

245- 275 Lamarche Avenue

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

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Table of Contents

| | | |
|--------|--|----|
| 1 | Screening | 1 |
| 2 | Existing and Planned Conditions | 1 |
| 2.1 | Proposed Development..... | 1 |
| 2.2 | Existing Conditions | 3 |
| 2.2.1 | Area Road Network | 3 |
| 2.2.2 | Existing Intersections..... | 3 |
| 2.2.3 | Existing Driveways | 4 |
| 2.2.4 | Cycling and Pedestrian Facilities..... | 5 |
| 2.2.5 | Existing Transit..... | 8 |
| 2.2.6 | Existing Area Traffic Management Measures..... | 9 |
| 2.2.7 | Existing Peak Hour Travel Demand..... | 9 |
| 2.2.8 | Collision Analysis | 11 |
| 2.3 | Planned Conditions..... | 13 |
| 2.3.1 | Changes to the Area Transportation Network | 13 |
| 2.3.2 | Other Study Area Developments..... | 13 |
| 3 | Study Area and Time Periods | 14 |
| 3.1 | Study Area | 14 |
| 3.2 | Time Periods | 14 |
| 3.3 | Horizon Years..... | 14 |
| 4 | Exemption Review | 14 |
| 5 | Development-Generated Travel Demand | 15 |
| 5.1 | Mode Shares..... | 15 |
| 5.2 | Trip Generation | 15 |
| 5.3 | Trip Distribution..... | 16 |
| 5.4 | Trip Assignment..... | 16 |
| 6 | Background Network Travel Demands..... | 17 |
| 6.1 | Transportation Network Plans | 17 |
| 6.2 | Background Growth..... | 17 |
| 6.3 | Other Developments | 18 |
| 7 | Demand Rationalization | 18 |
| 7.1 | 2025 Future Background Operations | 18 |
| 7.2 | 2030 Future Background Operations | 20 |
| 7.3 | Modal Share Sensitivity and Demand Rationalization Conclusions | 22 |
| 8 | Development Design | 22 |
| 8.1 | Design for Sustainable Modes..... | 22 |
| 8.2 | New Street Networks | 24 |
| 9 | Boundary Street Design..... | 25 |
| 10 | Access Intersections Design | 25 |
| 10.1 | Location and Design of Access..... | 25 |
| 10.2 | Intersection Control..... | 25 |
| 10.3 | Access Intersection Design | 26 |
| 10.3.1 | 2025 Future Total Access Intersection Operations | 26 |

10.3.2 2030 Future Total Access Intersection Operations 26

10.3.3 Access Intersection MMLOS 27

10.3.4 Recommended Design Elements 27

11 Transportation Demand Management 28

11.1 Context for TDM 28

11.2 Need and Opportunity 28

11.3 TDM Program 28

12 Transit 28

12.1 Transit Priority 28

13 Network Intersection Design 29

13.1 Network Intersection Control 29

13.2 Network Intersection Design 29

13.2.1 2025 Future Total Network Intersection Operations 29

13.2.2 2030 Future Total Network Intersection Operations 30

13.2.3 Network Intersection MMLOS 32

13.2.4 Recommended Design Elements 33

14 Summary of Improvements Indicated and Modifications Options 33

15 Conclusion 35

List of Figures

Figure 1: Area Context Plan 1

Figure 2: Concept Plan 2

Figure 3: Existing Driveways 5

Figure 4: Study Area Pedestrian Facilities 6

Figure 5: Study Area Cycling Facilities 7

Figure 6: Existing Pedestrian Volumes 7

Figure 7: Existing Cyclist Volumes 8

Figure 8: Existing Study Area Transit Service 8

Figure 9: Existing Study Area Transit Stops 9

Figure 10: Existing Traffic Counts 10

Figure 11: Study Area Collision Records – Representation of Study Area Collisions 12

Figure 12: New Site Generation Auto Volumes 17

Figure 13: 2025 Future Background Volumes 18

Figure 14: 2030 Future Background Volumes 20

Figure 15: Concept Pedestrian Network 23

Figure 16: On-Street Parking Plan 24

Figure 17: Concept Traffic Calming Plan 25

Figure 18: 2025 Future Total Volumes 26

Figure 19: 2030 Future Total Volumes 27

Table of Tables

Table 1: Intersection Count Date 9

Table 2: Existing Intersection Operations..... 10

Table 3: Segments of Innes Road between Page Road & The 3615 Innes Road/3636 Innes Road Access Collision Summary, 2016-2020 12

Table 4: Exemption Review 14

Table 5: TRANS Trip Generation Manual Recommended Mode Shares – Orleans..... 15

Table 6: Trip Generation Person Trip Rates by Peak Period..... 15

Table 7: Total Residential Person Trip Generation by Peak Period..... 15

Table 8: Trip Generation by Mode 16

Table 9: OD Survey Distribution – Orleans..... 16

Table 10: Trip Assignment 16

Table 11: TRANS Regional Model Projections – Study Area Growth Rates..... 17

Table 12: Recommended Area Growth Rates 18

Table 13: 2025 Future Background Intersection Operations 19

Table 14: 2030 Future Background Intersection Operations 21

Table 15: Boundary Street MMLOS Analysis 25

Table 16: 2025 Future Total Access Intersection Operations 26

Table 17: 2030 Future Total Access Intersection Operations 27

Table 18: Trip Generation by Transit Mode 28

Table 19: 2025 Future Total Network Intersection Operations 29

Table 20: 2030 Future Total Network Intersection Operations 31

Table 21: Study Area Intersection MMLOS Analysis 32

List of Appendices

- Appendix A – TIA Screening Form and Certification Form
- Appendix B – Turning Movement Count Data
- Appendix C – Synchro Intersection Worksheets – Existing Conditions
- Appendix D – Collision Data
- Appendix E – City TRANS Forecasts – Background Growth
- Appendix F – Background Development Volumes
- Appendix G – Synchro Intersection Worksheets – 2025 Future Background Conditions
- Appendix H – Synchro Intersection Worksheets – 2030 Future Background Conditions
- Appendix I – MMLOS Analysis
- Appendix J – Synchro Intersection Worksheets –2025 Future Total Conditions
- Appendix K –Synchro Intersection Worksheets – 2030 Future Total Conditions
- Appendix L – TDM Checklist

1 Screening

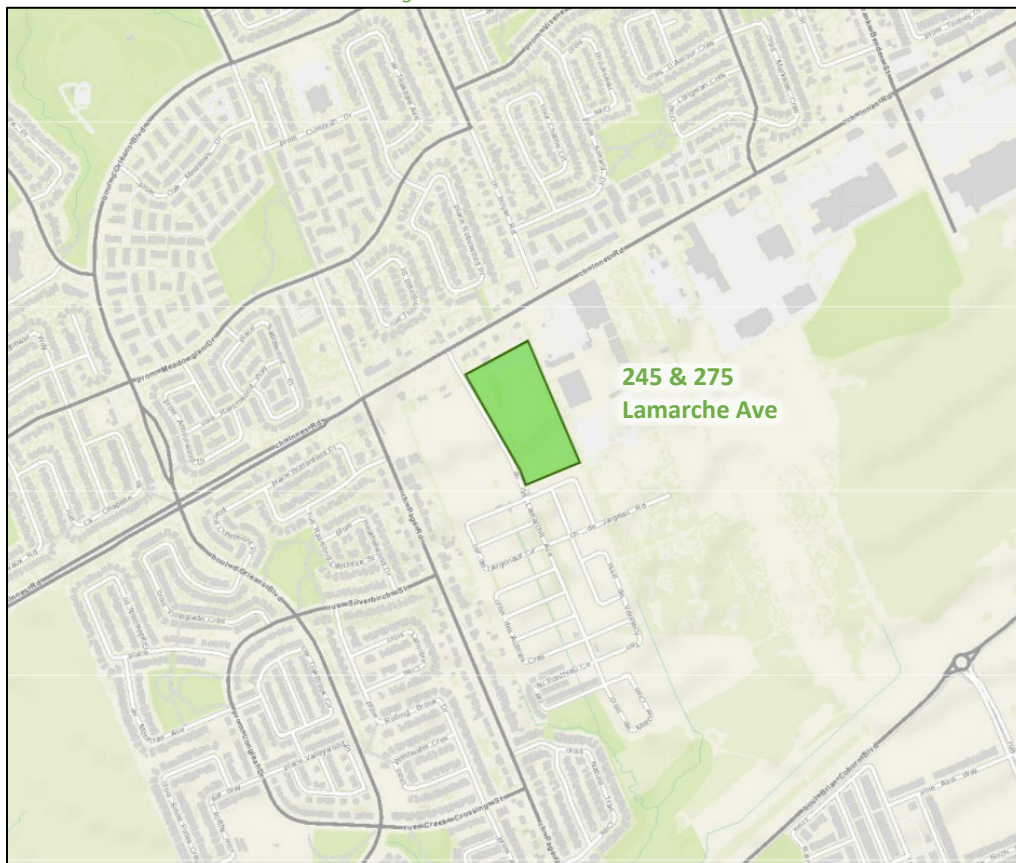
This study has been prepared according to the City of Ottawa’s 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is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

2 Existing and Planned Conditions

2.1 Proposed Development

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

Figure 1: Area Context Plan

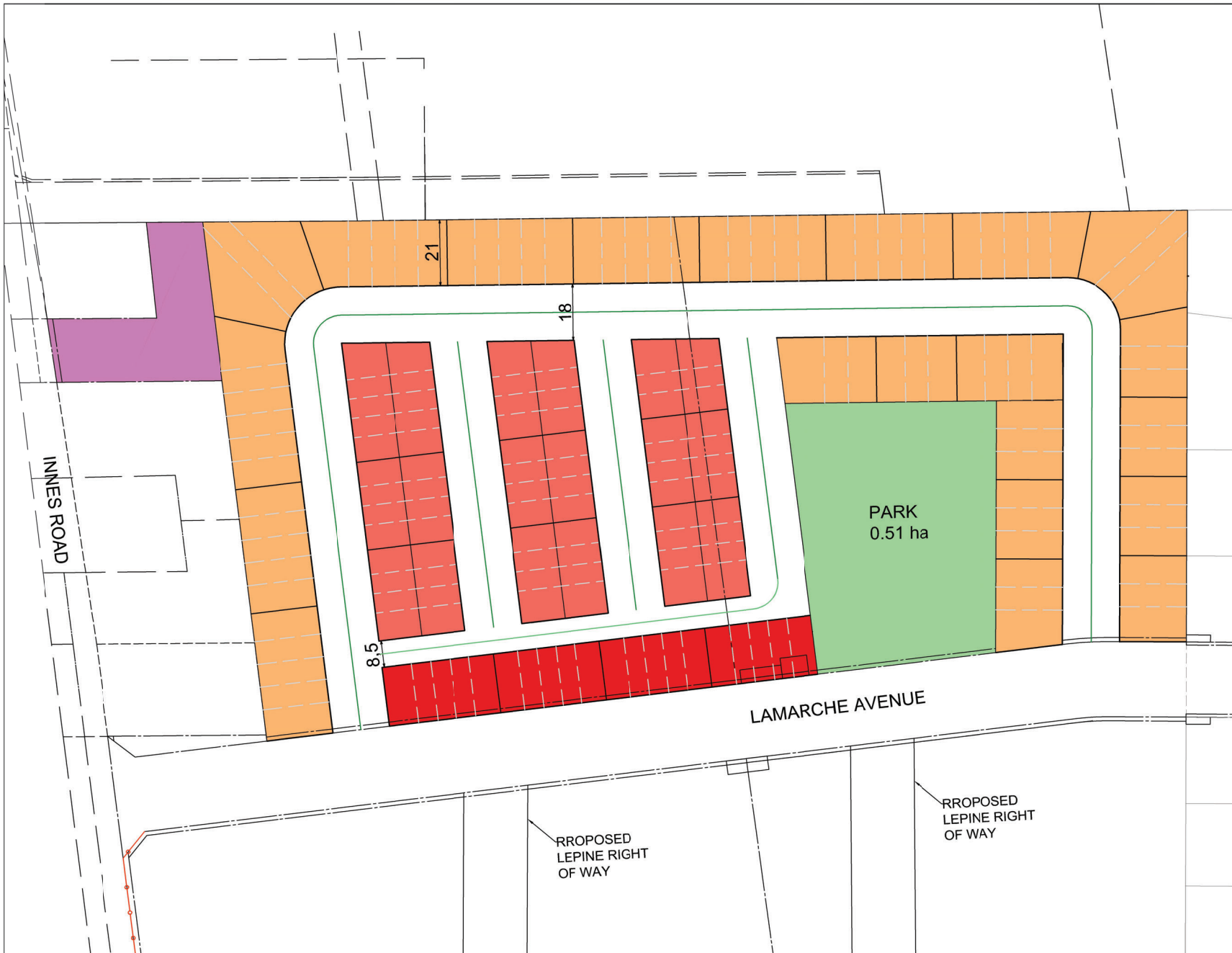


Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: March 21, 2022

CAIVAN

LEGEND:

- 18.9m DEPTH RLTH
- B2B
- 24' STANDARD TOWNHOUSE
- FUTURE MIXED-USE BLOCK



| LOT COUNT | | |
|------------------|------------|------------|
| UNIT TYPE | # UNITS | % |
| 18.9m DEPTH RLTH | 20 | 11 |
| B2B | 72 | 41 |
| 24' STND TH | 83 | 48 |
| TOTAL | 175 | 100 |

DATE:
22/03/09

PROJECT NO.:
OTL

PROJECT NAME:
OV PHASE 4

DRAWING #:
SK-06.5

2.2 Existing Conditions

2.2.1 Area Road Network

Innes Road: Innes Road is a City of Ottawa arterial road. It has a divided four-lane cross-section west of Page Road, and five-lane urban cross-section including a two-way left-turn lane to the east. Bike lanes and sidewalks are provided on both sides of the road east of Orleans Boulevard, and bike lane is also present on the north side of the road west of Orleans Boulevard. The posted speed limit is 60 km/h within the study area and the City-protected right-of-way is 37.5 metres. Innes Road is designated as a truck route.

Orleans Boulevard: Orleans Boulevard is a City of Ottawa arterial road with a four-lane divided cross-section and a two-lane cross-section south of Silverbirch Street. Sidewalks are present on both sides of the road to the north and on the west side of the road to the south of Silverbirch Street. The posted speed limit is 60 km/h north of Innes Road, and 50 km/h to the south. The city-protected right-of-way is 37.5 metres north of Innes Road, and the measured right-of-way is 34.0 metres south of Innes Road. Orleans Boulevard is designated as a truck route north of Innes Road.

Viseneau Drive: Viseneau Drive is a City of Ottawa collector road with a two-lane cross-section. A sidewalk is present on the west side of the road. The posted speed limit is 40 km/h and the city-protected right-of-way is 26.0 metres.

Page Road: Page Road is a City of Ottawa local road with a two-lane semi-urban cross-section north of Innes Road and a collector road with a two-lane urban cross-section south of Innes Road. Sidewalks are present on the west side of the road and for 205 metres south of Innes Road on east side of the road. The posted speed limit is 40 km/h and the measured right-of-way varies between 20.0 and 22.0 metres north of Silverbirch Street, and the City-protected right-of-way is 24.0 metres south of Silverbirch Street.

Lamarche Avenue: Lamarche Avenue is a City of Ottawa local road with a two-lane cross. A MUP is present on the west side of the road. A sidewalk is present on the east side of the road south of Argonaut Circle and is planning to be provided on the east side of the road north of Argonaut Circle. On-street parking is permitted on both sides of the road. The unposted speed limit is assumed to be 50 km/h, and the measured right-of-way is 24.0 metres.

2.2.2 Existing Intersections

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

Innes Road at Orleans Boulevard

The intersection of Innes Road at Orleans Boulevard is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, two through lanes, and an auxiliary channelized right-turn lane. The eastbound approach consists of two auxiliary left-turn lanes, two through lanes, and an auxiliary channelized right-turn lane, and the westbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary channelized right-turn lane. Trucks are restricted on southbound movement.

Innes Road at Page Road

The intersection of Innes Road at Page Road is a signalized intersection. The northbound and southbound approaches each consist of a shared all-movement lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, a shared through/right-turn lane, and a bike, and westbound approach consists of an auxiliary left-turn lane, which develops from the two-way left-

turn lane, a through lane, a shared through/right-turn lane, and a bike lane. No turn restrictions were noted.

Innes Road at Lamarche Avenue

The intersection of Innes Road at Lamarche Avenue is a T-intersection stop-controlled on the minor approach of Lamarche Avenue. The northbound approach consists of a shared all-movement lane. The eastbound approach consists of a through lane and a shared through/right-turn lane, and westbound approach consists of two through lanes. A two-way left-turn lane is present through the intersection on Innes Road. No turn restrictions were noted.

Innes Road at 3615 Innes Road/3636 Innes Road Access

The intersection of Innes Road at the 3615 Innes Road/3636 Innes Road access is a signalized intersection. The northbound approach functions as a left-turn lane and a shared through/right-turn lane, and the southbound approach consists of a shared all-movement lane. The eastbound approach consists of an auxiliary left-turn lane, which develops from the two-way left-turn lane, a through lane, a shared through/right-turn lane, and a bike lane, and the westbound approach consists of an auxiliary left-turn lane, a through lane, a shared through/right-turn lane, and a bike lane. No turn restrictions were noted.

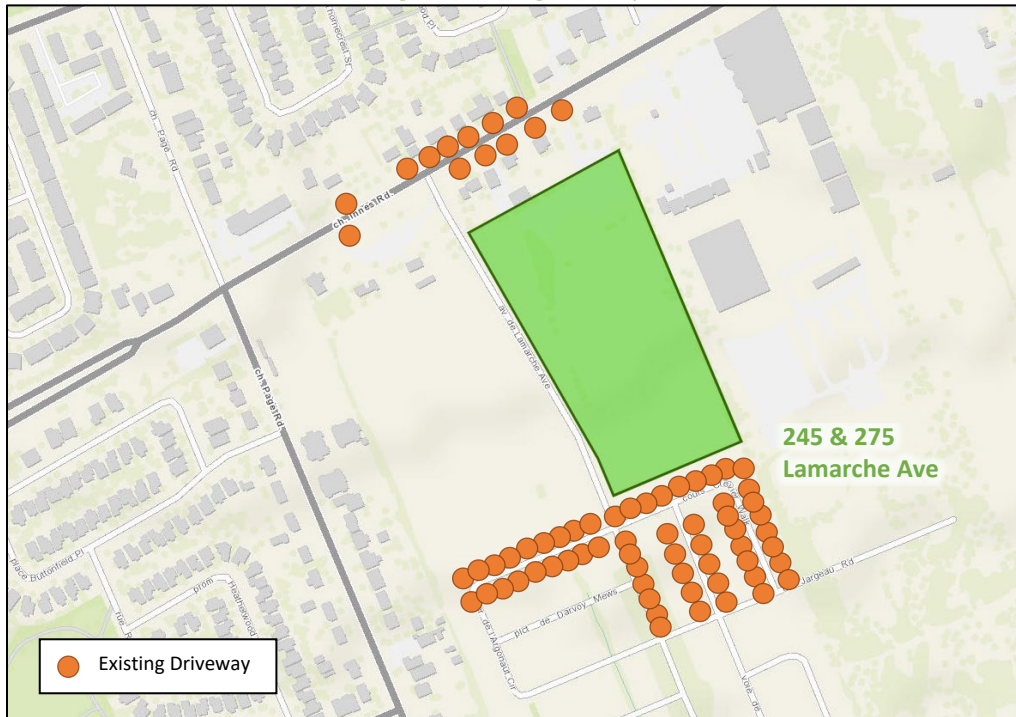
Innes Road at Viseneau Drive

The intersection of Innes Road at Viseneau Drive is a signalized intersection. The northbound approach consists of a left-turn lane, a through lane, and an auxiliary right-turn lane, and the southbound approach consists of a shared all-movement lane. The eastbound approach consists of an auxiliary left-turn lane, two through lanes, a bike lane, and an auxiliary right-turn lane, and the westbound approach consists of an auxiliary left-turn lane, a through lane, a shared through/right-turn lane, and a bike lane. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the site accesses, six driveways to detached homes and one to a clinic are located on the north side of Innes Road, and one driveway to a school bus parking lot, one to an office, one to a food truck and three to detached homes are located on the south side of Innes Road. South of the future access, driveways are provided to townhouses. Figure 3 illustrates the existing driveways.

Figure 3: Existing Driveways



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

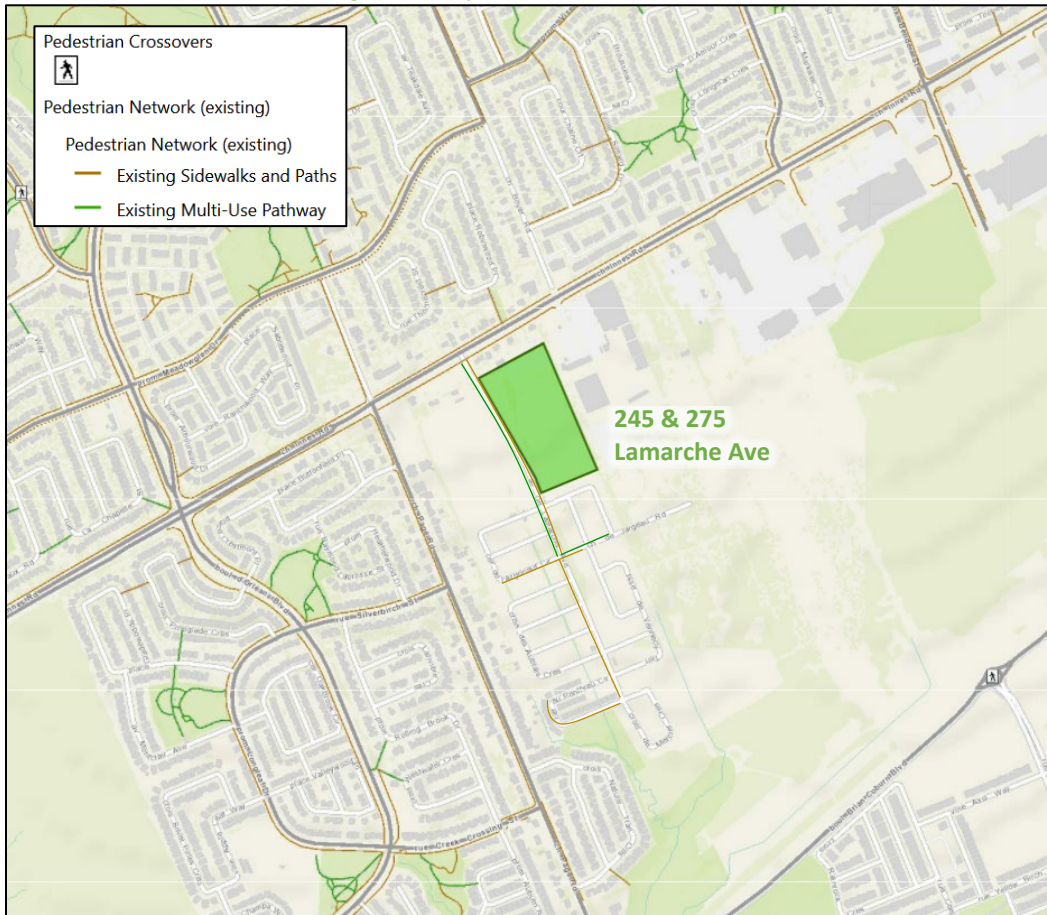
2.2.4 Cycling and Pedestrian Facilities

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

Sidewalks are provided along both sides of Innes Road, on the west side of Page Road, on east side of Page Road for 205 metres south of Innes Road, and on the east side of Lamarche Avenue south of Argonaut Circle.

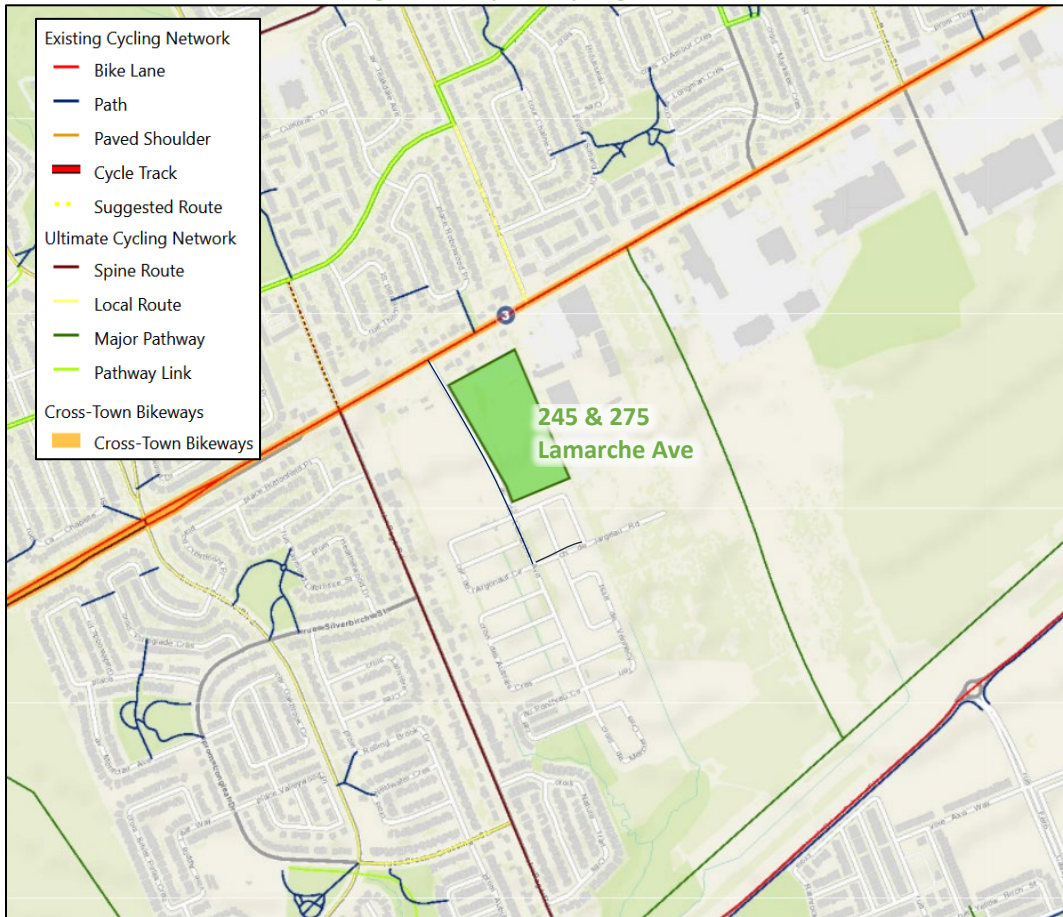
Cycling facilities include bike lanes along both side of Innes Road. A path is provided to connect Innes Road and Robinwood Place. A MUP is provided on the west side of Lamarche Avenue, and a major pathway is planned to be provided along Fern Casey Street connecting Innes Road to the Brian Coburn pathways. Innes Road, Orleans Boulevard are spine route, and Page Road north of Innes Road is suggested route. Innes Road is a cross-town bikeway.

Figure 4: Study Area Pedestrian Facilities



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

Figure 5: Study Area Cycling Facilities



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

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively.

Figure 6: Existing Pedestrian Volumes

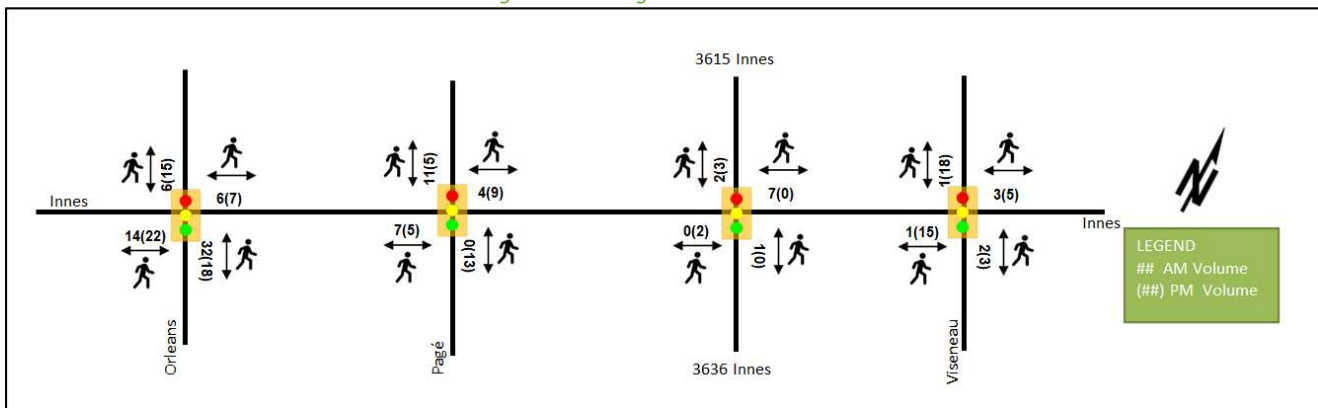
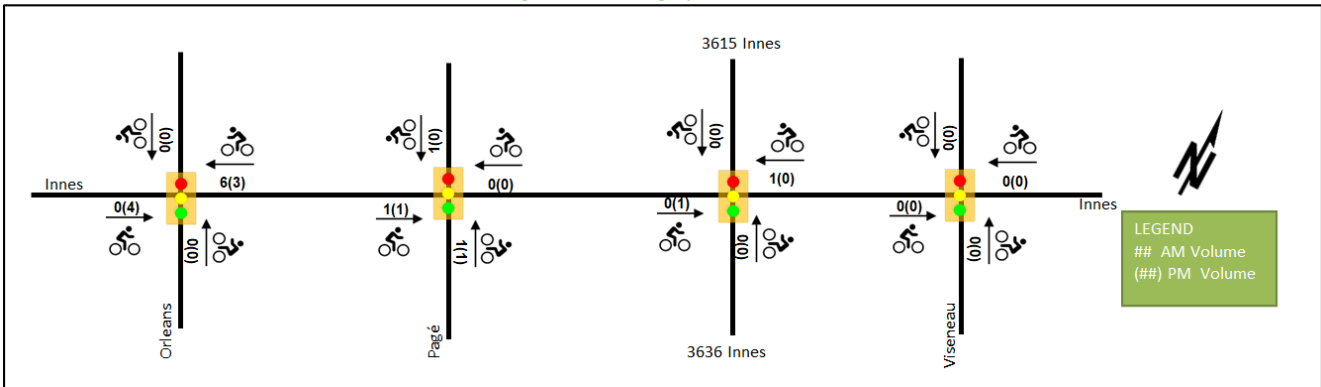


Figure 7: Existing Cyclist Volumes



2.2.5 Existing Transit

Within the study area, routes # 25, #612, and #648 travel along Innes Road, and route # 34 travels along Orleans Boulevard. Primary stops are located at Innes Road at 3615 Innes Road/3636 Innes Road access and Innes Road at Page Road. The frequency of these routes within proximity of the proposed site currently are:

- Route # 25 – 10-15-minute service in the peak period/direction, 15-minute daytime service, 30-minute service after 8:00 PM

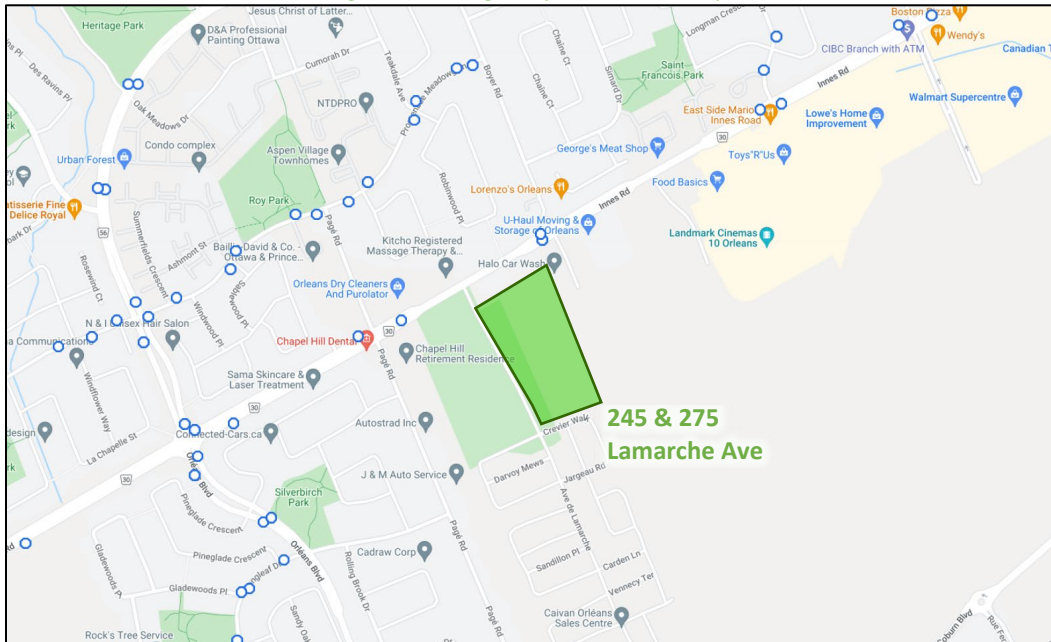
Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops.

Figure 8: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: March 21, 2022

Figure 9: Existing Study Area Transit Stops



Source: <http://www.octranspo.com/> Accessed: March 21, 2022

2.2.6 Existing Area Traffic Management Measures

On-street parking is permitted on both sides of Lamarche Avenue and speed humps are present on Page Road north of Innes Road.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the existing study area key intersections. It is confirmed that 131 townhomes and 121 detached houses of the 3490 Innes Road Phase 1-3 development have been constructed and are occupied, and the development trip generation using the TRANS Trip Generation Manual (2020) has been included in the existing conditions. The intersection of Innes Road at Lamarche Avenue has been estimated from the site trip generation of the previous phase of 3490 Innes Road development, and all intersections were balanced and grown to 2022. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

| Intersection | Count Date | Source |
|---|-----------------------------|----------------|
| Innes Road @ Orleans Boulevard | Wednesday, May 03, 2017 | City of Ottawa |
| Innes Road @ Page Road | Tuesday, January 08, 2019 | City of Ottawa |
| Innes Road @ 3615 Innes Road/3636 Innes Road Access | Thursday, January 31, 2019 | City of Ottawa |
| Innes Road @ Viseneau Drive | Wednesday, January 25, 2017 | City of Ottawa |

Figure 10 illustrates the existing traffic counts balanced along Innes Road and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume-to-capacity (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM 2010 average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

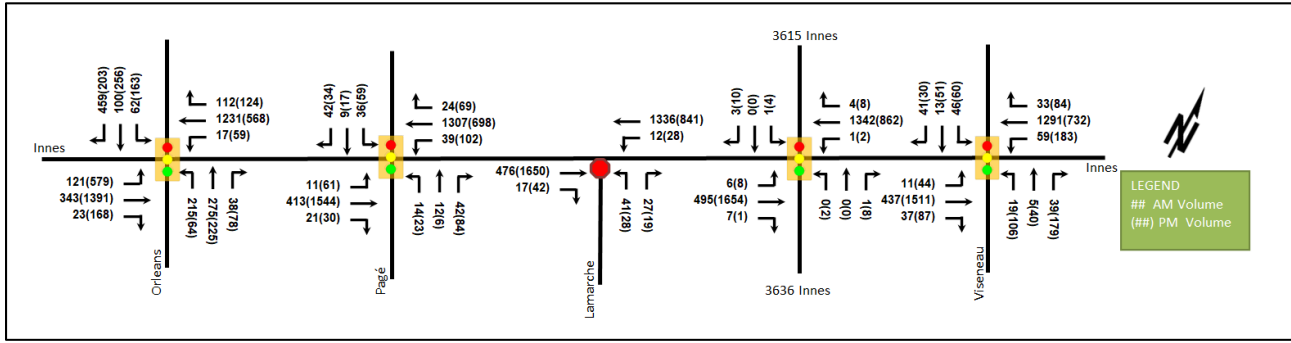


Table 2: Existing Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|----------|--------------|-------------|-----------|-----------------------|--------------|-------------|-----------|-----------------------|
| | | LOS | V/C | Delay (s) | Q (95 th) | LOS | V/C | Delay (s) | Q (95 th) |
| Innes Road at Orleans Boulevard <i>Signalized</i> | EBL | D | 0.85 | 101.3 | #36.1 | E | 0.92 | 61.7 | #100.9 |
| | EBT | A | 0.22 | 18.9 | 42.1 | F | 1.11 | 91.0 | #254.2 |
| | EBR | A | 0.03 | 0.1 | 0.0 | A | 0.27 | 5.9 | 16.8 |
| | WBL | A | 0.23 | 66.4 | 13.0 | A | 0.51 | 56.0 | 29.7 |
| | WBT | E | 0.91 | 43.6 | #207.8 | C | 0.74 | 52.8 | 94.8 |
| | WBR | A | 0.17 | 2.7 | 7.9 | A | 0.25 | 11.9 | 27.3 |
| | NBL | B | 0.61 | 40.2 | 70.1 | A | 0.22 | 26.5 | 20.4 |
| | NBT | A | 0.26 | 31.2 | 41.0 | A | 0.22 | 25.9 | 29.4 |
| | NBR | A | 0.08 | 0.8 | 1.0 | A | 0.14 | 0.5 | 0.0 |
| | SBL | A | 0.36 | 50.8 | 30.2 | B | 0.68 | 52.3 | #69.2 |
| | SBT | A | 0.17 | 43.6 | 20.9 | A | 0.33 | 35.1 | 39.1 |
| SBR | F | 1.23 | 155.9 | #197.0 | A | 0.42 | 7.1 | 18.4 | |
| Overall | E | 0.99 | 56.8 | - | E | 0.99 | 57.9 | - | |
| Innes Road at Page Road <i>Signalized</i> | EBL | A | 0.07 | 8.6 | 3.7 | A | 0.18 | 2.4 | m1.8 |
| | EBT/R | A | 0.20 | 6.2 | 31.3 | C | 0.75 | 7.3 | m23.7 |
| | WBL | A | 0.07 | 5.4 | m2.8 | F | 1.08 | 136.7 | #56.7 |
| | WBT/R | B | 0.61 | 8.0 | 27.3 | A | 0.37 | 12.4 | 109.1 |
| | NB | A | 0.29 | 20.4 | 17.4 | A | 0.47 | 36.6 | 33.5 |
| | SB | A | 0.40 | 30.4 | 25.2 | A | 0.53 | 40.0 | 33.7 |
| Overall | A | 0.55 | 9.3 | - | E | 0.95 | 16.0 | - | |
| Innes Road at Lamarche Avenue <i>Unsignalized</i> | EBT/R | - | - | - | - | - | - | - | - |
| | WBL | A | 0.01 | 8.6 | 0.0 | C | 0.10 | 17.7 | 2.3 |
| | WBT | - | - | - | - | - | - | - | - |
| | NB | C | 0.20 | 17.2 | 6.0 | F | 0.44 | 57.8 | 14.3 |
| Overall | A | - | 0.7 | - | A | - | 1.2 | - | |
| Innes Road at Access 3615 Innes Road/3636 Innes Road <i>Signalized</i> | EBL | A | 0.03 | 3.5 | m1.9 | A | 0.02 | 1.5 | m0.2 |
| | EBT/R | A | 0.18 | 1.9 | 27.4 | B | 0.62 | 3.3 | 162.7 |
| | WBL | A | 0.00 | 7.0 | m0.2 | A | 0.01 | 5.0 | 1.0 |
| | WBT/R | A | 0.48 | 5.5 | 140.4 | A | 0.33 | 3.6 | 61.9 |
| | NBL | A | 0.00 | 0.0 | 0.0 | A | 0.01 | 38.0 | 2.3 |
| | NBT/R | - | - | - | - | A | 0.04 | 0.4 | 0.3 |
| | SB | A | 0.02 | 0.2 | 0.0 | A | 0.08 | 5.1 | 2.5 |
| Overall | A | 0.50 | 4.1 | - | B | 0.63 | 3.4 | - | |

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------|--------------|-------------|----------|-----------------------|--------------|-------------|----------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Viseneau Drive Signalized | EBL | A | 0.06 | 8.1 | 1.3 | A | 0.16 | 19.5 | 15.9 |
| | EBT | A | 0.22 | 7.1 | 11.7 | E | 0.91 | 35.9 | #292.4 |
| | EBR | A | 0.04 | 0.1 | 0.0 | A | 0.12 | 3.2 | 8.0 |
| | WBL | A | 0.10 | 5.3 | 10.4 | C | 0.77 | 51.9 | 63.1 |
| | WBT/R | A | 0.59 | 8.6 | 131.6 | A | 0.38 | 7.5 | 61.8 |
| | NBL | A | 0.14 | 44.6 | 10.6 | C | 0.73 | 75.1 | 47.3 |
| | NBT | A | 0.03 | 40.6 | 4.6 | A | 0.16 | 44.8 | 19.3 |
| | NBR | A | 0.15 | 1.2 | 0.0 | A | 0.50 | 9.9 | 19.3 |
| | SB | A | 0.55 | 45.0 | 32.1 | B | 0.67 | 60.3 | 55.1 |
| Overall | B | 0.62 | 10.1 | - | D | 0.87 | 29.3 | - | |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 0.90
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

During both the AM and PM peak hours, capacity issues are noted at the intersection of Innes Road at Orleans Boulevard. At this intersection, the southbound right-turn movement during AM peak hour and the eastbound through movement are over theoretical capacity during the PM peak hour and may be subject to high delays and extended queues. Extended queues may be exhibited on the eastbound left-turn and westbound through movements during the AM peak hour, and on the eastbound and southbound left-turn movements during PM peak hour. High delays and are anticipated on the eastbound left-turn movement during AM peak hour.

The intersection of the Innes Road and Page Road may be subject to high delays and extended queues on the westbound left-turn movement during PM peak hour. The City may improve the operation by changing the eastbound and westbound left-turn to be protected/permissive phasing, and it would be subject to coordination of the Innes Road corridor.

At the intersection of Innes Road at Lamarche Avenue, the northbound movement may be subject to high delays during PM peak hour.

The eastbound through movement at the intersection of Innes Road and Viseneau Drive may exhibit extended queues during PM peak hour.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Within the study area, the segments of Innes Road between Page Road and the 3615 Innes Road/3636 Innes Road access is the only location noted to have experienced collisions. Figure 11 illustrates the intersections and segments analyzed. Table 3 summarizes the collision types and conditions for the location. Collision data are included in Appendix D.

Figure 11: Study Area Collision Records – Representation of Study Area Collisions



Table 3: Segments of Innes Road between Page Road & The 3615 Innes Road/3636 Innes Road Access Collision Summary, 2016-2020

| | | Number | % |
|-------------------------------|-----------------------------|-----------|-------------|
| Total Collisions | | 16 | 100% |
| Classification | Fatality | 0 | 0% |
| | Non-Fatal Injury | 3 | 19% |
| | Property Damage Only | 13 | 81% |
| Initial Impact Type | Angle | 5 | 31% |
| | Rear end | 4 | 25% |
| | Sideswipe | 3 | 19% |
| | Turning Movement | 1 | 6% |
| | SMV Other | 3 | 19% |
| Road Surface Condition | Dry | 12 | 75% |
| | Loose Snow | 1 | 6% |
| | Slush | 1 | 6% |
| | Packed Snow | 2 | 13% |
| Pedestrian Involved | | 0 | 0% |
| Cyclists Involved | | 0 | 0% |

The segments of Innes Road between Page Road and the 3615 Innes Road/3636 Innes Road access intersection had a total of 16 collisions during the 2016-2020 time period, with 13 involving property damage only and the remaining three having non-fatal injuries. The collision types are most represented by angle with five collisions, followed by four rear end collisions, three collisions each for the sideswipe and SMV Other, and with the remaining one collision as turning movement. No pattern is noted from the collision distribution summarized above. Weather conditions do not affect collisions at this location.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

Within the Transportation Master Plan, the Rapid Transit and Transit Priority Network's Network Concept diagram shows an isolated transit priority measures along Innes Road. The subject development is not within the CDP Area.

2.3.2 Other Study Area Developments

3817-3843 Innes Road

The proposed development application includes a site plan application for three apartment buildings with a total of 97 residential units. The development is assumed to be built out in 2024 and is predicted to generate 35 new AM and 45 new PM two-way peak hour auto trips. (D. J. Halpenny & Associates Ltd, 2021)

3484 Innes Road, 240 & 270 Lamarche Avenue

The proposed development application includes a zoning by-law amendment and plan of subdivision. The current option includes five seven-storey with a total of 525 residential units, 10,631 ft² of commercial space, a 26,905 ft² grocery store, a 2,217 ft² coffee shop with drive-thru, and a 1,550 ft² gas bar. The full buildout is currently estimated by 2031 and is forecasted to generate 261 new AM and 276 new PM two-way peak hour auto trips. (Parsons, 2021)

3490 Innes Road - Phase 1-3

The proposed development application includes a zoning by-law amendment and plan of subdivision. Phase 1 consists of approximately 267 units and has been built, and Phase 2 consists of the remaining 267 units expected to be constructed by 2024. Phase 1 was forecasted to generate 130 new AM and 165 new PM two-way peak hour auto trips. Phase 2 is forecasted to generate 112 new AM and 137 new PM two-way peak hour auto trips (Parsons, 2016). It has been confirmed that 131 townhomes and 121 detached of the development have been constructed, which is estimated to generate 97 new AM and 118 new PM two-way peak hour auto trips, and the traffic is included in the existing conditions. Phase 2 will include approximately 208 units, which is forecasted to generate 99 new AM and 121 new PM two-way peak hour auto trips, and the traffic will be included in the future horizons.

3443 Innes Road & 3437 Innes Road

The proposed development application includes a site plan application to include a six-storey, mixed-use building with ground floor commercial and 35 residential units. The development is anticipated to be built by 2023 and is forecasted to generate 24 new AM and 27 new PM two-way peak hour auto trips. (Novatech, 2018)

3604 Innes Road

The proposed development application includes a plan of subdivision for the construction of 180 single detached homes, 109 townhouse units and 168 stacked townhouses in two phases. Phase 1 is anticipated to be built by 2023 and is forecasted to generate 70 new AM and 92 new PM two-way peak-hour auto trips. Phase 2 is anticipated to be built by 2025 and is forecasted to generate 200 new AM two-way peak hour auto trips and 256 new PM two-way peak hour auto trips. (Novatech, 2019)

3672 Innes Road, 3730 Innes Road, and 3828 Innes Road

The proposed development application includes a zoning by-law amendment to permit the construction of 340 singles detached homes, 529 townhouses, 114 back-to-back townhomes, and 1,060 apartment units. Phase 1, which is anticipated to be built by 2037, is forecasted to generate 312-341 new AM and 380-415 new PM two-way peak hour auto trips. Phase 2, which is anticipated to be built by 2042, is forecasted to generate 603-659 new AM and 725-793 new PM two-way peak hour auto trips. Phase 3, which is anticipated to be built by 2047, is

forecasted to generate 968-1,056 new AM and 1,166-1,275 new PM two-way peak hour auto trips. (Castleglenn Consultants, 2021)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of:

- Innes Road at:
 - Orleans Boulevard
 - Page Road
 - Lamarche Avenue
 - 3615 Innes Road/3636 Innes Road Access
 - Viseneau Drive

The boundary road will be Innes Road and Lamarche Avenue and SL 47 screenlines is present within proximity to the site but will not be analyzed as part of this study.

3.2 Time Periods

As the proposed development is composed entirely of residential units the AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2025. As a result, the full build-out plus five years horizon year is 2030.

4 Exemption Review

Table 4 summarizes the exemptions for this TIA.

Table 4: Exemption Review

| Module | Element | Explanation | Exempt/Required |
|---|-------------------------------|---|-----------------|
| Design Review Component | | | |
| 4.1 Development Design | 4.1.2 Circulation and Access | Only required for site plans | Exempt |
| | 4.1.3 New Street Networks | Only required for plans of subdivision | Required |
| 4.2 Parking | 4.2.1 Parking Supply | Only required for site plans | Exempt |
| | 4.2.2 Spillover Parking | Only required for site plans where parking supply is 15% below unconstrained demand | Exempt |
| Network Impact Component | | | |
| 4.5 Transportation Demand Management | All Elements | Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time | Required |
| 4.6 Neighbourhood Traffic Management | 4.6.1 Adjacent Neighbourhoods | Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds | Exempt |
| 4.8 Network Concept | | Only required when proposed development generates more than 200 | Exempt |

| Module | Element | Explanation | Exempt/Required |
|--------|---------|--|-----------------|
| | | person-trips during the peak hour in excess of equivalent volume permitted by established zoning | |

5 Development-Generated Travel Demand

5.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Orleans have been summarized in Table 5.

Table 5: TRANS Trip Generation Manual Recommended Mode Shares – Orleans

| Travel Mode | Multi-Unit (Low-Rise) | |
|----------------|-----------------------|-------------|
| | AM | PM |
| Auto Driver | 47% | 51% |
| Auto Passenger | 15% | 19% |
| Transit | 29% | 24% |
| Cycling | 1% | 1% |
| Walking | 9% | 6% |
| Total | 100% | 100% |

5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020). Table 6 summarizes the person trip rates for the proposed residential land uses for each peak period.

Table 6: Trip Generation Person Trip Rates by Peak Period

| Land Use | Land Use Code | Peak Period | Person Trip Rates |
|-----------------------|----------------|-------------|-------------------|
| Multi-Unit (Low-Rise) | 220 (TRANS) | AM | 1.35 |
| | | PM | 1.58 |

Using the above person trip rates, the total person trip generation has been estimated. Table 7 summarizes the total person trip generation for the residential land use.

Table 7: Total Residential Person Trip Generation by Peak Period

| Land Use | Units | AM Peak Period | | | PM Peak Period | | |
|-----------------------|-------|----------------|-----|-------|----------------|-----|-------|
| | | In | Out | Total | In | Out | Total |
| Multi-Unit (Low-Rise) | 175 | 71 | 165 | 236 | 155 | 122 | 277 |

Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 8 summarizes the residential trip generation.

Table 8: Trip Generation by Mode

| Travel Mode | | AM Peak Hour | | | | PM Peak Hour | | | |
|--------------------------|----------------|--------------|-----------|-----------|------------|--------------|-----------|-----------|------------|
| | | Mode Share | In | Out | Total | Mode Share | In | Out | Total |
| Multi-Unit (Low-Rise) | Auto Driver | 47% | 16 | 37 | 53 | 51% | 35 | 27 | 62 |
| | Auto Passenger | 15% | 5 | 12 | 17 | 19% | 13 | 10 | 23 |
| | Transit | 29% | 12 | 26 | 37 | 24% | 17 | 14 | 31 |
| | Cycling | 1% | 1 | 1 | 1 | 1% | 1 | 0 | 1 |
| | Walking | 9% | 3 | 9 | 12 | 6% | 5 | 4 | 9 |
| | Total | 100% | 36 | 83 | 118 | 100% | 68 | 54 | 122 |

As shown above, a total of 53 AM and 62 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Orleans. Table 9 below summarizes the distributions.

Table 9: OD Survey Distribution – Orleans

| To/From | Residential % of Trips |
|--------------|------------------------|
| North | 15% |
| South | 0% |
| East | 40% |
| West | 45% |
| Total | 100% |

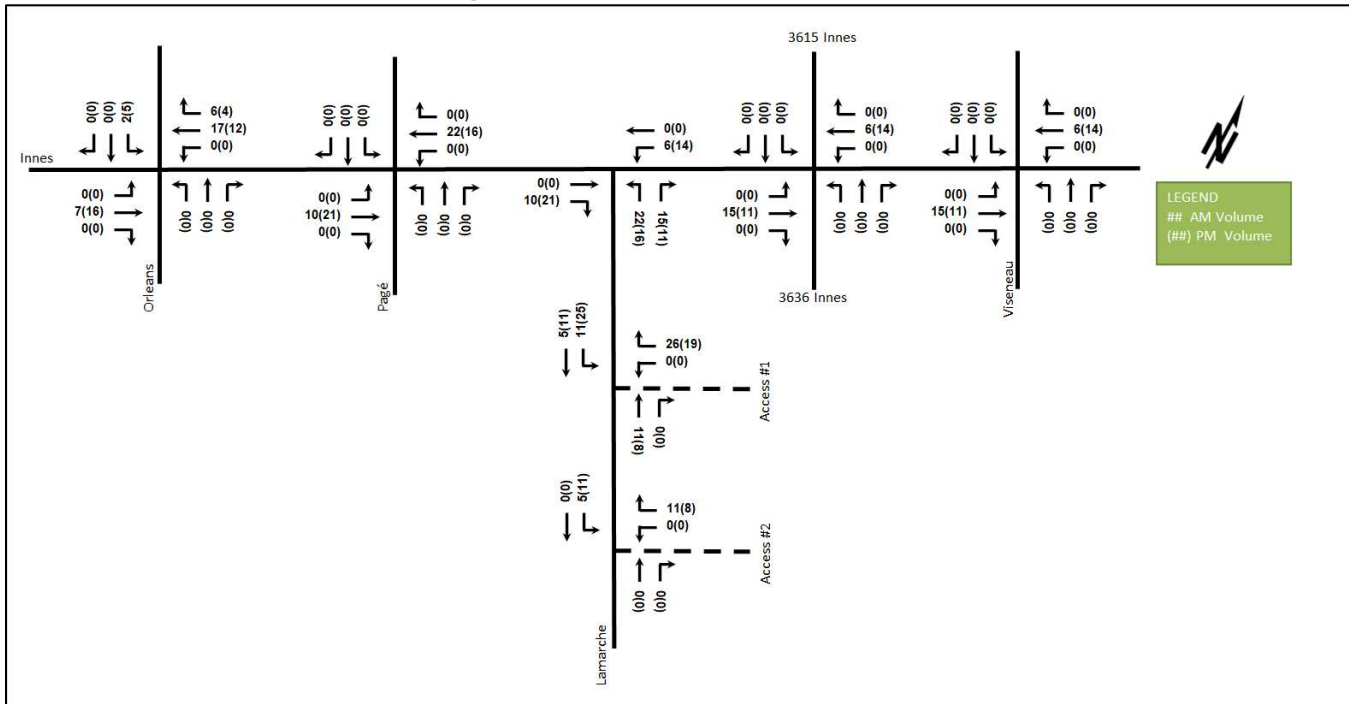
5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 10 summarizes the proportional assignment to the study area roadways, and Figure 12 illustrates the new site generated volumes.

Table 10: Trip Assignment

| To/From | Via |
|--------------|---------------------------|
| North | 15% Orleans Boulevard (N) |
| South | - |
| East | 40% Innes Road (E) |
| West | 45% Innes Road (W) |
| Total | 100% |

Figure 12: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

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

6.2 Background Growth

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

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

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

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

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

Table 12: Recommended Area Growth Rates

| Street | AM Peak Hour | | PM Peak Hour | |
|-------------------|--------------|------------|--------------|------------|
| | Eastbound | Westbound | Eastbound | Westbound |
| Innes Road | 1.00% | 1.00% | 1.00% | 1.00% |
| | Northbound | Southbound | Northbound | Southbound |
| Orleans Boulevard | 2.00% | - | - | 2.00% |

6.3 Other Developments

The background developments explicitly considered in the background conditions (Section 6.2) include:

- 3817-3843 Innes Road
- 3490 Innes Road - Phase 1-3
- 3443 Innes Road & 3437 Innes Road
- 3604 Innes Road

The background development volumes within the study area have been provided in Appendix F.

7 Demand Rationalization

7.1 2025 Future Background Operations

The Innes Road at Lamarche Avenue intersection is assumed to be signalized prior to 2025 and has been modelled as a signal for all future horizons. Figure 13 illustrates the 2025 background volumes and Table 13 summarizes the 2025 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2025 future background horizon are provided in Appendix G.

Figure 13: 2025 Future Background Volumes

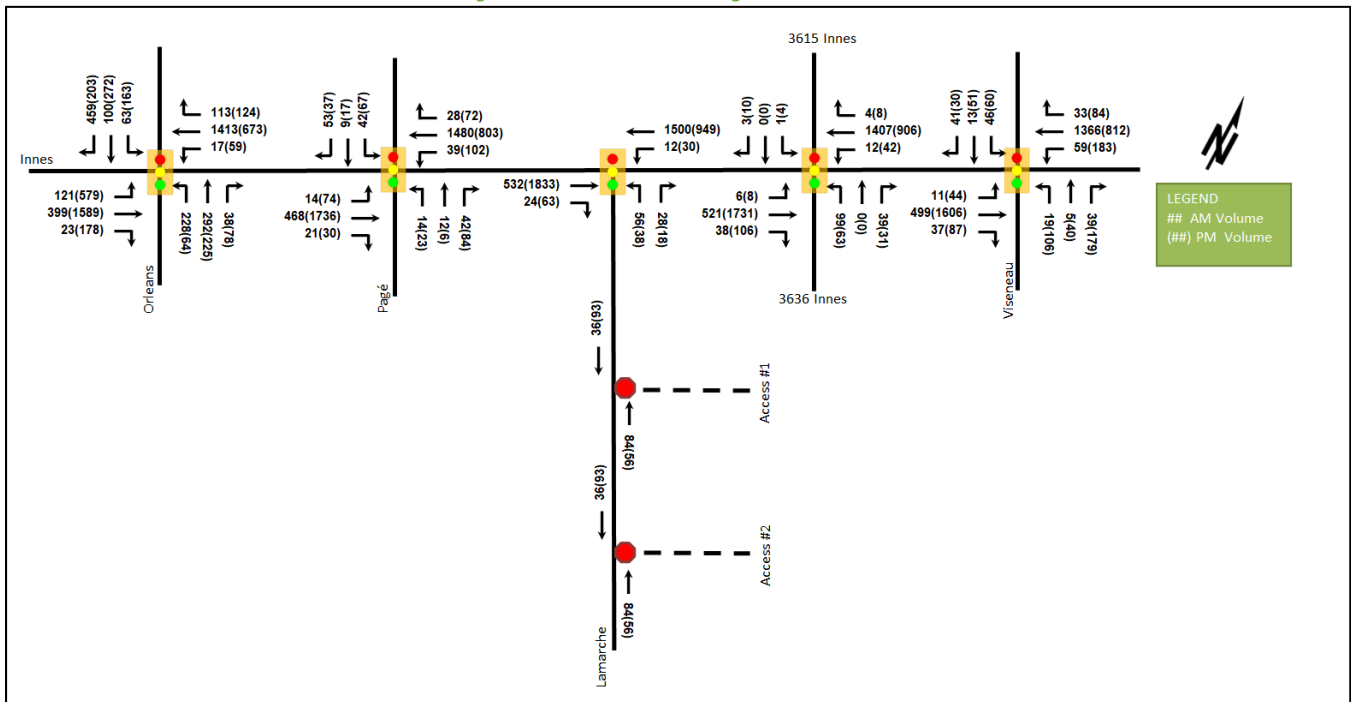


Table 13: 2025 Future Background Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|----------------|--------------|-------------|-------------|-----------------------|--------------|-------------|-------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Orleans Boulevard <i>Signalized</i> | EBL | C | 0.77 | 90.3 | #31.4 | D | 0.86 | 55.6 | #82.8 |
| | EBT | A | 0.23 | 19.0 | 44.1 | F | 1.13 | 101.2 | #264.6 |
| | EBR | A | 0.03 | 0.1 | 0.0 | A | 0.26 | 5.3 | 15.3 |
| | WBL | A | 0.21 | 65.5 | 12.2 | A | 0.46 | 51.9 | 27.4 |
| | WBT | E | 0.94 | 47.4 | #228.0 | C | 0.77 | 58.0 | 100.6 |
| | WBR | A | 0.15 | 1.9 | 6.0 | A | 0.22 | 11.2 | 23.3 |
| | NBL | A | 0.57 | 38.9 | 66.7 | A | 0.20 | 26.1 | 18.8 |
| | NBT | A | 0.25 | 31.0 | 39.3 | A | 0.19 | 25.7 | 26.6 |
| | NBR | A | 0.07 | 0.3 | 0.0 | A | 0.13 | 0.4 | 0.0 |
| | SBL | A | 0.32 | 49.7 | 28.0 | A | 0.60 | 47.6 | #56.6 |
| | SBT | A | 0.15 | 43.4 | 19.2 | A | 0.31 | 35.0 | 37.4 |
| | SBR | F | 1.11 | 108.2 | #166.3 | A | 0.38 | 5.4 | 13.5 |
| Overall | E | 0.96 | 49.6 | - | - | E | 0.96 | 62.6 | - |
| Innes Road at Page Road <i>Signalized</i> | EBL | A | 0.08 | 8.9 | 4.2 | A | 0.20 | 2.3 | m1.8 |
| | EBT/R | A | 0.20 | 6.3 | 31.7 | C | 0.76 | 8.5 | m21.0 |
| | WBL | A | 0.06 | 5.7 | m5.9 | E | 0.99 | 107.0 | #58.0 |
| | WBT/R | B | 0.62 | 15.9 | 222.8 | A | 0.38 | 3.3 | 0.0 |
| | NB | A | 0.26 | 20.2 | 16.0 | A | 0.42 | 34.8 | 30.2 |
| | SB | A | 0.42 | 30.2 | 26.3 | A | 0.51 | 39.0 | 33.3 |
| | Overall | A | 0.57 | 14.8 | - | - | C | 0.89 | 10.4 |
| Innes Road at Lamarche Avenue <i>Signalized</i> | EBT | A | 0.24 | 8.5 | 32.2 | D | 0.90 | 24.9 | #262.5 |
| | EBR | A | 0.02 | 8.9 | 5.4 | A | 0.07 | 13.9 | m7.7 |
| | WBL | A | 0.14 | 60.2 | m5.3 | A | 0.37 | 60.3 | 16.4 |
| | WBT | B | 0.63 | 10.8 | 92.0 | A | 0.42 | 11.1 | 94.2 |
| | NBL | A | 0.47 | 66.6 | 26.1 | A | 0.51 | 74.6 | #21.6 |
| | NBR | A | 0.10 | 39.4 | 13.3 | A | 0.06 | 32.7 | 8.8 |
| | Overall | B | 0.61 | 12.3 | - | - | C | 0.77 | 21.3 |
| Innes Road at Access 3615 Innes Road/3636 Innes Road <i>Signalized</i> | EBL | A | 0.03 | 2.0 | 0.4 | A | 0.02 | 2.5 | m0.5 |
| | EBT/R | A | 0.22 | 1.7 | 6.7 | B | 0.70 | 13.4 | 245.8 |
| | WBL | A | 0.02 | 7.3 | m2.5 | A | 0.33 | 15.5 | 15.4 |
| | WBT/R | A | 0.56 | 9.1 | 128.5 | A | 0.34 | 5.0 | 57.5 |
| | NB | A | 0.57 | 60.6 | 36.3 | A | 0.38 | 49.0 | 22.6 |
| | NBT/R | A | 0.07 | 0.3 | 0.0 | A | 0.14 | 14.1 | 7.5 |
| | SB | A | 0.02 | 0.2 | 0.0 | A | 0.07 | 4.5 | 2.2 |
| | Overall | A | 0.56 | 9.3 | - | - | B | 0.68 | 11.5 |

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|----------|--------------|------------|----------|-----------------------|--------------|-------------|----------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Viseneau Drive <i>Signalized</i> | EBL | A | 0.05 | 6.2 | 1.4 | A | 0.14 | 18.5 | 14.3 |
| | EBT | A | 0.22 | 4.9 | 16.5 | D | 0.84 | 29.8 | #272.0 |
| | EBR | A | 0.04 | 0.1 | 0.1 | A | 0.10 | 2.4 | 6.1 |
| | WBL | A | 0.09 | 5.2 | 9.6 | C | 0.71 | 41.1 | 52.4 |
| | WBT/R | A | 0.56 | 8.0 | 120.5 | A | 0.37 | 7.2 | 61.0 |
| | NBL | A | 0.13 | 44.5 | 9.8 | B | 0.66 | 69.3 | 42.5 |
| | NBT | A | 0.02 | 40.6 | 4.2 | A | 0.15 | 45.0 | 18.2 |
| | NBR | A | 0.14 | 1.1 | 0.0 | A | 0.48 | 10.2 | 18.6 |
| | SB | A | 0.51 | 42.3 | 28.9 | B | 0.62 | 58.1 | 49.7 |
| Overall | A | 0.58 | 8.9 | - | D | 0.80 | 25.0 | - | |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

Overall, the study area intersections will operate similar to the existing conditions. The westbound through movement during PM peak hour at Innes Road and Page intersection may exhibit extended queues and high delays. At the intersection of Innes Road at Lamarche Avenue, the eastbound through and northbound left-turn movements during PM peak hour may exhibit extended queues.

7.2 2030 Future Background Operations

Figure 14 illustrates the 2030 background volumes and Table 14 summarizes the 2030 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. The synchro worksheets for the 2030 future background horizon are provided in Appendix H.

Figure 14: 2030 Future Background Volumes

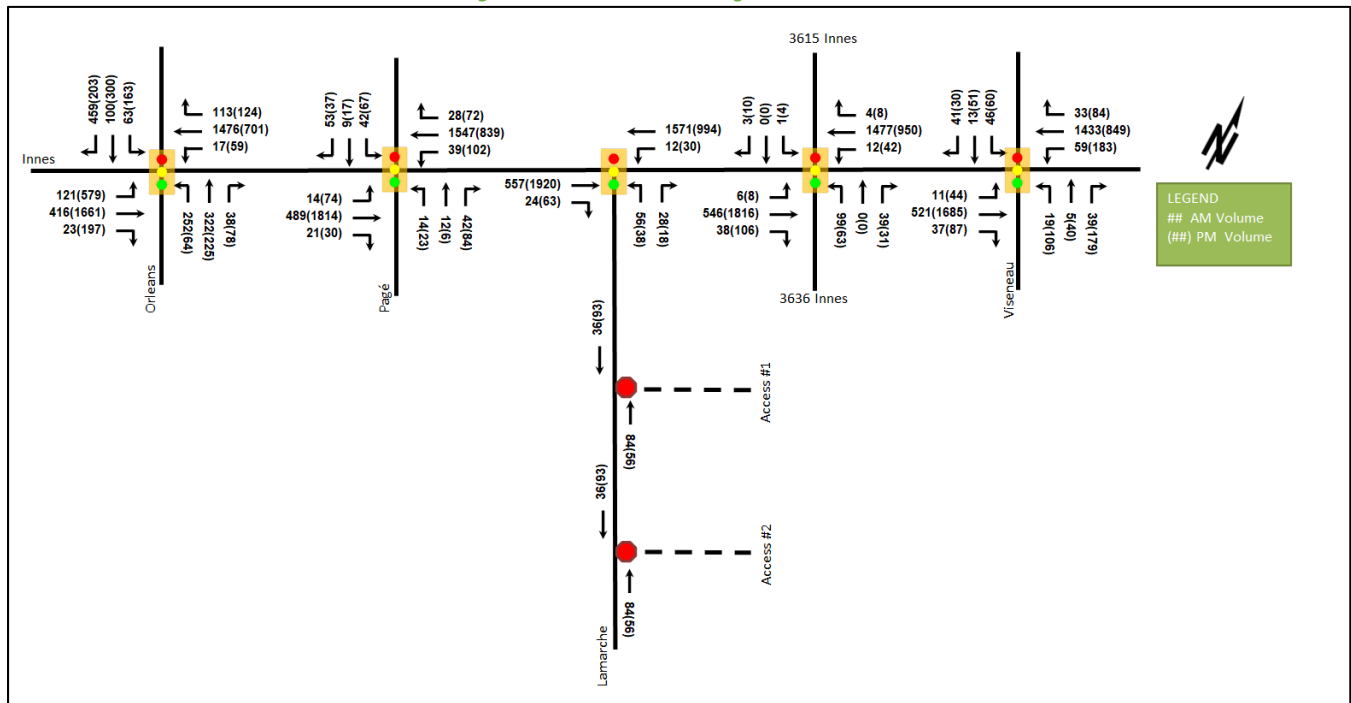


Table 14: 2030 Future Background Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|----------------|--------------|-------------|-------------|-----------------------|--------------|-------------|-------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Orleans Boulevard <i>Signalized</i> | EBL | C | 0.77 | 90.3 | #31.4 | D | 0.86 | 55.6 | #82.8 |
| | EBT | A | 0.24 | 19.1 | 46.1 | F | 1.19 | 121.8 | #281.8 |
| | EBR | A | 0.03 | 0.1 | 0.0 | A | 0.29 | 6.5 | 18.8 |
| | WBL | A | 0.21 | 65.5 | 12.2 | A | 0.46 | 51.6 | 27.2 |
| | WBT | E | 0.98 | 55.2 | #245.9 | C | 0.80 | 59.3 | #106.6 |
| | WBR | A | 0.15 | 1.9 | 6.0 | A | 0.22 | 11.0 | 22.8 |
| | NBL | B | 0.63 | 41.4 | 73.7 | A | 0.21 | 26.2 | 18.8 |
| | NBT | A | 0.28 | 31.4 | 43.0 | A | 0.19 | 25.7 | 26.6 |
| | NBR | A | 0.07 | 0.3 | 0.0 | A | 0.13 | 0.4 | 0.0 |
| | SBL | A | 0.33 | 50.1 | 28.1 | A | 0.60 | 47.6 | #56.6 |
| | SBT | A | 0.15 | 43.4 | 19.2 | A | 0.35 | 35.4 | 41.1 |
| | SBR | F | 1.13 | 116.6 | #170.3 | A | 0.38 | 5.4 | 13.5 |
| Overall | E | 1.00 | 53.9 | - | E | 0.99 | 70.9 | - | |
| Innes Road at Page Road <i>Signalized</i> | EBL | A | 0.09 | 9.2 | 4.3 | A | 0.21 | 2.2 | m1.8 |
| | EBT/R | A | 0.21 | 6.3 | 33.3 | C | 0.79 | 11.2 | m20.5 |
| | WBL | A | 0.07 | 5.4 | m5.4 | F | 1.16 | 164.0 | #61.1 |
| | WBT/R | B | 0.65 | 16.1 | 231.9 | A | 0.39 | 3.3 | 0.0 |
| | NB | A | 0.26 | 20.2 | 16.0 | A | 0.43 | 36.4 | 31.0 |
| | SB | A | 0.42 | 31.0 | 26.7 | A | 0.51 | 39.0 | 33.3 |
| | Overall | A | 0.59 | 14.5 | - | F | 1.01 | 15.6 | - |
| Innes Road at Lamarche Avenue <i>Signalized</i> | EBT | A | 0.25 | 8.2 | 33.1 | E | 0.94 | 32.6 | #283.3 |
| | EBR | A | 0.02 | 8.6 | 5.2 | A | 0.07 | 13.8 | m7.5 |
| | WBL | A | 0.14 | 60.2 | m5.1 | A | 0.37 | 59.8 | #16.6 |
| | WBT | B | 0.66 | 10.7 | 92.3 | A | 0.44 | 11.5 | 102.6 |
| | NBL | A | 0.47 | 66.6 | 26.1 | A | 0.51 | 74.6 | #21.6 |
| | NBR | A | 0.11 | 40.3 | 13.5 | A | 0.06 | 32.7 | 8.8 |
| | Overall | B | 0.63 | 12.1 | - | C | 0.80 | 26.2 | - |
| Innes Road at Access 3615 Innes Road/3636 Innes Road <i>Signalized</i> | EBL | A | 0.03 | 2.3 | m0.4 | A | 0.02 | 2.5 | m0.5 |
| | EBT/R | A | 0.23 | 1.8 | 7.4 | C | 0.73 | 15.3 | m249.3 |
| | WBL | A | 0.02 | 7.5 | m2.3 | A | 0.38 | 19.5 | #21.2 |
| | WBT/R | A | 0.58 | 9.6 | 138.9 | A | 0.36 | 5.1 | 61.3 |
| | NBL | A | 0.57 | 60.6 | 36.3 | A | 0.38 | 49.0 | 22.6 |
| | NBT/R | A | 0.07 | 0.3 | 0.0 | A | 0.14 | 14.1 | 7.5 |
| | SB | A | 0.02 | 0.2 | 0.0 | A | 0.07 | 4.5 | 2.2 |
| | Overall | A | 0.58 | 9.6 | - | C | 0.71 | 12.7 | - |

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------|--------------|------------|----------|-----------------------|--------------|-------------|----------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Viseneau Drive Signalized | EBL | A | 0.05 | 6.7 | 1.4 | A | 0.14 | 18.7 | 14.4 |
| | EBT | A | 0.23 | 5.1 | 20.4 | D | 0.88 | 32.2 | #293.8 |
| | EBR | A | 0.04 | 0.1 | 0.0 | A | 0.10 | 2.4 | 6.1 |
| | WBL | A | 0.10 | 5.2 | 9.6 | C | 0.75 | 50.2 | 56.3 |
| | WBT/R | A | 0.58 | 8.3 | 130.7 | A | 0.39 | 7.4 | 64.4 |
| | NBL | A | 0.13 | 44.5 | 9.8 | B | 0.66 | 69.3 | 42.5 |
| | NBT | A | 0.02 | 40.6 | 4.2 | A | 0.15 | 45.0 | 18.2 |
| | NBR | A | 0.14 | 1.1 | 0.0 | A | 0.48 | 10.2 | 18.6 |
| | SB | A | 0.51 | 42.3 | 28.9 | B | 0.62 | 58.1 | 49.7 |
| Overall | B | 0.61 | 9.1 | - | D | 0.84 | 26.7 | - | |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

In general, the study area intersections will operate similar to the 2025 conditions, with decreasing operations due to the background growth.

The westbound left-turn movement at the intersection of the Innes Road and Page Road will become over theoretical capacity and may be subject to high delays and extended queues during PM peak hour, which is similar to the existing conditions. A City review for a protected/permissive phasing should be conducted.

7.3 Modal Share Sensitivity and Demand Rationalization Conclusions

Capacity constraints have been noted along Innes Road during the existing and background horizons, which are subject to regional travel not associated with the development traffic. Given the forecasted auto trips are low, they are not anticipated to be contributing factors to the area operations. No further demand rationalization is required for this development.

8 Development Design

8.1 Design for Sustainable Modes

The proposed development is a residential subdivision where each dwelling will include a driveway and the typical townhomes will include a garage. Bicycle parking is assumed to be within the individual units. On-street parking will be provided along Lamarche Avenue and the new subdivision roadways. Figure 15 illustrates the pedestrian concept network with connections to adjacent pedestrian facilities, and Figure 16 illustrates the on-street parking plan.

Figure 15: Concept Pedestrian Network

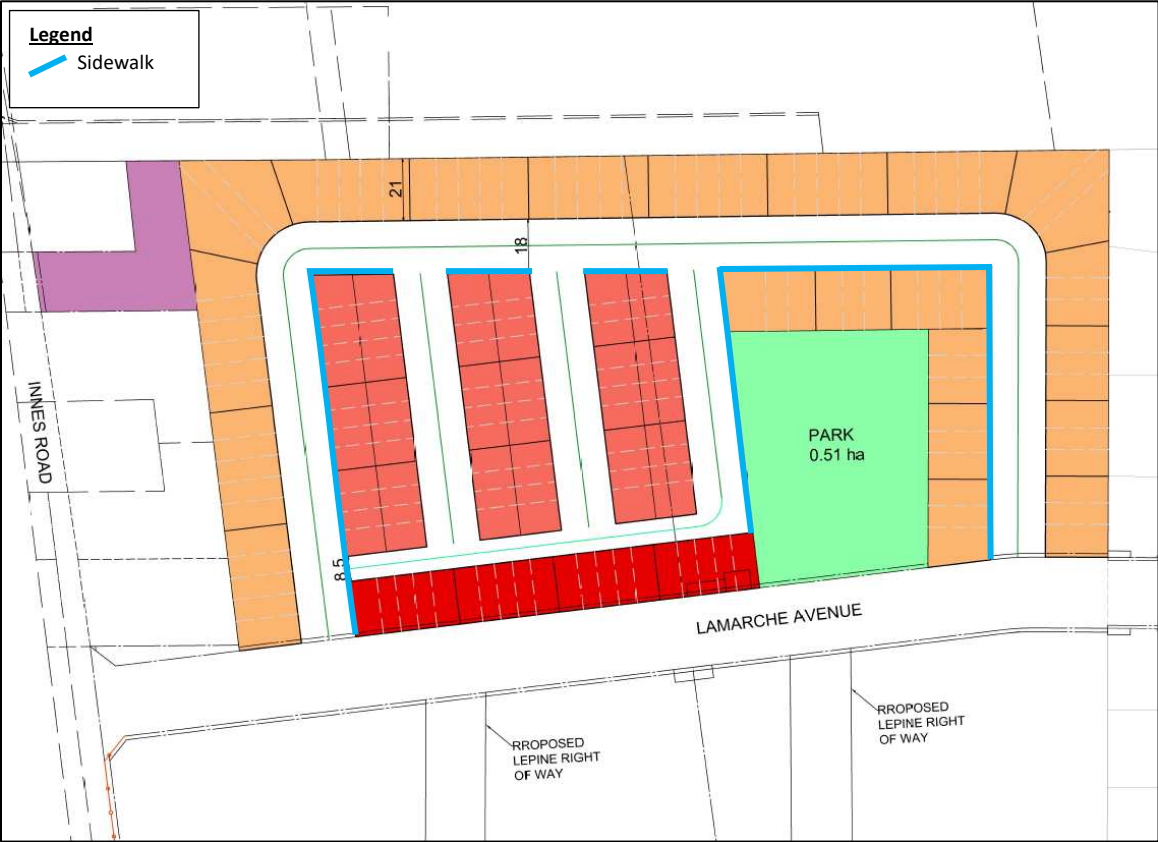
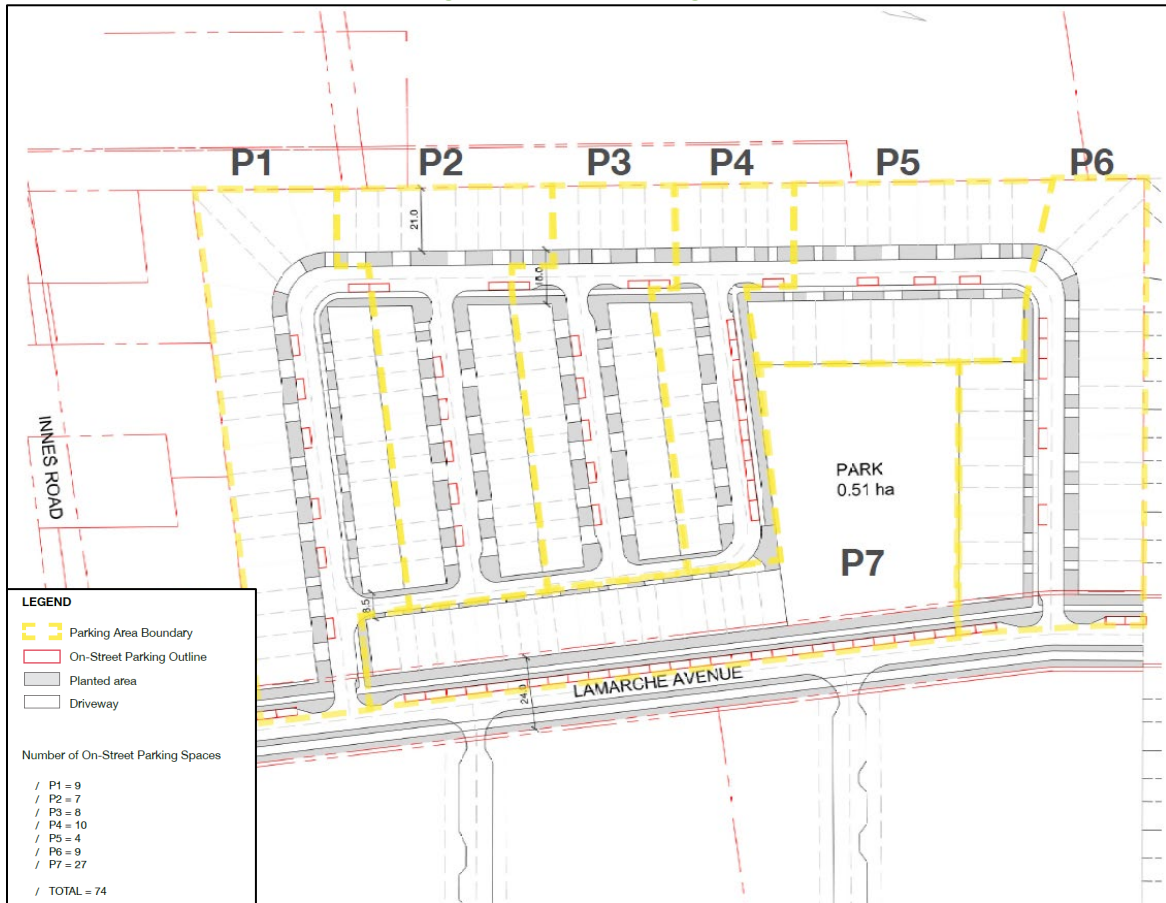


Figure 16: On-Street Parking Plan



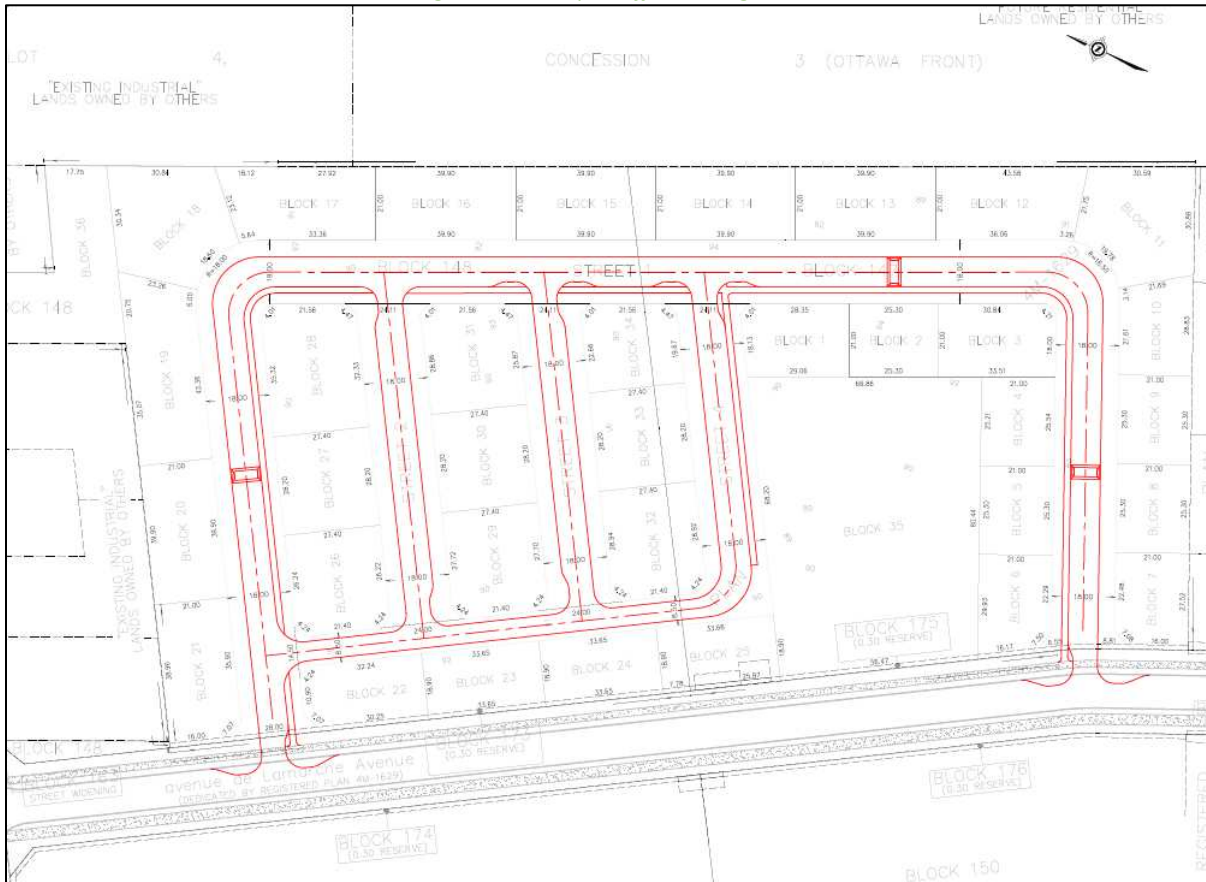
8.2 New Street Networks

The planned street network will include an 8.5-metre laneway and 18-metre local roadways. The local roads will accommodate on-street parking. The local roads are proposed to be posted as 30 km/h.

To support the pedestrian and cycling connectivity within the subdivision, Figure 17 illustrates the concept traffic calming plan. Traffic calming elements are recommended at the internal intersections, including bulb-outs to narrow each approach to the intersection (e.g. reduced crossing distance). The location of speed humps is subject to minor changes and will need to be refined as part of the detailed engineering submission once the locations of the driveway, stormwater flows, surface ponding, and servicing elements, such as utilities and fire hydrants, have been established.

The internal road intersections are recommended to be stop-controlled on the minor approaches of all intersections.

Figure 17: Concept Traffic Calming Plan



9 Boundary Street Design

Table 15 summarizes the MMLOS analysis for the boundary streets of Lamarche Avenue. The boundary street analysis is based on the land use of general urban area. The MMLOS worksheets has been provided in Appendix I.

Table 15: Boundary Street MMLOS Analysis

| Segment | Pedestrian LOS | | Bicycle LOS | | Transit LOS | | Truck LOS | |
|------------------------------------|----------------|--------|-------------|--------|-------------|--------|-----------|--------|
| | PLOS | Target | BLOS | Target | TLOS | Target | TrLOS | Target |
| Lamarche Avenue (Existing/ Future) | A | C | A | D | N/A | N/A | N/A | N/A |

Lamarche Avenue meets MMLOS targets for the area and no mitigation or additional elements are required.

10 Access Intersections Design

10.1 Location and Design of Access

The residential accesses will connect to the adjacent road network via local roads connection to Lamarche Avenue. Within the subdivision, no turn lanes are proposed for the internal intersections which will be controlled by minor stop control.

10.2 Intersection Control

Based upon the projected volumes, the site accesses will have stop-control on the minor approach. No further traffic control is necessary to address operational issues.

10.3 Access Intersection Design

10.3.1 2025 Future Total Access Intersection Operations

The 2025 future total intersection volumes are illustrated in Figure 18 and the access intersection operations are summarized below in Table 16. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix J.

Figure 18: 2025 Future Total Volumes

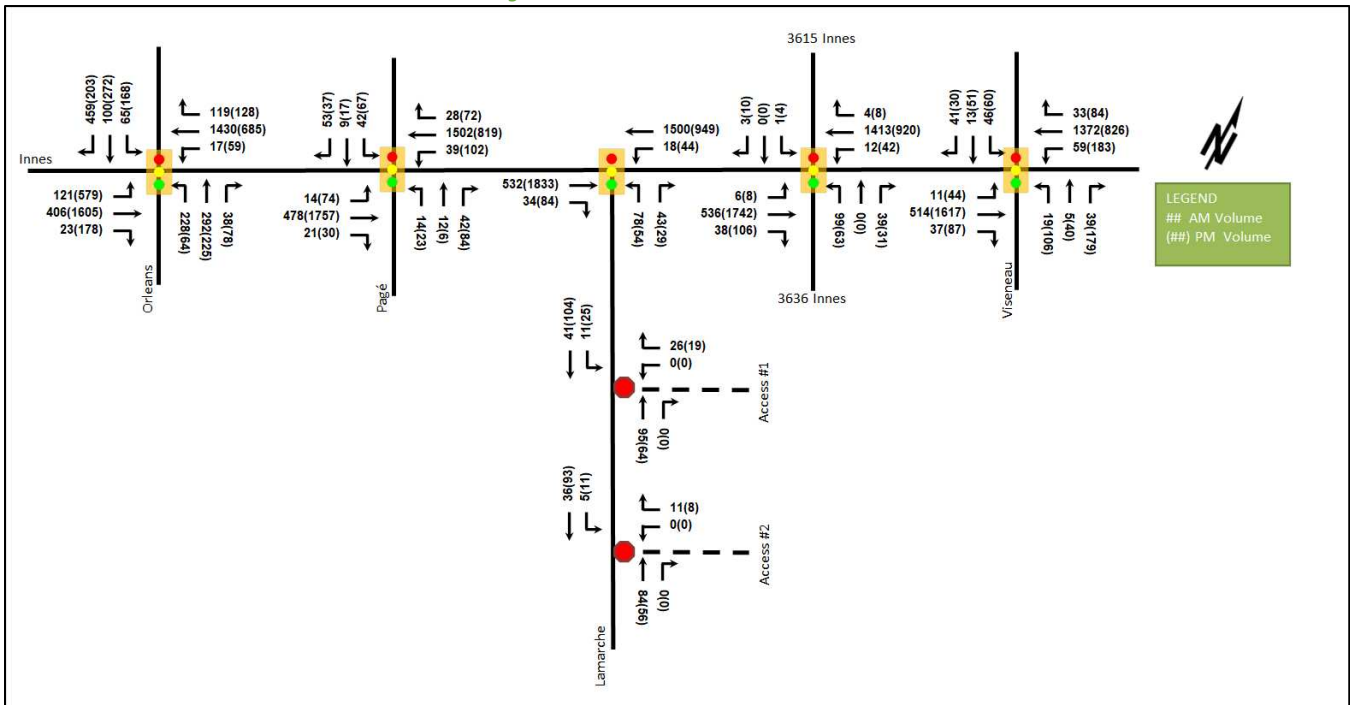


Table 16: 2025 Future Total Access Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|----------------|--------------|------|------------|-----------------------|--------------|------|------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Access #1 at Lamarche Avenue <i>Unsignalized</i> | WB | A | 0.03 | 8.8 | 0.8 | A | 0.02 | 8.7 | 0.8 |
| | NB | - | - | - | - | - | - | - | - |
| | SB | A | 0.01 | 7.4 | 0.0 | A | 0.02 | 7.4 | 0.8 |
| | Overall | A | - | 1.8 | - | A | - | 1.6 | - |
| Access #2 at Lamarche Avenue <i>Unsignalized</i> | WB | A | 0.01 | 8.7 | 0.0 | A | 0.01 | 8.6 | 0.0 |
| | NB | - | - | - | - | - | - | - | - |
| | SB | A | 0.00 | 7.4 | 0.0 | A | 0.01 | 7.3 | 0.0 |
| | Overall | A | - | 1.0 | - | A | - | 0.9 | - |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

The 2025 future total access intersections operate satisfactorily.

10.3.2 2030 Future Total Access Intersection Operations

The 2030 future total intersection volumes are illustrated in Figure 19 and the access intersection operations are summarized below in Table 17. Synchro 11 has been used to model the unsignalized intersections and HCM 2010 methodology was used for unsignalized intersection operations.

methodology was used for unsignalized intersection operations. The synchro worksheets have been provided in Appendix K.

Figure 19: 2030 Future Total Volumes

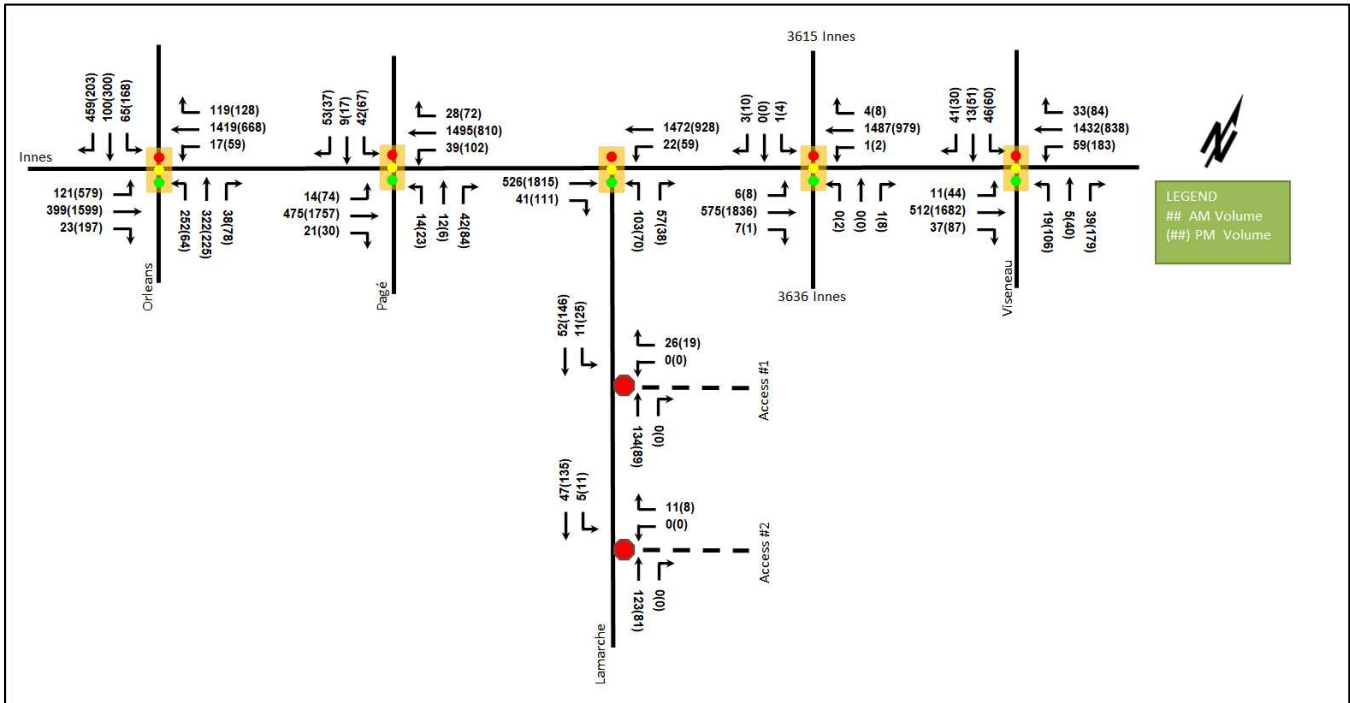


Table 17: 2030 Future Total Access Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------------|--------------|------|------------|-----------------------|--------------|------|------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Access #1 at Lamarche Avenue Unsignalized | WB | A | 0.03 | 8.8 | 0.8 | A | 0.02 | 8.7 | 0.8 |
| | NB | - | - | - | - | - | - | - | - |
| | SB | A | 0.01 | 7.4 | 0.0 | A | 0.02 | 7.4 | 0.8 |
| | Overall | A | - | 1.8 | - | A | - | 1.6 | - |
| Access #2 at Lamarche Avenue Unsignalized | WB | A | 0.01 | 8.7 | 0.0 | A | 0.01 | 8.6 | 0.0 |
| | NB | - | - | - | - | - | - | - | - |
| | SB | A | 0.00 | 7.4 | 0.0 | A | 0.01 | 7.3 | 0.0 |
| | Overall | A | - | 1.0 | - | A | - | 0.9 | - |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

The 2030 future total access intersections operate satisfactorily.

10.3.3 Access Intersection MMLOS

The access intersections are proposed to as minor stop-controlled intersections, therefore no access intersection MMLOS analysis has been conducted.

10.3.4 Recommended Design Elements

No changes to the site accesses are proposed.

11 Transportation Demand Management

11.1 Context for TDM

The mode shares used within the TIA represent the unmodified district mode shares. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided to encourage shifts towards sustainable modes.

The subject site is not within a design priority area. The total bedroom count within the development is subject to the final unit breakdown and layout selections by purchasers. No age restrictions are noted.

11.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel and those assumptions have been carried through the analysis. As the unmodified district mode shares have been applied, risks to other network users from failing to meet mode share targets are low.

11.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix L. The key TDM measures recommended include:

- Inclusion of a 1-year Presto card for first time new townhome purchase, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
- Provide a multimodal travel option information package to new residents

12 Transit

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 18 summarizes the transit trip generation.

Table 18: Trip Generation by Transit Mode

| Travel Mode | Mode Share | AM Peak Period | | | PM Peak Period | | |
|-------------|------------|----------------|-----|-------|----------------|-----|-------|
| | | In | Out | Total | In | Out | Total |
| Transit | Varies | 12 | 26 | 37 | 17 | 14 | 31 |

The proposed development is anticipated to generate an additional 37 AM peak hour transit trips and 31 PM peak hour transit trips. Of these trips, 26 outbound AM trips and 17 inbound PM trips are anticipated. From the trip distribution found in Section 5.2, these values can be further broken down. Site-generated outbound AM trips break down to 16 trips west from the site and ten trips east from the site.

All trips are assumed to be served by bus route #25, which provides four buses in the peak hour/ direction. Overall, the forecasted new transit trips would result in an averaged increase of under three additional riders per bus. Therefore, no service changes are anticipated as being required to accommodate site-generated transit trips.

12.1 Transit Priority

Examining the study area intersection delays, negligible impacts are noted on most of transit movements at the study area intersections as a result of the development site traffic except for the eastbound through movement at Innes Road at Lamarche Avenue intersection. Ultimately, the transit delay at this intersection will be subject to the cycling and pedestrian crossing locations and types.

13 Network Intersection Design

13.1 Network Intersection Control

No change to the existing signalized control is recommended for the network intersections.

13.2 Network Intersection Design

13.2.1 2025 Future Total Network Intersection Operations

The 2025 future total network intersection operations are summarized below in Table 19. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets have been provided in Appendix J.

Table 19: 2025 Future Total Network Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------------|--------------|-------------|-------------|-----------------------|--------------|-------------|-------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Orleans Boulevard <i>Signalized</i> | EBL | C | 0.77 | 90.3 | #31.4 | D | 0.86 | 55.6 | #82.8 |
| | EBT | A | 0.24 | 19.1 | 44.8 | F | 1.15 | 105.7 | #268.4 |
| | EBR | A | 0.03 | 0.1 | 0.0 | A | 0.26 | 5.3 | 15.3 |
| | WBL | A | 0.21 | 65.5 | 12.2 | A | 0.46 | 51.3 | 27.1 |
| | WBT | E | 0.95 | 49.2 | #232.7 | C | 0.78 | 61.7 | #102.3 |
| | WBR | A | 0.16 | 2.4 | 7.0 | A | 0.23 | 11.7 | 24.4 |
| | NBL | A | 0.57 | 38.9 | 66.7 | A | 0.20 | 26.1 | 18.8 |
| | NBT | A | 0.25 | 31.0 | 39.3 | A | 0.19 | 25.7 | 26.6 |
| | NBR | A | 0.07 | 0.3 | 0.0 | A | 0.13 | 0.4 | 0.0 |
| | SBL | A | 0.33 | 50.0 | 28.8 | B | 0.62 | 48.5 | #60.8 |
| | SBT | A | 0.15 | 43.4 | 19.2 | A | 0.31 | 35.0 | 37.4 |
| | SBR | F | 1.11 | 109.2 | #166.8 | A | 0.38 | 5.4 | 13.5 |
| Overall | E | 0.96 | 50.3 | - | E | 0.98 | 65.0 | - | |
| Innes Road at Page Road <i>Signalized</i> | EBL | A | 0.08 | 9.0 | 4.3 | A | 0.20 | 2.3 | m1.8 |
| | EBT/R | A | 0.21 | 6.3 | 32.5 | C | 0.77 | 8.9 | m21.4 |
| | WBL | A | 0.07 | 6.4 | m6.3 | F | 1.03 | 120.2 | m#58.2 |
| | WBT/R | B | 0.63 | 17.3 | 224.7 | A | 0.39 | 3.5 | 0.0 |
| | NB | A | 0.26 | 20.2 | 16.0 | A | 0.42 | 35.2 | 30.4 |
| | SB | A | 0.42 | 30.2 | 26.3 | A | 0.51 | 39.0 | 33.3 |
| | Overall | A | 0.57 | 15.3 | - | E | 0.91 | 13.0 | - |
| Innes Road at Lamarche Avenue <i>Signalized</i> | EBT | A | 0.24 | 8.5 | 33.1 | E | 0.96 | 36.6 | #262.6 |
| | EBR | A | 0.03 | 9.0 | 7.2 | A | 0.10 | 14.7 | m10.3 |
| | WBL | A | 0.20 | 61.1 | m7.9 | A | 0.57 | 75.6 | #25.9 |
| | WBT | B | 0.63 | 10.7 | 91.5 | A | 0.43 | 12.0 | 95.0 |
| | NBL | A | 0.55 | 66.2 | 33.2 | C | 0.72 | 98.5 | #32.8 |
| | NBR | A | 0.17 | 40.9 | 18.3 | A | 0.09 | 32.8 | 12.3 |
| Overall | B | 0.63 | 13.1 | - | C | 0.79 | 29.8 | - | |

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------------|--------------|-------------|------------|-----------------------|--------------|-------------|-------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Access 3615 Innes Road/3636 Innes Road Signalized | EBL | A | 0.03 | 2.5 | 0.6 | A | 0.02 | 2.4 | m0.5 |
| | EBT/R | A | 0.23 | 2.0 | 8.5 | B | 0.70 | 12.2 | m233.8 |
| | WBL | A | 0.02 | 7.3 | m2.5 | A | 0.33 | 15.8 | 15.6 |
| | WBT/R | A | 0.56 | 9.1 | 129.3 | A | 0.35 | 5.0 | 58.7 |
| | NBL | A | 0.57 | 60.6 | 36.3 | A | 0.38 | 49.0 | 22.6 |
| | NBT/R | A | 0.07 | 0.3 | 0.0 | A | 0.14 | 14.1 | 7.5 |
| | SB | A | 0.02 | 0.2 | 0.0 | A | 0.07 | 4.5 | 2.2 |
| | Overall | A | 0.56 | 9.4 | - | B | 0.69 | 10.7 | - |
| Innes Road at Viseneau Drive Signalized | EBL | A | 0.05 | 6.4 | 1.5 | A | 0.14 | 18.5 | 14.4 |
| | EBT | A | 0.23 | 4.9 | 18.6 | D | 0.84 | 30.1 | #275.1 |
| | EBR | A | 0.04 | 0.1 | 0.2 | A | 0.10 | 2.4 | 6.1 |
| | WBL | A | 0.10 | 5.2 | 9.6 | C | 0.71 | 42.5 | 53.0 |
| | WBT/R | A | 0.56 | 8.0 | 121.4 | A | 0.38 | 7.3 | 62.3 |
| | NBL | A | 0.13 | 44.5 | 9.8 | B | 0.66 | 69.3 | 42.5 |
| | NBT | A | 0.02 | 40.6 | 4.2 | A | 0.15 | 45.0 | 18.2 |
| | NBR | A | 0.14 | 1.1 | 0.0 | A | 0.48 | 10.2 | 18.6 |
| | SB | A | 0.51 | 42.3 | 28.9 | B | 0.62 | 58.1 | 49.7 |
| Overall | A | 0.59 | 8.9 | - | E | 0.81 | 25.2 | - | |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

Overall, the study area intersections operate similar to the existing and background conditions.

The PM peak operations in the eastbound direction along Innes Road will be at or over capacity at a number of locations and is a result on the background conditions for the corridor. The site traffic will contribute less than 2% of the total eastbound volumes to Lamarche Avenue and should be an acceptable increase for any roadway. The volumes along Innes Road may be reduced once the LRT is active and could be further reduced once Brian Coburn Boulevard is extended west to Blair Road. No mitigation is required for the subject site.

13.2.2 2030 Future Total Network Intersection Operations

The 2030 future total network intersection operations are summarized below in Table 20. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. The synchro worksheets have been provided in Appendix K.

Table 20: 2030 Future Total Network Intersection Operations

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------------|--------------|-------------|-------------|-----------------------|--------------|-------------|-------------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Orleans Boulevard Signalized | EBL | C | 0.77 | 90.3 | #31.4 | D | 0.86 | 55.6 | #82.8 |
| | EBT | A | 0.25 | 19.2 | 46.7 | F | 1.20 | 126.5 | #285.3 |
| | EBR | A | 0.03 | 0.1 | 0.0 | A | 0.29 | 6.5 | 18.8 |
| | WBL | A | 0.21 | 65.5 | 12.2 | A | 0.46 | 51.1 | 27.2 |
| | WBT | E | 1.00 | 57.9 | #250.4 | D | 0.81 | 63.0 | #109.6 |
| | WBR | A | 0.16 | 2.4 | 7.0 | A | 0.23 | 11.6 | 24.1 |
| | NBL | B | 0.63 | 41.4 | 73.7 | A | 0.21 | 26.2 | 18.8 |
| | NBT | A | 0.28 | 31.4 | 43.0 | A | 0.19 | 25.7 | 26.6 |
| | NBR | A | 0.07 | 0.3 | 0.0 | A | 0.13 | 0.4 | 0.0 |
| | SBL | A | 0.34 | 50.4 | 28.9 | B | 0.62 | 48.5 | #60.8 |
| | SBT | A | 0.15 | 43.4 | 19.2 | A | 0.35 | 35.4 | 41.1 |
| | SBR | F | 1.13 | 116.6 | #170.3 | A | 0.38 | 5.4 | 13.5 |
| Overall | E | 1.00 | 54.9 | - | F | 1.01 | 64.4 | - | |
| Innes Road at Page Road Signalized | EBL | A | 0.09 | 9.4 | 4.4 | A | 0.21 | 2.2 | m1.7 |
| | EBT/R | A | 0.21 | 6.4 | 33.9 | C | 0.80 | 11.9 | m20.8 |
| | WBL | A | 0.07 | 6.1 | m5.8 | F | 1.21 | 185.3 | m#61.6 |
| | WBT/R | B | 0.66 | 17.6 | 233.8 | A | 0.40 | 3.3 | 0.0 |
| | NB | A | 0.26 | 20.2 | 16.0 | A | 0.43 | 36.9 | 31.2 |
| | SB | A | 0.42 | 31.8 | 27.2 | A | 0.51 | 39.0 | 33.3 |
| | Overall | A | 0.60 | 15.6 | - | F | 1.05 | 16.6 | - |
| Innes Road at Lamarche Avenue Signalized | EBT | A | 0.25 | 8.2 | 34.1 | F | 1.01 | 60.4 | #284.4 |
| | EBR | A | 0.03 | 8.7 | 7.0 | A | 0.10 | 14.9 | m9.9 |
| | WBL | A | 0.20 | 60.8 | m7.7 | A | 0.57 | 75.4 | #25.9 |
| | WBT | B | 0.65 | 10.5 | 91.9 | A | 0.46 | 12.6 | 104.6 |
| | NBL | A | 0.55 | 66.2 | 33.2 | B | 0.68 | 91.5 | #31.8 |
| | NBR | A | 0.18 | 41.9 | 18.5 | A | 0.09 | 32.6 | 12.2 |
| | Overall | B | 0.65 | 12.8 | - | D | 0.83 | 44.5 | - |
| Innes Road at Access 3615 Innes Road/3636 Innes Road Signalized | EBL | A | 0.03 | 2.7 | m0.6 | A | 0.02 | 2.4 | m0.5 |
| | EBT/R | A | 0.24 | 2.1 | 9.2 | C | 0.73 | 14.0 | m232.8 |
| | WBL | A | 0.02 | 7.4 | m2.3 | A | 0.39 | 20.8 | #21.8 |
| | WBT/R | A | 0.59 | 9.6 | 139.7 | A | 0.37 | 5.2 | 62.5 |
| | NBL | A | 0.57 | 60.6 | 36.3 | A | 0.38 | 49.0 | 22.6 |
| | NBT/R | A | 0.08 | 0.3 | 0.0 | A | 0.14 | 14.1 | 7.5 |
| | SB | A | 0.02 | 0.2 | 0.0 | A | 0.07 | 4.5 | 2.2 |
| | Overall | A | 0.58 | 9.6 | - | C | 0.72 | 11.9 | - |

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|--|----------|--------------|------------|----------|-----------------------|--------------|-------------|----------|-----------------------|
| | | LOS | V/C | Delay | Q (95 th) | LOS | V/C | Delay | Q (95 th) |
| Innes Road at Viseneau Drive Signalized | EBL | A | 0.06 | 6.9 | 1.5 | A | 0.15 | 18.7 | 14.5 |
| | EBT | A | 0.24 | 5.2 | 22.3 | D | 0.89 | 32.6 | #296.9 |
| | EBR | A | 0.04 | 0.1 | 0.0 | A | 0.10 | 2.4 | 6.1 |
| | WBL | A | 0.10 | 5.2 | 9.6 | C | 0.75 | 50.7 | 56.5 |
| | WBT/R | A | 0.58 | 8.4 | 131.7 | A | 0.39 | 7.5 | 65.7 |
| | NBL | A | 0.13 | 44.5 | 9.8 | B | 0.66 | 69.3 | 42.5 |
| | NBT | A | 0.02 | 40.6 | 4.2 | A | 0.15 | 45.0 | 18.2 |
| | NBR | A | 0.14 | 1.1 | 0.0 | A | 0.48 | 10.2 | 18.6 |
| | SB | A | 0.51 | 42.3 | 28.9 | B | 0.62 | 58.1 | 49.7 |
| Overall | B | 0.61 | 9.1 | - | D | 0.84 | 26.8 | - | |

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00
 Delay = average driver delay in seconds

m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity
 v/c = volume to capacity ratio

The 2030 future total conditions are expected to operate similar to the background conditions. As discussed in Section 13.2.1, the PM peak eastbound volumes are near capacity on Innes Road and would require a regional solution, such as the LRT or Brian Coburn Boulevard to address potential capacity constraints.

13.2.3 Network Intersection MMLoS

Table 21 summarizes the MMLoS analysis for the network intersections within the study area. The existing and future conditions for both intersections will be the same and are considered in one row. The intersection analysis of Innes Road at Orleans Boulevard is based on the land use of general urban area, and other intersections analysis are based on the land use of arterial main street. The MMLoS worksheets has been provided in Appendix I.

Table 21: Study Area Intersection MMLoS Analysis

| Intersection | Pedestrian LOS | | Bicycle LOS | | Transit LOS | | Truck LOS | | Auto LOS | |
|---|----------------|--------|-------------|--------|-------------|--------|-----------|--------|----------|--------|
| | PLOS | Target | BLOS | Target | TLOS | Target | TrLOS | Target | ALOS | Target |
| Innes Road at Orleans Boulevard | F | C | F | B | F | D | A | D | F | D |
| Innes Road at Page Road | F | C | F | B | C | D | N/A | N/A | F | D |
| Innes Road at Lamarche Avenue (Future) | E | C | A | B | F | D | N/A | N/A | D | D |
| Innes Road at Access 3615 Innes Road/3636 Innes Road | F | C | F | B | B | D | N/A | N/A | C | D |
| Innes Road at Viseneau Drive | F | C | F | B | F | D | N/A | N/A | D | D |

The pedestrian LOS targets will not be met at the existing or future intersections within the study area. As typical for arterial roads, the crossing distance does not permit the targets to be met. To meet pedestrian LOS targets, the maximum crossing distance would need to be reduced to three lane-widths on all pedestrian crossings.

The bicycle LOS targets will not be met at the existing or future intersections within the study area expect for the future Innes Road at Lamarche Avenue intersection. To meet bicycle LOS targets, the left-turn configurations would need to be two-stage, turn boxes or protected facilities.

The transit LOS targets will not be met in the existing or future condition at the intersections of Innes Road at Orleans Boulevard and Innes Road at Viseneau Drive and in the future condition of Innes Road at Lamarche Avenue intersection. To meet transit LOS, the delay at the intersections would need to be reduced to below 30 seconds.

The auto LOS targets will not be met in the existing or future condition at the intersections of Innes Road at Orleans Boulevard and Innes Road at Page Road. To meet auto LOS, the volume to capacity ratio to less or equal to 0.90.

The improvements for these intersections are not the responsibility of the development and are provide for the City's planning. The intersection of Innes Road at Lamarche Avenue is currently being reviewed and the exact facilities will be subject to the approval of a roadway modification approval.

13.2.4 Recommended Design Elements

No study area intersection design elements are proposed as part of this study.

14 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed site includes 103 townhomes and 72 back-to-backs dwellings
- Two accesses on Lamarche Avenue will be provided
- The development is proposed to be completed as a single phase by 2025
- The trip generation, location, and safety triggers were met for the TIA Screening

Existing Conditions

- Innes Road and Orleans Boulevard are arterial roads, and Viseneau Drive is a collector road in the study area
- Sidewalks are provided along both sides of Innes Road, on the west side of Page Road, and on east side of Page Road for 205 metres south of Innes Road
- A MUP is provided on the west side of Lamarche Avenue
- Bike lanes along both side of Innes Road
- Innes Road, Orleans Boulevard are spine route, Page Road north of Innes Road is suggested route, and Innes Road is a cross-town bikeway
- The segments of Innes Road between Page Road and the 3615 Innes Road/3636 Innes Road access intersection, which is the only location noted to have experienced collisions, had a total of 16 collisions
- Capacity issues are noted at the intersections of Innes Road at Orleans Boulevard, Innes Road at Page Road, and Innes Road at Lamarche Avenue
- The Innes Road at Page Road intersection requires the City to review the signal timing and explore a protected/permissive phasing for the eastbound and westbound left-turn movements
- The intersection of Innes Road at Lamarche Avenue is planned to be signalized in the future and likely will address the capacity constraints

Development Generated Travel Demand

- The proposed development is forecasted produce 118 two-way people trips during the AM peak hour and 122 two-way people trips during the PM peak hour
- Of the forecasted people trips, 53 two-way trips will be vehicle trips during the AM peak hour and 62 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted trips, 15 % are anticipated to travel north, 40 % to the east, and 45 % to the west

Background Conditions

- It is assumed that a 1.00% growth rate will be applied to Innes Road and a 2.00% growth rate will be applied on Orleans Boulevard in peak directions
- The Innes Road at Lamarche Avenue intersection is assumed to be signalized prior to 2025
- The study area intersections are expected to operate similar to the existing conditions in the 2025 and 2030 background horizons
- No demand rationalization was required for the site generated trips as they are forecasted to be low and not anticipated to be a contributing factor to the network constraints

Development Design

- On-street parking will be provided along Lamarche Avenue and the subdivision roadways
- Traffic calming elements are recommended at the future internal road intersections including bulb-outs to narrow each approach to the intersection and reduce pedestrian crossing distances and speed humps

Boundary Street Design

- Lamarche Avenue meets MMLOS targets for the area and no mitigation or additional elements are required

Access Intersections Design

- The residential accesses will connect to the adjacent road network via local roads connection to Lamarche Avenue
- Within the subdivision, no turn lanes are proposed for the internal intersections which will be controlled by minor stop control
- The 2025 and 2030 future total access intersections operate satisfactorily

TDM

- Supportive TDM measures to be included within the proposed development should include:
 - Inclusion of a 1-year Presto card for first time new townhome purchase, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
 - Provide a multimodal travel option information package to new residents

Transit

- The proposed development is anticipated to generate an additional 37 AM peak hour transit trips and 31 PM peak hour transit trips
- All trips are assumed to be served by bus route #25, which provides four buses in the peak hour/ direction
- No service changes are anticipated as being required to accommodate site-generated transit trips
- Negligible impacts are noted on most of transit movements at the study area intersections except for the eastbound through movement at Innes Road at Lamarche Avenue intersection, which is subject to the signalized intersection design and cycling/pedestrian facilities

Network Intersection Design

- The study area intersections are expected to operate similarly during the existing, background and future total horizons, and experiencing capacity constraints due to the volumes along Innes Road
- The pedestrian LOS targets will not be met at the existing or future intersections within the study area, and no mitigation is recommended as the crossing distances would need to be reduced to equal or less than three lane widths
- Except for the future Innes Road at Lamarche Avenue intersection, the bicycle LOS targets will not be met at the existing or future intersections within the study area, and it is limited by the lack of dedicated facilities and improved left-turn configurations
- The transit LOS targets will not be met in the existing or future condition at the intersections of Innes Road at Orleans Boulevard and Innes Road at Viseneau Drive and in the future condition of Innes Road at Lamarche Avenue intersection, and require the delay to be below 30 seconds
- The auto LOS targets will not be met in the existing or future condition at the intersections of Innes Road at Orleans Boulevard and Innes Road at Page Road, and require the volume to capacity ratio to be improved to less or equal to 0.90
- The cycling, transit and auto targets will require a regional solution by the City to implement addition cycling facilities at the area intersections and reduce Innes Road volumes to meet the capacity and delay targets

15 Conclusion

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

Prepared By:

Reviewed By:



Yu-Chu Chen, EIT
Transportation Engineering-Intern



Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 25-Mar-22
Project Number: 2022-023

Project Reference: 245 and 275 Lamarche Avenue

| 1.1 Description of Proposed Development | |
|---|--|
| Municipal Address | 245 and 275 Lamarche Avenue |
| Description of Location | Ward 2. South of Innes Road between 3615 Innes Road/3636 Innes Road Access and Lamarche Avenue |
| Land Use Classification | Development Reserve (DR) |
| Development Size | approximately 103 townhomes and 72 back-to-backs dwellings |
| Accesses | One access onto Innes Road |
| Phase of Development | Single |
| Buildout Year | 2025 |
| TIA Requirement | Full TIA Required |

| 1.2 Trip Generation Trigger | |
|-----------------------------|-------------------------|
| Land Use Type | Townhomes or apartments |
| Development Size | 175 Units |
| Trip Generation Trigger | Yes |

| 1.3 Location Triggers | |
|--|-----|
| Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks? | Yes |
| Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone? | Yes |
| Location Trigger | Yes |

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



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 licensed¹ or registered² 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.


City Of Ottawa
Infrastructure Services and Community
Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d'infrastructure et Viabilité des
collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at Ottawa this 20 day of September, 2018.
(City)

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer



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

| |
|--|
| Office Contact Information (Please Print) |
| Address: 13 Markham Avenue |
| City / Postal Code: Ottawa / K2G 3Z1 |
| Telephone / Extension: (613) 697-3797 |
| E-Mail Address: Andrew.Harte@CGHTransportation.com |



Appendix B

Turning Movement Counts



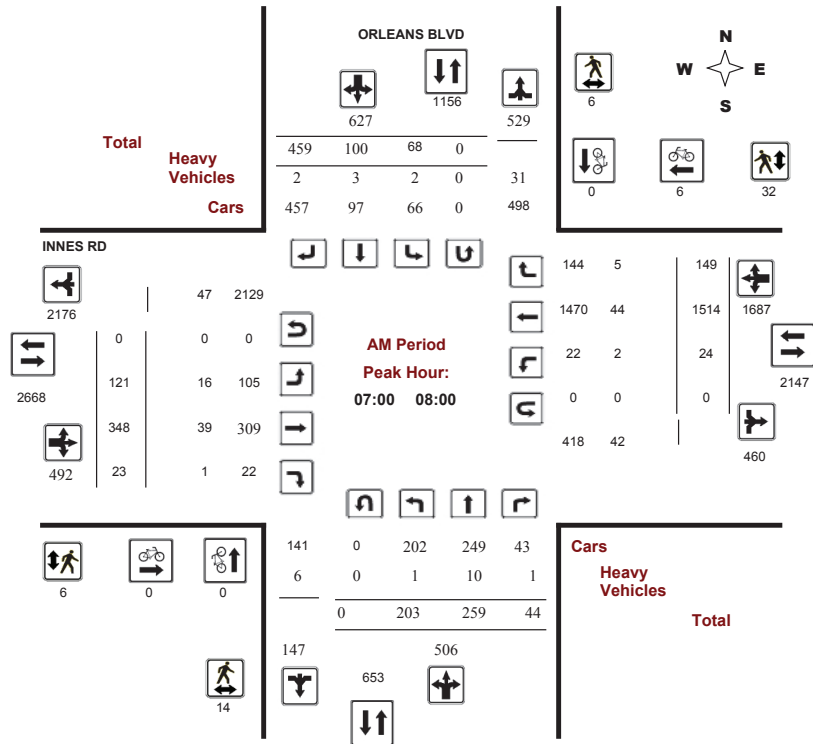
Transportation Services - Traffic Services

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



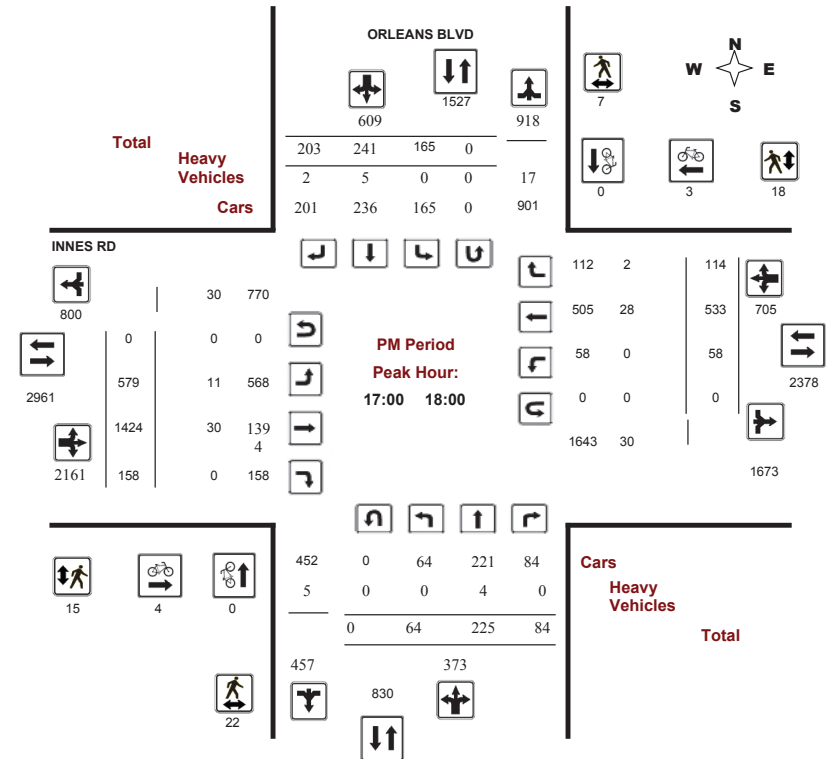
Transportation Services - Traffic Services

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



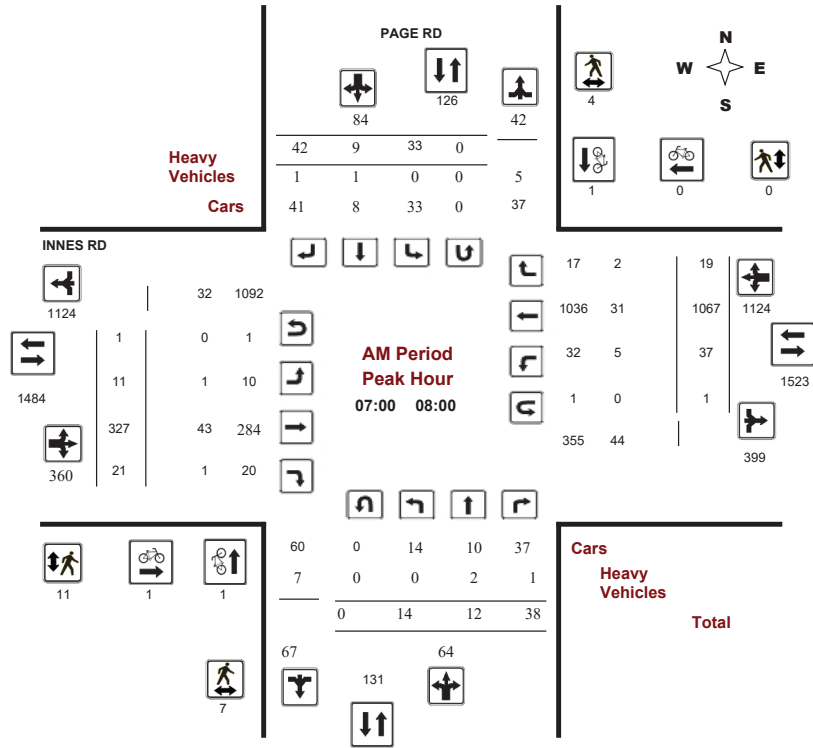
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ PAGE RD

Survey Date: Tuesday, January 08, 2019
Start Time: 07:00

WO No: 38221
Device: Miovision



Comments



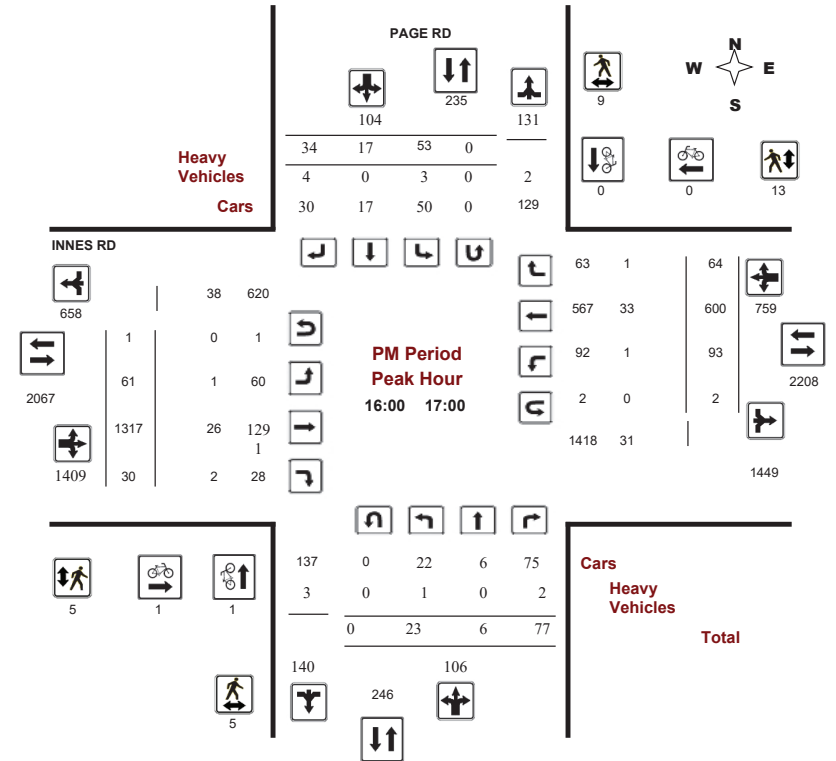
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

INNES RD @ PAGE RD

Survey Date: Tuesday, January 08, 2019
Start Time: 07:00

WO No: 38221
Device: Miovision



Comments



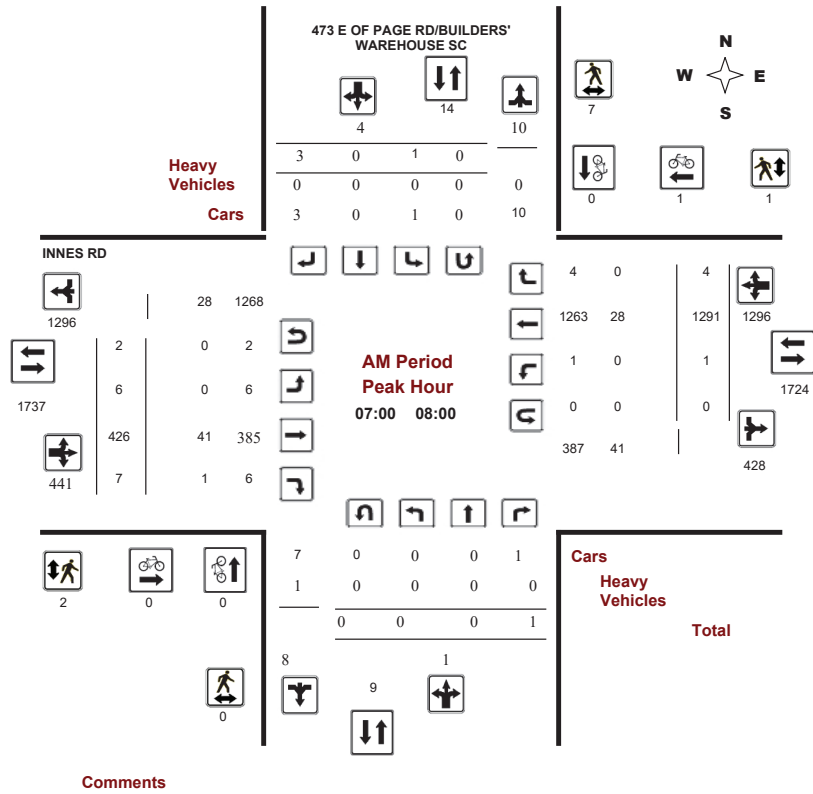
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

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

Survey Date: Thursday, January 31, 2019
Start Time: 07:00

WO No: 38223
Device: Miovision



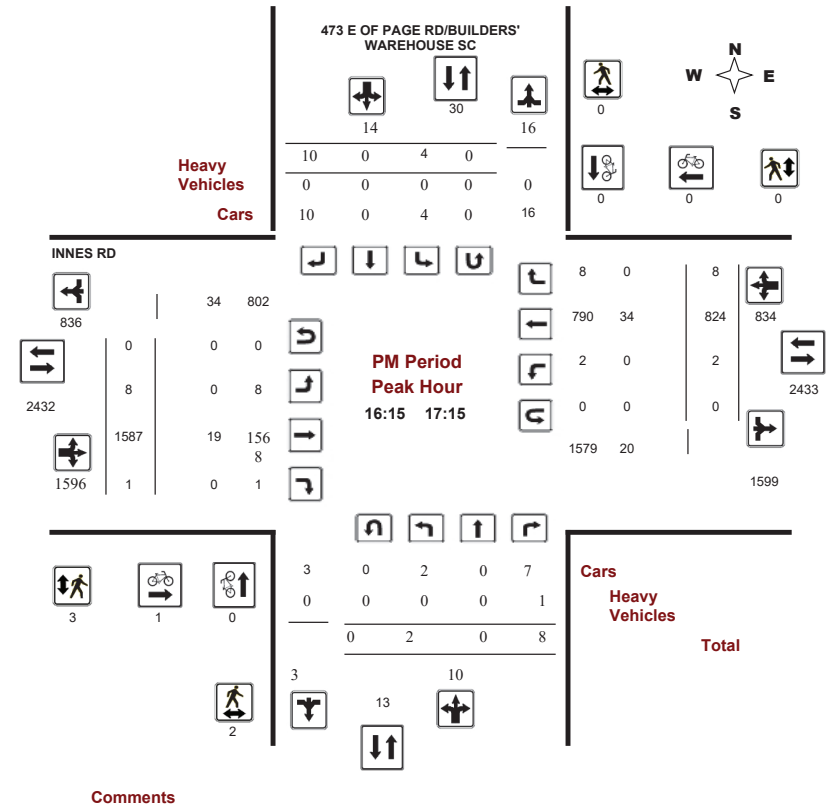
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

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

Survey Date: Thursday, January 31, 2019
Start Time: 07:00

WO No: 38223
Device: Miovision





Transportation Services - Traffic Services W.O. 36661
Turning Movement Count - 15 Minute Summary Report

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
 Eastbound: 12 Westbound: 4

| Time Period | VISENEAU DR | | | | | | INNES RD | | | | | | Grand Total | | | | | | |
|---------------|-------------|------------|------------|-------------|------------|------------|------------|------------|-------------|------------|-------------|------------|-------------|-------------|-------------|------------|-------------|--------------|--------------|
| | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | | | | | | | |
| | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | W TOT | STR TOT | Grand Total |
| 07:00 07:15 | 17 | 4 | 6 | 27 | 12 | 2 | 12 | 26 | 53 | 4 | 64 | 5 | 73 | 6 | 368 | 4 | 378 | 451 | 504 |
| 07:15 07:30 | 5 | 1 | 9 | 15 | 11 | 1 | 12 | 24 | 39 | 2 | 82 | 3 | 87 | 10 | 385 | 9 | 404 | 491 | 530 |
| 07:30 07:45 | 5 | 1 | 13 | 19 | 15 | 3 | 13 | 31 | 50 | 4 | 108 | 9 | 121 | 8 | 358 | 5 | 371 | 492 | 542 |
| 07:45 08:00 | 7 | 0 | 9 | 16 | 9 | 6 | 7 | 22 | 38 | 4 | 109 | 12 | 125 | 11 | 350 | 14 | 375 | 500 | 538 |
| 08:00 08:15 | 5 | 3 | 8 | 16 | 11 | 3 | 15 | 29 | 45 | 1 | 99 | 13 | 113 | 30 | 333 | 5 | 368 | 481 | 526 |
| 08:15 08:30 | 16 | 1 | 7 | 24 | 10 | 7 | 12 | 29 | 53 | 2 | 108 | 12 | 122 | 26 | 299 | 11 | 336 | 458 | 511 |
| 08:30 08:45 | 11 | 5 | 8 | 24 | 11 | 8 | 4 | 23 | 47 | 2 | 106 | 20 | 128 | 42 | 277 | 10 | 329 | 457 | 504 |
| 08:45 09:00 | 8 | 3 | 8 | 19 | 16 | 6 | 11 | 33 | 52 | 2 | 114 | 19 | 135 | 43 | 191 | 8 | 242 | 377 | 429 |
| 09:00 09:15 | 8 | 4 | 12 | 24 | 11 | 10 | 7 | 28 | 52 | 7 | 111 | 11 | 129 | 30 | 216 | 8 | 254 | 383 | 435 |
| 09:15 09:30 | 22 | 1 | 16 | 39 | 10 | 11 | 5 | 26 | 65 | 3 | 131 | 14 | 148 | 38 | 163 | 12 | 213 | 361 | 426 |
| 09:30 09:45 | 23 | 2 | 18 | 43 | 9 | 6 | 8 | 23 | 66 | 1 | 141 | 6 | 149 | 22 | 159 | 6 | 187 | 336 | 402 |
| 09:45 10:00 | 21 | 0 | 18 | 39 | 10 | 8 | 5 | 23 | 62 | 3 | 135 | 17 | 155 | 34 | 124 | 9 | 167 | 322 | 384 |
| 11:30 11:45 | 35 | 5 | 51 | 91 | 14 | 7 | 6 | 27 | 118 | 4 | 160 | 21 | 185 | 27 | 138 | 14 | 179 | 364 | 482 |
| 11:45 12:00 | 26 | 5 | 35 | 66 | 9 | 8 | 3 | 20 | 86 | 2 | 199 | 22 | 225 | 48 | 171 | 16 | 235 | 460 | 546 |
| 12:00 12:15 | 36 | 13 | 36 | 85 | 8 | 6 | 3 | 17 | 102 | 3 | 163 | 13 | 181 | 36 | 161 | 10 | 207 | 388 | 490 |
| 12:15 12:30 | 29 | 7 | 35 | 71 | 13 | 6 | 3 | 22 | 93 | 4 | 212 | 18 | 235 | 36 | 183 | 12 | 232 | 467 | 560 |
| 12:30 12:45 | 36 | 4 | 34 | 74 | 13 | 2 | 7 | 22 | 96 | 4 | 126 | 14 | 145 | 37 | 185 | 7 | 229 | 374 | 470 |
| 12:45 13:00 | 22 | 10 | 34 | 66 | 15 | 8 | 3 | 26 | 92 | 2 | 147 | 18 | 168 | 36 | 165 | 15 | 216 | 384 | 476 |
| 13:00 13:15 | 34 | 22 | 34 | 90 | 9 | 12 | 10 | 31 | 121 | 8 | 145 | 16 | 169 | 31 | 169 | 10 | 210 | 379 | 500 |
| 13:15 13:30 | 27 | 9 | 46 | 82 | 15 | 9 | 4 | 28 | 110 | 7 | 167 | 23 | 197 | 39 | 147 | 22 | 208 | 405 | 515 |
| 15:00 15:15 | 35 | 5 | 37 | 77 | 13 | 8 | 3 | 24 | 101 | 7 | 278 | 17 | 303 | 34 | 207 | 22 | 263 | 566 | 667 |
| 15:15 15:30 | 28 | 6 | 47 | 81 | 14 | 6 | 3 | 23 | 104 | 15 | 296 | 23 | 334 | 32 | 176 | 24 | 232 | 566 | 670 |
| 15:30 15:45 | 19 | 10 | 40 | 69 | 9 | 7 | 8 | 24 | 93 | 10 | 311 | 16 | 337 | 38 | 193 | 20 | 251 | 588 | 681 |
| 15:45 16:00 | 26 | 7 | 38 | 71 | 15 | 13 | 8 | 36 | 107 | 12 | 332 | 22 | 367 | 45 | 166 | 21 | 232 | 599 | 706 |
| 16:00 16:15 | 31 | 12 | 37 | 80 | 18 | 23 | 6 | 47 | 127 | 11 | 343 | 16 | 370 | 54 | 134 | 26 | 215 | 585 | 712 |
| 16:15 16:30 | 19 | 13 | 52 | 84 | 21 | 8 | 8 | 37 | 121 | 13 | 365 | 22 | 400 | 42 | 173 | 23 | 238 | 638 | 759 |
| 16:30 16:45 | 36 | 11 | 38 | 85 | 19 | 13 | 6 | 38 | 123 | 9 | 374 | 21 | 404 | 40 | 170 | 20 | 230 | 634 | 757 |
| 16:45 17:00 | 24 | 10 | 45 | 79 | 11 | 12 | 7 | 30 | 109 | 10 | 348 | 25 | 383 | 41 | 163 | 25 | 230 | 613 | 722 |
| 17:00 17:15 | 27 | 6 | 44 | 77 | 9 | 18 | 9 | 36 | 113 | 12 | 369 | 19 | 401 | 60 | 167 | 16 | 243 | 644 | 757 |
| 17:15 17:30 | 32 | 8 | 37 | 77 | 16 | 9 | 6 | 31 | 108 | 13 | 328 | 21 | 363 | 60 | 147 | 20 | 228 | 591 | 699 |
| 17:30 17:45 | 26 | 5 | 37 | 68 | 23 | 6 | 10 | 39 | 107 | 8 | 319 | 18 | 345 | 55 | 183 | 19 | 257 | 602 | 709 |
| 17:45 18:00 | 28 | 13 | 42 | 83 | 14 | 12 | 6 | 32 | 115 | 8 | 302 | 16 | 326 | 57 | 158 | 17 | 232 | 558 | 673 |
| TOTAL: | 724 | 206 | 931 | 1861 | 413 | 264 | 230 | 907 | 2768 | 197 | 6592 | 522 | 7323 | 1148 | 6579 | 460 | 8191 | 15514 | 18282 |

Note: U-Turns are included in Totals.

Comment:



Transportation Services - Traffic Services
Turning Movement Count - Cyclist Volume Report

Work Order
36661

INNES RD @ VISENEAU DR

Count Date: Wednesday, January 25, 2017

Start Time: 07:00

| Time Period | VISENEAU DR | | | INNES RD | | | Grand Total |
|--------------|-------------|------------|--------------|-----------|-----------|--------------|-------------|
| | Northbound | Southbound | Street Total | Eastbound | Westbound | Street Total | |
| 07:00 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 17:00 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 17:00 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 1 | 1 | 1 |

Comment:

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

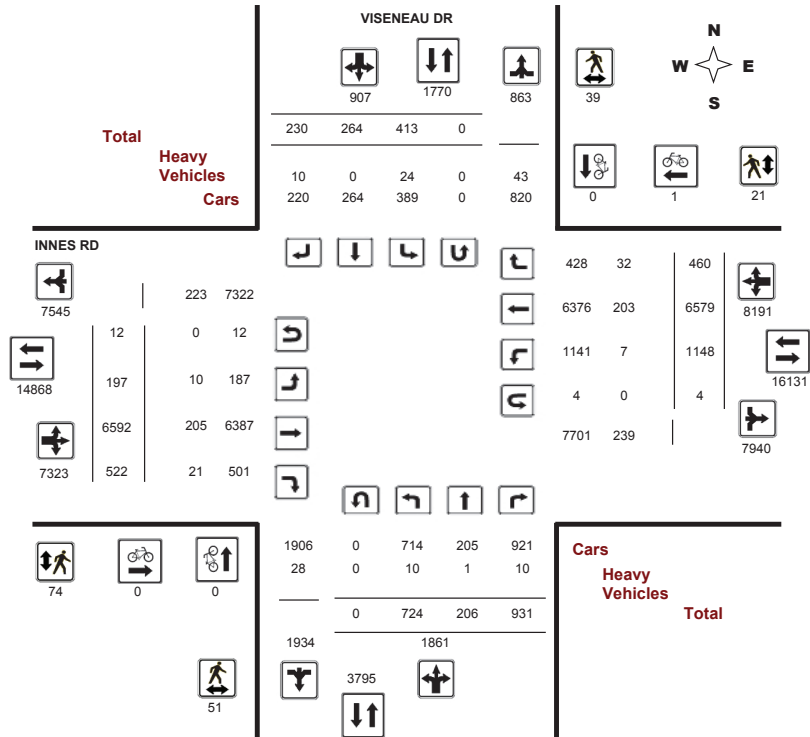


Transportation Services - Traffic Services
Turning Movement Count - Full Study Diagram

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017

WO#: 36661
 Device: Miovision



Comments



Transportation Services - Traffic Services

W.O.
36661

Turning Movement Count - Heavy Vehicle Report

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017

| Time Period | VISENEAU DR | | | | | | | | INNES RD | | | | | | | | W TOT | STR TOT | Grand Total |
|---------------------------------|-------------|----------|-----------|-----------|------------|----------|-----------|-----------|-----------|-----------|------------|-----------|------------|----------|------------|-----------|------------|------------|-------------|
| | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | | | |
| | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | | | |
| 07:00 | 0 | 0 | 4 | 4 | 2 | 0 | 0 | 2 | 6 | 7 | 35 | 2 | 44 | 1 | 32 | 7 | 40 | 84 | 90 |
| 08:00 | 1 | 0 | 1 | 2 | 5 | 0 | 1 | 6 | 8 | 2 | 25 | 4 | 31 | 2 | 34 | 5 | 41 | 72 | 80 |
| 09:00 | 4 | 0 | 2 | 6 | 2 | 0 | 0 | 2 | 8 | 0 | 30 | 7 | 37 | 2 | 28 | 3 | 33 | 70 | 78 |
| 11:30 | 1 | 0 | 1 | 2 | 3 | 0 | 0 | 3 | 5 | 0 | 30 | 4 | 34 | 0 | 14 | 4 | 18 | 52 | 57 |
| 12:30 | 3 | 0 | 1 | 4 | 2 | 0 | 0 | 2 | 6 | 0 | 28 | 3 | 31 | 2 | 14 | 2 | 18 | 49 | 55 |
| 15:00 | 1 | 0 | 1 | 2 | 3 | 0 | 2 | 5 | 7 | 1 | 22 | 1 | 24 | 0 | 36 | 7 | 43 | 67 | 74 |
| 16:00 | 0 | 1 | 0 | 1 | 5 | 0 | 3 | 8 | 9 | 0 | 18 | 0 | 18 | 0 | 24 | 2 | 26 | 44 | 53 |
| 17:00 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 6 | 6 | 0 | 17 | 0 | 17 | 0 | 21 | 2 | 23 | 40 | 46 |
| Sub Total | 10 | 1 | 10 | 21 | 24 | 0 | 10 | 34 | 55 | 10 | 205 | 21 | 236 | 7 | 203 | 32 | 242 | 478 | 533 |
| U-Turns (Heavy Vehicles) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 10 | 1 | 10 | 21 | 24 | 0 | 10 | 34 | 55 | 10 | 205 | 21 | 236 | 7 | 203 | 32 | 242 | 478 | 533 |

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



Transportation Services - Traffic Services
Turning Movement Count - Pedestrian Volume Report

Work Order
36661

INNES RD @ VISENEAU DR

Count Date: Wednesday, January 25, 2017

Start Time: 07:00

| Time Period | NB Approach (E or W Crossing) | SB Approach (E or W Crossing) | Total | EB Approach (N or S Crossing) | WB Approach (N or S Crossing) | Total | Grand Total |
|-------------|----------------------------------|----------------------------------|-------|----------------------------------|----------------------------------|-------|-------------|
| 07:00 07:15 | 0 | 0 | 0 | 3 | 0 | 3 | 3 |
| 07:15 07:30 | 1 | 1 | 2 | 0 | 1 | 1 | 3 |
| 07:30 07:45 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 07:45 08:00 | 0 | 1 | 1 | 0 | 1 | 1 | 2 |
| 07:00 08:00 | 1 | 3 | 4 | 3 | 2 | 5 | 9 |
| 08:00 08:15 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:15 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 08:45 | 1 | 1 | 2 | 1 | 1 | 2 | 4 |
| 08:45 09:00 | 2 | 1 | 3 | 2 | 1 | 3 | 6 |
| 08:00 09:00 | 3 | 2 | 5 | 4 | 2 | 6 | 11 |
| 09:00 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 09:30 | 1 | 2 | 3 | 2 | 0 | 2 | 5 |
| 09:30 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 10:00 | 1 | 0 | 1 | 4 | 0 | 4 | 5 |
| 09:00 10:00 | 2 | 2 | 4 | 6 | 0 | 6 | 10 |
| 11:30 11:45 | 2 | 0 | 2 | 2 | 0 | 2 | 4 |
| 11:45 12:00 | 1 | 0 | 1 | 2 | 0 | 2 | 3 |
| 12:00 12:15 | 0 | 5 | 5 | 3 | 3 | 6 | 11 |
| 12:15 12:30 | 0 | 7 | 7 | 5 | 0 | 5 | 12 |
| 11:30 12:30 | 3 | 12 | 15 | 12 | 3 | 15 | 30 |
| 12:30 12:45 | 0 | 0 | 0 | 4 | 0 | 4 | 4 |
| 12:45 13:00 | 1 | 1 | 2 | 2 | 0 | 2 | 4 |
| 13:00 13:15 | 2 | 0 | 2 | 0 | 0 | 0 | 2 |
| 13:15 13:30 | 6 | 1 | 7 | 2 | 3 | 5 | 12 |
| 12:30 13:30 | 9 | 2 | 11 | 8 | 3 | 11 | 22 |
| 15:00 15:15 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 15:15 15:30 | 2 | 5 | 7 | 4 | 1 | 5 | 12 |
| 15:30 15:45 | 3 | 2 | 5 | 1 | 1 | 2 | 7 |
| 15:45 16:00 | 1 | 1 | 2 | 2 | 0 | 2 | 4 |
| 15:00 16:00 | 6 | 8 | 14 | 7 | 4 | 11 | 25 |
| 16:00 16:15 | 4 | 0 | 4 | 5 | 0 | 5 | 9 |
| 16:15 16:30 | 5 | 0 | 5 | 6 | 1 | 7 | 12 |
| 16:30 16:45 | 3 | 2 | 5 | 3 | 1 | 4 | 9 |
| 16:45 17:00 | 3 | 3 | 6 | 4 | 1 | 5 | 11 |
| 16:00 17:00 | 15 | 5 | 20 | 18 | 3 | 21 | 41 |
| 17:00 17:15 | 4 | 0 | 4 | 5 | 0 | 5 | 9 |
| 17:15 17:30 | 1 | 1 | 2 | 3 | 1 | 4 | 6 |
| 17:30 17:45 | 6 | 2 | 8 | 4 | 1 | 5 | 13 |
| 17:45 18:00 | 1 | 2 | 3 | 4 | 2 | 6 | 9 |
| 17:00 18:00 | 12 | 5 | 17 | 16 | 4 | 20 | 37 |
| Total | 51 | 39 | 90 | 74 | 21 | 95 | 185 |

Comment:



Transportation Services - Traffic Services

Work Order
36661

Turning Movement Count - Full Study Summary Report

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0
Eastbound: 12 Westbound: 4 1.00

Full Study

| Period | VISENEAU DR | | | | | INNES RD | | | | | WB TOT | STR TOT | Grand Total | | | | | | |
|-------------|-------------|-----|------|------------|-----|-----------|-----|--------|-----------|-----|--------|---------|-------------|------|-------|--------|-------|-------|-------|
| | Northbound | | | Southbound | | Eastbound | | | Westbound | | | | | | | | | | |
| | LT | ST | RT | NB TOT | LT | ST | RT | SB TOT | STR TOT | LT | | | | ST | RT | EB TOT | | | |
| 07:00 08:00 | 34 | 6 | 37 | 77 | 47 | 12 | 44 | 103 | 180 | 14 | 363 | 29 | 406 | 35 | 1461 | 32 | 1528 | 1934 | 2114 |
| 08:00 09:00 | 40 | 12 | 31 | 83 | 48 | 24 | 42 | 114 | 197 | 7 | 427 | 64 | 498 | 141 | 1100 | 34 | 1275 | 1773 | 1970 |
| 09:00 10:00 | 74 | 7 | 64 | 145 | 40 | 35 | 25 | 100 | 245 | 14 | 518 | 48 | 580 | 124 | 662 | 35 | 821 | 1401 | 1646 |
| 11:30 12:30 | 126 | 30 | 157 | 313 | 44 | 27 | 15 | 86 | 399 | 13 | 734 | 74 | 821 | 147 | 653 | 52 | 852 | 1673 | 2072 |
| 12:30 13:30 | 119 | 45 | 148 | 312 | 52 | 31 | 24 | 107 | 419 | 21 | 585 | 71 | 677 | 143 | 666 | 54 | 863 | 1540 | 1959 |
| 15:00 16:00 | 108 | 28 | 162 | 298 | 51 | 34 | 22 | 107 | 405 | 44 | 1217 | 78 | 1339 | 149 | 742 | 87 | 978 | 2317 | 2722 |
| 16:00 17:00 | 110 | 46 | 172 | 328 | 69 | 56 | 27 | 152 | 480 | 43 | 1430 | 84 | 1557 | 177 | 640 | 94 | 911 | 2468 | 2948 |
| 17:00 18:00 | 113 | 32 | 160 | 305 | 62 | 45 | 31 | 138 | 443 | 41 | 1318 | 74 | 1433 | 232 | 655 | 72 | 959 | 2392 | 2835 |
| Sub Total | 724 | 206 | 931 | 1861 | 413 | 264 | 230 | 907 | 2768 | 197 | 6592 | 522 | 7311 | 1148 | 6579 | 460 | 8187 | 15498 | 18266 |
| U Turns | | | | 0 | | | | 0 | 0 | | | | 12 | | | | 4 | 16 | 16 |
| Total | 724 | 206 | 931 | 1861 | 413 | 264 | 230 | 907 | 2768 | 197 | 6592 | 522 | 7323 | 1148 | 6579 | 460 | 8191 | 15514 | 18282 |
| EQ 12Hr | 1006 | 286 | 1294 | 2587 | 574 | 367 | 320 | 1261 | 3848 | 274 | 9163 | 726 | 10179 | 1596 | 9145 | 639 | 11385 | 21564 | 25412 |
| AVG 12Hr | 1006 | 286 | 1294 | 2587 | 574 | 367 | 320 | 1261 | 3848 | 274 | 9163 | 726 | 10179 | 1596 | 9145 | 639 | 11385 | 21564 | 25412 |
| EQ 24Hr | 1318 | 375 | 1695 | 3389 | 752 | 481 | 419 | 1652 | 5041 | 359 | 12003 | 951 | 13334 | 2090 | 11980 | 838 | 14915 | 28249 | 33290 |
| AVG 24Hr | 1318 | 375 | 1695 | 3389 | 752 | 481 | 419 | 1652 | 5041 | 359 | 12003 | 951 | 13334 | 2090 | 11980 | 838 | 14915 | 28249 | 33290 |

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

1.39

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

1.00

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

1.31

Comments:

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



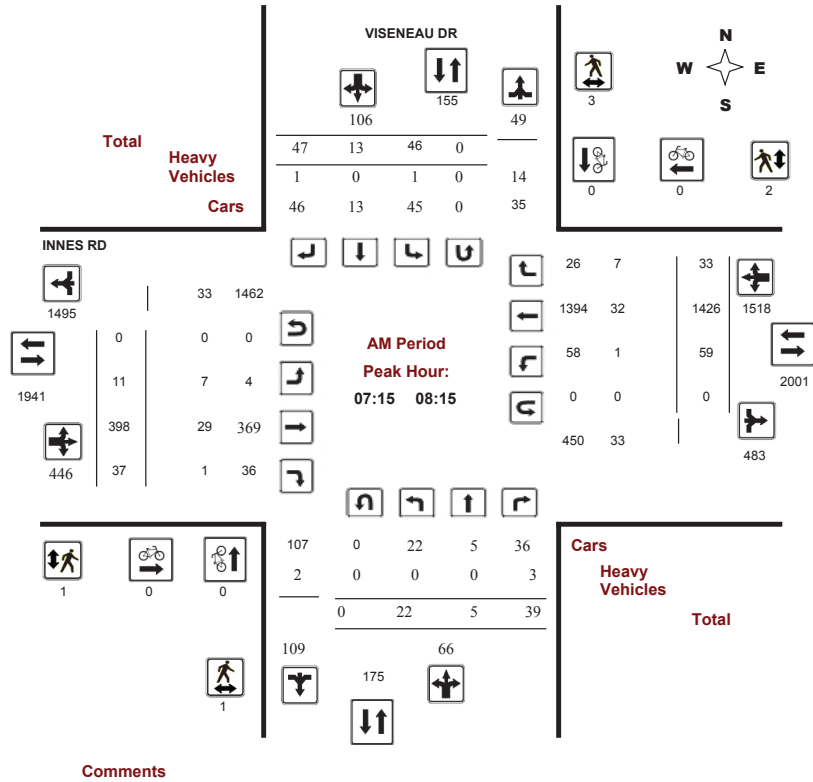
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017
Start Time: 07:00

WO No: 36661
Device: Miovision



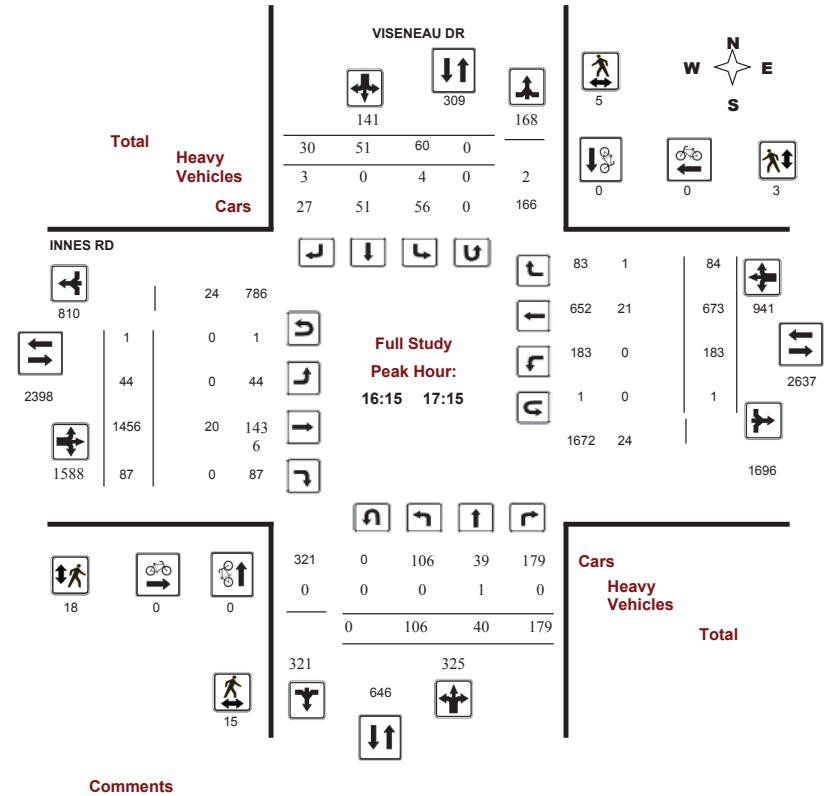
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017
Start Time: 07:00

WO No: 36661
Device: Miovision





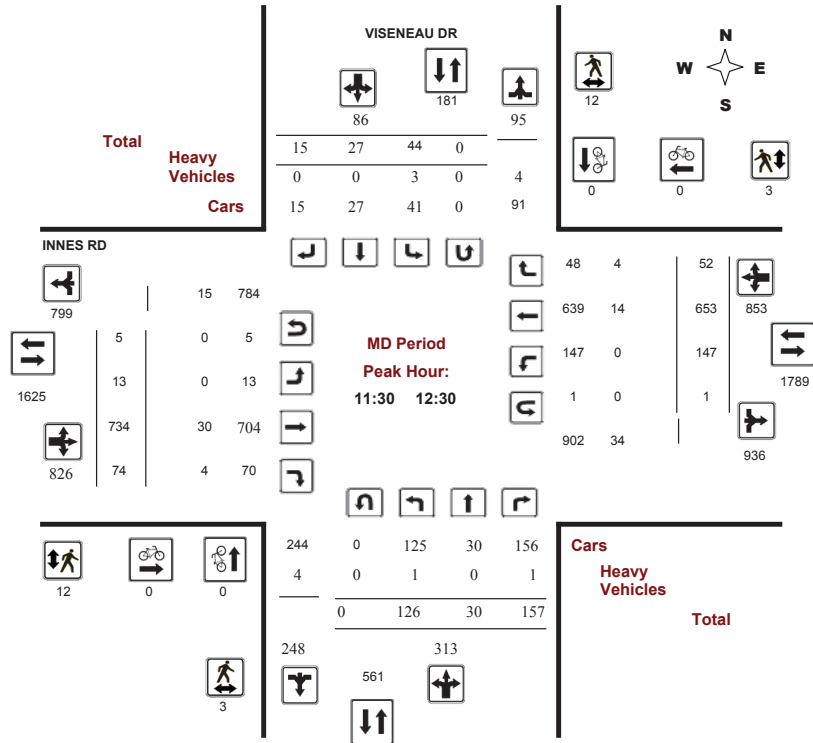
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017
Start Time: 07:00

WO No: 36661
Device: Miovision



Comments



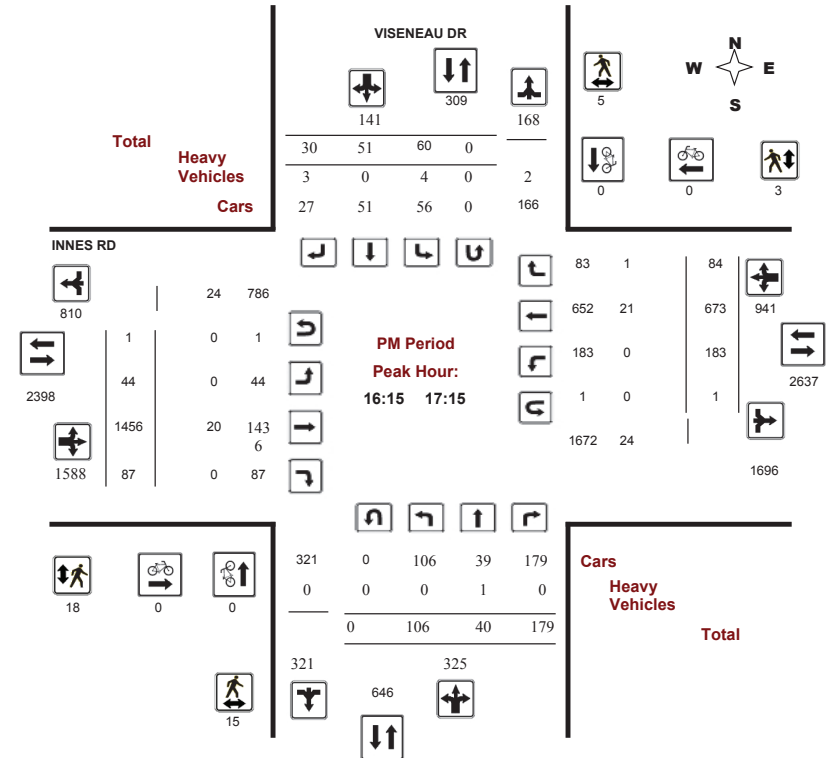
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017
Start Time: 07:00

WO No: 36661
Device: Miovision



Comments



Transportation Services - Traffic Services

Work Order
36661

Turning Movement Count - 15 Min U-Turn Total Report

INNES RD @ VISENEAU DR

Survey Date: Wednesday, January 25, 2017

| Time Period | Northbound U-Turn Total | Southbound U-Turn Total | Eastbound U-Turn Total | Westbound U-Turn Total | Total |
|-------------|----------------------------|----------------------------|---------------------------|---------------------------|-------|
| 07:00 07:15 | 0 | 0 | 0 | 0 | 0 |
| 07:15 07:30 | 0 | 0 | 0 | 0 | 0 |
| 07:30 07:45 | 0 | 0 | 0 | 0 | 0 |
| 07:45 08:00 | 0 | 0 | 0 | 0 | 0 |
| 08:00 08:15 | 0 | 0 | 0 | 0 | 0 |
| 08:15 08:30 | 0 | 0 | 0 | 0 | 0 |
| 08:30 08:45 | 0 | 0 | 0 | 0 | 0 |
| 08:45 09:00 | 0 | 0 | 0 | 0 | 0 |
| 09:00 09:15 | 0 | 0 | 0 | 0 | 0 |
| 09:15 09:30 | 0 | 0 | 0 | 0 | 0 |
| 09:30 09:45 | 0 | 0 | 1 | 0 | 1 |
| 09:45 10:00 | 0 | 0 | 0 | 0 | 0 |
| 11:30 11:45 | 0 | 0 | 0 | 0 | 0 |
| 11:45 12:00 | 0 | 0 | 2 | 0 | 2 |
| 12:00 12:15 | 0 | 0 | 2 | 0 | 2 |
| 12:15 12:30 | 0 | 0 | 1 | 1 | 2 |
| 12:30 12:45 | 0 | 0 | 1 | 0 | 1 |
| 12:45 13:00 | 0 | 0 | 1 | 0 | 1 |
| 13:00 13:15 | 0 | 0 | 0 | 0 | 0 |
| 13:15 13:30 | 0 | 0 | 0 | 0 | 0 |
| 15:00 15:15 | 0 | 0 | 1 | 0 | 1 |
| 15:15 15:30 | 0 | 0 | 0 | 0 | 0 |
| 15:30 15:45 | 0 | 0 | 0 | 0 | 0 |
| 15:45 16:00 | 0 | 0 | 1 | 0 | 1 |
| 16:00 16:15 | 0 | 0 | 0 | 1 | 1 |
| 16:15 16:30 | 0 | 0 | 0 | 0 | 0 |
| 16:30 16:45 | 0 | 0 | 0 | 0 | 0 |
| 16:45 17:00 | 0 | 0 | 0 | 1 | 1 |
| 17:00 17:15 | 0 | 0 | 1 | 0 | 1 |
| 17:15 17:30 | 0 | 0 | 1 | 1 | 2 |
| 17:30 17:45 | 0 | 0 | 0 | 0 | 0 |
| 17:45 18:00 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 12 | 4 | 16 |

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2022 Existing
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Volume (vph) | 121 | 343 | 23 | 17 | 1231 | 112 | 215 | 275 | 38 | 62 | 100 | 459 |
| Future Volume (vph) | 121 | 343 | 23 | 17 | 1231 | 112 | 215 | 275 | 38 | 62 | 100 | 459 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.543 | | | 0.565 | | |
| Satd. Flow (perm) | 3207 | 3316 | 1426 | 1631 | 3316 | 1444 | 941 | 3316 | 1396 | 955 | 3316 | 1452 |
| Satd. Flow (RTOR) | | | 143 | | | 143 | | | 82 | | | 150 |
| Lane Group Flow (vph) | 134 | 381 | 26 | 19 | 1368 | 124 | 239 | 306 | 42 | 69 | 111 | 510 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | | 8 |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 13.0 | 65.0 | 65.0 | 13.0 | 65.0 | 65.0 | 19.0 | 52.0 | 52.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 10.0% | 50.0% | 50.0% | 10.0% | 50.0% | 50.0% | 14.6% | 40.0% | 40.0% | 25.4% | 25.4% | 25.4% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None | None | None |
| Act Effct Green (s) | 6.4 | 66.6 | 66.6 | 6.4 | 58.8 | 58.8 | 45.3 | 45.3 | 45.3 | 26.3 | 26.3 | 26.3 |
| Actuated g/C Ratio | 0.05 | 0.51 | 0.51 | 0.05 | 0.45 | 0.45 | 0.35 | 0.35 | 0.35 | 0.20 | 0.20 | 0.20 |
| v/c Ratio | 0.85 | 0.22 | 0.03 | 0.23 | 0.91 | 0.17 | 0.61 | 0.26 | 0.08 | 0.36 | 0.17 | 1.23 |
| Control Delay | 101.3 | 18.9 | 0.1 | 66.4 | 43.6 | 2.7 | 40.2 | 31.2 | 0.8 | 50.8 | 43.6 | 155.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 101.3 | 18.9 | 0.1 | 66.4 | 43.6 | 2.7 | 40.2 | 31.2 | 0.8 | 50.8 | 43.6 | 155.9 |
| LOS | F | B | A | E | D | A | D | C | A | D | D | F |
| Approach Delay | | 38.4 | | | 40.6 | | | 32.7 | | | 127.3 | |
| Approach LOS | | D | | | D | | | C | | | F | |
| Queue Length 50th (m) | 17.8 | 24.9 | 0.0 | 4.8 | 168.7 | 0.0 | 46.4 | 29.4 | 0.0 | 15.3 | 12.4 | ~129.4 |
| Queue Length 95th (m) | #36.1 | 42.1 | 0.0 | 13.0 | #207.8 | 7.9 | 70.1 | 41.0 | 1.0 | 30.2 | 20.9 | #197.0 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 158 | 1698 | 800 | 86 | 1499 | 731 | 395 | 1155 | 539 | 193 | 670 | 413 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.85 | 0.22 | 0.03 | 0.22 | 0.91 | 0.17 | 0.61 | 0.26 | 0.08 | 0.36 | 0.17 | 1.23 |

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: 125

Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2022 Existing
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.23 | Intersection LOS: E |
| Intersection Signal Delay: 56.8 | ICU Level of Service F |
| Intersection Capacity Utilization 95.5% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2022 Existing
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↕ | ↕ | ↔ | | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 11 | 413 | 21 | 39 | 1307 | 24 | 14 | 12 | 42 | 36 | 9 | 42 |
| Future Volume (vph) | 11 | 413 | 21 | 39 | 1307 | 24 | 14 | 12 | 42 | 36 | 9 | 42 |
| Satd. Flow (prot) | 1658 | 3287 | 0 | 1658 | 3304 | 0 | 0 | 1572 | 0 | 0 | 1579 | 0 |
| Fit Permitted | 0.141 | | | 0.477 | | | | 0.920 | | | 0.853 | |
| Satd. Flow (perm) | 246 | 3287 | 0 | 827 | 3304 | 0 | 0 | 1457 | 0 | 0 | 1375 | 0 |
| Satd. Flow (RTOR) | | 8 | | | 3 | | | 47 | | | 38 | |
| Lane Group Flow (vph) | 12 | 482 | 0 | 43 | 1479 | 0 | 0 | 76 | 0 | 0 | 97 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.5 | 88.5 | | 88.5 | 88.5 | | 18.5 | 18.5 | | 18.5 | 18.5 | |
| Actuated g/C Ratio | 0.74 | 0.74 | | 0.74 | 0.74 | | 0.15 | 0.15 | | 0.15 | 0.15 | |
| v/c Ratio | 0.07 | 0.20 | | 0.07 | 0.61 | | 0.29 | 0.40 | | 0.29 | 0.40 | |
| Control Delay | 8.6 | 6.2 | | 5.4 | 8.0 | | 20.4 | 30.4 | | 20.4 | 30.4 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 8.6 | 6.2 | | 5.4 | 8.0 | | 20.4 | 30.4 | | 20.4 | 30.4 | |
| LOS | A | A | | A | A | | C | C | | C | C | |
| Approach Delay | | 6.3 | | | 7.9 | | 20.4 | 30.4 | | 20.4 | 30.4 | |
| Approach LOS | | A | | | A | | C | C | | C | C | |
| Queue Length 50th (m) | 0.5 | 10.8 | | 1.6 | 48.9 | | 6.5 | 13.5 | | 6.5 | 13.5 | |
| Queue Length 95th (m) | 3.7 | 31.3 | | m2.8 | 27.3 | | 17.4 | 25.2 | | 17.4 | 25.2 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | 143.5 | 112.1 | | 143.5 | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 106.0 | | | | | | | | |
| Base Capacity (vph) | 181 | 2425 | | 609 | 2436 | | 413 | 385 | | 413 | 385 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.07 | 0.20 | | 0.07 | 0.61 | | 0.18 | 0.25 | | 0.18 | 0.25 | |

| 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 |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2022 Existing
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.61 | Intersection LOS: A |
| Intersection Signal Delay: 9.0 | ICU Level of Service C |
| Intersection Capacity Utilization 65.0% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2022 Existing
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 6 | 495 | 7 | 1 | 1342 | 4 | 0 | 0 | 1 | 1 | 0 | 3 |
| Future Volume (vph) | 6 | 495 | 7 | 1 | 1342 | 4 | 0 | 0 | 1 | 1 | 0 | 3 |
| Satd. Flow (prot) | 1658 | 3309 | 0 | 1658 | 3315 | 0 | 1745 | 1464 | 0 | 0 | 1533 | 0 |
| Fit Permitted | 0.161 | | | 0.443 | | | | | | | 0.914 | |
| Satd. Flow (perm) | 281 | 3309 | 0 | 773 | 3315 | 0 | 1745 | 1464 | 0 | 0 | 1418 | 0 |
| Satd. Flow (RTOR) | | 3 | | | | | | 380 | | | 28 | |
| Lane Group Flow (vph) | 7 | 558 | 0 | 1 | 1495 | 0 | 0 | 1 | 0 | 0 | 4 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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) | 87.0 | 87.0 | | 87.0 | 87.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Total Split (%) | 72.5% | 72.5% | | 72.5% | 72.5% | | 27.5% | 27.5% | | 27.5% | 27.5% | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 112.3 | 112.3 | | 112.3 | 112.3 | | 13.2 | 13.2 | | 13.2 | 13.2 | |
| Actuated g/C Ratio | 0.94 | 0.94 | | 0.94 | 0.94 | | 0.11 | 0.11 | | 0.11 | 0.11 | |
| v/c Ratio | 0.03 | 0.18 | | 0.00 | 0.48 | | 0.00 | 0.00 | | 0.02 | 0.02 | |
| Control Delay | 3.5 | 1.9 | | 7.0 | 5.5 | | 0.0 | 0.0 | | 0.2 | 0.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 3.5 | 1.9 | | 7.0 | 5.5 | | 0.0 | 0.0 | | 0.2 | 0.2 | |
| LOS | A | A | | A | A | | A | A | | A | A | |
| Approach Delay | | 1.9 | | | 5.5 | | | | | | 0.3 | |
| Approach LOS | | A | | | A | | | | | | A | |
| Queue Length 50th (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | m1.9 | 27.4 | | m0.2 | 140.4 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 85.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 263 | 3097 | | 723 | 3103 | | 621 | 621 | | 337 | 337 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.03 | 0.18 | | 0.00 | 0.48 | | 0.00 | 0.00 | | 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 |

Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2022 Existing
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.48 | Intersection LOS: A |
| Intersection Signal Delay: 4.5 | ICU Level of Service B |
| Intersection Capacity Utilization 58.8% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2022 Existing
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ |
| Traffic Volume (vph) | 11 | 437 | 37 | 59 | 1291 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Future Volume (vph) | 11 | 437 | 37 | 59 | 1291 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3300 | 0 | 1658 | 1745 | 1483 | 0 | 1602 | 0 |
| Fit Permitted | 0.170 | | | 0.437 | | | 0.669 | | | | 0.850 | |
| Satd. Flow (perm) | 296 | 3316 | 1450 | 762 | 3300 | 0 | 1166 | 1745 | 1462 | 0 | 1391 | 0 |
| Satd. Flow (RTOR) | | | 115 | | 4 | | | | 105 | | 28 | |
| Lane Group Flow (vph) | 12 | 486 | 41 | 66 | 1471 | 0 | 21 | 6 | 43 | 0 | 111 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 66.0 | 66.0 | 66.0 | 12.0 | 78.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 55.0% | 55.0% | 55.0% | 10.0% | 65.0% | | 30.8% | 30.8% | 30.8% | 30.8% | 30.8% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 80.3 | 80.3 | 80.3 | 91.0 | 91.0 | | 15.4 | 15.4 | 15.4 | | 15.4 | |
| Actuated g/C Ratio | 0.67 | 0.67 | 0.67 | 0.76 | 0.76 | | 0.13 | 0.13 | 0.13 | | 0.13 | |
| v/c Ratio | 0.06 | 0.22 | 0.04 | 0.10 | 0.59 | | 0.14 | 0.03 | 0.15 | | 0.55 | |
| Control Delay | 8.1 | 7.1 | 0.1 | 5.3 | 8.6 | | 44.6 | 40.6 | 1.2 | | 45.0 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 8.1 | 7.1 | 0.1 | 5.3 | 8.6 | | 44.6 | 40.6 | 1.2 | | 45.0 | |
| LOS | A | A | A | A | A | | D | D | A | | D | |
| Approach Delay | | 6.6 | | | 8.4 | | | 17.6 | | | 45.0 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 0.8 | 19.2 | 0.0 | 2.9 | 59.4 | | 4.6 | 1.3 | 0.0 | | 18.9 | |
| Queue Length 95th (m) | 1.3 | 11.7 | 0.0 | 10.4 | 131.6 | | 10.6 | 4.6 | 0.0 | | 32.1 | |
| Internal Link Dist (m) | | 561.5 | | | 183.4 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | | 20.0 | | | |
| Base Capacity (vph) | 197 | 2218 | 1008 | 629 | 2504 | | 288 | 431 | 440 | | 365 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.06 | 0.22 | 0.04 | 0.10 | 0.59 | | 0.07 | 0.01 | 0.10 | | 0.30 | |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2022 Existing
AM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 4.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

Intersection Summary

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2022 Existing
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.59 | Intersection LOS: B |
| Intersection Signal Delay: 10.1 | ICU Level of Service D |
| Intersection Capacity Utilization 76.2% | |
| Analysis Period (min) 15 | |

Splits and Phases: 4: Innes Rd & Viseneau Dr



HCM 2010 TWSC
5: Lamarche Ave & Innes Rd

2022 Existing
AM Peak Hour

| Intersection | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|
| Int Delay, s/veh | 0.7 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑ | | ↑ | ↑↑ | ↑ | ↑ |
| Traffic Vol, veh/h | 476 | 17 | 12 | 1336 | 41 | 27 |
| Future Vol, veh/h | 476 | 17 | 12 | 1336 | 41 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - None | - None | - None | - None | - None | - None |
| Storage Length | - | - | 0 | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 529 | 19 | 13 | 1484 | 46 | 30 |
| Major/Minor | Major1 | Major2 | Minor1 | | | |
| Conflicting Flow All | 0 | 0 | 548 | 0 | 1307 | 274 |
| Stage 1 | - | - | - | - | 539 | - |
| Stage 2 | - | - | - | - | 768 | - |
| Critical Hdwy | - | - | 4.14 | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | - | - | 2.22 | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | - | - | 1018 | - | 151 | 724 |
| Stage 1 | - | - | - | - | 549 | - |
| Stage 2 | - | - | - | - | 418 | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1018 | - | 149 | 724 |
| Mov Cap-2 Maneuver | - | - | - | - | 281 | - |
| Stage 1 | - | - | - | - | 549 | - |
| Stage 2 | - | - | - | - | 413 | - |
| Approach | EB | WB | NB | | | |
| HCM Control Delay, s | 0 | 0.1 | 17.2 | | | |
| HCM LOS | | | C | | | |
| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT | |
| Capacity (veh/h) | 371 | - | - | 1018 | - | |
| HCM Lane V/C Ratio | 0.204 | - | - | 0.013 | - | |
| HCM Control Delay (s) | 17.2 | - | - | 8.6 | - | |
| HCM Lane LOS | C | - | - | A | - | |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0 | - | |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2022 Existing
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 579 | 1391 | 168 | 59 | 568 | 124 | 64 | 225 | 78 | 163 | 256 | 203 |
| Future Volume (vph) | 579 | 1391 | 168 | 59 | 568 | 124 | 64 | 225 | 78 | 163 | 256 | 203 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.457 | | | 0.597 | | |
| Satd. Flow (perm) | 3190 | 3316 | 1410 | 1651 | 3316 | 1445 | 789 | 3316 | 1432 | 1025 | 3316 | 1438 |
| Satd. Flow (RTOR) | | | 165 | | | 230 | | | 159 | | | 226 |
| Lane Group Flow (vph) | 643 | 1546 | 187 | 66 | 631 | 138 | 71 | 250 | 87 | 181 | 284 | 226 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | 8 | |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 16.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 31.0 | 49.0 | 49.0 | 16.0 | 34.0 | 34.0 | 12.0 | 45.0 | 45.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 28.2% | 44.5% | 44.5% | 14.5% | 30.9% | 30.9% | 10.9% | 40.9% | 40.9% | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | Max | Max | Max | Max | Max |
| Act Effct Green (s) | 23.9 | 46.3 | 46.3 | 8.7 | 28.3 | 28.3 | 38.3 | 38.3 | 38.3 | 28.7 | 28.7 | 28.7 |
| Actuated g/C Ratio | 0.22 | 0.42 | 0.42 | 0.08 | 0.26 | 0.26 | 0.35 | 0.35 | 0.35 | 0.26 | 0.26 | 0.26 |
| v/c Ratio | 0.92 | 1.11 | 0.27 | 0.51 | 0.74 | 0.25 | 0.22 | 0.22 | 0.14 | 0.68 | 0.33 | 0.42 |
| Control Delay | 61.7 | 91.0 | 5.9 | 56.0 | 52.8 | 11.9 | 26.5 | 25.9 | 0.5 | 52.3 | 35.1 | 7.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 61.7 | 91.0 | 5.9 | 56.0 | 52.8 | 11.9 | 26.5 | 25.9 | 0.5 | 52.3 | 35.1 | 7.1 |
| LOS | E | F | A | E | D | B | C | C | A | D | D | A |
| Approach Delay | | 76.4 | | | 46.3 | | 20.6 | | | 30.5 | | |
| Approach LOS | | E | | | D | | C | | | C | | |
| Queue Length 50th (m) | 69.5 | ~211.9 | 2.9 | 13.6 | 50.9 | 0.0 | 10.3 | 19.7 | 0.0 | 36.1 | 26.7 | 0.0 |
| Queue Length 95th (m) | #100.9 | #254.2 | 16.8 | 29.7 | 94.8 | 27.3 | 20.4 | 29.4 | 0.0 | #69.2 | 39.1 | 18.4 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 713 | 1397 | 689 | 147 | 852 | 542 | 316 | 1154 | 602 | 267 | 864 | 541 |
| 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 | 0.90 | 1.11 | 0.27 | 0.45 | 0.74 | 0.25 | 0.22 | 0.22 | 0.14 | 0.68 | 0.33 | 0.42 |

Intersection Summary

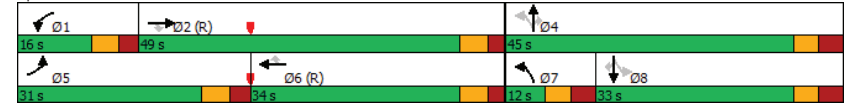
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 110 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2022 Existing
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.11 | Intersection LOS: E |
| Intersection Signal Delay: 57.9 | ICU Level of Service F |
| Intersection Capacity Utilization 97.5% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2022 Existing
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↕ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 61 | 1544 | 30 | 102 | 698 | 69 | 23 | 6 | 84 | 59 | 17 | 34 |
| Future Volume (vph) | 61 | 1544 | 30 | 102 | 698 | 69 | 23 | 6 | 84 | 59 | 17 | 34 |
| Satd. Flow (prot) | 1658 | 3304 | 0 | 1658 | 3259 | 0 | 0 | 1525 | 0 | 0 | 1620 | 0 |
| Fit Permitted | 0.312 | | | 0.086 | | | | 0.919 | | | 0.742 | |
| Satd. Flow (perm) | 542 | 3304 | 0 | 150 | 3259 | 0 | 0 | 1414 | 0 | 0 | 1227 | 0 |
| Satd. Flow (RTOR) | | 3 | | | 17 | | | 22 | | | 20 | |
| Lane Group Flow (vph) | 68 | 1749 | 0 | 113 | 853 | 0 | 0 | 126 | 0 | 0 | 123 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 77.5 | 77.5 | | 77.5 | 77.5 | | 19.5 | 19.5 | | 19.5 | 19.5 | |
| Actuated g/C Ratio | 0.70 | 0.70 | | 0.70 | 0.70 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.18 | 0.75 | | 1.08 | 0.37 | | 0.47 | 0.53 | | 0.53 | 0.53 | |
| Control Delay | 2.4 | 7.3 | | 136.7 | 12.4 | | 36.6 | 40.0 | | 40.0 | 40.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.4 | 7.3 | | 136.7 | 12.4 | | 36.6 | 40.0 | | 40.0 | 40.0 | |
| LOS | A | A | | F | B | | D | D | | D | D | |
| Approach Delay | | 7.1 | | | 27.0 | | | 36.6 | | | 40.0 | |
| Approach LOS | | A | | | C | | | D | | | D | |
| Queue Length 50th (m) | 1.4 | 29.1 | | 20.5 | 26.4 | | 21.4 | 21.5 | | 21.5 | 21.5 | |
| Queue Length 95th (m) | m1.8 | m23.7 | | #56.7 | 109.1 | | 33.5 | 33.7 | | 33.7 | 33.7 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | | 143.5 | | | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 106.0 | | | | | | | | |
| Base Capacity (vph) | 382 | 2329 | | 105 | 2301 | | 416 | 362 | | 362 | 362 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.18 | 0.75 | | 1.08 | 0.37 | | 0.30 | 0.34 | | 0.34 | 0.34 | |

Intersection Summary

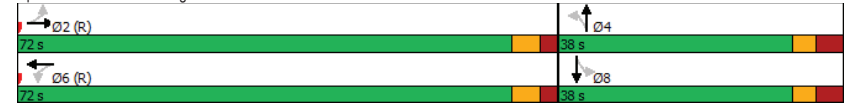
Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2022 Existing
PM Peak Hour

Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 16.0
 Intersection LOS: B
 Intersection Capacity Utilization 85.7%
 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 Rd & Innes Rd



Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2022 Existing
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 8 | 1654 | 1 | 2 | 862 | 8 | 2 | 0 | 8 | 4 | 0 | 10 |
| Future Volume (vph) | 8 | 1654 | 1 | 2 | 862 | 8 | 2 | 0 | 8 | 4 | 0 | 10 |
| Satd. Flow (prot) | 1658 | 3316 | 0 | 1658 | 3312 | 0 | 1658 | 1483 | 0 | 0 | 1534 | 0 |
| Fit Permitted | 0.291 | | | 0.100 | | | 0.748 | | | | 0.906 | |
| Satd. Flow (perm) | 508 | 3316 | 0 | 175 | 3312 | 0 | 1300 | 1483 | 0 | 0 | 1408 | 0 |
| Satd. Flow (RTOR) | | | | 2 | | | 31 | | | | 31 | |
| Lane Group Flow (vph) | 9 | 1839 | 0 | 2 | 967 | 0 | 2 | 9 | 0 | 0 | 15 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | | 8 |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | | 10.0 |
| Minimum Split (s) | 34.1 | 34.1 | | 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 | | 0.0 | | 0.0 |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | | | 6.3 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | | None |
| Act Effct Green (s) | 97.8 | 97.8 | | 97.8 | 97.8 | | 13.2 | 13.2 | | | | 13.2 |
| Actuated g/C Ratio | 0.89 | 0.89 | | 0.89 | 0.89 | | 0.12 | 0.12 | | | | 0.12 |
| v/c Ratio | 0.02 | 0.62 | | 0.01 | 0.33 | | 0.01 | 0.04 | | | | 0.08 |
| Control Delay | 1.5 | 3.3 | | 5.0 | 3.6 | | 38.0 | 0.4 | | | | 5.1 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | | 0.0 |
| Total Delay | 1.5 | 3.3 | | 5.0 | 3.6 | | 38.0 | 0.4 | | | | 5.1 |
| LOS | A | A | | A | A | | D | A | | | | A |
| Approach Delay | | 3.3 | | | 3.6 | | | 7.2 | | | | 5.1 |
| Approach LOS | | A | | | A | | | A | | | | A |
| Queue Length 50th (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.4 | 0.0 | | | | 0.0 |
| Queue Length 95th (m) | m0.2 | 162.7 | | 1.0 | 61.9 | | 2.3 | 0.3 | | | | 2.5 |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | | 33.2 |
| Turn Bay Length (m) | 85.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 452 | 2949 | | 155 | 2946 | | 315 | 383 | | | | 365 |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | | | 0 |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | | | 0 |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | | | 0 |
| Reduced v/c Ratio | 0.02 | 0.62 | | 0.01 | 0.33 | | 0.01 | 0.02 | | | | 0.04 |

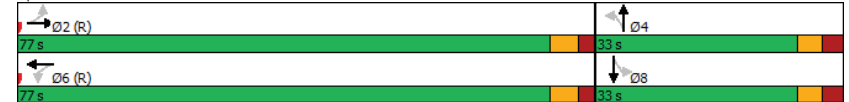
| Intersection Summary | |
|------------------------|---|
| Cycle Length: | 110 |
| Actuated Cycle Length: | 110 |
| Offset: | 36 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green |
| Natural Cycle: | 90 |
| Control Type: | Actuated-Coordinated |

Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2022 Existing
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.62 | Intersection LOS: A |
| Intersection Signal Delay: 3.4 | ICU Level of Service C |
| Intersection Capacity Utilization 68.2% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2022 Existing
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Volume (vph) | 44 | 1511 | 87 | 183 | 732 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Future Volume (vph) | 44 | 1511 | 87 | 183 | 732 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3255 | 0 | 1658 | 1745 | 1483 | 0 | 1648 | 0 |
| Fit Permitted | 0.315 | | | 0.051 | | | 0.588 | | | | 0.841 | |
| Satd. Flow (perm) | 548 | 3316 | 1399 | 89 | 3255 | 0 | 1008 | 1745 | 1460 | 0 | 1414 | 0 |
| Satd. Flow (RTOR) | | | 106 | | 18 | | | | 199 | | 10 | |
| Lane Group Flow (vph) | 49 | 1679 | 97 | 203 | 906 | 0 | 118 | 44 | 199 | 0 | 157 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | | 8 |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 68.0 | 68.0 | 68.0 | 20.0 | 88.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 52.3% | 52.3% | 52.3% | 15.4% | 67.7% | | 28.5% | 28.5% | 28.5% | 28.5% | 28.5% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 72.5 | 72.5 | 72.5 | 95.4 | 95.4 | | 21.0 | 21.0 | 21.0 | | 21.0 | |
| Actuated g/C Ratio | 0.56 | 0.56 | 0.56 | 0.73 | 0.73 | | 0.16 | 0.16 | 0.16 | | 0.16 | |
| v/c Ratio | 0.16 | 0.91 | 0.12 | 0.77 | 0.38 | | 0.73 | 0.16 | 0.50 | | 0.67 | |
| Control Delay | 19.5 | 35.9 | 3.2 | 51.9 | 7.5 | | 75.1 | 44.8 | 9.9 | | 60.3 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 19.5 | 35.9 | 3.2 | 51.9 | 7.5 | | 75.1 | 44.8 | 9.9 | | 60.3 | |
| LOS | B | D | A | D | A | | E | D | A | | E | |
| Approach Delay | | 33.7 | | | 15.6 | | | 35.5 | | | 60.3 | |
| Approach LOS | | C | | | B | | | D | | | E | |
| Queue Length 50th (m) | 5.9 | 195.7 | 0.0 | 34.9 | 37.1 | | 29.4 | 9.9 | 0.0 | | 36.3 | |
| Queue Length 95th (m) | 15.9 | #292.4 | 8.0 | 63.1 | 61.8 | | 47.3 | 19.3 | 19.3 | | 55.1 | |
| Internal Link Dist (m) | | 561.5 | | | 183.0 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | | 20.0 | | | |
| Base Capacity (vph) | 305 | 1849 | 827 | 272 | 2394 | | 230 | 398 | 487 | | 330 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.16 | 0.91 | 0.12 | 0.75 | 0.38 | | 0.51 | 0.11 | 0.41 | | 0.48 | |

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2022 Existing
PM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 3.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

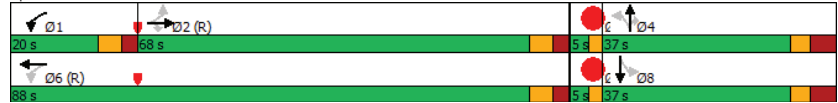
Intersection Summary

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2022 Existing
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.91 | Intersection LOS: C |
| Intersection Signal Delay: 29.3 | ICU Level of Service E |
| Intersection Capacity Utilization 90.7% | |
| Analysis Period (min) 15 | |
| # 95th percentile volume exceeds capacity, queue may be longer. | |
| Queue shown is maximum after two cycles. | |

Splits and Phases: 4: Innes Rd & Viseneau Dr



HCM 2010 TWSC
5: Lamarche Ave & Innes Rd

2022 Existing
PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.2 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑ | | | ↑↑ | ↑↑ | ↑↑ |
| Traffic Vol, veh/h | 1650 | 42 | 28 | 841 | 28 | 19 |
| Future Vol, veh/h | 1650 | 42 | 28 | 841 | 28 | 19 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1833 | 47 | 31 | 934 | 31 | 21 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 1880 |
| Stage 1 | - | - | 1857 |
| Stage 2 | - | - | 529 |
| Critical Hdwy | - | 4.14 | 6.84 |
| Critical Hdwy Stg 1 | - | - | 5.84 |
| Critical Hdwy Stg 2 | - | - | 5.84 |
| Follow-up Hdwy | - | 2.22 | 3.52 |
| Pot Cap-1 Maneuver | - | 315 | 28 |
| Stage 1 | - | - | 109 |
| Stage 2 | - | - | 555 |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | 315 | 22 |
| Mov Cap-2 Maneuver | - | - | 86 |
| Stage 1 | - | - | 109 |
| Stage 2 | - | - | 441 |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 0.6 | 57.8 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 118 | - | - | 315 | - |
| HCM Lane V/C Ratio | 0.443 | - | - | 0.099 | - |
| HCM Control Delay (s) | 57.8 | - | - | 17.7 | - |
| HCM Lane LOS | F | - | - | C | - |
| HCM 95th %tile Q(veh) | 1.9 | - | - | 0.3 | - |

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

Appendix D

Collision Data

| Accident Date | Accident Year | Accident Time | Location | Environment Condition | Light | Traffic Control | Traffic Control Condition | Classification Of Accident | Initial Impact Type | Road Surface Condition | # Vehicles | # Motorcycles | # Bicycles | # Pedestrians |
|---------------|---------------|---------------|---|-----------------------|---------------|-----------------|---------------------------|----------------------------|-----------------------|------------------------|------------|---------------|------------|---------------|
| 9/30/2016 | 2016 | 18:25 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 02 - Non-fatal injury | 03 - Rear end | 01 - Dry | 2 | 0 | 0 | 0 |
| 10/19/2016 | 2016 | 17:00 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 02 - Non-fatal injury | 02 - Angle | 01 - Dry | 2 | 0 | 0 | 0 |
| 2/17/2016 | 2016 | 20:46 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 07 - Dark | 10 - No control | 0 | 03 - P.D. only | 02 - Angle | 05 - Packed snow | 2 | 0 | 0 | 0 |
| 4/20/2016 | 2016 | 16:58 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 04 - Sideswipe | 01 - Dry | 2 | 0 | 0 | 0 |
| 11/14/2017 | 2017 | 16:12 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 03 - Rear end | 01 - Dry | 2 | 0 | 0 | 0 |
| 1/31/2017 | 2017 | 16:38 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 04 - Sideswipe | 01 - Dry | 2 | 0 | 0 | 0 |
| 2/1/2017 | 2017 | 6:49 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 03 - Dawn | 10 - No control | 0 | 03 - P.D. only | 03 - Rear end | 03 - Loose snow | 2 | 0 | 0 | 0 |
| 6/1/2017 | 2017 | 1:16 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 07 - Dark | 10 - No control | 0 | 03 - P.D. only | 04 - Sideswipe | 01 - Dry | 2 | 0 | 0 | 0 |
| 11/22/2018 | 2018 | 14:37 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 02 - Angle | 01 - Dry | 2 | 0 | 0 | 0 |
| 12/31/2018 | 2018 | 21:30 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 03 - Snow | 07 - Dark | 10 - No control | 0 | 03 - P.D. only | 02 - Angle | 05 - Packed snow | 2 | 0 | 0 | 0 |
| 4/26/2018 | 2018 | 18:06 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 05 - Turning movement | 01 - Dry | 2 | 0 | 0 | 0 |
| 4/21/2019 | 2019 | 19:26 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 07 - SMV other | 01 - Dry | 1 | 0 | 0 | 0 |
| 7/10/2019 | 2019 | 7:15 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 03 - P.D. only | 02 - Angle | 01 - Dry | 2 | 0 | 0 | 0 |
| 1/25/2020 | 2020 | 17:00 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 03 - Snow | 05 - Dusk | 10 - No control | 0 | 03 - P.D. only | 07 - SMV other | 04 - Slush | 1 | 0 | 0 | 0 |
| 4/20/2020 | 2020 | 19:59 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 05 - Dusk | 10 - No control | 0 | 03 - P.D. only | 03 - Rear end | 01 - Dry | 2 | 0 | 0 | 0 |
| 7/6/2020 | 2020 | 7:05 | INNES RD btwn PAGE RD & 473 E OF PAGE RD/BUILDERS' WAREHOUSE SC (_32AYFDA) | 01 - Clear | 01 - Daylight | 10 - No control | 0 | 02 - Non-fatal injury | 07 - SMV other | 01 - Dry | 1 | 1 | 0 | 0 |

Appendix E

City TRANS Forecasts – Background Growth

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume 245 and 275 Lamarche Avenue

2011 Model - Basecase

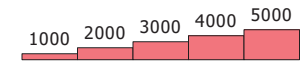
N/A

User Initials: TIMW
Plot Prepared: Feb, 2022
EMME Scenario: 21713



Legend

AM Peak Hour Total Traffic Volume



Distance (m)



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

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

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

M4

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume 245 and 275 Lamarche Avenue

2031 Model - Basecase

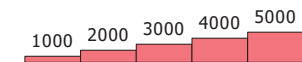
N/A

User Initials: TIMW
Plot Prepared: Feb, 2022
EMME Scenario: 21714



Legend

AM Peak Hour Total Traffic Volume



Distance (m)

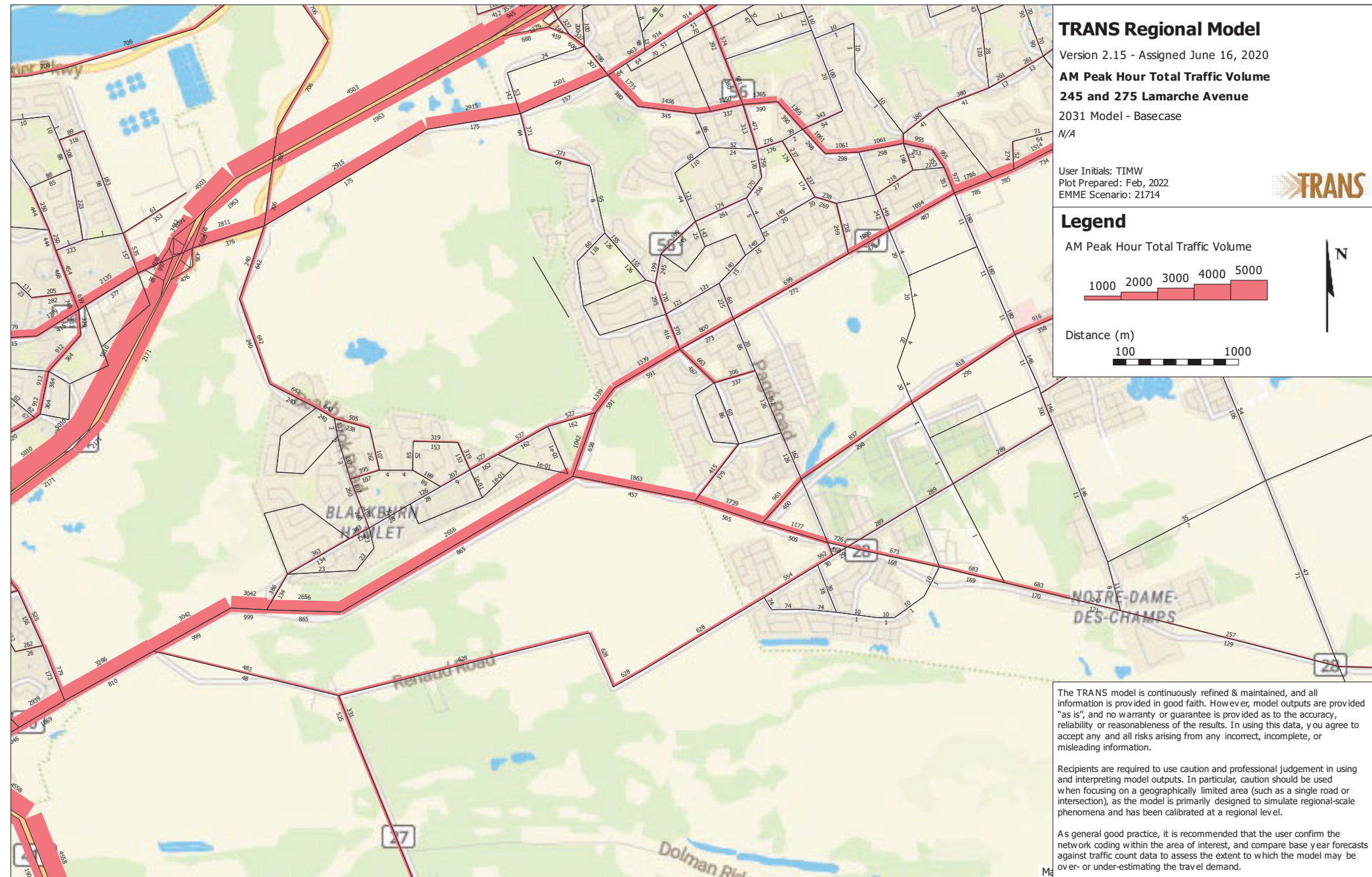


The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and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

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

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

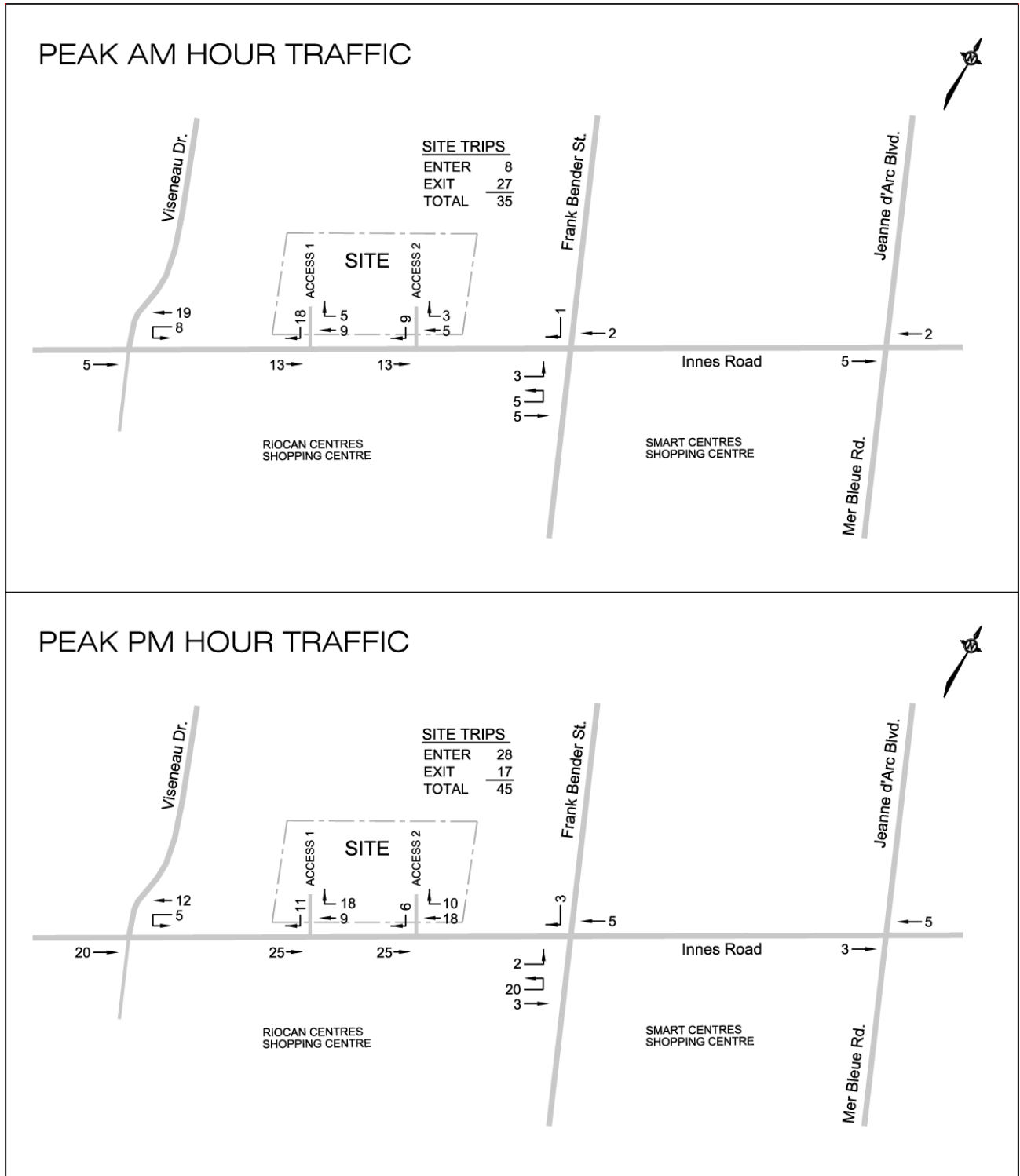
M4



Appendix F

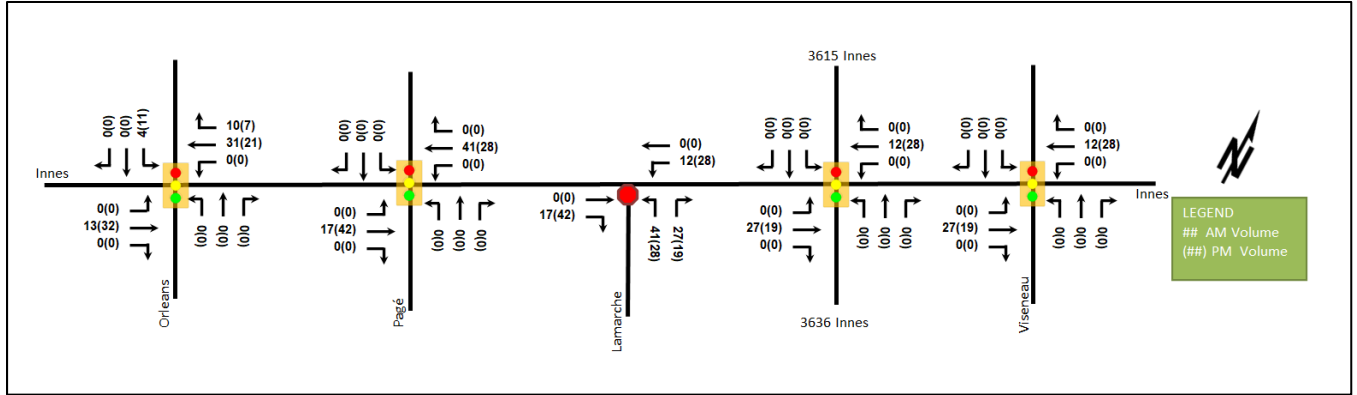
Background Development Volumes

**FIGURE 3.1
 PEAK AM AND PM HOUR SITE GENERATED TRIPS**



NOT TO SCALE

3490 Innes Road - Phase 1-3 (Phase 1)



3490 Innes Road - Phase 1-3 (Phase 1+2)

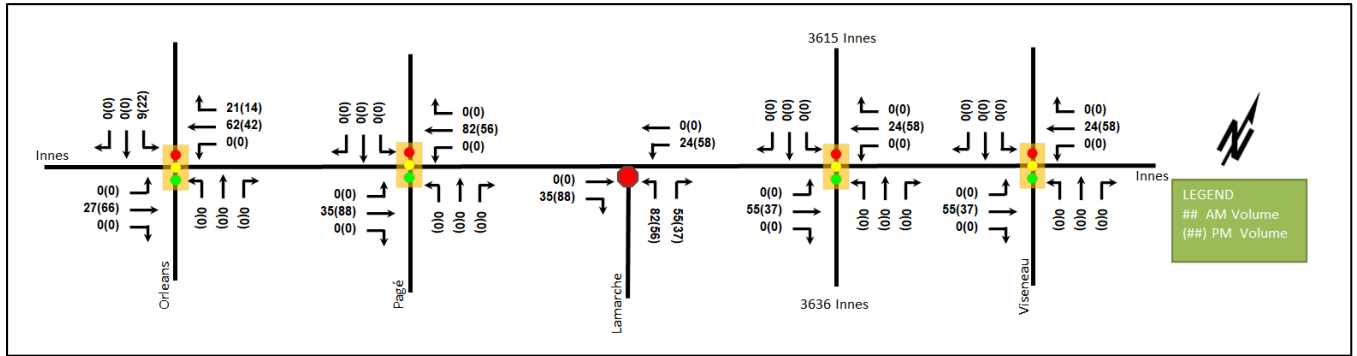


Figure 2: 2024 Background Traffic Volumes

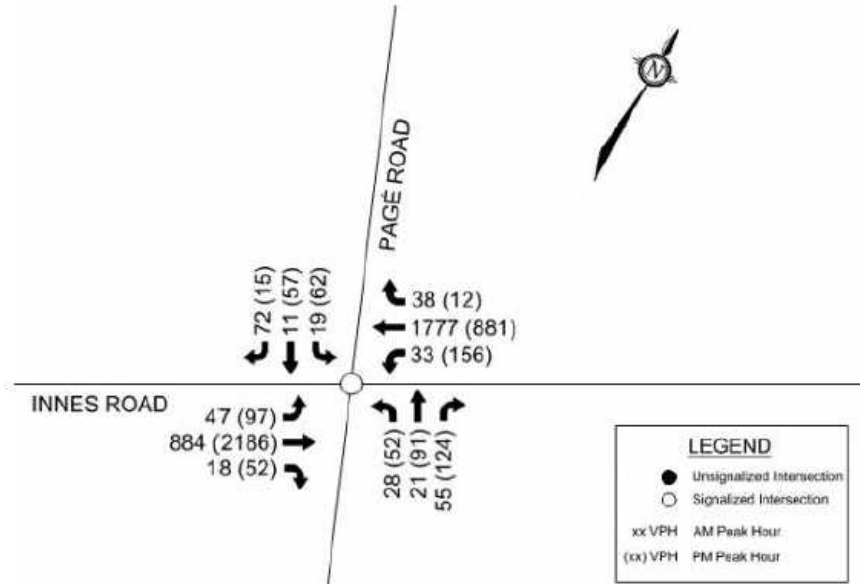
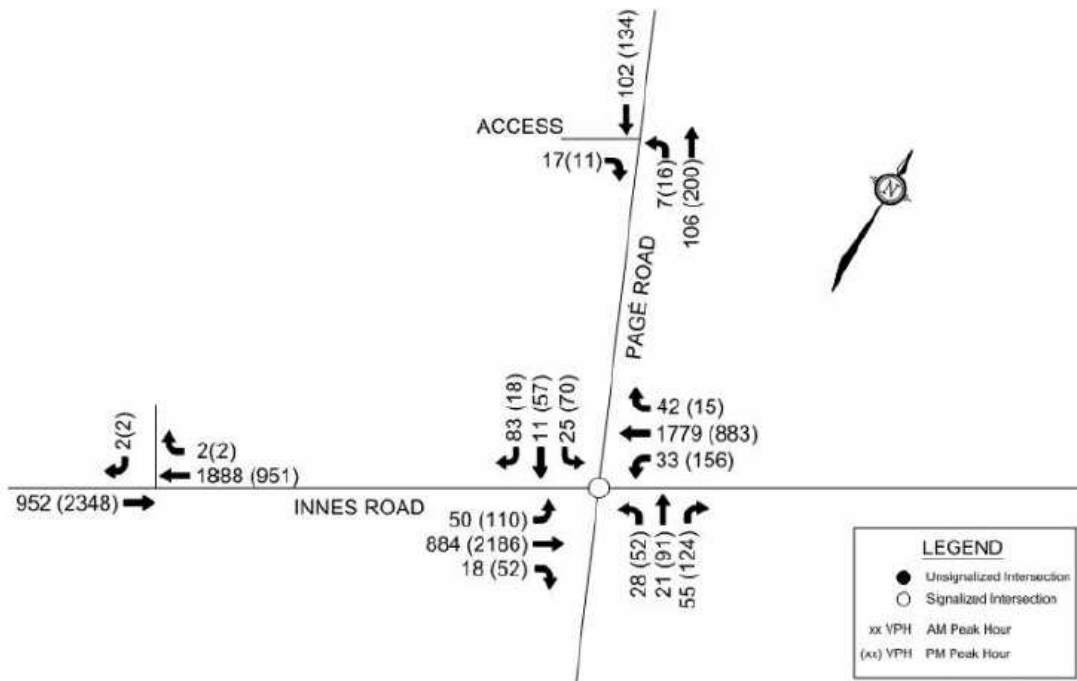
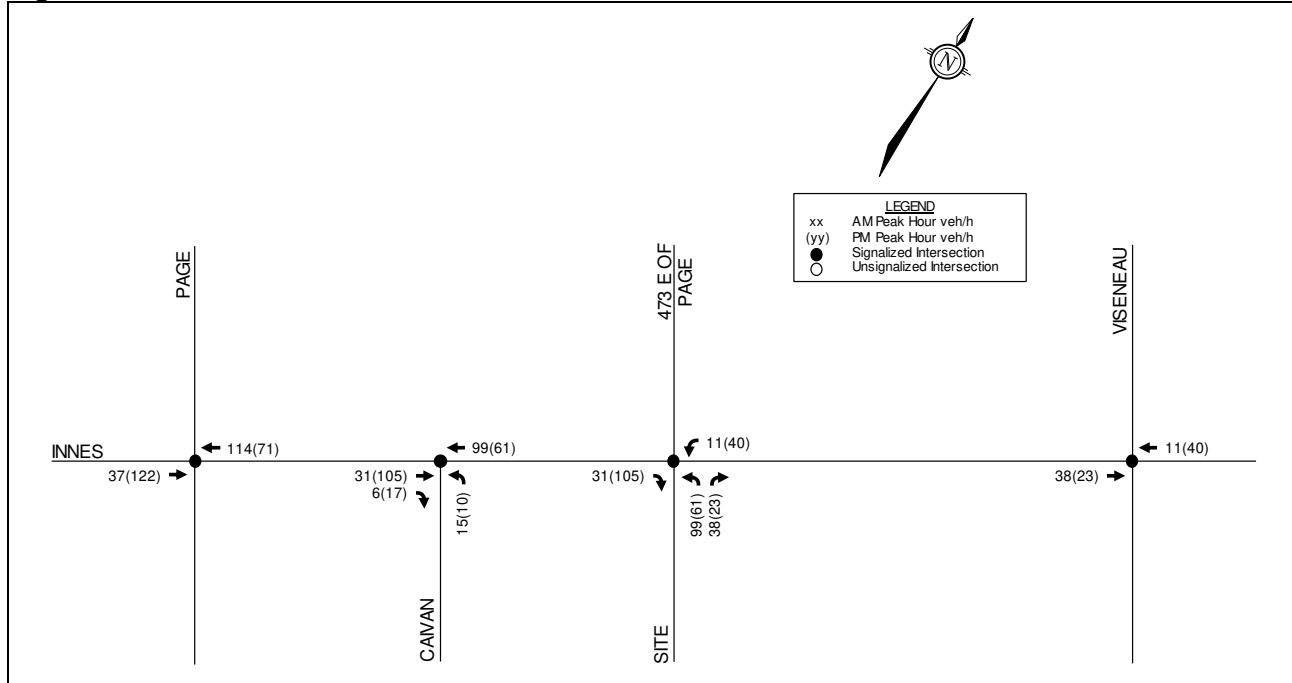


Figure 4: 2024 Total Traffic Volumes



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Figure 6: 2023/2028 Site-Generated Traffic



Appendix G

Synchro Intersection Worksheets – 2025 Future Background Conditions

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Background
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 121 | 399 | 23 | 17 | 1413 | 113 | 228 | 292 | 38 | 63 | 100 | 459 |
| Future Volume (vph) | 121 | 399 | 23 | 17 | 1413 | 113 | 228 | 292 | 38 | 63 | 100 | 459 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.549 | | | 0.573 | | |
| Satd. Flow (perm) | 3206 | 3316 | 1426 | 1632 | 3316 | 1444 | 952 | 3316 | 1396 | 968 | 3316 | 1452 |
| Satd. Flow (RTOR) | | | 143 | | | 143 | | | 82 | | | 152 |
| Lane Group Flow (vph) | 121 | 399 | 23 | 17 | 1413 | 113 | 228 | 292 | 38 | 63 | 100 | 459 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | | 8 |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 13.0 | 65.0 | 65.0 | 13.0 | 65.0 | 65.0 | 19.0 | 52.0 | 52.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 10.0% | 50.0% | 50.0% | 10.0% | 50.0% | 50.0% | 14.6% | 40.0% | 40.0% | 25.4% | 25.4% | 25.4% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None | None | None |
| Act Effct Green (s) | 6.4 | 66.6 | 66.6 | 6.4 | 58.8 | 58.8 | 45.3 | 45.3 | 45.3 | 26.3 | 26.3 | 26.3 |
| Actuated g/C Ratio | 0.05 | 0.51 | 0.51 | 0.05 | 0.45 | 0.45 | 0.35 | 0.35 | 0.35 | 0.20 | 0.20 | 0.20 |
| v/c Ratio | 0.77 | 0.23 | 0.03 | 0.21 | 0.94 | 0.15 | 0.57 | 0.25 | 0.07 | 0.32 | 0.15 | 1.11 |
| Control Delay | 90.3 | 19.0 | 0.1 | 65.5 | 47.4 | 1.9 | 38.9 | 31.0 | 0.3 | 49.7 | 43.4 | 108.2 |
| 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 | 90.3 | 19.0 | 0.1 | 65.5 | 47.4 | 1.9 | 38.9 | 31.0 | 0.3 | 49.7 | 43.4 | 108.2 |
| LOS | F | B | A | E | D | A | D | C | A | D | D | F |
| Approach Delay | | 34.1 | | | 44.3 | | | 32.1 | | | | 91.8 |
| Approach LOS | | C | | | D | | | C | | | | F |
| Queue Length 50th (m) | 16.0 | 26.3 | 0.0 | 4.3 | 178.4 | 0.0 | 44.0 | 28.0 | 0.0 | 13.9 | 11.2 | ~100.9 |
| Queue Length 95th (m) | #31.4 | 44.1 | 0.0 | 12.2 | #228.0 | 6.0 | 66.7 | 39.3 | 0.0 | 28.0 | 19.2 | #166.3 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | | 101.9 |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 158 | 1698 | 800 | 86 | 1499 | 731 | 398 | 1155 | 539 | 195 | 670 | 415 |
| 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 | 0.77 | 0.23 | 0.03 | 0.20 | 0.94 | 0.15 | 0.57 | 0.25 | 0.07 | 0.32 | 0.15 | 1.11 |

Intersection Summary

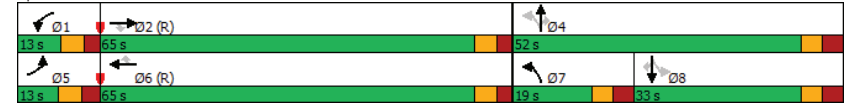
| |
|---|
| Cycle Length: 130 |
| Actuated Cycle Length: 130 |
| Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 105 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.11 | Intersection LOS: D |
| Intersection Signal Delay: 49.6 | ICU Level of Service G |
| Intersection Capacity Utilization 101.5% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Background
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↕ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 14 | 468 | 21 | 39 | 1480 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Future Volume (vph) | 14 | 468 | 21 | 39 | 1480 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Satd. Flow (prot) | 1658 | 3291 | 0 | 1658 | 3304 | 0 | 0 | 1572 | 0 | 0 | 1572 | 0 |
| Fit Permitted | 0.136 | | | 0.474 | | | | 0.923 | | | 0.859 | |
| Satd. Flow (perm) | 237 | 3291 | 0 | 822 | 3304 | 0 | 0 | 1462 | 0 | 0 | 1378 | 0 |
| Satd. Flow (RTOR) | | 7 | | | 3 | | | 42 | | | 42 | |
| Lane Group Flow (vph) | 14 | 489 | 0 | 39 | 1508 | 0 | 0 | 68 | 0 | 0 | 104 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.4 | 88.4 | | 88.4 | 88.4 | | 18.6 | 18.6 | | 18.6 | 18.6 | |
| Actuated g/C Ratio | 0.74 | 0.74 | | 0.74 | 0.74 | | 0.16 | 0.16 | | 0.16 | 0.16 | |
| v/c Ratio | 0.08 | 0.20 | | 0.06 | 0.62 | | 0.26 | 0.42 | | 0.26 | 0.42 | |
| Control Delay | 8.9 | 6.3 | | 5.7 | 15.3 | | 20.2 | 30.2 | | 20.2 | 30.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.7 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 8.9 | 6.3 | | 5.7 | 15.9 | | 20.2 | 30.2 | | 20.2 | 30.2 | |
| LOS | A | A | | A | B | | C | C | | C | C | |
| Approach Delay | | 6.3 | | | 15.7 | | | 20.3 | | | 30.2 | |
| Approach LOS | | A | | | B | | | C | | | C | |
| Queue Length 50th (m) | 0.6 | 11.2 | | 0.4 | 136.2 | | | 5.8 | | | 14.2 | |
| Queue Length 95th (m) | 4.2 | 31.7 | | m5.9 | 222.8 | | | 16.0 | | | 26.3 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | | 143.5 | | | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 174 | 2426 | | 605 | 2435 | | 411 | 389 | | 411 | 389 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 516 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.08 | 0.20 | | 0.06 | 0.79 | | 0.17 | 0.27 | | 0.17 | 0.27 | |

| 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 |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.62 | Intersection LOS: B |
| Intersection Signal Delay: 14.4 | ICU Level of Service C |
| Intersection Capacity Utilization 71.4% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings

2025 Future Background

3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

AM Peak Hour

| | ↖ | → | ↘ | ↙ | ← | ↖ | ↙ | ↘ | ↙ | ↘ | ↙ | ↘ |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↖ | ↕ | ↘ | ↖ | ↕ | ↘ | ↖ | ↕ | ↘ | ↖ | ↕ | ↘ |
| Traffic Volume (vph) | 6 | 521 | 38 | 12 | 1407 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Future Volume (vph) | 6 | 521 | 38 | 12 | 1407 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Satd. Flow (prot) | 1658 | 3283 | 0 | 1658 | 3315 | 0 | 1658 | 1464 | 0 | 0 | 1533 | 0 |
| Fit Permitted | 0.161 | | | 0.442 | | | 0.755 | | | | 0.952 | |
| Satd. Flow (perm) | 281 | 3283 | 0 | 771 | 3315 | 0 | 1314 | 1464 | 0 | 0 | 1477 | 0 |
| Satd. Flow (RTOR) | | | | | | | 402 | | | | 28 | |
| Lane Group Flow (vph) | 6 | 559 | 0 | 12 | 1411 | 0 | 99 | 39 | 0 | 0 | 4 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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) | 87.0 | 87.0 | | 87.0 | 87.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Total Split (%) | 72.5% | 72.5% | | 72.5% | 72.5% | | 27.5% | 27.5% | | 27.5% | 27.5% | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 91.8 | 91.8 | | 91.8 | 91.8 | | 15.8 | 15.8 | | 15.8 | 15.8 | |
| Actuated g/C Ratio | 0.76 | 0.76 | | 0.76 | 0.76 | | 0.13 | 0.13 | | 0.13 | 0.13 | |
| v/c Ratio | 0.03 | 0.22 | | 0.02 | 0.56 | | 0.57 | 0.07 | | 0.02 | 0.02 | |
| Control Delay | 2.0 | 1.7 | | 7.3 | 9.1 | | 60.6 | 0.3 | | 0.2 | 0.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.0 | 1.7 | | 7.3 | 9.1 | | 60.6 | 0.3 | | 0.2 | 0.2 | |
| LOS | A | A | | A | A | | E | A | | A | A | |
| Approach Delay | | 1.7 | | | 9.1 | | | 43.5 | | | 0.3 | |
| Approach LOS | | A | | | A | | | D | | | A | |
| Queue Length 50th (m) | 0.1 | 5.1 | | 0.5 | 53.2 | | 22.6 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | 0.4 | 6.7 | | m2.5 | 128.5 | | 36.3 | 0.0 | | 0.0 | 0.0 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 215 | 2511 | | 590 | 2536 | | 292 | 638 | | 350 | 350 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.03 | 0.22 | | 0.02 | 0.56 | | 0.34 | 0.06 | | 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 |

Lanes, Volumes, Timings

2025 Future Background

3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.57 | Intersection LOS: A |
| Intersection Signal Delay: 9.3 | ICU Level of Service C |
| Intersection Capacity Utilization 64.3% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Background
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Volume (vph) | 11 | 499 | 37 | 59 | 1366 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Future Volume (vph) | 11 | 499 | 37 | 59 | 1366 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3300 | 0 | 1658 | 1745 | 1483 | 0 | 1604 | 0 |
| Fit Permitted | 0.188 | | | 0.431 | | | 0.695 | | | | 0.850 | |
| Satd. Flow (perm) | 328 | 3316 | 1450 | 751 | 3300 | 0 | 1212 | 1745 | 1462 | 0 | 1393 | 0 |
| Satd. Flow (RTOR) | | | 115 | | 3 | | | | 105 | | 28 | |
| Lane Group Flow (vph) | 11 | 499 | 37 | 59 | 1399 | 0 | 19 | 5 | 39 | 0 | 100 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 66.0 | 66.0 | 66.0 | 12.0 | 78.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 55.0% | 55.0% | 55.0% | 10.0% | 65.0% | | 30.8% | 30.8% | 30.8% | 30.8% | 30.8% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 80.8 | 80.8 | 80.8 | 91.5 | 91.5 | | 14.9 | 14.9 | 14.9 | 14.9 | 14.9 | |
| Actuated g/C Ratio | 0.67 | 0.67 | 0.67 | 0.76 | 0.76 | | 0.12 | 0.12 | 0.12 | | 0.12 | |
| v/c Ratio | 0.05 | 0.22 | 0.04 | 0.09 | 0.56 | | 0.13 | 0.02 | 0.14 | | 0.51 | |
| Control Delay | 6.2 | 4.9 | 0.1 | 5.2 | 8.0 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 6.2 | 4.9 | 0.1 | 5.2 | 8.0 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| LOS | A | A | A | A | A | | D | D | A | | D | |
| Approach Delay | | 4.6 | | | 7.8 | | | 17.3 | | | 42.3 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 0.4 | 8.7 | 0.0 | 2.5 | 51.7 | | 4.2 | 1.1 | 0.0 | | 16.4 | |
| Queue Length 95th (m) | 1.4 | 16.5 | 0.1 | 9.6 | 120.5 | | 9.8 | 4.2 | 0.0 | | 28.9 | |
| Internal Link Dist (m) | | 561.5 | | | 188.9 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | | 20.0 | | | |
| Base Capacity (vph) | 220 | 2233 | 1014 | 623 | 2515 | | 299 | 431 | 440 | | 365 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.05 | 0.22 | 0.04 | 0.09 | 0.56 | | 0.06 | 0.01 | 0.09 | | 0.27 | |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Background
AM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 4.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

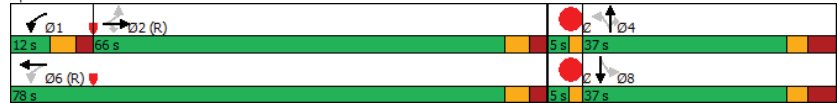
Intersection Summary

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.56 | Intersection LOS: A |
| Intersection Signal Delay: 8.9 | ICU Level of Service D |
| Intersection Capacity Utilization 76.2% | |
| Analysis Period (min) 15 | |

Splits and Phases: 4: Innes Rd & Viseneau Dr



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Background
AM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔↔ | ↔ | ↔ | ↔↔ | ↔ | ↔ | |
| Traffic Volume (vph) | 532 | 24 | 12 | 1500 | 56 | 28 | |
| Future Volume (vph) | 532 | 24 | 12 | 1500 | 56 | 28 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 532 | 24 | 12 | 1500 | 56 | 28 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 24.0 | 24.0 | 11.7 | 24.0 | 11.3 | 30.5 | 4.0 |
| Total Split (s) | 75.0 | 75.0 | 13.0 | 88.0 | 16.2 | 32.0 | 15.8 |
| Total Split (%) | 62.5% | 62.5% | 10.8% | 73.3% | 13.5% | 26.7% | 13% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 80.5 | 80.5 | 6.0 | 85.7 | 8.6 | 21.8 | |
| Actuated g/C Ratio | 0.67 | 0.67 | 0.05 | 0.71 | 0.07 | 0.18 | |
| v/c Ratio | 0.24 | 0.02 | 0.14 | 0.63 | 0.47 | 0.10 | |
| Control Delay | 8.5 | 8.9 | 60.2 | 10.7 | 66.6 | 39.4 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | |
| Total Delay | 8.5 | 8.9 | 60.2 | 10.8 | 66.6 | 39.4 | |
| LOS | A | A | E | B | E | D | |
| Approach Delay | 8.5 | | | 11.2 | 57.5 | | |
| Approach LOS | A | | | B | E | | |
| Queue Length 50th (m) | 20.3 | 1.5 | 2.8 | 62.2 | 12.8 | 5.4 | |
| Queue Length 95th (m) | 32.2 | 5.4 | 15.3 | 92.0 | 26.1 | 13.3 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 310.2 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 2225 | 995 | 87 | 2369 | 136 | 315 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 6 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 211 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.24 | 0.02 | 0.14 | 0.70 | 0.41 | 0.09 | |

Intersection Summary

| |
|---|
| Cycle Length: 120 |
| Actuated Cycle Length: 120 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 70 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.63 | Intersection LOS: B |
| Intersection Signal Delay: 12.3 | ICU Level of Service B |
| Intersection Capacity Utilization 58.2% | |
| Analysis Period (min) 15 | |

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

Splits and Phases: 5: Lamarche Ave & Innes Rd



Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 579 | 1589 | 178 | 59 | 673 | 124 | 64 | 225 | 78 | 163 | 272 | 203 |
| Future Volume (vph) | 579 | 1589 | 178 | 59 | 673 | 124 | 64 | 225 | 78 | 163 | 272 | 203 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.468 | | | 0.611 | | |
| Satd. Flow (perm) | 3190 | 3316 | 1410 | 1651 | 3316 | 1445 | 808 | 3316 | 1432 | 1048 | 3316 | 1438 |
| Satd. Flow (RTOR) | | | 165 | | | 230 | | | 159 | | | 225 |
| Lane Group Flow (vph) | 579 | 1589 | 178 | 59 | 673 | 124 | 64 | 225 | 78 | 163 | 272 | 203 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | 8 | |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 16.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 31.0 | 49.0 | 49.0 | 16.0 | 34.0 | 34.0 | 12.0 | 45.0 | 45.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 28.2% | 44.5% | 44.5% | 14.5% | 30.9% | 30.9% | 10.9% | 40.9% | 40.9% | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | Max | Max | Max | Max | Max |
| Act Effct Green (s) | 23.0 | 46.5 | 46.5 | 8.5 | 29.2 | 29.2 | 38.3 | 38.3 | 38.3 | 28.7 | 28.7 | 28.7 |
| Actuated g/C Ratio | 0.21 | 0.42 | 0.42 | 0.08 | 0.27 | 0.27 | 0.35 | 0.35 | 0.35 | 0.26 | 0.26 | 0.26 |
| v/c Ratio | 0.86 | 1.13 | 0.26 | 0.46 | 0.77 | 0.22 | 0.20 | 0.19 | 0.13 | 0.60 | 0.31 | 0.38 |
| Control Delay | 55.6 | 101.2 | 5.3 | 51.9 | 58.0 | 11.2 | 26.1 | 25.7 | 0.4 | 47.6 | 35.0 | 5.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.6 | 101.2 | 5.3 | 51.9 | 58.0 | 11.2 | 26.1 | 25.7 | 0.4 | 47.6 | 35.0 | 5.4 |
| LOS | E | F | A | D | E | B | C | C | A | D | C | A |
| Approach Delay | | 82.7 | | | 50.8 | | | 20.4 | | | 28.8 | |
| Approach LOS | | F | | | D | | | C | | | C | |
| Queue Length 50th (m) | 61.1 | ~220.6 | 1.7 | 10.2 | 79.2 | 3.3 | 9.2 | 17.6 | 0.0 | 31.7 | 25.5 | 0.0 |
| Queue Length 95th (m) | #82.8 | #264.6 | 15.3 | 27.4 | 100.6 | 23.3 | 18.8 | 26.6 | 0.0 | #56.6 | 37.4 | 13.5 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 713 | 1401 | 691 | 147 | 879 | 552 | 322 | 1154 | 602 | 273 | 864 | 541 |
| 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 | 0.81 | 1.13 | 0.26 | 0.40 | 0.77 | 0.22 | 0.20 | 0.19 | 0.13 | 0.60 | 0.31 | 0.38 |

Intersection Summary

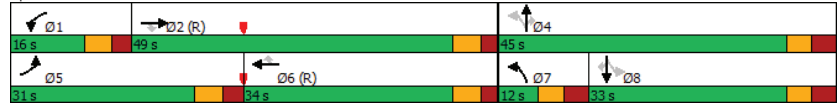
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 120 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.13 | Intersection LOS: E |
| Intersection Signal Delay: 62.6 | ICU Level of Service G |
| Intersection Capacity Utilization 103.2% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 74 | 1736 | 30 | 102 | 803 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Future Volume (vph) | 74 | 1736 | 30 | 102 | 803 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Satd. Flow (prot) | 1658 | 3304 | 0 | 1658 | 3267 | 0 | 0 | 1524 | 0 | 0 | 1620 | 0 |
| Fit Permitted | 0.304 | | | 0.084 | | | | 0.923 | | | 0.762 | |
| Satd. Flow (perm) | 528 | 3304 | 0 | 147 | 3267 | 0 | 0 | 1420 | 0 | 0 | 1261 | 0 |
| Satd. Flow (RTOR) | | 3 | | | 15 | | | 21 | | | 20 | |
| Lane Group Flow (vph) | 74 | 1766 | 0 | 102 | 875 | 0 | 0 | 113 | 0 | 0 | 121 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 77.6 | 77.6 | | 77.6 | 77.6 | | 19.4 | 19.4 | | 19.4 | 19.4 | |
| Actuated g/C Ratio | 0.71 | 0.71 | | 0.71 | 0.71 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.20 | 0.76 | | 0.99 | 0.38 | | 0.42 | 0.51 | | 0.42 | 0.51 | |
| Control Delay | 2.3 | 7.8 | | 107.0 | 3.3 | | 34.8 | 39.0 | | 34.8 | 39.0 | |
| Queue Delay | 0.0 | 0.6 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.3 | 8.5 | | 107.0 | 3.3 | | 34.8 | 39.0 | | 34.8 | 39.0 | |
| LOS | A | A | | F | A | | C | D | | C | D | |
| Approach Delay | | 8.2 | | | 14.1 | | 34.8 | 39.0 | | 34.8 | 39.0 | |
| Approach LOS | | A | | | B | | C | D | | C | D | |
| Queue Length 50th (m) | 1.5 | 32.2 | | 9.3 | 0.0 | | 18.7 | 21.0 | | 18.7 | 21.0 | |
| Queue Length 95th (m) | m1.8 | m21.0 | | #58.0 | 0.0 | | 30.2 | 33.3 | | 30.2 | 33.3 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | 143.5 | 112.1 | | 143.5 | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 372 | 2331 | | 103 | 2309 | | 417 | 371 | | 417 | 371 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 233 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.20 | 0.84 | | 0.99 | 0.38 | | 0.27 | 0.33 | | 0.27 | 0.33 | |

Intersection Summary

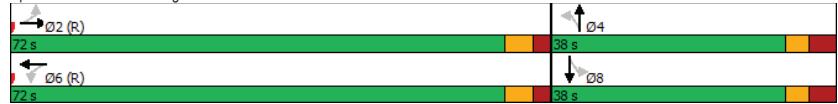
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green |
| Natural Cycle: 150 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.99 | Intersection LOS: B |
| Intersection Signal Delay: 12.3 | ICU Level of Service F |
| Intersection Capacity Utilization 91.9% | |
| 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 Rd & Innes Rd



Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2025 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 8 | 1731 | 106 | 42 | 906 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Future Volume (vph) | 8 | 1731 | 106 | 42 | 906 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Satd. Flow (prot) | 1658 | 3281 | 0 | 1658 | 3312 | 0 | 1658 | 1483 | 0 | 0 | 1538 | 0 |
| Fit Permitted | 0.302 | | | 0.091 | | | 0.748 | | | | 0.921 | |
| Satd. Flow (perm) | 527 | 3281 | 0 | 159 | 3312 | 0 | 1300 | 1483 | 0 | 0 | 1437 | 0 |
| Satd. Flow (RTOR) | | 11 | | | 2 | | | 31 | | | 31 | |
| Lane Group Flow (vph) | 8 | 1837 | 0 | 42 | 914 | 0 | 63 | 31 | 0 | 0 | 14 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 34.1 | 34.1 | | 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.2 | 88.2 | | 88.2 | 88.2 | | 13.9 | 13.9 | | 13.9 | 13.9 | |
| Actuated g/C Ratio | 0.80 | 0.80 | | 0.80 | 0.80 | | 0.13 | 0.13 | | 0.13 | 0.13 | |
| v/c Ratio | 0.02 | 0.70 | | 0.33 | 0.34 | | 0.38 | 0.14 | | 0.07 | 0.07 | |
| Control Delay | 2.5 | 12.1 | | 15.5 | 5.0 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| Queue Delay | 0.0 | 1.3 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.5 | 13.4 | | 15.5 | 5.0 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| LOS | A | B | | B | A | | D | B | | A | A | |
| Approach Delay | | 13.4 | | | 5.5 | | | 37.5 | | | 4.5 | |
| Approach LOS | | B | | | A | | | D | | | A | |
| Queue Length 50th (m) | 0.0 | 223.6 | | 2.1 | 24.0 | | 13.0 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | m0.5 | 245.8 | | 15.4 | 57.5 | | 22.6 | 7.5 | | 2.2 | 2.2 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 422 | 2633 | | 127 | 2655 | | 315 | 383 | | | 372 | |
| Starvation Cap Reductn | 0 | 539 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.88 | | 0.33 | 0.34 | | 0.20 | 0.08 | | 0.04 | 0.04 | |

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 |

Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2025 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.70 | Intersection LOS: B |
| Intersection Signal Delay: 11.5 | ICU Level of Service D |
| Intersection Capacity Utilization 74.8% | |
| Analysis Period (min) 15 | |

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

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 44 | 1606 | 87 | 183 | 812 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Future Volume (vph) | 44 | 1606 | 87 | 183 | 812 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3259 | 0 | 1658 | 1745 | 1483 | 0 | 1646 | 0 |
| Fit Permitted | 0.318 | | | 0.063 | | | 0.608 | | | | 0.844 | |
| Satd. Flow (perm) | 553 | 3316 | 1399 | 110 | 3259 | 0 | 1042 | 1745 | 1460 | 0 | 1417 | 0 |
| Satd. Flow (RTOR) | | | 106 | | 16 | | | | 179 | | 10 | |
| Lane Group Flow (vph) | 44 | 1606 | 87 | 183 | 896 | 0 | 106 | 40 | 179 | 0 | 141 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 68.0 | 68.0 | 68.0 | 20.0 | 88.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 52.3% | 52.3% | 52.3% | 15.4% | 67.7% | | 28.5% | 28.5% | 28.5% | 28.5% | 28.5% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 75.1 | 75.1 | 75.1 | 96.3 | 96.3 | | 20.1 | 20.1 | 20.1 | 20.1 | 20.1 | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.74 | 0.74 | | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | |
| v/c Ratio | 0.14 | 0.84 | 0.10 | 0.71 | 0.37 | | 0.66 | 0.15 | 0.48 | | 0.62 | |
| Control Delay | 18.5 | 29.8 | 2.4 | 41.1 | 7.2 | | 69.3 | 45.0 | 10.2 | | 58.1 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 18.5 | 29.8 | 2.4 | 41.1 | 7.2 | | 69.3 | 45.0 | 10.2 | | 58.1 | |
| LOS | B | C | A | D | A | | E | D | B | | E | |
| Approach Delay | | 28.2 | | | 13.0 | | | 33.7 | | | 58.1 | |
| Approach LOS | | C | | | B | | | C | | | E | |
| Queue Length 50th (m) | 4.8 | 163.2 | 0.0 | 25.5 | 34.1 | | 26.5 | 9.2 | 0.0 | | 32.5 | |
| Queue Length 95th (m) | 14.3 | #272.0 | 6.1 | 52.4 | 61.0 | | 42.5 | 18.2 | 18.6 | | 49.7 | |
| Internal Link Dist (m) | | 561.5 | | | 192.3 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | 20.0 | | | | |
| Base Capacity (vph) | 319 | 1915 | 852 | 274 | 2418 | | 238 | 398 | 471 | | 331 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.14 | 0.84 | 0.10 | 0.67 | 0.37 | | 0.45 | 0.10 | 0.38 | | 0.43 | |

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

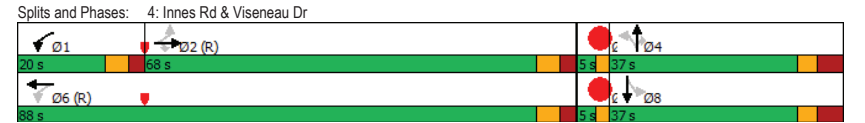
2025 Future Background
PM Peak Hour

| | | |
|------------------------|------|------|
| Lane Group | Ø3 | Ø7 |
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 3.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |
| Intersection Summary | | |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.84 | |
| Intersection Signal Delay: 25.0 | Intersection LOS: C |
| Intersection Capacity Utilization 93.5% | ICU Level of Service F |
| Analysis Period (min) 15 | |
| # 95th percentile volume exceeds capacity, queue may be longer. | |
| Queue shown is maximum after two cycles. | |



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Background
PM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|--------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔↔ | ↔ | ↔ | ↔↔ | ↔ | ↔ | |
| Traffic Volume (vph) | 1833 | 63 | 30 | 949 | 38 | 18 | |
| Future Volume (vph) | 1833 | 63 | 30 | 949 | 38 | 18 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 1833 | 63 | 30 | 949 | 38 | 18 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 22.5 | 22.5 | 11.7 | 22.5 | 11.3 | 22.5 | 22.5 |
| Total Split (s) | 64.5 | 64.5 | 11.7 | 76.2 | 11.3 | 33.8 | 22.5 |
| Total Split (%) | 58.6% | 58.6% | 10.6% | 69.3% | 10.3% | 30.7% | 20% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 67.7 | 67.7 | 5.4 | 74.7 | 5.0 | 22.8 | |
| Actuated g/C Ratio | 0.62 | 0.62 | 0.05 | 0.68 | 0.05 | 0.21 | |
| v/c Ratio | 0.90 | 0.07 | 0.37 | 0.42 | 0.51 | 0.06 | |
| Control Delay | 23.9 | 13.9 | 60.3 | 11.1 | 74.6 | 32.7 | |
| Queue Delay | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 24.9 | 13.9 | 60.3 | 11.1 | 74.6 | 32.7 | |
| LOS | C | B | E | B | E | C | |
| Approach Delay | 24.6 | | | 12.7 | 61.1 | | |
| Approach LOS | C | | | B | E | | |
| Queue Length 50th (m) | ~218.9 | 5.9 | 6.4 | 45.7 | 8.2 | 3.0 | |
| Queue Length 95th (m) | #262.5 | m7.7 | 16.4 | 94.2 | #21.6 | 8.8 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 256.5 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 2040 | 912 | 81 | 2252 | 75 | 368 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 67 | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.93 | 0.07 | 0.37 | 0.42 | 0.51 | 0.05 | |

Intersection Summary

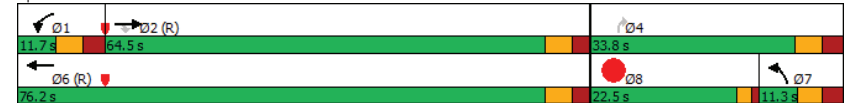
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 110 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Background
PM Peak Hour

| | | |
|---|---------------------------------|---------------------|
| Maximum v/c Ratio: 0.90 | Intersection Signal Delay: 21.3 | Intersection LOS: C |
| Intersection Capacity Utilization 68.1% | ICU Level of Service C | |
| 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: 5: Lamarche Ave & Innes Rd



Appendix H

Synchro Intersection Worksheets – 2030 Future Background Conditions

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Background
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Volume (vph) | 121 | 416 | 23 | 17 | 1476 | 113 | 252 | 322 | 38 | 63 | 100 | 459 |
| Future Volume (vph) | 121 | 416 | 23 | 17 | 1476 | 113 | 252 | 322 | 38 | 63 | 100 | 459 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.549 | | | 0.557 | | |
| Satd. Flow (perm) | 3206 | 3316 | 1426 | 1632 | 3316 | 1444 | 952 | 3316 | 1396 | 942 | 3316 | 1452 |
| Satd. Flow (RTOR) | | | 143 | | | 143 | | | 82 | | | 143 |
| Lane Group Flow (vph) | 121 | 416 | 23 | 17 | 1476 | 113 | 252 | 322 | 38 | 63 | 100 | 459 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | | 8 |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 13.0 | 65.0 | 65.0 | 13.0 | 65.0 | 65.0 | 19.0 | 52.0 | 52.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 10.0% | 50.0% | 50.0% | 10.0% | 50.0% | 50.0% | 14.6% | 40.0% | 40.0% | 25.4% | 25.4% | 25.4% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None | None | None |
| Act Effct Green (s) | 6.4 | 66.6 | 66.6 | 6.4 | 58.8 | 58.8 | 45.3 | 45.3 | 45.3 | 26.3 | 26.3 | 26.3 |
| Actuated g/C Ratio | 0.05 | 0.51 | 0.51 | 0.05 | 0.45 | 0.45 | 0.35 | 0.35 | 0.35 | 0.20 | 0.20 | 0.20 |
| v/c Ratio | 0.77 | 0.24 | 0.03 | 0.21 | 0.98 | 0.15 | 0.63 | 0.28 | 0.07 | 0.33 | 0.15 | 1.13 |
| Control Delay | 90.3 | 19.1 | 0.1 | 65.5 | 55.2 | 1.9 | 41.4 | 31.4 | 0.3 | 50.1 | 43.4 | 116.6 |
| 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 | 90.3 | 19.1 | 0.1 | 65.5 | 55.2 | 1.9 | 41.4 | 31.4 | 0.3 | 50.1 | 43.4 | 116.6 |
| LOS | F | B | A | E | E | A | D | C | A | D | D | F |
| Approach Delay | | 33.7 | | | 51.5 | | | 33.6 | | | 98.1 | |
| Approach LOS | | C | | | D | | | C | | | F | |
| Queue Length 50th (m) | 16.0 | 27.6 | 0.0 | 4.3 | 192.7 | 0.0 | 49.4 | 31.2 | 0.0 | 13.9 | 11.2 | ~104.9 |
| Queue Length 95th (m) | #31.4 | 46.1 | 0.0 | 12.2 | #245.9 | 6.0 | 73.7 | 43.0 | 0.0 | 28.1 | 19.2 | #170.3 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 158 | 1698 | 800 | 86 | 1499 | 731 | 398 | 1155 | 539 | 190 | 670 | 407 |
| 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 | 0.77 | 0.24 | 0.03 | 0.20 | 0.98 | 0.15 | 0.63 | 0.28 | 0.07 | 0.33 | 0.15 | 1.13 |

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

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.13 | Intersection LOS: D |
| Intersection Signal Delay: 53.9 | ICU Level of Service G |
| Intersection Capacity Utilization 104.8% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Background
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↕ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 14 | 489 | 21 | 39 | 1547 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Future Volume (vph) | 14 | 489 | 21 | 39 | 1547 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Satd. Flow (prot) | 1658 | 3291 | 0 | 1658 | 3304 | 0 | 0 | 1572 | 0 | 0 | 1572 | 0 |
| Fit Permitted | 0.123 | | | 0.464 | | | | 0.923 | | | 0.859 | |
| Satd. Flow (perm) | 215 | 3291 | 0 | 805 | 3304 | 0 | 0 | 1462 | 0 | 0 | 1378 | 0 |
| Satd. Flow (RTOR) | | 7 | | | 3 | | | 42 | | | 40 | |
| Lane Group Flow (vph) | 14 | 510 | 0 | 39 | 1575 | 0 | 0 | 68 | 0 | 0 | 104 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.4 | 88.4 | | 88.4 | 88.4 | | 18.6 | 18.6 | | 18.6 | 18.6 | |
| Actuated g/C Ratio | 0.74 | 0.74 | | 0.74 | 0.74 | | 0.16 | 0.16 | | 0.16 | 0.16 | |
| v/c Ratio | 0.09 | 0.21 | | 0.07 | 0.65 | | 0.26 | 0.42 | | 0.26 | 0.42 | |
| Control Delay | 9.2 | 6.3 | | 5.4 | 15.3 | | 20.2 | 31.0 | | 20.2 | 31.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.8 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 9.2 | 6.3 | | 5.4 | 16.1 | | 20.2 | 31.0 | | 20.2 | 31.0 | |
| LOS | A | A | | A | B | | C | C | | C | C | |
| Approach Delay | | 6.4 | | | 15.9 | | | 20.2 | | | 31.0 | |
| Approach LOS | | A | | | B | | | C | | | C | |
| Queue Length 50th (m) | 0.6 | 11.9 | | 0.3 | 144.5 | | | 5.8 | | | 14.6 | |
| Queue Length 95th (m) | 4.3 | 33.3 | | m5.4 | 231.9 | | | 16.0 | | | 26.7 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | | 143.5 | | | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 158 | 2425 | | 592 | 2434 | | 411 | 387 | | 411 | 387 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 498 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.09 | 0.21 | | 0.07 | 0.81 | | 0.17 | 0.27 | | 0.17 | 0.27 | |

| 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 |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.65 | Intersection LOS: B |
| Intersection Signal Delay: 14.5 | ICU Level of Service D |
| Intersection Capacity Utilization 73.4% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings
 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd
 2030 Future Background
 AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 6 | 546 | 38 | 12 | 1477 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Future Volume (vph) | 6 | 546 | 38 | 12 | 1477 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Satd. Flow (prot) | 1658 | 3283 | 0 | 1658 | 3315 | 0 | 1658 | 1464 | 0 | 0 | 1533 | 0 |
| Fit Permitted | 0.147 | | | 0.432 | | | 0.755 | | | | 0.952 | |
| Satd. Flow (perm) | 256 | 3283 | 0 | 754 | 3315 | 0 | 1314 | 1464 | 0 | 0 | 1477 | 0 |
| Satd. Flow (RTOR) | | | | | | | 383 | | | | 28 | |
| Lane Group Flow (vph) | 6 | 584 | 0 | 12 | 1481 | 0 | 99 | 39 | 0 | 0 | 4 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | | 8 |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | | 8 |
| 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) | 87.0 | 87.0 | | 87.0 | 87.0 | | 33.0 | 33.0 | | 33.0 | | 33.0 |
| Total Split (%) | 72.5% | 72.5% | | 72.5% | 72.5% | | 27.5% | 27.5% | | 27.5% | | 27.5% |
| 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 | | 0.0 | | 0.0 |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | | 6.3 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | | None |
| Act Effct Green (s) | 91.8 | 91.8 | | 91.8 | 91.8 | | 15.8 | 15.8 | | 15.8 | | 15.8 |
| Actuated g/C Ratio | 0.76 | 0.76 | | 0.76 | 0.76 | | 0.13 | 0.13 | | 0.13 | | 0.13 |
| v/c Ratio | 0.03 | 0.23 | | 0.02 | 0.58 | | 0.57 | 0.07 | | 0.02 | | 0.02 |
| Control Delay | 2.3 | 1.8 | | 7.5 | 9.6 | | 60.6 | 0.3 | | 0.2 | | 0.2 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | | 0.0 |
| Total Delay | 2.3 | 1.8 | | 7.5 | 9.6 | | 60.6 | 0.3 | | 0.2 | | 0.2 |
| LOS | A | A | | A | A | | E | A | | A | | A |
| Approach Delay | | 1.8 | | | 9.5 | | | 43.5 | | | | 0.3 |
| Approach LOS | | A | | | A | | | D | | | | A |
| Queue Length 50th (m) | 0.1 | 5.7 | | 0.5 | 58.2 | | 22.6 | 0.0 | | 0.0 | | 0.0 |
| Queue Length 95th (m) | m0.4 | 7.4 | | m2.3 | 138.9 | | 36.3 | 0.0 | | 0.0 | | 0.0 |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | | 33.2 |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 196 | 2511 | | 576 | 2536 | | 292 | 623 | | 350 | | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 |
| Reduced v/c Ratio | 0.03 | 0.23 | | 0.02 | 0.58 | | 0.34 | 0.06 | | 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

Lanes, Volumes, Timings
 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd
 2030 Future Background
 AM Peak Hour

Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 9.6
 Intersection Capacity Utilization 66.3%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service C
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Background
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↖ | ↖↗ | ↖ | ↖ | ↖↗ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ |
| Traffic Volume (vph) | 11 | 521 | 37 | 59 | 1433 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Future Volume (vph) | 11 | 521 | 37 | 59 | 1433 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3304 | 0 | 1658 | 1745 | 1483 | 0 | 1604 | 0 |
| Fit Permitted | 0.172 | | | 0.420 | | | 0.695 | | | | 0.850 | |
| Satd. Flow (perm) | 300 | 3316 | 1450 | 732 | 3304 | 0 | 1212 | 1745 | 1462 | 0 | 1393 | 0 |
| Satd. Flow (RTOR) | | | 115 | | 3 | | | | 105 | | 28 | |
| Lane Group Flow (vph) | 11 | 521 | 37 | 59 | 1466 | 0 | 19 | 5 | 39 | 0 | 100 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 66.0 | 66.0 | 66.0 | 12.0 | 78.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 55.0% | 55.0% | 55.0% | 10.0% | 65.0% | | 30.8% | 30.8% | 30.8% | 30.8% | 30.8% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 80.8 | 80.8 | 80.8 | 91.5 | 91.5 | | 14.9 | 14.9 | 14.9 | 14.9 | 14.9 | |
| Actuated g/C Ratio | 0.67 | 0.67 | 0.67 | 0.76 | 0.76 | | 0.12 | 0.12 | 0.12 | | 0.12 | |
| v/c Ratio | 0.05 | 0.23 | 0.04 | 0.10 | 0.58 | | 0.13 | 0.02 | 0.14 | | 0.51 | |
| Control Delay | 6.7 | 5.1 | 0.1 | 5.2 | 8.3 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 6.7 | 5.1 | 0.1 | 5.2 | 8.3 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| LOS | A | A | A | A | A | | D | D | A | | D | |
| Approach Delay | | 4.8 | | | 8.2 | | | 17.3 | | | 42.3 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 0.4 | 9.2 | 0.0 | 2.5 | 56.2 | | 4.2 | 1.1 | 0.0 | | 16.4 | |
| Queue Length 95th (m) | 1.4 | 20.4 | 0.0 | 9.6 | 130.7 | | 9.8 | 4.2 | 0.0 | | 28.9 | |
| Internal Link Dist (m) | | 561.5 | | | 188.9 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | | 20.0 | | | |
| Base Capacity (vph) | 202 | 2233 | 1014 | 609 | 2518 | | 299 | 431 | 440 | | 365 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.05 | 0.23 | 0.04 | 0.10 | 0.58 | | 0.06 | 0.01 | 0.09 | | 0.27 | |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Background
AM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 4.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

Intersection Summary

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.58 | Intersection LOS: A |
| Intersection Signal Delay: 9.1 | ICU Level of Service D |
| Intersection Capacity Utilization 76.2% | |
| Analysis Period (min) 15 | |

Splits and Phases: 4: Innes Rd & Viseneau Dr



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Background
AM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔↔ | ↔ | ↔ | ↔↔ | ↔ | ↔ | |
| Traffic Volume (vph) | 557 | 24 | 12 | 1571 | 56 | 28 | |
| Future Volume (vph) | 557 | 24 | 12 | 1571 | 56 | 28 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 557 | 24 | 12 | 1571 | 56 | 28 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 24.0 | 24.0 | 11.7 | 24.0 | 11.3 | 30.5 | 4.0 |
| Total Split (s) | 76.0 | 76.0 | 13.0 | 89.0 | 16.2 | 31.0 | 14.8 |
| Total Split (%) | 63.3% | 63.3% | 10.8% | 74.2% | 13.5% | 25.8% | 12% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 81.5 | 81.5 | 6.0 | 86.7 | 8.6 | 20.8 | |
| Actuated g/C Ratio | 0.68 | 0.68 | 0.05 | 0.72 | 0.07 | 0.17 | |
| v/c Ratio | 0.25 | 0.02 | 0.14 | 0.66 | 0.47 | 0.11 | |
| Control Delay | 8.2 | 8.6 | 60.2 | 10.4 | 66.6 | 40.3 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | |
| Total Delay | 8.2 | 8.6 | 60.2 | 10.7 | 66.6 | 40.3 | |
| LOS | A | A | E | B | E | D | |
| Approach Delay | 8.2 | | | 11.0 | 57.8 | | |
| Approach LOS | A | | | B | E | | |
| Queue Length 50th (m) | 20.8 | 1.4 | 2.8 | 63.5 | 12.8 | 5.4 | |
| Queue Length 95th (m) | 33.1 | 5.2 | 15.1 | 92.3 | 26.1 | 13.5 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 310.2 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 2253 | 1007 | 87 | 2396 | 136 | 302 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 5 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 221 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.25 | 0.02 | 0.14 | 0.72 | 0.41 | 0.09 | |

Intersection Summary

| |
|---|
| Cycle Length: 120 |
| Actuated Cycle Length: 120 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 75 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Background
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.66 | Intersection LOS: B |
| Intersection Signal Delay: 12.1 | ICU Level of Service B |
| Intersection Capacity Utilization 60.3% | |
| Analysis Period (min) 15 | |

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

Splits and Phases: 5: Lamarche Ave & Innes Rd



Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 579 | 1661 | 197 | 59 | 701 | 124 | 64 | 225 | 78 | 163 | 300 | 203 |
| Future Volume (vph) | 579 | 1661 | 197 | 59 | 701 | 124 | 64 | 225 | 78 | 163 | 300 | 203 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.443 | | | 0.611 | | |
| Satd. Flow (perm) | 3191 | 3316 | 1410 | 1652 | 3316 | 1445 | 765 | 3316 | 1432 | 1048 | 3316 | 1438 |
| Satd. Flow (RTOR) | | | 165 | | | 230 | | | 159 | | | 225 |
| Lane Group Flow (vph) | 579 | 1661 | 197 | 59 | 701 | 124 | 64 | 225 | 78 | 163 | 300 | 203 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | 8 | |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 16.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 31.0 | 49.0 | 49.0 | 16.0 | 34.0 | 34.0 | 12.0 | 45.0 | 45.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 28.2% | 44.5% | 44.5% | 14.5% | 30.9% | 30.9% | 10.9% | 40.9% | 40.9% | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | Max | Max | Max | Max | Max |
| Act Effct Green (s) | 23.0 | 46.5 | 46.5 | 8.5 | 29.2 | 29.2 | 38.3 | 38.3 | 38.3 | 28.7 | 28.7 | 28.7 |
| Actuated g/C Ratio | 0.21 | 0.42 | 0.42 | 0.08 | 0.27 | 0.27 | 0.35 | 0.35 | 0.35 | 0.26 | 0.26 | 0.26 |
| v/c Ratio | 0.86 | 1.19 | 0.29 | 0.46 | 0.80 | 0.22 | 0.21 | 0.19 | 0.13 | 0.60 | 0.35 | 0.38 |
| Control Delay | 55.6 | 121.8 | 6.5 | 51.6 | 59.3 | 11.0 | 26.2 | 25.7 | 0.4 | 47.6 | 35.4 | 5.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.6 | 121.8 | 6.5 | 51.6 | 59.3 | 11.0 | 26.2 | 25.7 | 0.4 | 47.6 | 35.4 | 5.4 |
| LOS | E | F | A | D | E | B | C | C | A | D | D | A |
| Approach Delay | | 96.7 | | | 52.0 | | | 20.4 | | | 29.2 | |
| Approach LOS | | F | | | D | | | C | | | C | |
| Queue Length 50th (m) | 61.1 | ~237.6 | 4.2 | 10.1 | 82.7 | 3.2 | 9.2 | 17.6 | 0.0 | 31.7 | 28.4 | 0.0 |
| Queue Length 95th (m) | #82.8 | #281.8 | 18.8 | 27.2 | #106.6 | 22.8 | 18.8 | 26.6 | 0.0 | #56.6 | 41.1 | 13.5 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 713 | 1401 | 691 | 147 | 879 | 552 | 309 | 1154 | 602 | 273 | 864 | 541 |
| 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 | 0.81 | 1.19 | 0.29 | 0.40 | 0.80 | 0.22 | 0.21 | 0.19 | 0.13 | 0.60 | 0.35 | 0.38 |

Intersection Summary

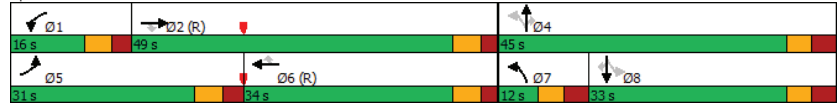
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 120 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.19 | Intersection LOS: E |
| Intersection Signal Delay: 70.9 | ICU Level of Service G |
| Intersection Capacity Utilization 105.3% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 74 | 1814 | 30 | 102 | 839 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Future Volume (vph) | 74 | 1814 | 30 | 102 | 839 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Satd. Flow (prot) | 1658 | 3308 | 0 | 1658 | 3267 | 0 | 0 | 1524 | 0 | 0 | 1620 | 0 |
| Fit Permitted | 0.291 | | | 0.072 | | | | 0.923 | | | 0.762 | |
| Satd. Flow (perm) | 506 | 3308 | 0 | 126 | 3267 | 0 | 0 | 1420 | 0 | 0 | 1261 | 0 |
| Satd. Flow (RTOR) | | 3 | | | 14 | | | 17 | | | 20 | |
| Lane Group Flow (vph) | 74 | 1844 | 0 | 102 | 911 | 0 | 0 | 113 | 0 | 0 | 121 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 77.6 | 77.6 | | 77.6 | 77.6 | | 19.4 | 19.4 | | 19.4 | 19.4 | |
| Actuated g/C Ratio | 0.71 | 0.71 | | 0.71 | 0.71 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.21 | 0.79 | | 1.16 | 0.39 | | 0.43 | 0.51 | | 0.51 | 0.51 | |
| Control Delay | 2.2 | 9.4 | | 164.0 | 3.3 | | 36.4 | 39.0 | | 39.0 | 39.0 | |
| Queue Delay | 0.0 | 1.8 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.2 | 11.2 | | 164.0 | 3.3 | | 36.4 | 39.0 | | 39.0 | 39.0 | |
| LOS | A | B | | F | A | | D | D | | D | D | |
| Approach Delay | | 10.8 | | | 19.5 | | 36.4 | 39.0 | | 39.0 | 39.0 | |
| Approach LOS | | B | | | B | | D | D | | D | D | |
| Queue Length 50th (m) | 1.5 | 41.3 | | -20.2 | 0.0 | | 19.6 | 21.0 | | 21.0 | 21.0 | |
| Queue Length 95th (m) | m1.8 | m20.5 | | #61.1 | 0.0 | | 31.0 | 33.3 | | 33.3 | 33.3 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | 143.5 | 112.1 | | 112.1 | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 357 | 2334 | | 88 | 2308 | | 414 | 371 | | 371 | 371 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 317 | | 0 | 0 | | 1 | 1 | | 1 | 1 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.21 | 0.91 | | 1.16 | 0.39 | | 0.27 | 0.33 | | 0.33 | 0.33 | |

Intersection Summary

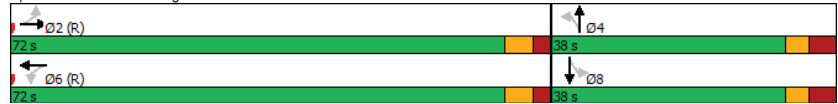
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green |
| Natural Cycle: 150 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.16 | Intersection LOS: B |
| Intersection Signal Delay: 15.6 | ICU Level of Service F |
| Intersection Capacity Utilization 94.2% | |
| 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: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2030 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 8 | 1816 | 106 | 42 | 950 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Future Volume (vph) | 8 | 1816 | 106 | 42 | 950 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Satd. Flow (prot) | 1658 | 3285 | 0 | 1658 | 3312 | 0 | 1658 | 1483 | 0 | 0 | 1538 | 0 |
| Fit Permitted | 0.287 | | | 0.080 | | | 0.748 | | | | 0.921 | |
| Satd. Flow (perm) | 501 | 3285 | 0 | 140 | 3312 | 0 | 1300 | 1483 | 0 | 0 | 1437 | 0 |
| Satd. Flow (RTOR) | | 11 | | | 1 | | | 31 | | | | 31 |
| Lane Group Flow (vph) | 8 | 1922 | 0 | 42 | 958 | 0 | 63 | 31 | 0 | 0 | 14 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phases | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 34.1 | 34.1 | | 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.2 | 88.2 | | 88.2 | 88.2 | | 13.9 | 13.9 | | 13.9 | 13.9 | |
| Actuated g/C Ratio | 0.80 | 0.80 | | 0.80 | 0.80 | | 0.13 | 0.13 | | 0.13 | 0.13 | |
| v/c Ratio | 0.02 | 0.73 | | 0.38 | 0.36 | | 0.38 | 0.14 | | 0.07 | 0.07 | |
| Control Delay | 2.5 | 13.2 | | 19.5 | 5.1 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| Queue Delay | 0.0 | 2.1 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.5 | 15.3 | | 19.5 | 5.1 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| LOS | A | B | | B | A | | D | B | | A | A | |
| Approach Delay | | 15.2 | | | 5.7 | | | 37.5 | | | 4.5 | |
| Approach LOS | | B | | | A | | | D | | | A | |
| Queue Length 50th (m) | 0.0 | 234.0 | | 2.2 | 25.5 | | 13.0 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | m0.5 | m249.3 | | #21.2 | 61.3 | | 22.6 | 7.5 | | 2.2 | 2.2 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 401 | 2636 | | 112 | 2655 | | 315 | 383 | | | 372 | |
| Starvation Cap Reductn | 0 | 540 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.92 | | 0.38 | 0.36 | | 0.20 | 0.08 | | 0.04 | 0.04 | |

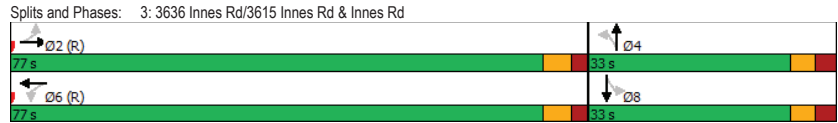
Intersection Summary

| |
|---|
| 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 |

Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2030 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.73 | Intersection LOS: B |
| Intersection Signal Delay: 12.7 | ICU Level of Service D |
| Intersection Capacity Utilization 77.2% | |
| 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. | |



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Background
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 44 | 1685 | 87 | 183 | 849 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Future Volume (vph) | 44 | 1685 | 87 | 183 | 849 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3260 | 0 | 1658 | 1745 | 1483 | 0 | 1646 | 0 |
| Fit Permitted | 0.306 | | | 0.050 | | | 0.608 | | | | 0.844 | |
| Satd. Flow (perm) | 532 | 3316 | 1399 | 87 | 3260 | 0 | 1042 | 1745 | 1460 | 0 | 1417 | 0 |
| Satd. Flow (RTOR) | | | 106 | | 15 | | | | 179 | | 10 | |
| Lane Group Flow (vph) | 44 | 1685 | 87 | 183 | 933 | 0 | 106 | 40 | 179 | 0 | 141 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | | 4 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 68.0 | 68.0 | 68.0 | 20.0 | 88.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 52.3% | 52.3% | 52.3% | 15.4% | 67.7% | | 28.5% | 28.5% | 28.5% | 28.5% | 28.5% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 75.1 | 75.1 | 75.1 | 96.3 | 96.3 | | 20.1 | 20.1 | 20.1 | 20.1 | 20.1 | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.74 | 0.74 | | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | |
| v/c Ratio | 0.14 | 0.88 | 0.10 | 0.75 | 0.39 | | 0.66 | 0.15 | 0.48 | 0.62 | 0.62 | |
| Control Delay | 18.7 | 32.2 | 2.4 | 50.2 | 7.4 | | 69.3 | 45.0 | 10.2 | 58.1 | 58.1 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 18.7 | 32.2 | 2.4 | 50.2 | 7.4 | | 69.3 | 45.0 | 10.2 | 58.1 | 58.1 | |
| LOS | B | C | A | D | A | | E | D | B | E | E | |
| Approach Delay | | 30.5 | | | 14.4 | | | 33.7 | | | 58.1 | |
| Approach LOS | | C | | | B | | | C | | | E | |
| Queue Length 50th (m) | 4.8 | 179.4 | 0.0 | 30.0 | 36.1 | | 26.5 | 9.2 | 0.0 | | 32.5 | |
| Queue Length 95th (m) | 14.4 | #293.8 | 6.1 | 56.3 | 64.4 | | 42.5 | 18.2 | 18.6 | | 49.7 | |
| Internal Link Dist (m) | | 561.5 | | | 192.3 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | 20.0 | | | | |
| Base Capacity (vph) | 307 | 1915 | 852 | 260 | 2419 | | 238 | 398 | 471 | | 331 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.14 | 0.88 | 0.10 | 0.70 | 0.39 | | 0.45 | 0.10 | 0.38 | | 0.43 | |

| | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Summary | | | | | | | | | | | | |
| Cycle Length: 130 | | | | | | | | | | | | |
| Actuated Cycle Length: 130 | | | | | | | | | | | | |
| Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | | | | | | | | | | |
| Natural Cycle: 125 | | | | | | | | | | | | |
| Control Type: Actuated-Coordinated | | | | | | | | | | | | |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

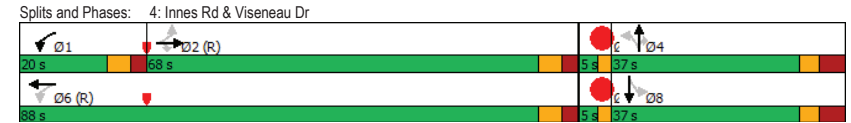
2030 Future Background
PM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 3.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |
| Intersection Summary | | |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Background
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.88 | |
| Intersection Signal Delay: 26.7 | Intersection LOS: C |
| Intersection Capacity Utilization 95.8% | 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. | |



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Background
PM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|--------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔↔ | ↔ | ↔ | ↔↔ | ↔ | ↔ | |
| Traffic Volume (vph) | 1920 | 63 | 30 | 994 | 38 | 18 | |
| Future Volume (vph) | 1920 | 63 | 30 | 994 | 38 | 18 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 1920 | 63 | 30 | 994 | 38 | 18 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 22.5 | 22.5 | 11.7 | 22.5 | 11.3 | 22.5 | 22.5 |
| Total Split (s) | 64.5 | 64.5 | 11.7 | 76.2 | 11.3 | 33.8 | 22.5 |
| Total Split (%) | 58.6% | 58.6% | 10.6% | 69.3% | 10.3% | 30.7% | 20% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 67.7 | 67.7 | 5.4 | 74.7 | 5.0 | 22.8 | |
| Actuated g/C Ratio | 0.62 | 0.62 | 0.05 | 0.68 | 0.05 | 0.21 | |
| v/c Ratio | 0.94 | 0.07 | 0.37 | 0.44 | 0.51 | 0.06 | |
| Control Delay | 27.5 | 13.8 | 59.8 | 11.5 | 74.6 | 32.7 | |
| Queue Delay | 5.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 32.6 | 13.8 | 59.8 | 11.5 | 74.6 | 32.7 | |
| LOS | C | B | E | B | E | C | |
| Approach Delay | 32.0 | | | 12.9 | 61.1 | | |
| Approach LOS | C | | | B | E | | |
| Queue Length 50th (m) | ~240.0 | 6.1 | 6.4 | 49.0 | 8.2 | 3.0 | |
| Queue Length 95th (m) | #283.3 | m7.5 | #16.6 | 102.6 | #21.6 | 8.8 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 256.5 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 2040 | 912 | 81 | 2252 | 75 | 368 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 98 | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.99 | 0.07 | 0.37 | 0.44 | 0.51 | 0.05 | |

Intersection Summary

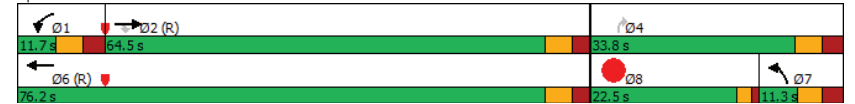
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Background
PM Peak Hour

Maximum v/c Ratio: 0.94
Intersection Signal Delay: 26.2
Intersection LOS: C
Intersection Capacity Utilization 70.6%
ICU Level of Service C
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: 5: Lamarche Ave & Innes Rd



Appendix I

MMLOS Analysis

Multi-Modal Level of Service - Intersections Form

| | | | |
|------------------------------|--|--------------|-----------------------------|
| Consultant Scenario Comments | CGH Transportation Inc. Existing/Future | Project Date | 245 and 275 Lamarche Avenue |
| | | | |
| | | | |

| INTERSECTIONS | | Innes Road at Orleans Boulevard | | | | Innes Road at Page Road | | | | Innes Road at Lamarche Avenue (Future) | | | | Innes Road at Access 3615 Innes Road/3636 Innes Road | | | | Innes Road at Viseneau Drive | | | | |
|------------------|--|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|-----------------------------|-----------------------------|-----------------------------------|-----------------------------------|--|-----------------------------------|-----------------------------------|-----------------------------------|--|-----------------------------|-----------------------------------|-----------------------------------|------------------------------|-----------------------------|-----------------------------------|-----------------------------------|------------|
| Crossing Side | | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | |
| Pedestrian | Lanes | 6 | 6 | 8 | 8 | 6 | 6 | 8 | 8 | 3 | 3 | 7 | 7 | 4 | 5 | 7 | 7 | 5 | 7 | 9 | 9 | |
| | Median | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | Median > 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | Median > 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | |
| | Conflicting Left Turns | Protected | Protected | Permissive | Protected/ Permissive | Permissive | Permissive | Permissive | Permissive | Protected | Protected | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive | Protected/ Permissive | Permissive | Permissive | Permissive | |
| | Conflicting Right Turns | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | No right turn | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | |
| | Right Turns on Red (RTorR) ? | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR prohibited | RTOR prohibited | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | |
| | Ped Signal Leading Interval? | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | Yes | Yes | Yes |
| | Right Turn Channel | Conventional with Receiving Lane | Conventional with Receiving Lane | Conventional with Receiving Lane | Conv'tl without Receiving Lane | No Channel | No Channel | No Channel | No Channel | No Channel | No Right Turn | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel |
| | Corner Radius | 15-25m | 15-25m | 15-25m | 15-25m | 10-15m | 10-15m | 10-15m | 10-15m | 3-5m | No Right Turn | 3-5m | 5-10m | 10-15m | 5-10m | 5-10m | 5-10m | 5-10m | 10-15m | 10-15m | 10-15m | |
| | Crosswalk Type | Std transverse markings | Std transverse markings | Zebra stripe hi-vis markings | Zebra stripe hi-vis markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Zebra stripe hi-vis markings | Zebra stripe hi-vis markings | |
| | PETSI Score | 27 | 27 | -10 | -7 | 20 | 20 | -12 | -12 | 83 | 30 | 55 | 38 | 4 | 11 | 38 | 4 | -24 | -24 | | | |
| | Ped. Exposure to Traffic LoS | F | F | F | F | F | F | F | F | E | E | D | E | F | F | E | F | #N/A | #N/A | | | |
| | Cycle Length | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | | | 110 | 110 | 110 | 110 | 120 | 120 | 120 | 120 | 120 | 120 | |
| | Effective Walk Time | 7 | 26 | 26 | 26 | 7 | 7 | 48 | 48 | | | 8 | 8 | 57 | 57 | 8 | 8 | 53 | 53 | 41 | 41 | |
| | Average Pedestrian Delay | 48 | 32 | 32 | 32 | 48 | 48 | 17 | 17 | | | 47 | 47 | 13 | 13 | 52 | 52 | 19 | 26 | | | |
| | Pedestrian Delay LoS | E | D | D | D | E | E | B | B | | | E | E | B | B | E | E | B | B | | | |
| Level of Service | F | F | F | F | F | F | F | F | E | E | F | F | F | F | E | F | #N/A | #N/A | | | | |
| Approach From | | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | NORTH | SOUTH | EAST | WEST | |
| Bicycle | Bicycle Lane Arrangement on Approach | Mixed Traffic | Mixed Traffic | Mixed Traffic | Curb Bike Lane, Cycletrack or MLP | Mixed Traffic | Mixed Traffic | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | Mixed Traffic | Mixed Traffic | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | Mixed Traffic | Mixed Traffic | Curb Bike Lane, Cycletrack or MLP | Curb Bike Lane, Cycletrack or MLP | |
| | Right Turn Lane Configuration | > 50 m | ≤ 50 m | > 50 m | Not Applicable | | | | | | | | | | | | | | | | | |
| | Right Turning Speed | >25 km/h | >25 km/h | >25 km/h | Not Applicable | | | | | | | | | | | | | | | | | |
| | Cyclist relative to RT motorists | F | E | F | Not Applicable | #N/A | #N/A | Not Applicable | Not Applicable | - | Not Applicable | Not Applicable | Not Applicable | #N/A | #N/A | Not Applicable | Not Applicable | D | #N/A | Not Applicable | Not Applicable | |
| | Separated or Mixed Traffic | Mixed Traffic | Mixed Traffic | Mixed Traffic | Separated | Mixed Traffic | Mixed Traffic | Separated | Separated | - | Separated | Separated | Separated | Mixed Traffic | Mixed Traffic | Separated | Separated | Mixed Traffic | Mixed Traffic | Separated | Separated | |
| | Left Turn Approach | ≥ 2 lanes crossed | ≥ 2 lanes crossed | ≥ 2 lanes crossed | ≥ 2 lanes crossed | No lane crossed | No lane crossed | ≥ 2 lanes crossed | ≥ 2 lanes crossed | | 2-stage, LT box | 2-stage, LT box | 2-stage, LT box | No lane crossed | No lane crossed | ≥ 2 lanes crossed | ≥ 2 lanes crossed | No lane crossed | ≥ 2 lanes crossed | ≥ 2 lanes crossed | ≥ 2 lanes crossed | |
| | Operating Speed | ≥ 60 km/h | > 50 to < 60 km/h | ≥ 60 km/h | ≥ 60 km/h | > 40 to ≤ 50 km/h | > 40 to ≤ 50 km/h | ≥ 60 km/h | ≥ 60 km/h | | > 50 to < 60 km/h | ≥ 60 km/h | ≥ 60 km/h | > 50 to < 60 km/h | > 50 to < 60 km/h | ≥ 60 km/h | ≥ 60 km/h | > 40 to ≤ 50 km/h | > 40 to ≤ 50 km/h | ≥ 60 km/h | ≥ 60 km/h | |
| | Left Turning Cyclist | F | F | F | F | B | B | F | F | | A | A | A | C | C | F | F | B | E | F | F | |
| | Level of Service | F | F | F | F | #N/A | #N/A | F | F | | A | A | A | #N/A | #N/A | F | F | D | #N/A | F | F | |
| | Level of Service | F | | | | #N/A | | | | A | | | | #N/A | | | | #N/A | | | | |
| Transit | Average Signal Delay | > 40 sec | > 40 sec | > 40 sec | > 40 sec | | | ≤ 10 sec | ≤ 20 sec | | | > 40 sec | > 40 sec | | | ≤ 10 sec | ≤ 10 sec | > 40 sec | | ≤ 10 sec | ≤ 40 sec | |
| | Level of Service | F | F | F | F | - | - | B | C | | | F | F | - | - | B | B | F | - | B | E | |
| Truck | Effective Corner Radius | > 15 m | | > 15 m | | | | | | | | | | | | | | | | | | |
| | Number of Receiving Lanes on Departure from Intersection | ≥ 2 | | | | | | | | | | | | | | | | | | | | |
| Level of Service | A | - | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| Auto | Volume to Capacity Ratio | | 0.91 - 1.00 | | | | 0.91 - 1.00 | | | | 0.71 - 0.80 | | | | 0.61 - 0.70 | | | | | 0.81 - 0.90 | | |
| | Level of Service | | E | | | | E | | | | C | | | | B | | | | | D | | |

Multi-Modal Level of Service - Segments Form

| | | | |
|------------|-------------------------|---------|-----------------------------|
| Consultant | CGH Transportation Inc. | Project | 245 and 275 Lamarche Avenue |
| Scenario | Existing/Future | Date | |
| Comments | | | |

| SEGMENTS | | Lamarche Ave | Lamarche Ave | Section | Section |
|---|---|----------------------|----------------------|----------|----------|
| | | Existing | Future | 3 | 4 |
| Pedestrian | Sidewalk Width | ≥ 2 m | 1.8 m | | |
| | Boulevard Width | > 2 m | > 2 m | | |
| | Avg Daily Curb Lane Traffic Volume | ≤ 3000 | ≤ 3000 | | |
| | Operating Speed | > 50 to 60 km/h | > 50 to 60 km/h | | |
| | On-Street Parking | yes | yes | | |
| | Exposure to Traffic PLoS | A | A | - | - |
| | Effective Sidewalk Width | | | | |
| Pedestrian Volume | | | | | |
| Crowding PLoS | - | - | - | - | |
| Level of Service | - | - | - | - | |
| Bicycle | Type of Cycling Facility | Physically Separated | Physically Separated | | |
| | Number of Travel Lanes | | | | |
| | Operating Speed | | | | |
| | # of Lanes & Operating Speed LoS | - | - | - | - |
| | Bike Lane (+ Parking Lane) Width | | | | |
| | Bike Lane Width LoS | - | - | - | - |
| | Bike Lane Blockages | | | | |
| | Blockage LoS | - | - | - | - |
| | Median Refuge Width (no median = < 1.8 m) | | | | |
| | No. of Lanes at Unsignalized Crossing | | | | |
| Sidestreet Operating Speed | | | | | |
| Unsignalized Crossing - Lowest LoS | A | A | - | - | |
| Level of Service | A | A | - | - | |
| Transit | Facility Type | | | | |
| | Friction or Ratio Transit:Posted Speed | | | | |
| Level of Service | - | - | - | - | |
| Truck | Truck Lane Width | | | | |
| | Travel Lanes per Direction | | | | |
| Level of Service | - | - | - | - | |

Appendix J

Synchro Intersection Worksheets –2025 Future Total Conditions

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Total
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| Lane Configurations | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ | ↖ ↗ |
| Traffic Volume (vph) | 121 | 406 | 23 | 17 | 1430 | 119 | 228 | 292 | 38 | 65 | 100 | 459 |
| Future Volume (vph) | 121 | 406 | 23 | 17 | 1430 | 119 | 228 | 292 | 38 | 65 | 100 | 459 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.549 | | | 0.573 | | |
| Satd. Flow (perm) | 3207 | 3316 | 1426 | 1632 | 3316 | 1444 | 952 | 3316 | 1396 | 968 | 3316 | 1452 |
| Satd. Flow (RTOR) | | | 143 | | | 143 | | | 82 | | | 151 |
| Lane Group Flow (vph) | 121 | 406 | 23 | 17 | 1430 | 119 | 228 | 292 | 38 | 65 | 100 | 459 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | | 8 |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 13.0 | 65.0 | 65.0 | 13.0 | 65.0 | 65.0 | 19.0 | 52.0 | 52.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 10.0% | 50.0% | 50.0% | 10.0% | 50.0% | 50.0% | 14.6% | 40.0% | 40.0% | 25.4% | 25.4% | 25.4% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None | None | None |
| Act Effct Green (s) | 6.4 | 66.6 | 66.6 | 6.4 | 58.8 | 58.8 | 45.3 | 45.3 | 45.3 | 26.3 | 26.3 | 26.3 |
| Actuated g/C Ratio | 0.05 | 0.51 | 0.51 | 0.05 | 0.45 | 0.45 | 0.35 | 0.35 | 0.35 | 0.20 | 0.20 | 0.20 |
| v/c Ratio | 0.77 | 0.24 | 0.03 | 0.21 | 0.95 | 0.16 | 0.57 | 0.25 | 0.07 | 0.33 | 0.15 | 1.11 |
| Control Delay | 90.3 | 19.1 | 0.1 | 65.5 | 49.2 | 2.4 | 38.9 | 31.0 | 0.3 | 50.0 | 43.4 | 109.2 |
| 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 | 90.3 | 19.1 | 0.1 | 65.5 | 49.2 | 2.4 | 38.9 | 31.0 | 0.3 | 50.0 | 43.4 | 109.2 |
| LOS | F | B | A | E | D | A | D | C | A | D | D | F |
| Approach Delay | | 33.9 | | | 45.8 | | | 32.1 | | | 92.4 | |
| Approach LOS | | C | | | D | | | C | | | F | |
| Queue Length 50th (m) | 16.0 | 26.8 | 0.0 | 4.3 | 182.1 | 0.0 | 44.0 | 28.0 | 0.0 | 14.4 | 11.2 | ~101.4 |
| Queue Length 95th (m) | #31.4 | 44.8 | 0.0 | 12.2 | #232.7 | 7.0 | 66.7 | 39.3 | 0.0 | 28.8 | 19.2 | #166.8 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 158 | 1698 | 800 | 86 | 1499 | 731 | 398 | 1155 | 539 | 195 | 670 | 414 |
| 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 | 0.77 | 0.24 | 0.03 | 0.20 | 0.95 | 0.16 | 0.57 | 0.25 | 0.07 | 0.33 | 0.15 | 1.11 |

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 |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.11 | Intersection LOS: D |
| Intersection Signal Delay: 50.3 | ICU Level of Service G |
| Intersection Capacity Utilization 102.0% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Total
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↕ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 14 | 478 | 21 | 39 | 1502 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Future Volume (vph) | 14 | 478 | 21 | 39 | 1502 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Satd. Flow (prot) | 1658 | 3291 | 0 | 1658 | 3304 | 0 | 0 | 1572 | 0 | 0 | 1572 | 0 |
| Fit Permitted | 0.131 | | | 0.469 | | | | 0.923 | | | 0.859 | |
| Satd. Flow (perm) | 228 | 3291 | 0 | 813 | 3304 | 0 | 0 | 1462 | 0 | 0 | 1378 | 0 |
| Satd. Flow (RTOR) | | 7 | | | 3 | | | 42 | | | 42 | |
| Lane Group Flow (vph) | 14 | 499 | 0 | 39 | 1530 | 0 | 0 | 68 | 0 | 0 | 104 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.4 | 88.4 | | 88.4 | 88.4 | | 18.6 | 18.6 | | 18.6 | 18.6 | |
| Actuated g/C Ratio | 0.74 | 0.74 | | 0.74 | 0.74 | | 0.16 | 0.16 | | 0.16 | 0.16 | |
| v/c Ratio | 0.08 | 0.21 | | 0.07 | 0.63 | | 0.26 | 0.42 | | 0.26 | 0.42 | |
| Control Delay | 9.0 | 6.3 | | 6.4 | 16.5 | | 20.2 | 30.2 | | 20.2 | 30.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.7 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 9.0 | 6.3 | | 6.4 | 17.3 | | 20.2 | 30.2 | | 20.2 | 30.2 | |
| LOS | A | A | | A | B | | C | C | | C | C | |
| Approach Delay | | 6.4 | | | 17.0 | | 20.3 | 30.2 | | 20.3 | 30.2 | |
| Approach LOS | | A | | | B | | C | C | | C | C | |
| Queue Length 50th (m) | 0.6 | 11.5 | | 0.8 | 144.2 | | 5.8 | 14.2 | | 5.8 | 14.2 | |
| Queue Length 95th (m) | 4.3 | 32.5 | | m6.3 | 224.7 | | 16.0 | 26.3 | | 16.0 | 26.3 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | 143.5 | 112.1 | | 143.5 | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 168 | 2426 | | 599 | 2435 | | 411 | 389 | | 411 | 389 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 523 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.08 | 0.21 | | 0.07 | 0.80 | | 0.17 | 0.27 | | 0.17 | 0.27 | |

| 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 |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.63 | Intersection LOS: B |
| Intersection Signal Delay: 15.3 | ICU Level of Service C |
| Intersection Capacity Utilization 72.0% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings

2025 Future Total

3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

AM Peak Hour

| | ↖ | → | ↘ | ↙ | ← | ↖ | ↙ | ↘ | ↙ | ↘ | ↙ | ↘ |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↖ | ↕ | ↘ | ↖ | ↕ | ↘ | ↖ | ↕ | ↘ | ↖ | ↕ | ↘ |
| Traffic Volume (vph) | 6 | 536 | 38 | 12 | 1413 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Future Volume (vph) | 6 | 536 | 38 | 12 | 1413 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Satd. Flow (prot) | 1658 | 3283 | 0 | 1658 | 3315 | 0 | 1658 | 1464 | 0 | 0 | 1533 | 0 |
| Fit Permitted | 0.160 | | | 0.436 | | | 0.755 | | | | 0.952 | |
| Satd. Flow (perm) | 279 | 3283 | 0 | 761 | 3315 | 0 | 1314 | 1464 | 0 | 0 | 1477 | 0 |
| Satd. Flow (RTOR) | | | | | | | 391 | | | | 28 | |
| Lane Group Flow (vph) | 6 | 574 | 0 | 12 | 1417 | 0 | 99 | 39 | 0 | 0 | 4 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | | 8 |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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) | 87.0 | 87.0 | | 87.0 | 87.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | |
| Total Split (%) | 72.5% | 72.5% | | 72.5% | 72.5% | | 27.5% | 27.5% | | 27.5% | 27.5% | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 91.8 | 91.8 | | 91.8 | 91.8 | | 15.8 | 15.8 | | 15.8 | 15.8 | |
| Actuated g/C Ratio | 0.76 | 0.76 | | 0.76 | 0.76 | | 0.13 | 0.13 | | 0.13 | 0.13 | |
| v/c Ratio | 0.03 | 0.23 | | 0.02 | 0.56 | | 0.57 | 0.07 | | 0.02 | 0.02 | |
| Control Delay | 2.5 | 2.0 | | 7.3 | 9.1 | | 60.6 | 0.3 | | 0.2 | 0.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.5 | 2.0 | | 7.3 | 9.1 | | 60.6 | 0.3 | | 0.2 | 0.2 | |
| LOS | A | A | | A | A | | E | A | | A | A | |
| Approach Delay | | 2.0 | | | 9.1 | | | 43.5 | | | 0.3 | |
| Approach LOS | | A | | | A | | | D | | | A | |
| Queue Length 50th (m) | 0.1 | 6.4 | | 0.5 | 53.8 | | 22.6 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | 0.6 | 8.5 | | m2.5 | 129.3 | | 36.3 | 0.0 | | 0.0 | 0.0 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 213 | 2511 | | 582 | 2536 | | 292 | 629 | | 350 | 350 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.03 | 0.23 | | 0.02 | 0.56 | | 0.34 | 0.06 | | 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 |

Lanes, Volumes, Timings

2025 Future Total

3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

AM Peak Hour

| | | |
|---|--------------------------------|---------------------|
| Maximum v/c Ratio: 0.57 | Intersection Signal Delay: 9.4 | Intersection LOS: A |
| Intersection Capacity Utilization 64.5% | ICU Level of Service C | |
| Analysis Period (min) 15 | | |
| m Volume for 95th percentile queue is metered by upstream signal. | | |

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Total
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↖ | ↖↗ | ↖ | ↖ | ↖↗ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖↗ | ↖ |
| Traffic Volume (vph) | 11 | 514 | 37 | 59 | 1372 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Future Volume (vph) | 11 | 514 | 37 | 59 | 1372 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3300 | 0 | 1658 | 1745 | 1483 | 0 | 1604 | 0 |
| Fit Permitted | 0.187 | | | 0.424 | | | 0.695 | | | | 0.850 | |
| Satd. Flow (perm) | 326 | 3316 | 1450 | 739 | 3300 | 0 | 1212 | 1745 | 1462 | 0 | 1393 | 0 |
| Satd. Flow (RTOR) | | | 115 | | 3 | | | | 105 | | 28 | |
| Lane Group Flow (vph) | 11 | 514 | 37 | 59 | 1405 | 0 | 19 | 5 | 39 | 0 | 100 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 66.0 | 66.0 | 66.0 | 12.0 | 78.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 55.0% | 55.0% | 55.0% | 10.0% | 65.0% | | 30.8% | 30.8% | 30.8% | 30.8% | 30.8% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 80.8 | 80.8 | 80.8 | 91.5 | 91.5 | | 14.9 | 14.9 | 14.9 | | 14.9 | |
| Actuated g/C Ratio | 0.67 | 0.67 | 0.67 | 0.76 | 0.76 | | 0.12 | 0.12 | 0.12 | | 0.12 | |
| v/c Ratio | 0.05 | 0.23 | 0.04 | 0.10 | 0.56 | | 0.13 | 0.02 | 0.14 | | 0.51 | |
| Control Delay | 6.4 | 4.9 | 0.1 | 5.2 | 8.0 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 6.4 | 4.9 | 0.1 | 5.2 | 8.0 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| LOS | A | A | A | A | A | | D | D | A | | D | |
| Approach Delay | | 4.7 | | | 7.9 | | | 17.3 | | | 42.3 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 0.4 | 8.8 | 0.0 | 2.5 | 52.1 | | 4.2 | 1.1 | 0.0 | | 16.4 | |
| Queue Length 95th (m) | 1.5 | 18.6 | 0.2 | 9.6 | 121.4 | | 9.8 | 4.2 | 0.0 | | 28.9 | |
| Internal Link Dist (m) | | 561.5 | | | 188.9 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | | 20.0 | | | |
| Base Capacity (vph) | 219 | 2233 | 1014 | 614 | 2515 | | 299 | 431 | 440 | | 365 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.05 | 0.23 | 0.04 | 0.10 | 0.56 | | 0.06 | 0.01 | 0.09 | | 0.27 | |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Total
AM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 4.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

Intersection Summary

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.56 | Intersection LOS: A |
| Intersection Signal Delay: 8.9 | ICU Level of Service D |
| Intersection Capacity Utilization 76.2% | |
| Analysis Period (min) 15 | |

Splits and Phases: 4: Innes Rd & Viseneau Dr



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Total
AM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔↔ | ↔ | ↔ | ↔↔ | ↔ | ↔ | |
| Traffic Volume (vph) | 532 | 34 | 18 | 1500 | 78 | 43 | |
| Future Volume (vph) | 532 | 34 | 18 | 1500 | 78 | 43 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 532 | 34 | 18 | 1500 | 78 | 43 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 24.0 | 24.0 | 11.7 | 24.0 | 11.3 | 30.5 | 4.0 |
| Total Split (s) | 74.0 | 74.0 | 14.0 | 88.0 | 18.9 | 32.0 | 13.1 |
| Total Split (%) | 61.7% | 61.7% | 11.7% | 73.3% | 15.8% | 26.7% | 11% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 81.2 | 81.2 | 6.5 | 86.8 | 10.4 | 20.7 | |
| Actuated g/C Ratio | 0.68 | 0.68 | 0.05 | 0.72 | 0.09 | 0.17 | |
| v/c Ratio | 0.24 | 0.03 | 0.20 | 0.63 | 0.55 | 0.17 | |
| Control Delay | 8.5 | 9.0 | 61.1 | 10.5 | 66.2 | 40.9 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | |
| Total Delay | 8.5 | 9.0 | 61.1 | 10.7 | 66.2 | 40.9 | |
| LOS | A | A | E | B | E | D | |
| Approach Delay | 8.5 | | | 11.3 | 57.2 | | |
| Approach LOS | A | | | B | E | | |
| Queue Length 50th (m) | 19.6 | 2.1 | 4.3 | 65.8 | 17.8 | 8.4 | |
| Queue Length 95th (m) | 33.1 | 7.2 | 17.9 | 91.5 | 33.2 | 18.3 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 65.1 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 2243 | 1003 | 100 | 2397 | 174 | 315 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 8 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 206 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.24 | 0.03 | 0.18 | 0.68 | 0.45 | 0.14 | |

Intersection Summary

| |
|---|
| Cycle Length: 120 |
| Actuated Cycle Length: 120 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 70 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.63 | Intersection LOS: B |
| Intersection Signal Delay: 13.1 | ICU Level of Service B |
| Intersection Capacity Utilization 58.6% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 5: Lamarche Ave & Innes Rd



HCM 2010 TWSC
6: Lamarche Ave & Access #1

2025 Future Total
AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.8 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Vol, veh/h | 0 | 26 | 95 | 0 | 11 | 41 |
| Future Vol, veh/h | 0 | 26 | 95 | 0 | 11 | 41 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 26 | 95 | 0 | 11 | 41 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 158 | 95 | 0 |
| Stage 1 | 95 | - | - |
| Stage 2 | 63 | - | - |
| Critical Hdwy | 6.42 | 6.22 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - |
| Pot Cap-1 Maneuver | 833 | 962 | - |
| Stage 1 | 929 | - | - |
| Stage 2 | 960 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 826 | 962 | - |
| Mov Cap-2 Maneuver | 826 | - | - |
| Stage 1 | 929 | - | - |
| Stage 2 | 952 | - | - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.8 | 0 | 1.6 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 962 | 1499 |
| HCM Lane V/C Ratio | - | - | 0.027 | 0.007 |
| HCM Control Delay (s) | - | - | 8.8 | 7.4 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 |

HCM 2010 TWSC
7: Lamarche Ave & Access #2

2025 Future Total
AM Peak Hour

| Intersection | | | | | | |
|--------------------------|--------|----------|--------|-------|-------|------|
| Int Delay, s/veh | 1 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Vol, veh/h | 0 | 11 | 84 | 0 | 5 | 36 |
| Future Vol, veh/h | 0 | 11 | 84 | 0 | 5 | 36 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 11 | 84 | 0 | 5 | 36 |
| Major/Minor | Minor1 | Major1 | Major2 | | | |
| Conflicting Flow All | 130 | 84 | 0 | 0 | 84 | 0 |
| Stage 1 | 84 | - | - | - | - | - |
| Stage 2 | 46 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 864 | 975 | - | - | 1513 | - |
| Stage 1 | 939 | - | - | - | - | - |
| Stage 2 | 976 | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 861 | 975 | - | - | 1513 | - |
| Mov Cap-2 Maneuver | 861 | - | - | - | - | - |
| Stage 1 | 939 | - | - | - | - | - |
| Stage 2 | 973 | - | - | - | - | - |
| Approach | WB | NB | SB | | | |
| HCM Control Delay, s | 8.7 | 0 | 0.9 | | | |
| HCM LOS | A | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | | |
| Capacity (veh/h) | - | - | 975 | 1513 | | |
| HCM Lane V/C Ratio | - | - | 0.011 | 0.003 | | |
| HCM Control Delay (s) | - | - | 8.7 | 7.4 | 0 | |
| HCM Lane LOS | - | - | A | A | A | |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | | |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Volume (vph) | 579 | 1605 | 178 | 59 | 685 | 128 | 64 | 225 | 78 | 168 | 272 | 203 |
| Future Volume (vph) | 579 | 1605 | 178 | 59 | 685 | 128 | 64 | 225 | 78 | 168 | 272 | 203 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.468 | | | 0.611 | | |
| Satd. Flow (perm) | 3191 | 3316 | 1410 | 1651 | 3316 | 1445 | 808 | 3316 | 1432 | 1048 | 3316 | 1438 |
| Satd. Flow (RTOR) | | | 165 | | | 230 | | | 159 | | | 225 |
| Lane Group Flow (vph) | 579 | 1605 | 178 | 59 | 685 | 128 | 64 | 225 | 78 | 168 | 272 | 203 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | 8 | |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 16.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 31.0 | 49.0 | 49.0 | 16.0 | 34.0 | 34.0 | 12.0 | 45.0 | 45.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 28.2% | 44.5% | 44.5% | 14.5% | 30.9% | 30.9% | 10.9% | 40.9% | 40.9% | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | Max | Max | Max | Max | Max |
| Act Effct Green (s) | 23.0 | 46.5 | 46.5 | 8.5 | 29.2 | 29.2 | 38.3 | 38.3 | 38.3 | 28.7 | 28.7 | 28.7 |
| Actuated g/C Ratio | 0.21 | 0.42 | 0.42 | 0.08 | 0.27 | 0.27 | 0.35 | 0.35 | 0.35 | 0.26 | 0.26 | 0.26 |
| v/c Ratio | 0.86 | 1.15 | 0.26 | 0.46 | 0.78 | 0.23 | 0.20 | 0.19 | 0.13 | 0.62 | 0.31 | 0.38 |
| Control Delay | 55.6 | 105.7 | 5.3 | 51.3 | 61.7 | 11.7 | 26.1 | 25.7 | 0.4 | 48.5 | 35.0 | 5.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.6 | 105.7 | 5.3 | 51.3 | 61.7 | 11.7 | 26.1 | 25.7 | 0.4 | 48.5 | 35.0 | 5.4 |
| LOS | E | F | A | D | E | B | C | C | A | D | C | A |
| Approach Delay | | 85.8 | | | 53.6 | | 20.4 | | | | 29.2 | |
| Approach LOS | | F | | | D | | C | | | | C | |
| Queue Length 50th (m) | 61.1 | ~224.4 | 1.7 | 10.2 | 79.4 | 3.4 | 9.2 | 17.6 | 0.0 | 32.8 | 25.5 | 0.0 |
| Queue Length 95th (m) | #82.8 | #268.4 | 15.3 | 27.1 | #102.3 | 24.4 | 18.8 | 26.6 | 0.0 | #60.8 | 37.4 | 13.5 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | 69.4 | | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 713 | 1401 | 691 | 147 | 879 | 552 | 322 | 1154 | 602 | 273 | 864 | 541 |
| 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 | 0.81 | 1.15 | 0.26 | 0.40 | 0.78 | 0.23 | 0.20 | 0.19 | 0.13 | 0.62 | 0.31 | 0.38 |

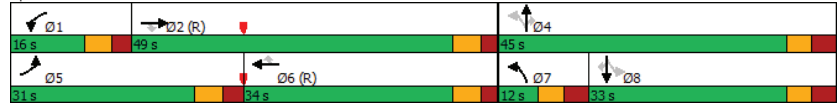
| Intersection Summary | |
|---|--|
| Cycle Length: 110 | |
| Actuated Cycle Length: 110 | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | |
| Natural Cycle: 120 | |
| Control Type: Actuated-Coordinated | |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2025 Future Total
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.15 | Intersection LOS: E |
| Intersection Signal Delay: 65.0 | ICU Level of Service G |
| Intersection Capacity Utilization 104.0% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|--------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↕ | ↕ | ↔ | ↕ | ↕ | ↔ |
| Traffic Volume (vph) | 74 | 1757 | 30 | 102 | 819 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Future Volume (vph) | 74 | 1757 | 30 | 102 | 819 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Satd. Flow (prot) | 1658 | 3304 | 0 | 1658 | 3267 | 0 | 0 | 1524 | 0 | 0 | 1620 | 0 |
| Fit Permitted | 0.298 | | | 0.081 | | | | 0.923 | | | 0.762 | |
| Satd. Flow (perm) | 518 | 3304 | 0 | 141 | 3267 | 0 | 0 | 1420 | 0 | 0 | 1261 | 0 |
| Satd. Flow (RTOR) | | 3 | | | 15 | | | 20 | | | 20 | |
| Lane Group Flow (vph) | 74 | 1787 | 0 | 102 | 891 | 0 | 0 | 113 | 0 | 0 | 121 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 77.6 | 77.6 | | 77.6 | 77.6 | | 19.4 | 19.4 | | 19.4 | 19.4 | |
| Actuated g/C Ratio | 0.71 | 0.71 | | 0.71 | 0.71 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.20 | 0.77 | | 1.03 | 0.39 | | 0.42 | 0.51 | | 0.42 | 0.51 | |
| Control Delay | 2.3 | 8.2 | | 120.2 | 3.5 | | 35.2 | 39.0 | | 35.2 | 39.0 | |
| Queue Delay | 0.0 | 0.7 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.3 | 8.9 | | 120.2 | 3.5 | | 35.2 | 39.0 | | 35.2 | 39.0 | |
| LOS | A | A | | F | A | | D | D | | D | D | |
| Approach Delay | | 8.6 | | | 15.5 | | 35.2 | 39.0 | | 35.2 | 39.0 | |
| Approach LOS | | A | | | B | | D | D | | D | D | |
| Queue Length 50th (m) | 1.5 | 34.2 | | 9.2 | 0.0 | | 19.0 | 21.0 | | 19.0 | 21.0 | |
| Queue Length 95th (m) | m1.8 | m21.4 | | m#58.2 | 0.0 | | 30.4 | 33.3 | | 30.4 | 33.3 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | 143.5 | 112.1 | | 143.5 | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 365 | 2331 | | 99 | 2309 | | 417 | 371 | | 417 | 371 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 235 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.20 | 0.85 | | 1.03 | 0.39 | | 0.27 | 0.33 | | 0.27 | 0.33 | |

Intersection Summary

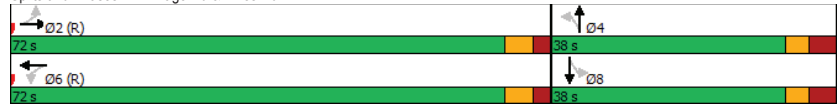
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green |
| Natural Cycle: 150 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2025 Future Total
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.03 | Intersection LOS: B |
| Intersection Signal Delay: 13.0 | ICU Level of Service F |
| Intersection Capacity Utilization 92.5% | |
| 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 Rd & Innes Rd



Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2025 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 8 | 1742 | 106 | 42 | 920 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Future Volume (vph) | 8 | 1742 | 106 | 42 | 920 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Satd. Flow (prot) | 1658 | 3281 | 0 | 1658 | 3312 | 0 | 1658 | 1483 | 0 | 0 | 1538 | 0 |
| Fit Permitted | 0.297 | | | 0.090 | | | 0.748 | | | | 0.921 | |
| Satd. Flow (perm) | 518 | 3281 | 0 | 157 | 3312 | 0 | 1300 | 1483 | 0 | 0 | 1437 | 0 |
| Satd. Flow (RTOR) | | 11 | | | 2 | | | 31 | | | 31 | |
| Lane Group Flow (vph) | 8 | 1848 | 0 | 42 | 928 | 0 | 63 | 31 | 0 | 0 | 14 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 34.1 | 34.1 | | 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.2 | 88.2 | | 88.2 | 88.2 | | 13.9 | 13.9 | | 13.9 | 13.9 | |
| Actuated g/C Ratio | 0.80 | 0.80 | | 0.80 | 0.80 | | 0.13 | 0.13 | | 0.13 | 0.13 | |
| v/c Ratio | 0.02 | 0.70 | | 0.33 | 0.35 | | 0.38 | 0.14 | | 0.07 | 0.07 | |
| Control Delay | 2.4 | 11.0 | | 15.8 | 5.0 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| Queue Delay | 0.0 | 1.2 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.4 | 12.2 | | 15.8 | 5.0 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| LOS | A | B | | B | A | | D | B | | A | A | |
| Approach Delay | | 12.2 | | | 5.5 | | | 37.5 | | | 4.5 | |
| Approach LOS | | B | | | A | | | D | | | A | |
| Queue Length 50th (m) | 0.0 | 222.3 | | 2.1 | 24.4 | | 13.0 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | m0.5 | m233.8 | | 15.6 | 58.7 | | 22.6 | 7.5 | | 2.2 | 2.2 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 415 | 2633 | | 126 | 2655 | | 315 | 383 | | | 372 | |
| Starvation Cap Reductn | 0 | 509 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.87 | | 0.33 | 0.35 | | 0.20 | 0.08 | | 0.04 | 0.04 | |

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 |

Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2025 Future Total
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.70 | Intersection LOS: B |
| Intersection Signal Delay: 10.7 | ICU Level of Service D |
| Intersection Capacity Utilization 75.1% | |
| Analysis Period (min) 15 | |

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

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕↕ | ↔ | ↔ | ↕↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 44 | 1617 | 87 | 183 | 826 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Future Volume (vph) | 44 | 1617 | 87 | 183 | 826 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3260 | 0 | 1658 | 1745 | 1483 | 0 | 1646 | 0 |
| Fit Permitted | 0.313 | | | 0.061 | | | 0.608 | | | | 0.844 | |
| Satd. Flow (perm) | 544 | 3316 | 1399 | 106 | 3260 | 0 | 1042 | 1745 | 1460 | 0 | 1417 | 0 |
| Satd. Flow (RTOR) | | | 106 | | 16 | | | | 179 | | 10 | |
| Lane Group Flow (vph) | 44 | 1617 | 87 | 183 | 910 | 0 | 106 | 40 | 179 | 0 | 141 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 68.0 | 68.0 | 68.0 | 20.0 | 88.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 52.3% | 52.3% | 52.3% | 15.4% | 67.7% | | 28.5% | 28.5% | 28.5% | 28.5% | 28.5% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 75.1 | 75.1 | 75.1 | 96.3 | 96.3 | | 20.1 | 20.1 | 20.1 | | 20.1 | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.74 | 0.74 | | 0.15 | 0.15 | 0.15 | | 0.15 | |
| v/c Ratio | 0.14 | 0.84 | 0.10 | 0.71 | 0.38 | | 0.66 | 0.15 | 0.48 | | 0.62 | |
| Control Delay | 18.5 | 30.1 | 2.4 | 42.5 | 7.3 | | 69.3 | 45.0 | 10.2 | | 58.1 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 18.5 | 30.1 | 2.4 | 42.5 | 7.3 | | 69.3 | 45.0 | 10.2 | | 58.1 | |
| LOS | B | C | A | D | A | | E | D | B | | E | |
| Approach Delay | | 28.5 | | | 13.2 | | | 33.7 | | | 58.1 | |
| Approach LOS | | C | | | B | | | C | | | E | |
| Queue Length 50th (m) | 4.8 | 165.2 | 0.0 | 26.3 | 34.8 | | 26.5 | 9.2 | 0.0 | | 32.5 | |
| Queue Length 95th (m) | 14.4 | #275.1 | 6.1 | 53.0 | 62.3 | | 42.5 | 18.2 | 18.6 | | 49.7 | |
| Internal Link Dist (m) | | 561.5 | | | 192.3 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | 20.0 | | | | |
| Base Capacity (vph) | 314 | 1915 | 852 | 271 | 2419 | | 238 | 398 | 471 | | 331 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.14 | 0.84 | 0.10 | 0.68 | 0.38 | | 0.45 | 0.10 | 0.38 | | 0.43 | |

Intersection Summary

| |
|--|
| Cycle Length: 130 |
| Actuated Cycle Length: 130 |
| Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green |
| Natural Cycle: 115 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Total
PM Peak Hour

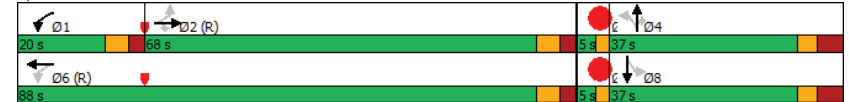
| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 3.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |
| Intersection Summary | | |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2025 Future Total
PM Peak Hour

| |
|---|
| Maximum v/c Ratio: 0.84 |
| Intersection Signal Delay: 25.2 |
| Intersection LOS: C |
| Intersection Capacity Utilization 93.8% |
| 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. |

Splits and Phases: 4: Innes Rd & Viseneau Dr



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Total
PM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|--------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔↔ | ↔ | ↔ | ↔↔ | ↔ | ↔ | |
| Traffic Volume (vph) | 1833 | 84 | 44 | 949 | 54 | 29 | |
| Future Volume (vph) | 1833 | 84 | 44 | 949 | 54 | 29 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 1833 | 84 | 44 | 949 | 54 | 29 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 22.5 | 22.5 | 11.7 | 22.5 | 11.3 | 22.5 | 22.5 |
| Total Split (s) | 64.5 | 64.5 | 11.7 | 76.2 | 11.3 | 33.8 | 22.5 |
| Total Split (%) | 58.6% | 58.6% | 10.6% | 69.3% | 10.3% | 30.7% | 20% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 63.1 | 63.1 | 5.1 | 72.5 | 5.0 | 25.0 | |
| Actuated g/C Ratio | 0.57 | 0.57 | 0.05 | 0.66 | 0.05 | 0.23 | |
| v/c Ratio | 0.96 | 0.10 | 0.57 | 0.43 | 0.72 | 0.09 | |
| Control Delay | 31.4 | 14.7 | 75.6 | 12.0 | 98.5 | 32.7 | |
| Queue Delay | 5.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | |
| Total Delay | 36.6 | 14.7 | 75.6 | 12.0 | 98.5 | 32.8 | |
| LOS | D | B | E | B | F | C | |
| Approach Delay | 35.6 | | | 14.8 | 75.5 | | |
| Approach LOS | D | | | B | E | | |
| Queue Length 50th (m) | ~219.2 | 8.0 | 9.4 | 45.7 | 11.7 | 4.8 | |
| Queue Length 95th (m) | #262.6 | m10.3 | #25.9 | 95.0 | #32.8 | 12.3 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 61.3 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 1902 | 850 | 77 | 2184 | 75 | 368 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 63 | 0 | 0 | 0 | 0 | 88 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 1.00 | 0.10 | 0.57 | 0.43 | 0.72 | 0.10 | |

Intersection Summary

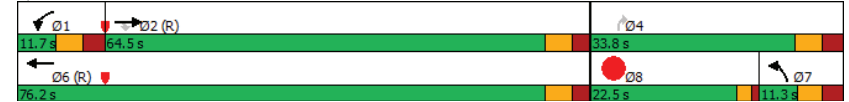
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2025 Future Total
PM Peak Hour

Maximum v/c Ratio: 0.96
Intersection Signal Delay: 29.8
Intersection LOS: C
Intersection Capacity Utilization 68.1%
ICU Level of Service C
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: 5: Lamarche Ave & Innes Rd



Lanes, Volumes, Timings
6: Lamarche Ave

2025 Future Total
PM Peak Hour

| | WBL | WBR | NBT | NBR | SBL | SBT |
|---|------|-----|------|-----|-----|-------|
| Lane Configurations | ↔ | | ↔ | | | ↔ |
| Traffic Volume (vph) | 0 | 19 | 64 | 0 | 25 | 104 |
| Future Volume (vph) | 0 | 19 | 64 | 0 | 25 | 104 |
| Satd. Flow (prot) | 1510 | 0 | 1745 | 0 | 0 | 1728 |
| Fit Permitted | | | | | | 0.990 |
| Satd. Flow (perm) | 1510 | 0 | 1745 | 0 | 0 | 1728 |
| Lane Group Flow (vph) | 19 | 0 | 64 | 0 | 0 | 129 |
| Sign Control | Stop | | Free | | | Free |
| Intersection Summary | | | | | | |
| Control Type: Unsignalized | | | | | | |
| Intersection Capacity Utilization 23.9% | | | | | | |
| ICU Level of Service A | | | | | | |
| Analysis Period (min) 15 | | | | | | |

HCM 2010 TWSC
6: Lamarche Ave

2025 Future Total
PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.6 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | | ↔ | | | ↔ |
| Traffic Vol, veh/h | 0 | 19 | 64 | 0 | 25 | 104 |
| Future Vol, veh/h | 0 | 19 | 64 | 0 | 25 | 104 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 19 | 64 | 0 | 25 | 104 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 218 | 64 | 0 |
| Stage 1 | 64 | - | - |
| Stage 2 | 154 | - | - |
| Critical Hdwy | 6.42 | 6.22 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - |
| Pot Cap-1 Maneuver | 770 | 1000 | - |
| Stage 1 | 959 | - | - |
| Stage 2 | 874 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 757 | 1000 | - |
| Mov Cap-2 Maneuver | 757 | - | - |
| Stage 1 | 959 | - | - |
| Stage 2 | 859 | - | - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.7 | 0 | 1.4 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 1000 | 1538 |
| HCM Lane V/C Ratio | - | - | 0.019 | 0.016 |
| HCM Control Delay (s) | - | - | 8.7 | 7.4 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0.1 |

Lanes, Volumes, Timings
7: Lamarche Ave

2025 Future Total
PM Peak Hour

| | WBL | WBR | NBT | NBR | SBL | SBT |
|---|------|-----|------|-----|-----|-------|
| Lane Configurations | ↔ | | ↔ | | | ↔ |
| Traffic Volume (vph) | 0 | 8 | 56 | 0 | 11 | 93 |
| Future Volume (vph) | 0 | 8 | 56 | 0 | 11 | 93 |
| Satd. Flow (prot) | 1510 | 0 | 1745 | 0 | 0 | 1736 |
| Fit Permitted | | | | | | 0.995 |
| Satd. Flow (perm) | 1510 | 0 | 1745 | 0 | 0 | 1736 |
| Lane Group Flow (vph) | 8 | 0 | 56 | 0 | 0 | 104 |
| Sign Control | Stop | | Free | | | Free |
| Intersection Summary | | | | | | |
| Control Type: Unsignalized | | | | | | |
| Intersection Capacity Utilization 22.5% | | | | | | |
| ICU Level of Service A | | | | | | |
| Analysis Period (min) 15 | | | | | | |

HCM 2010 TWSC
7: Lamarche Ave

2025 Future Total
PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.9 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | | ↔ | | | ↔ |
| Traffic Vol, veh/h | 0 | 8 | 56 | 0 | 11 | 93 |
| Future Vol, veh/h | 0 | 8 | 56 | 0 | 11 | 93 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 8 | 56 | 0 | 11 | 93 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 171 | 56 | 0 |
| Stage 1 | 56 | - | - |
| Stage 2 | 115 | - | - |
| Critical Hdwy | 6.42 | 6.22 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - |
| Pot Cap-1 Maneuver | 819 | 1011 | - |
| Stage 1 | 967 | - | - |
| Stage 2 | 910 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 813 | 1011 | - |
| Mov Cap-2 Maneuver | 813 | - | - |
| Stage 1 | 967 | - | - |
| Stage 2 | 904 | - | - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.6 | 0 | 0.8 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 1011 | 1549 |
| HCM Lane V/C Ratio | - | - | 0.008 | 0.007 |
| HCM Control Delay (s) | - | - | 8.6 | 7.3 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 |

Appendix K

Synchro Intersection Worksheets – 2030 Future Total Conditions

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Total
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Volume (vph) | 121 | 423 | 23 | 17 | 1493 | 119 | 252 | 322 | 38 | 65 | 100 | 459 |
| Future Volume (vph) | 121 | 423 | 23 | 17 | 1493 | 119 | 252 | 322 | 38 | 65 | 100 | 459 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.549 | | | 0.557 | | |
| Satd. Flow (perm) | 3207 | 3316 | 1426 | 1633 | 3316 | 1444 | 952 | 3316 | 1396 | 942 | 3316 | 1452 |
| Satd. Flow (RTOR) | | | 143 | | | 143 | | | 82 | | | 143 |
| Lane Group Flow (vph) | 121 | 423 | 23 | 17 | 1493 | 119 | 252 | 322 | 38 | 65 | 100 | 459 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 7 | 4 | | | | 8 |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 13.0 | 65.0 | 65.0 | 13.0 | 65.0 | 65.0 | 19.0 | 52.0 | 52.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 10.0% | 50.0% | 50.0% | 10.0% | 50.0% | 50.0% | 14.6% | 40.0% | 40.0% | 25.4% | 25.4% | 25.4% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None | None | None |
| Act Effct Green (s) | 6.4 | 66.6 | 66.6 | 6.4 | 58.8 | 58.8 | 45.3 | 45.3 | 45.3 | 26.3 | 26.3 | 26.3 |
| Actuated g/C Ratio | 0.05 | 0.51 | 0.51 | 0.05 | 0.45 | 0.45 | 0.35 | 0.35 | 0.35 | 0.20 | 0.20 | 0.20 |
| v/c Ratio | 0.77 | 0.25 | 0.03 | 0.21 | 1.00 | 0.16 | 0.63 | 0.28 | 0.07 | 0.34 | 0.15 | 1.13 |
| Control Delay | 90.3 | 19.2 | 0.1 | 65.5 | 57.9 | 2.4 | 41.4 | 31.4 | 0.3 | 50.4 | 43.4 | 116.6 |
| 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 | 90.3 | 19.2 | 0.1 | 65.5 | 57.9 | 2.4 | 41.4 | 31.4 | 0.3 | 50.4 | 43.4 | 116.6 |
| LOS | F | B | A | E | E | A | D | C | A | D | D | F |
| Approach Delay | | 33.6 | | | 53.9 | | | 33.6 | | | 98.0 | |
| Approach LOS | | C | | | D | | | C | | | F | |
| Queue Length 50th (m) | 16.0 | 28.1 | 0.0 | 4.3 | 197.0 | 0.0 | 49.4 | 31.2 | 0.0 | 14.4 | 11.2 | ~104.9 |
| Queue Length 95th (m) | #31.4 | 46.7 | 0.0 | 12.2 | #250.4 | 7.0 | 73.7 | 43.0 | 0.0 | 28.9 | 19.2 | #170.3 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | 101.9 | |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 158 | 1698 | 800 | 86 | 1499 | 731 | 398 | 1155 | 539 | 190 | 670 | 407 |
| 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 | 0.77 | 0.25 | 0.03 | 0.20 | 1.00 | 0.16 | 0.63 | 0.28 | 0.07 | 0.34 | 0.15 | 1.13 |

Intersection Summary

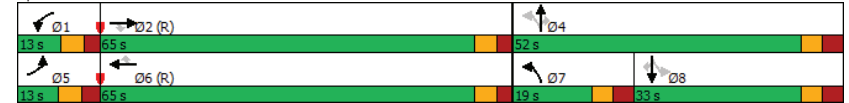
| |
|---|
| Cycle Length: 130 |
| Actuated Cycle Length: 130 |
| Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 125 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.13 | Intersection LOS: D |
| Intersection Signal Delay: 54.9 | ICU Level of Service G |
| Intersection Capacity Utilization 105.3% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Total
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 14 | 499 | 21 | 39 | 1569 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Future Volume (vph) | 14 | 499 | 21 | 39 | 1569 | 28 | 14 | 12 | 42 | 42 | 9 | 53 |
| Satd. Flow (prot) | 1658 | 3291 | 0 | 1658 | 3304 | 0 | 0 | 1572 | 0 | 0 | 1572 | 0 |
| Fit Permitted | 0.119 | | | 0.460 | | | | 0.923 | | | 0.859 | |
| Satd. Flow (perm) | 208 | 3291 | 0 | 798 | 3304 | 0 | 0 | 1462 | 0 | 0 | 1378 | 0 |
| Satd. Flow (RTOR) | | 7 | | | 3 | | | 42 | | | 38 | |
| Lane Group Flow (vph) | 14 | 520 | 0 | 39 | 1597 | 0 | 0 | 68 | 0 | 0 | 104 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.3 | 88.3 | | 88.3 | 88.3 | | 18.7 | 18.7 | | 18.7 | 18.7 | |
| Actuated g/C Ratio | 0.74 | 0.74 | | 0.74 | 0.74 | | 0.16 | 0.16 | | 0.16 | 0.16 | |
| v/c Ratio | 0.09 | 0.21 | | 0.07 | 0.66 | | 0.26 | 0.42 | | 0.26 | 0.42 | |
| Control Delay | 9.4 | 6.4 | | 6.1 | 16.7 | | 20.2 | 31.8 | | 20.2 | 31.8 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.9 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 9.4 | 6.4 | | 6.1 | 17.6 | | 20.2 | 31.8 | | 20.2 | 31.8 | |
| LOS | A | A | | A | B | | C | C | | C | C | |
| Approach Delay | | 6.4 | | | 17.3 | | | 20.2 | | | 31.8 | |
| Approach LOS | | A | | | B | | | C | | | C | |
| Queue Length 50th (m) | 0.6 | 12.3 | | 0.8 | 154.0 | | 5.7 | 15.0 | | 5.7 | 15.0 | |
| Queue Length 95th (m) | 4.4 | 33.9 | | m5.8 | 233.8 | | 16.0 | 27.2 | | 16.0 | 27.2 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | | 143.5 | | | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 153 | 2424 | | 587 | 2433 | | 411 | 386 | | 411 | 386 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 505 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.09 | 0.21 | | 0.07 | 0.83 | | 0.17 | 0.27 | | 0.17 | 0.27 | |

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

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Total
AM Peak Hour

Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 15.6
 Intersection Capacity Utilization 74.0%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings

3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2030 Future Total

AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-------|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 6 | 561 | 38 | 12 | 1483 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Future Volume (vph) | 6 | 561 | 38 | 12 | 1483 | 4 | 99 | 0 | 39 | 1 | 0 | 3 |
| Satd. Flow (prot) | 1658 | 3283 | 0 | 1658 | 3315 | 0 | 1658 | 1464 | 0 | 0 | 1533 | 0 |
| Fit Permitted | 0.146 | | | 0.426 | | | 0.755 | | | | 0.952 | |
| Satd. Flow (perm) | 255 | 3283 | 0 | 743 | 3315 | 0 | 1314 | 1464 | 0 | 0 | 1477 | 0 |
| Satd. Flow (RTOR) | | | | | | | 372 | | | | 28 | |
| Lane Group Flow (vph) | 6 | 599 | 0 | 12 | 1487 | 0 | 99 | 39 | 0 | 0 | 4 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | | 8 |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | | 8 |
| 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) | 87.0 | 87.0 | | 87.0 | 87.0 | | 33.0 | 33.0 | | 33.0 | | 33.0 |
| Total Split (%) | 72.5% | 72.5% | | 72.5% | 72.5% | | 27.5% | 27.5% | | 27.5% | | 27.5% |
| 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 | | 0.0 | | 0.0 |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | | 6.3 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | | None |
| Act Effct Green (s) | 91.8 | 91.8 | | 91.8 | 91.8 | | 15.8 | 15.8 | | 15.8 | | 15.8 |
| Actuated g/C Ratio | 0.76 | 0.76 | | 0.76 | 0.76 | | 0.13 | 0.13 | | 0.13 | | 0.13 |
| v/c Ratio | 0.03 | 0.24 | | 0.02 | 0.59 | | 0.57 | 0.08 | | 0.02 | | 0.02 |
| Control Delay | 2.7 | 2.1 | | 7.4 | 9.6 | | 60.6 | 0.3 | | 0.2 | | 0.2 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | | 0.0 |
| Total Delay | 2.7 | 2.1 | | 7.4 | 9.6 | | 60.6 | 0.3 | | 0.2 | | 0.2 |
| LOS | A | A | | A | A | | E | A | | A | | A |
| Approach Delay | | 2.1 | | | 9.6 | | | 43.5 | | | | 0.3 |
| Approach LOS | | A | | | A | | | D | | | | A |
| Queue Length 50th (m) | 0.1 | 7.1 | | 0.5 | 58.7 | | 22.6 | 0.0 | | 0.0 | | 0.0 |
| Queue Length 95th (m) | m0.6 | 9.2 | | m2.3 | 139.7 | | 36.3 | 0.0 | | 0.0 | | 0.0 |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | | 33.2 |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 195 | 2511 | | 568 | 2536 | | 292 | 614 | | 350 | | 350 |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 |
| Reduced v/c Ratio | 0.03 | 0.24 | | 0.02 | 0.59 | | 0.34 | 0.06 | | 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

Lanes, Volumes, Timings

3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2030 Future Total

AM Peak Hour

| | | |
|---|--------------------------------|---------------------|
| Maximum v/c Ratio: 0.59 | Intersection Signal Delay: 9.6 | Intersection LOS: A |
| Intersection Capacity Utilization 66.5% | ICU Level of Service C | |
| Analysis Period (min) 15 | | |
| m Volume for 95th percentile queue is metered by upstream signal. | | |

Splits and Phases: 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd



Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Total
AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕↕ | ↕↕ | ↕↕ | ↕↕ | ↔ | ↕↕ | ↕↕ | ↕↕ | ↔ | ↕↕ | ↕↕ |
| Traffic Volume (vph) | 11 | 536 | 37 | 59 | 1439 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Future Volume (vph) | 11 | 536 | 37 | 59 | 1439 | 33 | 19 | 5 | 39 | 46 | 13 | 41 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3304 | 0 | 1658 | 1745 | 1483 | 0 | 1604 | 0 |
| Fit Permitted | 0.171 | | | 0.413 | | | 0.695 | | | | 0.850 | |
| Satd. Flow (perm) | 298 | 3316 | 1450 | 720 | 3304 | 0 | 1212 | 1745 | 1462 | 0 | 1393 | 0 |
| Satd. Flow (RTOR) | | | 115 | | 3 | | | | 105 | | 28 | |
| Lane Group Flow (vph) | 11 | 536 | 37 | 59 | 1472 | 0 | 19 | 5 | 39 | 0 | 100 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 2 | | | 1 | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 66.0 | 66.0 | 66.0 | 12.0 | 78.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 55.0% | 55.0% | 55.0% | 10.0% | 65.0% | | 30.8% | 30.8% | 30.8% | 30.8% | 30.8% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 80.8 | 80.8 | 80.8 | 91.5 | 91.5 | | 14.9 | 14.9 | 14.9 | 14.9 | 14.9 | |
| Actuated g/C Ratio | 0.67 | 0.67 | 0.67 | 0.76 | 0.76 | | 0.12 | 0.12 | 0.12 | | 0.12 | |
| v/c Ratio | 0.06 | 0.24 | 0.04 | 0.10 | 0.58 | | 0.13 | 0.02 | 0.14 | | 0.51 | |
| Control Delay | 6.9 | 5.2 | 0.1 | 5.2 | 8.4 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 6.9 | 5.2 | 0.1 | 5.2 | 8.4 | | 44.5 | 40.6 | 1.1 | | 42.3 | |
| LOS | A | A | A | A | A | | D | D | A | | D | |
| Approach Delay | | 4.9 | | | 8.2 | | | 17.3 | | | 42.3 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 0.4 | 9.3 | 0.0 | 2.5 | 56.5 | | 4.2 | 1.1 | 0.0 | | 16.4 | |
| Queue Length 95th (m) | 1.5 | 22.3 | 0.0 | 9.6 | 131.7 | | 9.8 | 4.2 | 0.0 | | 28.9 | |
| Internal Link Dist (m) | | 561.5 | | | 188.9 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | | 20.0 | | | |
| Base Capacity (vph) | 200 | 2233 | 1014 | 601 | 2518 | | 299 | 431 | 440 | | 365 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.06 | 0.24 | 0.04 | 0.10 | 0.58 | | 0.06 | 0.01 | 0.09 | | 0.27 | |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Total
AM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 4.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

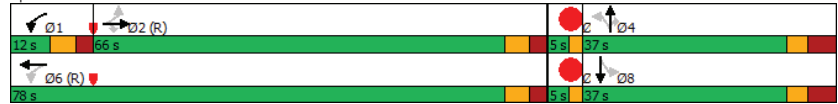
Intersection Summary

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.58 | Intersection LOS: A |
| Intersection Signal Delay: 9.1 | ICU Level of Service D |
| Intersection Capacity Utilization 76.2% | |
| Analysis Period (min) 15 | |

Splits and Phases: 4: Innes Rd & Viseneau Dr



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Total
AM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↕↕ | ↕ | ↕ | ↕↕ | ↕ | ↕ | |
| Traffic Volume (vph) | 557 | 34 | 18 | 1571 | 78 | 43 | |
| Future Volume (vph) | 557 | 34 | 18 | 1571 | 78 | 43 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 557 | 34 | 18 | 1571 | 78 | 43 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 24.0 | 24.0 | 11.7 | 24.0 | 11.3 | 30.5 | 4.0 |
| Total Split (s) | 75.0 | 75.0 | 14.0 | 89.0 | 18.9 | 31.0 | 12.1 |
| Total Split (%) | 62.5% | 62.5% | 11.7% | 74.2% | 15.8% | 25.8% | 10% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 82.2 | 82.2 | 6.5 | 87.8 | 10.4 | 19.7 | |
| Actuated g/C Ratio | 0.68 | 0.68 | 0.05 | 0.73 | 0.09 | 0.16 | |
| v/c Ratio | 0.25 | 0.03 | 0.20 | 0.65 | 0.55 | 0.18 | |
| Control Delay | 8.2 | 8.7 | 60.8 | 10.3 | 66.2 | 41.9 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | |
| Total Delay | 8.2 | 8.7 | 60.8 | 10.5 | 66.2 | 41.9 | |
| LOS | A | A | E | B | E | D | |
| Approach Delay | 8.2 | | | 11.1 | 57.5 | | |
| Approach LOS | A | | | B | E | | |
| Queue Length 50th (m) | 20.1 | 2.0 | 4.2 | 67.2 | 17.8 | 8.5 | |
| Queue Length 95th (m) | 34.1 | 7.0 | 7.7 | 91.9 | 33.2 | 18.5 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 65.1 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 2270 | 1015 | 100 | 2425 | 174 | 302 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 7 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 216 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.25 | 0.03 | 0.18 | 0.71 | 0.45 | 0.14 | |

Intersection Summary

| |
|---|
| Cycle Length: 120 |
| Actuated Cycle Length: 120 |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: 75 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Total
AM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.65 | Intersection LOS: B |
| Intersection Signal Delay: 12.8 | ICU Level of Service B |
| Intersection Capacity Utilization 60.7% | |
| Analysis Period (min) 15 | |
| m Volume for 95th percentile queue is metered by upstream signal. | |

Splits and Phases: 5: Lamarche Ave & Innes Rd



HCM 2010 TWSC
6: Lamarche Ave & Access #1

2030 Future Total
AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.8 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Vol, veh/h | 0 | 26 | 95 | 0 | 11 | 41 |
| Future Vol, veh/h | 0 | 26 | 95 | 0 | 11 | 41 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 26 | 95 | 0 | 11 | 41 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 158 | 95 | 0 |
| Stage 1 | 95 | - | - |
| Stage 2 | 63 | - | - |
| Critical Hdwy | 6.42 | 6.22 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - |
| Pot Cap-1 Maneuver | 833 | 962 | - |
| Stage 1 | 929 | - | - |
| Stage 2 | 960 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 826 | 962 | - |
| Mov Cap-2 Maneuver | 826 | - | - |
| Stage 1 | 929 | - | - |
| Stage 2 | 952 | - | - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.8 | 0 | 1.6 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 962 | 1499 |
| HCM Lane V/C Ratio | - | - | 0.027 | 0.007 |
| HCM Control Delay (s) | - | - | 8.8 | 7.4 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 |

HCM 2010 TWSC
7: Lamarche Ave & Access #2

2030 Future Total
AM Peak Hour

| Intersection | | | | | | |
|--------------------------|--------|----------|--------|-------|-------|------|
| Int Delay, s/veh | 1 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Vol, veh/h | 0 | 11 | 84 | 0 | 5 | 36 |
| Future Vol, veh/h | 0 | 11 | 84 | 0 | 5 | 36 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 11 | 84 | 0 | 5 | 36 |
| Major/Minor | Minor1 | Major1 | Major2 | | | |
| Conflicting Flow All | 130 | 84 | 0 | 0 | 84 | 0 |
| Stage 1 | 84 | - | - | - | - | - |
| Stage 2 | 46 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 864 | 975 | - | - | 1513 | - |
| Stage 1 | 939 | - | - | - | - | - |
| Stage 2 | 976 | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 861 | 975 | - | - | 1513 | - |
| Mov Cap-2 Maneuver | 861 | - | - | - | - | - |
| Stage 1 | 939 | - | - | - | - | - |
| Stage 2 | 973 | - | - | - | - | - |
| Approach | WB | NB | SB | | | |
| HCM Control Delay, s | 8.7 | 0 | 0.9 | | | |
| HCM LOS | A | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | | |
| Capacity (veh/h) | - | - | 975 | 1513 | | |
| HCM Lane V/C Ratio | - | - | 0.011 | 0.003 | | |
| HCM Control Delay (s) | - | - | 8.7 | 7.4 | 0 | |
| HCM Lane LOS | - | - | A | A | A | |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | | |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Volume (vph) | 579 | 1677 | 197 | 59 | 713 | 128 | 64 | 225 | 78 | 168 | 300 | 203 |
| Future Volume (vph) | 579 | 1677 | 197 | 59 | 713 | 128 | 64 | 225 | 78 | 168 | 300 | 203 |
| Satd. Flow (prot) | 3216 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 | 1658 | 3316 | 1483 |
| Fit Permitted | 0.950 | | | 0.950 | | | 0.443 | | | 0.611 | | |
| Satd. Flow (perm) | 3192 | 3316 | 1410 | 1652 | 3316 | 1445 | 765 | 3316 | 1432 | 1048 | 3316 | 1438 |
| Satd. Flow (RTOR) | | | 165 | | | 230 | | | 159 | | | 225 |
| Lane Group Flow (vph) | 579 | 1677 | 197 | 59 | 713 | 128 | 64 | 225 | 78 | 168 | 300 | 203 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | pm+pt | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | 6 | 7 | 4 | | | 8 | 8 |
| Permitted Phases | | | 2 | | | 6 | 4 | | 4 | 8 | | 8 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 7 | 4 | 4 | 8 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 16.6 | 26.2 | 26.2 | 11.2 | 26.2 | 26.2 | 11.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 |
| Total Split (s) | 31.0 | 49.0 | 49.0 | 16.0 | 34.0 | 34.0 | 12.0 | 45.0 | 45.0 | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 28.2% | 44.5% | 44.5% | 14.5% | 30.9% | 30.9% | 10.9% | 40.9% | 40.9% | 30.0% | 30.0% | 30.0% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 |
| All-Red Time (s) | 2.9 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.6 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Recall Mode | None | C-Max | C-Max | None | C-Max | C-Max | None | Max | Max | Max | Max | Max |
| Act Effct Green (s) | 23.0 | 46.5 | 46.5 | 8.5 | 29.2 | 29.2 | 38.3 | 38.3 | 38.3 | 28.7 | 28.7 | 28.7 |
| Actuated g/C Ratio | 0.21 | 0.42 | 0.42 | 0.08 | 0.27 | 0.27 | 0.35 | 0.35 | 0.35 | 0.26 | 0.26 | 0.26 |
| v/c Ratio | 0.86 | 1.20 | 0.29 | 0.46 | 0.81 | 0.23 | 0.21 | 0.19 | 0.13 | 0.62 | 0.35 | 0.38 |
| Control Delay | 55.6 | 126.5 | 6.5 | 51.1 | 63.0 | 11.6 | 26.2 | 25.7 | 0.4 | 48.5 | 35.4 | 5.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.6 | 126.5 | 6.5 | 51.1 | 63.0 | 11.6 | 26.2 | 25.7 | 0.4 | 48.5 | 35.4 | 5.4 |
| LOS | E | F | A | D | E | B | C | C | A | D | D | A |
| Approach Delay | | 100.1 | | | 54.9 | | | 20.4 | | | | 29.6 |
| Approach LOS | | F | | | D | | | C | | | | C |
| Queue Length 50th (m) | 61.1 | ~241.4 | 4.2 | 10.2 | 82.9 | 3.4 | 9.2 | 17.6 | 0.0 | 32.8 | 28.4 | 0.0 |
| Queue Length 95th (m) | #82.8 | #285.3 | 18.8 | 27.2 | #109.6 | 24.1 | 18.8 | 26.6 | 0.0 | #60.8 | 41.1 | 13.5 |
| Internal Link Dist (m) | | 265.9 | | | 463.6 | | | 69.4 | | | | 101.9 |
| Turn Bay Length (m) | 135.5 | | 87.0 | 106.0 | | 57.0 | 48.0 | | 43.5 | 50.0 | | 53.0 |
| Base Capacity (vph) | 713 | 1401 | 691 | 147 | 879 | 552 | 309 | 1154 | 602 | 273 | 864 | 541 |
| 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 | 0.81 | 1.20 | 0.29 | 0.40 | 0.81 | 0.23 | 0.21 | 0.19 | 0.13 | 0.62 | 0.35 | 0.38 |

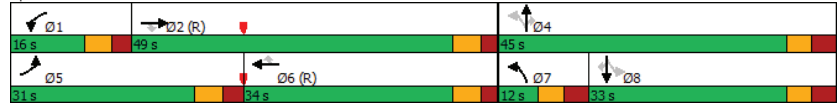
| Intersection Summary | |
|------------------------|---|
| Cycle Length: | 110 |
| Actuated Cycle Length: | 110 |
| Offset: | 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |
| Natural Cycle: | 120 |
| Control Type: | Actuated-Coordinated |

Lanes, Volumes, Timings
1: Orleans Blvd & Innes Rd

2030 Future Total
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.20 | Intersection LOS: E |
| Intersection Signal Delay: 73.4 | ICU Level of Service G |
| Intersection Capacity Utilization 106.1% | |
| 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 Blvd & Innes Rd



Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|-----|--------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 74 | 1835 | 30 | 102 | 855 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Future Volume (vph) | 74 | 1835 | 30 | 102 | 855 | 72 | 23 | 6 | 84 | 67 | 17 | 37 |
| Satd. Flow (prot) | 1658 | 3308 | 0 | 1658 | 3267 | 0 | 0 | 1524 | 0 | 0 | 1620 | 0 |
| Fit Permitted | 0.285 | | | 0.069 | | | | 0.923 | | | 0.762 | |
| Satd. Flow (perm) | 495 | 3308 | 0 | 120 | 3267 | 0 | 0 | 1420 | 0 | 0 | 1261 | 0 |
| Satd. Flow (RTOR) | | 3 | | | 14 | | | 16 | | | 20 | |
| Lane Group Flow (vph) | 74 | 1865 | 0 | 102 | 927 | 0 | 0 | 113 | 0 | 0 | 121 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.8 | 6.8 | | 6.8 | 6.8 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 77.6 | 77.6 | | 77.6 | 77.6 | | 19.4 | 19.4 | | 19.4 | 19.4 | |
| Actuated g/C Ratio | 0.71 | 0.71 | | 0.71 | 0.71 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.21 | 0.80 | | 1.21 | 0.40 | | 0.43 | 0.51 | | 0.51 | 0.51 | |
| Control Delay | 2.2 | 9.8 | | 185.3 | 3.3 | | 36.9 | 39.0 | | 39.0 | 39.0 | |
| Queue Delay | 0.0 | 2.1 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.2 | 11.9 | | 185.3 | 3.3 | | 36.9 | 39.0 | | 39.0 | 39.0 | |
| LOS | A | B | | F | A | | D | D | | D | D | |
| Approach Delay | | 11.5 | | | 21.3 | | 36.9 | 39.0 | | 39.0 | 39.0 | |
| Approach LOS | | B | | | C | | D | D | | D | D | |
| Queue Length 50th (m) | 1.4 | 43.3 | | -25.6 | 0.0 | | 19.9 | 21.0 | | 21.0 | 21.0 | |
| Queue Length 95th (m) | m1.7 | m20.8 | | m#61.6 | 0.0 | | 31.2 | 33.3 | | 33.3 | 33.3 | |
| Internal Link Dist (m) | | 463.6 | | | 206.5 | | 143.5 | 112.1 | | 112.1 | 112.1 | |
| Turn Bay Length (m) | 104.5 | | | 120.0 | | | | | | | | |
| Base Capacity (vph) | 349 | 2334 | | 84 | 2308 | | 414 | 371 | | 371 | 371 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 319 | | 0 | 0 | | 1 | 1 | | 1 | 1 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.21 | 0.93 | | 1.21 | 0.40 | | 0.27 | 0.33 | | 0.33 | 0.33 | |

Intersection Summary

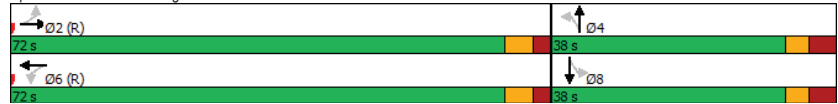
| |
|---|
| Cycle Length: 110 |
| Actuated Cycle Length: 110 |
| Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green |
| Natural Cycle: 150 |
| Control Type: Actuated-Coordinated |

Lanes, Volumes, Timings
2: Page Rd & Innes Rd

2030 Future Total
PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 1.21 | Intersection LOS: B |
| Intersection Signal Delay: 16.6 | ICU Level of Service F |
| Intersection Capacity Utilization 94.8% | |
| 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: 2: Page Rd & Innes Rd



Lanes, Volumes, Timings
3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2030 Future Total
PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ | ↔ | ↕ | ↔ |
| Traffic Volume (vph) | 8 | 1827 | 106 | 42 | 964 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Future Volume (vph) | 8 | 1827 | 106 | 42 | 964 | 8 | 63 | 0 | 31 | 4 | 0 | 10 |
| Satd. Flow (prot) | 1658 | 3285 | 0 | 1658 | 3312 | 0 | 1658 | 1483 | 0 | 0 | 1538 | 0 |
| Fit Permitted | 0.282 | | | 0.078 | | | 0.748 | | | | 0.921 | |
| Satd. Flow (perm) | 492 | 3285 | 0 | 136 | 3312 | 0 | 1300 | 1483 | 0 | 0 | 1437 | 0 |
| Satd. Flow (RTOR) | | 11 | | | 1 | | | 31 | | | 31 | |
| Lane Group Flow (vph) | 8 | 1933 | 0 | 42 | 972 | 0 | 63 | 31 | 0 | 0 | 14 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | 8 | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | 8 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 34.1 | 34.1 | | 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 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.1 | 6.1 | | 6.1 | 6.1 | | 6.3 | 6.3 | | 6.3 | 6.3 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Act Effct Green (s) | 88.2 | 88.2 | | 88.2 | 88.2 | | 13.9 | 13.9 | | 13.9 | 13.9 | |
| Actuated g/C Ratio | 0.80 | 0.80 | | 0.80 | 0.80 | | 0.13 | 0.13 | | 0.13 | 0.13 | |
| v/c Ratio | 0.02 | 0.73 | | 0.39 | 0.37 | | 0.38 | 0.14 | | 0.07 | 0.07 | |
| Control Delay | 2.4 | 12.1 | | 20.8 | 5.2 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| Queue Delay | 0.0 | 1.8 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 2.4 | 14.0 | | 20.8 | 5.2 | | 49.0 | 14.1 | | 4.5 | 4.5 | |
| LOS | A | B | | C | A | | D | B | | A | A | |
| Approach Delay | | 13.9 | | | 5.8 | | | 37.5 | | | 4.5 | |
| Approach LOS | | B | | | A | | | D | | | A | |
| Queue Length 50th (m) | 0.0 | 232.7 | | 2.2 | 26.0 | | 13.0 | 0.0 | | 0.0 | 0.0 | |
| Queue Length 95th (m) | m0.5 | m232.8 | | #21.8 | 62.5 | | 22.6 | 7.5 | | 2.2 | 2.2 | |
| Internal Link Dist (m) | | 221.9 | | | 561.5 | | | 129.3 | | | 33.2 | |
| Turn Bay Length (m) | 80.0 | | | 40.0 | | | | | | | | |
| Base Capacity (vph) | 394 | 2636 | | 109 | 2655 | | 315 | 383 | | | 372 | |
| Starvation Cap Reductn | 0 | 510 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.91 | | 0.39 | 0.37 | | 0.20 | 0.08 | | 0.04 | 0.04 | |

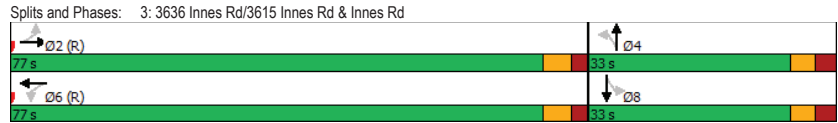
Intersection Summary

| |
|---|
| 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 |

Lanes, Volumes, Timings
 3: 3636 Innes Rd/3615 Innes Rd & Innes Rd

2030 Future Total
 PM Peak Hour

| | |
|---|------------------------|
| Maximum v/c Ratio: 0.73 | Intersection LOS: B |
| Intersection Signal Delay: 11.9 | ICU Level of Service D |
| Intersection Capacity Utilization 77.6% | |
| 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. | |



Lanes, Volumes, Timings
 4: Innes Rd & Viseneau Dr

2030 Future Total
 PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Configurations | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Volume (vph) | 44 | 1696 | 87 | 183 | 863 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Future Volume (vph) | 44 | 1696 | 87 | 183 | 863 | 84 | 106 | 40 | 179 | 60 | 51 | 30 |
| Satd. Flow (prot) | 1658 | 3316 | 1483 | 1658 | 3263 | 0 | 1658 | 1745 | 1483 | 0 | 1646 | 0 |
| Fit Permitted | 0.302 | | | 0.049 | | | 0.608 | | | | 0.844 | |
| Satd. Flow (perm) | 525 | 3316 | 1399 | 86 | 3263 | 0 | 1042 | 1745 | 1460 | 0 | 1417 | 0 |
| Satd. Flow (RTOR) | | | 106 | | 15 | | | | 179 | | 10 | |
| Lane Group Flow (vph) | 44 | 1696 | 87 | 183 | 947 | 0 | 106 | 40 | 179 | 0 | 141 | 0 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | | 4 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | | 4 | | 4 | 8 | | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 10.0 | 5.0 | 10.0 | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | |
| Minimum Split (s) | 32.3 | 32.3 | 32.3 | 11.3 | 32.3 | | 36.3 | 36.3 | 36.3 | 36.3 | 36.3 | |
| Total Split (s) | 68.0 | 68.0 | 68.0 | 20.0 | 88.0 | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | |
| Total Split (%) | 52.3% | 52.3% | 52.3% | 15.4% | 67.7% | | 28.5% | 28.5% | 28.5% | 28.5% | 28.5% | |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | |
| 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) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | | 7.3 | 7.3 | 7.3 | | 7.3 | |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lag | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | | None | None | None | None | None | |
| Act Effct Green (s) | 75.1 | 75.1 | 75.1 | 96.3 | 96.3 | | 20.1 | 20.1 | 20.1 | | 20.1 | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.74 | 0.74 | | 0.15 | 0.15 | 0.15 | | 0.15 | |
| v/c Ratio | 0.15 | 0.89 | 0.10 | 0.75 | 0.39 | | 0.66 | 0.15 | 0.48 | | 0.62 | |
| Control Delay | 18.7 | 32.6 | 2.4 | 50.7 | 7.5 | | 69.3 | 45.0 | 10.2 | | 58.1 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 18.7 | 32.6 | 2.4 | 50.7 | 7.5 | | 69.3 | 45.0 | 10.2 | | 58.1 | |
| LOS | B | C | A | D | A | | E | D | B | | E | |
| Approach Delay | | 30.9 | | | 14.5 | | | 33.7 | | | 58.1 | |
| Approach LOS | | C | | | B | | | C | | | E | |
| Queue Length 50th (m) | 4.8 | 181.7 | 0.0 | 30.2 | 37.0 | | 26.5 | 9.2 | 0.0 | | 32.5 | |
| Queue Length 95th (m) | 14.5 | #296.9 | 6.1 | 56.5 | 65.7 | | 42.5 | 18.2 | 18.6 | | 49.7 | |
| Internal Link Dist (m) | | 561.5 | | | 192.3 | | | 77.4 | | | 48.4 | |
| Turn Bay Length (m) | 47.5 | | 58.5 | 58.5 | | | 48.5 | 20.0 | | | | |
| Base Capacity (vph) | 303 | 1915 | 852 | 259 | 2421 | | 238 | 398 | 471 | | 331 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.15 | 0.89 | 0.10 | 0.71 | 0.39 | | 0.45 | 0.10 | 0.38 | | 0.43 | |

| | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Intersection Summary | | | | | | | | | | | | |
| Cycle Length: 130 | | | | | | | | | | | | |
| Actuated Cycle Length: 130 | | | | | | | | | | | | |
| Offset: 105 (81%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | | | | | | | | | | |
| Natural Cycle: 125 | | | | | | | | | | | | |
| Control Type: Actuated-Coordinated | | | | | | | | | | | | |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Total
PM Peak Hour

| Lane Group | Ø3 | Ø7 |
|------------------------|------|------|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Satd. Flow (prot) | | |
| Fit Permitted | | |
| Satd. Flow (perm) | | |
| Satd. Flow (RTOR) | | |
| Lane Group Flow (vph) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 1.0 | 1.0 |
| Minimum Split (s) | 3.0 | 3.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 4% | 4% |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Recall Mode | None | None |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |
| Intersection Summary | | |

Lanes, Volumes, Timings
4: Innes Rd & Viseneau Dr

2030 Future Total
PM Peak Hour

| |
|---|
| Maximum v/c Ratio: 0.89 |
| Intersection Signal Delay: 26.8 |
| Intersection Capacity Utilization 96.1% |
| Analysis Period (min) 15 |
| # 95th percentile volume exceeds capacity, queue may be longer. |
| Queue shown is maximum after two cycles. |

Splits and Phases: 4: Innes Rd & Viseneau Dr



Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Total
PM Peak Hour

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø8 |
|------------------------|--------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↕↕ | ↕ | ↕ | ↕↕ | ↕ | ↕ | |
| Traffic Volume (vph) | 1920 | 84 | 44 | 994 | 54 | 29 | |
| Future Volume (vph) | 1920 | 84 | 44 | 994 | 54 | 29 | |
| Satd. Flow (prot) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Fit Permitted | | | 0.950 | | 0.950 | | |
| Satd. Flow (perm) | 3316 | 1483 | 1658 | 3316 | 1658 | 1483 | |
| Satd. Flow (RTOR) | | | | | | | |
| Lane Group Flow (vph) | 1920 | 84 | 44 | 994 | 54 | 29 | |
| Turn Type | NA | Perm | Prot | NA | Prot | Perm | |
| Protected Phases | 2 | | 1 | 6 | 7 | | 8 |
| Permitted Phases | | 2 | | | | 4 | |
| Detector Phase | 2 | 2 | 1 | 6 | 7 | 4 | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 1.0 |
| Minimum Split (s) | 22.5 | 22.5 | 11.7 | 22.5 | 11.3 | 22.5 | 22.5 |
| Total Split (s) | 64.2 | 64.2 | 11.7 | 75.9 | 11.6 | 34.1 | 22.5 |
| Total Split (%) | 58.4% | 58.4% | 10.6% | 69.0% | 10.5% | 31.0% | 20% |
| Yellow Time (s) | 3.7 | 3.7 | 3.7 | 3.7 | 3.3 | 3.5 | 2.0 |
| All-Red Time (s) | 2.3 | 2.3 | 3.0 | 2.3 | 3.0 | 3.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.7 | 6.0 | 6.3 | 6.5 | |
| Lead/Lag | Lag | Lag | Lead | | Lag | | Lead |
| Lead-Lag Optimize? | Yes | Yes | Yes | | Yes | | Yes |
| Recall Mode | C-Max | C-Max | None | C-Max | None | None | Max |
| Act Effct Green (s) | 62.9 | 62.9 | 5.1 | 72.2 | 5.3 | 25.3 | |
| Actuated g/C Ratio | 0.57 | 0.57 | 0.05 | 0.66 | 0.05 | 0.23 | |
| v/c Ratio | 1.01 | 0.10 | 0.57 | 0.46 | 0.68 | 0.09 | |
| Control Delay | 42.5 | 14.9 | 75.4 | 12.6 | 91.5 | 32.4 | |
| Queue Delay | 17.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | |
| Total Delay | 60.4 | 14.9 | 75.4 | 12.6 | 91.5 | 32.6 | |
| LOS | E | B | E | B | F | C | |
| Approach Delay | 58.5 | | | 15.3 | 70.9 | | |
| Approach LOS | E | | | B | E | | |
| Queue Length 50th (m) | ~241.3 | 8.2 | 9.4 | 49.4 | 11.6 | 4.8 | |
| Queue Length 95th (m) | #284.4 | m9.9 | #25.9 | 104.6 | #31.8 | 12.2 | |
| Internal Link Dist (m) | 206.5 | | | 221.9 | 61.3 | | |
| Turn Bay Length (m) | | 40.0 | 80.0 | | 80.0 | | |
| Base Capacity (vph) | 1894 | 847 | 77 | 2177 | 79 | 372 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 88 | 0 | 0 | 0 | 0 | 129 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 1.06 | 0.10 | 0.57 | 0.46 | 0.68 | 0.12 | |

Intersection Summary

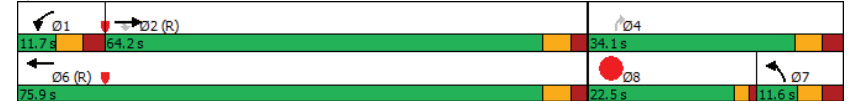
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
5: Lamarche Ave & Innes Rd

2030 Future Total
PM Peak Hour

Maximum v/c Ratio: 1.01
Intersection Signal Delay: 44.5
Intersection LOS: D
Intersection Capacity Utilization 70.6%
ICU Level of Service C
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: 5: Lamarche Ave & Innes Rd



HCM 2010 TWSC
6: Lamarche Ave & Access #1

2030 Future Total
PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.6 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | | ↔ | | | ↔ |
| Traffic Vol, veh/h | 0 | 19 | 64 | 0 | 25 | 104 |
| Future Vol, veh/h | 0 | 19 | 64 | 0 | 25 | 104 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 19 | 64 | 0 | 25 | 104 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 218 | 64 | 0 0 64 0 |
| Stage 1 | 64 | - | - - - - |
| Stage 2 | 154 | - | - - - - |
| Critical Hdwy | 6.42 | 6.22 | - - 4.12 - |
| Critical Hdwy Stg 1 | 5.42 | - | - - - - |
| Critical Hdwy Stg 2 | 5.42 | - | - - - - |
| Follow-up Hdwy | 3.518 | 3.318 | - - 2.218 - |
| Pot Cap-1 Maneuver | 770 | 1000 | - - 1538 - |
| Stage 1 | 959 | - | - - - - |
| Stage 2 | 874 | - | - - - - |
| Platoon blocked, % | - | - | - - - - |
| Mov Cap-1 Maneuver | 757 | 1000 | - - 1538 - |
| Mov Cap-2 Maneuver | 757 | - | - - - - |
| Stage 1 | 959 | - | - - - - |
| Stage 2 | 859 | - | - - - - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.7 | 0 | 1.4 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 1000 | 1538 |
| HCM Lane V/C Ratio | - | - | 0.019 | 0.016 |
| HCM Control Delay (s) | - | - | 8.7 | 7.4 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0.1 |

HCM 2010 TWSC
7: Lamarche Ave & Access #2

2030 Future Total
PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.9 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↔ | | ↔ | | | ↔ |
| Traffic Vol, veh/h | 0 | 8 | 56 | 0 | 11 | 93 |
| Future Vol, veh/h | 0 | 8 | 56 | 0 | 11 | 93 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 8 | 56 | 0 | 11 | 93 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 171 | 56 | 0 0 56 0 |
| Stage 1 | 56 | - | - - - - |
| Stage 2 | 115 | - | - - - - |
| Critical Hdwy | 6.42 | 6.22 | - - 4.12 - |
| Critical Hdwy Stg 1 | 5.42 | - | - - - - |
| Critical Hdwy Stg 2 | 5.42 | - | - - - - |
| Follow-up Hdwy | 3.518 | 3.318 | - - 2.218 - |
| Pot Cap-1 Maneuver | 819 | 1011 | - - 1549 - |
| Stage 1 | 967 | - | - - - - |
| Stage 2 | 910 | - | - - - - |
| Platoon blocked, % | - | - | - - - - |
| Mov Cap-1 Maneuver | 813 | 1011 | - - 1549 - |
| Mov Cap-2 Maneuver | 813 | - | - - - - |
| Stage 1 | 967 | - | - - - - |
| Stage 2 | 904 | - | - - - - |

| Approach | WB | NB | SB |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.6 | 0 | 0.8 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 1011 | 1549 |
| HCM Lane V/C Ratio | - | - | 0.008 | 0.007 |
| HCM Control Delay (s) | - | - | 8.6 | 7.3 |
| HCM Lane LOS | - | - | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 |

Appendix L

TDM Checklist

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 | <input type="checkbox"/> |
| 1.2 Travel surveys | | |
| BETTER | 1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress | <input type="checkbox"/> |
| 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 (<i>multi-family, condominium</i>) | <input type="checkbox"/> |
| 2.2 Bicycle skills training | | |
| BETTER | 2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses | <input type="checkbox"/> |

| 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 (<i>multi-family, condominium</i>) | <input type="checkbox"/> |
| BETTER | 3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>) | <input type="checkbox"/> |
| 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 | <input checked="" type="checkbox"/> |
| BETTER | 3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in | <input checked="" type="checkbox"/> |
| 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 (<i>subdivision</i>) | <input type="checkbox"/> |
| 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) | <input type="checkbox"/> |
| 4. CARSHARING & BIKESHARING | | |
| 4.1 Bikeshare stations & memberships | | |
| BETTER | 4.1.1 Contract with provider to install on-site bikeshare station (<i>multi-family</i>) | <input type="checkbox"/> |
| BETTER | 4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>) | <input type="checkbox"/> |
| 4.2 Carshare vehicles & memberships | | |
| BETTER | 4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents | <input type="checkbox"/> |
| BETTER | 4.2.2 Provide residents with carshare memberships, either free or subsidized | <input type="checkbox"/> |
| 5. PARKING | | |
| 5.1 Priced parking | | |
| BASIC ★ | 5.1.1 Unbundle parking cost from purchase price (<i>condominium</i>) | <input type="checkbox"/> |
| BASIC ★ | 5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>) | <input type="checkbox"/> |

| TDM measures: <i>Residential developments</i> | | 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 | <input checked="" type="checkbox"/> |
| 6.2 Personalized trip planning | | |
| BETTER ★ | 6.2.1 Offer personalized trip planning to new residents | <input type="checkbox"/> |