisions (71%) involved only property damage, indicating low impact speeds, and 29% involved personal injuries. The primary causes of collisions cited by police include; rear end (48%), turning movement (23%) and angle (17%) type collisions.

A standard unit of measure for assessing collisions at an intersection is based on the number collisions per million entering vehicles (MEV). At intersections within the study area, reported collisions have historically take place at a rate of:

- 0.11/MEV at the U-Haul/Innes intersection;
- 1.05/MEV at the Orléans/Innes intersection; and,
- 0.38/MEV at the Pagé/Innes intersection.

Orléans/Innes is a major intersection of two arterial roads, which translates to a high number of vehicles during the peak periods leading to congestion. This is the likely cause for the higher MEV index. It is noteworthy that within the five-years of recorded collision data there were 2 collisions involving pedestrians resulting in property damage only and no collisions involving cyclists.

The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix D.

2.1.3. PLANNED CONDITIONS

Planned Study Area Transportation Network Changes

Within the study area, notable transportation network changes are illustrated in **Figure 5** (excerpt from the 2013 TMP) and are described as follows:

Blackburn Bypass Extension – Brian Coburn Boulevard

The extension of the Blackburn Bypass will provide an additional east-west arterial roadway through Orléans, south of the subject site. This extension, known as Brian Coburn Boulevard, is currently constructed from Trim Road to Navan Road.

As shown in **Figure 5**, Brian Coburn will continue past Navan and connect to the Blackburn Bypass. It has been initially constructed as a two-lane arterial and ultimately is planned to be a four-lane divided arterial. The timing of the widening of Brian Coburn Boulevard from two to four lanes will likely depend on the amount and timing of development within the vicinity of the arterial roadway. The widening is currently not identified as a planned project within the City's 2013 TMP, which indicates that the widening of Brian Coburn Boulevard will likely be completed post 2031.

Future Collector Roads

The transportation master plan (TMP) outlines future collector roadways in the vicinity of the proposed development. Three collector roadway extensions within the vicinity of the site are shown on **Figure 5**, the Frank Bender Street (major north-south collector), and Harvest Valley Avenue (east-west collector) extensions. Vanguard Drive is currently underway (east-west collector) which will extend from Lanthier Drive in the east to Mer Bleue Road in the west and will serve as one of the primary east-west collectors through the proposed Orléans Industrial Park.

Transit

Within the TMP's affordable network, transit priority (isolated measures) are proposed along Innes Road and Brian Coburn Boulevard. Transit priority (continuous lanes) are proposed along the Blackburn Bypass, west of the site.

Figure 5: Transportation Master Plan Road Network (Map 6)

Other Area Development

According to the City's development application search tool, the following developments are planned within the vicinity of the subject site and are illustrated in **Figure 6**.

East Urban Community Mixed Use Centre CDP

The City is currently engaged in the East Urban Community Mixed Use Centre Community Design Plan (EUC MUC CDP) process. The CDP area is located between Mer Bleue Road, the hydro corridor and Brian Coburn Boulevard. The aim of the CDP is to create a mixed used community with an area of approximately 570 hectares. Though still in its infancy, it is noteworthy due to its size and proximity to Lépine's proposed site.

3443 Innes Road

The proposed development is a six-storey, mixed-use building with commercial uses at grade and residential units above. A total of six commercial units are being proposed on the ground floor with four units facing Innes Road and two units facing Pagé Road. A total of 35 residential units are proposed from the remainder of the storeys. The Transportation Brief (prepared by Novatech) projects an increase in two-way traffic volumes of approximately 25 to 30 veh/h during peak hours.

3817-3843 Innes Road

Four four-storey apartment buildings are proposed at the above noted addresses, located approximately 1 km east of the subject site. The Transportation Brief (prepared by Novatech) projects an increase in two-way traffic volumes of approximately 30 to 40 veh/h during peak hours.

3490 Innes Road (south of site)

Innes Road Development Corporation is proposing a residential development at the above-noted address, which is located south of the subject development. The Transportation Impact Assessment (prepared by Parsons) projected an increase in vehicle traffic of approximately 245 and 300 veh/h during both the morning and afternoon peak hours.

Figure 6: Other Area Development

2.2. STUDY AREA AND TIME PERIODS

As the proposed site is largely a residential development, the time periods assessed will be the weekday morning and afternoon peak hours. The proposed study area is outlined below and highlighted in **Figure 7**.

- Pagé/Innes intersection;
- Orléans/Innes intersection;
- U-Haul/Innes intersection;
- Planned Site/Innes intersection (referred to Lamarche/Innes from herein); and

- Innes Road adjacent to the site.

Figure 7: Study Area

2.3. EXEMPTION REVIEW

The following modules/elements of the TIA process are recommended to be exempt in the subsequent steps of the TIA process, based on the City's TIA guidelines and the subject site:

Table 2: Exemptions Review Summary

Module	Element	Exemption Consideration
4.2 Parking	4.2.2 Spillover Parking	The parking is expected to meet By-Law requirements.
4.6 Neighbourhood Traffic Management	All elements	The site relies on arterial roadways for access.
4.8 Review of Network Concept	All elements	The site is not expected to generate 200 trips more than the established zoning. This will be confirmed in Step 3.

3. FORECASTING REPORT

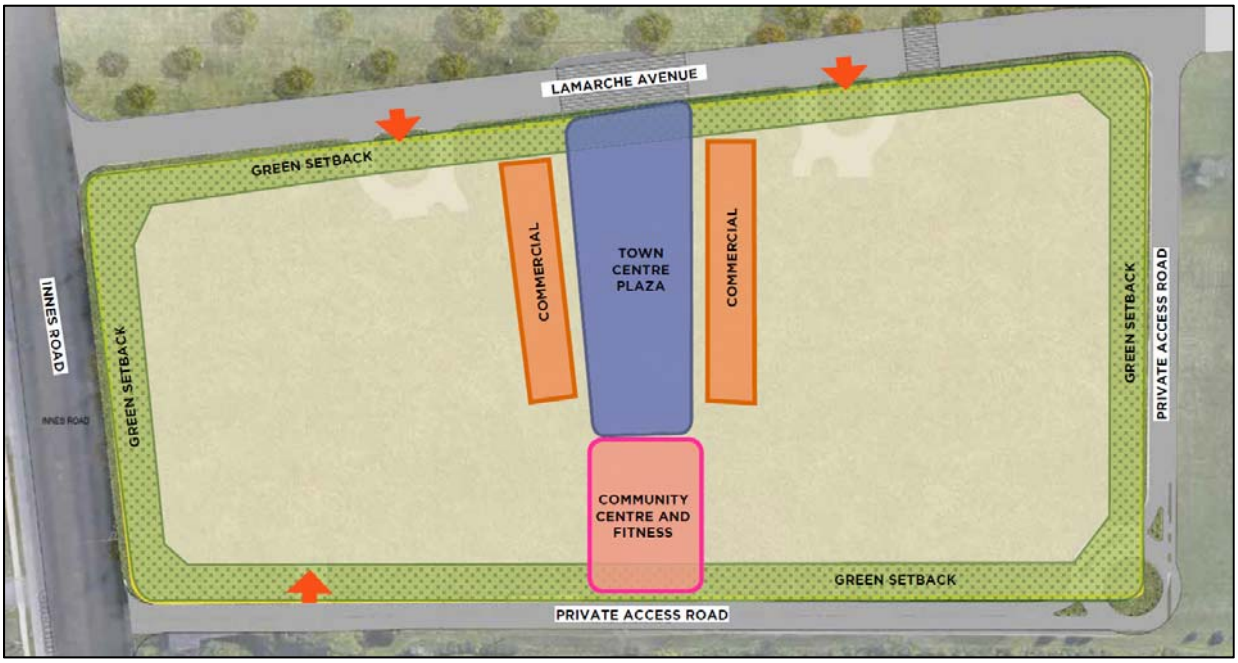
3.1. DEVELOPMENT GENERATED TRAVEL DEMAND

3.1.1. TRIP GENERATION AND MODE SHARES

Trip generation rates for the proposed development, consisting of 699 high-rise apartment units and 621 mid-rise apartment units, were obtained from the City's TRANS Trip Generation Report. For the purpose of this study, all 1,320 apartment units were treated as mid-rise apartment units as it has a slightly higher trip generation rate than high-rise units and offers a more conservative analysis. It was assumed the approximate 2,700 m^2 of ground floor local service retail

space would cater to local residents and would not generate new primary trips. The basis for this assumption was based on the proposed location and orientation of the local service retail area, as shown in **Figure 8**.

Figure 8: Local Service Retail Area



The proposed local service retail area will not front Innes Road, but will be split between two buildings straddling the Town Centre Plaza. The location is far removed from Innes Road, which is expected to deter pass-by travel for regional commuters. The orientation along the plaza caters directly to local residents. Therefore, any trips generated by the local service retail space are expected to be generated from within the development or from nearby developments using non-auto modes. **Table 3** provides the appropriate trip generation rates for residential use.

Table 3: Vehicle Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
Mid-Rise Apartments	TRANS (Table 3.18)	T = 0.29(du)	T = 0.37(du)
Notes: *T = Average Vehicle Trip Ends*			

Using the TRANS Trip Generation rates, the total amount of vehicle trips generated by the proposed Phase 1 development (consisting of 436 units and 2,707 m^2 of local service retail) and full buildout development (consisting of an additional 884 units) was calculated. The results are summarized in **Table 4**.

Table 4: TRANS Vehicle Trip Generation

Land Use	Data Source	Units	AM Peak (veh/h)			PM Peak (veh/h)		
			In	Out	Total	In	Out	Total
Phase 1 - Buildings D and E	TRANS (Table 3.13)	436	30	96	126	99	62	161
Remaining Buildings		884	61	196	257	203	124	327
Total Full Buildout			**91**	**292**	**383**	**302**	**186**	**488**

Using the TRANS trip projections in **Table 4** and the mode share percentages from the TRANS Trip Generation Report (Table 3.13), the total projected number of person trips by mode for interim phase and ultimate buildout of the site development are summarized in **Table 5** and **Table 7** respectively. The person trips were then used to calculate the vehicle trips

generated based on mode shares for Orleans extracted from the OD-Survey conducted in 2011 as seen in **Table 6** and **Table 8** for interim and ultimate buildout respectively.

Table 5: Phase 1 Site Person Trip Generation – Buildings D and E

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	44%	30	96	126	44%	99	62	161
Auto Passenger	9%	6	19	25	14%	32	20	52
Transit	34%	24	74	98	33%	76	45	121
Non-motorized	13%	9	28	37	9%	19	13	32
Total People Trips	**100%**	**69**	**217**	**286**	**100%**	**226**	**140**	**366**

Table 6: Phase 1 Site Vehicle Trip Generation Using OD Mode Shares – Buildings D and E

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	50%	34	109	143	55%	124	77	201
Auto Passenger	15%	11	31	42	20%	45	28	73
Transit	25%	17	55	72	15%	35	20	55
Non-motorized	10%	7	22	29	10%	22	15	37
Total People Trips	**100%**	**69**	**217**	**286**	**100%**	**226**	**140**	**366**
Total 'New' Interim Auto Trips		**34**	**109**	**143**	-	**124**	**77**	**201**

As per **Table 6**, Phase 1 of the subject site is projected to generated approximately 145 and 200 vehicles in the AM and PM peaks respectively.

Table 7: Full Buildout Site Person Trip Generation – All Buildings

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	44%	91	292	383	44%	302	186	488
Auto Passenger	9%	19	59	78	14%	97	58	155
Transit	34%	72	224	296	33%	226	140	366
Non-motorized	13%	28	85	113	9%	62	38	100
Total People Trips	**100%**	**210**	**660**	**870**	**100%**	**687**	**422**	**1,109**

Table 8: Full Buildout Site Vehicle Trip Generation Using OD Mode Shares – All Buildings

Travel Mode	AM Mode Share	AM Peak (veh/h)			PM Mode Share	PM Peak (veh/h)		
		In	Out	Total		In	Out	Total
Auto Driver	50%	105	330	435	55%	377	232	609
Auto Passenger	15%	32	99	131	20%	138	84	222
Transit	25%	53	164	217	15%	104	63	167
Non-motorized	10%	20	67	87	10%	68	43	111
Total People Trips	**100%**	**210**	**660**	**870**	**100%**	**687**	**422**	**1,109**
Total 'New' Full Buildout Auto Trips		**105**	**330**	**435**	-	**377**	**232**	**609**

As per **Table 8**, full buildout of the site is projected to generate approximately 435 and 610 vehicles in the AM and PM peaks respectively.

Adjusted Mode Shares

Considering the location of the site on major bus route #25 (former #94) with frequent service and planned transit investments in the future, the mode shares from the OD-Survey 2011 for Orléans demonstrate a relatively conservative transit assumption for local residents by the 2031 horizon. Within the TMP Affordable Network, transit priority (isolated measures) are proposed along Innes Road and the future Brian Coburn Boulevard extension, plus continuous lanes along the Blackburn Bypass west of the site. The TMP Network Concept includes the Cumberland Transitway that would provide fully exclusive bus rapid transit between Blair Station and Frank Kenny Road by 2031. While the funding for the Transitway is currently uncertain, there is growing demand for this infrastructure since the City approved the Mer-Bleue Expansion CDP; residential development south of Innes between Navan and Tenth Line is expected to accelerate in the next 10 years. If constructed, the subject site would be located approximately 1km (straight-line distance) of the proposed Belcourt (now Fern Casey) Extension Station and within 2km of Chapel Hill South Park and Ride/Brian Coburn Navan Rapid Transit Station.

From a capacity perspective, Innes Road is not expected to be widened by 2031, so potential traffic will be constrained and eventually plateau. It is unlikely that future growth along this corridor will maintain the existing mode share, particularly with the City's focus on investing in alternate modes, as described above.

Therefore, the mode share assumptions for the proposed development at 2031 were adjusted to reflect lower auto-driver mode share, and higher transit mode share targets, as shown in **Table 9**.

Table 9: Future Mode Share Targets for Proposed Development

Travel Mode	Mode Share Target	Rationale
Auto Driver	45%	Given the close proximity to transit and commercial services, the auto driver and passenger mode splits are forecasted to be lower than other areas of the City.
Auto Passenger	5%	
Transit	35%	Development is located in close proximity to major bus route #25 (former #94). Innes Road is in the TMP's affordable network for transit priority with major updates in transit services in the near future.
Walking	10%	This is consistent with the City's TMP and existing mode shares shown in Tables 5 through 9.
Biking	5%	

The future mode shares summarized in **Table 9** were applied to the total person-trips outlined in **Table 7**, to estimate future trip generation at ultimate buildout, as shown in **Table 10**.

Table 10: Future Trip Generation with Mode Share Assumptions – Ultimate Buildout (2031)

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	45%	94	297	391	45%	309	190	499
Auto Passenger	5%	11	33	44	5%	35	21	56
Transit	35%	73	231	304	35%	240	148	388
Non-motorized	15%	32	99	131	15%	103	63	166
Total People Trips	**100%**	**210**	**660**	**870**	**100%**	**687**	**422**	**1,109**
Total 'New' Full Buildout Auto Trips		**94**	**297**	**391**	**391**	**309**	**190**	**499**

Assuming the adjusted mode share targets, two-way transit trips were estimated to be approximately 305 to 390 trips per hour and bike/walk trips were estimated to be approximately 130 to 165 trips per hour, in the AM and PM peak hour periods respectively at full buildout. The number of 'new' vehicular trips generated by the proposed development at full buildout is projected to be approximately 390 to 500 vehicles per hour during the AM and PM peak hour periods respectively.

3.1.2. TRIP DISTRIBUTION

Traffic distribution was based on the existing volume splits at study area intersections, land use types, time of day, and our knowledge of the surrounding area. During the morning peak hour, it is assumed that the majority of drivers are travelling to/from employment; however, during the afternoon peak hour, there is a greater percentage of drivers travelling to/from retail land uses and communities located to the east of the subject site. As such, the morning and afternoon peak hour distributions differ slightly, as outlined below:

AM Peak Hour
- 70% to/from the west;
- 25% to/from the north;
- 5% to/from the east.

PM Peak Hour
- 60% to/from the west;
- 20% to/from the north;
- 20% to/from the east.

3.1.3. TRIP ASSIGNMENT

Based on this assumed distribution, site-generated traffic at interim phase (2022) was assigned to the adjacent network, as shown in **Figure 9**. Site-generated traffic at ultimate buildout (2031) was assigned to the planned adjacent network as shown in **Figure 10**.

Figure 9: Phase 1 Site-Generated Traffic (Buildings D and E, 2022)

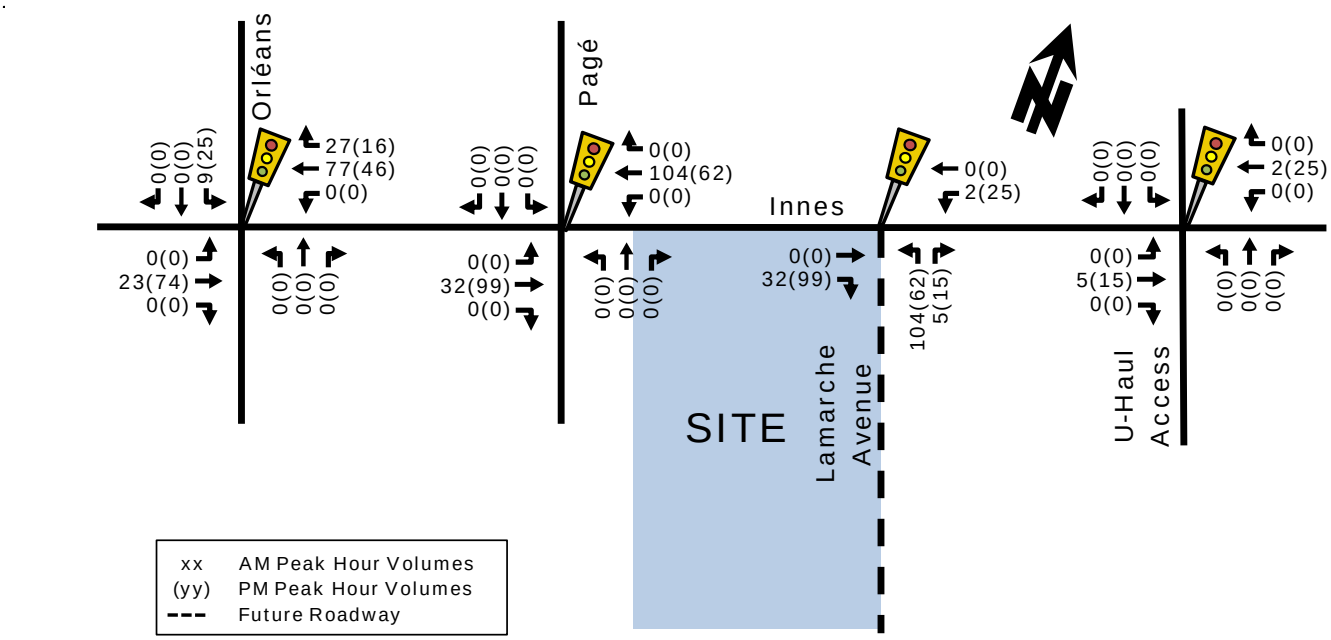
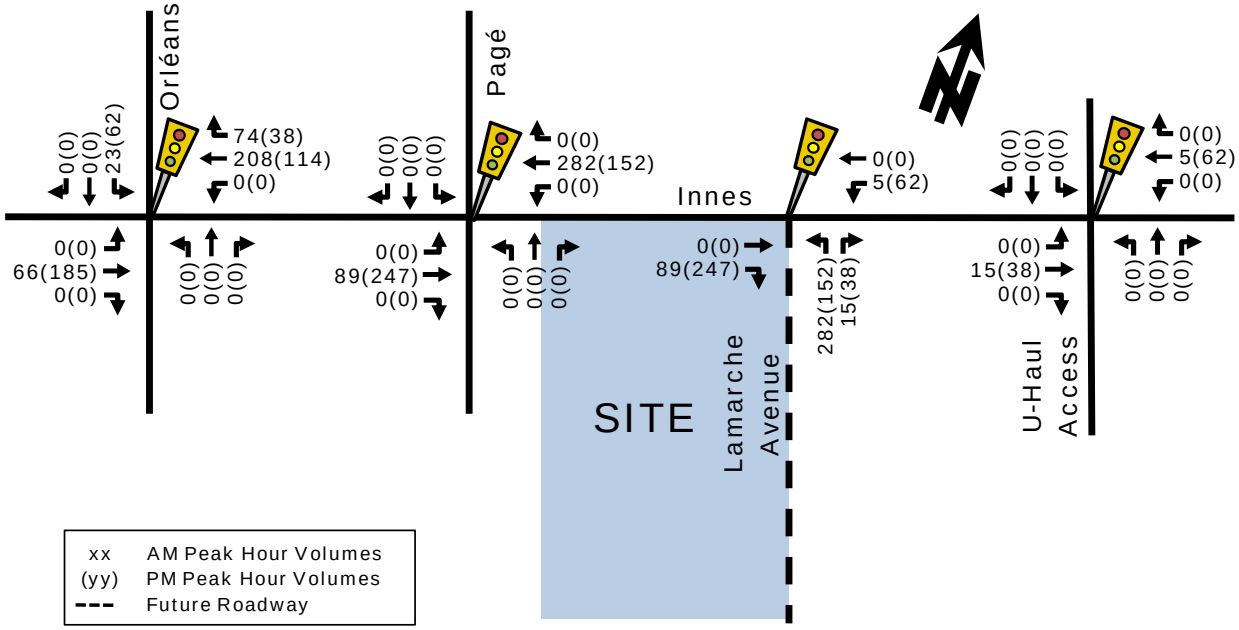


Figure 10: Ultimate Site-Generated Traffic 2031 (All Buildings)



3.2. BACKGROUND NETWORK TRAVEL DEMAND

3.2.1. TRANSPORTATION NETWORK PLANS

The transportation network changes have been discussed within Section 2.1.3., and none were anticipated to impact the transportation analysis for this development.

3.2.2. BACKGROUND GROWTH

The background traffic growth through the immediate study area (summarized in **Table 11**) 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 E.

Table 11: 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 11**, 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 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 focused on constructing new connections (e.g. Brian Coburn) and alternative infrastructure (e.g. transit priority measures and strengthening pedestrian/cycling facilities) to increase capacity for future developments

south of Innes rather than increasing capacity on Innes. Therefore, a 1% annual growth rate for traffic on Innes Road east-west through movement will be applied in the future analysis.

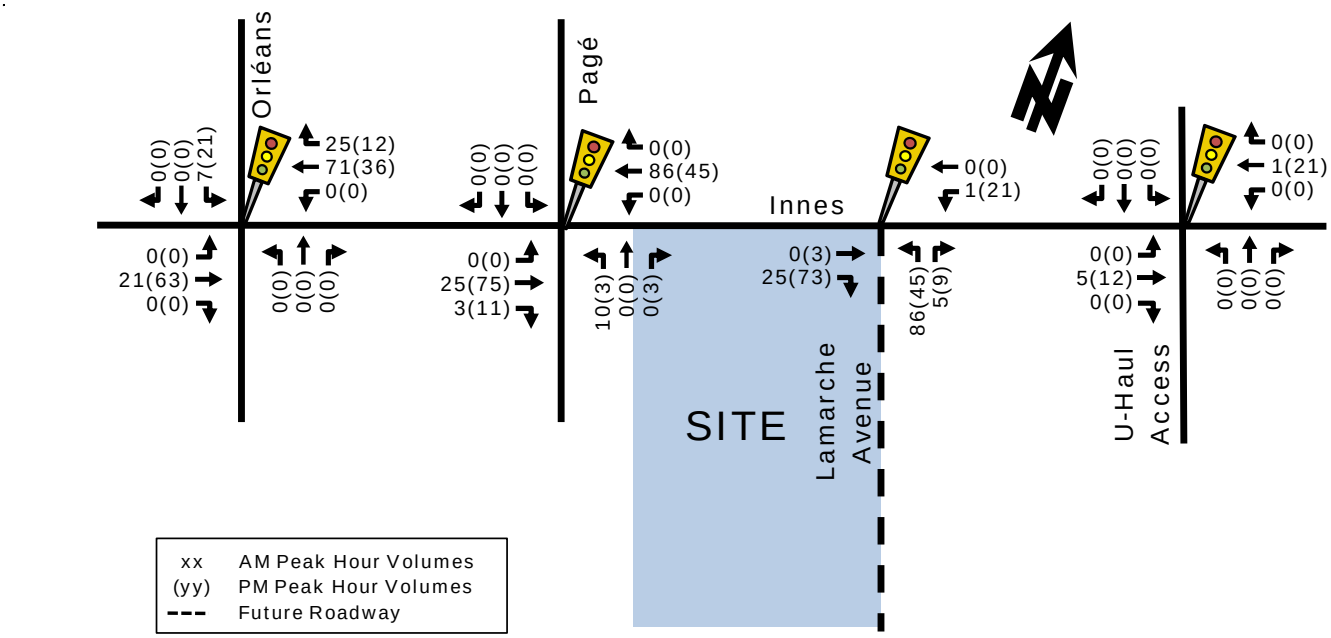
3.2.3. OTHER AREA DEVELOPMENTS

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

3490 Innes south of site - Phase 1

Figure 11 illustrates the projected traffic volumes for 3490 Innes located just south of site and expected to be at full occupancy by 2020 for interim Phase 1.

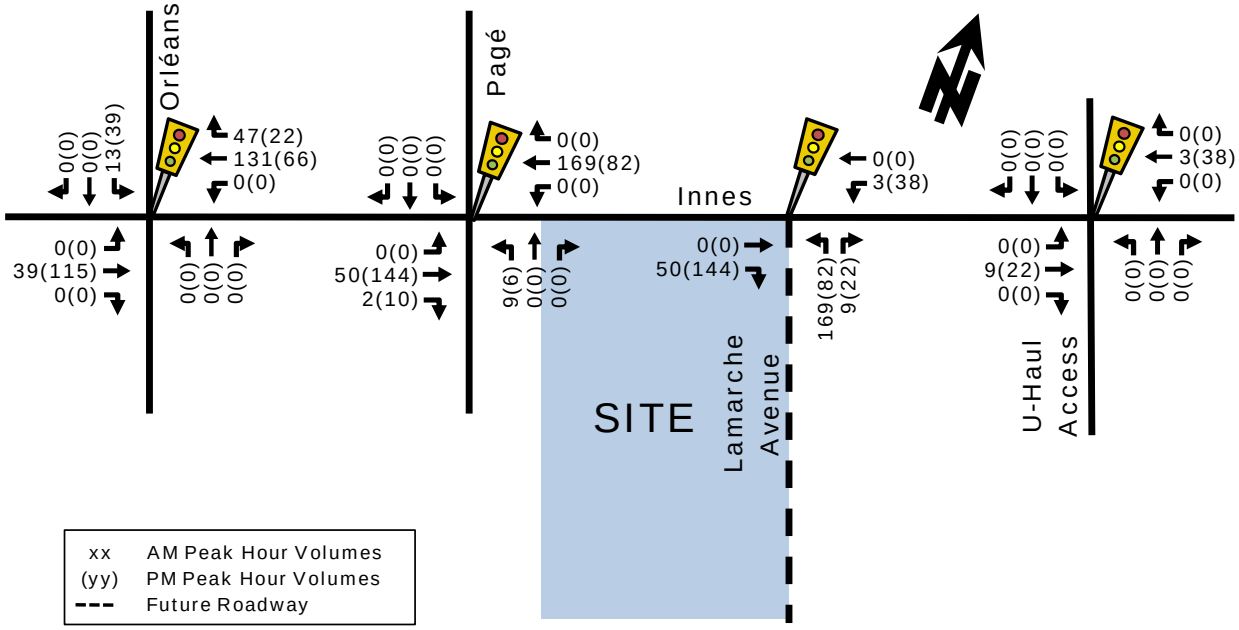
Figure 11: 3490 Innes Projected Traffic Volumes – 2020



3490 Innes south of site - Phase 1 and 2

Figure 12 illustrates the projected traffic volumes for 3490 Innes located just south of site and expected to be at full occupancy by 2024 for full buildout Phase 2.

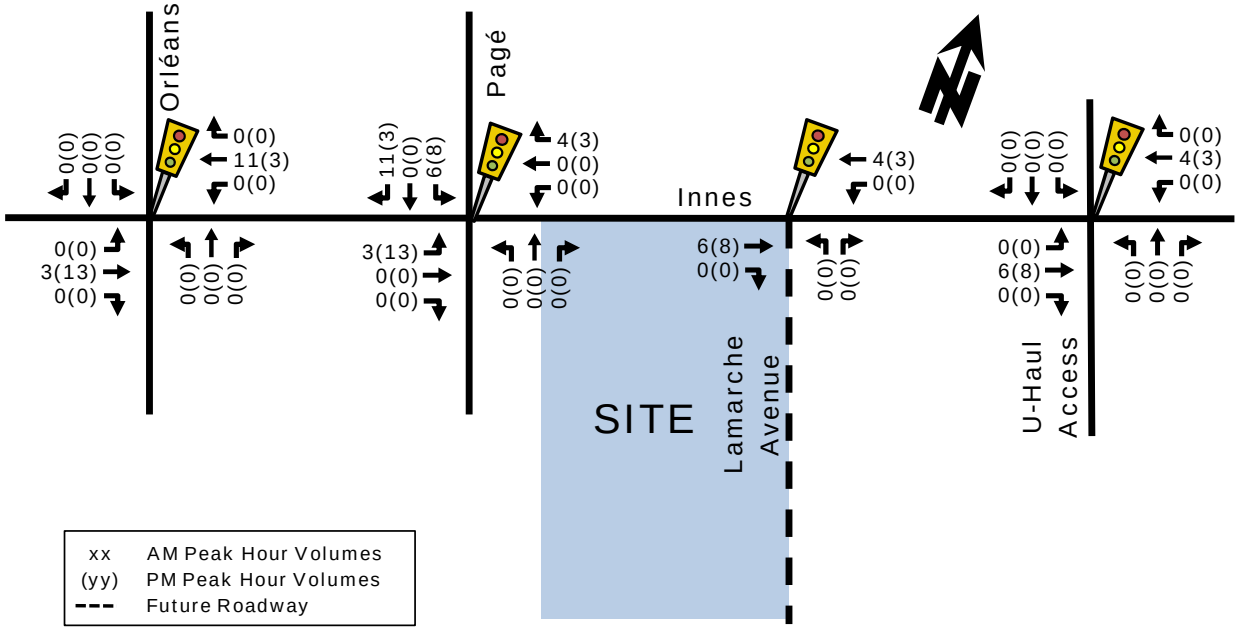
Figure 12: 3490 Innes Projected Traffic Volumes – 2024



3443 Innes

Figure 13 illustrates the projected traffic volumes for 3443 Innes located on the north west corner of Innes Road and Pagé Road and expected to be at full occupancy by 2020.

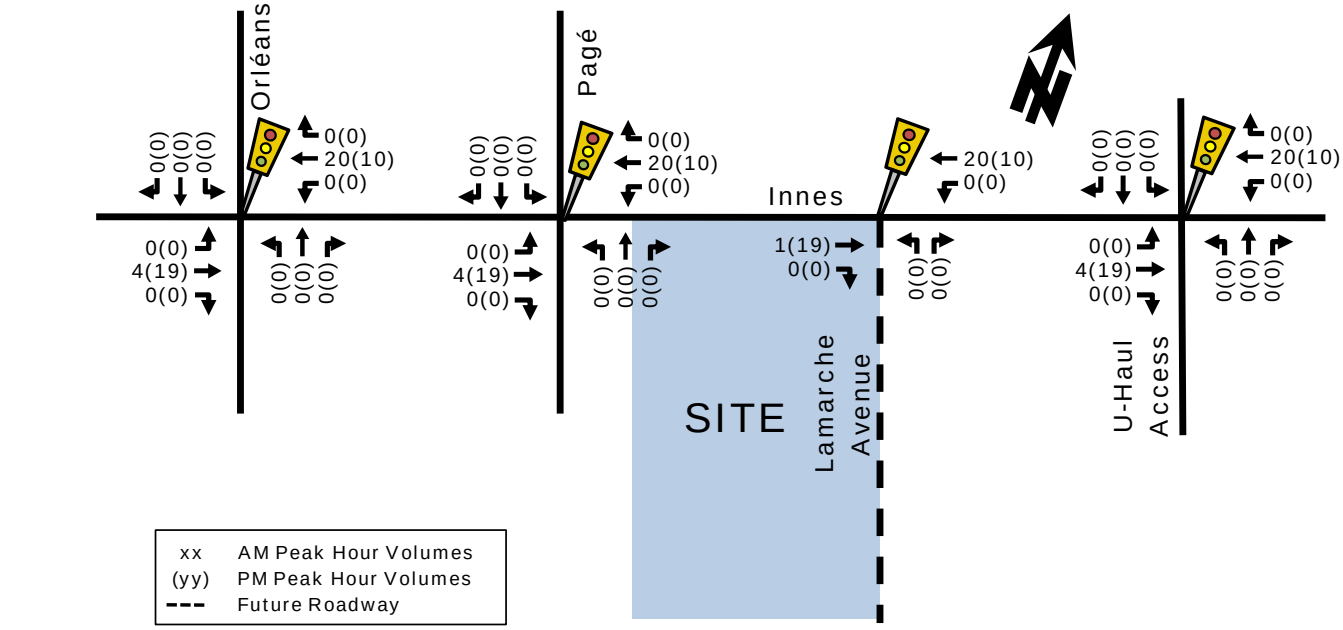
Figure 13: 3443 Innes Projected Traffic Volumes – 2020



3817-3843 Innes

Figure 14 illustrates the projected traffic volumes for 3817 Innes located on the north west corner of Innes Road and Pagé Road and expected to be at full occupancy by 2016; however, as of late 2018, there had still been no ground-break. Assumed occupancy by 2020.

Figure 14: 3817 Innes Projected Traffic Volumes – 2020



3.2.4. BACKGROUND TRAFFIC GROWTH

The future background volumes were calculated by superimposing other area developments on to the network and adding a background growth of 1% along the east-west through lanes on Innes Road. Background volumes were created for the Phase 1 buildout year 2022 and for full buildout year 2031. The resulting background traffic volumes for Phase 1 and full buildout are depicted in **Figure 15** and **Figure 16**.

Figure 15: 2022 Background Traffic Volumes

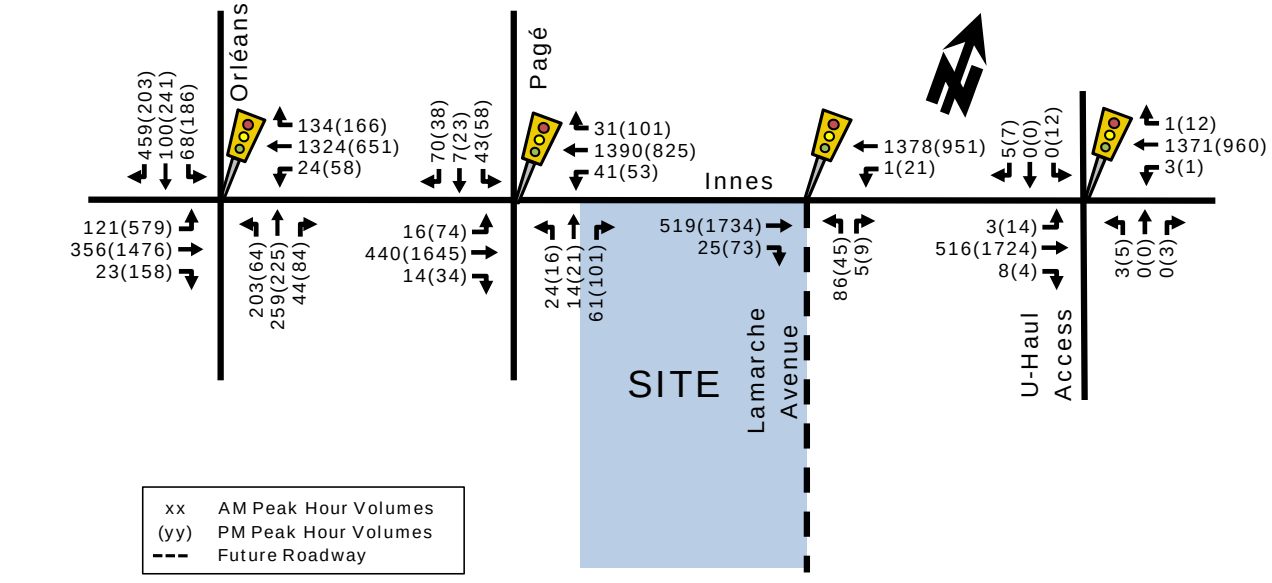
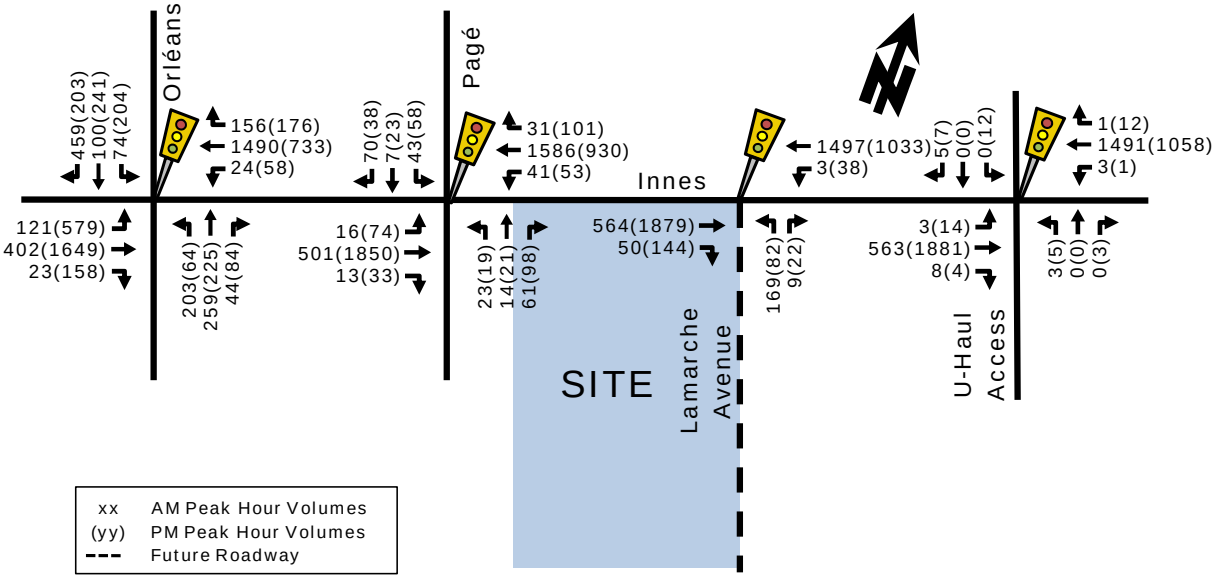


Figure 16: 2031 Background Traffic Volumes



3.3. DEMAND RATIONALIZATION

3.3.1. EXISTING CAPACITY CONDITIONS

The following **Table 12** provides a summary of the existing traffic operations at the study area intersection based on the Synchro (V10) traffic analysis software. The subject intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the critical movement(s). The Synchro model outputs of existing conditions are provided within Appendix F.

Table 12: Existing Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Orléans/Innes	C(F)	0.73(1.07)	WBT(EBT)	27.1(49.4)	B(E)	0.68(0.92)
Pagé/Innes	A(B)	0.55(0.69)	WBT(EBT)	5.2(9.7)	A(B)	0.54(0.67)
U-Haul/Innes	A(B)	0.54(0.70)	WBT(EBT)	5.6(8.3)	A(B)	0.54(0.69)
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 12**, all the intersections within the subject area are currently operating 'as a whole' at acceptable LoS 'E' or better during the AM and PM peak hours. The majority of the 'critical movements' at study area intersections are currently operating at a good LoS 'C' or better during both peak hours with the exception of Orléans/Innes which has a critical movement of 'F'.

It is important to note that the side street volumes at the Orléans/Innes intersection correspond to 2017 counts completed prior to the opening of Brian Coburn Boulevard in 2018, which may lead to higher traffic volume estimates at the intersection.

Overall, the existing Synchro analysis indicates there are no capacity constraints in the network with the exception of the eastbound through movement at the Orléans/Innes intersection.

4. STRATEGY REPORT

4.1. DEVELOPMENT DESIGN

Location of Transit Facilities

The furthest Buildings from OC-Transpo major bus route #25 bus-stop on Innes Road are Buildings G and H which are located approximately 350 meters walking distance from existing stops. All other Buildings are located less than 350 meters walking distance, with the closest Buildings, A and B, which directly front Innes Road.

Pedestrian Routes and Facilities

The buildings will have at-grade access directly onto Innes Road and Lamarche Avenue. Sidewalks are located on both sides of Innes Road (east-west arterial) and Lamarche Avenue (north-south collector road). Internal pedestrian walkways are proposed through landscaped courtyards which connect all the buildings.

Bicycle Parking

The proponent is providing bicycle parking spaces at a rate of 0.5 per unit which equates to 660 parking spaces plus 11 additional parking spaces for retail visitors for a total of 671 bicycle parking spaces; thus, meeting the City's By-Law requirements. The majority of bicycle parking spaces will be provided indoors at ground floor elevation in a secure, well-lit area. The majority of bicycle parking areas will be located near elevator, with smaller racks located throughout the site near the proposed internal pathways.

Vehicle Access

The proposed development access will be provided through two vehicular loops connecting the parking lots to Lamarche Avenue. It is anticipated that on-site vehicle circulation and parking lot circulation will meet the City's By-Law requirements.

It is anticipated that garbage pick-up will take place on-site from the rear (west) via the controlled-access internal service road.

4.2. PARKING SUPPLY

The subject site is located in "Area C" according to Schedule 1A within Part 4 – Parking, Queuing and Loading Provisions (Sections 100 to 112), City of Ottawa By-Laws. Due to proximity to 'frequent' bus route #25 (frequent identified by OC-Transpo as having service every 15 minutes or less on weekdays, operating 7 days a week) and future investment plans to place transit priority measures along Innes Road and nearby Brian Coburn, parking reductions should be considered. Reductions in parking reduces traffic demand and promotes active travel. A summary of the parking rationale has been provided below.

Residential Parking:

- Section 101 – 3a: "In the case of a building containing residential uses, no off-street motor vehicle parking is required to be provided under this section for the first twelve dwelling units and the parking requirements under Table 101 apply only to dwelling units and rooming units in excess of 12."
- From Table 101 Row 12 (Dwelling, Mid-High-Rise Apartments), the rates vary between 0.5 spaces per unit to 1.2 spaces per unit based on location (with 'Area C' being 1.2 spaces per unit). A reduced parking rate of 1.0 spaces per unit is proposed, which has been agreed to by City staff.

Visitor Parking:

- From Table 102, visitor parking varies between 0.1 spaces per unit to 0.2 spaces per unit depending on location. A visitor parking rate of 0.2 spaces per dwelling unit is required for this area. However, a 0.1 spaces per dwelling is proposed based on anticipated demographics and proximity to a transit corridor.

Commercial Parking:

- The rates vary between 1.25 to 3.4 spaces per 100 m^2 of gross floor area.
- The isolated nature of the local service retail segment from Innes Road and the small size of local service retail (approximately 2,700 m^2) was designed to serve local residents rather than regional customers.
- Despite the lower expected demand for commercial parking, the higher rate of 3.4 spaces per 100 m^2 of gross floor area was assumed.

Based on the City of Ottawa parking bylaws and proposed parking mentioned above, the vehicle and bicycle parking requirements were calculated and are summarized in **Table 13** and **Table 14** respectively.

Table 13: Vehicle Parking Spaces Requirements

Building / Units		Reduced Residential Rate (spaces/unit)	Required # of Parking Spaces				Proposed # of Parking Spaces
			Reduced Residential	Reduced Visitor	Service Retail	Total	
Building A	263	1.0	251	26	0	277	1,491
Building B	125		113	13	0	126	
Building C	105		93	10	0	103	
Building D	207		195	21	47	263	
Building E	229		217	23	45	285	
Building F	97		85	10	0	95	
Building G	150		138	15	0	153	
Building H	144		132	14	0	146	
Total			**1,224**	**132**	**92**	**1,448**	**1,491**
						SURPLUS	43

According to **Table 13**, the subject development is required to provide 1,224 parking spaces for residents (reduced rate of 1.0 parking spaces per unit, minus 12 spots per tower), 132 parking spaces for visitors (reduced rate of 0.1 parking spaces per unit), and 92 parking spaces for local service retail (rate of 3.4 spaces per 100 m^2 of gross floor area, for a total of 1,448 parking spaces. With a total of 1,491 proposed underground and surface parking spaces, the subject development more than meets minimum City parking requirements.

Table 14 summarizes bicycle parking requirements as per City of Ottawa Zoning By-Law-Part 4, sections 100-114.

Table 14: Bicycle Parking Requirements

Land Use	Units	# of Bicycle Spaces	
		Required	Proposed
Buildings A to H	1,320	660	660
Service Retail	-	11	11
Total	**1,320**	**671**	**671**

4.3. BOUNDARY STREET DESIGN

The boundary streets for the development are Innes Road and Lamarche Avenue. Lamarche Avenue has not been complete yet and is subject to changes; however, it is expected that this road segment will be built to collector road standards with appropriate pedestrian and cycling facilities. Furthermore, there are internal pedestrian walkways proposed at the site which will connect the proposed development to Innes Road. The existing roadway geometry consists of the following features:

- Innes Road

  - 2 vehicle travel lane in each direction;
  - 1.8m sidewalk with 1.5m boulevard on both sides of the roadway; and,
  - More than 3,000 vehicles per day.
- Potential Lamarche Avenue
  - 1 vehicle travel lane in each direction;
  - 1.8m sidewalk with 0.5m boulevard on both sides of the roadway; and,
  - Less than 3,000 vehicles per day.

The multi-modal level of service analysis for the subject road segments adjacent to the site is summarized in **Table** 15 with detail analysis provided in Appendix G.

Table 15: MMLOS –Road Segments Adjacent to the Site

Road Segment	Level of Service					
	Pedestrian (PLoS)		Bicycle (BLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TkLoS	Target
Innes Road between Pagé & U-Haul	E	C	C	C	A	D
Potential Lamarche Avenue by development	B	C	B	B	C	N/A

Pedestrian PLoS targets were not met on Innes Road. The triggers were due to high vehicle volumes, and high operating speeds. MMLOS targets would be met if the speeds were reduced, the volumes were reduced or on-street parking was provided; however, this may not be feasible, or it would highly affect vehicle flow on a major arterial. Cyclist BLoS and truck TkLoS targets were met on Innes Road. All targets were met for a theoretical cross section of Lamarche Avenue adjacent to site is a 1.8-meter-wide sidewalk was constructed with a boulevard spacing of at least 0.5 meters and mixed traffic on a single lane per direction road.

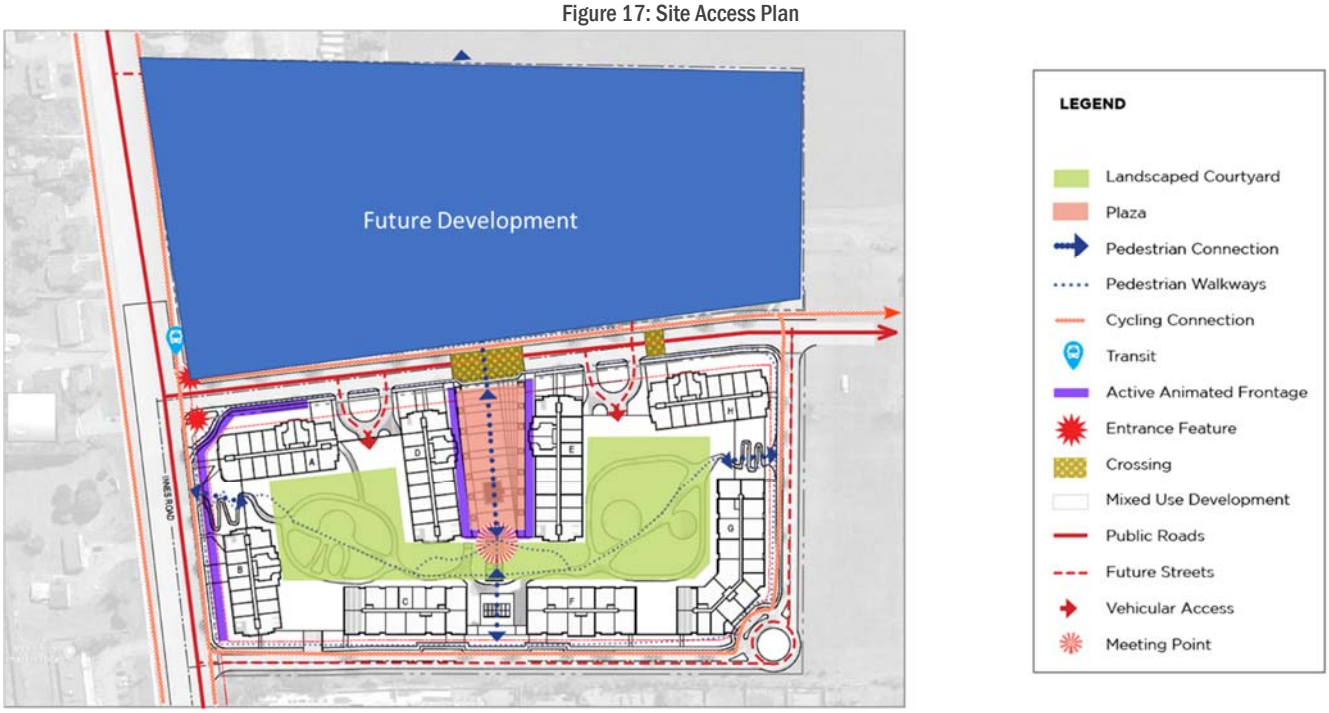
The MMLOS analysis will need to be revisited during the Site Plan Application process, when more details regarding about the site plan are presented.

4.4. ACCESS INTERSECTION DESIGN

The proposed development will make use of a new collector road for access, Lamarche Avenue, which connects to Innes Road on the north and Silverbirch to the south. The site will be connected via two access loops to ground and underground parking. Internal surface sidewalks are proposed within the site which offers pedestrian connectivity between the buildings and to Innes Road, Lamarche Avenue and the truck/emergency access only roadway.

A road around the south and west perimeter of the site will offer delivery, drop off and emergency vehicle only access and will be controlled by a 24-hour on site security system gate. **Figure 17** illustrates the proposed access for the development.

Figure 17: Site Access Plan



4.4.1. ACCESS DESIGN – SIGNAL WARRANT

A traffic signal warrant was completed, and it was determined that traffic signal controls are required at the buildout plus 5-year horizon, and 99% warranted (1% less than the threshold) at the buildout year. Therefore, it is recommended traffic signals be constructed prior to full buildout. The warrant calculations are shown in Appendix H.

4.5. TRANSPORTATION DEMAND MANAGEMENT

The development generated travel demand has been estimated in Section 3.1.1 using modal shares from the 2011 TRANS O-D survey for Orléans. These modal shares reflect conditions for a wide variety of transportation services supply within Orléans. Given site location near major arterial Innes Road, they might not reflect site's current conditions. However, considering development phasing (full occupancy by 2031) and consideration of the TMP's affordable network plans proposing isolated transit priority on Innes Road and future Brian Coburn transit priority corridor, it is anticipated that transit shares will increase, and auto shares will decrease for the subject site within the horizon analysis.

Once the envisioned transit priority corridors are completed, and to support the anticipated rise in transit ridership, post-occupancy TDM measures are recommended and attached as Appendix I. Some of the TDM measures that the proponent is providing/considering are as follows:

- Property management staff to serve as TDM program coordinator;
- Display local walking/cycling maps with on-hand at the security desk and property management office;
- Display OC Transpo schedules and maps and have on hand at the security desk and property management office;
- Marked crosswalks provided at designated areas on-site crossing internal laneways;
- Provide multimodal travel option information in a standard welcome manual for new residents and tenants;
- Sidewalks provided on the all frontages;
- Direct and attractive walking routes provided from public sidewalks to building entrances and transit stops;
- On-site bicycle parking provided according to the City's By-Law requirements;
- Landscaping and benches provided along walking and cycling routes; and,
- Designated drop-off/pick-up areas provided on-site.

4.6. TRANSIT ROUTE CAPACITY

It is anticipated that there will be sufficient transit capacity due to the high frequency route 25 (former 94) located at the frontage of the proposed development. Route 25 operates at approximately 5-minute intervals during peak hours and approximately 15-minute intervals during non-peak hours with service from as early as 4:33am until midnight.

4.7. INTERSECTION DESIGN

4.7.1. MULTI-MODAL LEVEL OF SERVICE

Future Multi-Modal Level of Service

Lamarche/Innes intersection has only recently been built and relies on a STOP control on the minor (Lamarche Avenue). Since the intersection is not signal or roundabout controlled, it is not suited for an MMLOS analysis.

As described in Section 4.4.1., traffic signals are recommended prior to full buildout. It can be assumed that Innes Road will maintain 2 lanes per direction and a left turn lane will likely be added to the east leg. Lamarche will likely have a left turn lane and a right turn lane to accommodate for vehicular volumes. The MMLOS analysis for the future signalized intersection Lamarche/Innes is summarized in **Table 16**, with detailed analyses provided in Appendix K. As stated in the MMLoS Guidelines, only signalized or roundabout intersections are considered for the intersection level of service measures.

Table 16: MMLOS – Intersections

Road Segment	Level of Service			
	Pedestrian (PLoS)		Bicycle (BLoS)	
	PLoS	Target	BLoS	Target
Innes Road between Pagé & U-Haul	D	C	F	C

As shown in **Table 16**, the pedestrian and cyclist target level of service were not met. Pedestrians have to cross 3 to 5 lanes of traffic when crossing, resulting in low level of service. The bicycle target level of service could be met if a 2-stage left turn box is added on the east leg and if cycling facilities are included on Lamarche Avenue approach.

4.7.2. PROJECTED BACKGROUND INTERIM OPERATIONS

The interim background volumes from Section 3.2.4 and **Figure 15** were inputted in Synchro to analyze the future interim background conditions. Results are summarized in **Table 17** with detailed analyses provided in Appendix L.

Table 17: Projected 2022 Background Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Orléans/Innes	C(E)	0.74(1.00)	WBT(EBT)	26.8(41.3)	B(D)	0.70(0.89)
Pagé/Innes	A(C)	0.56(0.77)	SBT(EBT)	6.4(10.8)	A(C)	0.54(0.73)
U-Haul/Innes	A(B)	0.51(0.66)	WBT(EBT)	5.3(5.3)	A(B)	0.51(0.65)
Lamarche/Innes	A(B)	0.51(0.68)	WBT(EBT)	5.1(4.2)	A(B)	0.51(0.66)
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 17**, all the intersections within the subject area are projected to operate 'as a whole' at acceptable LoS 'D' or better during the AM and PM peak hours. All of the 'critical movements' at study area intersections are projected to operate at acceptable LoS 'E' or better during both peak. Note that the timing plans for the intersections were optimized to improve critical turning movements while maintaining existing cycle lengths. No significant changes between existing conditions and interim background were noted.

4.7.3. PROJECTED BACKGROUND ULTIMATE BUILDOUT OPERATIONS

The ultimate buildout background volumes from Section 3.2.4 and **Figure 16** were inputted in Synchro to analyze the future ultimate background conditions. Results are summarized in **Table 18** with detailed analyses provided in Appendix K.

Table 18: Projected Background Ultimate Buildout Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Orléans/Innes	D(F)	0.83(1.11)	WBT(EBT)	28.6(56.5)	C(E)	0.77(0.99)
Pagé/Innes	B(D)	0.63(0.86)	WBT(EBT)	7.7(12.9)	B(D)	0.61(0.81)
U-Haul/Innes	A(C)	0.56(0.72)	WBT(EBT)	5.7(6.9)	A(C)	0.56(0.71)
Lamarche/Innes	C(C)	0.72(0.78)	NBL(EBT)	8.3(6.9)	A(C)	0.59(0.76)
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 18**, all the intersections within the subject area are projected to operate 'as a whole' at acceptable LoS 'D' or better during the AM and PM peak hours with the exception of Orléans/Innes which is anticipated to reach capacity. The majority of the 'critical movements' at study area intersections are projected to operate at acceptable LoS 'D' or better during both peak hours with the exception Orléans/Innes which has a critical movements of LoS 'F' in the PM peak hour. Note that the timing plans for the intersections were optimized to improve critical turning movements while still keeping the original cycle lengths. Some changes between existing conditions and ultimate buildout background future were noted, predominantly in the PM peak hour.

4.7.4. FUTURE PROJECTED INTERIM CONDITIONS

The total future projected interim conditions were derived by superimposing the interim background volumes onto the interim site-generated volumes and are illustrated in **Figure 18**. Synchro results for study area intersection performance are summarized in **Table 19** with detailed analyses provided in Appendix L.

Figure 18: Future Projected Phase 1 Conditions

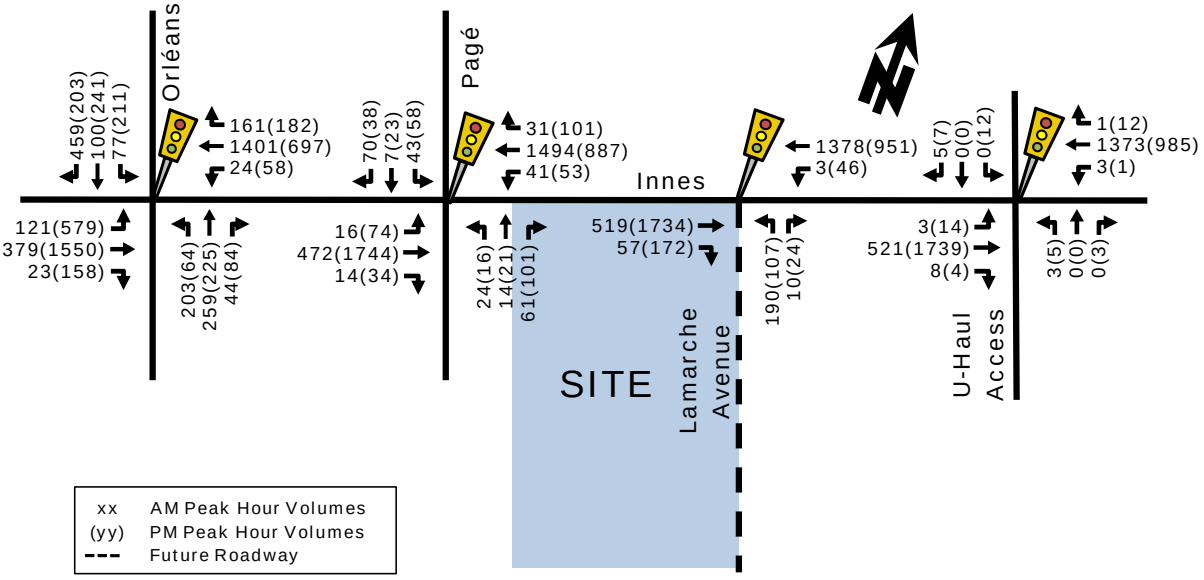


Table 19: Future Projected Phase 1 Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Orléans/Innes	C(F)	0.77(1.05)	WBT(EBT)	27.5(47.5)	C(E)	0.72(0.95)
Pagé/Innes	A(D)	0.59(0.81)	WBT(EBT)	9.6(11.6)	A(C)	0.57(0.76)
U-Haul/Innes	A(B)	0.52(0.67)	WBT(EBT)	5.1(6.1)	A(B)	0.52(0.66)
Lamarche/Innes	C(C)	0.73(0.74)	NBL(EBT)	9.9(7.0)	A(C)	0.57(0.72)
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 19**, the majority of intersections within the subject area are projected to operate 'as a whole' at acceptable LoS 'C' or better during the AM and PM peak hours with the exception of Orléans/Innes in the PM peak hour which is approaching capacity. The majority of the 'critical movements' at study area intersections are projected to operate at good LoS 'D' or better during both peak hours with the exception of Orléans/Innes which has a critical movements of LoS 'F' in the PM. Note that the timing plans for the intersections were optimized to improve critical turning movements while still keeping the original cycle lengths. No significant changes between interim background conditions and interim future conditions were noted.

4.7.5. FUTURE PROJECTED FULL BUILDOUT CONDITIONS

The total future projected ultimate buildout conditions were derived by superimposing the ultimate buildout background volumes onto the ultimate buildout site-generated volumes and are illustrated in **Figure 19**. Synchro results for study area intersection performance are summarized in **Table 20** with detailed analyses provided in Appendix L.

Figure 19: Future Projected Full Buildout Conditions

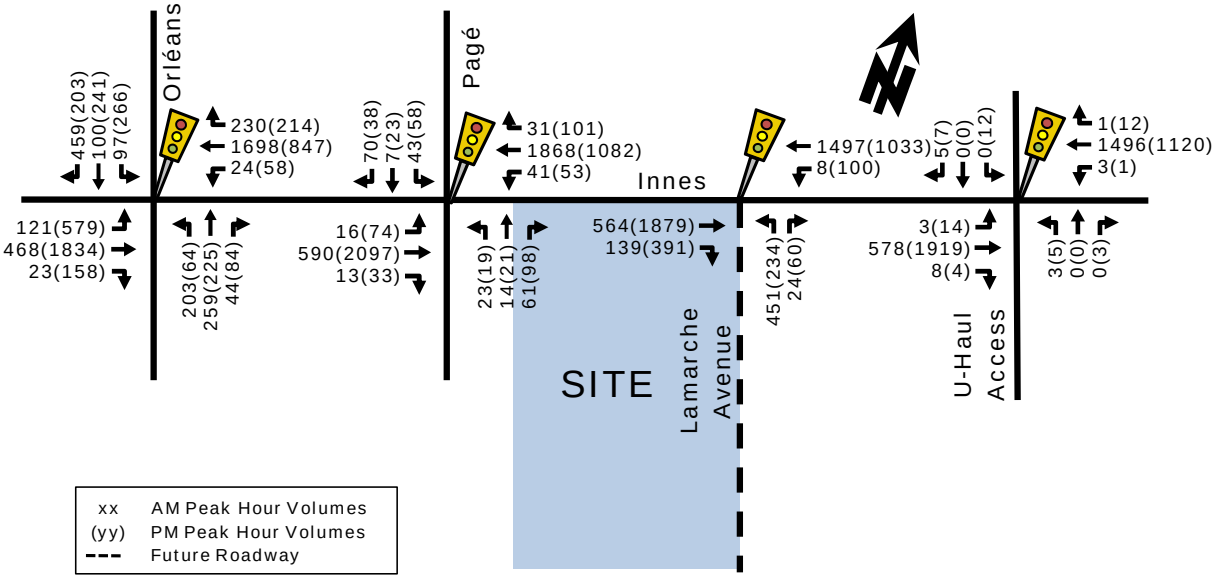


Table 20: Future Projected Full Buildout Operations at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Orléans/Innes	E(F)	0.91(1.24)	WBT(EBT)	31.1(79.2)	D(F)	0.85(1.13)
Pagé/Innes	C(E)	0.75(0.97)	WBT(EBT)	13.0(20.3)	C(E)	0.72(0.91)
U-Haul/Innes	A(C)	0.56(0.74)	WBT(EBT)	5.0(14.9)	A(C)	0.56(0.73)
Lamarche/Innes	D(F)	0.88(1.22)	NBL(WBL)	20.7(15.5)	C(C)	0.77(0.80)
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						

As shown in **Table 20**, all of the intersections within the subject area are projected to operate 'as a whole' at acceptable LoS 'D' or better during the AM peak hour. The U-Haul/Innes and Lamarche/Innes intersections are expected to operate within well in the PM peak hour. However, the Pagé/Innes is projected to approach capacity (LoS 'E') and the Orléans/Innes intersection is projected to exceed capacity (LoS 'F').

To achieve these LoS targets, the Lamarche/Innes intersection will need to be constructed with an EBR turn lane and a WBL. In recent comments, the City of Ottawa agreed that an EBR turn lane has merit and there is sufficient space within the existing right-of-way to accommodate it. Should the WBL movement become permissive-protected, the intersection 'as a whole' would operate with an LoS 'E' and significantly increase the EBT queue. However, the WBL failure would improve to a LoS 'A.'

Timing plans for the intersections were optimized to improve critical turning movements while maintaining existing cycle lengths. No significant change between background and buildout conditions were noted, indicating that the majority of vehicles impacting the operations at the study area intersections were more affected by background growth.

5. SUMMARY OF FINDINGS

Proposed Development

- The proposed development is located at 3490 Innes Road
- The site is currently occupied by an insurance company, food truck, mini-put facility and driving range which are no longer operating
- The proposed development will consist of an interim residential and local service retail Buildings D and E expected to have occupancy by 2022, and ultimate residential Buildings A to H by 2031
- The proposed development will consist of the following:
  - Building D: 12-storey building with 207 units and 1,395 m^2 of local service retail
  - Building E: 12-storeys building with 229 units and 1,312 m^2 of local service retail
  - Building A: 16-storeys building with 263 units
  - Building B: 9-storeys building with 125 units
  - Building C: 9-storeys building with 105 units
  - Building F: 9-storeys building with 97 units
  - Building G: 9-storeys building with 150 units
  - Building H: 9-storeys building with 144 units
- Full buildout will consist of 1,320 units and approximately 2,700 m^2 of local service retail space

Existing Conditions

- The Orléans/Innes intersection 'as a whole' is currently operating at an LoS 'E' in the PM peak hours, with critical movement of LoS 'F' in the PM peak
- The Pagé/Innes and U-Haul/Innes intersections operate at a LoS 'B' or better in both peak periods
- Volumes reflect travel patterns prior to the opening of arterial Brian Coburn Boulevard and likely reflects a more conservative analysis

Background Conditions

- A 1% annual growth rate was applied to study Innes Road through movements
- Other area developments noted in the study included:
  - East Urban Community Mixed Use Centre CDP
  - 3490 Innes Road residential development, south of this development (245-300 veh/h)
  - 3817 Innes Road residential development (30-40 veh/h)
  - 3443 Innes Road mixed use buildings (25-30 veh/h)
- The other area developments, except the EUC MUC CDP, were accounted for separately in the traffic analysis

Trip Generation and Parking

- Phase 1 (2022) of the proposed development was expected to generate approximately 145 and 200 vehicle trips in the weekday morning and afternoon peak hours respectively
- Full buildout (2031) modal share percentages were adjusted to reflect a 35% transit share targets based on the location and proximity of future transit infrastructure
- Full buildout of the proposed development was expected to generate approximately 390 and 500 vehicle trips during the weekday morning and afternoon periods respectively
- The subject development will provide a total of 1,491 underground and surface vehicle parking spaces
- The subject development will provide a total of 671 bicycle parking spaces located on ground floor in a sheltered location, which meets City bicycle parking bylaws

Projected Conditions

- Projected Phase 1 (2022) traffic condition 'as a whole' was projected to operate at a LoS 'E' or better during peak hours with critical movements operating at a LoS 'D' or better with the exception of Orléans/Innes which has a critical movement of 'F' in the PM. Overall, the intersections will operate similarly to existing levels of operation.
- Projected full buildout (2031) traffic conditions were shown to be similar to the 2031 background traffic conditions, indicating the impacts to network operations were mainly triggered by background traffic growth.
- The proposed Lamarche/Innes intersection should be constructed with a westbound and northbound left-turn lane and an eastbound right-turn lane to meet arterial level-of-service requirements (v/c <= 1.00);
- The MMLOS road segment analysis showed cyclist levels-of-service (BLoS) targets were met on Innes Road. However, the south side of Innes Road between Pagé and U-Haul was not expected to meet minimum targets for pedestrians due to high operating speeds, high vehicle volumes and a lack of on-street parking. There are no plans to modify Innes Road, which is a 4-lane major arterial. Therefore, it is unlikely any mitigation could be accommodated within the current horizons.
- It is anticipated Lamarche Avenue will be constructed with pedestrian and cycling facilities, however similar challenges will be faced in meeting MMLOS guidelines due to the number of lanes and level of traffic on Innes Road.

Transit

- Site-generated transit trips at Phase 1 (2022) were approximately 70 and 55 during the weekday morning and afternoon peak hours, respectively
- Site-generated transit trips at full buildout (2031) were approximately 305 to 390 during the weekday morning and afternoon peak hours
- The estimated transit trips could be accommodated by high frequency route #25 (former #94) during the AM and PM peak hour periods, with buses every 5 minutes during rush hours and every 15 minutes during off peak hours
- There are plans in the TMP Affordable Network to expand and improve public transit within the study area and also in nearby Brian Coburn Boulevard which is expected to have sufficient capacity to accommodate anticipated development transit demand
- The TMP Network Concept includes the Cumberland Transitway that would provide fully exclusive bus rapid transit between Blair Station and Frank Kenny Road by 2031. While the funding for the Transitway is currently uncertain, there is growing demand for this infrastructure since the City approved the Mer-Bleue Expansion CDP and the ongoing development of the East Urban Community Mixed Use Centre CDP. If constructed, the subject site would be located approximately 1km (straight-line distance) of the proposed Belcourt (now Fern Casey) Extension Station and 2km of Chapel Hill South Park and Ride/Brian Coburn Navan Rapid Transit Station.

Site Access, Circulation and Connectivity

- The proposed development will be accessed on Lamarche Avenue, which has a connection to Innes Road, approximately 220m east of the Pagé/Innes intersection
- A traffic signal control is warranted at Lamarche/Innes for interim and ultimate buildout
- Vehicle access to site consists of two loops which connect the parking lots to Lamarche Avenue. Access of municipal and emergency services HSU vehicles will be provided via a private loop around the perimeter of the site which is closed to general public and is monitored by a 24-hour security service on site
- Truck access and circulation will be assessed during the Site Plan Application process, when more details are available regarding the internal site design
- The proposed rezoning is considered supportive of pedestrian connectivity by providing a network of internal pathways that connect all buildings to Innes Road south sidewalk
- The proposed rezoning is anticipated to be supportive of cycling connectivity by providing a road network layout that is consistent with traffic calming principles and safe sharing of the road with bike users

Based on the foregoing, the proposed 3490 Innes Road development is recommended from a transportation perspective.

Prepared By:

Rani Nahas, E.I.T.
Transportation Analyst

Reviewed By:

Austin Shih, P.Eng.
Senior Transportation Engineer

Appendix A

City Comments

PARSONS

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P: +1 613.738.4160 | www.parsons.com

13 February 2020

City of Ottawa
Development Review Services
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Attention: Neeti Paudel

Dear Neeti:

Re: 3490 Innes Road
Transportation Impact Assessment – Step 5 Comments

This Addendum has been prepared to address the comments received from the City of Ottawa, dated January 9th, 2020 and February 5th, 2020, with corresponding responses from Parsons.

1.1. TRANSPORTATION ENGINEERING SERVICES

Comment 1: *Justify the large difference in mode share targets for the current 3490 Innes Road development and the subdivision just to the south. Concerns remain about the viability of a 45% transit mode share. While it is acknowledged that the proposed development is closer to Innes Road, and that the volume along Innes Road will encourage some auto drivers to take transit, the subdivision south of this development proposed 25% transit and 50% auto driver mode share targets. With congestion along Innes Road, isolated measures will help but a 25% increase in transit mode share will take effort to achieve. Current transit mode shares from the OD survey are 22% during the AM Peak (blend of from/within district) and 18% in the PM peak (blend of to/within district).*

Response 1: The transit mode share has been reduced to 35% as per City's recommendation (see Comment 6 below).

Comment 2: *Demand rationalization is required for the projected vehicle volumes not just the existing vehicle volumes.*

Response 2: Projected vehicle volume and intersection operations are summarized in Section 4.7. The existing vehicle volumes were analyzed in Demand Rationalization to demonstrate the available intersection capacity existing today and how projected site traffic can be accommodated.

Comment 3: *As part of site plan application, a TDM measures plan will be required to facilitate achieving a high transit mode share.*

Response 3: Acknowledged.

Comment 4: *Monitoring of mode shares will be required as phasing progresses and should be completed by an on-site TDM coordinator. If mode share targets are not achieved at target dates, additional strategies will be required. Monitoring and strategies must be included in the site plan agreement to ensure targets are met.*

Response 4: Noted, this will be considered during the Site Plan Application.

Comment 5: *During site plan, provide details of the transit capacity and the additional requirements for the proposed development.*

Response 5: Acknowledged.

Comment 6: *Given the type of development being proposed, it is justifiable to have a 30-35% transit mode share with pre- and post-occupancy TDM measures implemented suitable to facilitate the ridership increase from existing O-D mode shares. Refer to the two TDM checklists to see proven measures to encourage sustainable modes of transportation. Please reach out to the City's TDM officer at travelwise@ottawa.ca for further guidance and provide a TDM implementation plan as indicated in Module 4.5.3 of the TIA Guidelines.*

Response 6: The transit mode share has been decreased to 35%. TDM measures to be implemented have been added to Section 4.5 of the revised TIA report.

Comment 7: *With any target transit mode share above what was observed in the OD Survey, monitoring is recommended one year after occupancy to determine what mode shares were achieved. If the non-auto transportation mode shares are not met, supplementary TDM Measures identified in the plan will need to be implemented in order to achieve the targets. Please reach out to the City's TDM officer at travelwise@ottawa.ca for further guidance.*

Response 7: Noted, this will be considered during the Site Plan Application.

1.2. TRAFFIC SIGNAL OPERATIONS

Comment 8: *Mode share projections remain artificially high. Conservative auto share projections would alter many synchro results along the corridor and identify further network capacity issues for which mitigation should be examined. Provide future analysis with a more realistic auto mode share.*

Response 8: The trip generation and Synchro analysis has been updated to reflect a 35% transit mode share.

Comment 9: *East Urban Community CDP is unlikely to be captured within a 1% background growth rate.*

Response 9: The EUC MUC CDP has yet to be approved, as such, build-out of initial phases is not likely to occur within the subject development's horizon years. At that time, TIAs in support of future development within the CDP lands will identify appropriate infrastructure requirements along Innes.

Comment 10: *Addition of an EB right turn lane at avenue de Lamarche shows merit.*

Response 10: Noted, an EBR turn lane has been included in the full build-out scenario.

Comment 11: *Suggested PM/PT phasing for low volume WBL at avenue de Lamarche drastically increases EB queueing.*

Response 11: Noted, the WBL PM/PT phasing is no longer recommended, only noted.

Comment 12: *Address the lack of pedestrian actuations in the modelling as this is concerning given the projected modal share and trip distribution. Conflicting pedestrian movements compound delay for left turning vehicles and result in failing LOS for some critical movements.*

Response 12: Existing pedestrian and cyclist volumes and related pedestrian calls have been included in the revised Synchro analysis for all horizon years.

Comment 13: *Demonstrate the functionality of the network intersections at the agreed upon modal splits. Ensure that this review is not limited only to vehicle trips along the network.*

Response 13: Noted.

Comment 14: *Through the course of review, it is apparent that no pedestrian, transit or active trip modes are accounted for in the Synchro modelling. These will all have impacts on the traffic signal operations surrounding the development and will directly impact the level of service for all users.*

Response 14: See Response 10.

Comment 15: *Each intersection within the study area will face additional pressure at build out that is not currently addressed in the review. Include active/transit distribution and trips within the Synchro modelling in subsequent submissions.*

Response 15: See Response 10.

1.3. TRAFFIC SIGNAL DESIGN

Comment 16: *No comments to this TIA for this circulation. Traffic Signal Design and Specification reserves the right to make future comments based on subsequent submissions.*

Response 16: Noted.

1.4. STREET LIGHTING

Comment 17: *No comments with initial TIA for this circulation. Street Lighting reserves the right to make future comments based on subsequent submissions.*

Response 17: Noted.

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30 October 2019

City of Ottawa
Development Review Services
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Attention: Neeti Paudel, P.Eng.

Dear Neeti:

Re: 3490 Innes Road
Step 3 – Comment and Response Form

The following response form has been prepared to address City of Ottawa comments received on June 26th, 2019. City comments are noted in black with the corresponding responses from Parsons in red.

TRAFFIC SIGNAL OPERATIONS

Transportation Engineering Services

Provide traffic signal warrant analysis for the proposed signalization of the Lamarche intersection. Noted

We agree with Transportation Engineering Services that the 65% transit modal share is unrealistic based on the proximity to transit facilities that remain in the conceptual phase. Address the impacts to the network of trip generation/modal shares following the 2011 OD Survey including the capacity issue along Innes Road. Noted, updates made.

Apply background growth. Development of the surrounding area is not complete. Do not isolate one intersection as a justification, evaluate based on the network. Noted, updates made.

The Synchro modelling provided contains multiple errors, please review and correct.
Noted, updates made.

TRANSPORTATION ENGINEERING SERVICES

2707 square-m of commercial space is significant. Provide confirmation that all generated trips are expected to be internal trips. Consider any additional site features required to address internal trips. Commercial was reduced to 2,612 square meters. Based on the proposed commercial location and parking location provided for commercial, it was determined that it was catered to local residents rather than to general public.

The proposed Belcourt transit station is not within 600m of this development. Therefore, a 65% transit modal share target may not be feasible without significant TDM measures, especially since the Cumberland Transitway is only a network concept. Noted, modal shares were updated in section 3.1.1.

The existing modal share should be gathered from the Orleans Traffic Assessment Zone in the 2011 OD Survey. See the modal shares used for the southern portion of the 3490 Innes Road development. Noted, report and analysis updated to reflect 2011 OD Survey for this development.

A re-evaluation of possible alternative access(es) to the development should be completed since Innes Road is already operating near capacity. Full build-out of all of the 3490 Innes Road development could add up to 443 AM

peak and 503 PM peak trips by 2022, and 849 AM peak and 909 PM peak vehicle trips by 2031 with 44% auto mode share. Noted, updates made.

Another traffic count on Innes Road could be considered to evaluate the impact of Brian Coburn Boulevard on Innes Road's traffic volumes since the traffic counts referenced in the document were obtained in years 2015-2017, prior to build-out of Brian Coburn. Noted, new counts used.

In Table 1, the future phases subtotal is incorrect. Noted, corrections made.

There is a reference error in section 3.1.1 Noted, corrections made.

In section 3.2.3, the description of 3817 Innes Road does not refer to the correct development location. Noted

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6 November 2019

City of Ottawa
Development Review Services
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Attention: Neeti Paudel, P.Eng.

Dear Neeti:

Re: 3490 Innes Road
Step 4 – Comment and Response Form Second Submission

The following response form has been prepared to address City of Ottawa comments received on October 4th, 2019. City comments are noted in black with the corresponding responses from Parsons in red.

TRAFFIC SIGNAL OPERATIONS

Transportation Engineering Services

Q1. The apartment land use code is used in the Strategy Report instead of the condominium code used in the Forecasting report. As trip generation varies considerably between these two codes, ensure that the appropriate designation is provided as part of the final submission.

R1. The developer has confirmed the site will only offer rental apartment units.

Q2. Clarify in the text of the document that the proposed development is not within 600 metres of the planned Belcourt/Fern Casey transit station.

R2. Noted, the TIA has been updated accordingly.

Q3. Review signal warrants with appropriate volumes. Volume figures shown in Appendix H for the intersection of Innes/Lamarche are inconsistent with the body of the report. Since this intersection is a future intersection (and identified for DC funding), justification 7 and any appropriate volume expansion factors are required for signal warrant analysis.

R3. Appendix H sheets have been updated with most current warrant analysis. The Innes/Lamarche intersection is now 99% warranted for signals (1% below the threshold) in the buildout year.

Q4. As per module 4.5, the TDM Measures checklist must be completed. Given the projected 45% transit mode share and 15% active mode shares, these measures will require an implementation plan and possible post-occupancy monitoring. Implementation details must reference the concept plan/site map for all infrastructure related TDM measures.

R4. Noted, the completed TDM Measures checklist has been included in Appendix I.

Q5. Indicate on an access plan where deliveries will occur and provide vehicle turning template review. Provide a site plan.

R5. Truck access and onsite circulation will be confirmed during the site plan review as part of the Site Plan Application process, when more detail on the internal layout is available. The development design assessments are not required for a zoning amendment application as per the City TIA Guidelines.

Q6. Six of the proposed buildings do not have a mixed-use designation; review the minimum parking requirements for the building. Clarify that the minimum dwelling unit, visitor and non-residential parking rates are proposed. Justify the reduction in the parking rates from the minimum zoning by-law requirements.

R6. Similar to the previous comment, parking assessments are not required for zoning amendment applications. However, a supplementary rationale was added to Section 4.2 for information purposes. Overall, there are more parking spaces proposed than is required by the City by-law; resulting in a surplus of 43 spaces. Therefore, there are no concerns with potential overflow of parking on local streets.

The proposed parking rates used in the analysis were as follows:

- Residential parking = 1.0 spaces per unit;
- Commercial parking = 3.4 spaces per 100m2; and
- Visitor parking = 0.1 spaces per unit.

Q7. Describe the location of the bicycle parking and consider ease of access to facilitate its usage given the large amount of parking required.

R7. Descriptions for bicycle parking have been explained in further detail in Section 4.1. and also discussed in TDM Checklist.

Q8. Conduct MMLOS analysis and provide a concept plan of Lamarche Street and the Lamarche/Innes intersection.

R8. MMLOS analysis for access intersections are not required for a zoning amendment application. The details required for accurate analysis are not available at this time. However, for information purposes, a high-level MMLOS analysis was included in Section 4.7.1. This analysis will have to be revisited during the Site Plan Application process. A concept plan for the intersection will also be provided as part of the Site Plan Application.

Q9. Innes Road is a spine route and the segment BLOS target is C. Review TLOS for Innes Road as it is a truck route.

R9. Noted, the network MMLOS analysis has been updated.

Q10. Table 1 and the summary section describes different sizes for the commercial development. Please provide clarification.

R10. Noted, the TIA has been updated to reflect most recent development statistics.

Traffic Signal Operations

Q11. The speed limits used in the Synchro modelling are incorrect.

Q12. The lost time adjustment should not be manipulated.

Q13. The allocated left-turn phasing is indicative of field operational requirements and should not be adjusted or "optimized" to improve LOS results.

Q14. The turn type is incorrect for Orléans Boulevard at Innes Road in some modelling.

R11-14. Noted, the Synchro analysis has been updated.

Traffic Signal Design

Q15. No comments on this TIA at this time. Traffic Signal Design & Specification Unit staff reserve the right to make future comments based on subsequent submissions.

Q16. Future considerations:

a) If there are any future proposed changes in the existing roadway geometry for the purpose of construction of a new TCS(s) or modifications to existing TCS(s), the City of Ottawa Traffic Signal Design & Specification Unit is required to complete a review for traffic signal plant re-design and provide the actual re-design. b) If the proposed traffic signals are warranted and approved for installation or modifications to existing TCS are approved and an RMA approved, then please forward an approved geometry detail design drawing (.dwg digital format in NAD 83 coordinates) including base mapping, existing and new underground utilities or sewers, new or existing CBs locations, turn radius modeling for approved vehicles, and approved pavement markings drawings in separate files for detail traffic plant design lay out.

Q17. Please send all digital (CADD) design files to Peter.Grajcar@ottawa.ca (Tel: 613-580-2424, ext. 23035).

R15-17. Noted

Street Lighting

Q18. No comments with initial TIS at this time. Street Lighting staff reserve the right to make future comments based on subsequent submissions.

R18. Noted

Transit Services

Q19. The initial phase trip generation projections for transit have been noted. Be advised that OC Transpo regularly conducts capacity review analysis on the transit network to determine whether additional bus trips or capacity is required. Any additional transit volume to Route 94 and others would likely be identified and service would be adjusted through this process.

Q20. The 2031 horizon projections have also been noted and will be considered for future review of network service design.

R19-20. Noted

Appendix B

Screening Form

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City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	7/3/2018
Project	3490 Innes Road TIA
Project Number	476731-01000

Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	Yes
Development Satisfies the Safety Trigger	Yes

Module 1.1 - Description of Proposed Development	
Municipal Address	3490 Innes Road
Description of location	Located on the south side of Innes Road, midblock between Pagé Road and Boyer Road
Land Use	The lot is currently used for an insurance business, food truck, a mini-put facility/driving range
Development Size	8 residential towers totalling 1,320 units with approximately 2,707 sq. m of ground floor commercial space
Number of Accesses and Locations	The main access is proposed via two one-way loops on a new access road connecting to Innes Road A secondary access will be provided for emergency and service vehicles only.
Development Phasing	Multi-phased from 2022 to 2031
Buildout Year	2031
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Townhomes or Apartments	
Development Size	1,320	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers	
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	No
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	Yes	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	No	
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	

Appendix C

Traffic Counts

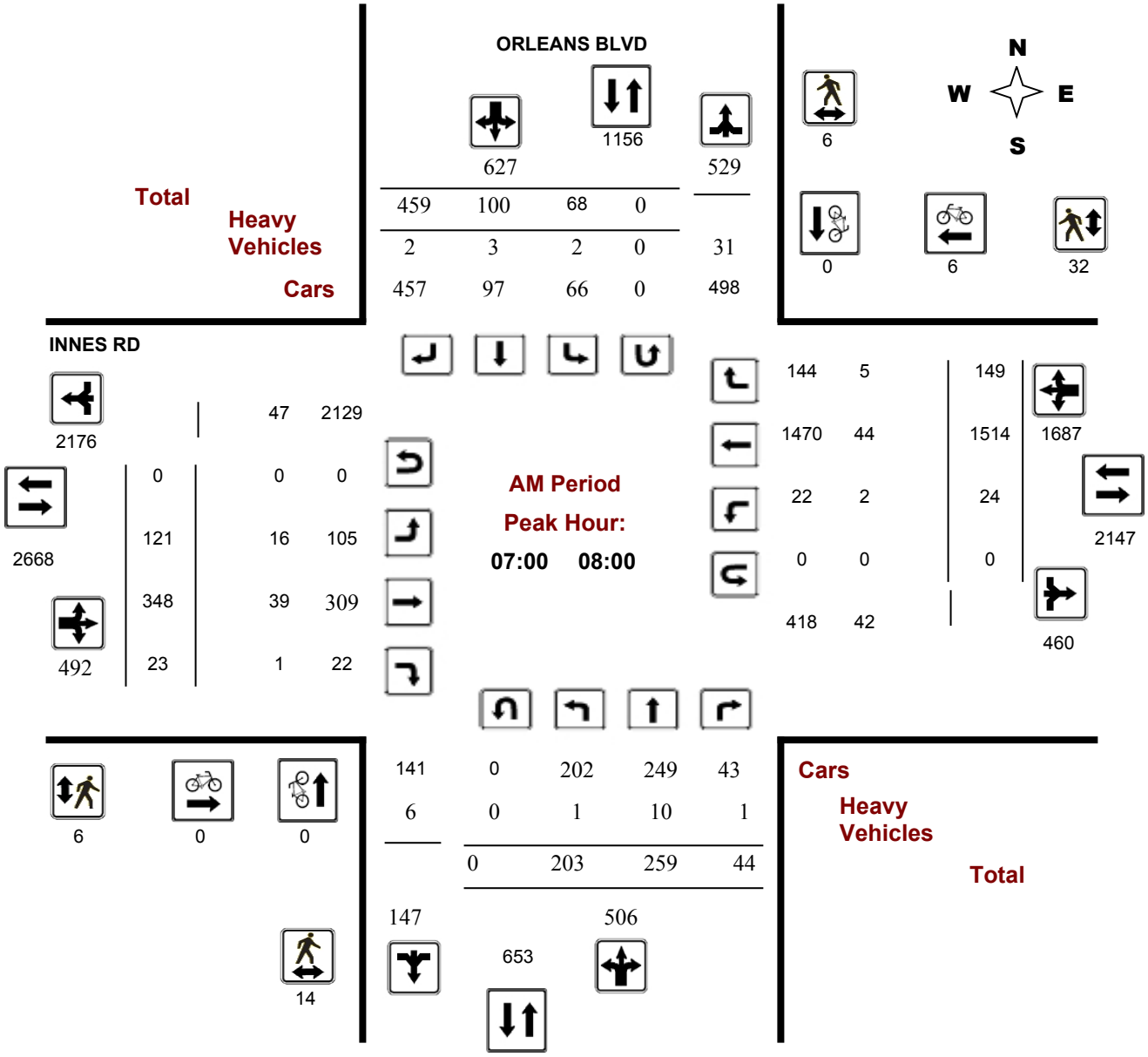
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

INNES RD @ ORLEANS BLVD

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

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



Comments

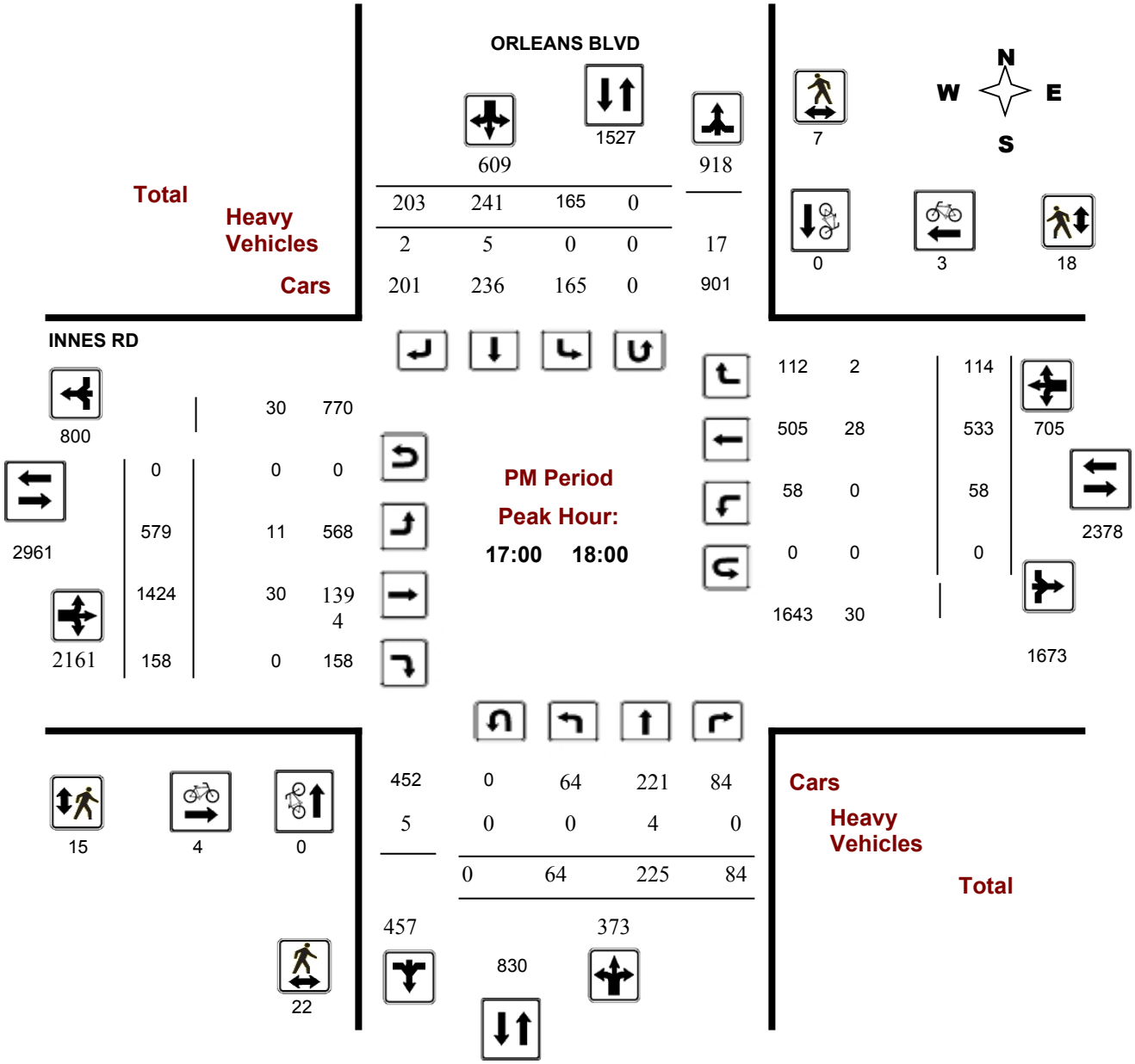
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

INNES RD @ ORLEANS BLVD

Survey Date: Wednesday, May 03, 2017
Start Time: 07:00

WO No: 36978
Device: Miovision



Comments

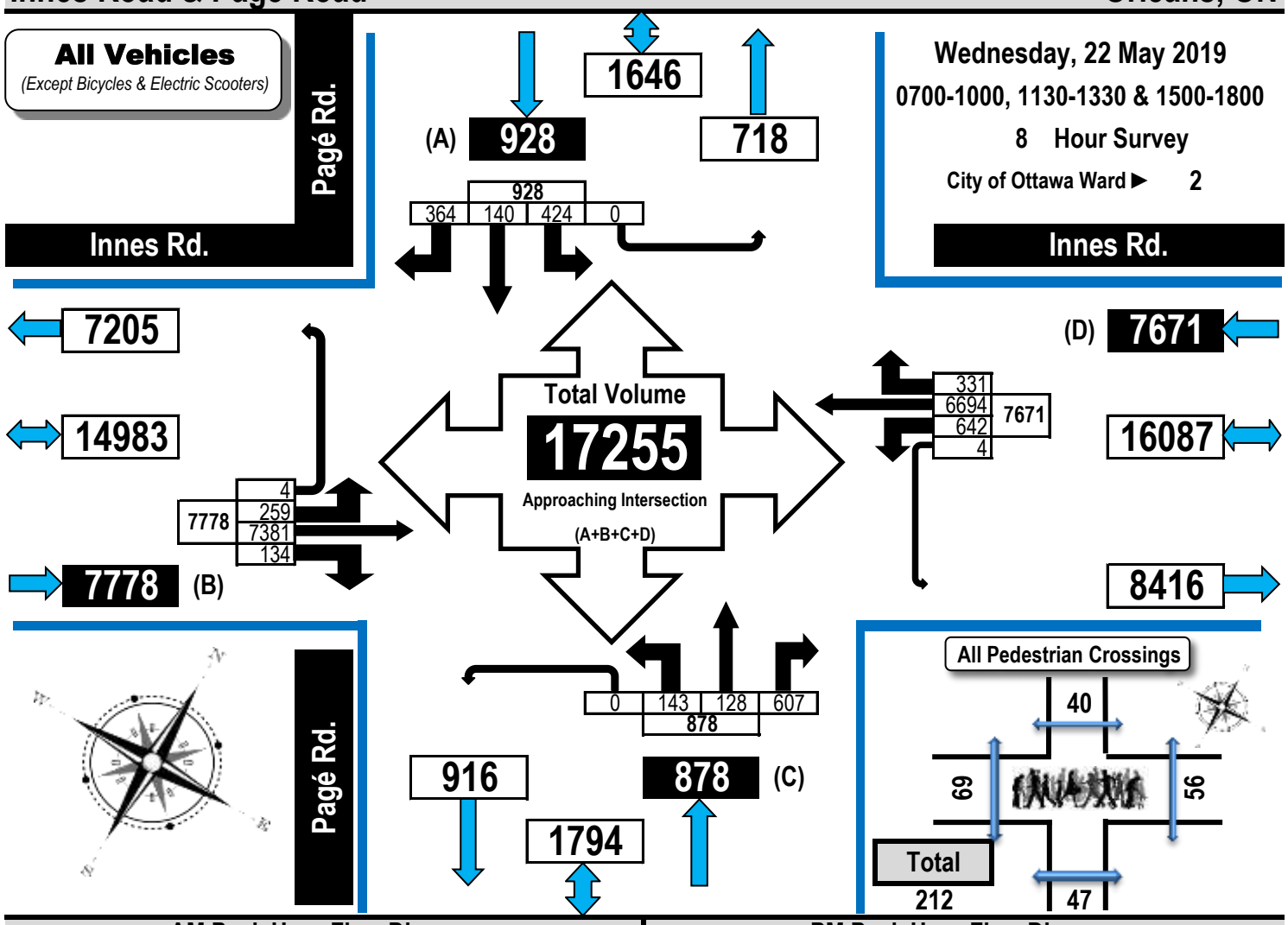
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

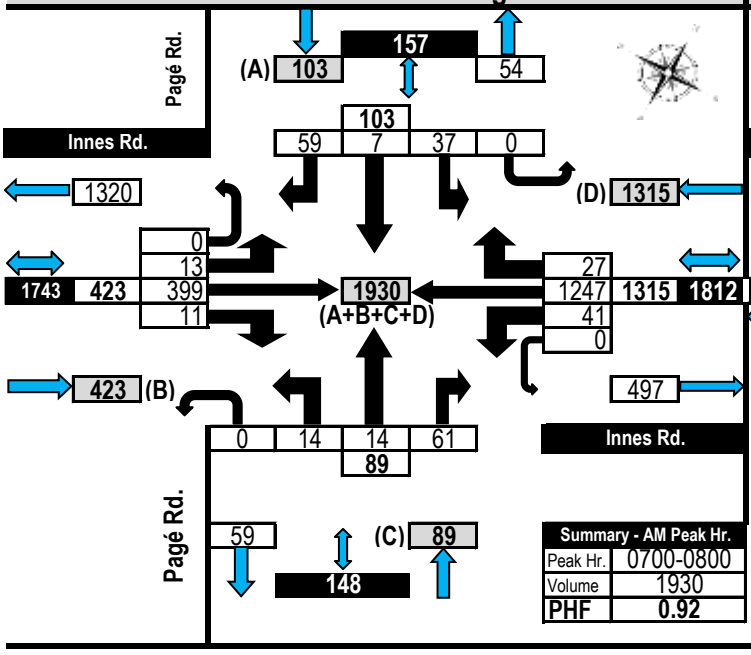
Innes Road & Pagé Road — Orléans, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Wednesday, 22 May 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 2

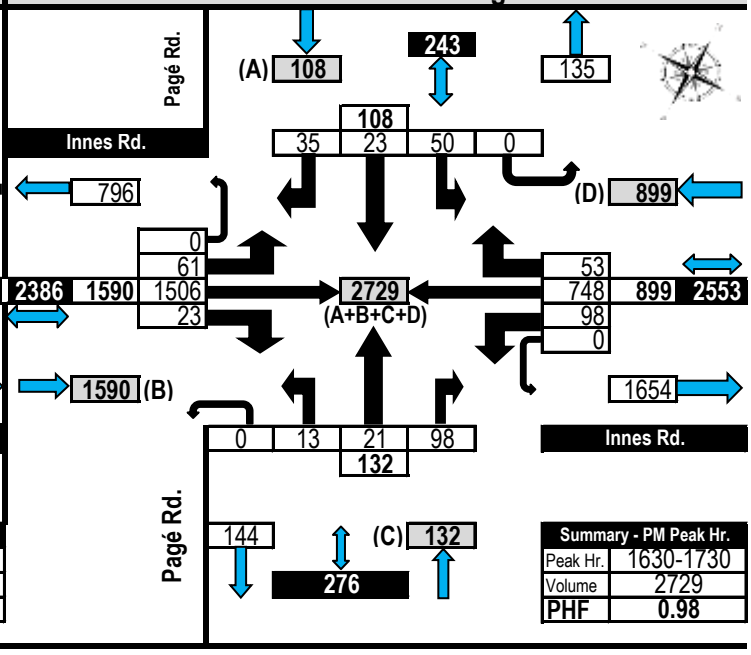


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0700-0800
Volume	1930
PHF	0.92

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	2729
PHF	0.98

ACCURATE TRUSTED TRAFFIC DATA

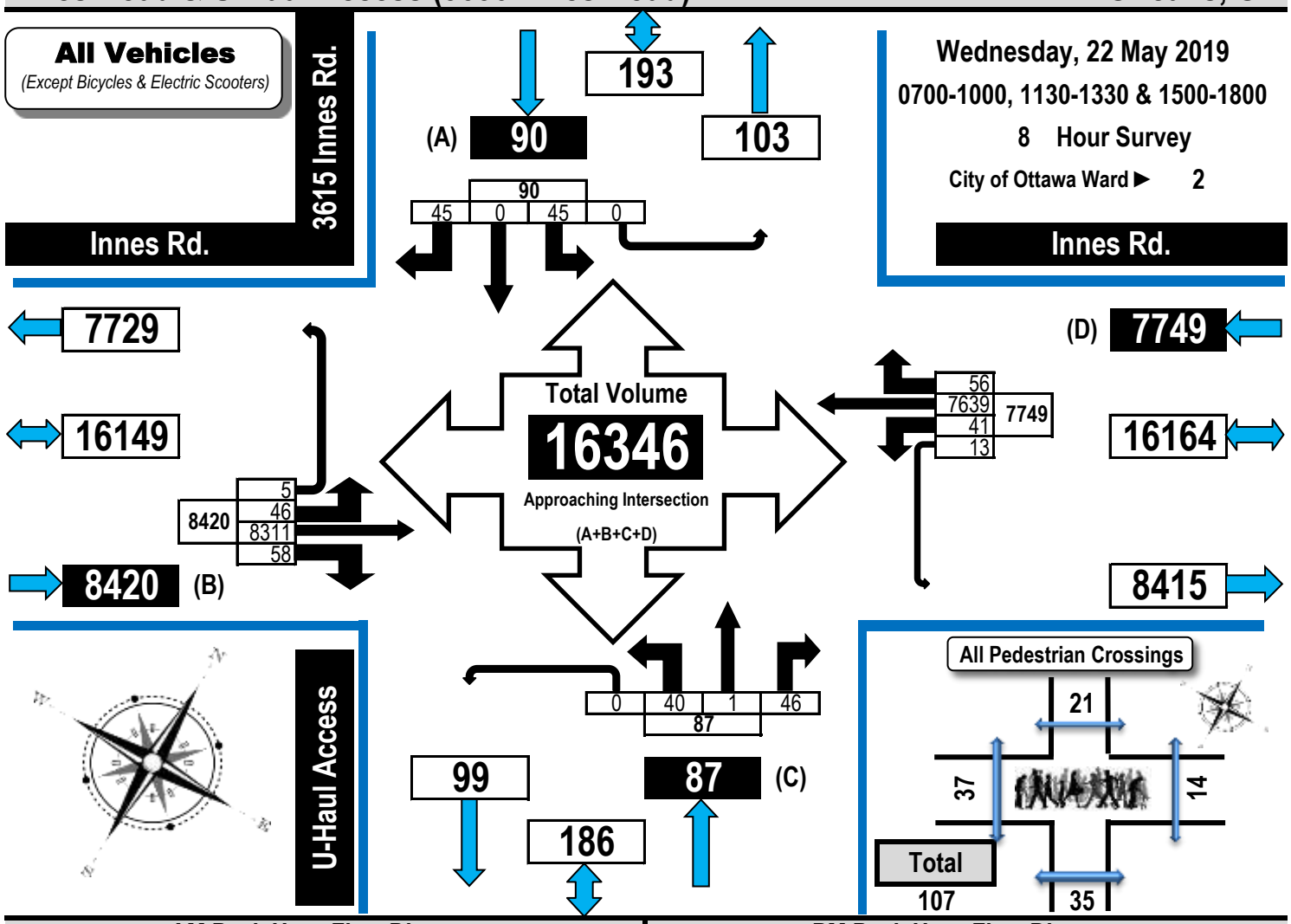
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

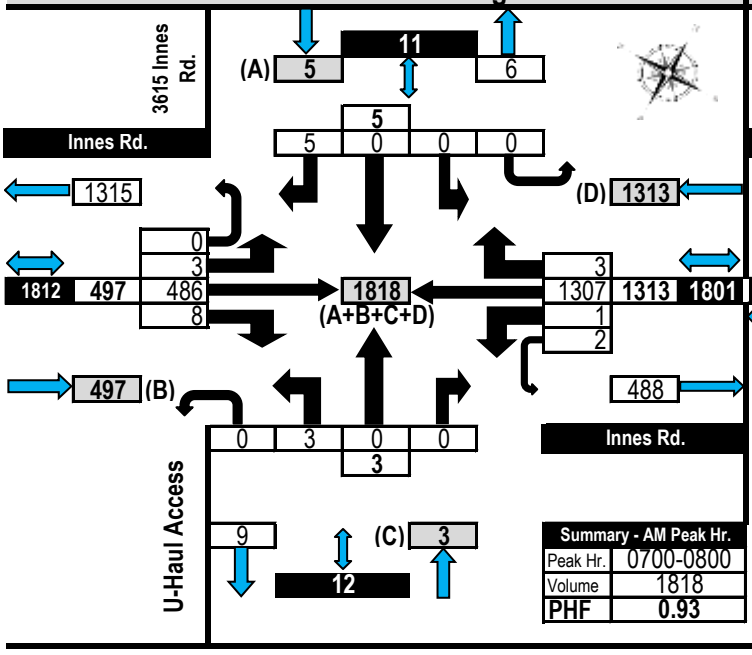
Innes Road & U-Haul Access (3636 Innes Road) — Orléans, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Wednesday, 22 May 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 2

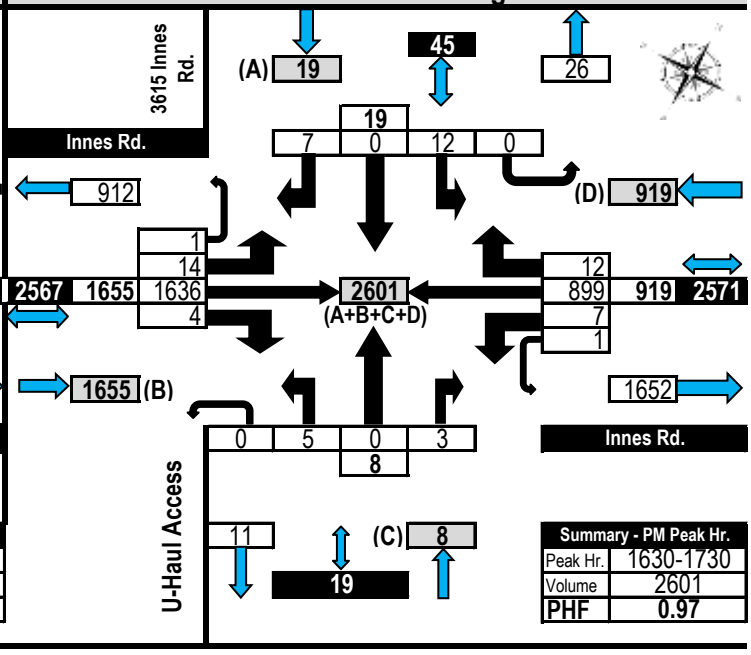


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0700-0800
Volume	1818
PHF	0.93

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	2601
PHF	0.97

Appendix D

Collision Data

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2012 **To:** December 31, 2016

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

Traffic Control: Traffic signal **Total Collisions:** 6

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	
					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	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Mar-19, Tue,20:08	Snow	Rear end	Non-fatal injury	Ice	West	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Feb-27, Wed,15:15	Snow	Angle	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2012-Apr-05, Thu,17:30	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

2012-Jul-02, Mon,01:14	Clear	SMV other	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Pole (utility, power)	

Location: INNES RD @ ORLEANS BLVD

Traffic Control: Traffic signal **Total Collisions:** 77

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-07, Tue,10:08	Clear	Angle	P.D. only	Slush	South	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2014-Jan-08, Wed,07:37	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Apr-01, Tue,08:10	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Pick-up truck	Other motor vehicle	
2014-May-29, Thu,08:20	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Pick-up truck	Other motor vehicle	
2014-Jun-04, Wed,07:34	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2014-Jun-10, Tue,08:40	Clear	Rear end	P.D. only	Dry	South	Turning left	Passenger van	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	

2014-Jul-06, Sun,14:27	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2014-Aug-12, Tue,12:11	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Truck - open	Other motor vehicle
					North	Turning right	Delivery van	Other motor vehicle
2014-Sep-22, Mon,14:50	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Dec-09, Tue,07:50	Clear	Angle	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2014-Dec-01, Mon,21:10	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Oct-17, Fri,07:25	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-10, Wed,15:40	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2014-Aug-25, Mon,18:19	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Passenger van	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Nov-17, Mon,19:54	Clear	Turning movement	Non-fatal injury	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jul-09, Wed,19:26	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	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
					West	Going ahead	Municipal transit bus	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
					East	Stopped	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
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-06, Tue,08:51	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	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

					South	Turning right	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
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Sep-01, Tue,11:55	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Municipal transit bus	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)
2015-Jul-09, Thu,17:10	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					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
					West	Going ahead	Municipal transit bus	Other motor vehicle
2016-Jan-19, Tue,18:45	Clear	Rear end	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	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
					South	Going ahead	Pick-up truck	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
					East	Turning left	Passenger van	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
					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
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-25, Mon,18:40	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					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
					South	Slowing or stopping	Passenger van	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
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Apr-28, Thu,10:30	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Mar-12, Sat,21:07	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle

					West	Going ahead	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
					East	Slowing or stopping	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
					East	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
					North	Turning right	Passenger van	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
					West	Stopped	Pick-up truck	Other motor vehicle
					West	Stopped	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
					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
					West	Going ahead	Municipal transit bus	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

					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Nov-02, Wed,17:03	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					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
					South	Turning left	Automobile, station wagon	Other motor vehicle
2013-Mar-19, Tue,06:14	Snow	Angle	P.D. only	Loose snow	North	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jan-13, Sun,16:43	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Mar-08, Fri,15:45	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2013-Feb-22, Fri,17:56	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle

					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-May-30, Thu,16:19	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Truck - closed	Other motor vehicle
2013-Jun-12, Wed,07:20	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2013-Jul-18, Thu,08:54	Clear	Rear end	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2013-Aug-08, Thu,23:21	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Sep-14, Sat,12:29	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - closed	Other motor vehicle
					West	Stopped	Delivery van	Other motor vehicle
2013-Aug-17, Sat,20:42	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Sep-09, Mon,07:15	Clear	Rear end	P.D. only	Dry	South	Turning right	Passenger van	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle

2013-Sep-14, Sat,13:11	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Nov-01, Fri,08:01	Rain	Rear end	P.D. only	Wet	South	Turning right	Passenger van	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2013-Dec-07, Sat,09:45	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					East	Turning left	Pick-up truck	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2013-Dec-02, Mon,16:27	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Dec-22, Sun,05:45	Freezing Rain	SMV other	P.D. only	Packed snow	West	Slowing or stopping	Automobile, station wagon	Skidding/sliding
2012-Jan-16, Mon,08:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Passenger van	Other motor vehicle
2012-Jan-12, Thu,22:30	Snow	SMV other	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Snowbank/drift
2012-Feb-03, Fri,07:10	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					West	Stopped	Pick-up truck	Other motor vehicle
2012-Apr-14, Sat,21:54	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Apr-27, Fri,20:54	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2012-Apr-23, Mon,09:23	Rain	Rear end	Non-fatal injury	Wet	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2012-Jun-05, Tue,22:04	Rain	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Dec-26, Wed,15:15	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2012-Jul-10, Tue,11:20	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2012-Jul-20, Fri,16:33	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle

2012-Aug-17, Fri,16:45	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2012-Sep-08, Sat,01:11	Clear	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Oct-11, Thu,14:45	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Sep-14, Fri,16:00	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2012-Dec-20, Thu,17:32	Clear	Rear end	P.D. only	Ice	West	Turning right	Truck - dump	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2012-Dec-13, Thu,06:55	Fog, mist, smoke, dust	Turning movement	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle

Location: INNES RD @ PAGE RD

Traffic Control: Traffic signal

Total Collisions: 28

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-May-03, Sat,15:48	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Aug-19, Tue,11:06	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Oct-20, Mon,20:40	Rain	Turning movement	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2014-Dec-07, Sun,11:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Nov-18, Tue,16:45	Clear	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2014-Nov-18, Tue,17:39	Clear	Rear end	P.D. only	Ice	North	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Dec-10, Wed,20:15	Snow	Rear end	P.D. only	Loose snow	West	Turning left	Passenger van	Other motor vehicle	

					West	Turning left	Pick-up truck	Other motor vehicle
2015-Jan-14, Wed,08:40	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	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
					East	Stopped	Automobile, station wagon	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
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Jul-14, Tue,18:58	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	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
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-22, Sat,11:07	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2015-Sep-28, Mon,08:12	Clear	Angle	P.D. only	Dry	West	Turning right	School bus	Other motor vehicle

					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	
					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	
					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	
					West	Stopped	Truck - closed	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	
					West	Stopped	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	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Jun-19, Wed,19:49	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2013-Oct-17, Thu,16:35	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	

					North	Going ahead	Pick-up truck	Other motor vehicle
2013-Nov-10, Sun,18:37	Rain	Turning movement	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2012-Mar-16, Fri,16:11	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2012-Jan-19, Thu,22:47	Snow	Angle	Non-fatal injury	Slush	North	Turning right	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-May-04, Fri,07:51	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Nov-16, Fri,16:28	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Municipal transit bus	Other motor vehicle
					West	Changing lanes	Automobile, station wagon	Other motor vehicle
2012-Dec-22, Sat,15:15	Snow	Rear end	P.D. only	Packed snow	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

Location: INNES RD btwn INNES RD & PAGE RD

Traffic Control: No control

Total Collisions: 21

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Mar-06, Thu,07:29	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jun-19, Thu,16:53	Clear	Rear end	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	
					West	Stopped	Truck - dump	Other motor vehicle	
2015-Jan-22, Thu,08:53	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-May-13, Wed,07:45	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	
					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-May-05, Tue,07:24	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	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
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Changing lanes	Automobile, station wagon	Other motor vehicle
2015-Jul-16, Thu,08:07	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle
					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
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Nov-19, Sat,18:49	Clear	Rear end	Non-reportable	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jan-31, Thu,07:51	Clear	Rear end	P.D. only	Wet	West	Changing lanes	Passenger van	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Feb-02, Sat,19:10	Snow	Turning movement	Non-fatal injury	Wet	West	Making "U" turn	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Feb-09, Sat,13:37	Clear	Rear end	P.D. only	Dry	East	Going ahead	Farm tractor	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Farm tractor

2013-Apr-27, Sat,00:38	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					South	Reversing	Pick-up truck	Other motor vehicle
2013-May-10, Fri,10:56	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2013-May-05, Sun,14:40	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Jul-08, Mon,11:04	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Sep-23, Mon,07:55	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle
2012-Jan-04, Wed,16:18	Snow	Sideswipe	P.D. only	Loose snow	East	Going ahead	Unknown	Other motor vehicle
					East	Stopped	Municipal transit bus	Other motor vehicle
2012-Feb-07, Tue,17:34	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

2012-Feb-02, Thu,15:52	Clear	Sideswipe	P.D. only	Dry	East	Overtaking	Passenger van	Other motor vehicle	
					East	Stopped	Municipal transit bus	Other motor vehicle	
2012-Jun-28, Thu,16:47	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	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
2014-Mar-06, Thu,07:58	Clear	Angle	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Nov-20, Thu,16:56	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
2015-Jan-14, Wed,09:38	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	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	
					West	Going ahead	Automobile, station wagon	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	

					East	Stopped	Passenger van	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
					East	Stopped	Pick-up truck	Other motor vehicle
2016-Apr-20, Wed,16:58	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2016-Oct-19, Wed,17:00	Clear	Angle	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jan-25, Fri,07:05	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Municipal transit bus	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-May-17, Fri,18:45	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2013-Sep-29, Sun,18:00	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle

					West	Turning right	Automobile, station wagon	Other motor vehicle	
2013-Dec-21, Sat,13:11	Clear	Angle	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2012-Apr-05, Thu,11:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Jun-20, Wed,14:05	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Sep-27, Thu,17:52	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	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
2014-Apr-29, Tue,11:45	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Oct-05, Mon,18:56	Clear	Sideswipe	Non-fatal injury	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	

					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	
					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	
					East	Stopped	Pick-up truck	Other motor vehicle	

Location: INNES RD WB btwn ORLEANS BLVD & INNES RD

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
2016-May-21, Sat,16:15	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Jan-19, Tue,18:20	Snow	Rear end	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Changing lanes	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	

Appendix E

Background Traffic Growth

Innes/Orleans
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2003	Monday May 5	3894	4061	2568	2126	5041	4663	7013	7666	37032
2004	Thursday July 22	3435	3253	2003	1682	4016	4101	5585	6003	30078
2014	Tuesday Jan 21	3719	3786	1906	1485	6786	7032	8225	8333	41272
2017	Wednesday May 3	4527	4881	2515	2055	7900	8264	9610	9352	49104

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2003	4061	3894	7955	37032				
2004	3253	3435	6688	30078	-19.9%	-11.8%	-15.9%	-18.8%
2014	3786	3719	7505	41272	16.4%	8.3%	12.2%	37.2%
2017	4881	4527	9408	49104	28.9%	21.7%	25.4%	19.0%

Regression Estimate	2003	3587	3611	7198
Regression Estimate	2017	4466	4220	8686
Average Annual Change		**1.58%**	**1.12%**	**1.35%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2003	7013	7666	14679	37032				
2004	5585	6003	11588	30078	-20.4%	-21.7%	-21.1%	-18.8%
2014	8225	8333	16558	41272	47.3%	38.8%	42.9%	37.2%
2017	9610	9352	18962	49104	16.8%	12.2%	14.5%	19.0%

Regression Estimate	2003	6178	6757	12935
Regression Estimate	2017	9259	9086	18345
Average Annual Change		**2.93%**	**2.14%**	**2.53%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2003	4663	5041	9704	37032				
2004	4101	4016	8117	30078	-12.1%	-20.3%	-16.4%	-18.8%
2014	7032	6786	13818	41272	71.5%	69.0%	70.2%	37.2%
2017	8264	7900	16164	49104	17.5%	16.4%	17.0%	19.0%

Regression Estimate	2003	4237	4412	8649
Regression Estimate	2017	8067	7694	15761
Average Annual Change		**4.71%**	**4.05%**	**4.38%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2003	2568	2126	4694	37032				
2004	2003	1682	3685	30078	-22.0%	-20.9%	-21.5%	-18.8%
2014	1906	1485	3391	41272	-4.8%	-11.7%	-8.0%	37.2%
2017	2515	2055	4570	49104	32.0%	38.4%	34.8%	19.0%

Regression Estimate	2003	2260	1880	4139
Regression Estimate	2017	2234	1788	4022
Average Annual Change		**-0.08%**	**-0.36%**	**-0.20%**

Innes/Orleans
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2003	Monday May 5	881	410	584	165	1095	308	355	2032	5830
2004	Thursday July 22	558	229	336	95	872	294	302	1480	4166
2014	Tuesday Jan 21	670	482	450	98	1527	388	424	2103	6142
2017	Wednesday May 3	627	529	506	147	1687	460	492	2176	6624

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2003	410	881	1291	5830				
2004	229	558	787	4166	-44.1%	-36.7%	-39.0%	-28.5%
2014	482	670	1152	6142	110.5%	20.1%	46.4%	47.4%
2017	529	627	1156	6624	9.8%	-6.4%	0.3%	7.8%

Regression Estimate	2003	316	731	1047
Regression Estimate	2017	524	630	1154
Average Annual Change		**3.68%**	**-1.06%**	**0.69%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2003	355	2032	2387	5830				
2004	302	1480	1782	4166	-14.9%	-27.2%	-25.3%	-28.5%
2014	424	2103	2527	6142	40.4%	42.1%	41.8%	47.4%
2017	492	2176	2668	6624	16.0%	3.5%	5.6%	7.8%

Regression Estimate	2003	322	1754	2076
Regression Estimate	2017	475	2171	2646
Average Annual Change		**2.82%**	**1.53%**	**1.75%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2003	308	1095	1403	5830				
2004	294	872	1166	4166	-4.5%	-20.4%	-16.9%	-28.5%
2014	388	1527	1915	6142	32.0%	75.1%	64.2%	47.4%
2017	460	1687	2147	6624	18.6%	10.5%	12.1%	7.8%

Regression Estimate	2003	294	963	1257
Regression Estimate	2017	442	1678	2120
Average Annual Change		**2.96%**	**4.05%**	**3.81%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2003	584	165	749	5830				
2004	336	95	431	4166	-42.5%	-42.4%	-42.5%	-28.5%
2014	450	98	548	6142	33.9%	3.2%	27.1%	47.4%
2017	506	147	653	6624	12.4%	50.0%	19.2%	7.8%

Regression Estimate	2003	461	128	590
Regression Estimate	2017	478	124	602
Average Annual Change		**0.25%**	**-0.27%**	**0.14%**

Innes/Orleans
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2003	Monday May 5	566	996	303	593	466	1170	2009	585	6688
2004	Thursday July 22	514	796	311	404	450	895	1445	625	5440
2014	Tuesday Jan 21	506	812	231	382	596	1551	2058	646	6782
2017	Wednesday May 3	609	918	373	457	705	1673	2161	800	7696

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2003	996	566	1562	6688				
2004	796	514	1310	5440	-20.1%	-9.2%	-16.1%	-18.7%
2014	812	506	1318	6782	2.0%	-1.6%	0.6%	24.7%
2017	918	609	1527	7696	13.1%	20.4%	15.9%	13.5%

Regression Estimate	2003	894	534	1428
Regression Estimate	2017	865	566	1431
Average Annual Change		**-0.24%**	**0.41%**	**0.01%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2003	2009	585	2594	6688				
2004	1445	625	2070	5440	-28.1%	6.8%	-20.2%	-18.7%
2014	2058	646	2704	6782	42.4%	3.4%	30.6%	24.7%
2017	2161	800	2961	7696	5.0%	23.8%	9.5%	13.5%

Regression Estimate	2003	1724	591	2315
Regression Estimate	2017	2143	748	2891
Average Annual Change		**1.57%**	**1.69%**	**1.60%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2003	1170	466	1636	6688				
2004	895	450	1345	5440	-23.5%	-3.4%	-17.8%	-18.7%
2014	1551	596	2147	6782	73.3%	32.4%	59.6%	24.7%
2017	1673	705	2378	7696	7.9%	18.3%	10.8%	13.5%

Regression Estimate	2003	1017	447	1464
Regression Estimate	2017	1675	678	2353
Average Annual Change		**3.63%**	**3.03%**	**3.45%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2003	303	593	896	6688				
2004	311	404	715	5440	2.6%	-31.9%	-20.2%	-18.7%
2014	231	382	613	6782	-25.7%	-5.4%	-14.3%	24.7%
2017	373	457	830	7696	61.5%	19.6%	35.4%	13.5%

Regression Estimate	2003	298	500	797
Regression Estimate	2017	312	412	725
Average Annual Change		**0.35%**	**-1.36%**	**-0.68%**

Appendix F

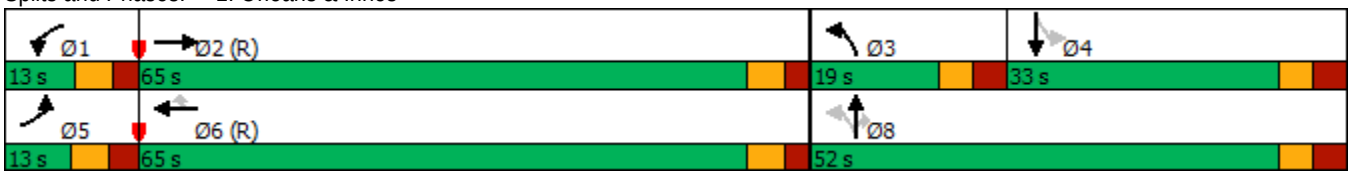
Synchro Analysis: Existing Conditions

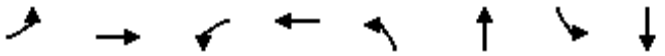
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	318	23	24	1186	109	203	259	44	61	100	459
Future Volume (vph)	121	318	23	24	1186	109	203	259	44	61	100	459
Lane Group Flow (vph)	127	335	24	25	1248	115	214	273	46	64	105	483
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	
Total Split (s)	13.0	65.0		13.0	65.0	65.0	19.0	52.0	52.0	33.0	33.0	
Total Split (%)	10.0%	50.0%		10.0%	50.0%	50.0%	14.6%	40.0%	40.0%	25.4%	25.4%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Min	Min	Min	Min	
Act Effct Green (s)	8.4	72.8	130.0	6.7	65.8	65.8	36.3	36.3	36.3	17.3	17.3	130.0
Actuated g/C Ratio	0.06	0.56	1.00	0.05	0.51	0.51	0.28	0.28	0.28	0.13	0.13	1.00
v/c Ratio	0.60	0.18	0.02	0.29	0.73	0.14	0.67	0.29	0.10	0.48	0.23	0.32
Control Delay	71.6	16.6	0.0	67.9	29.3	2.0	48.4	36.4	1.7	61.8	49.5	0.6
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	71.6	16.6	0.0	67.9	29.3	2.0	48.4	36.4	1.7	61.8	49.5	0.6
LOS	E	B	A	E	C	A	D	D	A	E	D	A
Approach Delay		30.2			27.8			38.3			14.5	
Approach LOS		C			C			D			B	
Queue Length 50th (m)	16.2	21.8	0.0	6.3	125.1	0.0	47.3	30.1	0.0	15.9	13.3	0.0
Queue Length 95th (m)	#32.4	37.0	0.0	15.6	172.6	6.2	62.6	36.9	2.2	28.2	20.1	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	211	1898	1492	91	1717	820	321	1181	550	203	685	1496
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	0.60	0.18	0.02	0.27	0.73	0.14	0.67	0.23	0.08	0.32	0.15	0.32

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 27.1	Intersection LOS: C
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 1: Orleans & Innes





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	399	41	1247	14	14	37	7
Future Volume (vph)	13	399	41	1247	14	14	37	7
Lane Group Flow (vph)	14	455	46	1416	0	100	0	115
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
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%
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?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	92.0	92.0	92.0	92.0		15.0		15.0
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.06	0.18	0.07	0.55		0.41		0.54
Control Delay	6.6	4.8	1.3	1.9		21.8		34.1
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	6.6	4.8	1.3	1.9		21.8		34.1
LOS	A	A	A	A		C		C
Approach Delay		4.9		1.9		21.8		34.1
Approach LOS		A		A		C		C
Queue Length 50th (m)	0.6	10.2	0.4	0.0		7.2		13.7
Queue Length 95th (m)	4.1	29.5	m1.3	12.8		19.4		27.0
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	219	2587	668	2589		435		387
Starvation Cap Reductn	0	0	0	24		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	0.18	0.07	0.55		0.23		0.30

Intersection Summary	
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: 5.2	Intersection LOS: A
Intersection Capacity Utilization 66.1%	ICU Level of Service C
Analysis Period (min) 15	

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

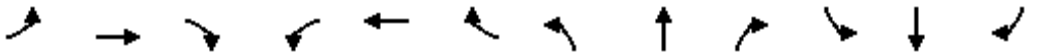
Splits and Phases: 2: Page & Innes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	3	486	3	1307	3	0	0
Future Volume (vph)	3	486	3	1307	3	0	0
Lane Group Flow (vph)	3	549	3	1453	0	3	6
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3
Total Split (s)	87.0	87.0	87.0	87.0	33.0	33.0	33.0
Total Split (%)	72.5%	72.5%	72.5%	72.5%	27.5%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3	6.3
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
Act Effct Green (s)	94.4	94.4	94.4	94.4		13.2	13.2
Actuated g/C Ratio	0.79	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.01	0.21	0.00	0.54		0.02	0.03
Control Delay	4.0	3.2	4.7	6.5		43.3	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.0	3.2	4.7	6.5		43.3	0.2
LOS	A	A	A	A		D	A
Approach Delay		3.2		6.5		43.3	0.2
Approach LOS		A		A		D	A
Queue Length 50th (m)	0.1	10.8	0.1	46.5		0.7	0.0
Queue Length 95th (m)	m0.6	15.7	1.2	111.2		3.2	0.0
Internal Link Dist (m)		215.4		197.0		184.8	37.6
Turn Bay Length (m)	45.0		50.0				
Base Capacity (vph)	220	2661	625	2667		299	384
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	0.01	0.21	0.00	0.54		0.01	0.02

Intersection Summary	
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: 0.54	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 57.3%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

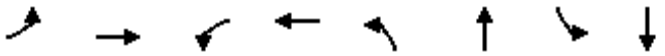


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1341	158	58	584	154	64	225	84	165	241	203
Future Volume (vph)	579	1341	158	58	584	154	64	225	84	165	241	203
Lane Group Flow (vph)	609	1412	166	61	615	162	67	237	88	174	254	214
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	
Total Split (s)	31.0	49.0		16.0	34.0	34.0	12.0	45.0	45.0	33.0	33.0	
Total Split (%)	28.2%	44.5%		14.5%	30.9%	30.9%	10.9%	40.9%	40.9%	30.0%	30.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	Max	C-Max		Max	C-Max	C-Max	None	Min	Min	Min	Min	
Act Effct Green (s)	31.2	42.8	110.0	16.6	27.8	27.8	31.5	31.5	31.5	21.9	21.9	110.0
Actuated g/C Ratio	0.28	0.39	1.00	0.15	0.25	0.25	0.29	0.29	0.29	0.20	0.20	1.00
v/c Ratio	0.65	1.07	0.11	0.24	0.72	0.30	0.25	0.24	0.17	0.82	0.38	0.14
Control Delay	40.8	79.2	0.2	43.0	46.4	9.8	28.3	29.1	0.7	71.4	38.8	0.2
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	40.8	79.2	0.2	43.0	46.4	9.8	28.3	29.1	0.7	71.4	38.8	0.2
LOS	D	E	A	D	D	A	C	C	A	E	D	A
Approach Delay		62.5			39.1			22.6			34.8	
Approach LOS		E			D			C			C	
Queue Length 50th (m)	62.5	~177.3	0.0	12.1	48.6	0.0	10.1	19.3	0.0	35.3	24.5	0.0
Queue Length 95th (m)	#90.5	#219.0	0.0	26.0	92.8	23.2	19.5	27.9	0.0	#63.3	35.2	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	932	1319	1487	255	856	545	269	1180	613	253	810	1492
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	0.65	1.07	0.11	0.24	0.72	0.30	0.25	0.20	0.14	0.69	0.31	0.14

Intersection Summary		
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: 1.07		
Intersection Signal Delay: 49.4	Intersection LOS: D	
Intersection Capacity Utilization 88.8%	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

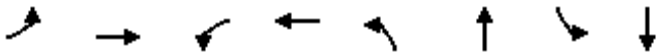


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	61	1506	53	748	13	21	50	23
Future Volume (vph)	61	1506	53	748	13	21	50	23
Lane Group Flow (vph)	68	1699	59	940	0	146	0	121
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
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%
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?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	80.2	80.2	80.2	80.2		16.8		16.8
Actuated g/C Ratio	0.73	0.73	0.73	0.73		0.15		0.15
v/c Ratio	0.18	0.69	0.45	0.39		0.58		0.61
Control Delay	2.8	5.3	23.8	7.0		44.1		47.0
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	2.8	5.3	23.8	7.0		44.1		47.0
LOS	A	A	C	A		D		D
Approach Delay		5.2		8.0		44.1		47.0
Approach LOS		A		A		D		D
Queue Length 50th (m)	1.8	25.5	4.0	30.2		25.4		20.6
Queue Length 95th (m)	m2.4	m28.3	#28.7	68.5		38.1		33.4
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	369	2465	131	2426		446		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	0.18	0.69	0.45	0.39		0.33		0.35

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 9.7	Intersection LOS: A
Intersection Capacity Utilization 83.0%	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.

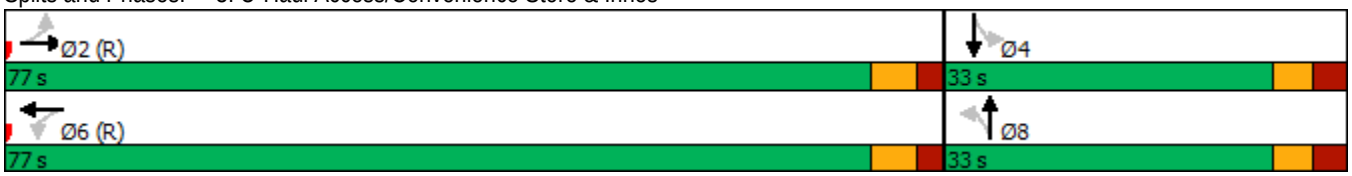
Splits and Phases: 2: Page & Innes



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	1636	1	899	5	0	12	0
Future Volume (vph)	14	1636	1	899	5	0	12	0
Lane Group Flow (vph)	16	1822	1	1012	0	9	0	21
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
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	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
Total Split (%)	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3		6.3
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	84.4	84.4	84.4	84.4		13.2		13.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.04	0.70	0.01	0.39		0.05		0.11
Control Delay	5.1	9.5	5.0	5.5		0.5		9.3
Queue Delay	0.0	0.4	0.0	0.0		0.0		0.0
Total Delay	5.1	9.9	5.0	5.5		0.5		9.3
LOS	A	A	A	A		A		A
Approach Delay		9.9		5.4		0.5		9.3
Approach LOS		A		A		A		A
Queue Length 50th (m)	0.6	71.9	0.0	26.3		0.0		0.0
Queue Length 95th (m)	3.7	176.3	0.7	65.1		0.3		4.5
Internal Link Dist (m)		215.4		197.0		184.8		37.6
Turn Bay Length (m)	45.0		50.0					
Base Capacity (vph)	365	2600	124	2595		366		361
Starvation Cap Reductn	0	312	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	0.04	0.80	0.01	0.39		0.02		0.06

Intersection Summary	
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: 8.3	Intersection LOS: A
Intersection Capacity Utilization 71.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes



Appendix G

MMLOS Analysis: Road Segments

Multi-Modal Level of Service - Segments Form

Consultant	**Parsons**	**Project**	**Lepine 476731**
Scenario		**Date**	**9-Oct-19**
Comments			

SEGMENTS		Street A	Innes	Lamarche	Section	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width	E	1.8 m 0.5 - 2 m	1.8 m 0.5 - 2 m							
	Avg Daily Curb Lane Traffic Volume		> 3000	≤ 3000							
	Operating Speed On-Street Parking		> 50 to 60 km/h no	> 30 to 50 km/h no							
	Exposure to Traffic PLoS		**E**	**B**	-	-	-	-	-	-	-
	Effective Sidewalk Width		1.5 m	1.5 m							
	Pedestrian Volume		250 ped/hr	250 ped/hr							
	Crowding PLoS		**B**	**B**	-	-	-	-	-	-	-
	Level of Service		**E**	**B**	-	-	-	-	-	-	-
Bicycle	Type of Cycling Facility	C	Curbside Bike Lane	Mixed Traffic							
	Number of Travel Lanes		2 ea. dir. (no median)	≤ 2 (no centreline)							
	Operating Speed		>50 to 70 km/h	>40 to <50 km/h							
	# of Lanes & Operating Speed LoS		**C**	**B**	-	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m								
	Bike Lane Width LoS		**A**	-	-	-	-	-	-	-	-
	Bike Lane Blockages		Rare								
	Blockage LoS		**A**	-	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge							
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes							
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h							
	Unsignalized Crossing - Lowest LoS		**A**	**A**	-	-	-	-	-	-	-
	Level of Service		**C**	**B**	-	-	-	-	-	-	-
Transit	Facility Type	D	Mixed Traffic	Mixed Traffic							
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8							
	Level of Service		**D**	**D**	-	-	-	-	-	-	-
Truck	Truck Lane Width	C	> 3.7 m	≤ 3.5 m							
	Travel Lanes per Direction		> 1	1							
	Level of Service		**A**	**C**	-	-	-	-	-	-	-

Appendix H

Traffic Signal Warrants

Innes/Lamarche - (peak hour signal warrant BACKGROUND)

Signal Warrant			Description	Minimum Requirement for Two-Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	900	153%	28%	**84% No**
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	255	28%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	900	145%	84%	
		(2) B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	75	84%		

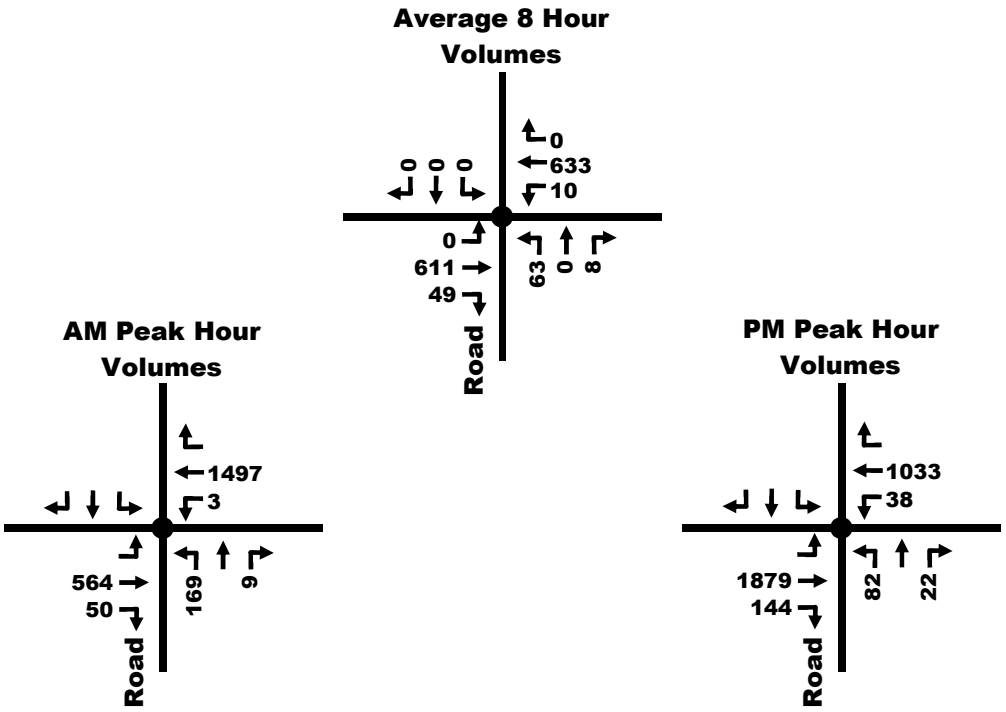
Notes

1 *Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above* **Yes**

2 *For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08*

3 *The Lowest Sectional Percentage Governs the Entire Warrant*

4 *For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)* **Yes**



Innes/Lamarche - (peak hour signal warrant INTERIM BUILDOUT)

Signal Warrant			Description	Minimum Requirement for Two-Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	900	144%	33%	**99% No**
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	255	33%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	900	135%	99%	
		(2) B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	75	99%		

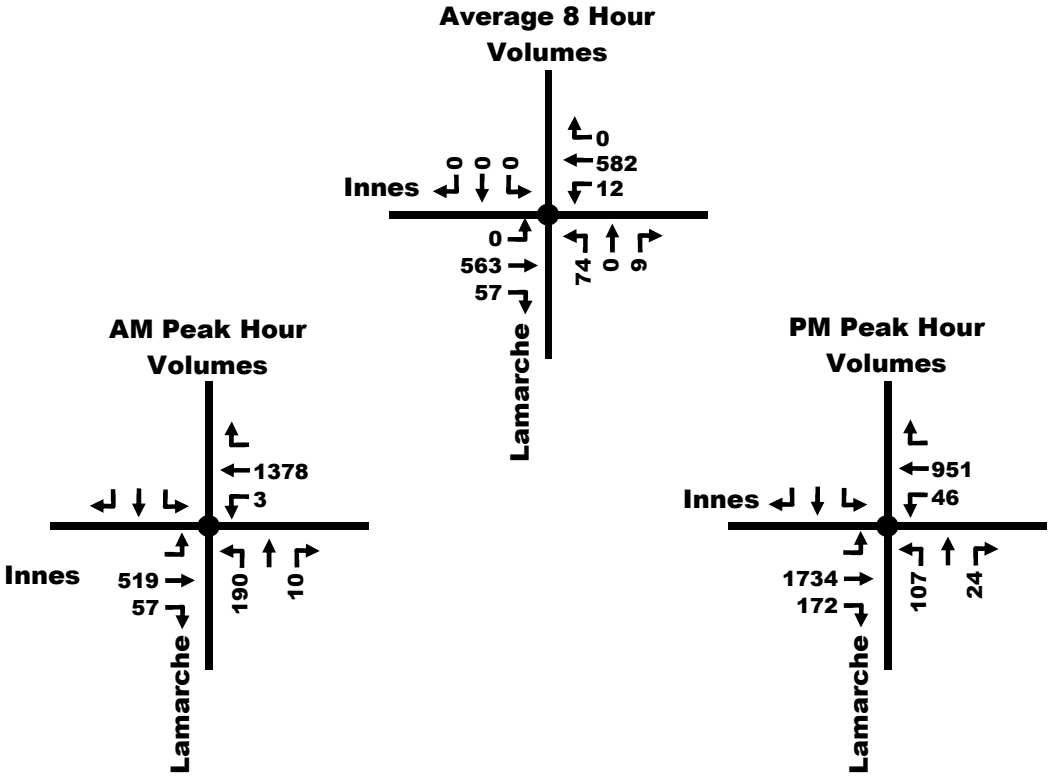
Notes

1 *Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above* **Yes**

2 *For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08*

3 *The Lowest Sectional Percentage Governs the Entire Warrant*

4 *For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)* **Yes**



Innes/Lamarche - (peak hour signal warrant ULTIMATE BUILDOUT)

Signal Warrant			Description	Minimum Requirement for Two-Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	900	167%	47%	**100% Yes**
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	255	47%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	900	153%	136%	
		(2) B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	75	136%		

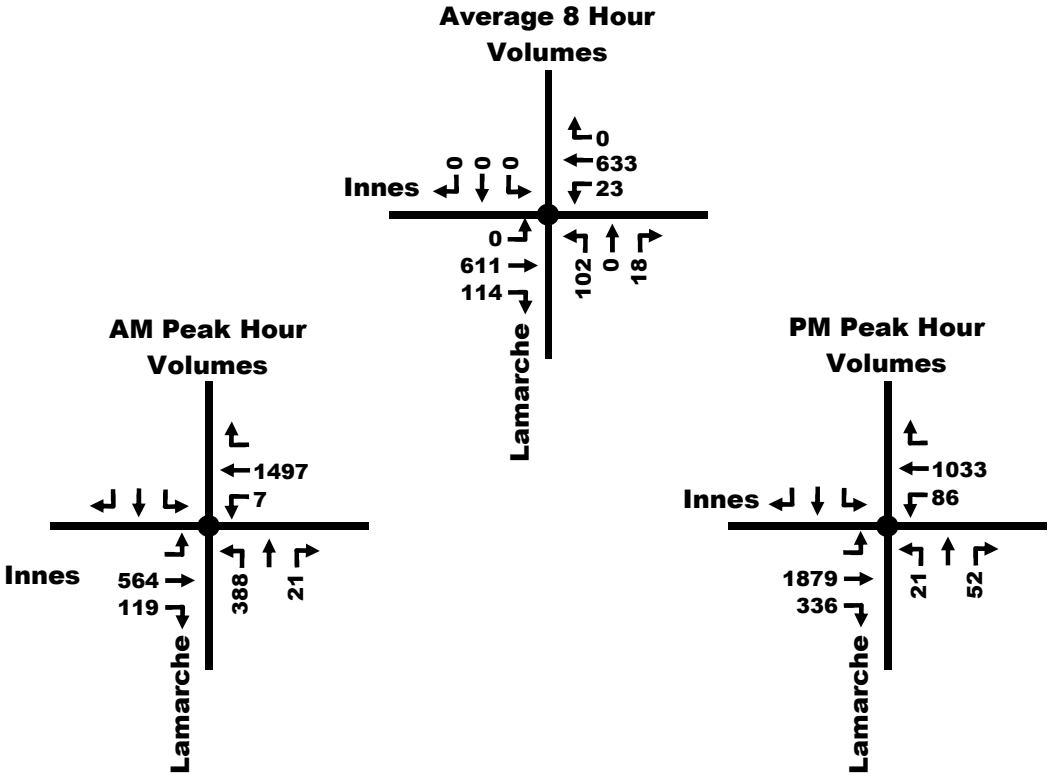
Notes

1 *Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above* **Yes**

2 *For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08*

3 *The Lowest Sectional Percentage Governs the Entire Warrant*

4 *For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)* **Yes**



Appendix I

TDM Measures

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

Legend

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

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	√ Addressed in rezoning application, to be confirmed at Site Plan Control
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	√ Addressed in rezoning application, to be confirmed at Site Plan Control
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	√ Addressed in rezoning application, to be confirmed at Site Plan Control
	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)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control

TDM-supportive design & infrastructure measures: *Residential developments*			Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	√ Addressed in rezoning application, to be confirmed at Site Plan Control
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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	√ Addressed in rezoning application, to be confirmed at Site Plan Control
	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	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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)	√ Addressed in rezoning application, to be confirmed at Site Plan Control

	TDM-supportive design & infrastructure measures: *Residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
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)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	√ Addressed in rezoning application, to be confirmed at Site Plan Control; where spaces are not provided, residents will be able to keep bicycles inside indoor storage lockers
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	√ Addressed in rezoning application, to be confirmed at Site Plan Control
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	√ Addressed in rezoning application, to be confirmed at Site Plan Control; where spaces are not provided, residents will be able to keep bicycles inside indoor storage lockers
	2.3	**Bicycle repair station**	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐ No on-site transit stops planned for subject development
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	☐ NOT NECESSARY: OC Transpo bus shelter is installed on Innes Road frontage of 2305 Pagé Road
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐ No on-site transit stops planned within subject development

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	√ Passenger drop-off areas will be providsed; addressed in rezoning application, to be confirmed at Site Plan Control
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	√ Reduced parking ratios addressed in rezoning application, to be confirmed at Site Plan Control
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	√ Visitor parking addressed in rezoning application, to be confirmed at Site Plan Control
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)*	√ Reduced parking ratios addressed in rezoning application, to be confirmed at Site Plan Control
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☐

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

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

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

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

		TDM measures: *Residential developments*	Check if proposed & add descriptions
	1.	**TDM PROGRAM MANAGEMENT**	
	1.1	**Program coordinator**	
BASIC ★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	√ Property Management staff of rental apartment building to serve as coordinator
	1.2	**Travel surveys**	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
	2.	**WALKING AND CYCLING**	
	2.1	**Information on walking/cycling routes & destinations**	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	√ Display City of Ottawa maps and have on hand at Security Desk and Property Management Office
	2.2	**Bicycle skills training**	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	√ Display OC Transpo schedules and maps and have on hand at Security Desk and Property Management Office
BETTER		3.1.2	Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
		3.2	**Transit fare incentives**	
BASIC	★	3.2.1	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☐
BETTER		3.2.2	Offer at least one year of free monthly transit passes on residence purchase/move-in	☐
		3.3	**Enhanced public transit service**	
BETTER	★	3.3.1	Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
		3.4	**Private transit service**	
BETTER		3.4.1	Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
		4.	**CARSHARING & BIKESHARING**	
		4.1	**Bikeshare stations & memberships**	
BETTER		4.1.1	Contract with provider to install on-site bikeshare station (*multi-family)*	☐
BETTER		4.1.2	Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
		4.2	**Carshare vehicles & memberships**	
BETTER		4.2.1	Contract with provider to install on-site carshare vehicles and promote their use by residents	☐
BETTER		4.2.2	Provide residents with carshare memberships, either free or subsidized	☐
		5.	**PARKING**	
		5.1	**Priced parking**	
BASIC	★	5.1.1	Unbundle parking cost from purchase price *(condominium)*	☐
BASIC	★	5.1.2	Unbundle parking cost from monthly rent *(multi-family)*	☐

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	√ Provide multimodal travel option information in standard Welcome Manual for new residents (tenants)
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

Appendix J

MMLOS Analysis: Intersections

Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**Lepine 476731**
Scenario		**Date**	**9-Oct-19**
Comments			

Unlocked Rows for Replicating

INTERSECTIONS		**Future Innes/Lamarche**												
	Crossing Side	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Pedestrian	Lanes		3	5	4								
	Median		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m								
	Conflicting Left Turns		Permissive	Permissive	No left turn / Prohib.								
	Conflicting Right Turns		Permissive or yield control	No right turn	Permissive or yield control								
	Right Turns on Red (RToR) ?		RTOR allowed	RTOR prohibited	RTOR allowed								
	Ped Signal Leading Interval?		No	No	No								
	Right Turn Channel		No Channel	No Channel	No Channel								
	Corner Radius		10-15m	10-15m	10-15m								
	Crosswalk Type		Std transverse markings	Std transverse markings	Std transverse markings								
	PETSI Score		**70**	**45**	**61**								
	Ped. Exposure to Traffic LoS	**-**	**C**	**D**	**C**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Cycle Length		110	110	110								
	Effective Walk Time		31	33	33								
	Average Pedestrian Delay		**28**	**27**	**27**								
	Pedestrian Delay LoS	**-**	**C**	**C**	**C**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Level of Service	**-**	**C**	**D**	**C**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		D				**-**				**-**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach		Mixed Traffic	Pocket Bike Lane	Pocket Bike Lane								
	Right Turn Lane Configuration		≤ 50 m	≤ 50 m Introduced right turn lane	≤ 50 m Introduced right turn lane								
	Right Turning Speed		≤ 25 km/h	≤ 25 km/h	≤ 25 km/h								
	Cyclist relative to RT motorists	**-**	**D**	**B**	**B**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Separated or Mixed Traffic	**-**	**Mixed Traffic**	**Separated**	**Separated**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Left Turn Approach		One lane crossed	≥ 2 lanes crossed	No lane crossed								
	Operating Speed		> 40 to ≤ 50 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h								
	Left Turning Cyclist	**-**	**D**	**F**	**C**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Level of Service	**-**	**D**	**F**	**C**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		F				**-**				**-**			
Transit	Average Signal Delay												
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		-				**-**				**-**			
Truck	Effective Corner Radius												
	Number of Receiving Lanes on Departure from Intersection												
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		-				**-**				**-**			
Auto	Volume to Capacity Ratio												
	Level of Service	**-**				**-**				**-**			

Appendix K

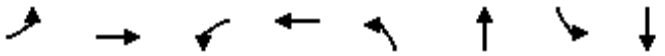
Synchro Analysis: Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	356	23	24	1324	134	203	259	44	68	100	459
Future Volume (vph)	121	356	23	24	1324	134	203	259	44	68	100	459
Lane Group Flow (vph)	121	356	23	24	1324	134	203	259	44	68	100	459
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	
Total Split (s)	12.7	69.9		11.2	68.4	68.4	16.2	48.9	48.9	32.7	32.7	
Total Split (%)	9.8%	53.8%		8.6%	52.6%	52.6%	12.5%	37.6%	37.6%	25.2%	25.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Min	Min	Min	Min	
Act Effct Green (s)	8.0	76.3	130.0	5.8	68.9	68.9	33.6	33.6	33.6	17.4	17.4	130.0
Actuated g/C Ratio	0.06	0.59	1.00	0.04	0.53	0.53	0.26	0.26	0.26	0.13	0.13	1.00
v/c Ratio	0.60	0.18	0.02	0.32	0.74	0.16	0.71	0.30	0.10	0.50	0.22	0.31
Control Delay	72.1	14.7	0.0	72.1	27.9	3.2	54.1	38.4	1.8	62.5	49.1	0.5
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	72.1	14.7	0.0	72.1	27.9	3.2	54.1	38.4	1.8	62.5	49.1	0.5
LOS	E	B	A	E	C	A	D	D	A	E	D	A
Approach Delay		27.9			26.3			41.5			15.0	
Approach LOS		C			C			D			B	
Queue Length 50th (m)	15.5	22.3	0.0	6.0	131.1	0.0	45.7	29.2	0.0	16.9	12.5	0.0
Queue Length 95th (m)	#32.0	36.3	0.0	15.4	179.3	9.9	61.2	36.3	2.1	29.5	19.2	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	203	1990	1492	75	1795	849	287	1100	516	204	678	1496
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	0.60	0.18	0.02	0.32	0.74	0.16	0.71	0.24	0.09	0.33	0.15	0.31

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green		
Natural Cycle: 95		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.74		
Intersection Signal Delay: 26.8	Intersection LOS: C	
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.

Splits and Phases: 1: Orleans & Innes



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	16	440	41	1390	24	14	43	7
Future Volume (vph)	16	440	41	1390	24	14	43	7
Lane Group Flow (vph)	16	454	41	1421	0	99	0	120
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
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)	80.0	80.0	80.0	80.0	40.0	40.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%
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?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	91.6	91.6	91.6	91.6		15.4		15.4
Actuated g/C Ratio	0.76	0.76	0.76	0.76		0.13		0.13
v/c Ratio	0.07	0.18	0.06	0.55		0.43		0.56
Control Delay	6.8	4.9	2.0	3.2		24.9		36.7
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	6.8	4.9	2.0	3.2		24.9		36.7
LOS	A	A	A	A		C		D
Approach Delay		4.9		3.2		24.9		36.7
Approach LOS		A		A		C		D
Queue Length 50th (m)	0.7	10.6	0.6	10.8		8.5		15.7
Queue Length 95th (m)	4.5	29.3	m2.8	29.2		20.9		29.3
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	216	2575	666	2580		430		407
Starvation Cap Reductn	0	0	0	23		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	0.18	0.06	0.56		0.23		0.29

Intersection Summary	
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: 0.56	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 69.9%	ICU Level of Service C
Analysis Period (min) 15	

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

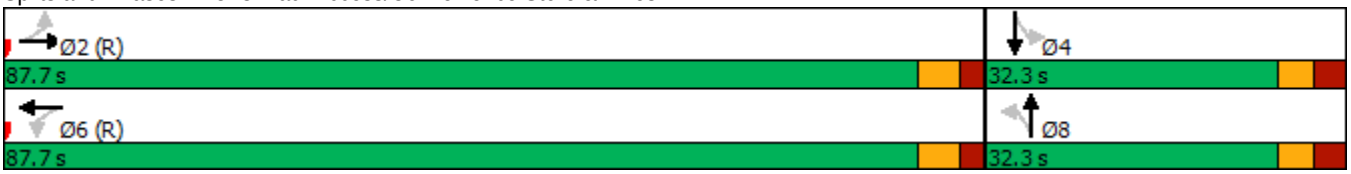
Splits and Phases: 2: Page & Innes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	3	516	3	1371	3	0	0
Future Volume (vph)	3	516	3	1371	3	0	0
Lane Group Flow (vph)	3	524	3	1372	0	3	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3
Total Split (s)	87.7	87.7	87.7	87.7	32.3	32.3	32.3
Total Split (%)	73.1%	73.1%	73.1%	73.1%	26.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3	6.3
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
Act Effct Green (s)	94.4	94.4	94.4	94.4		13.2	13.2
Actuated g/C Ratio	0.79	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.01	0.20	0.00	0.51		0.02	0.02
Control Delay	3.3	2.8	4.7	6.1		43.3	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	3.3	2.8	4.7	6.1		43.3	0.2
LOS	A	A	A	A		D	A
Approach Delay		2.8		6.1		43.3	0.2
Approach LOS		A		A		D	A
Queue Length 50th (m)	0.1	9.9	0.1	42.1		0.7	0.0
Queue Length 95th (m)	m0.5	12.2	1.2	101.0		3.2	0.0
Internal Link Dist (m)		215.4		197.0		184.8	37.6
Turn Bay Length (m)	45.0		50.0				
Base Capacity (vph)	244	2661	640	2667		291	386
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	0.01	0.20	0.00	0.51		0.01	0.01

Intersection Summary	
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: 0.51	
Intersection Signal Delay: 5.3	Intersection LOS: A
Intersection Capacity Utilization 59.1%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	519	1	1378	86	5
Future Volume (vph)	519	1	1378	86	5
Lane Group Flow (vph)	544	1	1378	86	5
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	92.0	92.0	92.0	28.0	28.0
Total Split (%)	76.7%	76.7%	76.7%	23.3%	23.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	95.4	95.4	95.4	12.6	12.6
Actuated g/C Ratio	0.80	0.80	0.80	0.10	0.10
v/c Ratio	0.20	0.00	0.51	0.49	0.03
Control Delay	2.9	2.0	2.5	59.8	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	2.0	2.5	59.8	27.0
LOS	A	A	A	E	C
Approach Delay	2.9		2.5	58.0	
Approach LOS	A		A	E	
Queue Length 50th (m)	11.1	0.0	15.4	19.7	0.0
Queue Length 95th (m)	17.8	m0.0	17.3	34.2	3.7
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2671	627	2695	304	272
Starvation Cap Reductn	0	0	2	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.00	0.51	0.28	0.02

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 5.1	Intersection LOS: A
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	

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

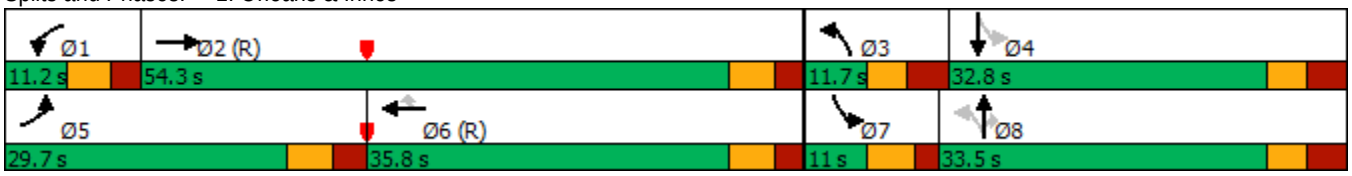
Splits and Phases: 4: Lamarche & Innes

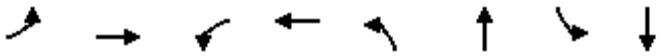
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1476	158	58	651	166	64	225	84	186	241	203
Future Volume (vph)	579	1476	158	58	651	166	64	225	84	186	241	203
Lane Group Flow (vph)	579	1476	158	58	651	166	64	225	84	186	241	203
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	11.0	32.7	
Total Split (s)	29.7	54.3		11.2	35.8	35.8	11.7	33.5	33.5	11.0	32.8	
Total Split (%)	27.0%	49.4%		10.2%	32.5%	32.5%	10.6%	30.5%	30.5%	10.0%	29.8%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	4.0	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	3.4	3.4	3.4	2.0	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.0	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	C-Max		Max	C-Max	C-Max	None	Min	Min	None	Min	
Act Effct Green (s)	34.3	48.1	110.0	16.2	29.6	29.6	20.6	15.6	15.6	22.0	17.3	110.0
Actuated g/C Ratio	0.31	0.44	1.00	0.15	0.27	0.27	0.19	0.14	0.14	0.20	0.16	1.00
v/c Ratio	0.57	1.00	0.11	0.23	0.71	0.30	0.28	0.47	0.21	0.78	0.45	0.14
Control Delay	35.7	53.9	0.1	46.8	46.1	9.1	34.3	45.4	1.2	60.1	44.8	0.2
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	35.7	53.9	0.1	46.8	46.1	9.1	34.3	45.4	1.2	60.1	44.8	0.2
LOS	D	D	A	D	D	A	C	D	A	E	D	A
Approach Delay		45.3			39.1			33.6			34.9	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	51.9	162.4	0.0	10.8	76.0	2.1	11.1	24.1	0.0	34.7	26.2	0.0
Queue Length 95th (m)	#87.3	#215.1	0.0	#36.1	68.1	25.0	18.9	31.3	0.0	47.1	33.6	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	1024	1482	1487	249	912	560	227	825	521	239	804	1492
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	0.57	1.00	0.11	0.23	0.71	0.30	0.28	0.27	0.16	0.78	0.30	0.14

Intersection Summary	
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: 1.00	
Intersection Signal Delay: 41.3	Intersection LOS: D
Intersection Capacity Utilization 93.4%	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.

Splits and Phases: 1: Orleans & Innes





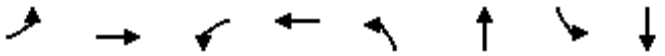
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	74	1645	53	825	16	21	58	23
Future Volume (vph)	74	1645	53	825	16	21	58	23
Lane Group Flow (vph)	74	1679	53	926	0	138	0	119
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	1	6	8	8	4	4
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	11.0	39.2	37.8	37.8	37.8	37.8
Total Split (s)	61.2	61.2	11.0	72.2	37.8	37.8	37.8	37.8
Total Split (%)	55.6%	55.6%	10.0%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.7	3.7	4.0	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.0	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	6.0	6.2		6.8		6.8
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min	Min	Min
Act Effct Green (s)	71.2	71.2	81.0	80.8		16.2		16.2
Actuated g/C Ratio	0.65	0.65	0.74	0.73		0.15		0.15
v/c Ratio	0.21	0.77	0.30	0.38		0.45		0.62
Control Delay	5.7	8.4	15.7	9.4		17.1		48.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.7	8.4	15.7	9.4		17.1		48.2
LOS	A	A	B	A		B		D
Approach Delay		8.3		9.7		17.1		48.2
Approach LOS		A		A		B		D
Queue Length 50th (m)	2.9	35.4	3.5	33.8		7.3		20.5
Queue Length 95th (m)	m3.4	m#41.3	15.0	83.2		20.8		32.9
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	354	2185	178	2446		496		348
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.21	0.77	0.30	0.38		0.28		0.34

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 10.8	Intersection LOS: B
Intersection Capacity Utilization 92.3%	ICU Level of Service F
Analysis Period (min) 15	

Background Interim PM

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	1724	1	960	5	0	12	0
Future Volume (vph)	14	1724	1	960	5	0	12	0
Lane Group Flow (vph)	14	1728	1	972	0	8	0	19
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
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3	32.3
Total Split (s)	77.7	77.7	77.7	77.7	32.3	32.3	32.3	32.3
Total Split (%)	70.6%	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3		6.3
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	84.4	84.4	84.4	84.4		13.2		13.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.04	0.66	0.01	0.37		0.04		0.10
Control Delay	1.3	4.8	5.0	5.3		0.4		7.4
Queue Delay	0.0	0.5	0.0	0.0		0.0		0.0
Total Delay	1.3	5.3	5.0	5.3		0.4		7.4
LOS	A	A	A	A		A		A
Approach Delay		5.2		5.3		0.4		7.4
Approach LOS		A		A		A		A
Queue Length 50th (m)	0.2	40.1	0.0	24.8		0.0		0.0
Queue Length 95th (m)	m0.4	160.0	0.7	61.7		0.2		3.9
Internal Link Dist (m)		215.4		197.0		184.8		37.6
Turn Bay Length (m)	45.0		50.0					
Base Capacity (vph)	382	2600	143	2595		361		353
Starvation Cap Reductn	0	409	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	0.04	0.79	0.01	0.37		0.02		0.05

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 36 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 5.3	Intersection LOS: A
Intersection Capacity Utilization 73.8%	ICU Level of Service D
Analysis Period (min) 15	

Background Interim PM

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	1734	21	951	45	9
Future Volume (vph)	1734	21	951	45	9
Lane Group Flow (vph)	1807	21	951	45	9
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	86.0	86.0	86.0	24.0	24.0
Total Split (%)	78.2%	78.2%	78.2%	21.8%	21.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	86.4	86.4	86.4	11.6	11.6
Actuated g/C Ratio	0.79	0.79	0.79	0.11	0.11
v/c Ratio	0.68	0.16	0.36	0.26	0.06
Control Delay	2.8	6.6	4.2	47.9	22.6
Queue Delay	0.3	0.0	0.0	0.0	0.0
Total Delay	3.1	6.6	4.2	47.9	22.6
LOS	A	A	A	D	C
Approach Delay	3.1		4.2	43.7	
Approach LOS	A		A	D	
Queue Length 50th (m)	4.4	0.8	23.5	9.2	0.0
Queue Length 95th (m)	18.6	m4.2	44.4	18.7	4.4
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2643	135	2663	272	247
Starvation Cap Reductn	277	0	0	0	0
Spillback Cap Reductn	71	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.16	0.36	0.17	0.04

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 4.2	Intersection LOS: A
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

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

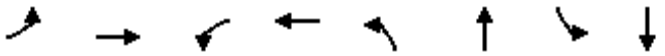
Splits and Phases: 4: Lamarche & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1649	158	58	733	176	64	225	84	204	241	203
Future Volume (vph)	579	1649	158	58	733	176	64	225	84	204	241	203
Lane Group Flow (vph)	579	1649	158	58	733	176	64	225	84	204	241	203
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	11.0	32.7	
Total Split (s)	29.7	54.4		11.2	35.9	35.9	11.7	33.4	33.4	11.0	32.7	
Total Split (%)	27.0%	49.5%		10.2%	32.6%	32.6%	10.6%	30.4%	30.4%	10.0%	29.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	4.0	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	3.4	3.4	3.4	2.0	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.0	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	C-Max		Max	C-Max	C-Max	None	Min	Min	None	Min	
Act Effct Green (s)	34.2	48.2	110.0	16.1	29.7	29.7	20.6	15.6	15.6	22.0	17.3	110.0
Actuated g/C Ratio	0.31	0.44	1.00	0.15	0.27	0.27	0.19	0.14	0.14	0.20	0.16	1.00
v/c Ratio	0.57	1.11	0.11	0.23	0.80	0.31	0.28	0.47	0.21	0.85	0.45	0.14
Control Delay	35.8	90.4	0.1	46.6	48.0	9.8	34.3	45.4	1.2	69.7	44.8	0.2
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	35.8	90.4	0.1	46.6	48.0	9.8	34.3	45.4	1.2	69.7	44.8	0.2
LOS	D	F	A	D	D	A	C	D	A	E	D	A
Approach Delay		71.1			41.0			33.6			38.6	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	52.0	~213.5	0.0	11.1	83.2	2.9	11.1	24.1	0.0	38.5	26.2	0.0
Queue Length 95th (m)	#87.6	#255.7	0.0	#36.4	78.2	27.6	18.9	31.3	0.0	51.3	33.6	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	1021	1485	1487	247	915	561	227	822	520	239	801	1492
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	0.57	1.11	0.11	0.23	0.80	0.31	0.28	0.27	0.16	0.85	0.30	0.14

Intersection Summary		
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: 1.11		
Intersection Signal Delay: 56.5	Intersection LOS: E	
Intersection Capacity Utilization 99.5%	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

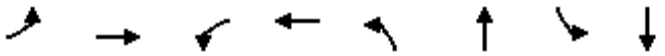


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	74	1850	53	930	19	21	58	23
Future Volume (vph)	74	1850	53	930	19	21	58	23
Lane Group Flow (vph)	74	1883	53	1031	0	138	0	119
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	1	6	8	8	4	4
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	11.0	39.2	37.8	37.8	37.8	37.8
Total Split (s)	61.2	61.2	11.0	72.2	37.8	37.8	37.8	37.8
Total Split (%)	55.6%	55.6%	10.0%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.7	3.7	4.0	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.0	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	6.0	6.2		6.8		6.8
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min	Min	Min
Act Effct Green (s)	71.2	71.2	81.0	80.8		16.2		16.2
Actuated g/C Ratio	0.65	0.65	0.74	0.73		0.15		0.15
v/c Ratio	0.23	0.86	0.34	0.42		0.46		0.62
Control Delay	5.5	12.0	18.7	9.9		18.6		48.1
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.5	12.0	18.7	9.9		18.6		48.1
LOS	A	B	B	A		B		D
Approach Delay		11.8		10.4		18.6		48.1
Approach LOS		B		B		B		D
Queue Length 50th (m)	3.0	58.7	3.8	40.8		8.3		20.5
Queue Length 95th (m)	m3.1	m#206.7	15.4	93.2		21.8		32.9
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	320	2185	155	2449		489		349
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	0.23	0.86	0.34	0.42		0.28		0.34

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 12.9	Intersection LOS: B
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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	1881	1	1058	5	0	12	0
Future Volume (vph)	14	1881	1	1058	5	0	12	0
Lane Group Flow (vph)	14	1885	1	1070	0	8	0	19
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
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3	32.3
Total Split (s)	77.7	77.7	77.7	77.7	32.3	32.3	32.3	32.3
Total Split (%)	70.6%	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3		6.3
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	84.4	84.4	84.4	84.4		13.2		13.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.04	0.72	0.01	0.41		0.04		0.10
Control Delay	2.0	6.8	5.0	5.6		0.4		7.4
Queue Delay	0.0	0.9	0.0	0.0		0.0		0.0
Total Delay	2.0	7.7	5.0	5.6		0.4		7.4
LOS	A	A	A	A		A		A
Approach Delay		7.7		5.6		0.4		7.4
Approach LOS		A		A		A		A
Queue Length 50th (m)	0.2	61.4	0.0	28.5		0.0		0.0
Queue Length 95th (m)	m0.8	250.6	0.7	70.3		0.2		3.9
Internal Link Dist (m)		215.4		197.0		184.8		37.6
Turn Bay Length (m)	45.0		50.0					
Base Capacity (vph)	341	2600	112	2595		361		353
Starvation Cap Reductn	0	403	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	0.04	0.86	0.01	0.41		0.02		0.05

Intersection Summary	
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: 0.72	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

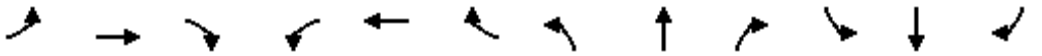
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	1879	38	1033	82	22
Future Volume (vph)	1879	38	1033	82	22
Lane Group Flow (vph)	2023	38	1033	82	22
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	86.0	86.0	86.0	24.0	24.0
Total Split (%)	78.2%	78.2%	78.2%	21.8%	21.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-2.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	85.8	85.8	85.8	12.2	14.2
Actuated g/C Ratio	0.78	0.78	0.78	0.11	0.13
v/c Ratio	0.78	0.41	0.39	0.44	0.11
Control Delay	5.0	26.7	4.6	52.6	16.3
Queue Delay	0.8	0.0	0.0	0.0	0.0
Total Delay	5.8	26.7	4.6	52.6	16.3
LOS	A	C	A	D	B
Approach Delay	5.8		5.3	44.9	
Approach LOS	A		A	D	
Queue Length 50th (m)	4.5	2.0	27.6	17.0	0.0
Queue Length 95th (m)	47.2	13.8	49.7	29.9	6.7
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2609	93	2643	272	284
Starvation Cap Reductn	274	0	0	0	0
Spillback Cap Reductn	126	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.41	0.39	0.30	0.08

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Lamarche & Innes

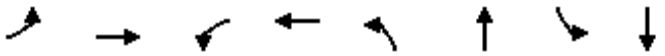


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	402	23	24	1490	156	203	259	44	74	100	459
Future Volume (vph)	121	402	23	24	1490	156	203	259	44	74	100	459
Lane Group Flow (vph)	121	402	23	24	1490	156	203	259	44	74	100	459
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	
Total Split (s)	12.7	69.9		11.2	68.4	68.4	16.2	48.9	48.9	32.7	32.7	
Total Split (%)	9.8%	53.8%		8.6%	52.6%	52.6%	12.5%	37.6%	37.6%	25.2%	25.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Min	Min	Min	Min	
Act Effct Green (s)	8.0	76.1	130.0	5.8	68.6	68.6	33.9	33.9	33.9	17.7	17.7	130.0
Actuated g/C Ratio	0.06	0.59	1.00	0.04	0.53	0.53	0.26	0.26	0.26	0.14	0.14	1.00
v/c Ratio	0.60	0.20	0.02	0.32	0.83	0.18	0.70	0.29	0.10	0.54	0.22	0.31
Control Delay	72.1	15.0	0.0	72.1	32.2	4.5	53.5	38.2	1.8	64.3	48.9	0.5
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	72.1	15.0	0.0	72.1	32.2	4.5	53.5	38.2	1.8	64.3	48.9	0.5
LOS	E	B	A	E	C	A	D	D	A	E	D	A
Approach Delay		27.0			30.2			41.2			15.6	
Approach LOS		C			C			D			B	
Queue Length 50th (m)	15.5	25.9	0.0	6.0	162.5	2.0	45.3	29.0	0.0	18.4	12.5	0.0
Queue Length 95th (m)	#32.0	40.9	0.0	15.4	#224.1	13.9	61.2	36.3	2.1	31.6	19.2	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	203	1983	1492	75	1788	846	289	1100	516	204	678	1496
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	0.60	0.20	0.02	0.32	0.83	0.18	0.70	0.24	0.09	0.36	0.15	0.31

Intersection Summary		
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: 0.83		
Intersection Signal Delay: 28.6	Intersection LOS: C	
Intersection Capacity Utilization 94.9%	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

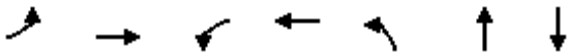


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	16	501	41	1586	23	14	43	7
Future Volume (vph)	16	501	41	1586	23	14	43	7
Lane Group Flow (vph)	16	514	41	1617	0	98	0	120
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
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)	80.0	80.0	80.0	80.0	40.0	40.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%
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?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	91.0	91.0	91.0	91.0		16.0		16.0
Actuated g/C Ratio	0.76	0.76	0.76	0.76		0.13		0.13
v/c Ratio	0.10	0.20	0.07	0.63		0.40		0.58
Control Delay	7.9	5.2	2.6	4.9		23.7		44.4
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	7.9	5.2	2.6	4.9		23.7		44.4
LOS	A	A	A	A		C		D
Approach Delay		5.2		4.9		23.7		44.4
Approach LOS		A		A		C		D
Queue Length 50th (m)	0.7	13.3	1.0	21.8		8.1		19.9
Queue Length 95th (m)	4.8	33.5	m3.2	76.4		20.4		33.2
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	162	2559	624	2561		436		395
Starvation Cap Reductn	0	0	0	23		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.10	0.20	0.07	0.64		0.22		0.30

Intersection Summary	
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: 0.63	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 75.8%	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	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	3	563	3	1491	3	0	0
Future Volume (vph)	3	563	3	1491	3	0	0
Lane Group Flow (vph)	3	571	3	1492	0	3	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3
Total Split (s)	87.7	87.7	87.7	87.7	32.3	32.3	32.3
Total Split (%)	73.1%	73.1%	73.1%	73.1%	26.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3	6.3
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
Act Effct Green (s)	94.4	94.4	94.4	94.4		13.2	13.2
Actuated g/C Ratio	0.79	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.01	0.21	0.00	0.56		0.02	0.02
Control Delay	3.7	2.9	4.7	6.7		43.3	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	3.7	2.9	4.7	6.7		43.3	0.2
LOS	A	A	A	A		D	A
Approach Delay		2.9		6.7		43.3	0.2
Approach LOS		A		A		D	A
Queue Length 50th (m)	0.1	10.8	0.1	48.6		0.7	0.0
Queue Length 95th (m)	m0.4	14.1	1.2	116.5		3.2	0.0
Internal Link Dist (m)		215.4		197.0		184.8	37.6
Turn Bay Length (m)	45.0		50.0				
Base Capacity (vph)	209	2661	610	2667		291	373
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	0.01	0.21	0.00	0.56		0.01	0.01

Intersection Summary	
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: 0.56	
Intersection Signal Delay: 5.7	Intersection LOS: A
Intersection Capacity Utilization 62.6%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	564	3	1497	169	9
Future Volume (vph)	564	3	1497	169	9
Lane Group Flow (vph)	614	3	1497	169	9
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	92.0	92.0	92.0	28.0	28.0
Total Split (%)	76.7%	76.7%	76.7%	23.3%	23.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	91.0	91.0	91.0	17.0	17.0
Actuated g/C Ratio	0.76	0.76	0.76	0.14	0.14
v/c Ratio	0.24	0.01	0.58	0.72	0.04
Control Delay	4.0	2.3	3.5	65.8	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	2.3	3.5	65.8	21.9
LOS	A	A	A	E	C
Approach Delay	4.0		3.5	63.5	
Approach LOS	A		A	E	
Queue Length 50th (m)	16.6	0.1	16.8	38.4	0.0
Queue Length 95th (m)	20.0	m0.1	18.7	59.1	4.5
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2532	557	2569	304	275
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	10	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.01	0.58	0.56	0.03

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 65.0%	ICU Level of Service C
Analysis Period (min) 15	

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

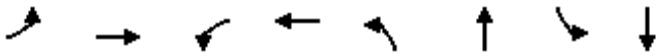
Splits and Phases: 4: Lamarche & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1649	158	58	733	176	64	225	84	204	241	203
Future Volume (vph)	579	1649	158	58	733	176	64	225	84	204	241	203
Lane Group Flow (vph)	579	1649	158	58	733	176	64	225	84	204	241	203
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	11.0	32.7	
Total Split (s)	29.7	54.4		11.2	35.9	35.9	11.7	33.4	33.4	11.0	32.7	
Total Split (%)	27.0%	49.5%		10.2%	32.6%	32.6%	10.6%	30.4%	30.4%	10.0%	29.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	4.0	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	3.4	3.4	3.4	2.0	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.0	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	C-Max		Max	C-Max	C-Max	None	Min	Min	None	Min	
Act Effct Green (s)	34.2	48.2	110.0	16.1	29.7	29.7	20.6	15.6	15.6	22.0	17.3	110.0
Actuated g/C Ratio	0.31	0.44	1.00	0.15	0.27	0.27	0.19	0.14	0.14	0.20	0.16	1.00
v/c Ratio	0.57	1.11	0.11	0.23	0.80	0.31	0.28	0.47	0.21	0.85	0.45	0.14
Control Delay	35.8	90.4	0.1	46.6	48.0	9.8	34.3	45.4	1.2	69.7	44.8	0.2
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	35.8	90.4	0.1	46.6	48.0	9.8	34.3	45.4	1.2	69.7	44.8	0.2
LOS	D	F	A	D	D	A	C	D	A	E	D	A
Approach Delay		71.1			41.0			33.6			38.6	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	52.0	~213.5	0.0	11.1	83.2	2.9	11.1	24.1	0.0	38.5	26.2	0.0
Queue Length 95th (m)	#87.6	#255.7	0.0	#36.4	78.2	27.6	18.9	31.3	0.0	51.3	33.6	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	1021	1485	1487	247	915	561	227	822	520	239	801	1492
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	0.57	1.11	0.11	0.23	0.80	0.31	0.28	0.27	0.16	0.85	0.30	0.14

Intersection Summary		
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: 1.11		
Intersection Signal Delay: 56.5	Intersection LOS: E	
Intersection Capacity Utilization 99.5%	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

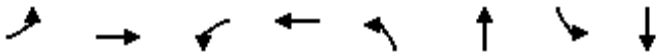


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	74	1850	53	930	19	21	58	23
Future Volume (vph)	74	1850	53	930	19	21	58	23
Lane Group Flow (vph)	74	1883	53	1031	0	138	0	119
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	1	6	8	8	4	4
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	11.0	39.2	37.8	37.8	37.8	37.8
Total Split (s)	61.2	61.2	11.0	72.2	37.8	37.8	37.8	37.8
Total Split (%)	55.6%	55.6%	10.0%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.7	3.7	4.0	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.0	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	6.0	6.2		6.8		6.8
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min	Min	Min
Act Effct Green (s)	71.2	71.2	81.0	80.8		16.2		16.2
Actuated g/C Ratio	0.65	0.65	0.74	0.73		0.15		0.15
v/c Ratio	0.23	0.86	0.34	0.42		0.46		0.62
Control Delay	5.5	12.0	18.7	9.9		18.6		48.1
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.5	12.0	18.7	9.9		18.6		48.1
LOS	A	B	B	A		B		D
Approach Delay		11.8		10.4		18.6		48.1
Approach LOS		B		B		B		D
Queue Length 50th (m)	3.0	58.7	3.8	40.8		8.3		20.5
Queue Length 95th (m)	m3.1	m#206.7	15.4	93.2		21.8		32.9
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	320	2185	155	2449		489		349
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	0.23	0.86	0.34	0.42		0.28		0.34

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 12.9	Intersection LOS: B
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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	1881	1	1058	5	0	12	0
Future Volume (vph)	14	1881	1	1058	5	0	12	0
Lane Group Flow (vph)	14	1885	1	1070	0	8	0	19
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
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3	32.3
Total Split (s)	77.7	77.7	77.7	77.7	32.3	32.3	32.3	32.3
Total Split (%)	70.6%	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3		6.3
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	84.4	84.4	84.4	84.4		13.2		13.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.04	0.72	0.01	0.41		0.04		0.10
Control Delay	2.0	6.8	5.0	5.6		0.4		7.4
Queue Delay	0.0	0.9	0.0	0.0		0.0		0.0
Total Delay	2.0	7.7	5.0	5.6		0.4		7.4
LOS	A	A	A	A		A		A
Approach Delay		7.7		5.6		0.4		7.4
Approach LOS		A		A		A		A
Queue Length 50th (m)	0.2	61.4	0.0	28.5		0.0		0.0
Queue Length 95th (m)	m0.8	250.6	0.7	70.3		0.2		3.9
Internal Link Dist (m)		215.4		197.0		184.8		37.6
Turn Bay Length (m)	45.0		50.0					
Base Capacity (vph)	341	2600	112	2595		361		353
Starvation Cap Reductn	0	403	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	0.04	0.86	0.01	0.41		0.02		0.05

Intersection Summary	
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: 0.72	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	1879	38	1033	82	22
Future Volume (vph)	1879	38	1033	82	22
Lane Group Flow (vph)	2023	38	1033	82	22
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	86.0	86.0	86.0	24.0	24.0
Total Split (%)	78.2%	78.2%	78.2%	21.8%	21.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-2.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	85.8	85.8	85.8	12.2	14.2
Actuated g/C Ratio	0.78	0.78	0.78	0.11	0.13
v/c Ratio	0.78	0.41	0.39	0.44	0.11
Control Delay	5.0	26.7	4.6	52.6	16.3
Queue Delay	0.8	0.0	0.0	0.0	0.0
Total Delay	5.8	26.7	4.6	52.6	16.3
LOS	A	C	A	D	B
Approach Delay	5.8		5.3	44.9	
Approach LOS	A		A	D	
Queue Length 50th (m)	4.5	2.0	27.6	17.0	0.0
Queue Length 95th (m)	47.2	13.8	49.7	29.9	6.7
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2609	93	2643	272	284
Starvation Cap Reductn	274	0	0	0	0
Spillback Cap Reductn	126	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.41	0.39	0.30	0.08

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Lamarche & Innes

Appendix L

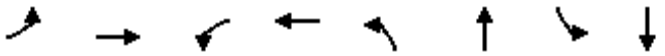
Synchro Analysis: Future Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	379	23	24	1401	161	203	259	44	77	100	459
Future Volume (vph)	121	379	23	24	1401	161	203	259	44	77	100	459
Lane Group Flow (vph)	121	379	23	24	1401	161	203	259	44	77	100	459
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	
Total Split (s)	14.0	69.9		12.4	68.3	68.3	15.0	47.7	47.7	32.7	32.7	
Total Split (%)	10.8%	53.8%		9.5%	52.5%	52.5%	11.5%	36.7%	36.7%	25.2%	25.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Min	Min	Min	Min	
Act Effct Green (s)	8.3	76.6	130.0	6.3	69.4	69.4	32.8	32.8	32.8	17.8	17.8	130.0
Actuated g/C Ratio	0.06	0.59	1.00	0.05	0.53	0.53	0.25	0.25	0.25	0.14	0.14	1.00
v/c Ratio	0.58	0.19	0.02	0.30	0.77	0.19	0.74	0.30	0.11	0.55	0.22	0.31
Control Delay	70.9	14.7	0.0	69.4	29.1	4.8	57.6	39.1	1.9	65.1	48.7	0.5
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	70.9	14.7	0.0	69.4	29.1	4.8	57.6	39.1	1.9	65.1	48.7	0.5
LOS	E	B	A	E	C	A	E	D	A	E	D	A
Approach Delay		27.0			27.2			43.3			15.9	
Approach LOS		C			C			D			B	
Queue Length 50th (m)	15.5	23.8	0.0	6.0	142.8	2.6	45.7	29.2	0.0	19.2	12.4	0.0
Queue Length 95th (m)	#27.5	38.6	0.0	15.2	197.3	14.8	62.1	36.9	2.1	33.0	19.2	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	209	1998	1492	83	1809	854	275	1069	504	204	678	1496
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	0.58	0.19	0.02	0.29	0.77	0.19	0.74	0.24	0.09	0.38	0.15	0.31

Intersection Summary		
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: 0.77		
Intersection Signal Delay: 27.5	Intersection LOS: C	
Intersection Capacity Utilization 92.3%	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	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	16	472	41	1494	24	14	43	7
Future Volume (vph)	16	472	41	1494	24	14	43	7
Lane Group Flow (vph)	16	486	41	1525	0	99	0	120
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
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)	81.0	81.0	81.0	81.0	39.0	39.0	39.0	39.0
Total Split (%)	67.5%	67.5%	67.5%	67.5%	32.5%	32.5%	32.5%	32.5%
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?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	91.3	91.3	91.3	91.3		15.7		15.7
Actuated g/C Ratio	0.76	0.76	0.76	0.76		0.13		0.13
v/c Ratio	0.09	0.19	0.06	0.59		0.42		0.57
Control Delay	7.3	5.0	3.7	7.8		24.5		40.2
Queue Delay	0.0	0.0	0.0	0.1		0.0		0.0
Total Delay	7.3	5.0	3.7	7.9		24.5		40.2
LOS	A	A	A	A		C		D
Approach Delay		5.1		7.8		24.5		40.2
Approach LOS		A		A		C		D
Queue Length 50th (m)	0.7	12.0	1.2	22.9		8.4		17.8
Queue Length 95th (m)	4.7	31.5	m4.5	178.4		20.9		31.2
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	187	2568	644	2571		421		390
Starvation Cap Reductn	0	0	0	201		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	0.19	0.06	0.64		0.24		0.31

Intersection Summary	
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: 0.59	
Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 73.0%	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	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	3	521	3	1373	3	0	0
Future Volume (vph)	3	521	3	1373	3	0	0
Lane Group Flow (vph)	3	529	3	1374	0	3	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3
Total Split (s)	87.7	87.7	87.7	87.7	32.3	32.3	32.3
Total Split (%)	73.1%	73.1%	73.1%	73.1%	26.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3	6.3
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
Act Effct Green (s)	94.4	94.4	94.4	94.4		13.2	13.2
Actuated g/C Ratio	0.79	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.01	0.20	0.00	0.52		0.02	0.02
Control Delay	2.7	2.3	4.7	6.2		43.3	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	2.7	2.3	4.7	6.2		43.3	0.2
LOS	A	A	A	A		D	A
Approach Delay		2.3		6.2		43.3	0.2
Approach LOS		A		A		D	A
Queue Length 50th (m)	0.1	7.0	0.1	42.0		0.7	0.0
Queue Length 95th (m)	m0.3	9.7	1.2	101.2		3.2	0.0
Internal Link Dist (m)		215.4		197.0		184.8	37.6
Turn Bay Length (m)	45.0		50.0				
Base Capacity (vph)	244	2661	637	2667		291	386
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	0.01	0.20	0.00	0.52		0.01	0.01

Intersection Summary	
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: 0.52	
Intersection Signal Delay: 5.1	Intersection LOS: A
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	

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

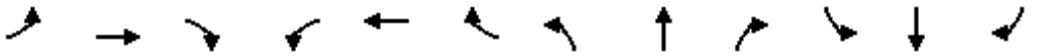
Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	519	3	1378	190	10
Future Volume (vph)	519	3	1378	190	10
Lane Group Flow (vph)	576	3	1378	190	10
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	86.0	86.0	86.0	34.0	34.0
Total Split (%)	71.7%	71.7%	71.7%	28.3%	28.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	88.9	88.9	88.9	19.1	19.1
Actuated g/C Ratio	0.74	0.74	0.74	0.16	0.16
v/c Ratio	0.23	0.01	0.55	0.73	0.04
Control Delay	4.7	4.3	4.6	63.4	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	4.3	4.6	63.4	19.4
LOS	A	A	A	E	B
Approach Delay	4.7		4.6	61.2	
Approach LOS	A		A	E	
Queue Length 50th (m)	16.6	0.1	24.6	43.0	0.0
Queue Length 95th (m)	23.2	m0.2	27.6	63.5	4.5
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2462	561	2511	383	346
Starvation Cap Reductn	0	0	2	0	0
Spillback Cap Reductn	0	0	11	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.01	0.55	0.50	0.03

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 62.8%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 4: Lamarche & Innes

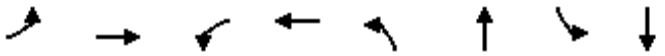


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1550	158	58	697	182	64	225	84	211	241	203
Future Volume (vph)	579	1550	158	58	697	182	64	225	84	211	241	203
Lane Group Flow (vph)	579	1550	158	58	697	182	64	225	84	211	241	203
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		Free
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.6	26.2	26.2	11.2	26.2	26.2	11.7	32.7	32.7	11.0	32.7	
Total Split (s)	29.7	54.3	54.3	11.2	35.8	35.8	11.7	33.5	33.5	11.0	32.8	
Total Split (%)	27.0%	49.4%	49.4%	10.2%	32.5%	32.5%	10.6%	30.5%	30.5%	10.0%	29.8%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	4.0	3.3	
All-Red Time (s)	2.9	2.5	2.5	2.5	2.5	2.5	3.4	3.4	3.4	2.0	3.4	
Lost Time Adjust (s)	0.0	0.0	-2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.6	6.2	4.0	6.2	6.2	6.2	6.7	6.7	6.7	6.0	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	C-Max	C-Max	Max	C-Max	C-Max	None	Min	Min	None	Min	
Act Effct Green (s)	34.3	48.1	50.3	16.2	29.6	29.6	20.6	15.6	15.6	22.0	17.3	110.0
Actuated g/C Ratio	0.31	0.44	0.46	0.15	0.27	0.27	0.19	0.14	0.14	0.20	0.16	1.00
v/c Ratio	0.57	1.05	0.21	0.23	0.76	0.33	0.28	0.47	0.21	0.88	0.45	0.14
Control Delay	35.7	67.5	3.5	46.4	47.0	10.4	34.3	45.4	1.2	74.4	44.8	0.2
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	35.7	67.5	3.5	46.4	47.0	10.4	34.3	45.4	1.2	74.4	44.8	0.2
LOS	D	E	A	D	D	B	C	D	A	E	D	A
Approach Delay		55.0			39.8			33.6			40.5	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	51.9	~190.6	0.0	11.0	76.7	3.2	11.1	24.1	0.0	~40.4	26.2	0.0
Queue Length 95th (m)	#87.3	#232.5	10.9	#36.2	73.7	29.0	18.9	31.3	0.0	53.2	33.6	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	1024	1482	745	249	912	560	227	825	521	239	804	1492
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	0.57	1.05	0.21	0.23	0.76	0.33	0.28	0.27	0.16	0.88	0.30	0.14

Intersection Summary		
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: 1.05		
Intersection Signal Delay: 47.5	Intersection LOS: D	
Intersection Capacity Utilization 97.0%	ICU Level of Service F	
Analysis Period (min) 15		

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

Splits and Phases: 1: Orleans & Innes

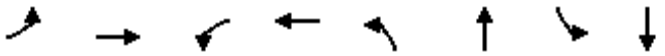


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	74	1744	53	887	16	21	58	23
Future Volume (vph)	74	1744	53	887	16	21	58	23
Lane Group Flow (vph)	74	1778	53	988	0	138	0	119
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	1	6	8	8	4	4
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	11.0	39.2	37.8	37.8	37.8	37.8
Total Split (s)	61.2	61.2	11.0	72.2	37.8	37.8	37.8	37.8
Total Split (%)	55.6%	55.6%	10.0%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.7	3.7	4.0	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.0	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	6.0	6.2		6.8		6.8
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min	Min	Min
Act Effct Green (s)	71.2	71.2	81.0	80.8		16.2		16.2
Actuated g/C Ratio	0.65	0.65	0.74	0.73		0.15		0.15
v/c Ratio	0.22	0.81	0.33	0.40		0.45		0.62
Control Delay	5.7	10.1	17.6	9.3		17.9		48.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.7	10.1	17.6	9.3		17.9		48.2
LOS	A	B	B	A		B		D
Approach Delay		9.9		9.7		17.9		48.2
Approach LOS		A		A		B		D
Queue Length 50th (m)	3.1	45.8	3.6	34.6		7.9		20.5
Queue Length 95th (m)	m3.2	m#47.1	13.8	88.4		21.4		32.9
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	334	2185	159	2449		494		348
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.22	0.81	0.33	0.40		0.28		0.34

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 11.6	Intersection LOS: B
Intersection Capacity Utilization 95.2%	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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	1739	1	985	5	0	12	0
Future Volume (vph)	14	1739	1	985	5	0	12	0
Lane Group Flow (vph)	14	1743	1	997	0	8	0	19
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
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3	32.3
Total Split (s)	77.7	77.7	77.7	77.7	32.3	32.3	32.3	32.3
Total Split (%)	70.6%	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3		6.3
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	84.4	84.4	84.4	84.4		13.2		13.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.04	0.67	0.01	0.38		0.04		0.10
Control Delay	2.1	6.0	5.0	5.4		0.4		7.4
Queue Delay	0.0	0.6	0.0	0.0		0.0		0.0
Total Delay	2.1	6.6	5.0	5.4		0.4		7.4
LOS	A	A	A	A		A		A
Approach Delay		6.6		5.4		0.4		7.4
Approach LOS		A		A		A		A
Queue Length 50th (m)	0.2	49.1	0.0	25.7		0.0		0.0
Queue Length 95th (m)	m0.7	221.8	0.7	63.9		0.2		3.9
Internal Link Dist (m)		215.4		197.0		184.8		37.6
Turn Bay Length (m)	45.0		50.0					
Base Capacity (vph)	371	2600	139	2595		361		353
Starvation Cap Reductn	0	442	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	0.04	0.81	0.01	0.38		0.02		0.05

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 36 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	1734	46	951	107	24
Future Volume (vph)	1734	46	951	107	24
Lane Group Flow (vph)	1906	46	951	107	24
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	2		6		
Permitted Phases		6		8	8
Detector Phase	2	6	6	8	8
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0
Total Split (s)	84.0	84.0	84.0	26.0	26.0
Total Split (%)	76.4%	76.4%	76.4%	23.6%	23.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-2.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	84.9	84.9	84.9	13.1	15.1
Actuated g/C Ratio	0.77	0.77	0.77	0.12	0.14
v/c Ratio	0.74	0.42	0.36	0.55	0.11
Control Delay	4.5	25.3	4.7	55.8	15.9
Queue Delay	0.4	0.0	0.0	0.0	0.0
Total Delay	4.9	25.3	4.7	55.8	15.9
LOS	A	C	A	E	B
Approach Delay	4.9		5.6	48.5	
Approach LOS	A		A	D	
Queue Length 50th (m)	5.6	2.6	27.1	22.1	0.0
Queue Length 95th (m)	34.9	15.1	44.5	37.6	7.1
Internal Link Dist (m)	206.4		215.4	157.2	
Turn Bay Length (m)		50.0		50.0	
Base Capacity (vph)	2571	110	2617	299	309
Starvation Cap Reductn	236	0	0	0	0
Spillback Cap Reductn	72	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.42	0.36	0.36	0.08

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 77.5%	ICU Level of Service D
Analysis Period (min) 15	

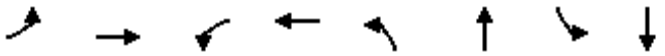
Splits and Phases: 4: Lamarche & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	468	23	24	1698	230	203	259	44	97	100	459
Future Volume (vph)	121	468	23	24	1698	230	203	259	44	97	100	459
Lane Group Flow (vph)	121	468	23	24	1698	230	203	259	44	97	100	459
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	32.7	32.7	
Total Split (s)	12.4	72.9		12.4	72.9	72.9	12.0	44.7	44.7	32.7	32.7	
Total Split (%)	9.5%	56.1%		9.5%	56.1%	56.1%	9.2%	34.4%	34.4%	25.2%	25.2%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.7	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Min	Min	Min	Min	
Act Effct Green (s)	8.0	78.7	130.0	6.3	71.7	71.7	30.8	30.8	30.8	18.8	18.8	130.0
Actuated g/C Ratio	0.06	0.61	1.00	0.05	0.55	0.55	0.24	0.24	0.24	0.14	0.14	1.00
v/c Ratio	0.60	0.23	0.02	0.30	0.91	0.26	0.83	0.32	0.11	0.66	0.20	0.31
Control Delay	72.1	14.0	0.0	69.4	35.5	6.8	71.3	41.0	1.6	72.0	47.9	0.5
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	72.1	14.0	0.0	69.4	35.5	6.8	71.3	41.0	1.6	72.0	47.9	0.5
LOS	E	B	A	E	D	A	E	D	A	E	D	A
Approach Delay		24.9			32.5			49.7			18.3	
Approach LOS		C			C			D			B	
Queue Length 50th (m)	15.4	30.1	0.0	6.0	203.8	9.8	46.0	29.4	0.0	24.1	12.2	0.0
Queue Length 95th (m)	#33.0	45.4	0.0	15.2	#274.6	24.9	64.4	38.2	1.7	40.5	19.2	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	202	2052	1492	83	1870	881	245	990	475	204	678	1496
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	0.60	0.23	0.02	0.29	0.91	0.26	0.83	0.26	0.09	0.48	0.15	0.31

Intersection Summary		
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: 0.91		
Intersection Signal Delay: 31.1	Intersection LOS: C	
Intersection Capacity Utilization 96.4%	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.

Splits and Phases: 1: Orleans & Innes

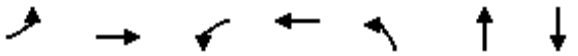


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	16	590	41	1868	23	14	43	7
Future Volume (vph)	16	590	41	1868	23	14	43	7
Lane Group Flow (vph)	16	603	41	1899	0	98	0	120
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
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)	81.9	81.9	81.9	81.9	38.1	38.1	38.1	38.1
Total Split (%)	68.3%	68.3%	68.3%	68.3%	31.8%	31.8%	31.8%	31.8%
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?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	90.3	90.3	90.3	90.3		16.7		16.7
Actuated g/C Ratio	0.75	0.75	0.75	0.75		0.14		0.14
v/c Ratio	0.16	0.24	0.07	0.75		0.39		0.59
Control Delay	11.1	5.6	3.9	11.6		23.0		50.6
Queue Delay	0.0	0.0	0.0	1.1		0.0		0.0
Total Delay	11.1	5.6	3.9	12.7		23.0		50.6
LOS	B	A	A	B		C		D
Approach Delay		5.7		12.5		23.0		50.6
Approach LOS		A		B		C		D
Queue Length 50th (m)	0.8	17.1	1.2	27.5		8.0		23.1
Queue Length 95th (m)	5.8	39.9	m3.4	38.2		20.4		36.3
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	102	2542	567	2545		418		365
Starvation Cap Reductn	0	0	0	381		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.16	0.24	0.07	0.88		0.23		0.33

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 13.0	Intersection LOS: B
Intersection Capacity Utilization 84.0%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 2: Page & Innes



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	3	578	3	1496	3	0	0
Future Volume (vph)	3	578	3	1496	3	0	0
Lane Group Flow (vph)	3	586	3	1497	0	3	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3
Total Split (s)	87.7	87.7	87.7	87.7	32.3	32.3	32.3
Total Split (%)	73.1%	73.1%	73.1%	73.1%	26.9%	26.9%	26.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3	6.3
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
Act Effct Green (s)	94.4	94.4	94.4	94.4		13.2	13.2
Actuated g/C Ratio	0.79	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.01	0.22	0.00	0.56		0.02	0.02
Control Delay	0.7	0.5	4.7	6.7		43.3	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	0.7	0.5	4.7	6.7		43.3	0.2
LOS	A	A	A	A		D	A
Approach Delay		0.5		6.7		43.3	0.2
Approach LOS		A		A		D	A
Queue Length 50th (m)	0.0	0.4	0.1	49.0		0.7	0.0
Queue Length 95th (m)	m0.0	2.4	1.2	117.2		3.2	0.0
Internal Link Dist (m)		215.4		197.0		184.8	37.6
Turn Bay Length (m)	45.0		50.0				
Base Capacity (vph)	207	2661	603	2667		291	373
Starvation Cap Reductn	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	1		0	0
Storage Cap Reductn	0	0	0	0		0	0
Reduced v/c Ratio	0.01	0.22	0.00	0.56		0.01	0.01

Intersection Summary	
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: 0.56	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 62.8%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	564	139	8	1497	451	24
Future Volume (vph)	564	139	8	1497	451	24
Lane Group Flow (vph)	564	139	8	1497	451	24
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	38.7	38.7	38.7	38.7	36.7	36.7
Total Split (s)	71.0	71.0	71.0	71.0	49.0	49.0
Total Split (%)	59.2%	59.2%	59.2%	59.2%	40.8%	40.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7	3.7	5.7	5.7	5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min
Act Effct Green (s)	72.1	74.1	72.1	72.1	36.5	36.5
Actuated g/C Ratio	0.60	0.62	0.60	0.60	0.30	0.30
v/c Ratio	0.28	0.14	0.02	0.74	0.88	0.05
Control Delay	11.2	1.5	10.2	15.1	57.5	9.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	11.2	1.5	10.2	15.1	57.5	9.5
LOS	B	A	B	B	E	A
Approach Delay	9.3			15.1	55.1	
Approach LOS	A			B	E	
Queue Length 50th (m)	29.0	0.0	0.5	128.0	99.3	0.0
Queue Length 95th (m)	37.1	5.4	m0.9	57.0	130.9	5.7
Internal Link Dist (m)	206.4			215.4	157.2	
Turn Bay Length (m)			50.0		50.0	
Base Capacity (vph)	2036	989	446	2036	611	562
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	31	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.14	0.02	0.75	0.74	0.04

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 20.7	Intersection LOS: C
Intersection Capacity Utilization 79.6%	ICU Level of Service D
Analysis Period (min) 15	

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

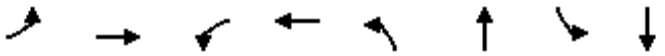
Splits and Phases: 4: Lamarche & Innes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	579	1834	158	58	847	214	64	225	84	266	241	203
Future Volume (vph)	579	1834	158	58	847	214	64	225	84	266	241	203
Lane Group Flow (vph)	579	1834	158	58	847	214	64	225	84	266	241	203
Turn Type	Prot	NA	Free	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6	8		8	4		Free
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	11.6	26.2		11.2	26.2	26.2	11.7	32.7	32.7	11.0	32.7	
Total Split (s)	27.0	54.4		11.2	38.6	38.6	11.7	33.4	33.4	11.0	32.7	
Total Split (%)	24.5%	49.5%		10.2%	35.1%	35.1%	10.6%	30.4%	30.4%	10.0%	29.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7	3.7	3.3	3.3	3.3	4.0	3.3	
All-Red Time (s)	2.9	2.5		2.5	2.5	2.5	3.4	3.4	3.4	2.0	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	
Total Lost Time (s)	6.6	6.2		6.2	6.2	6.2	6.7	6.7	6.7	6.0	6.7	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	C-Max		Max	C-Max	C-Max	None	Min	Min	None	Min	
Act Effct Green (s)	31.5	48.2	110.0	16.1	32.4	32.4	20.6	15.6	15.6	22.0	17.3	110.0
Actuated g/C Ratio	0.29	0.44	1.00	0.15	0.29	0.29	0.19	0.14	0.14	0.20	0.16	1.00
v/c Ratio	0.62	1.24	0.11	0.23	0.85	0.36	0.28	0.47	0.21	1.11	0.45	0.14
Control Delay	38.9	141.3	0.1	55.2	39.1	9.7	34.3	45.4	1.2	130.9	44.8	0.2
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	38.9	141.3	0.1	55.2	39.1	9.7	34.3	45.4	1.2	130.9	44.8	0.2
LOS	D	F	A	E	D	A	C	D	A	F	D	A
Approach Delay		109.5			34.3			33.6			64.3	
Approach LOS		F			C			C			E	
Queue Length 50th (m)	54.0	~257.1	0.0	13.0	76.3	5.3	11.1	24.1	0.0	~66.8	26.2	0.0
Queue Length 95th (m)	#96.9	#299.3	0.0	#36.0	#122.7	31.5	18.9	31.3	0.0	#79.2	33.6	0.0
Internal Link Dist (m)		172.6			446.9			66.6			225.1	
Turn Bay Length (m)	150.0		85.0	120.0		70.0	50.0		45.0	65.0		60.0
Base Capacity (vph)	940	1485	1487	247	998	592	227	822	520	239	801	1492
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	0.62	1.24	0.11	0.23	0.85	0.36	0.28	0.27	0.16	1.11	0.30	0.14

Intersection Summary	
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: 1.24	
Intersection Signal Delay: 79.2	Intersection LOS: E
Intersection Capacity Utilization 108.5%	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

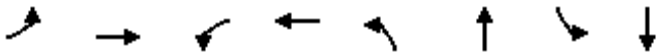


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	74	2097	53	1082	19	21	58	23
Future Volume (vph)	74	2097	53	1082	19	21	58	23
Lane Group Flow (vph)	74	2130	53	1183	0	138	0	119
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	1	6	8	8	4	4
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	11.0	39.2	37.8	37.8	37.8	37.8
Total Split (s)	61.2	61.2	11.0	72.2	37.8	37.8	37.8	37.8
Total Split (%)	55.6%	55.6%	10.0%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	3.7	3.7	4.0	3.7	3.0	3.0	3.0	3.0
All-Red Time (s)	2.5	2.5	2.0	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	6.0	6.2		6.8		6.8
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min	Min	Min
Act Effct Green (s)	71.2	71.2	81.0	80.8		16.2		16.2
Actuated g/C Ratio	0.65	0.65	0.74	0.73		0.15		0.15
v/c Ratio	0.27	0.97	0.34	0.48		0.46		0.62
Control Delay	14.5	26.5	21.8	6.9		19.1		48.1
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	14.5	26.5	21.8	6.9		19.1		48.1
LOS	B	C	C	A		B		D
Approach Delay		26.1		7.5		19.1		48.1
Approach LOS		C		A		B		D
Queue Length 50th (m)	6.6	141.1	3.6	50.1		8.7		20.5
Queue Length 95th (m)	m6.2	m#212.4	m14.6	41.8		22.2		32.9
Internal Link Dist (m)		446.9		206.4		187.2		222.4
Turn Bay Length (m)	110.0		75.0					
Base Capacity (vph)	275	2187	155	2454		487		349
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.27	0.97	0.34	0.48		0.28		0.34

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 99 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 20.3	Intersection LOS: C
Intersection Capacity Utilization 94.8%	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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	1919	1	1120	5	0	12	0
Future Volume (vph)	14	1919	1	1120	5	0	12	0
Lane Group Flow (vph)	14	1923	1	1132	0	8	0	19
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
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	32.1	32.1	32.1	32.1	32.3	32.3	32.3	32.3
Total Split (s)	77.7	77.7	77.7	77.7	32.3	32.3	32.3	32.3
Total Split (%)	70.6%	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1		6.3		6.3
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	84.4	84.4	84.4	84.4		13.2		13.2
Actuated g/C Ratio	0.77	0.77	0.77	0.77		0.12		0.12
v/c Ratio	0.04	0.74	0.01	0.44		0.04		0.10
Control Delay	6.1	17.7	5.0	5.8		0.4		7.4
Queue Delay	0.0	2.7	0.0	0.0		0.0		0.0
Total Delay	6.1	20.5	5.0	5.8		0.4		7.4
LOS	A	C	A	A		A		A
Approach Delay		20.4		5.8		0.4		7.4
Approach LOS		C		A		A		A
Queue Length 50th (m)	0.6	212.5	0.0	30.9		0.0		0.0
Queue Length 95th (m)	m1.7	256.2	0.7	76.3		0.2		3.9
Internal Link Dist (m)		215.4		197.0		184.8		37.6
Turn Bay Length (m)	45.0		50.0					
Base Capacity (vph)	316	2600	105	2595		361		353
Starvation Cap Reductn	0	541	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	0.04	0.93	0.01	0.44		0.02		0.05

Intersection Summary	
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: 0.74	
Intersection Signal Delay: 14.9	Intersection LOS: B
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: U-Haul Access/Convenience Store & Innes

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1879	391	100	1033	234	60
Future Volume (vph)	1879	391	100	1033	234	60
Lane Group Flow (vph)	1879	391	100	1033	234	60
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	38.7	38.7	38.7	38.7	36.7	36.7
Total Split (s)	62.6	62.6	73.3	73.3	36.7	36.7
Total Split (%)	56.9%	56.9%	66.6%	66.6%	33.4%	33.4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	0.0	0.0	-2.0
Total Lost Time (s)	5.7	3.7	5.7	5.7	5.7	3.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	77.3	79.3	77.3	77.3	21.3	23.3
Actuated g/C Ratio	0.70	0.72	0.70	0.70	0.19	0.21
v/c Ratio	0.79	0.36	1.22	0.43	0.72	0.19
Control Delay	5.5	0.3	194.0	12.4	53.7	26.9
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.1
Total Delay	5.8	0.3	194.0	12.4	53.7	27.0
LOS	A	A	F	B	D	C
Approach Delay	4.8			28.4	48.3	
Approach LOS	A			C	D	
Queue Length 50th (m)	13.4	0.0	~26.2	43.4	47.8	8.0
Queue Length 95th (m)	m32.7	m0.0	#55.2	125.2	65.9	17.0
Internal Link Dist (m)	206.4			215.4	157.2	
Turn Bay Length (m)		60.0	50.0		50.0	
Base Capacity (vph)	2381	1099	82	2381	470	449
Starvation Cap Reductn	87	0	0	0	0	0
Spillback Cap Reductn	111	0	0	0	0	82
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.36	1.22	0.43	0.50	0.16

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 99.3 (90%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.22	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 95.9%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Lamarche & Innes