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100 Argyle Avenue

Ottawa, Ontario

Transportation Impact Assessment

**Proposed Residential Development
100 Argyle Avenue**

Transportation Impact Assessment

Prepared By:

NOVATECH

Suite 200, 240 Michael Cowpland Drive
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December 2018

Novatech File: 118116
Ref: R-2018-107

December 10, 2018

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

Attention: Mr. Wally Dubyk
Project Manager, Infrastructure Approvals

Dear Mr. Dubyk:

Reference: 100 Argyle Avenue
Transportation Impact Assessment
Novatech File No. 118116

We are pleased to submit the following Transportation Impact Assessment in support of a Zoning By-Law Amendment for the property at 100 Argyle Avenue, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

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

Yours truly,

NOVATECH



Joshua Audia, B.Sc.
E.I.T. | Transportation/Traffic



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.


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Dated at Ottawa this 10 day of December, 2018.
(City)

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(Please Print)

Professional Title: Senior Project Manager, Transportation/Traffic


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

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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared in support of a Zoning By-Law Amendment for the property located at 100 Argyle Avenue. The approximately 0.16-hectare site is currently occupied by two and a half storeys of commercial offices.

The subject site is designated as General Urban Area on Schedule B of the City of Ottawa's Official Plan. The implemented zoning for the property is General Mixed Use (GM), which allows 'residential, commercial, and institutional uses, or mixed use development in the General Urban Area.' The subject site is also within the boundaries of the Centretown Community Design Plan and Secondary Plan. A Zoning By-Law Amendment is required to seek relief of various performance standards.

The proposed redevelopment will replace the existing 2 ½-storey office building with a 21-storey residential building containing 156 dwelling units, amenity space for residents, and 74 underground parking spaces. The redevelopment is anticipated to be constructed in a single phase with full occupancy in the year 2023.

Access to the proposed redevelopment will be provided by a right-in/right-out (RIRO) access to underground parking on Argyle Avenue at the western limit of the property, a loading access at the eastern limit, and an existing shared access to surface parking and the adjacent property to the west.

The study area for this report will include Argyle Avenue, Catherine Street, O'Connor Street, Metcalfe Street, Elgin Street, and McLeod Street. The study area intersections include the signalized intersections at O'Connor Street/Argyle Avenue, O'Connor Street/Catherine Street, Metcalfe Street West/Argyle Avenue, Metcalfe Street West/Catherine Street/Highway 417 (Exit 119), Elgin Street/Argyle Avenue, and Elgin Street/Catherine Street, as well as the unsignalized intersections at Metcalfe Street East/McLeod Street and Metcalfe Street East/Argyle Avenue.

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The proposed development is expected to be completed with full occupancy by the year 2023. As such, the weekday AM and PM peak periods will be analyzed for the buildout year 2023 and the horizon year 2028.

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

Forecasting

- The net increase in trips generated by the proposed redevelopment is approximately 73 person trips in the AM peak hour and 79 person trips in the PM peak hour, which includes an increase of approximately 26 vehicle trips in the AM peak hour and 27 vehicle trips in the PM peak hour.

Development Design and Parking

- Pedestrian facilities will be provided between the building entrances and Argyle Avenue. Sidewalks will be depressed and continuous across the accesses, in accordance with City standards.

- Transit stops serving OC Transpo Routes 5, 14, 56, and westbound 101 and 103 are within 400m walking distance of the subject site. Transit stops serving OC Transpo Routes 6, 7, and eastbound 101 and 103 are within 600m walking distance of the subject site.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- Approximately 74 vehicle parking spaces and 160 bicycle parking spaces are proposed for the redevelopment. The amount of bicycle parking meets the requirements outlined in the ZBL, however the amount of vehicle parking is 14 spaces fewer than the minimum outlined in the ZBL.

Boundary Streets

- Argyle Avenue meets the target TkLOS E and Auto LOS D, but does not meet the target PLOS C or BLOS D. The following recommendations are identified for the City's consideration as funding becomes available.
- The south side of Argyle Avenue can achieve the target PLOS C by widening the sidewalk to 1.8m while maintaining a boulevard width of 2.0m.
- The BLOS of Argyle Avenue can meet the target BLOS D can be achieved by either implementing a 4.0m-wide bike lane plus parking lane, or reducing the operating speed to 50 km/h.

Access Design

- The proposed redevelopment will be served by a two-way underground parking garage access approximately 3.0m east of the western property line. The existing shared RIRO access will be maintained. An access exclusively for garbage collection and deliveries is located approximately at the eastern property line.
- Full-height curb and sidewalks will be reinstated where necessary, and depressed curb and continuous sidewalks will be provided across the full width of the accesses, as per City standards.
- Section 25 (a) of the *Private Approach By-Law* identifies a requirement for properties with a frontage of 20m to 34m to have no more than one (1) two-way private approach or two (2) one-way private approaches. Considering the loading access will be used exclusively by delivery and garbage collection vehicles, the only exclusive access to 100 Argyle Avenue is the two-way underground parking garage ramp. The shared access must be maintained for the neighbouring property to the west.
- Section 25 (c) of the *Private Approach By-Law* identifies a requirement for two-way accesses to have a width no greater than 9m, as measured at the street line. Section 107 (1)(a) of the ZBL identifies a minimum width requirement of 6.0m for a double traffic lane leading to a parking garage. Any access to an apartment building must also meet Section 107 (1)(aa), which identifies a maximum width requirement of 6.7m for any double traffic lane which leads to 20 or more parking spaces. The proposed underground parking access is approximately 6.0m in width, thereby meeting these requirements.

- The proposed loading access is approximately 4.7m in width, and the shared access with the property to the west is approximately 3.0m in width.
- Section 25 (l) of the *Private Approach By-Law* identifies a requirement to provide a minimum distance of 18m between the private approach and the nearest intersecting street line, and a minimum distance of 15m between a two-way private approach and any other private approach. The proposed spacing between the loading access and the underground parking access is 19m.
- The proposed spacing between the underground parking access and the existing shared access is approximately 1.2m. A relaxation of the minimum distance outlined in Section 25 (l) is requested for the spacing between these two accesses.
- Section 25 (o) of the *Private Approach By-Law* identifies a requirement to provide a minimum spacing of 3m between the nearest edge of the private approach and the property line, as measured at the street line. The spacing between the proposed underground parking access and the western property line is approximately 3.0m, however the spacing between the proposed access and the existing shared access is approximately 1.2m. Section 25 (o) states that a relaxation of the minimum clearance distance from 3m to 0.3m is permissible by the General Manager, provided there are no safety issues associated with doing so.
- Further relaxation of the minimum clearance distance is requested for the loading access, which is proposed to abut the eastern property line. As this access doesn't serve parking, the requirements of the *Private Approach By-Law* are not considered applicable.
- Section 25 (t) of the *Private Approach By-Law* identifies a requirement that any private approach may not exceed a grade of 2-6% within 9m of the street line. The proposed underground parking access ramp has a grade of 7% approximately 8.2m from the street line. This requirement will be addressed at the Site Plan Control application stage, where the ramp will be brought into compliance or a waiver for this requirement will be requested at that time.
- Implementation of the underground parking access will require a shift of the two existing on-street parking spaces in front of the subject site, such that the spaces are approximately 7m further east. Removal of the existing site-exclusive access will accommodate this shift, as will the implementation of the loading access at the eastern limit of the site. Based on the parking space dimension regulations outlined by City staff and the *Traffic and Parking By-Law*, two on-street parking spaces can be supported.
- The Transportation Association of Canada outlines a minimum sight distance requirement of 95m for vehicles exiting the accesses to the subject site. Provided the vegetation proposed at the front of the development is non-obstructive, the sight distance requirement is met for all accesses.

Transit

- No capacity problems are anticipated on any of the adjacent bus routes, or at any of the adjacent bus stops. No recommendations have been made to mitigate the increase of transit ridership, as none are required.

Intersection Design

- Based on the results of the intersection MMLoS analysis:
 - No intersections meet the target pedestrian level of service (PLOS);
 - Only O'Connor Street/Argyle Avenue meets the target bicycle level of service (BLOS);
 - Among intersections with targets, only Metcalfe Street West/Catherine Street/Exit 119 does not meet the target transit level of service (TLOS);
 - Elgin Street/Argyle Avenue and Elgin Street/Catherine Street do not meet the target truck level of service (TkLOS);
 - Metcalfe Street West/Argyle Avenue and Metcalfe Street West/Catherine Street/Exit 119 do not meet the target vehicular level of service (Auto LOS).

- Pedestrian Level of Service
 - There is limited opportunity in improving the PLOS of any approaches that do not meet the target PLOS C, as major road or timing modifications are required.

- Bicycle Level of Service
 - The east approach of O'Connor Street/Catherine Street does not meet the target BLOS B, based on left turn characteristics. No recommendations have been made, as Catherine Street is not a cycling route and Gladstone Avenue is a nearby east-west spine route.

 - The south approach of Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) does not meet the target BLOS C, as left turning cyclists are required to cross two lanes of traffic. Accommodation of left turning cyclists onto Catherine Street is not recommended, as Catherine Street is not a cycling route and implementation of a two-stage bike box would be difficult given the configuration of the westbound approaches (Catherine Street and the Exit 119 off-ramp).

 - The west approach of Elgin Street/Argyle Avenue does not meet the target BLOS C, based on left turn characteristics. The dual left turn lanes are required based on the existing peak hour turning movement volumes, and no changes have been proposed as part of the Elgin Street Renewal project with respect to the westbound dual left turn lanes.

 - The south and east approaches of Elgin Street/Catherine Street do not meet the target BLOS D. The south approach can achieve the target BLOS by reducing the operating speed to 40 km/h, and the Elgin Street Renewal suggests a reduced speed limit of 30 km/h from Lisgar Street to McLeod Street. No changes were recommended for the accommodation of northbound left turning cyclists as part of the Elgin Street Renewal. The peak hour volumes for westbound right turning vehicles justifies a right turn lane, and this lane is carried in the Elgin Street Renewal design.

- Transit Level of Service
 - The east approach (Catherine Street) of Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) does not meet the target TLOS D, requiring a 5-second reduction in the delay to achieve the target. Implementation of transit signal priority on Catherine Street as identified in the 2031 RTTP Network Concept may improve the TLOS.

- Truck Level of Service
 - The west approach of Elgin Street/Argyle Avenue does not meet the target TkLOS D. It is clear that the Elgin Street Renewal prioritizes the levels of service for pedestrians and cyclists, and it is anticipated that there will be few heavy vehicles approaching Elgin Street from Argyle Avenue.
 - The north approach of Elgin Street/Catherine Street does not meet the target TkLOS D. The Elgin Street Renewal functional design identifies a concrete rumble strip/truck apron at this approach, allowing heavy vehicles a greater effective corner radius. While the MMLOS guidelines evaluate this corner as achieving a TkLOS E, in reality the corner is expected to perform acceptably.
- Vehicular Level of Service
 - The northbound right turn movement at Metcalfe Street West/Argyle Avenue does not meet the target Auto LOS D during the AM peak hour. To achieve the target Auto LOS, a reduction of approximately ten vehicles is required.
 - The northwestbound right turn movement (vehicles turning from westbound Highway 417 onto northbound Metcalfe Street West) and the northbound through movement (vehicles continuing on northbound Metcalfe Street West) do not meet the target Auto LOS D during the AM peak hour. To achieve the target, a reduction of 140 vehicles making the northbound right turn movement and a reduction of 60 vehicles making the northbound through movement is required.
- In existing and future traffic conditions, queueing issues were identified for the following movements:
 - O'Connor Street/Argyle Avenue
 - Southbound through (PM peak hour)
 - O'Connor Street/Catherine Street
 - Southbound right turn (AM and PM peak hours)
 - Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)
 - Northbound through (AM peak hour)
 - Elgin Street/Argyle Avenue
 - Southbound through (PM peak hour)
- The background traffic conditions appear to improve when compared to the existing traffic conditions, attributable to differences in the Peak Hour Factor (set to 0.90 in existing conditions and 1.0 in future conditions, as per the 2017 TIA Guidelines).
- Compared to the background traffic conditions, the total traffic conditions are anticipated to have marginal increases to the v/c ratios, queue lengths, and delays, as a result of the additional site-generated traffic within the study area. All intersections are anticipated to operate at approximately the same level of service.

1.0 INTRODUCTION

This Transportation Impact Assessment (TIA) has been prepared in support of a Zoning By-Law Amendment for the property located at 100 Argyle Avenue. The approximately 0.16-hectare site is currently occupied by two and a half storeys of commercial offices.

The proposed redevelopment will replace the existing offices with a 21-storey residential building containing 156 units and amenity space for residents. Twelve surface parking spaces and two levels of underground parking containing 31 spaces each have been proposed, for a total of approximately 74 parking spaces.

The subject site is surrounded by the following:

- Argyle Avenue and the Canadian Museum of Nature to the north;
- Elgin Street and Ottawa Police Central Headquarters to the east;
- Catherine Street, Highway 417 and Ottawa Police Central Headquarters to the south;
- O'Connor Street, offices and residences to the west.

A view of the subject site and study area is provided in **Figure 1**.

2.0 PROPOSED DEVELOPMENT

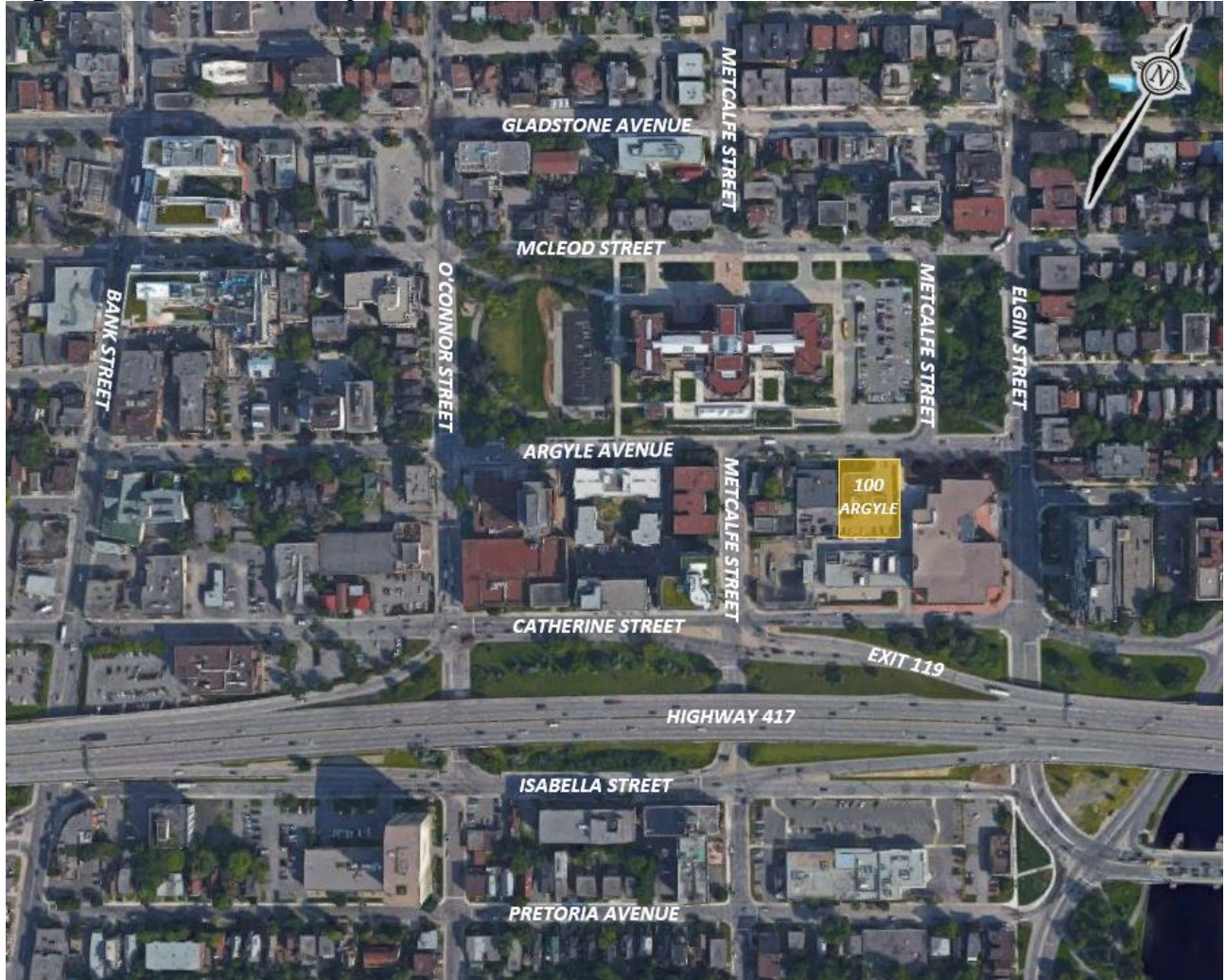
The subject site is designated as General Urban Area on Schedule B of the City of Ottawa's Official Plan. The implemented zoning for the property is General Mixed Use (GM), which allows 'residential, commercial, and institutional uses, or mixed use development in the General Urban Area.' The subject site is also within the boundaries of the Centretown Community Design Plan and Secondary Plan. A Zoning By-Law Amendment is required to seek relief of various performance standards.

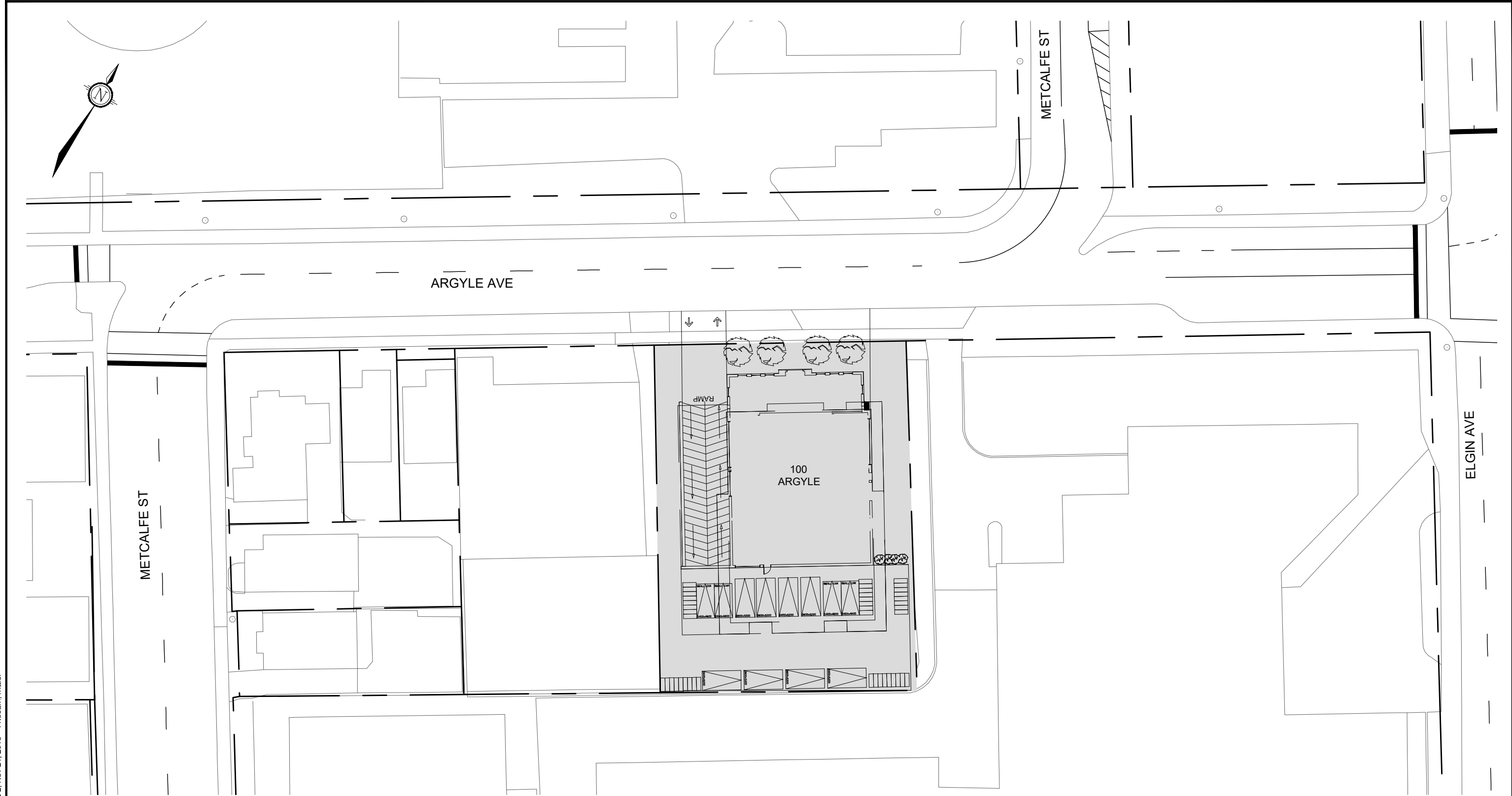
The proposed redevelopment will replace the existing 2 ½-storey office building with a 21-storey residential building containing 156 dwelling units, amenity space for residents, and 74 underground parking spaces. The redevelopment is anticipated to be constructed in a single phase with full occupancy in the year 2023.

Access to the proposed redevelopment will be provided by a right-in/right-out (RIRO) access to underground parking on Argyle Avenue at the western limit of the property, a loading access at the eastern limit, and an existing shared access to surface parking and the adjacent property to the west.

A copy of the conceptual site plan is included in **Appendix A**. A site plan context figure, which includes details of the boundary streets such as pavement markings and sidewalks, is included in **Figure 2**.

Figure 1: View of the Study Area





NOTES:

1. PROPERTY LINES ARE APPROXIMATED FROM geo OTTAWA.



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100 ARGYLE AVENUE

SITE PLAN CONTEXT

SCALE 1 : 500

DATE	NOV 2018	JOB	118116	FIGURE	FIGURE-2
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3.0 SCREENING

3.1 Screening Form

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

- Trip Generation Trigger – The proposed development is anticipated to generate over 60 person trips/peak hour; further assessment is required based on this trigger.
- Location Triggers – The proposed development is not located along a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks, is not located in a Design Priority Area or Transit-Oriented Development Zone; further assessment is not required based on this trigger.
- Safety Triggers – The proposed access is within 150m of adjacent traffic signals, and there is a history of traffic collisions on Argyle Avenue between O'Connor Street and Elgin Street; further assessment is required based on this trigger.

A copy of the TIA Screening Form is included in **Appendix B**.

4.0 SCOPING

4.1 Existing Conditions

4.1.1 Roadways

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

Argyle Avenue is a generally local roadway that runs on an east-west alignment between Bank Street and the Queen Elizabeth Driveway. Between the two intersections with Metcalfe Street (approximately 120m apart), Argyle Avenue is classified as an arterial roadway. The eastern section of Argyle Avenue (a two-way roadway between Elgin Street and the Queen Elizabeth Driveway) intersects with Elgin Street approximately 15m south of where the western section of Argyle Avenue (a one-way roadway eastbound between Bank Street and Elgin Street) intersects with Elgin Street. Within the study area, Argyle Avenue typically has a two- or three-lane undivided urban cross-section, sidewalks on both sides of the roadway, and an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. Argyle Avenue is not classified as a truck route. Street parking is permitted except during weekday peak hours (7:00am to 9:00am and 3:30pm to 5:30pm). The right-of-way (ROW) at the subject site is currently 20m. The City of Ottawa's Official Plan does not identify any further ROW protection on Argyle Avenue.

Catherine Street is a one-way arterial roadway in the westbound direction that runs on an east-west alignment between Queen Elizabeth Driveway and Bronson Avenue. West of Metcalfe Street, Catherine Street and Exit 119 of Highway 417 converge, continuing as Catherine Street. West of Bronson Avenue, it continues as the local roadway Raymond Street, before becoming an on-ramp to Highway 417 west of Rochester Street. Within the study area, Catherine Street has a two- to four-lane undivided urban cross-section, sidewalks on the north side of the roadway, and an unposted

regulatory speed limit of 50 km/h. Catherine Street is classified as a truck route, allowing full loads. One-hour street parking is permitted on Catherine Street between Metcalfe Street and Elgin Street on weekdays between 8:00am and 3:30 pm.

O'Connor Street is a one-way arterial roadway in the southbound direction that runs on a north-south alignment between Wellington Street and Isabella Street. South of Isabella Street, O'Connor Street continues as a local roadway until terminating at Holmwood Avenue. Within the study area, O'Connor Street has a two- or three-lane undivided urban cross-section, sidewalks on both sides of the roadway, a bidirectional cycle track on the east side, and an unposted regulatory speed limit of 50 km/h. O'Connor Street is classified as a truck route, allowing full loads. Street parking is permitted north of Argyle Avenue.

Metcalfe Street is generally a one-way arterial roadway in the northbound direction that runs on a north-south alignment in three distinct sections, as a result of the Canadian Museum of Nature's location. South of the museum, Metcalfe Street is a two-way local roadway from Monkland Avenue to Strathcona Avenue. From Strathcona Avenue to Isabella Street, Metcalfe Street is a one-way local roadway, before becoming a one-way arterial roadway between Isabella Street and Wellington Street. Metcalfe Street wraps around the east side of the museum between Argyle Avenue and McLeod Street. Metcalfe Street has a two-lane undivided urban cross-section and an unposted regulatory speed limit of 50 km/h. Within the study area, sidewalks are provided on both sides of the roadway, except between Argyle Avenue and McLeod Street, as there are direct pedestrian connections through the museum site. Metcalfe Street is not classified as a truck route. Within the study area, street parking is not permitted, except for a designated tour bus parking area east of the museum.

McLeod Street is generally a one-way local roadway in the westbound direction that runs on an east-west alignment between Bronson Avenue and the Queen Elizabeth Driveway. Between the two intersections with Metcalfe Street (approximately 125m apart), McLeod Street is classified as an arterial roadway. From Elgin Street to Cartier Street, McLeod Street is a two-way roadway. From Cartier Street to the Queen Elizabeth Driveway, McLeod Street shifts approximately 25m south, and operates as a two-way roadway. Within the study area, McLeod Street has a one- to two-lane undivided urban cross-section, sidewalks on both sides of the roadway, and an unposted regulatory speed limit of 50 km/h. McLeod Street is not classified as a truck route. Street parking is permitted east of the intersection of Metcalfe Street East/McLeod Street and west of the intersection of Metcalfe Street West/McLeod Street.

Elgin Street is a two-way arterial roadway that runs on a north-south alignment between Wellington Street and Isabella Street. At Isabella Street, the roadway transitions into an east-west alignment and continues as Hawthorne Avenue. East of Isabella Street, Hawthorne Avenue is an arterial roadway before becoming a local roadway east of Main Street. Hawthorne Avenue terminates approximately 380m east of Main Street. Within the study area, Elgin Street has a four- to five-lane undivided urban cross-section, sidewalks on both sides of the roadway, and an unposted regulatory speed limit of 50 km/h. Elgin Street is classified as a truck route, allowing full loads. Street parking is permitted within the study in certain sections, except during weekday peak hours (7:00am to 9:00am and 3:30pm to 5:30pm).

4.1.2 Intersections

O'Connor Street/Argyle Avenue

- Signalized four-legged intersection
- One-way vehicular traffic on O'Connor Street and Argyle Avenue
- North Approach: one shared left turn/through lane and one through lane
- West Approach: one shared through/right turn lane
- Bidirectional cycle tracks on northbound and southbound approaches



O'Connor Street/Catherine Street

- Signalized five-legged intersection
- One-way vehicular traffic on O'Connor Street and Catherine Street
- North Approach: two through lanes, one shared through/right turn lane
- East Approach: one left turn lane, one shared left turn/through lane, and two through lanes
- Westbound left turns on red are prohibited
- Bidirectional cycle tracks on northbound and southbound approaches



Metcalfe Street West/Argyle Avenue

- Signalized three-legged intersection
- One-way traffic on Metcalfe Street West and Argyle Avenue
- South Approach: two right turn lanes
- West Approach: one through lane
- Northbound right turns on red are prohibited



Metcalfe Street/Catherine Street/ Highway 417 (Exit 119)

- Signalized five-legged intersection
- One-way traffic on Metcalfe Street, Catherine Street, and Exit 119
- South Approach: one left turn lane and two through lanes
- Northeast Approach: one through lane and one shared through/right turn lane
- Southeast Approach: two through lanes and two right turn lanes
- Westbound right turns on red are prohibited



Metcalfe Street East/McLeod Street

- Unsignalized three-legged intersection
- One-way traffic on Metcalfe Street East and McLeod Street
- South Approach: two left turn lanes with a PXO Type 'B'
- East Approach: one through lane, stop controlled



Metcalfe Street East/Argyle Avenue

- Unsignalized three-legged intersection
- One-way traffic on Metcalfe Street East and Argyle Avenue
- West Approach: one left turn lane and one shared left turn/through lane



Elgin Street/Argyle Avenue

- Signalized three-legged intersection
- One-way traffic on Argyle Avenue
- North Approach: two through lanes
- South Approach: two through lanes
- West Approach: two left turn lanes and one right turn lane



Elgin Street/Catherine Street

- Signalized four-legged intersection
- One-way traffic on Catherine Street
- North Approach: one through lane and one shared through/right turn lane
- South Approach: one shared left turn/through lane and one through lane
- East Approach: one left turn lane, one through lane, and one right turn lane

**4.1.3 Driveways**

In accordance with the City's 2017 TIA Guidelines, a review of driveways on the boundary streets within 200m of the proposed accesses is provided as follows:

Argyle Avenue, North Side:

- One driveway to the museum at 240 McLeod Street

Argyle Avenue, South Side:

- Seven driveways to residences at 464 Metcalfe Street, and 114, 116, 122 & 150 Argyle Avenue
- One driveway to businesses at 110 Argyle Avenue
- One police station access at 474 Elgin Street

4.1.4 Pedestrian and Cycling Facilities

Concrete and/or unit paver sidewalks are provided on both sides of Argyle Avenue, O'Connor Street, Metcalfe Street, and Elgin Street, and one side of Catherine Street. A bidirectional cycle track is provided on O'Connor Street.

In the City of Ottawa's primary cycling network, O'Connor Street is classified as a Cross-Town Bikeway, Elgin Street is classified as a Local Route, Argyle Avenue is classified as a Spine Route between O'Connor Street and the southern section of Metcalfe Street, and Metcalfe Street is classified as a Spine Route south of Argyle Avenue.

4.1.5 Area Traffic Management

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

4.1.6 Transit

The nearest bus stops to the subject site are as follows:

Elgin Street

- Stop #2472 – for routes 5 and 14
(located at the northwest corner of Elgin Street/Gladstone Avenue)
- Stop #7671 – for route 14
(located at the southwest corner of Elgin Street/Gladstone Avenue)
- Stop #2468 – for route 5
(located at the southeast corner of Elgin Street/McLeod Street)
- Stop #2473 – for route 5
(located at the southwest corner of Elgin Street/McLeod Street)
- Stop #2466 – for route 5
(located at the southeast corner of Elgin Street/Argyle Avenue)
- Stop #2476 – for route 5
(located at the northwest corner of Elgin Street/Catherine Street)

Metcalf Street

- Stop #2428 – for route 56
(located at the northeast corner of Metcalfe Street/Pretoria Avenue)
- Stop #7628 – for route 56
(located at the northwest corner of Metcalfe Street/Pretoria Avenue)

O'Connor Street

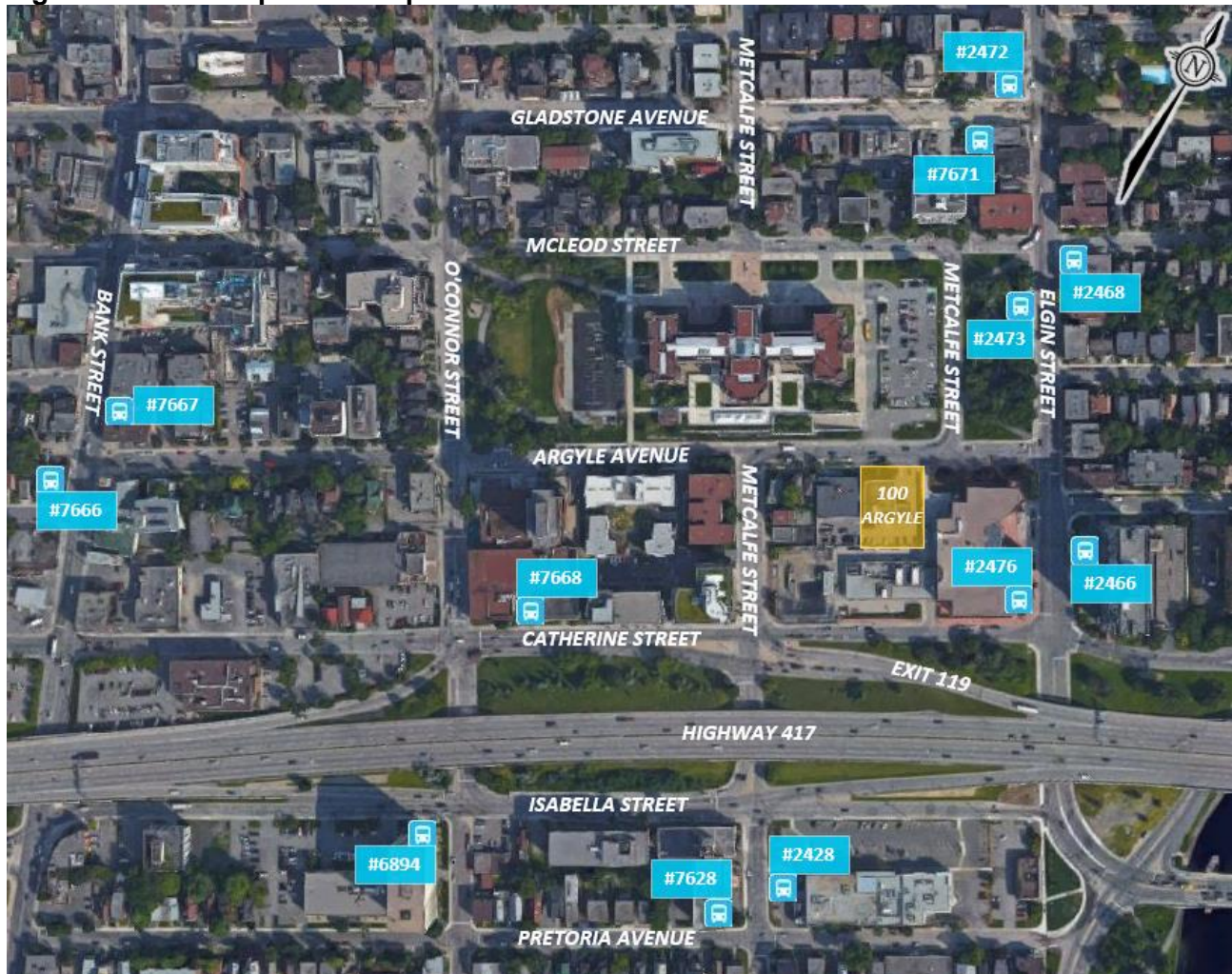
- Stop #6894 – for routes 101 and 103
(located at the southwest corner of O'Connor Street/Isabella Street)
- Stop #7668 – for routes 101 and 103
(located at the northeast corner of O'Connor Street/Catherine Street)

Bank Street

- Stop #7666 – for routes 6 and 7
(located between Argyle Avenue and Arlington Avenue)
- Stop #7667 – for routes 6 and 7
(located between Argyle Avenue and Flora Street)

Locations of these bus stops are shown in **Figure 3**.

Figure 3: OC Transpo Bus Stop Locations



OC Transpo Route 5 travels between Billings Bridge Station and Rideau Centre. On weekdays, the route operates every 15 minutes from 6:00am to 8:30am and 2:00pm to 6:30pm, and every 30 minutes from 8:30am to 2:00pm and 6:30pm to 12:00am. On weekends, the route operates every 30 minutes from 7:00am to 11:30pm.

OC Transpo Route 6 travels between Rockcliffe and Greenboro Station. On weekdays, the route operates every 10-15 minutes from 6:30am to 7:30pm, and every 30 minutes from 4:30am to 6:30am and 7:30pm to 2:30am. On weekends, the route operates every 10-15 minutes from 9:00am to 9:00pm, and every 30 minutes from 5:30am to 9:00am and 9:00pm to 2:00am.

OC Transpo Route 7 travels between St. Laurent Station and Carleton University. On weekdays, the route operates every 5-10 minutes from 6:30am to 9:00am and 2:00pm to 6:00pm, every 15 minutes from 9:00am to 2:00pm and 6:00pm to 7:00pm, and every 30 minutes from 4:30am to 6:30am and 7:00pm to 1:30am. On weekends, the route operates every 10-15 minutes from 9:00am to 9:00pm, and every 30 minutes from 6:00am to 9:00am and 9:00pm to 12:00am.

OC Transpo Route 14 travels between St. Laurent Station and Carlington. On weekdays, the route operates every 15 minutes from 6:00am to 6:00pm, and every 30 minutes from 6:00pm to 1:00am. On Saturdays, the route operates every 15 minutes from 12:30pm to 5:00pm, every 20 minutes from 9:30am to 12:30pm and 5:00pm to 8:00pm, and every 30 minutes from 6:30am to 9:30am and 8:00pm to 1:00am. On Sundays, the route operates every 20 minutes from 11:00am to 7:00pm, every 30 minutes from 7:00am to 11:00am and 7:00pm to 10:00pm, and every 60 minutes from 10:00pm to 12:00pm.

OC Transpo Route 56 travels between Hurdman Station and Tunney's Pasture Station. On weekdays, the route operates every 15 minutes from 3:00pm to 5:00pm, and every 30 minutes from 6:00am to 10:00am and 5:00pm to 7:00pm. No service is provided between 10:00am and 3:00pm. This route does not operate on weekends.

OC Transpo Route 101 travels between St. Laurent Station and Bayshore Station. Service extends to Moodie Station during weekday peak hours (6:00am to 8:30am and 3:00pm to 6:00pm). On weekdays, the route operates every 15 minutes from 6:00am to 9:00am and 1:30pm to 6:30pm, and every 20 minutes from 9:00am to 1:30pm and 6:30pm to 10:00pm. On Saturdays, the route operates every 20 minutes from 9:30am to 8:00pm, and every 30 minutes from 6:00am to 9:30am and 8:00pm to 9:30pm. The route does not operate on Sundays.

OC Transpo Route 103 travels between Place d'Orléans and Moodie Station. During the AM peak period, the route operates from Place d'Orléans to Moodie Station every 15 minutes between 6:00am and 9:30am. During the PM peak period, the route operates from Moodie Station to Place d'Orléans every 15 minutes between 3:00pm and 6:30pm.

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

4.1.7 Existing Traffic Volumes

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

- | | |
|--|----------------|
| • O'Connor Street/Argyle Avenue | March 21, 2017 |
| • O'Connor Street/Catherine Street | March 21, 2017 |
| • Metcalfe Street West/Argyle Avenue | April 19, 2018 |
| • Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) | April 4, 2017 |
| • Metcalfe Street East/McLeod Street | April 13, 2010 |
| • Elgin Street/Argyle Avenue | May 11, 2016 |
| • Elgin Street/Catherine Street | May 11, 2016 |

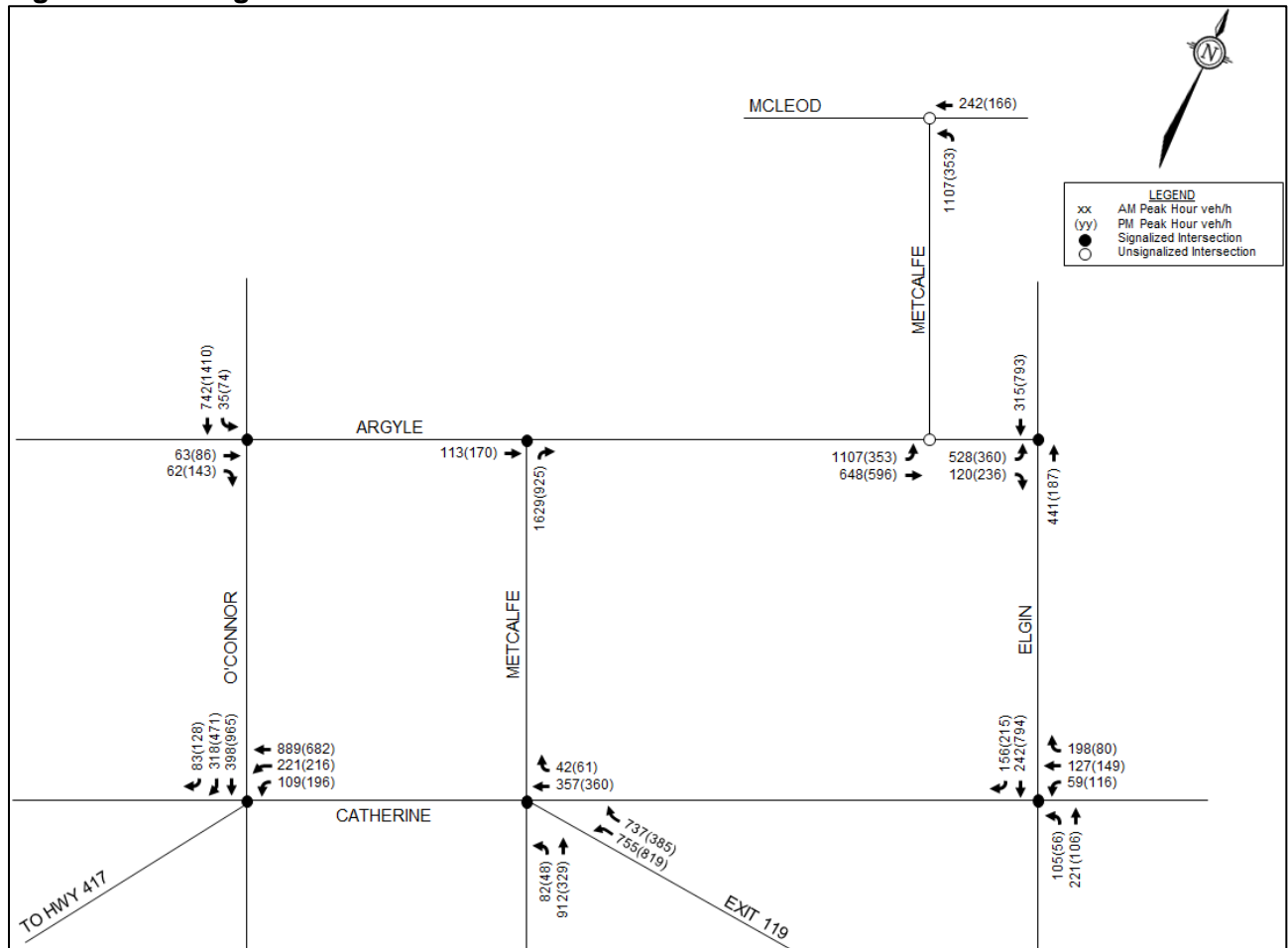
The average annual daily traffic (AADT) of Argyle Avenue at the subject site is 13,980 vehicles/day. The traffic volumes at Metcalfe Street East/Argyle Avenue have been estimated based on the volumes observed at Metcalfe Street East/McLeod Street and Elgin Street/Argyle Avenue.

Comparing the 2010 count of Metcalfe Street East/McLeod Street to the 2017 count at the downstream intersection of Metcalfe Street West/McLeod Street, the 2010 volumes are approximately 60 vehicles higher in the AM peak (4% higher), 45 vehicles higher in the midday peak

(8% higher), and 45 vehicles lower in the PM peak (8% lower). Therefore, the traffic count conducted at Metcalfe Street East/McLeod Street is considered to be representative despite being more than five years old.

Traffic count data is included in **Appendix D**. Traffic volumes within the study area are shown in **Figure 4**.

Figure 4: Existing Network Traffic Volumes



4.1.8 Collision Records

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

The collision data has been evaluated to determine if there are any identifiable collision patterns. The number of collisions at each intersection from January 1, 2013 to December 31, 2017 is summarized in **Table 1**.

Table 1: Reported Collisions

Intersection	Number of Reported Collisions
O'Connor Street/Argyle Avenue	35
O'Connor Street/Catherine Street	95
Metcalfe Street West/Argyle Avenue	5
Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)	61
Metcalfe Street East/McLeod Street	1
Metcalfe Street East/Argyle Avenue	0
Elgin Street/Argyle Avenue	10
Elgin Street/Catherine Street	33

O'Connor Street/Argyle Avenue

A total of 35 collisions were reported at this intersection over the last five years, of which there were six rear-end impacts, 12 turning movement impacts, four sideswipe impacts, eight angle impacts, and five single-vehicle/other impacts. Seven of the collisions caused injuries, but none caused fatalities.

Of the six rear-end impacts, five occurred at the southbound approach (five through vehicle incidents) and one occurred at the eastbound approach (one through vehicle incident). Three of the six impacts occurred in poor driving conditions.

All 12 turning movement impacts involved southbound left turning vehicles, and two of the impacts involved cyclists. Three of the 12 impacts occurred in poor driving conditions. Each of the ten impacts between two vehicles occurred before October 2016, when the bidirectional cycle tracks on O'Connor Street opened. Before the implementation of the cycle tracks, the leftmost lane on O'Connor Street at Argyle Avenue was a shared left-turn/through lane. Both cyclist impacts have occurred since the implementation of the bidirectional cycle tracks on O'Connor Street, and involved southbound cyclists. There are multiple signs indicating that left turning traffic must yield to cyclists.

As O'Connor Street and Argyle Avenue are both one-way streets, all eight angle impacts involved a southbound vehicle and an eastbound vehicle. Five of the eight impacts occurred in poor driving conditions.

Of the five single-vehicle/other impacts, three involved pedestrians. Three of the five impacts occurred in poor driving conditions. Each of the three impacts with pedestrians involved a southbound left turning vehicle.

O'Connor Street/Catherine Street

A total of 95 collisions were reported at this intersection over the last five years, of which there were 14 rear-end impacts, six turning movement impacts, 32 sideswipe impacts, 35 angle impacts, and eight single-vehicle/other impacts. Five of the collisions caused injuries, but none caused fatalities.

Of the 14 rear-end impacts, five occurred at the southbound approach (four through vehicle incidents and one right turn incident) and nine occurred at the westbound approach (eight through vehicle incidents and one left turn incident). Six of the 14 impacts occurred in poor driving conditions.

Of the six turning movement impacts, one involved a right turn at the southbound approach, and five involved left turns at the westbound approach. Two of the six impacts occurred in poor driving conditions.

Of the 32 sideswipe impacts, ten occurred at the southbound approach and 22 occurred at the westbound approach. Nine of the 32 impacts occurred in poor driving conditions. Most of these impacts are attributable to lane changes. Weaving is likely present at both approaches, as drivers have limited space and time to enter the correct lane for their route.

As O'Connor Street and Catherine Street are both one-way streets, all 35 angle impacts involved a southbound vehicle and a westbound vehicle. Eleven of the 35 impacts occurred in poor driving conditions. Southbound and westbound traffic have limited visibility of one another, as the Taggart Family YMCA/YWCA is approximately 3.5m from the edge of O'Connor Street and 6.5m from the edge of Catherine Street. The unusual geometry of the intersection may have also had a role in these collisions.

Of the eight single-vehicle/other impacts, one involved a pedestrian. Four impacts involved a southbound vehicle and four impacts involved a westbound vehicle. Four of the eight impacts occurred in poor driving conditions.

Metcalfe Street West/Argyle Avenue

A total of five collisions were reported at this intersection over the last five years, of which there was one rear-end impact, three sideswipe impacts, and one single-vehicle/other impact. Two of the collisions caused injuries, but none caused fatalities. Two of the five collisions occurred in poor driving conditions.

Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)

Collisions on Catherine Street midblock between O'Connor Street and Metcalfe Street have been included in the discussion for this intersection, as the layout is unorthodox and requires weaving for many westbound drivers. The collision data provided by the City specifies vehicle direction, but not the approach. While there are three distinct streams of westbound traffic at this intersection (through vehicles from Catherine Street, through vehicles from Exit 119, and right turning vehicles from Exit 119), they are all combined into a single 'westbound' category.

A total of 61 collisions were reported at this intersection over the last five years, of which there were 17 rear-end impacts, eight turning movement impacts, 15 sideswipe impacts, 14 angle impacts, and seven single-vehicle/other impacts. Ten of the collisions caused injuries, but none caused fatalities.

All 17 rear-end impacts involved westbound through vehicles. Five of the 17 impacts occurred in poor driving conditions. Given that most westbound traffic comes from the approach exiting Highway 417, the majority of these impacts are likely from the exit as well.

Of the eight turning movement impacts, two involved northbound left turns, two involved westbound left turns, and four involved westbound right turns. One of the eight impacts occurred in poor driving conditions.

Of the 15 sideswipe impacts, two occurred at the northbound approach and 13 occurred at the westbound approaches. Five of the 15 impacts occurred in poor driving conditions. Most of these impacts are attributable to lane changes and overtaking.

As Metcalfe Street, Catherine Street, and Exit 119 are all one-way roadways, all 14 angle impacts involved a northbound vehicle and a westbound vehicle. Five of the 14 impacts occurred in poor driving conditions. Visibility of the westbound approaches from the northbound approach is obstructed by vegetation and a slope up to the Highway 417 overpass. The unusual geometry of this intersection may have also had a role in these collisions.

Of the seven single-vehicle/other impacts, three involved pedestrians. In each of these three incidents, the pedestrian was struck by a northbound left turning vehicle. Three of the seven impacts occurred in poor driving conditions.

Metcalfe Street East/McLeod Street

One collision was reported at this intersection over the last five years, a rear-end impact in good driving conditions, which caused no injuries.

Elgin Street/Argyle Avenue

A total of ten collisions were reported at this intersection over the last five years, of which there were two rear-end impacts, five angle impacts, and three single-vehicle/other impacts. One collision caused injuries, but none caused fatalities. Four of the ten collisions occurred in poor driving conditions.

Elgin Street/Catherine Street

A total of 33 collisions were reported at this intersection over the last five years, of which there were six rear-end impacts, 11 turning movement impacts, six sideswipe impacts, eight angle impacts, and two single-vehicle/other impacts. Ten of the collisions caused injuries, but none caused fatalities.

Of the six rear-end impacts, two involved through vehicles at the northbound approach and four involved through vehicles at the southbound approach. Four of the six impacts occurred in poor driving conditions.

Of the 11 turning movement impacts, ten involved left turns at the northbound approach, and one involved a left turn at the southbound approach (where southbound left turns are prohibited, as Catherine Street is a one-way westbound street). Four of the 11 impacts occurred in poor driving conditions. The lack of a protected left turn phase and designated left turn lane may influence drivers to choose insufficient gaps in traffic to attempt a left turn.

Of the six sideswipe impacts, two occurred at each of the northbound, southbound, and westbound approaches. Three of the six impacts occurred in poor driving conditions.

Of the eight angle impacts, four involved a northbound vehicle and a westbound vehicle, and four involved a southbound vehicle and a westbound vehicle. Five of the eight impacts occurred in poor driving conditions.

4.2 Planned Conditions

The City of Ottawa's 2013 Transportation Master Plan (TMP) does not identify any upcoming roadway projects within the study area in its Affordable Road Network. The Rapid Transit and Transit Priority (RTTP) Network identifies Elgin Street in its Affordable Network and Catherine Street/Chamberlain Avenue/Isabella Street in its 2031 Network Concept as Transit Priority Corridors with Isolated Measures. On Elgin Street, transit signal priority will be implemented between Gladstone Avenue and Wellington Street to reduce travel time and delay for OC Transpo Route 5, 6, and 14. Transit signal priority will also be implemented on Catherine Street/Chamberlain Avenue/Isabella Street to improve the reliability of transit trips which bypass downtown between Bronson Avenue and Lees Station.

The 2013 Ottawa Cycling Plan identifies the dedication of segregated cycling facilities, shared lanes, and multi-use pathways on O'Connor Street between Wellington Street and Holmwood Avenue. The facilities are listed as a Phase 1 (2016-2021) project. The section within the study area is complete.

Reconstruction of Elgin Street is currently ongoing between Gloucester Street and Isabella Street. The road modifications associated with the Elgin Street Renewal include lane reductions in favour of wider sidewalks, shared use lanes for cyclists and vehicles, transit facilities (such as bus pads or shelters), and traffic calming measures (such as 30 km/h speed limits and raised intersections at select locations). It is anticipated that construction will be complete in late 2020. A functional design of the Elgin Street Renewal within the study area is shown in **Figure 5**.

4.3 Study Area and Time Periods

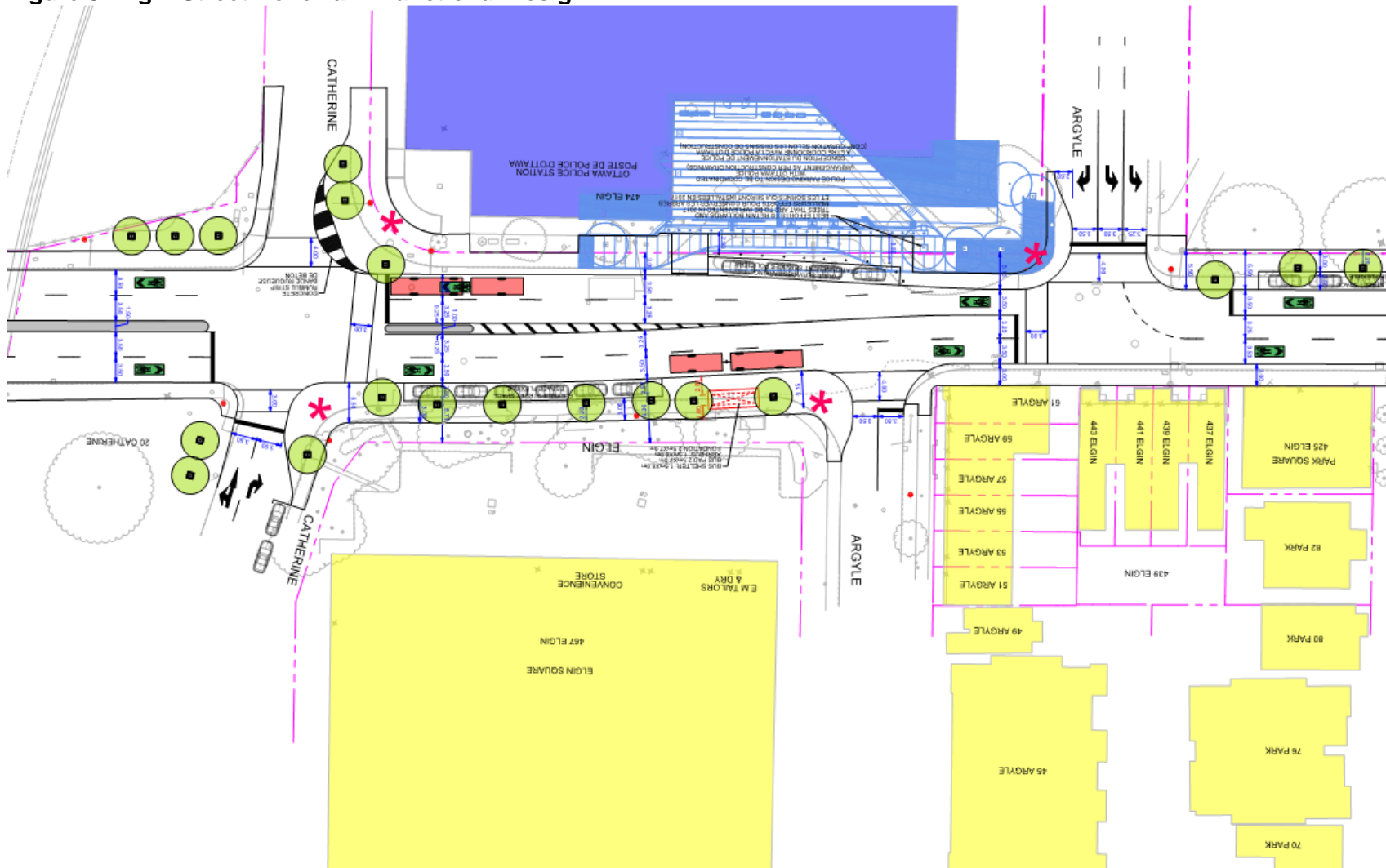
The study area for this report will include Argyle Avenue, Catherine Street, O'Connor Street, Metcalfe Street, Elgin Street, and McLeod Street. The study area intersections include the signalized intersections at O'Connor Street/Argyle Avenue, O'Connor Street/Catherine Street, Metcalfe Street West/Argyle Avenue, Metcalfe Street West/Catherine Street/Highway 417 (Exit 119), Elgin Street/Argyle Avenue, and Elgin Street/Catherine Street, as well as the unsignalized intersections at Metcalfe Street East/McLeod Street and Metcalfe Street East/Argyle Avenue.

A review of Saturday counts at Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) was conducted to identify if analysis of the Saturday peak hour was warranted. Within the study area, Metcalfe Street is the only connection from Highway 417 to Argyle Avenue. Additionally, weekday counts at Metcalfe Street West/Argyle Avenue indicate that Metcalfe Street carries approximately 85-90% of the traffic at this intersection, while Argyle Avenue carries the other 10-15%.

For these reasons, reviewing Metcalfe Street West/Catherine Street/Highway 417 for Saturday volumes can be considered representative of the study area overall. Based on the 2015 Saturday and 2017 weekday counts, the total traffic volumes at all approaches are:

- 2,887 vehicles during the AM peak hour;
- 2,002 vehicles during the PM peak hour;
- 1,888 vehicles during the Sat peak hour.

Figure 5: Elgin Street Renewal – Functional Design



Looking only at vehicles departing the intersection north on Metcalfe Street West, the volumes are:

- 1,691 vehicles during the AM peak hour;
- 775 vehicles during the PM peak hour;
- 499 vehicles during the Sat peak hour.

Therefore, the selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the ‘worst case’ combination of site generated traffic and adjacent street traffic. The proposed development is expected to be completed with full occupancy by the year 2023. As such, the weekday AM and PM peak periods will be analyzed for the buildout year 2023 and the horizon year 2028.

4.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the TIA guidelines. The applicable exemptions for this site are shown in **Table 2**.

Table 2: TIA Exemptions

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

The Transportation Demand Management module will be reviewed for the proposed redevelopment as part of the Site Plan Control application. The projected site traffic will not change the role or function of any study area streets (thereby exempting the Neighbourhood Traffic Management module), and the proposed redevelopment will not generate more than 200 person trips during any peak hour, thereby exempting the Network Concept module.

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

- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design
- Module 4.7: Transit
- Module 4.9: Intersection Design

5.0 FORECASTING

5.1 Development-Generated Travel Demand

5.1.1 Trip Generation

Currently, the subject site is occupied by a 2 ½-storey office building, with a total gross floor area of approximately 17,700 ft² (approximated using aerial photography). Trips generated by the existing office building have been estimated using the rates outlined in the *ITE Trip Generation Manual, 10th Edition* for the General Office Building land use. While it is acknowledged that the City prefers to estimate traffic volumes at existing developments by conducting traffic counts versus the use of forecasting projections, it is Novatech’s position that conducting a count for a development of this size is not cost effective. Using the *ITE Trip Generation Manual* to estimate the number of trips generated by the existing site represents a valid and conservative approach.

The person trips generated by the existing development are summarized in **Table 3**.

Table 3: Existing Commercial Trip Generation

Land Use	ITE Code	GFA	AM Peak (PPH ⁽¹⁾)			PM Peak (PPH)		
			IN	OUT	TOT	IN	OUT	TOT
General Office Building	710	17,700 ft ²	23	4	27	4	24	28

1. PPH: Person Trips Per Hour – Calculated using an ITE Trip to Person Trip factor of 1.28, consistent with the 2017 TIA guidelines

From the previous table, the existing offices are estimated to generate 27 person trips during the AM peak hour and 28 person trips during the PM peak hour.

The proposed redevelopment will include 156 residential units, along with amenities for residents (which are not anticipated to generate any external trips). Trips generated by the proposed residential units during the AM and PM peak hours have been estimated using the recommended rates from the *TRANS Trip Generation Manual*, prepared in 2009 by McCormick Rankin Corporation. The trip generation rates, taken from Table 3.18 of the report, correspond to High-Rise Apartments (10+ floors) in the Core Area. The directional split between inbound and outbound trips are based on the blended splits presented in Table 3.17 of the report.

The estimated number of trips generated by the proposed residential units are shown in **Table 4**.

Table 4: Proposed Residential Trip Generation

Land Use	TRANS Rate	Units	AM Peak (VPH)			PM Peak (VPH)		
			IN	OUT	TOT	IN	OUT	TOT
High-Rise Apartments	AM: 0.17 PM: 0.16	156 units	7	20	27	16	9	25

It is recognized that use of the *TRANS Trip Generation Manual* is preferred by the City of Ottawa to estimate the trip generation of residential developments. For comparison, the trip generation rates outlined in the *ITE Trips Generation Manual, 10th Edition* for the Multifamily Housing (High-Rise) land use have been included in **Table 5**. The number of person trips generated by the proposed residential units as estimated by the TRANS rates are based on the modal shares presented in Table 3.13 of the TRANS report, while the number of person trips estimated by the ITE rates are based on the 1.28 ITE Trip to Person Trip Factor, consistent with the 2017 TIA Guidelines.

Table 5: Proposed Residential Person Trip Generation

Land Use	TRANS Auto Share	AM Peak (PPH)			PM Peak (PPH)			
		IN	OUT	TOT	IN	OUT	TOT	
High-Rise Apartments	AM: 27% PM: 23%	24	76	100	66	41	107	
Land Use	ITE Code	Units	AM Peak (PPH)			PM Peak (PPH)		
			IN	OUT	TOT	IN	OUT	TOT
Multifamily Housing (High-Rise)	222	156 units	18	55	73	48	31	79

Based on the foregoing table, the trip generation rates outlined in the TRANS report can generally be considered comparable to the ITE rates and more conservative. The TRANS rates will be carried forward for the remainder of the TIA report. Subtracting the person trips generated by the existing development, the proposed redevelopment is projected to generate an additional 73 person trips during the AM peak hour and 79 person trips during the PM peak hour.

The modal shares for the development are anticipated to be consistent with the modal shares outlined in the *2011 TRANS O-D Survey Report*, specific to the Ottawa Inner Area region. The modal share values applied to the existing offices are based on all observed trips to/within the Ottawa Inner Area in the AM peak hour, and all observed trips from/within the Ottawa Inner Area in the PM peak hour. Conversely, the modal share values applied to the proposed residences are based on all observed trips from/within the Ottawa Inner Area in the AM peak hour, and all observed trips to/within the Ottawa Inner Area in the PM peak hour.

A full breakdown of the projected net increase in person trips by modal share is shown in **Table 6**.

Table 6: Person Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		IN	OUT	TOT	IN	OUT	TOT
Existing Development							
<i>Office Person Trips</i>		23	4	27	4	24	28
Auto Driver	35%	7	2	9	2	8	10
Auto Passenger	10%	3	0	3	0	3	3
Transit	30%	7	1	8	1	7	8
Non-Auto	25%	6	1	7	1	6	7
Proposed Development							
<i>Residential Person Trips</i>		24	76	100	66	41	107
Auto Driver	35%	8	27	35	23	14	37
Auto Passenger	10%	3	7	10	7	4	11
Transit	20%	5	15	20	13	9	22
Non-Auto	35%	8	27	35	23	14	37
Auto Driver (Difference)		1	25	26	21	6	27
Auto Pass. (Difference)		0	7	7	7	1	8
Transit (Difference)		-2	14	12	12	2	14
Non-Auto (Difference)		2	26	28	22	8	30

Based on the previous table, the proposed redevelopment is projected to generate an additional 26 vehicle trips during the AM peak hour and 27 vehicle trips during the PM peak hour.

5.1.2 Trip Distribution

The assumed distribution of trips generated by the existing and proposed development has been derived from existing traffic patterns within the study area. The distributions for each land use are different however, since offices generate mostly inbound trips during the AM peak hour and mostly outbound trips during the PM peak hour, while residences generate mostly outbound trips during the AM peak hour and mostly inbound trips during the PM peak hour. This is shown in the previous table.

The trip distribution of the existing offices is therefore based on the traffic movements entering the study area during the AM peak hour and exiting the study area during the PM peak hour. Conversely, the trip distribution of the proposed residential building is based on the traffic movements exiting the study area during the AM peak hour and entering the study area during the PM peak hour. Due to many of the streets being one-way roadways, the route of arrivals and departures will be different in the two distributions.

The trip distribution for the existing offices is described as follows:

Arriving

- 15% from the north via O'Connor Street
- 5% from the north on O'Connor Street via McLeod Street
- 5% from the north via Elgin Street
- 35% from the south via Highway 417 (Exit 119)
- 25% from the south via Metcalfe Street West
- 5% from the south via Elgin Street
- 10% from the east via Catherine Street

Departing

- 10% to the north on McLeod Street via Metcalfe Street East
- 10% to the north via Elgin Street
- 25% to the south via O'Connor Street
- 20% to the south on Highway 417 via Catherine Street
- 20% to the south via Elgin Street
- 15% to the west via Catherine Street

The trip distribution for the proposed residential building is described as follows:

Arriving

- 25% from the north via O'Connor Street
- 5% from the north on O'Connor Street via McLeod Street
- 15% from the north via Elgin Street
- 25% from the south via Highway 417 (Exit 119)
- 15% from the south via Metcalfe Street West
- 5% from the south via Elgin Street
- 10% from the east via Catherine Street

Departing

- 30% to the north on McLeod Street via Metcalfe Street East
- 20% to the north via Elgin Street
- 10% to the south via O'Connor Street
- 15% to the south on Highway 417 via Catherine Street
- 5% to the south via Elgin Street
- 20% to the west via Catherine Street

5.1.3 Trip Assignment

The subject site is only accessible on Argyle Avenue, a one-way street. In effect, this means the existing and proposed driveways are right-in/right-out (RIRO) accesses. All inbound trips arrive on Argyle Avenue from either O'Connor Street or Metcalfe Street West, and all outbound trips depart Argyle Avenue at either Metcalfe Street East or Elgin Street.

Based on the existing and proposed land uses, it is anticipated that no pass-by trips or internally captured trips are generated. Trips generated by the existing development are shown in **Figure 6**, trips generated by the proposed redevelopment are shown in **Figure 7**, and the net difference in site-generated traffic is shown in **Figure 8**.

Figure 6: Existing Site-Generated Traffic

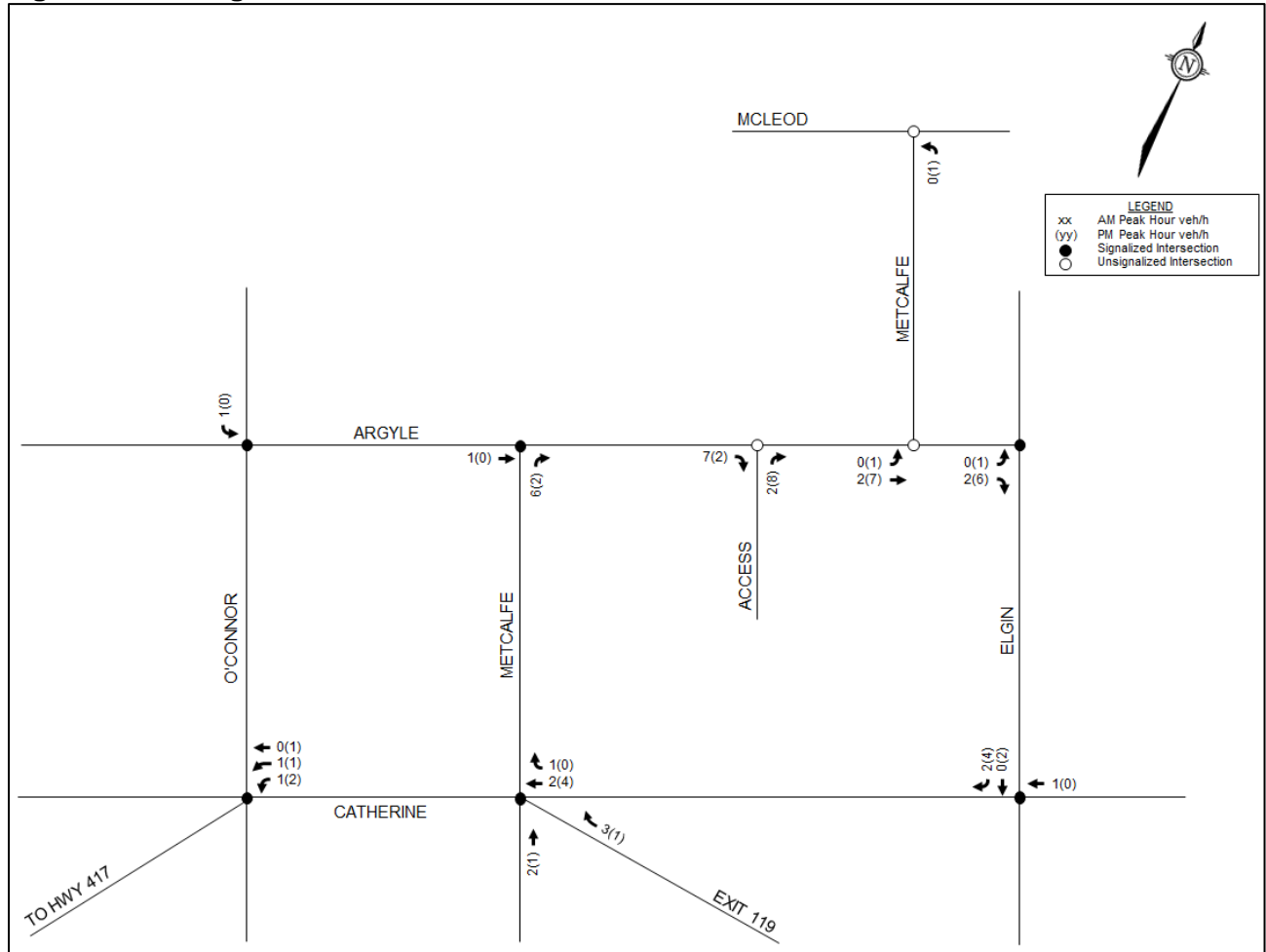


Figure 7: Proposed Site-Generated Traffic

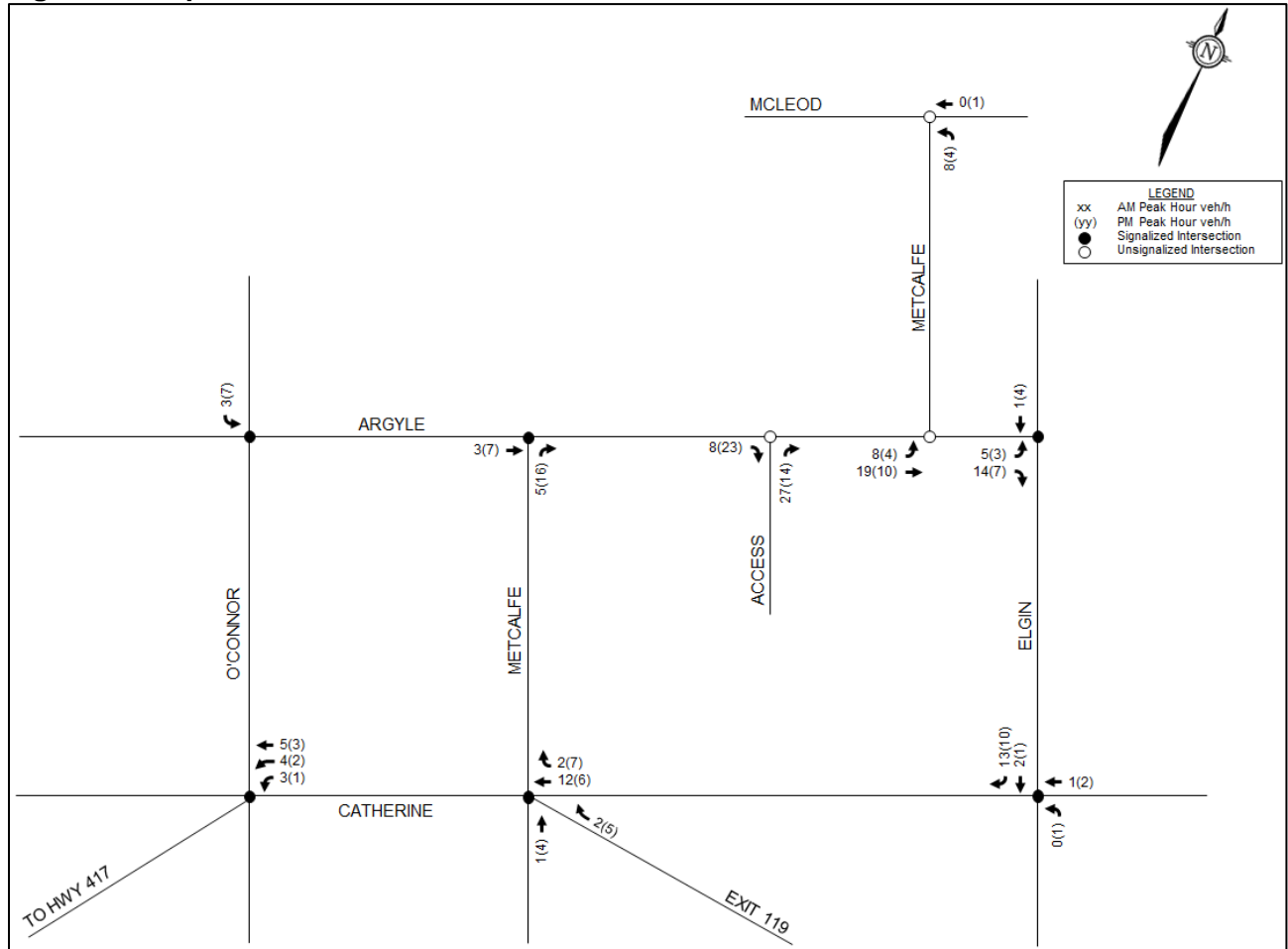
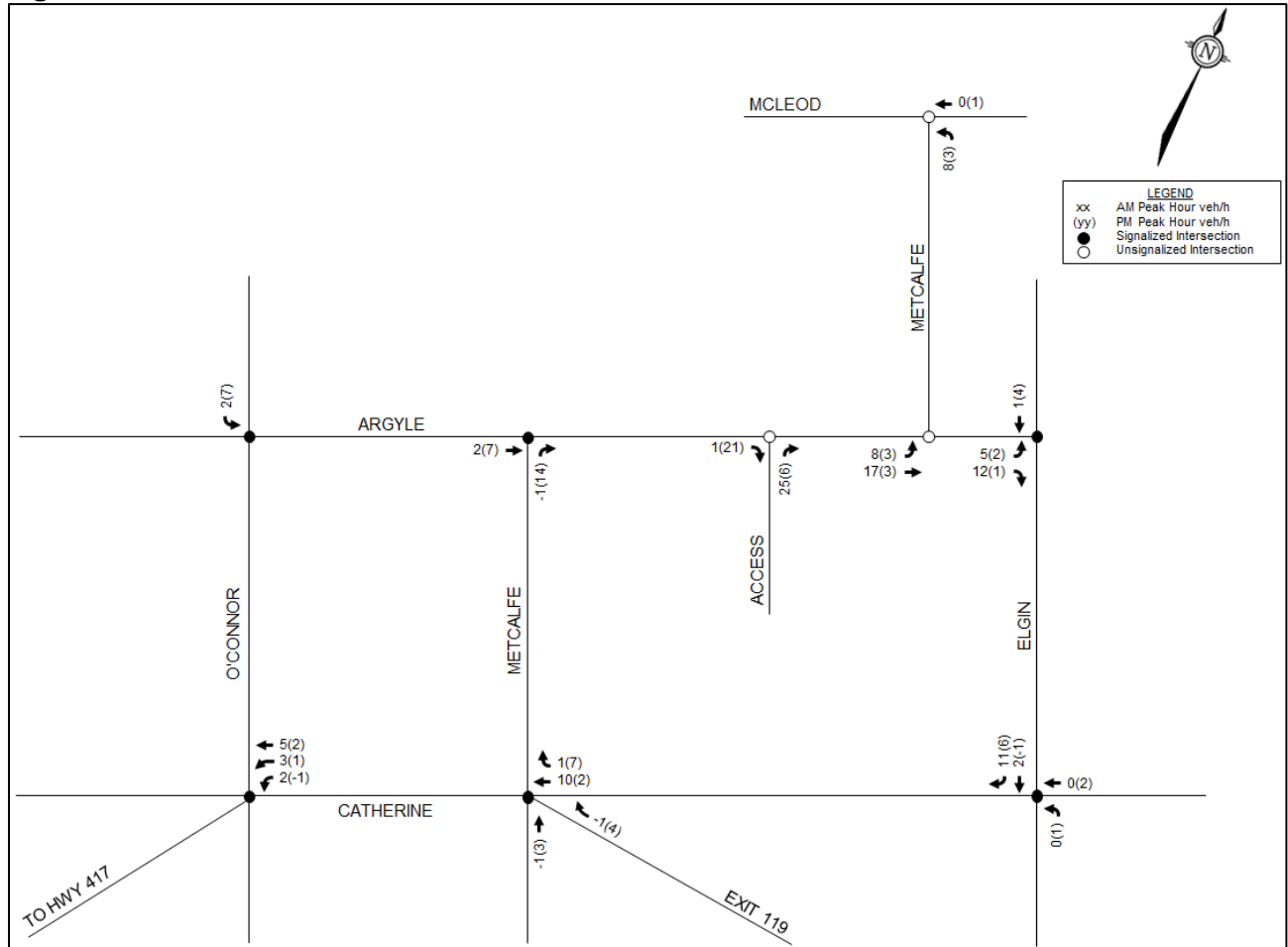


Figure 8: Net Site-Generated Traffic



5.2 Background Traffic

5.2.1 General Background Growth Rate

A rate of background growth has been established through a review of the city of Ottawa's Strategic Long Range Model (comparing snapshots of 2011 and 2031 AM peak volumes), as well as historic traffic counts at Metcalfe Street West/Argyle Avenue. On the roadways within and around the study area, the snapshots suggest a growth rate between -1% and +1% per annum. The historic traffic counts at Metcalfe Street West/Argyle Avenue are similarly inconsistent, showing an increase in volumes between 2015 and 2017, but a decrease between 2017 and 2018.

The City's 2013 TMP projects a 20% growth in population within the 'Inner Area' of Ottawa between 2011 and 2031, equating to a growth rate of approximately 1% per annum. The TMP also outlines transit and non-auto share targets for 2031, based on the observed shares in 2011. For the Inner Area during the AM peak period, the TMP identifies an observed transit share of 15% in 2011 and a target transit share of 20% in 2031 (equating to a growth rate of approximately 1% per annum), as well as an observed non-auto share of 59% in 2011 and a target non-auto share of 64% in 2031 (equating to a growth rate of approximately 0.5% per annum).

Based on the foregoing, no background growth rate will be applied in the analysis, as the evidence for growth is either inconclusive or accounted for with alternative travel modes. The 2023 and 2028 background conditions are therefore assumed to be equal.

5.2.2 Other Area Development

The City of Ottawa's Development Application Search Tool identifies that near the subject site, five redevelopment applications are approved or in the approval process. Transportation Overviews were completed for the following developments:

- 141 Isabella Street (Smart Property Advisors, March 2014)
- 215 McLeod Street (exp, August 2012)
- 320 McLeod Street (Delcan, May 2013)
- 500 Bank Street (Parsons, July 2014)

In each case, the number of trips generated were considered to be insignificant, and no analysis was performed. Similarly, these developments will not be accounted for in the analysis of this application.

A Transportation Brief was completed by Parsons in May 2014 for a proposed redevelopment at 267 O'Connor Street, which would replace the existing office building with a high-rise condominium building with ground-floor retail. The projected net increase in traffic generated by the redevelopment was approximately 58 vph in the AM peak hour and 66 vph in the PM peak hour. To maintain a conservative analysis, outbound trips taking O'Connor Street and inbound trips taking Metcalfe Street have been added to the background traffic. Relevant excerpts of the brief are included in **Appendix F**.

Trips generated by the proposed redevelopment at 267 O'Connor Street are shown in **Figure 9**. The background traffic in 2023 and 2028 is shown in **Figure 10**, and the total traffic in 2023 and 2028 is shown in **Figure 11**.

Figure 9: Traffic Generated by Proposed Redevelopment at 267 O'Connor Street

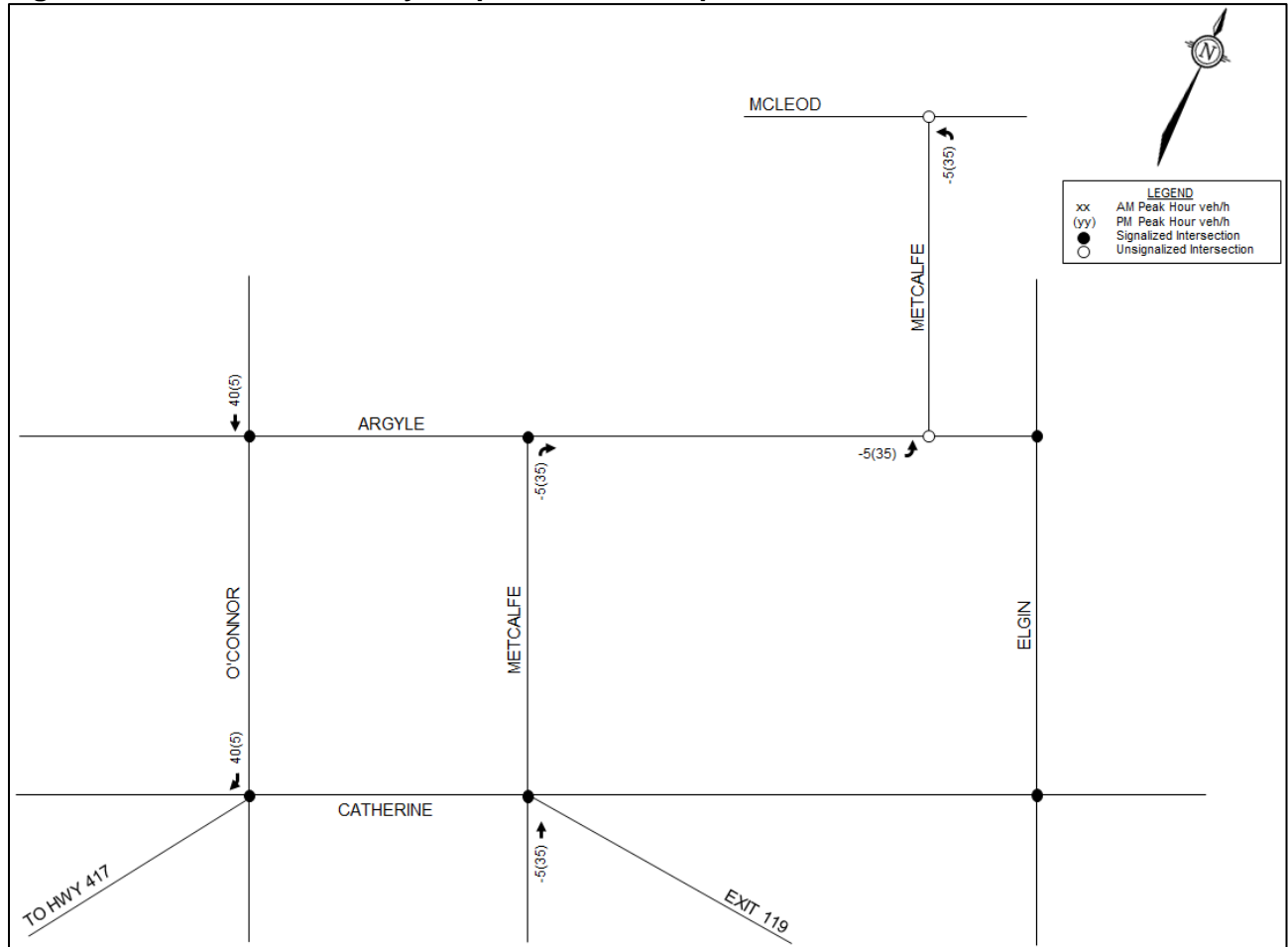


Figure 10: 2023/2028 Background Traffic

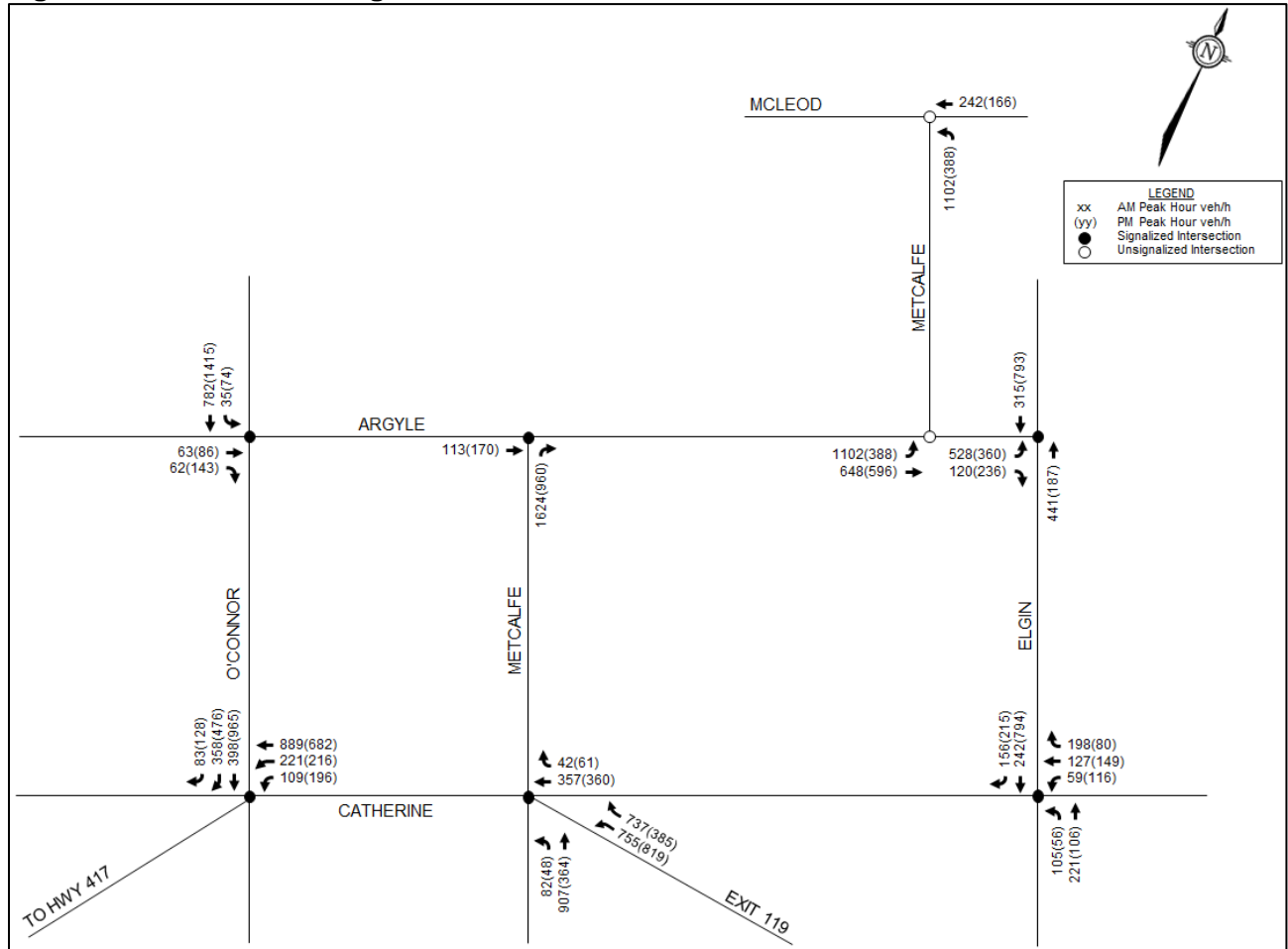
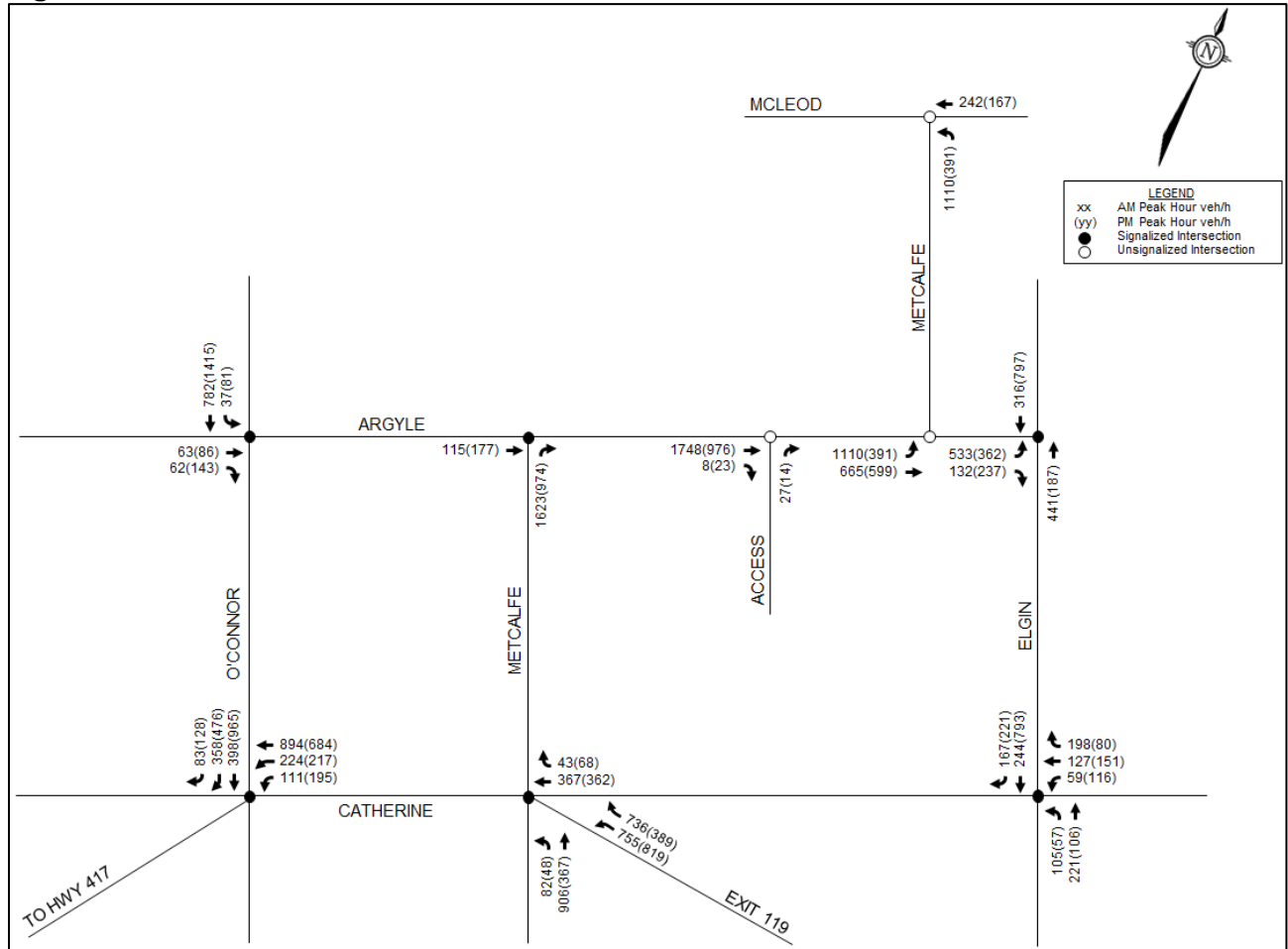


Figure 11: 2023/2028 Total Traffic



6.0 ANALYSIS

6.1 Development Design

Sidewalk connections will be provided between the building entrance and Argyle Avenue. Sidewalks will be depressed and continuous across the shared access, parking garage access and loading access, in accordance with City standards.

Parking for bicycles will be provided in the surface parking lot, in a ground-floor indoor storage area, and within the underground parking garage. In total, 88 surface bicycle parking spaces and 72 underground bicycle parking spaces will be provided. Further review of the number of bicycle parking spaces is included in Section 6.2: Parking.

OC Transpo guidelines recommend that all developments within the vicinity of a bus route should have at least one bus stop within a walking distance of 400m, roughly a 5-minute walk. Among the transit stops outlined in Section 4.1.6, all are within a 400m walking distance, except for stops #6894, #7666, and #7667. These three stops are within a 600m walking distance of the subject site.

The stops within 400m walking distance of the subject site provide service to routes 5, 14, and 56, as well as westbound routes 101 and 103. The stops beyond 400m but within 600m walking distance provide service to routes 6 and 7, as well as eastbound routes 101 and 103.

A review of the Transportation Demand Management (TDM) – *Supportive Development Design and Infrastructure Checklist* has been conducted. A copy of the TDM checklist is included in **Appendix G**. All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

On-site garbage collection and deliveries will be accommodated with a loading access on Argyle Avenue at the eastern edge of the property. Trucks will be required to reverse into the access. Further review of the access is included in Section 6.4: Access Design.

The fire route for the development is curbside along Argyle Avenue.

6.2 Parking

The subject site is located in Area B of Schedule 1 and Area X of Schedule 1A of the City of Ottawa's *Zoning By-Law* (ZBL). Minimum parking rates for vehicles and bicycles are summarized in **Table 7**.

Table 7: Parking Requirements

Land Use	Rate	Units/GFA	Required
<i>Vehicle Parking</i>			
Residential	<u>Parking Rate</u> : 0.5 per dwelling unit after the first 12 units	156 units	72
	<u>Visitor Rate</u> : 0.1 per dwelling unit after the first 12 units		14
		Minimum	86
		Provided	74
<i>Bicycle Parking</i>			
Residential	<u>Minimum Bicycle Rate</u> : 0.5 per dwelling unit	156 units	78
		Minimum	78
		Provided	160

Based on the previous table, the amount of bicycle parking provided meets the requirements. A reduction is required for relief of the minimum vehicular parking requirement, as the development proposes a reduction of 12 parking spaces from the minimum requirement outlined in the ZBL. Due to geotechnical reasons and the location of the water table, a maximum of two underground parking levels can be supported, along with a small section of surface parking at the back of the development.

As the amount of vehicular parking supplied by the proposed development equates to approximately 86% of the required parking under the ZBL, a review of spillover parking is not required under the TIA guidelines.

6.3 Boundary Streets

This section provides a review of the boundary street Argyle Avenue, using complete streets principles. The *Multi-Modal Level of Service* (MMLOS) guidelines produced by IBI Group in October 2015 have been used to evaluate the LOS of boundary roadways for each mode of transportation.

Schedule B of the City of Ottawa’s Official Plan identifies Argyle Avenue as being in the General Urban Area. Within the boundaries of the subject site, Argyle Avenue is classified as an arterial roadway (between the western and eastern section of Metcalfe Street). Therefore, Argyle Avenue will be evaluated using the targets set for arterial roadways within the General Urban Area.

Since Argyle Avenue does not provide transit service, the transit level of service (TLOS) has not been evaluated. All other modes have been evaluated based on the targets outlined in Exhibit 22 of the MMLOS guidelines.

6.3.1 Pedestrian Level of Service (PLOS)

Exhibit 4 of the MMLOS guidelines has been used to evaluate the segment PLOS of Argyle Avenue. Exhibit 22 of the MMLOS guidelines suggests a target PLOS C for all roadways within the General Urban Area. The results of the segment PLOS analysis are summarized in **Table 8**.

Table 8: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed ⁽¹⁾	Segment PLOS
Argyle Avenue (north side)					
≥ 2.0m	0m	> 3000 vpd	No	60 km/h	C
Argyle Avenue (south side)					
1.5m	≥ 2.0m	> 3000 vpd	Yes	60 km/h	D

1. Operating speed of Argyle Avenue taken as the regulatory speed limit plus 10 km/h

6.3.2 Bicycle Level of Service (BLOS)

Exhibit 11 of the MMLOS guidelines has been used to evaluate the segment BLOS of Argyle Avenue. Exhibit 22 of the MMLOS guidelines suggests a target BLOS D for all roadways with no bike route classification within the General Urban Area. The results of the segment BLOS analysis are summarized in **Table 9**.

Table 9: BLOS Segment Analysis

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Operating Speed	Segment BLOS
Argyle Avenue (Metcalf Street West to Metcalfe Street East)					
Arterial	No Class	Mixed Traffic	3	60 km/h	F

6.3.3 Truck Level of Service (TkLOS)

Exhibit 20 of the MMLOS guidelines has been used to evaluate the segment TkLOS of Argyle Avenue. Both lanes of Argyle Avenue have been evaluated, as access to the Museum of Nature’s shipping and receiving zone is provided on Argyle Avenue, approximately 30m west of Metcalfe Street East. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS E for arterial roadways not classified as truck routes within the General Urban Area. The results of the segment TkLOS analysis are summarized in **Table 10**.

Table 10: TkLOS Segment Analysis

Curb Lane Width	Number of Travel Lanes Per Direction	Segment TkLOS
Argyle Avenue (north lane)		
> 3.7m	2	A
Argyle Avenue (south lane)		
≤ 3.0m	2	E

6.3.4 Vehicular Level of Service (Auto LOS)

Exhibit 22 of the MMLOS guidelines suggests a target Auto LOS D for all roadways within the General Urban Area. The typical lane capacity along the study area roadways are based on the City’s guidelines for the TRANS Long-Range Transportation Model. The lane capacity along Argyle Avenue has been estimated based on roadway classification and general characteristics (i.e. suburban with limited access, urban with on-street parking, etc.). The results of the Auto LOS analysis are summarized in **Table 11**.

Table 11: Auto LOS Segment Analysis

Direction	Directional Capacity	Traffic Volumes		V/C Ratio and LOS			
		AM Peak	PM Peak	AM Peak		PM Peak	
				V/C	LOS	V/C	LOS
Argyle Avenue (Metcalfe Street West to Metcalfe Street East)							
Eastbound	2,400 vph	1,738	1,150	0.72	C	0.48	A

6.3.5 Segment MMLOS Summary

A summary of the results of the segment MMLOS analysis for the boundary street Argyle Avenue is provided in **Table 12**.

Table 12: Segment MMLOS Summary

	Segment	Argyle Avenue
Pedestrian	Sidewalk Width	1.5m
	Boulevard Width	> 2.0m
	Average Daily Curb Lane Traffic Volume	> 3000 vpd
	On-Street Parking	Yes
	Operating Speed	60 km/h
	Level of Service Target	D C
Cyclist	Road Classification	Arterial
	Bike Route Classification	No Class
	Type of Bikeway	Mixed Traffic
	Travel Lanes	3
	Centerline Type	-
	Operating Speed	60 km/h
	Level of Service Target	F D
Truck	Lane Width	≤ 3.0m
	Travel Lanes (per direction)	2
	Level of Service Target	E E
	Level of Service Target	C D

Argyle Avenue meets the target TkLOS E and Auto LOS D, but does not meet the target PLOS C or BLOS D. A discussion on improving these levels of service is provided below.

The south side of Argyle Avenue does not achieve the target PLOS C. The sidewalk is approximately 1.5m with a boulevard width of 2.3m. It is therefore feasible to achieve the target PLOS C, by widening the sidewalk to 1.8m while maintaining a boulevard width of 2.0m. This is identified for the City’s consideration as funding becomes available.

The bicycle level of service on Argyle Avenue is failing. The target BLOS D can be achieved by either implementing a 4.0m wide bike lane plus parking lane, or reducing the operating speed to 50 km/h. This is also identified for the City's consideration as funding becomes available.

6.4 Access Design

The subject site is currently served by a shared RIRO access on Argyle Avenue with the adjacent property to the west, and a RIRO access on Argyle Avenue approximately 5.0m west of the eastern property line.

The proposed redevelopment will be served by a two-way underground parking garage access approximately 3.0m east of the western property line. The existing shared RIRO access will be maintained. The proposed redevelopment will also have a loading access for garbage collection and deliveries, located approximately at the eastern property line. Full-height curb and sidewalks will be reinstated where necessary, and depressed curb and continuous sidewalks will be provided across the full width of the accesses, as per City standards.

Section 25 (a) of the City of Ottawa's *Private Approach By-Law* identifies a requirement for properties with a frontage of 20m to 34m to have no more than one (1) two-way private approach or two (2) one-way private approaches. Considering the loading access will be used exclusively by delivery and garbage collection vehicles, the only exclusive access to 100 Argyle Avenue is the two-way underground parking garage ramp. The shared access must be maintained for the neighbouring property to the west.

Section 25 (c) of the *Private Approach By-Law* identifies a requirement for two-way accesses to have a width no greater than 9m, as measured at the street line. Section 107 (1)(a) of the *Zoning By-Law* identifies a minimum width requirement of 6.0m for a double traffic lane leading to a parking garage. Despite Section 107 (1)(a), any apartment building access must also meet Section 107 (1)(aa), which identifies a maximum width requirement of 6.7m for any double traffic lane which leads to 20 or more parking spaces. The proposed underground parking access is approximately 6.0m in width, thereby meeting these requirements.

The proposed loading access is approximately 4.7m in width, and the shared access with the property to the west is approximately 3.0m in width.

Section 25 (l) of the *Private Approach By-Law* identifies a requirement to provide a minimum distance of 18m between the private approach and the nearest intersecting street line, as measured at the street line. Section 25 (l) identifies a requirement to provide a minimum distance of 15m between a two-way private approach and any other private approach. The proposed spacing between the loading access and the underground parking access is 19m.

The proposed spacing between the underground parking access and the existing shared access is approximately 1.2m. As there is only an opportunity to provide two levels of underground parking due to geotechnical restrictions, the existing access will continue to serve both the subject site and the neighbouring property, in an effort to provide as much parking as possible. The minimum spacing can be met by shifting the underground parking access to be adjacent to the loading access, however the spacing between the underground access and Metcalfe Street East would then be less than the 18m minimum. Additionally, there is an access to the adjacent police station approximately 3.3m east of the property line, meaning three accesses would be implemented within 18m of Metcalfe Street East. This configuration is considered less desirable than the proposed access configuration.

Therefore, a relaxation of the minimum distance is requested for the spacing between the underground parking garage and the shared access.

Section 25 (o) of the *Private Approach By-Law* identifies a requirement to provide a minimum spacing of 3m between the nearest edge of the private approach and the property line, as measured at the street line. The spacing between the proposed underground parking access and the western property line is approximately 3.0m, however the spacing between the proposed access and the existing access is 1.2m. Section 25 (o) states that a relaxation of the minimum clearance distance from 3m to 0.3m is permissible by the General Manager, provided there are no safety issues associated with doing so. The shared access will serve 12 new residential spaces on the subject property and approximately 20 office spaces on the adjacent property to the west. The majority of traffic using the shared access will be inbound in the AM while traffic at the underground parking access will be outbound, and vice versa in the PM. The one-way nature of Argyle Avenue will help reduce the number of potential conflict points compared to a two-way road with adjacent accesses.

Further relaxation of the minimum clearance distance is requested for the loading access, which is proposed to abut the eastern property line. As this access doesn't serve parking, the requirements of the *Private Approach By-Law* are not considered applicable.

Section 25 (t) of the *Private Approach By-Law* identifies a requirement that any private approach may not exceed a grade of 2-6% within 9m of the street line. The proposed underground parking access ramp has a grade of 7% approximately 8.2m from the street line, which is less than the 9m identified. This requirement will be addressed at the Site Plan Control application stage, where the ramp will be brought into compliance or a waiver for this requirement will be requested at that time.

Implementation of the proposed underground parking access will require a shift of the two existing on-street parking spaces in front of the subject site, such that the spaces are approximately 7m further east. Removal of the existing exclusive site access will accommodate this shift, as well as the implementation of the loading access at the eastern limit of the site. The City's *Traffic and Parking By-Law* states that on-street parking spaces must be located a minimum distance of 1.5m from any private approach, and City staff have confirmed that on-street parking spaces must be 5.5m in length. Considering these dimensions, two on-street parking spaces can be provided, resulting in no net loss of on-street parking spaces.

The Transportation Association of Canada (TAC) outlines a minimum sight distance requirement of 95m for vehicles exiting the accesses to the subject site, which is approximately the distance to the upstream intersection at Metcalfe Street West/Argyle Avenue. Provided the vegetation proposed at the front of the development is non-obstructive, the sight distance requirement is met for all accesses.

6.5 Transit

The assumed trip distribution for transit trips has been simplified based on the vehicular trip distribution outlined in Section 5.1.2, and can be summarized as follows:

- 50% to/from the north via Route 5, at stops #2466 (outbound) and #2476 (inbound);
- 20% to/from the south via Route 5, at stops #2476 (outbound) and #2466 (inbound);

- 15% to/from the east via Route 56, at stops #2428 (outbound) and #7628 (inbound) and Routes 101 or 103, at stop #7668 (inbound);
- 15% to/from the west via Route 56, at stops #7628 (outbound) and #2428 (inbound) and Routes 101 or 103, at stop #7668 (outbound).

Applying these distribution percentages to the projected net transit trip volumes presented in **Table 6** results in an overall net increase at the following transit stops:

AM Peak Hour

- + 6 passengers (7 boarding, -1 alighting) at stop #2466;
- + 2 passengers (3 boarding, -1 alighting) at stop #2476;
- + 2 passengers (2 boarding, 0 alighting) at stop #2428;
- + 1 passenger (1 boarding, 0 alighting) at stop #7628;
- + 1 passenger (1 boarding, 0 alighting) at stop #7668.

PM Peak Hour

- + 3 passengers (1 boarding, 2 alighting) at stop #2466;
- + 7 passengers (1 boarding, 6 alighting) at stop #2476;
- + 2 passengers (0 boarding, 2 alighting) at stop #2428;
- + 1 passenger (0 boarding, 1 alighting) at stop #7628;
- + 1 passenger (0 boarding, 1 alighting) at stop #7668.

Based on the projected increase in transit trip volumes due to the proposed redevelopment, no capacity problems are anticipated on any of the adjacent bus routes, or at any of the adjacent bus stops. No recommendations have been made to mitigate the increase of transit ridership, as none are required.

6.6 Intersection Design

6.6.1 Intersection MMLOS Analysis

This section provides a review of the study area intersections using complete streets principles. The MMLOS guidelines produced by IBI Group in October 2015 were used to evaluate the multi-modal levels of service for each signalized intersection within the study area. All roadways have been evaluated based on the targets for the General Urban Area except for Elgin Street, which has been evaluated based on the targets for Traditional Main Streets.

Evaluation of the MMLOS for Elgin Street is based on the Elgin Street Renewal. A functional design of the renewal within the study area was presented in **Figure 5**. All other roadways have been evaluated based on existing conditions.

The full intersection MMLOS analysis is included in **Appendix H**. A summary of the results is shown in **Table 13**.

Table 13: Intersection MMLOS Summary

Intersection	PLOS		BLOS		TLOS		TkLOS		Auto LOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target
O'Connor Street/ Argyle Avenue	E	C	A	B	-	-	D	D	D	D
O'Connor Street/ Catherine Street	E	C	F	B	D	D	D	D	D	D
Metcalfe Street West/ Argyle Avenue	D	C	-	C	-	-	D	E	E	D
Metcalfe Street West/ Catherine Street/Hwy 417 (Exit 119)	F	C	F	C	E	D	B	D	F	D
Elgin Street/ Argyle Avenue	C	B	F	C	B	D	F	D	C	D
Elgin Street/ Catherine Street	D	B	F	C	C	D	E	D	C	D
Metcalfe Street East/ McLeod Street ⁽¹⁾	-	-	-	-	-	-	-	-	D	D
Argyle Avenue/ Site Access ⁽¹⁾	-	-	-	-	-	-	-	-	B	D

1. Unsignalized intersection, evaluated for Auto LOS only

Based on the results of the intersection MMLOS analysis:

- No intersections meet the target pedestrian level of service (PLOS);
- Only O'Connor Street/Argyle Avenue meets the target bicycle level of service (BLOS);
- Among intersections with targets, only Metcalfe Street West/Catherine Street/Exit 119 does not meet the target transit level of service (TLOS);
- Elgin Street/Argyle Avenue and Elgin Street/Catherine Street do not meet the target truck level of service (TkLOS);
- Metcalfe Street West/Argyle Avenue and Metcalfe Street West/Catherine Street/Exit 119 do not meet the target vehicular level of service (Auto LOS).

The following sections outline a further discussion for each intersection.

6.6.1.1 O'Connor Street/Argyle Avenue

O'Connor Street/Argyle Avenue does not meet the target PLOS C.

All crosswalks meet the target PLOS based on PETS_I score. The north and south crosswalks do not meet the target PLOS based on delay score. To achieve the target PLOS C, the effective walk time for pedestrians would require an increase of approximately 12 seconds. This increase would come at the expense of vehicles and cyclists on O'Connor Street, which carries far more traffic than Argyle Avenue. Therefore, no recommendations have been made in improving the PLOS.

6.6.1.2 O'Connor Street/Catherine Street

O'Connor Street/Catherine Street does not meet the target PLOS C or BLOS B.

All crosswalks meet the target PLOS based on PETS_I score. The southwest crosswalk (crossing the on-ramp to Highway 417) does not meet the target PLOS based on delay score. To achieve the target PLOS C, the effective walk time for pedestrians would require an increase of approximately

16 seconds. This increase would come at the expense of traffic on O'Connor Street wishing to enter Highway 417, which is already the critical movement for this intersection. Therefore, no recommendations have been made in improving the PLOS.

The east approach does not meet the target BLOS B, based on left turn characteristics. To meet the target, a two-stage left-turn bike box, cycle tracks, and a reduction in the operating speed to 40 km/h is required. The desirable cycling facility selection tool included in *Ontario Traffic Manual (OTM) – Book 12* does recommend cycle tracks on Catherine Street, however Catherine Street is not a cycling route and Gladstone Avenue is a nearby east-west spine route. Therefore, no recommendations have been made in improving the BLOS. The desirable cycling facility selection tool in OTM Book 12 is included in **Figure 12**.

When looking at 95th-percentile volumes, the Synchro analysis identifies over-capacity queueing for the southbound right turn movement. Without allocating more green time to this movement (at the expense of westbound traffic and/or pedestrians crossing the southwest crosswalk), there is limited opportunity in improving the vehicular level of service. Prior to the O'Connor Street Bikeway, traffic turning right onto Catherine Street and traffic bearing right onto Highway 417 west each had dedicated lanes. With the implementation of the bikeway, these movements were combined into a single shared lane to prioritize and make room for the bidirectional cycle tracks.

6.6.1.3 Metcalfe Street West/Argyle Avenue

Metcalfe Street West/Argyle Avenue does not meet the target PLOS C or Auto LOS D.

Both crosswalks meet the target PLOS based on PETS I score. The south crosswalk does not meet the target PLOS based on delay score. To achieve the target PLOS C, the effective walk time for pedestrians would require an increase of approximately 10 seconds. This increase would come at the expense of traffic on Metcalfe Street West wishing to head towards the downtown core. Therefore, no recommendations have been made in improving the PLOS.

The northbound right turn movement does not meet the target Auto LOS D during the AM peak hour. To achieve the target, a reduction of approximately ten vehicles is required.

6.6.1.4 Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)

Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) does not meet the target PLOS C, BLOS C, TLOS D, or Auto LOS D.

The west crosswalk does not meet the target PLOS based on PETS I score. Neither crosswalk meets the target PLOS based on delay score. There are limited opportunities in improving the PLOS at this intersection without reducing the number of travel lanes or incurring major delays for vehicles. Therefore, no recommendations have been made in improving the PLOS.

The south approach does not meet the target BLOS, based on left turn characteristics (left turning cyclists are required to cross two lanes). Metcalfe Street is a spine cycling route, however Catherine Street is not. The desirable cycling facility selection tool included in OTM Book 12 recommends cycle tracks on Metcalfe Street. Accommodation of left turning cyclists onto Catherine Street is not recommended as Catherine Street is not a cycling route and implementation of a two-stage bike box would be difficult given the configuration of the westbound approaches (Catherine Street and the Exit 119 off-ramp). Therefore, no recommendations have been made in improving the BLOS.

The east approach (Catherine Street) does not meet the target TLOS D. Implementation of transit signal priority on Catherine Street as identified in the 2031 RTTP Network Concept may improve the TLOS. No other recommendations have been made in improving the TLOS.

The northwestbound right turn movement (vehicles turning from westbound Highway 417 onto northbound Metcalfe Street) does not meet the target Auto LOS D during the AM peak hour. To achieve the target, a reduction of approximately 140 vehicles during the AM peak is required. The northbound through movement (vehicles continuing on northbound Metcalfe Street West) does not meet the target Auto LOS D during the AM peak hour. To achieve the target, a reduction of approximately 60 vehicles during the AM peak is required. The Synchro analysis identifies over-capacity queueing for the northbound through movement at both 50th-percentile and 95th-percentile volumes. As there are two conflicting movements that both fail to meet the target Auto LOS, there is limited opportunity in adjusting the signal timing to improve the level of service at these two approaches.

6.6.1.5 Elgin Street/Argyle Avenue

Elgin Street/Argyle Avenue does not meet the target PLOS B, BLOS C, or TkLOS D.

Both crosswalks meet the target PLOS based on PETS I score. The south crosswalk does not meet the target PLOS based on delay score. To achieve the target PLOS B, the effective walk time for pedestrians would require an increase of approximately four seconds. This increase would come at the expense of traffic on Elgin Street, however the signal timing for this intersection may change upon completion of the Elgin Street Renewal. No recommendations have been made in improving the PLOS.

The west approach does not meet the target BLOS, based on left turn characteristics. Left turning cyclists are required to interact with vehicles using dual left turn lanes. The dual left turn lanes are required based on the existing peak hour turning movement volumes (360 vph to 530 vph), and no changes have been proposed as part of the Elgin Street Renewal project with respect to the westbound dual left turn lanes.

The west approach does not meet the target TkLOS D. It is clear that the Elgin Street Renewal prioritizes the levels of service for pedestrians and cyclists, and it is anticipated that there will be few heavy vehicles approaching Elgin Street from Argyle Avenue. For these reasons, no recommendations have been made in improving the TkLOS.

6.6.1.6 Elgin Street/Catherine Street

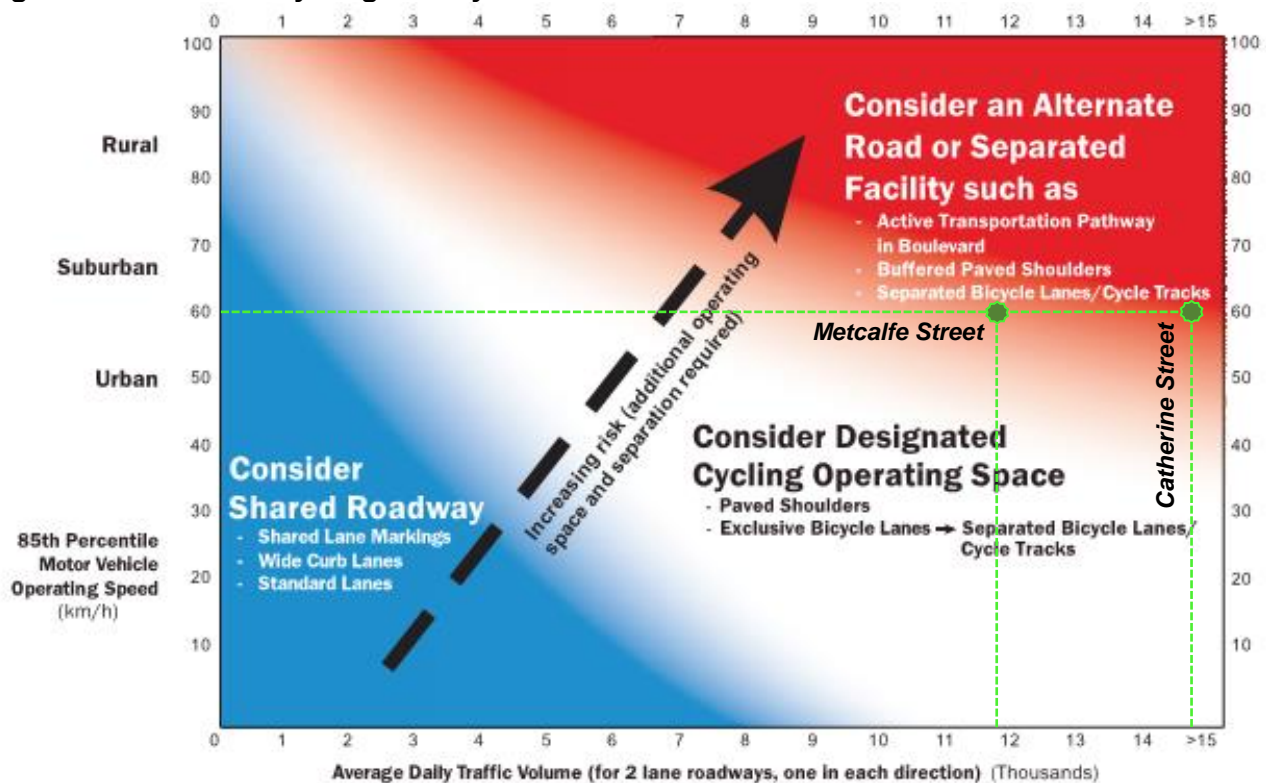
Elgin Street/Catherine Street does not meet the target PLOS B, BLOS C, or TkLOS D.

The north and west crosswalks do not meet the target PLOS based on PETS I score. The north crosswalk also does not meet the target PLOS based on delay score. There are limited opportunities in improving the PLOS at this intersection without reducing the number of travel lanes, restricting turning movements, or incurring major delays for vehicles. No changes are proposed as part of the Elgin Street Renewal project with respect to the north crossing. The west crossing is improved relative to the existing intersection geometry.

The south approach does not meet the target BLOS based on left turn characteristics, and the east approach does not meet the target BLOS based on left and right turn characteristics. The south approach can achieve the target BLOS by reducing the operating speed to 40 km/h. The Elgin Street Renewal suggests a reduced speed limit of 30 km/h from Lisgar Street to McLeod Street. No changes were recommended for the accommodation of northbound left turning cyclists as part of the Elgin Street Renewal. Similarly, the left turn characteristics of the east approach can achieve the target BLOS by reducing the operating speed to 40 km/h. With respect to the right turn characteristics, a right turn lane of less than 25m is required. The peak hour volumes for westbound right turning vehicles (200 vph) justifies a right turn lane, and this lane is carried in the Elgin Street Renewal design.

The north approach does not meet the target TkLOS D. The Elgin Street Renewal functional design identifies a concrete rumble strip/truck apron at this approach, allowing heavy vehicles a greater effective corner radius. While the MMLOS guidelines evaluate this corner as achieving a TkLOS E, in reality the corner is expected to perform acceptably. Therefore, no recommendations have been made in improving the TkLOS, as none are required.

Figure 12: Desirable Cycling Facility Selection Tool



Footnotes: - This nomograph is the first of a three step bicycle facility selection process, and should not be used by itself as the justification for facility selection (see Steps 2 and 3). The nomograph simply helps practitioners pre-select a desirable cycling facility type, however the context of the situation governs the final decision.
 - The nomograph has been adapted for the North American context and is based on international examples and research for two lane roadways. It is, however, still applicable for multi-lane roadways. For these situations, designers should consider the operating speed, total combined traffic volume and traffic mix of the vehicles traveling in the lanes immediately adjacent to the cycling facilities.

- Consider a Separated Facility or an Alternate Road for roadways with an AADT greater than 15,000 vehicles and an operating speed of greater than 50 km/h.
 For rural and suburban locations this nomograph assumes good sightlines are provided for all road users. In urban areas, there are typically more frequent conflict points at driveways, midblock crossings and intersections (especially on multi-lane roads), as well as on road segments with on street parking. This needs to be considered when assessing risk exposure in urban environments since it will influence the selection of a suitable facility type.

6.6.2 2023/2028 Background Intersection Operations

For all existing, background, and total traffic scenarios, there are two points in the Synchro network where the geometry does not reflect reality, due to limitations in the programming of Synchro. The two situations are described below.

The intersection of Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) is set up as a cluster, with two nodes using one signal controller. SimTraffic simulations identify space for northbound traffic to stop in between the two nodes, whereas in reality, this likely does not occur. The results of the Synchro analysis are unaffected by this inconsistency.

The intersection of Metcalfe Street East/McLeod Street has been adjusted geometrically. The northbound left movement at Metcalfe Street East has been coded as a northbound through movement, and the westbound through movement at McLeod Street has been coded as a westbound right turn movement. The speed of traffic on Metcalfe Street East has been reduced to simulate turning speed. When the intersection is drawn as it exists in reality, Synchro identifies impossibly high delays on McLeod Street, due to the unorthodox nature of the intersection.

Intersection capacity analysis has been completed for the background traffic conditions in 2023 and 2028. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 1.0). The results of the Synchro analysis for the AM and PM peak periods are summarized in **Table 14**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths in **Table 15**. Signal timing plans are included in **Appendix I**. Detailed reports are included in **Appendix J**.

Table 14: 2023/2028 Background – Intersection Operations

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
O'Connor Street/Argyle Avenue	0.40	A	EBT	0.72	C	EBT
O'Connor Street/Catherine Street	0.66	B	SBR	0.78	C	SBR
Metcalfe Street West/Argyle Avenue	0.77	C	NBR	0.68	B	EBT
Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)	1.00	E	NWBR	0.69	B	NWBR
Elgin Street/Argyle Avenue	0.69	B	EBL	0.70	B	EBR
Elgin Street/Catherine Street	0.33	A	WBR	0.67	B	SBT
Metcalfe Street East/McLeod Street ⁽¹⁾	20 sec	C	WBT	11 sec	B	WBT

1. Unsignalized intersection

Table 15: 2023/2028 Background - Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
O'Connor Street/ Argyle Avenue	SBT	0.39	A	25	34	0.69	B	73	94
O'Connor Street/ Catherine Street	SBR	0.66	B	40	#110	0.78	C	19	#171
Metcalfe Street West/ Catherine Street/ Hwy 417 (Exit 119)	NBT	0.86	D	71	#101	0.40	A	28	40
Elgin Street/ Argyle Avenue	SBT	0.29	A	16	33	0.68	B	50	#143

#: volume for the 95th percentile cycle exceeds capacity

Based on the previous tables, the background traffic conditions appear to improve when compared to the existing traffic conditions. This can be attributed to differences in the Peak Hour Factor (set to 0.90 in existing conditions and 1.0 in future conditions, as per the 2017 TIA Guidelines).

6.6.3 2023/2028 Total Intersection Operations

Intersection capacity analysis has been completed for the total traffic conditions in 2023 and 2028. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 1.0). The results of the Synchro analysis for the AM and PM peak periods are summarized in **Table 16**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths in **Table 17**. Signal timing plans are included in **Appendix I**. Detailed reports are included in **Appendix J**.

Table 16: 2023/2028 Total – Intersection Operations

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
O'Connor Street/ Argyle Avenue	0.40	A	EBT	0.72	C	EBT
O'Connor Street/ Catherine Street	0.66	B	SBR	0.78	C	SBR
Metcalfe Street West/ Argyle Avenue	0.77	C	NBR	0.69	B	EBT
Metcalfe Street West/ Catherine Street/ Highway 417 (Exit 119)	1.00	E	NWBR	0.70	B	NWBR
Elgin Street/ Argyle Avenue	0.69	B	EBL	0.70	B	EBR
Elgin Street/ Catherine Street	0.33	A	WBR	0.67	B	SBT
Metcalfe Street East/ McLeod Street ⁽¹⁾	20 sec	C	WBT	11 sec	B	WBT
Argyle Avenue/ Site Access ⁽¹⁾	13 sec	B	NBR	11 sec	B	NBR

1. Unsignalized intersection

Table 17: 2023/2028 Total – Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
O'Connor Street/ Argyle Avenue	SBT	0.39	A	25	34	0.69	B	74	95
O'Connor Street/ Catherine Street	SBR	0.66	B	40	#109	0.78	C	19	#171
Metcalf Street West/ Catherine Street/ Hwy 417 (Exit 119)	NBT	0.86	D	71	#100	0.40	A	28	40
Elgin Street/ Argyle Avenue	SBT	0.29	A	17	34	0.69	B	51	#145

#: volume for the 95th percentile cycle exceeds capacity

Compared to the background traffic conditions, marginal increases to the v/c ratios, queue lengths, and delays are anticipated as a result of the additional site-generated traffic within the study area. The results are still improvements compared to the existing traffic conditions, again due to the differences in the Peak Hour Factor.

7.0 CONCLUSIONS AND RECOMMENDATIONS

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

Forecasting

- The net increase in trips generated by the proposed redevelopment is approximately 73 person trips in the AM peak hour and 79 person trips in the PM peak hour, which includes an increase of approximately 26 vehicle trips in the AM peak hour and 27 vehicle trips in the PM peak hour.

Development Design and Parking

- Pedestrian facilities will be provided between the building entrances and Argyle Avenue. Sidewalks will be depressed and continuous across the accesses, in accordance with City standards.
- Transit stops serving OC Transpo Routes 5, 14, 56, and westbound 101 and 103 are within 400m walking distance of the subject site. Transit stops serving OC Transpo Routes 6, 7, and eastbound 101 and 103 are within 600m walking distance of the subject site.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- Approximately 74 vehicle parking spaces and 160 bicycle parking spaces are proposed for the redevelopment. The amount of bicycle parking meets the requirements outlined in the ZBL, however the amount of vehicle parking is 14 spaces fewer than the minimum outlined in the ZBL.

Boundary Streets

- Argyle Avenue meets the target TkLOS E and Auto LOS D, but does not meet the target PLOS C or BLOS D. The following recommendations are identified for the City's consideration as funding becomes available.
- The south side of Argyle Avenue can achieve the target PLOS C by widening the sidewalk to 1.8m while maintaining a boulevard width of 2.0m.
- The BLOS of Argyle Avenue can meet the target BLOS D can be achieved by either implementing a 4.0m-wide bike lane plus parking lane, or reducing the operating speed to 50 km/h.

Access Design

- The proposed redevelopment will be served by a two-way underground parking garage access approximately 3.0m east of the western property line. The existing shared RIRO access will be maintained. An access exclusively for garbage collection and deliveries is located approximately at the eastern property line.
- Full-height curb and sidewalks will be reinstated where necessary, and depressed curb and continuous sidewalks will be provided across the full width of the accesses, as per City standards.
- Section 25 (a) of the *Private Approach By-Law* identifies a requirement for properties with a frontage of 20m to 34m to have no more than one (1) two-way private approach or two (2) one-way private approaches. Considering the loading access will be used exclusively by delivery and garbage collection vehicles, the only exclusive access to 100 Argyle Avenue is the two-way underground parking garage ramp. The shared access must be maintained for the neighbouring property to the west.
- Section 25 (c) of the *Private Approach By-Law* identifies a requirement for two-way accesses to have a width no greater than 9m, as measured at the street line. Section 107 (1)(a) of the ZBL identifies a minimum width requirement of 6.0m for a double traffic lane leading to a parking garage. Any access to an apartment building must also meet Section 107 (1)(aa), which identifies a maximum width requirement of 6.7m for any double traffic lane which leads to 20 or more parking spaces. The proposed underground parking access is approximately 6.0m in width, thereby meeting these requirements.
- The proposed loading access is approximately 4.7m in width, and the shared access with the property to the west is approximately 3.0m in width.
- Section 25 (l) of the *Private Approach By-Law* identifies a requirement to provide a minimum distance of 18m between the private approach and the nearest intersecting street line, and a minimum distance of 15m between a two-way private approach and any other private approach. The proposed spacing between the loading access and the underground parking access is 19m.
- The proposed spacing between the underground parking access and the existing shared access is approximately 1.2m. A relaxation of the minimum distance outlined in Section 25 (l) is requested for the spacing between these two accesses.

- Section 25 (o) of the *Private Approach By-Law* identifies a requirement to provide a minimum spacing of 3m between the nearest edge of the private approach and the property line, as measured at the street line. The spacing between the proposed underground parking access and the western property line is approximately 3.0m, however the spacing between the proposed access and the existing shared access is approximately 1.2m. Section 25 (o) states that a relaxation of the minimum clearance distance from 3m to 0.3m is permissible by the General Manager, provided there are no safety issues associated with doing so.
- Further relaxation of the minimum clearance distance is requested for the loading access, which is proposed to abut the eastern property line. As this access doesn't serve parking, the requirements of the *Private Approach By-Law* are not considered applicable.
- Section 25 (t) of the *Private Approach By-Law* identifies a requirement that any private approach may not exceed a grade of 2-6% within 9m of the street line. The proposed underground parking access ramp has a grade of 7% approximately 8.2m from the street line. This requirement will be addressed at the Site Plan Control application stage, where the ramp will be brought into compliance or a waiver for this requirement will be requested at that time.
- Implementation of the underground parking access will require a shift of the two existing on-street parking spaces in front of the subject site, such that the spaces are approximately 7m further east. Removal of the existing site-exclusive access will accommodate this shift, as will the implementation of the loading access at the eastern limit of the site. Based on the parking space dimension regulations outlined by City staff and the *Traffic and Parking By-Law*, two on-street parking spaces can be supported.
- The Transportation Association of Canada outlines a minimum sight distance requirement of 95m for vehicles exiting the accesses to the subject site. Provided the vegetation proposed at the front of the development is non-obstructive, the sight distance requirement is met for all accesses.

Transit

- No capacity problems are anticipated on any of the adjacent bus routes, or at any of the adjacent bus stops. No recommendations have been made to mitigate the increase of transit ridership, as none are required.

Intersection Design

- Based on the results of the intersection MMLoS analysis:
 - No intersections meet the target pedestrian level of service (PLOS);
 - Only O'Connor Street/Argyle Avenue meets the target bicycle level of service (BLOS);
 - Among intersections with targets, only Metcalfe Street West/Catherine Street/Exit 119 does not meet the target transit level of service (TLOS);
 - Elgin Street/Argyle Avenue and Elgin Street/Catherine Street do not meet the target truck level of service (TkLOS);
 - Metcalfe Street West/Argyle Avenue and Metcalfe Street West/Catherine Street/Exit 119 do not meet the target vehicular level of service (Auto LOS).

- Pedestrian Level of Service
 - There is limited opportunity in improving the PLOS of any approaches that do not meet the target PLOS C, as major road or timing modifications are required.
- Bicycle Level of Service
 - The east approach of O'Connor Street/Catherine Street does not meet the target BLOS B, based on left turn characteristics. No recommendations have been made, as Catherine Street is not a cycling route and Gladstone Avenue is a nearby east-west spine route.
 - The south approach of Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) does not meet the target BLOS C, as left turning cyclists are required to cross two lanes of traffic. Accommodation of left turning cyclists onto Catherine Street is not recommended, as Catherine Street is not a cycling route and implementation of a two-stage bike box would be difficult given the configuration of the westbound approaches (Catherine Street and the Exit 119 off-ramp).
 - The west approach of Elgin Street/Argyle Avenue does not meet the target BLOS C, based on left turn characteristics. The dual left turn lanes are required based on the existing peak hour turning movement volumes, and no changes have been proposed as part of the Elgin Street Renewal project with respect to the westbound dual left turn lanes.
 - The south and east approaches of Elgin Street/Catherine Street do not meet the target BLOS D. The south approach can achieve the target BLOS by reducing the operating speed to 40 km/h, and the Elgin Street Renewal suggests a reduced speed limit of 30 km/h from Lisgar Street to McLeod Street. No changes were recommended for the accommodation of northbound left turning cyclists as part of the Elgin Street Renewal. The peak hour volumes for westbound right turning vehicles justifies a right turn lane, and this lane is carried in the Elgin Street Renewal design.
- Transit Level of Service
 - The east approach (Catherine Street) of Metcalfe Street West/Catherine Street/Highway 417 (Exit 119) does not meet the target TLOS D, requiring a 5-second reduction in the delay to achieve the target. Implementation of transit signal priority on Catherine Street as identified in the 2031 RTTP Network Concept may improve the TLOS.
- Truck Level of Service
 - The west approach of Elgin Street/Argyle Avenue does not meet the target TkLOS D. It is clear that the Elgin Street Renewal prioritizes the levels of service for pedestrians and cyclists, and it is anticipated that there will be few heavy vehicles approaching Elgin Street from Argyle Avenue.
 - The north approach of Elgin Street/Catherine Street does not meet the target TkLOS D. The Elgin Street Renewal functional design identifies a concrete rumble strip/truck apron at this approach, allowing heavy vehicles a greater effective corner radius. While the MMLOS guidelines evaluate this corner as achieving a TkLOS E, in reality the corner is expected to perform acceptably.

- Vehicular Level of Service
 - The northbound right turn movement at Metcalfe Street West/Argyle Avenue does not meet the target Auto LOS D during the AM peak hour. To achieve the target Auto LOS, a reduction of approximately ten vehicles is required.
 - The northwestbound right turn movement (vehicles turning from westbound Highway 417 onto northbound Metcalfe Street West) and the northbound through movement (vehicles continuing on northbound Metcalfe Street West) do not meet the target Auto LOS D during the AM peak hour. To achieve the target, a reduction of 140 vehicles making the northbound right turn movement and a reduction of 60 vehicles making the northbound through movement is required.
- In existing and future traffic conditions, queueing issues were identified for the following movements:
 - O'Connor Street/Argyle Avenue
 - Southbound through (PM peak hour)
 - O'Connor Street/Catherine Street
 - Southbound right turn (AM and PM peak hours)
 - Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)
 - Northbound through (AM peak hour)
 - Elgin Street/Argyle Avenue
 - Southbound through (PM peak hour)
- The background traffic conditions appear to improve when compared to the existing traffic conditions, attributable to differences in the Peak Hour Factor (set to 0.90 in existing conditions and 1.0 in future conditions, as per the 2017 TIA Guidelines).
- Compared to the background traffic conditions, the total traffic conditions are anticipated to have marginal increases to the v/c ratios, queue lengths, and delays, as a result of the additional site-generated traffic within the study area. All intersections are anticipated to operate at approximately the same level of service.

NOVATECH

Prepared by:



Joshua Audia, B.Sc.
E.I.T.,
Transportation/Traffic

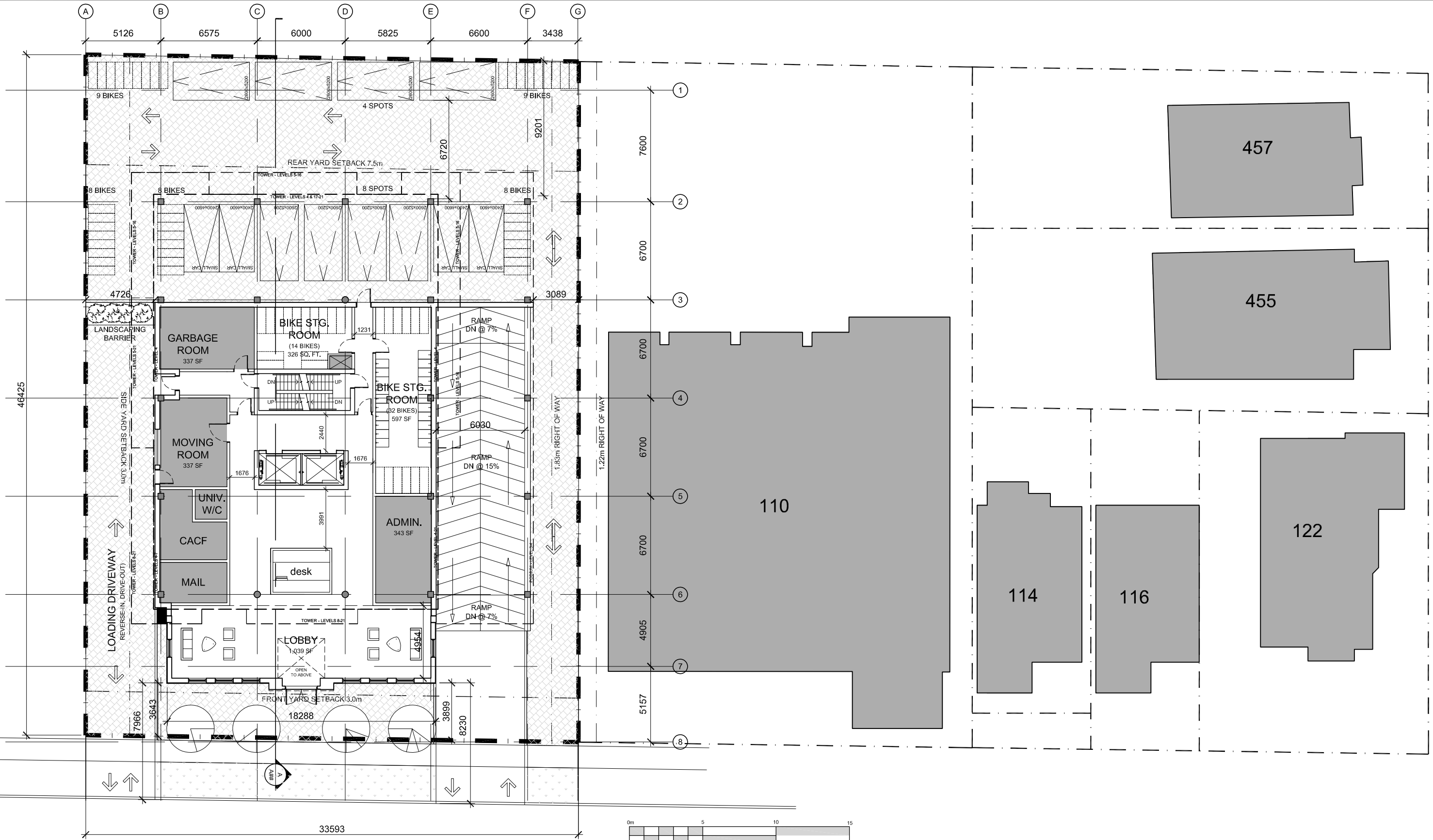
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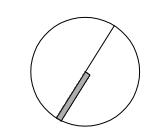
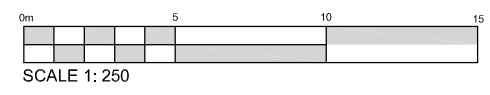
Jennifer Luong, P.Eng.
Senior Project Manager,
Transportation/Traffic

APPENDIX A

Conceptual Site Plan



ARGYLE AVENUE



APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	100 Argyle Avenue
Description of Location	The approximately 0.16-hectare property is located midblock between Metcalfe Street and Elgin Street
Land Use Classification	High-Rise Residential
Development Size (units)	156 dwellings
Development Size (m ²)	-
Number of Accesses and Locations	<ul style="list-style-type: none"> - One underground parking access on Argyle Avenue, near western limits of the property - One shared access with property to the west on Argyle Avenue - One loading access on Argyle Avenue, near eastern limits of the property
Phase of Development	1
Buildout Year	2023

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

2. Trip Generation Trigger

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

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

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

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

3. Location Triggers

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

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

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

4. Safety Triggers

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

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

5. Summary

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

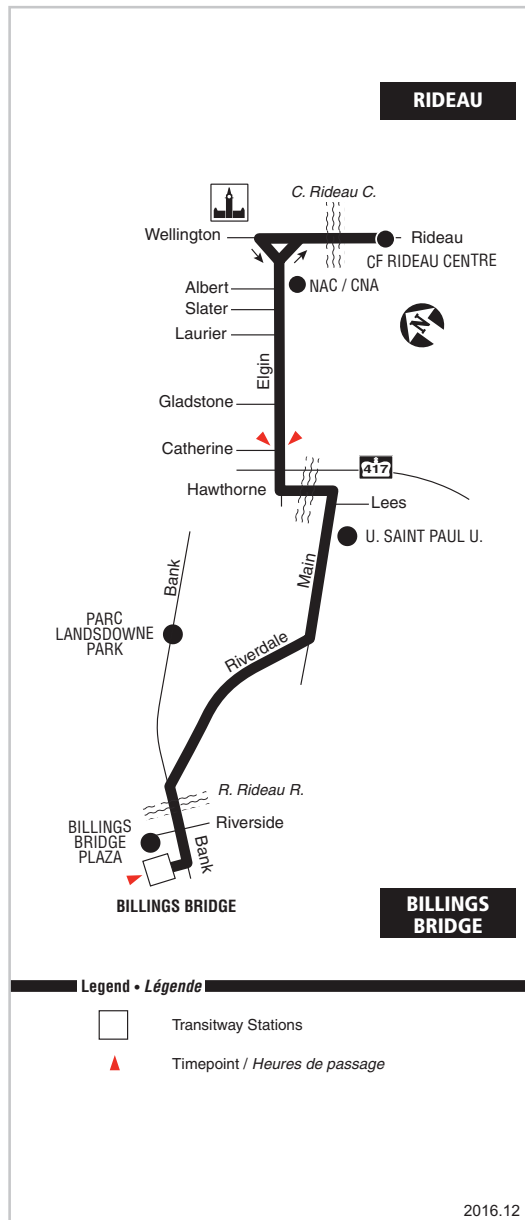
If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

APPENDIX C

OC Transpo Route Maps

5 RIDEAU BILLINGS BRIDGE

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



Information / Renseignement.....**613-741-4390**
Customer Relations
Service à la clientèle**613-842-3600**
Lost and Found / Objets perdus**613-563-4011**
Schedule / Horaire.....**613-560-1000**
Text / Texto**560560**

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

Effective / En vigueur Dec. 25 déc. 2016

FORMER / ANCIEN 1

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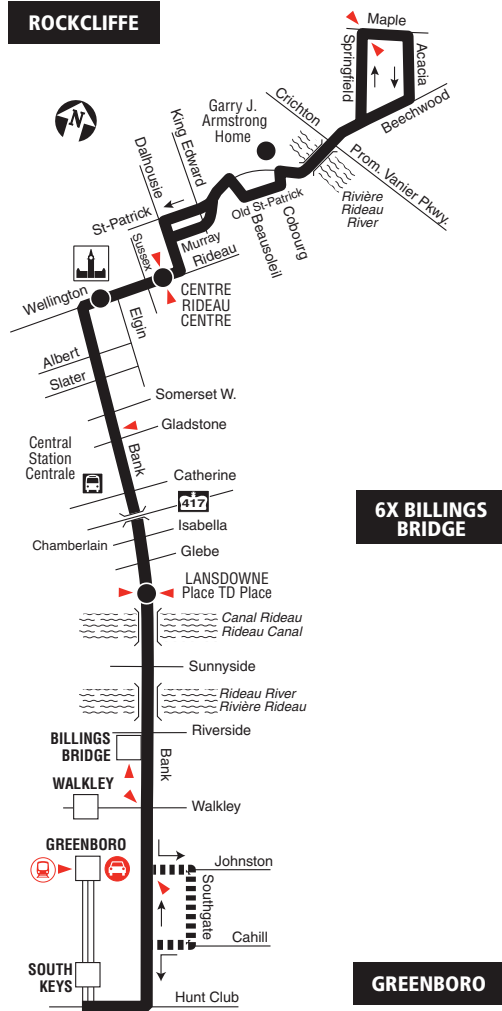
ROCKCLIFFE
GREENBORO

Fréquent

7 days a week / 7 jours par semaine

All day service

Service toute la journée



Legend • Légende

- Transitway & Station / Station et Transitway
- No early morning service / Aucun service matinal
- Line 2 - O-Train Trillium Line / Ligne 2 - O-Train Ligne Trillium
- Park & Ride / Parc-o-Bus
- Timepoint / Heures de passage

2017.06



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

Text / Texto560560

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

Customer Relations

Service à la clientèle 613-842-3600

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

Security / Sécurité..... 613-741-2478

Effective June 25, 2017

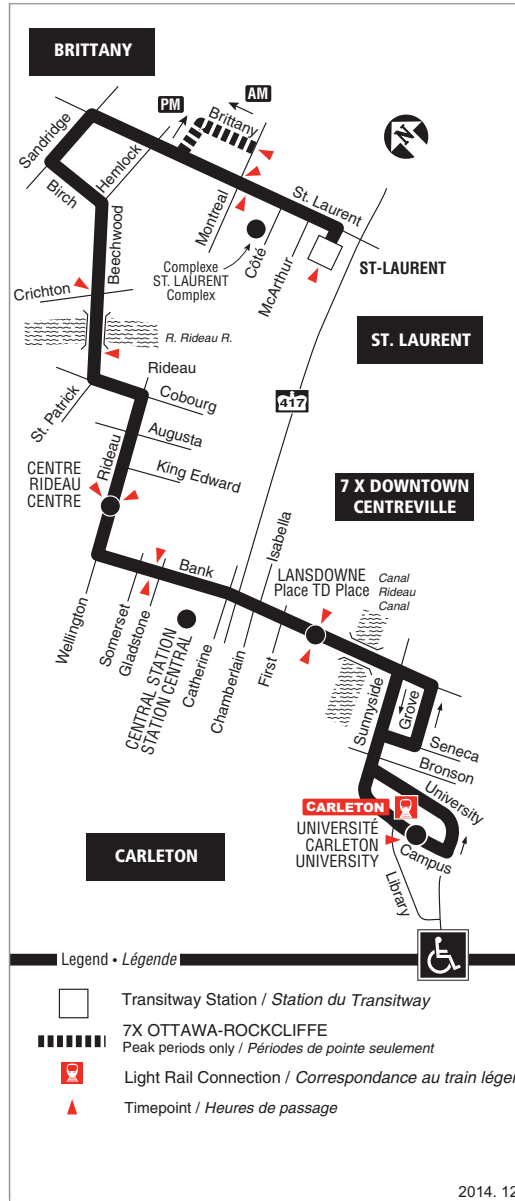
En vigueur 25 juin 2017



INFO 613-741-4390
octranspo.com

7 ST. LAURENT CARLETON

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



Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle**613-842-3600**

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

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

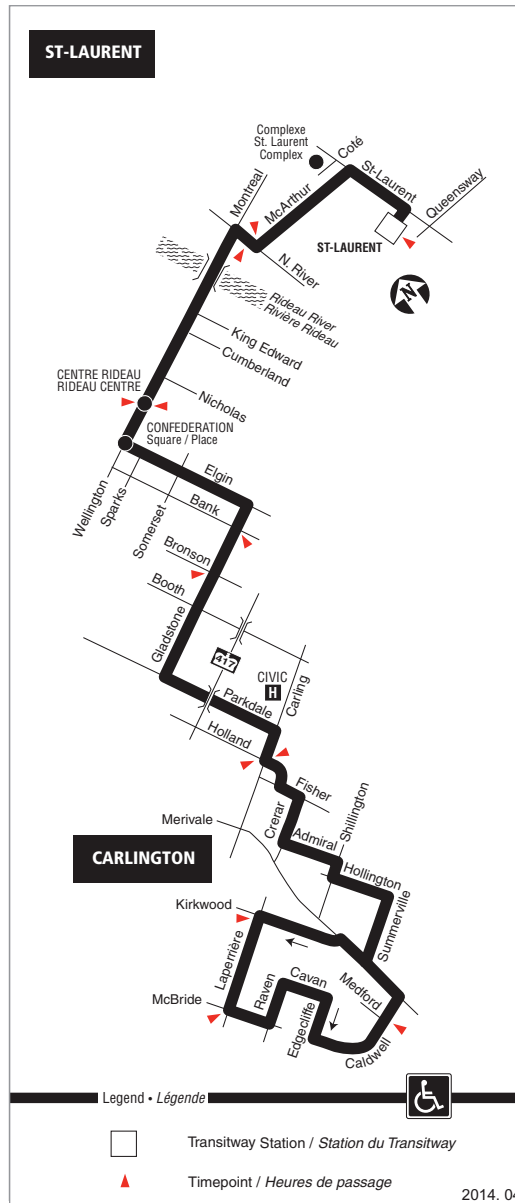
Text / Texto**560560**

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

Effective / En vigueur Sept 5 sept 2004

14 ST-LAURENT CARLINGTON

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



Information / Renseignement.....**613-741-4390**

Customer Relations
Service à la clientèle**613-842-3600**

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

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

Text / Texto**560560**

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

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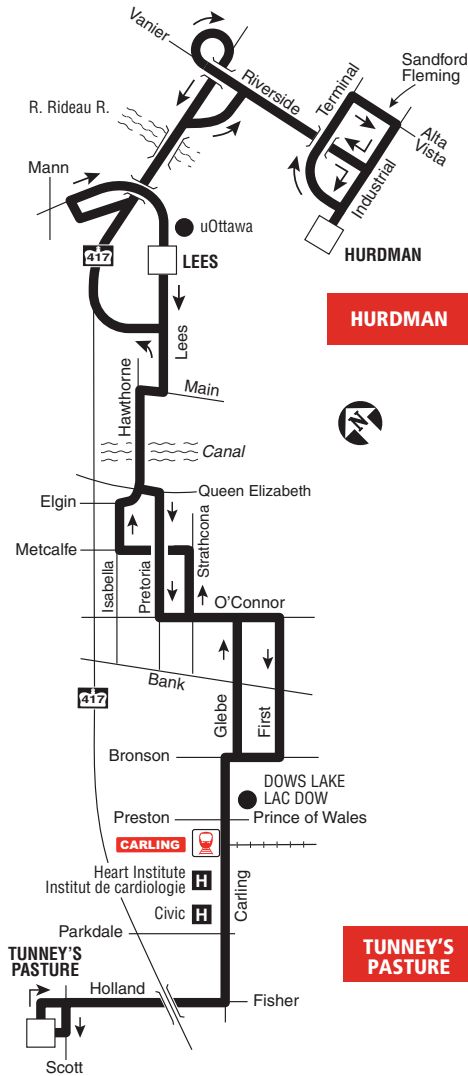
HURDMAN TUNNEY'S PASTURE

Local

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



Legend • Légende



Transitway Station / Station du Transitway



O-Train Connection
Correspondance avec l'O-Train

2017.04



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

Text / Texto560560

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

Customer Relations

Service à la clientèle 613-842-3600

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

Security / Sécurité 613-741-2478

Effective April 24, 2017

En vigueur 24 avril 2017



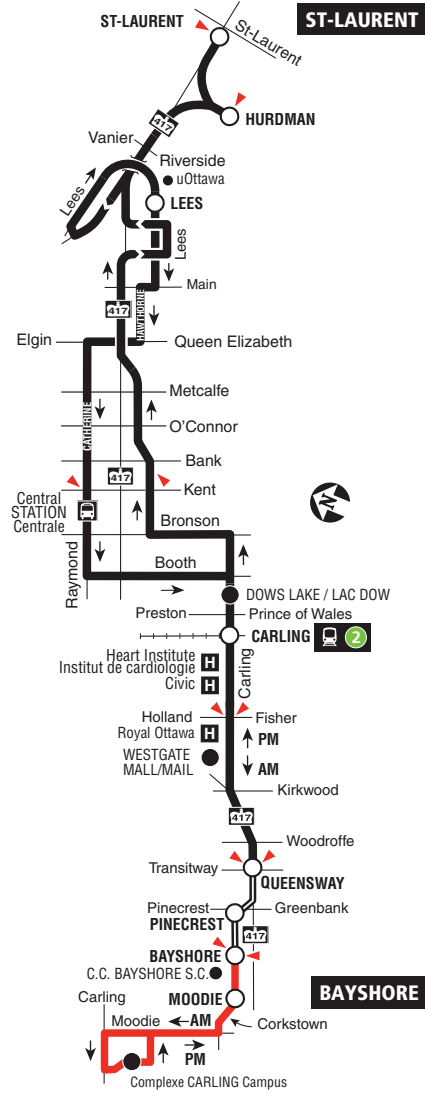
INFO 613-741-4390
octranspo.com



101 ST-LAURENT BAYSHORE

Local

Monday to Saturday / Lundi ay samedi
 No Sunday service
 Aucun service le dimanche



- Transitway & Station
- Peak Periods / Périodes de pointe
- Timepoint / Heures de passage

2017.12

Schedule / Horaire.....613-560-1000
Text / Texto560560
plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

Customer Relations
 Service à la clientèle **613-842-3600**

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

Security / Sécurité **613-741-2478**

Effective December 24, 2017
En vigueur 24 décembre 2017

INFO 613-741-4390
octranspo.com

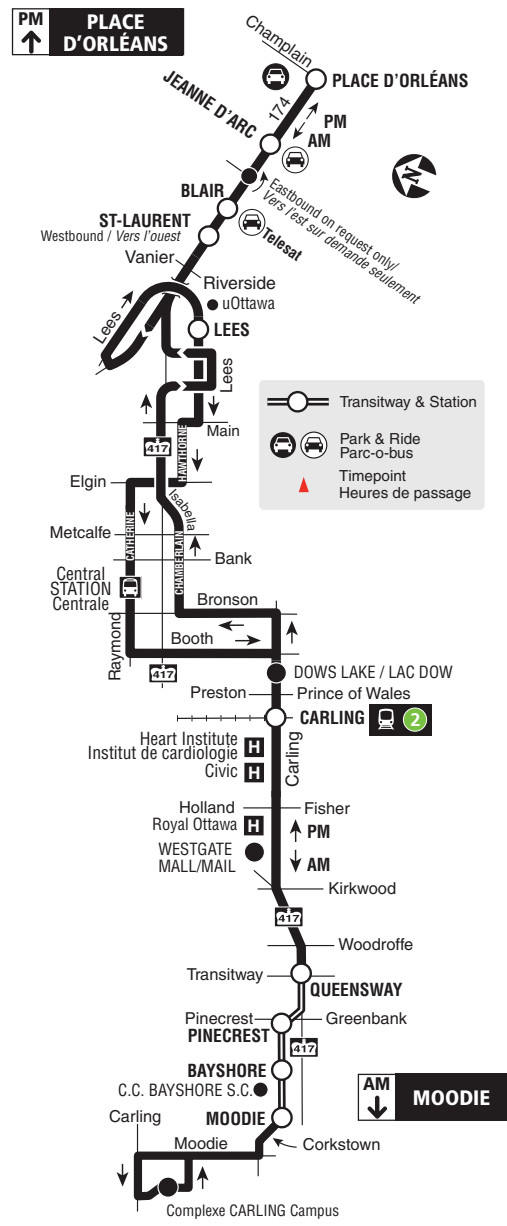


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MOODIE PLACE D'ORLÉANS

Local

Monday to FRIDAY / Lundi au vendredi
Peak Periods Only
Périodes de pointe seulement



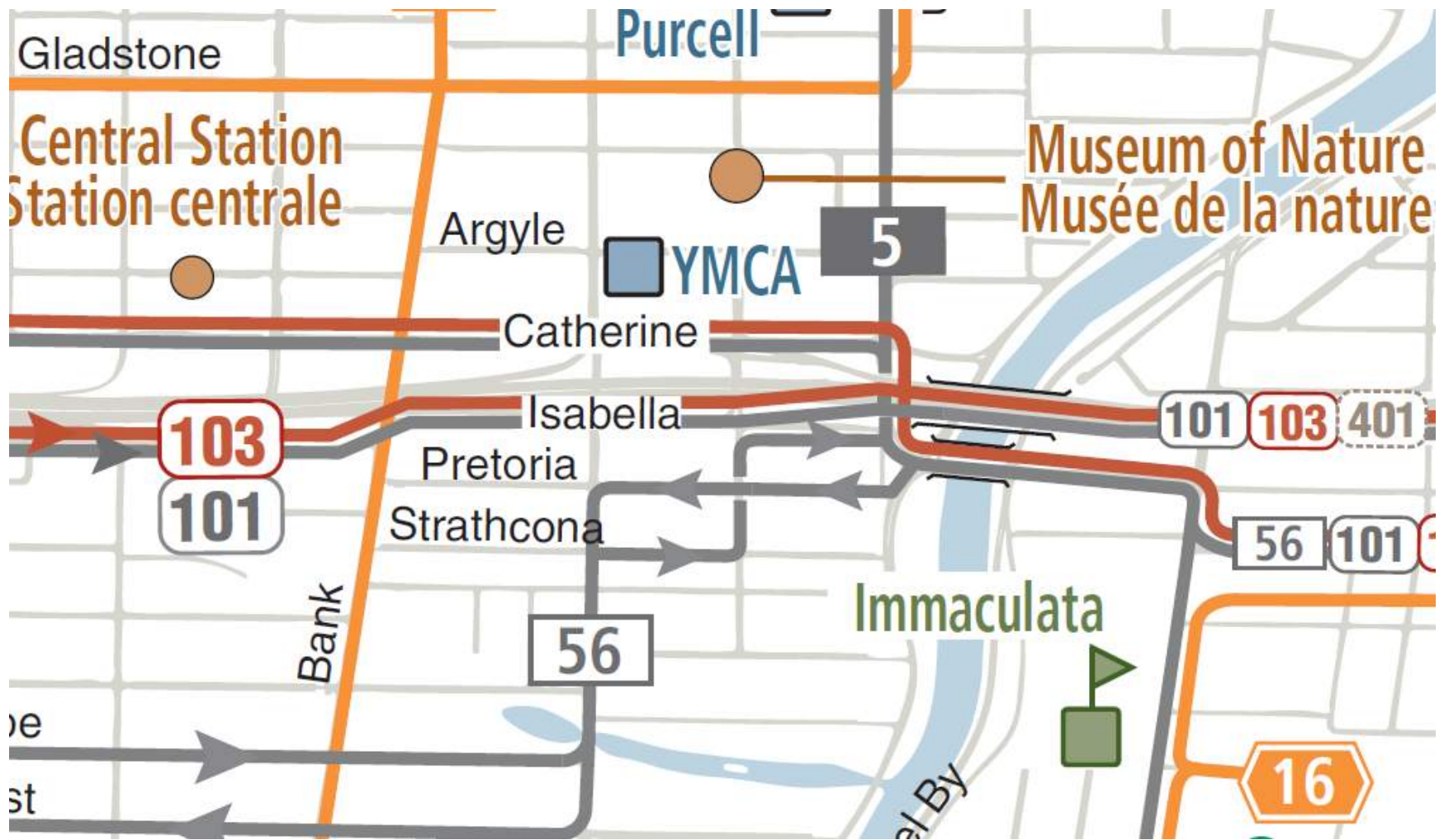
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 **Schedule / Horaire.....613-560-1000**
Text / Texto560560
plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

Customer Relations
 Service à la clientèle 613-842-3600
 Lost and Found / Objets perdus..... 613-563-4011
 Security / Sécurité 613-741-2478

Effective December 24, 2017
En vigueur 24 décembre 2017

 **INFO 613-741-4390**
 octranspo.com



APPENDIX D

Traffic Count Data

Turning Movement Count - Full Study Summary Report

ARGYLE AVE @ O'CONNOR ST

Survey Date: Tuesday, March 21, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

1.00

Full Study

Period	O'CONNOR ST									ARGYLE AVE									Grand Total
	Northbound				Southbound					Eastbound			Westbound						
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	0	0	0	0	20	605	0	625	625	0	34	47	81	0	0	0	0	81	706
08:00 09:00	0	0	0	0	32	718	0	750	750	0	71	63	134	0	0	0	0	134	884
09:00 10:00	0	0	0	0	34	750	0	784	784	0	53	62	115	0	0	0	0	115	899
11:30 12:30	0	0	0	0	42	837	0	879	879	0	50	61	111	0	0	0	0	111	990
12:30 13:30	0	0	0	0	44	784	0	828	828	0	53	76	129	0	0	1	1	130	958
15:00 16:00	0	0	0	0	50	1359	0	1409	1409	0	46	125	171	0	0	0	0	171	1580
16:00 17:00	0	0	0	0	54	1399	0	1453	1453	0	67	133	200	0	0	0	0	200	1653
17:00 18:00	0	0	0	0	78	1391	0	1469	1469	0	73	130	203	0	0	0	0	203	1672
Sub Total	0	0	0	0	354	7843	0	8197	8197	0	447	697	1144	0	0	1	1	1145	9342
U Turns				0				0	0				0				0	0	0
Total	0	0	0	0	354	7843	0	8197	8197	0	447	697	1144	0	0	1	1	1145	9342
EQ 12Hr	0	0	0	0	492	10902	0	11394	11394	0	621	969	1590	0	0	1	1	1591	12985
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	0	0	0	0	492	10902	0	11394	11394	0	621	969	1590	0	0	1	1	1591	12985
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													1.00						
AVG 24Hr	0	0	0	0	645	14281	0	14926	14926	0	814	1269	2083	0	0	2	2	2085	17011
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.

Turning Movement Count - Peak Hour Diagram

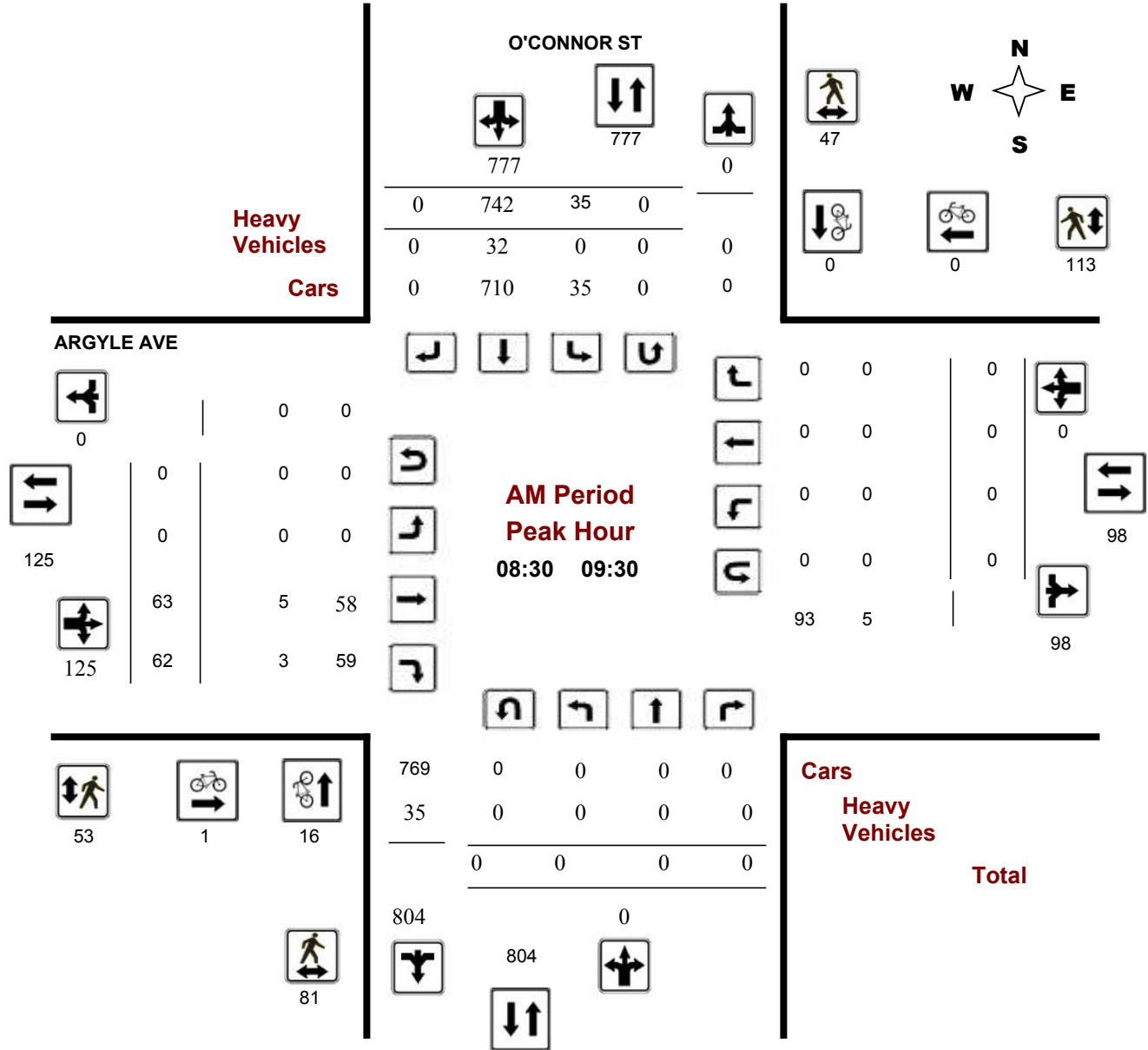
ARGYLE AVE @ O'CONNOR ST

Survey Date: Tuesday, March 21, 2017

WO No: 36790

Start Time: 07:00

Device: Miovision



Turning Movement Count - Peak Hour Diagram

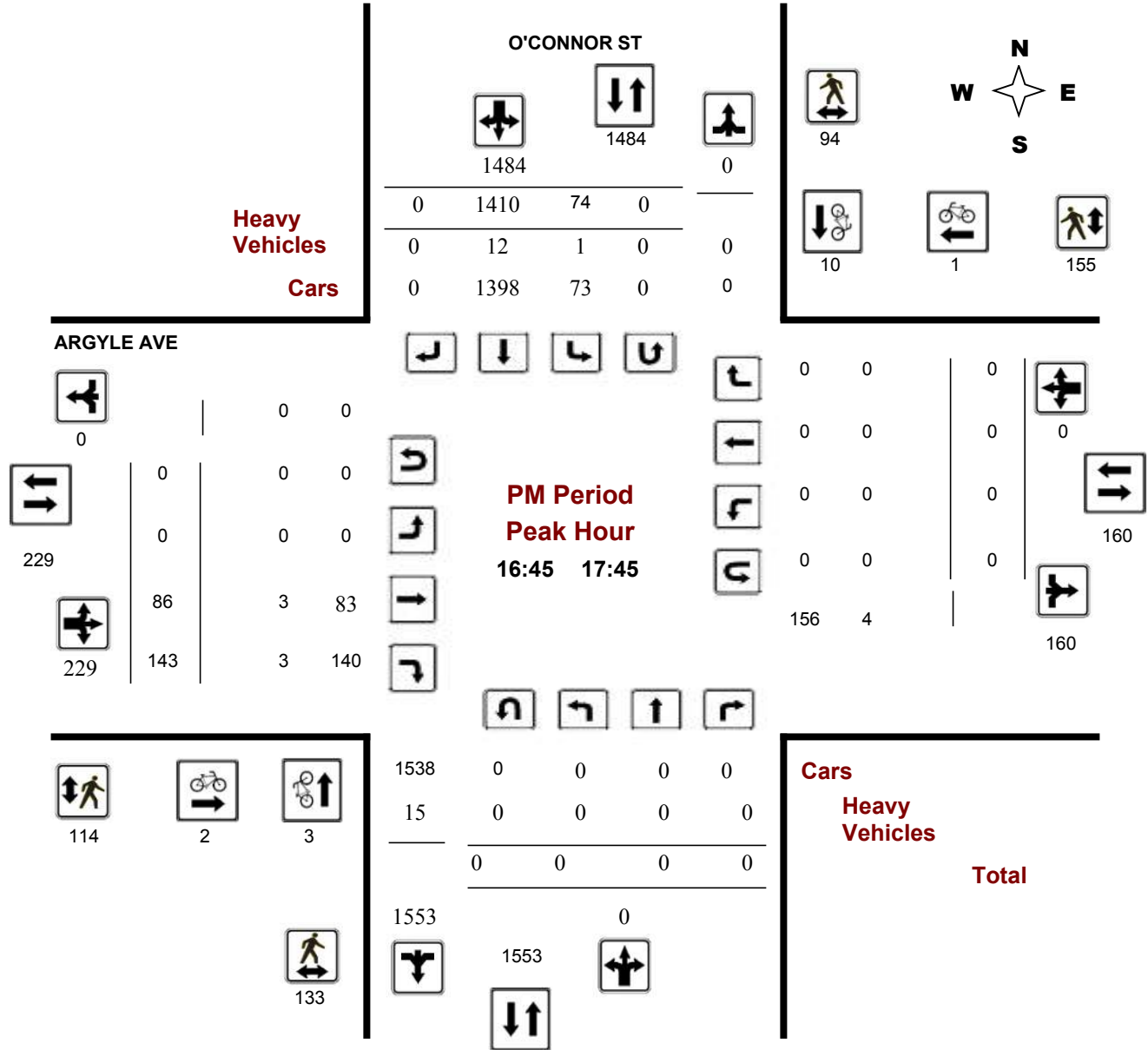
ARGYLE AVE @ O'CONNOR ST

Survey Date: Tuesday, March 21, 2017

Start Time: 07:00

WO No: 36790

Device: Miovision



Turning Movement Count - Full Study Summary Report

ARGYLE AVE W @ METCALFE ST

Survey Date: Tuesday, February 10, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

1.00

Full Study

Period	METCALFE ST									ARGYLE AVE W									Grand Total
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT				
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT	
07:00 08:00	0	0	1022	1022	0	0	0	0	1022	0	82	0	82	0	0	0	0	82	1104
08:00 09:00	0	0	1408	1408	0	0	0	0	1408	0	133	0	133	0	0	0	0	133	1541
09:00 10:00	0	0	933	933	0	0	0	0	933	0	112	0	112	0	0	0	0	112	1045
11:30 12:30	0	0	582	582	0	0	0	0	582	0	91	0	91	0	0	0	0	91	673
12:30 13:30	0	0	603	603	0	0	0	0	603	0	82	0	82	0	0	0	0	82	685
15:00 16:00	0	0	555	555	0	0	0	0	555	0	160	0	160	0	0	0	0	160	715
16:00 17:00	0	0	581	581	0	0	0	0	581	0	197	0	197	0	0	0	0	197	778
17:00 18:00	0	0	732	732	0	0	0	0	732	0	218	0	218	0	0	0	0	218	950
Sub Total	0	0	6416	6416	0	0	0	0	6416	0	1075	0	1075	0	0	0	0	1075	7491
U Turns				0				0	0				0				0	0	0
Total	0	0	6416	6416	0	0	0	0	6416	0	1075	0	1075	0	0	0	0	1075	7491
EQ 12Hr	0	0	8918	8918	0	0	0	0	8918	0	1494	0	1494	0	0	0	0	1494	10412
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	0	0	8918	8918	0	0	0	0	8918	0	1494	0	1494	0	0	0	0	1494	10412
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													1.00						
AVG 24Hr	0	0	11683	11683	0	0	0	0	11683	0	1957	0	1957	0	0	0	0	1957	13640
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.

Turning Movement Count - Peak Hour Diagram

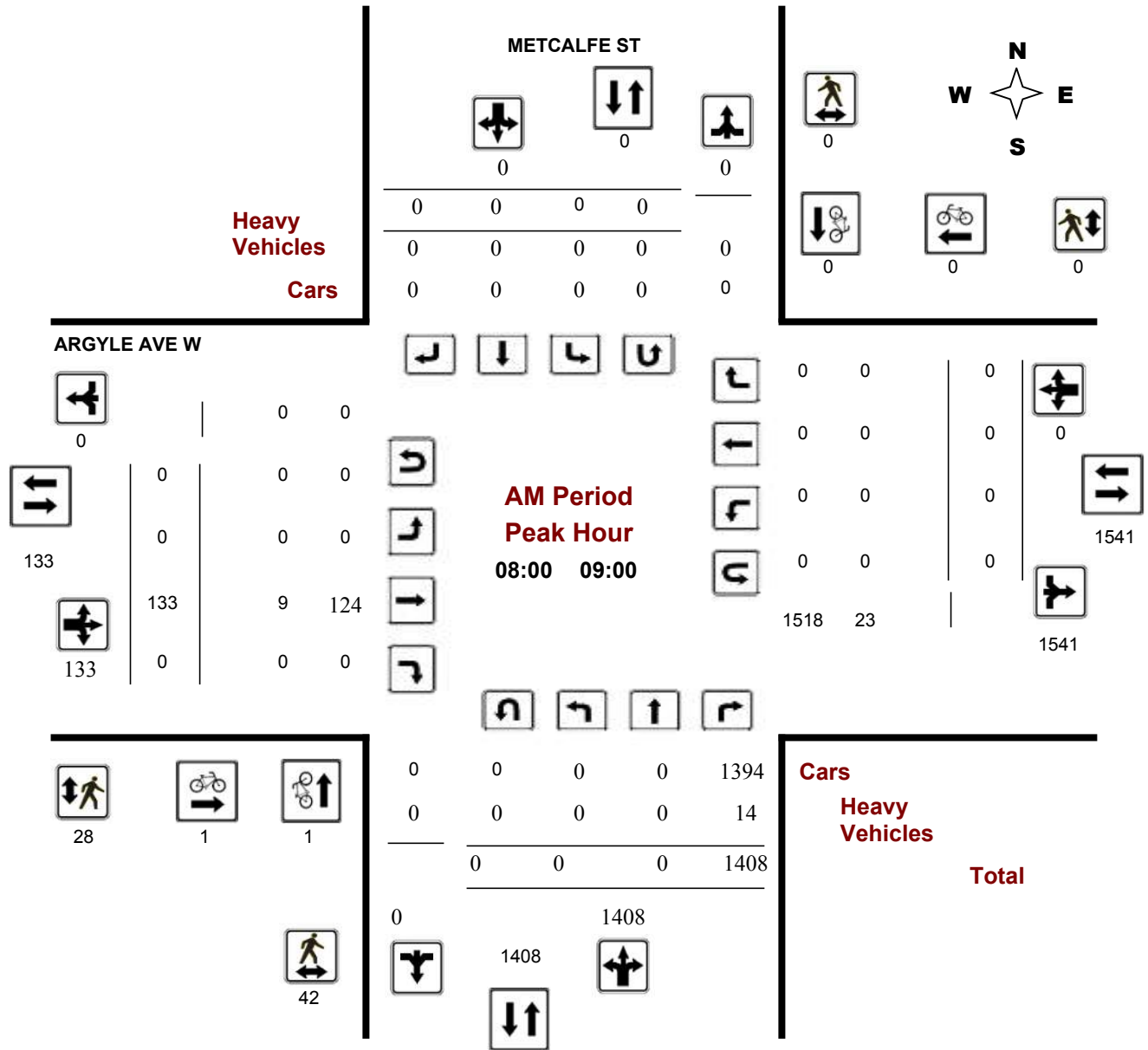
ARGYLE AVE W @ METCALFE ST

Survey Date: Tuesday, February 10, 2015

Start Time: 07:00

WO No: 35173

Device: Miovision



Turning Movement Count - Peak Hour Diagram

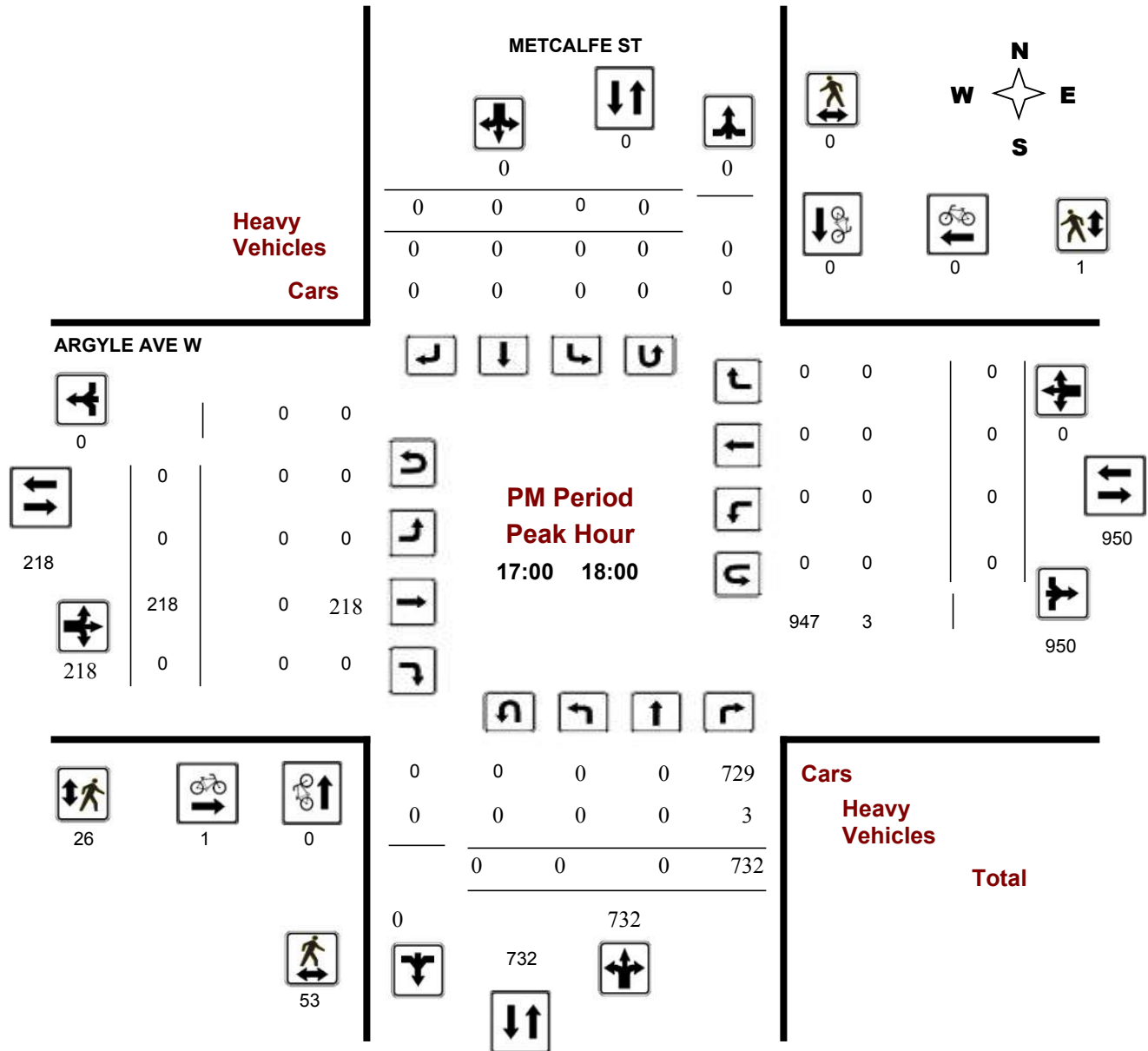
ARGYLE AVE W @ METCALFE ST

Survey Date: Tuesday, February 10, 2015

Start Time: 07:00

WO No: 35173

Device: Miovision



Turning Movement Count - Full Study Summary Report

ARGYLE AVE W @ METCALFE ST

Survey Date: Tuesday, April 04, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

Period	METCALFE ST									ARGYLE AVE W									Grand Total
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT				
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT	
07:00 08:00	0	0	1368	1368	0	0	0	0	1368	0	69	0	69	0	0	0	0	69	1437
08:00 09:00	0	0	1697	1697	0	0	0	0	1697	0	120	0	120	0	0	0	0	120	1817
09:00 10:00	0	0	1282	1282	0	0	0	0	1282	0	115	0	115	0	0	0	0	115	1397
11:30 12:30	0	0	680	680	0	0	0	0	680	0	95	0	95	0	0	0	0	95	775
12:30 13:30	0	0	704	704	0	0	0	0	704	0	117	0	117	0	0	0	0	117	821
15:00 16:00	0	0	633	633	0	0	0	0	633	0	121	0	121	0	0	0	0	121	754
16:00 17:00	0	0	615	615	0	0	0	0	615	0	154	0	154	0	0	0	0	154	769
17:00 18:00	0	0	770	770	0	0	0	0	770	0	165	0	165	0	0	0	0	165	935
Sub Total	0	0	7749	7749	0	0	0	0	7749	0	956	0	956	0	0	0	0	956	8705
U Turns				0				0	0				0				0	0	0
Total	0	0	7749	7749	0	0	0	0	7749	0	956	0	956	0	0	0	0	956	8705
EQ 12Hr	0	0	10771	10771	0	0	0	0	10771	0	1329	0	1329	0	0	0	0	1329	12100
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.												1.39							
AVG 12Hr	0	0	9694	9694	0	0	0	0	9694	0	1196	0	1196	0	0	0	0	1196	10890
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.												.90							
AVG 24Hr	0	0	12699	12699	0	0	0	0	12699	0	1567	0	1567	0	0	0	0	1567	14266
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.

Turning Movement Count - Peak Hour Diagram

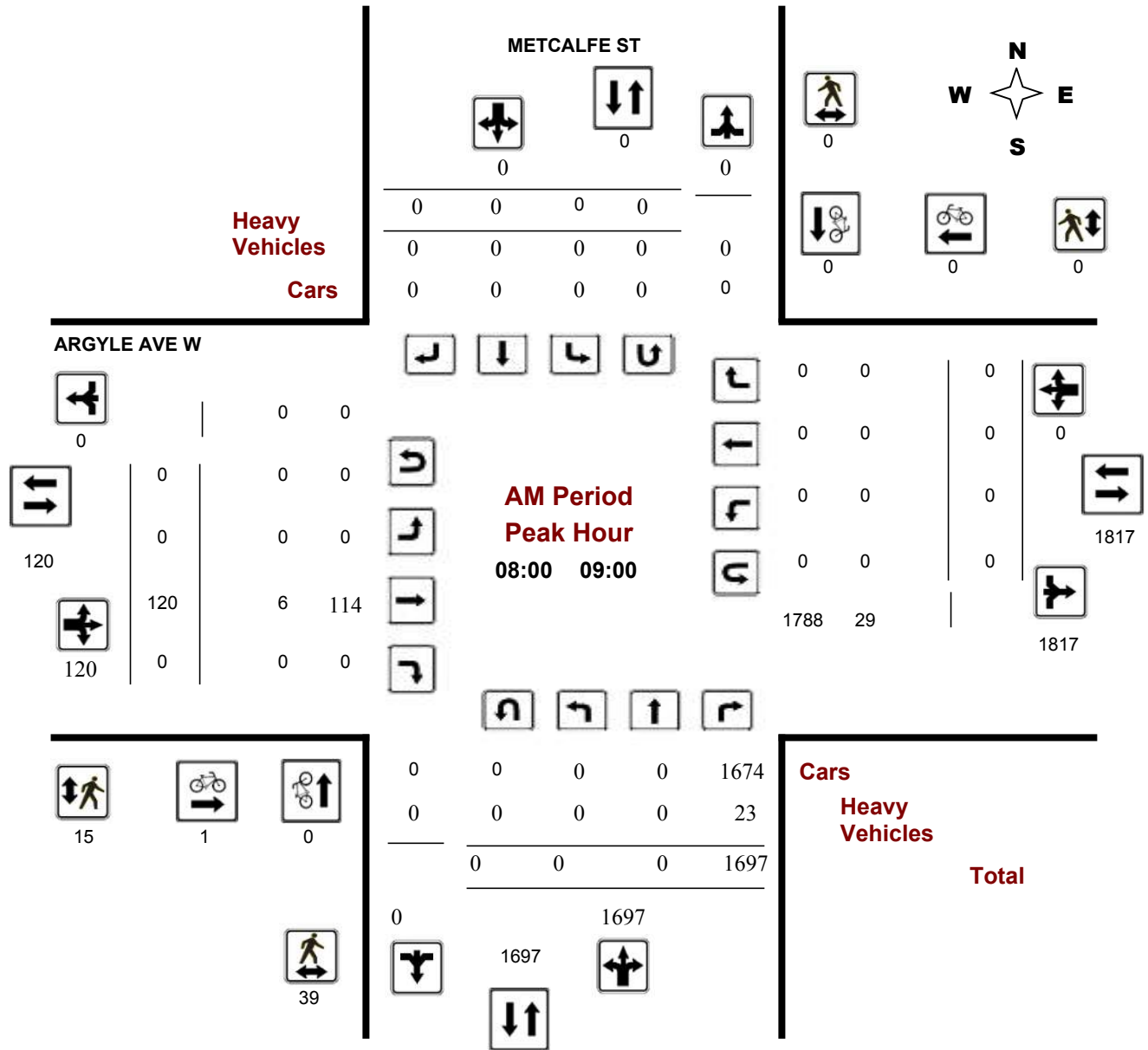
ARGYLE AVE W @ METCALFE ST

Survey Date: Tuesday, April 04, 2017

Start Time: 07:00

WO No: 36831

Device: Miovision



Turning Movement Count - Peak Hour Diagram

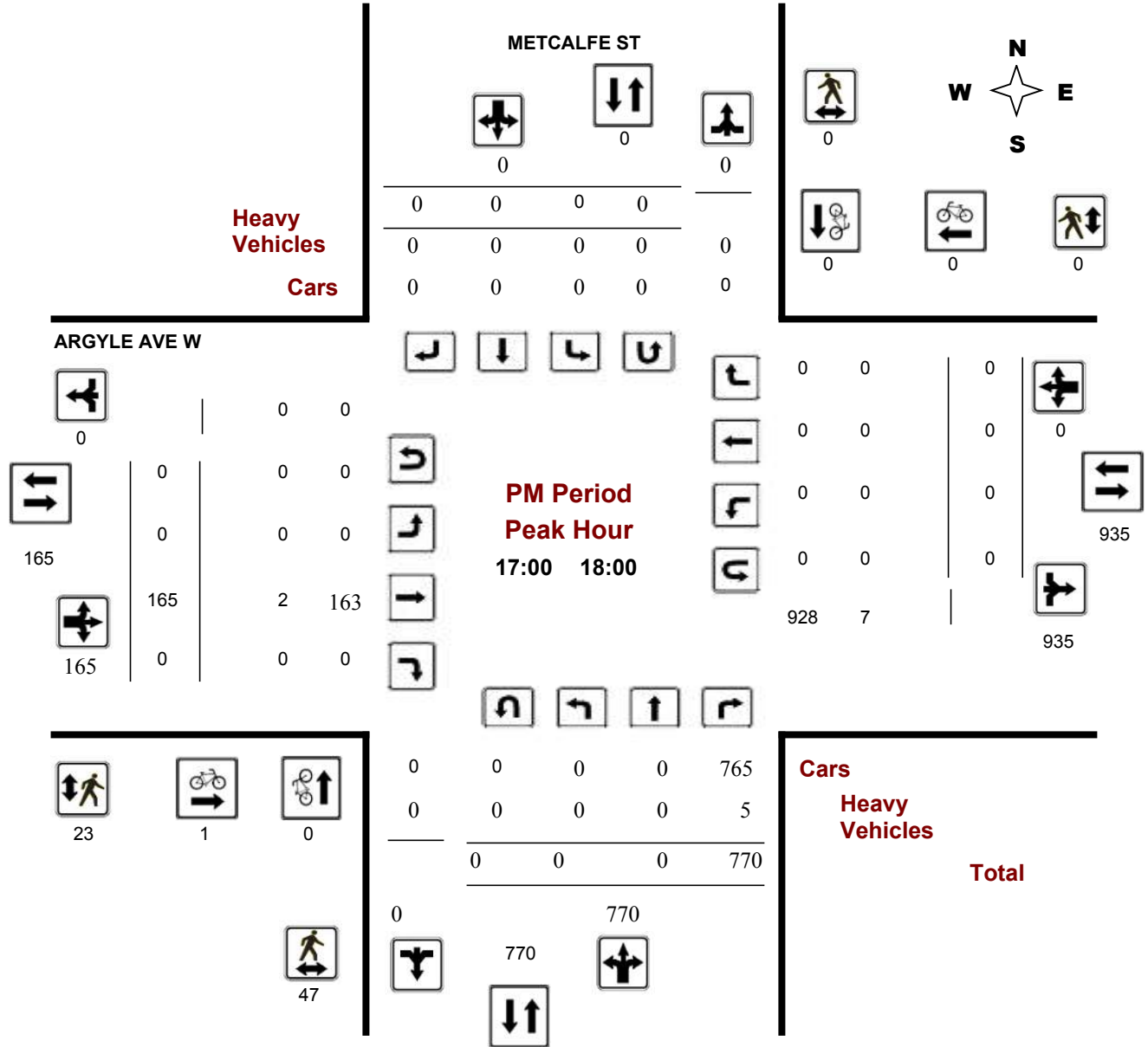
ARGYLE AVE W @ METCALFE ST

Survey Date: Tuesday, April 04, 2017

Start Time: 07:00

WO No: 36831

Device: Miovision



Turning Movement Count - Full Study Summary Report

ARGYLE AVE W @ METCALFE ST

Survey Date: Thursday, April 19, 2018

Total Observed U-Turns

 Northbound: 0 Southbound: 0
 Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

		METCALFE ST								ARGYLE AVE W										
		Northbound				Southbound				Eastbound				Westbound						
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
00:00	01:00	0	0	51	51	0	0	0	0	51	0	9	0	9	0	0	0	0	9	60
01:00	02:00	0	0	31	31	0	0	0	0	31	0	0	0	0	0	0	0	0	0	31
02:00	03:00	0	0	34	34	0	0	0	0	34	0	7	0	7	0	0	0	0	7	41
03:00	04:00	0	0	33	33	0	0	0	0	33	0	2	0	2	0	0	0	0	2	35
04:00	05:00	0	0	19	19	0	0	0	0	19	0	3	0	3	0	0	0	0	3	22
05:00	06:00	0	0	148	148	0	0	0	0	148	0	2	0	2	0	0	0	0	2	150
06:00	07:00	0	0	915	915	0	0	0	0	915	0	15	1	16	0	0	0	0	16	931
07:00	08:00	0	0	1320	1320	0	0	0	0	1320	0	66	0	66	0	0	0	0	66	1386
08:00	09:00	0	0	1629	1629	0	0	0	0	1629	0	113	0	113	0	0	0	0	113	1742
09:00	10:00	0	0	1049	1049	0	0	0	0	1049	0	119	0	119	0	0	0	0	119	1168
10:00	11:00	0	0	737	737	0	0	0	0	737	0	115	0	115	0	0	0	0	115	852
11:00	12:00	0	0	746	746	0	0	0	0	746	0	99	0	99	0	0	0	0	99	845
12:00	13:00	0	0	728	728	0	0	0	0	728	0	103	0	103	0	0	0	0	103	831
13:00	14:00	0	0	690	690	0	0	0	0	690	0	104	0	104	0	0	0	0	104	794
14:00	15:00	0	0	642	642	0	0	0	0	642	0	109	0	109	0	0	0	0	109	751
15:00	16:00	0	0	744	744	0	0	0	0	744	0	138	0	138	0	0	0	0	138	882
16:00	17:00	0	0	825	825	0	0	0	0	825	0	173	0	173	0	0	0	0	173	998
17:00	18:00	0	0	910	910	0	0	0	0	910	0	176	0	176	0	0	0	0	176	1086
18:00	19:00	0	0	768	768	0	0	0	0	768	0	182	0	182	0	0	0	0	182	950
19:00	20:00	0	0	623	623	0	0	0	0	623	0	115	0	115	0	0	0	0	115	738
20:00	21:00	0	0	375	375	0	0	0	0	375	0	69	0	69	0	0	0	0	69	444
21:00	22:00	0	0	344	344	0	0	0	0	344	0	55	0	55	0	0	0	0	55	399
22:00	23:00	0	0	255	255	0	0	0	0	255	0	39	0	39	0	0	0	0	39	294
Sub Total		0	0	13616	13616	0	0	0	0	13616	0	1813	1	1814	0	0	0	0	1814	15430
U Turns				0				0	0				0					0	0	0
Total		0	0	13616	13699	0	0	0	0	13699	0	1813	1	1834	0	0	0	0	1834	15533
EQ 12Hr		0	0	19042	19042	0	0	0	0	19042	0	2548	1	2549	0	0	0	0	2549	21591
Note:		These values are calculated by multiplying the totals by the appropriate expansion factor.																1.39		
AVG 12Hr		0	0	17137	17137	0	0	0	0	17137	0	2293	1	2294	0	0	0	0	2294	19431
Note:		These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																.90		



Turning Movement Count - Full Study Summary Report

ARGYLE AVE W @ METCALFE ST

AVG 24Hr	0	0	22450	22450	0	0	0	0	22450	0	3004	2	3006	0	0	0	0	3006	25456
----------	---	---	-------	-------	---	---	---	---	-------	---	------	---	------	---	---	---	---	------	-------

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.

Turning Movement Count - Peak Hour Diagram

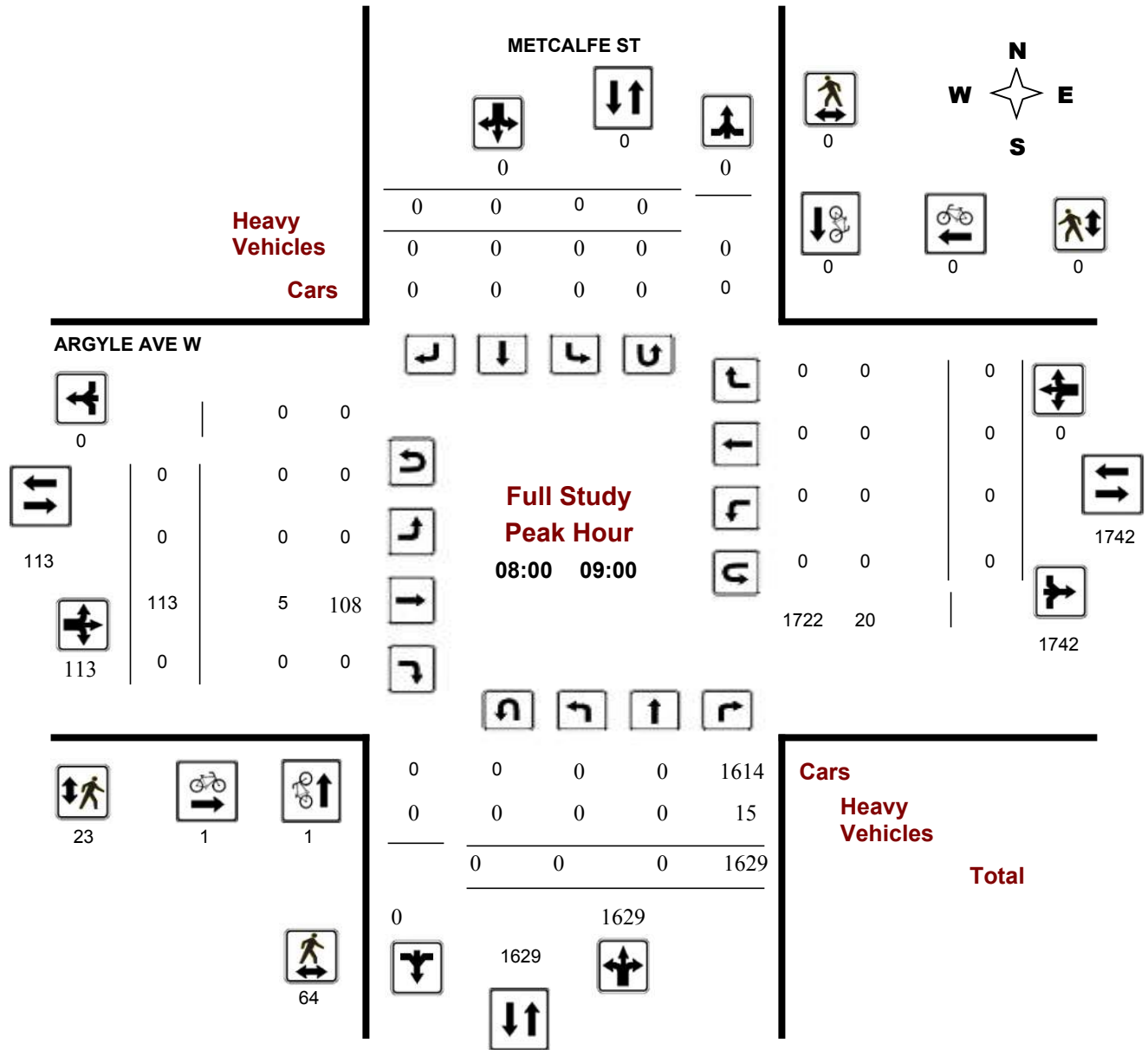
ARGYLE AVE W @ METCALFE ST

Survey Date: Thursday, April 19, 2018

Start Time: 00:00

WO No: 37768

Device: Miovision



Comments

Study Name 5215431- Catherine and Metcalfe - (Sat)-Oct 24th
Start Date Saturday, October 24, 2015 9:00 AM
End Date Saturday, October 24, 2015 9:00 PM
Site Code

Report Summary

Time Period	Class.	Southbound		Westbound		Northwestbound				Northbound				Eastbound		Total	Ped	Total				
		I	O	R	T	I	O	BR	BL	I	O	T	L	I	O							
Peak 1	Lights	0	528	39	196	235	0	427	1236	1663	0	62	44	106	0	0	1476	2004	N	4	4	
Specified Period	%	0%	99%	100%	98%	98%	0%	99%	96%	97%	0%	97%	96%	96%	0%	0%	97%	97%		100%		
9:00 AM - 12:00 PM	Other Vehicles	0	8	0	3	3	0	6	46	52	0	2	2	4	0	0	51	59	E	0	0	
One Hour Peak	%	0%	1%	0%	2%	1%	0%	1%	4%	3%	0%	3%	4%	4%	0%	0%	3%	3%		0%		
9:45 AM - 10:45 AM	Bicycles on Road	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	SE	1	1	
	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%		
	Total	0	536	39	200	239	0	433	1282	1715	0	64	46	110	0	0	1528	2064	S	0	0	
	PHF	0	0.91	0.51	0.93	0.87	0	0.93	0.98	0.99	0	0.64	0.77	0.74	0	0	0.98	0.98		0%		
	Approach %	0%	26%			12%	0%			83%	0%			5%	0%	0%	74%		W	21	21	
																				100%	26	26
Peak 2	Lights	0	549	94	255	349	0	332	1179	1511	0	123	38	161	0	0	1472	2021	N	5	5	
Specified Period	%	0%	99%	100%	100%	100%	0%	100%	98%	99%	0%	95%	95%	95%	0%	0%	98%	99%		100%		
12:00 PM - 9:00 PM	Other Vehicles	0	1	0	1	1	0	0	20	20	0	1	2	3	0	0	23	24	E	1	1	
One Hour Peak	%	0%	0%	0%	0%	0%	0%	0%	2%	1%	0%	1%	5%	2%	0%	0%	2%	1%		100%		
4:45 PM - 5:45 PM	Bicycles on Road	0	6	0	0	0	0	0	0	0	0	6	0	6	0	0	0	6	SE	0	0	
	%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	4%	0%	0%	0%	0%		0%		
	Total	0	556	94	256	350	0	332	1199	1531	0	130	40	170	0	0	1495	2051	S	1	1	
	PHF	0	0.93	0.81	0.88	0.86	0	0.95	0.98	0.97	0	0.79	0.83	0.89	0	0	0.97	0.98		100%		
	Approach %	0%	27%			17%	0%			75%	0%			8%	0%	0%	73%		W	42	42	
																				100%	49	49

Study Name 5299279 - Catherine and Metcalfe - Apr - 4th
Start Date Tuesday, April 04, 2017 7:00 AM
End Date Tuesday, April 04, 2017 6:00 PM
Site Code 36830103

Report Summary

Time Period	Class.	Southbound					Westbound					Northwestbound					Northbound					Eastbound					Crosswalk													
		R	T	BL	L	U	I	O	R	T	L	HL	U	I	O	HR	BR	BL	HL	U	I	O	HR	R	T	L	U	I	O	R	BR	T	L	U	I	O	Total	Ped	Total	
Peak 1	Lights	0	0	0	0	0	0	1677	40	342	0	0	0	382	0	0	729	731	0	0	1460	0	0	0	908	82	0	990	0	0	0	0	0	0	0	1155	2832	N	18	18
Specified Period	%	0%	0%	0%	0%	0%	0%	99%	95%	95%	0%	0%	0%	95%	0%	0%	99%	97%	0%	0%	98%	0%	0%	0%	100%	100%	0%	100%	0%	0%	0%	0%	0%	0%	0%	97%	98%		100%	
7:00 AM - 10:00 AM	Other Vehicles	0	0	0	0	0	0	14	2	15	0	0	0	17	0	0	8	24	0	0	32	0	0	0	4	0	0	4	0	0	0	0	0	0	0	39	53	E	0	0
One Hour Peak	%	0%	0%	0%	0%	0%	0%	1%	5%	4%	0%	0%	0%	4%	0%	0%	1%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	2%		0%	
8:00 AM - 9:00 AM	Bicycles on Road	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	SE	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	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	0	0	0	0	0	0	1691	42	359	0	0	0	401	0	0	737	755	0	0	1492	0	0	0	912	82	0	994	0	0	0	0	0	0	0	1196	2887	S	0	0
	PHF	0	0	0	0	0	0	0.93	0.52	0.95	0	0	0	0.88	0	0	0.92	0.94	0	0	0.97	0	0	0	0.93	0.89	0	0.93	0	0	0	0	0	0	0	0.98	0.95		0%	
	Approach %						0%	59%						14%	0%						52%	0%						34%	0%						0%	41%		W	7	7
																																							100%	
																																							25	25
Peak 2	Lights	1	0	0	0	0	1	656	28	294	0	0	0	322	0	0	274	473	0	0	747	0	0	0	354	78	0	432	0	0	0	0	0	0	0	846	1502	N	12	12
Specified Period	%	100%	0%	0%	0%	0%	100%	97%	88%	96%	0%	0%	0%	95%	0%	0%	98%	96%	0%	0%	97%	0%	0%	0%	98%	100%	0%	98%	0%	0%	0%	0%	0%	0%	0%	97%	97%		100%	
11:30 AM - 1:30 PM	Other Vehicles	0	0	0	0	0	0	18	4	11	0	0	0	15	0	0	6	18	0	0	24	0	0	0	8	0	0	8	0	0	0	0	0	0	0	29	47	E	0	0
One Hour Peak	%	0%	0%	0%	0%	0%	0%	3%	13%	4%	0%	0%	0%	4%	0%	0%	2%	4%	0%	0%	3%	0%	0%	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	3%	3%		0%	
12:15 PM - 1:15 PM	Bicycles on Road	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	SE	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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	1	0	0	0	0	1	674	32	306	0	0	0	338	0	0	280	491	0	0	771	0	0	0	362	78	0	440	0	0	0	0	0	0	0	876	1550	S	0	0
	PHF	0.25	0	0	0	0	0.25	0.87	0.67	0.88	0	0	0	0.92	0	0	0.74	0.91	0	0	0.84	0	0	0	0.9	0.81	0	0.93	0	0	0	0	0	0	0	0.89	0.88		0%	
	Approach %						0%	43%						22%	0%						50%	0%						28%	0%						0%	57%		W	17	17
																																							100%	
																																							29	29
Peak 3	Lights	0	0	0	0	0	0	771	61	349	0	0	0	410	0	0	382	811	0	0	1193	0	0	0	328	48	0	376	0	0	0	0	0	0	0	1208	1979	N	11	11
Specified Period	%	0%	0%	0%	0%	0%	0%	99%	100%	97%	0%	0%	0%	97%	0%	0%	99%	99%	0%	0%	99%	0%	0%	0%	100%	100%	0%	100%	0%	0%	0%	0%	0%	0%	0%	98%	99%		100%	
3:00 PM - 6:00 PM	Other Vehicles	0	0	0	0	0	0	4	0	11	0	0	0	11	0	0	3	8	0	0	11	0	0	0	1	0	0	1	0	0	0	0	0	0	0	19	23	E	0	0
One Hour Peak	%	0%	0%	0%	0%	0%	0%	1%	0%	3%	0%	0%	0%	3%	0%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%		0%	
5:00 PM - 6:00 PM	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SE	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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	0	0	0	0	0	0	775	61	360	0	0	0	421	0	0	385	819	0	0	1204	0	0	0	329	48	0	377	0	0	0	0	0	0	0	1227	2002	S	0	0
	PHF	0	0	0	0	0	0	0.95	0.85	0.92	0	0	0	0.92	0	0	0.78	0.95	0	0	0.89	0	0	0	0.82	0.75	0	0.81	0	0	0	0	0	0	0	0.95	0.96		0%	
	Approach %						0%	39%						21%	0%						60%	0%						19%	0%						0%	61%		W	27	27
																																							100%	
																																							38	38

Study Name 5299279 - Catherine and Metcalfe - Apr - 4th
Start Date Tuesday, April 04, 2017 7:00 AM
End Date Tuesday, April 04, 2017 6:00 PM
Site Code 36830103

Road Volumes

TMV Interval	Movement																								Grand Total						
	Southbound						Westbound						Northwestbound						Northbound							Eastbound					
	R	T	BL	L	U	Total	R	T	L	U	HL	Total	BL	U	HL	HR	BR	Total	R	T	L	U	HR	Total		R	T	L	U	BR	Total
4/4/2017 7:00	0	0	0	0	0	0	8	64	0	0	0	72	164	0	0	0	143	307	0	115	8	0	0	123	0	0	0	0	0	502	
Lights	0	0	0	0	0	0	8	61	0	0	0	69	158	0	0	0	142	300	0	113	6	0	0	119	0	0	0	0	0	488	
Other Vehicles	0	0	0	0	0	0	0	3	0	0	0	3	6	0	0	0	1	7	0	2	2	0	0	4	0	0	0	0	0	14	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4/4/2017 7:15	0	0	0	0	0	0	9	72	0	0	0	81	168	0	0	0	190	358	0	165	18	0	0	183	0	0	0	0	0	622	
Lights	0	0	0	0	0	0	8	68	0	0	0	76	165	0	0	0	188	353	0	164	16	0	0	180	0	0	0	0	0	609	
Other Vehicles	0	0	0	0	0	0	1	4	0	0	0	5	3	0	0	0	2	5	0	1	2	0	3	0	0	0	0	0	13		
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4/4/2017 7:30	0	0	0	0	0	0	5	63	0	0	0	68	191	0	0	0	147	338	0	201	10	0	0	211	0	0	0	0	0	617	
Lights	0	0	0	0	0	0	5	61	0	0	0	66	183	0	0	0	145	328	0	201	10	0	0	211	0	0	0	0	0	605	
Other Vehicles	0	0	0	0	0	0	0	2	0	0	0	2	8	0	0	0	2	10	0	0	0	0	0	0	0	0	0	0	12		
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4/4/2017 7:45	0	0	0	0	0	0	10	91	0	0	0	101	185	0	0	0	184	369	0	180	9	0	0	189	0	0	0	0	0	659	
Lights	0	0	0	0	0	0	10	88	0	0	0	98	180	0	0	0	184	364	0	178	8	0	0	186	0	0	0	0	0	648	
Other Vehicles	0	0	0	0	0	0	1	3	0	0	0	3	5	0	0	0	5	4	0	1	0	0	1	0	0	0	0	0	11		
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4/4/2017 8:00	0	0	0	0	0	0	6	86	0	0	0	92	200	0	0	0	181	381	0	210	18	0	0	228	0	0	0	0	0	701	
Lights	0	0	0	0	0	0	6	82	0	0	0	88	192	0	0	0	179	371	0	208	18	0	0	226	0	0	0	0	0	685	
Other Vehicles	0	0	0	0	0	0	0	4	0	0	0	4	8	0	0	0	2	10	0	2	0	0	2	0	0	0	0	0	16		
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4/4/2017 8:15	0	0	0	0	0	0	20	94	0	0	0	114	185	0	0	0	193	378	0	244	23	0	0	267	0	0	0	0	0	759	
Lights	0	0	0	0	0	0	19	90	0	0	0	109	180	0	0	0	190	370	0	243	23	0	0	266	0	0	0	0	0	745	
Other Vehicles	0	0	0	0	0	0	1	3	0	0	0	4	5	0	0	0	3	8	0	1	0	0	1	0	0	0	0	0	10	13	
Bicycles on Road	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
4/4/2017 8:30	0	0	0	0	0	0	10	89	0	0	0	99	187	0	0	0	163	350	0	230	21	0	0	251	0	0	0	0	0	700	
Lights	0	0	0	0	0	0	9	83	0	0	0	92	181	0	0	0	161	342	0	230	21	0	0	251	0	0	0	0	0	685	
Other Vehicles	0	0	0	0	0	0	1	5	0	0	0	6	6	0	0	0	2	8	0	0	0	0	0	0	0	0	0	0	14	14	
Bicycles on Road	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
4/4/2017 8:45	0	0	0	0	0	0	6	90	0	0	0	96	183	0	0	0	200	383	0	228	20	0	0	248	0	0	0	0	0	727	
Lights	0	0	0	0	0	0	6	87	0	0	0	93	178	0	0	0	199	377	0	227	20	0	0	247	0	0	0	0	0	717	
Other Vehicles	0	0	0	0	0	0	0	3	0	0	0	3	5	0	0	0	1	6	0	1	0	0	1	0	0	0	0	0	10	10	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2017 9:00	0	0	0	0	0	0	12	74	0	0	0	86	197	0	0	0	194	391	0	176	21	0	0	197	0	0	0	0	0	674	
Lights	0	0	0	0	0	0	12	66	0	0	0	78	194	0	0	0	191	385	0	174	20	0	0	194	0	0	0	0	0	657	
Other Vehicles	0	0	0	0	0	0	0	8	0	0	0	8	3	0	0	0	3	6	0	2	1	0	3	0	0	0	0	0	17	17	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2017 9:15	0	0	0	0	0	0	12	77	0	0	0	89	182	0	0	0	165	347	0	167	22	0	0	189	0	0	0	0	0	625	
Lights	0	0	0	0	0	0	12	76	0	0	0	88	174	0	0	0	159	333	0	166	18	0	0	184	0	0	0	0	0	605	
Other Vehicles	0	0	0	0	0	0	0	1	0	0	0	1	8	0	0	0	6	14	0	1	4	0	0	5	0	0	0	0	20	20	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2017 9:30	0	0	0	0	0	0	12	75	0	0	0	87	136	0	0	0	122	258	0	162	15	0	0	177	0	0	0	0	0	522	
Lights	0	0	0	0	0	0	11	70	0	0	0	81	130	0	0	0	119	249	0	160	15	0	0	175	0	0	0	0	0	505	
Other Vehicles	0	0	0	0	0	0	1	5	0	0	0	6	6	0	0	0	3	9	0	2	0	0	2	0	0	0	0	0	17	17	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2017 9:45	0	0	0	0	0	0	11	61	0	0	0	72	126	0	0	0	100	226	0	124	18	0	0	142	0	0	0	0	0	440	
Lights	0	0	0	0	0	0	11	58	0	0	0	69	119	0	0	0	99	218	0	121	17	0	0	138	0	0	0	0	0	425	
Other Vehicles	0	0	0	0	0	0	0	3	0	0	0	3	7	0	0	0	1	8	0	3	1	0	0	4	0	0	0	0	0	15	15
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2017 11:30	0	0	0	0	0	0	15	78	0	0	0	93	120	0	0	0	78	198	0	100	20	0	0	120	0	0	0	0	0	411	411
Lights	0	0	0	0	0	0	15	71	0	0	0	86	111	0	0	0	77	188	0	98	18	0	0	116	0	0	0	0	0	390	390
Other Vehicles	0	0	0	0	0	0	0	6	0	0	0	6	9	0	0	0	1	10	0	2	2	0	4	0	0	0	0	0	20	20	
Bicycles on Road	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
4/4/2017 11:45	0	0	0	0	0	0	8	67	0	0	0	75	110	0	0	0	81	191	0	96	21	0	0	117	0	0	0	0	0	383	383
Lights	0	0	0	0	0	0	8	67	0	0	0	75	102	0	0	0	79	181	0	94	21	0	0	115	0	0	0	0	0	371	371
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	2	10	0	2	0	0	2	0	0	0	0	0	12	12	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2017 12:00	0	0	0	0	0	0	10	75	0	0	0	85	112	0	0	0	69	181	0	73	17	0	0	90	0	0	0	0	0	356	356
Lights	0	0	0	0	0	0	10	74	0	0	0	84	107	0	0	0	69	176	0	73	17	0	0	90	0	0	0	0	0	350	350
Other Vehicles	0	0	0	0	0	0	0	1	0	0	0	1	5	0	0	0	5	0	0	0											



Turning Movement Count - Full Study Summary Report

MCLEOD ST E @ METCALFE ST E

Survey Date: Tuesday, April 13, 2010

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

AADT Factor
.90

Full Study

Period	METCALFE ST E									MCLEOD ST E									Grand Total
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT				
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT	
07:30 08:30	1042	0	0	1042	0	0	0	0	1042	0	0	0	0	0	222	0	222	222	1264
08:30 09:30	980	0	0	980	0	0	0	0	980	0	0	0	0	0	241	0	241	241	1221
11:30 12:30	437	0	0	437	0	0	0	0	437	0	0	0	0	0	104	0	104	104	541
12:30 13:30	433	0	0	433	0	0	0	0	433	0	0	0	0	0	121	0	121	121	554
14:00 15:00	361	0	0	361	0	0	0	0	361	0	0	0	0	0	118	0	118	118	479
15:00 16:00	372	0	0	372	0	0	0	0	372	0	0	0	0	0	129	0	129	129	501
16:00 17:00	338	0	0	338	0	0	0	0	338	0	0	0	0	0	137	0	137	137	475
17:00 18:00	333	0	0	333	0	0	0	0	333	0	0	0	0	0	166	0	166	166	499
Sub Total	4296	0	0	4296	0	0	0	0	4296	0	0	0	0	0	1238	0	1238	1238	5534
U Turns				0				0	0				0				0	0	0
Total	4296	0	0	4296	0	0	0	0	4296	0	0	0	0	0	1238	0	1238	1238	5534
EQ 12Hr	5971	0	0	5971	0	0	0	0	5971	0	0	0	0	0	1721	0	1721	1721	7692
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	5374	0	0	5374	0	0	0	0	5374	0	0	0	0	0	1549	0	1549	1549	6923
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	7040	0	0	7040	0	0	0	0	7040	0	0	0	0	0	2029	0	2029	2029	9069
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.

Turning Movement Count - Peak Hour Diagram

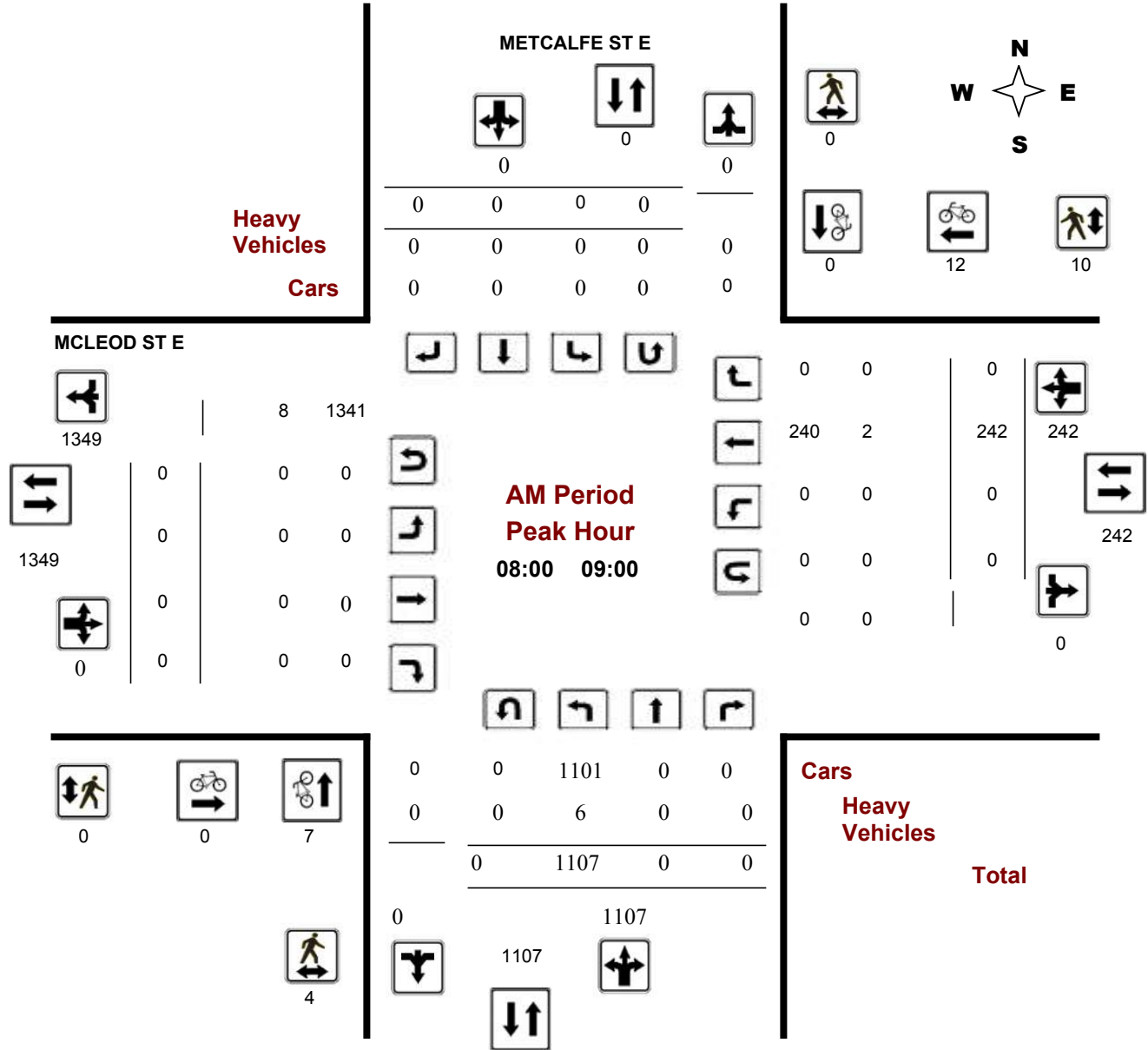
MCLEOD ST E @ METCALFE ST E

Survey Date: Tuesday, April 13, 2010

WO No: 33669

Start Time: 07:00

Device:



Turning Movement Count - Peak Hour Diagram

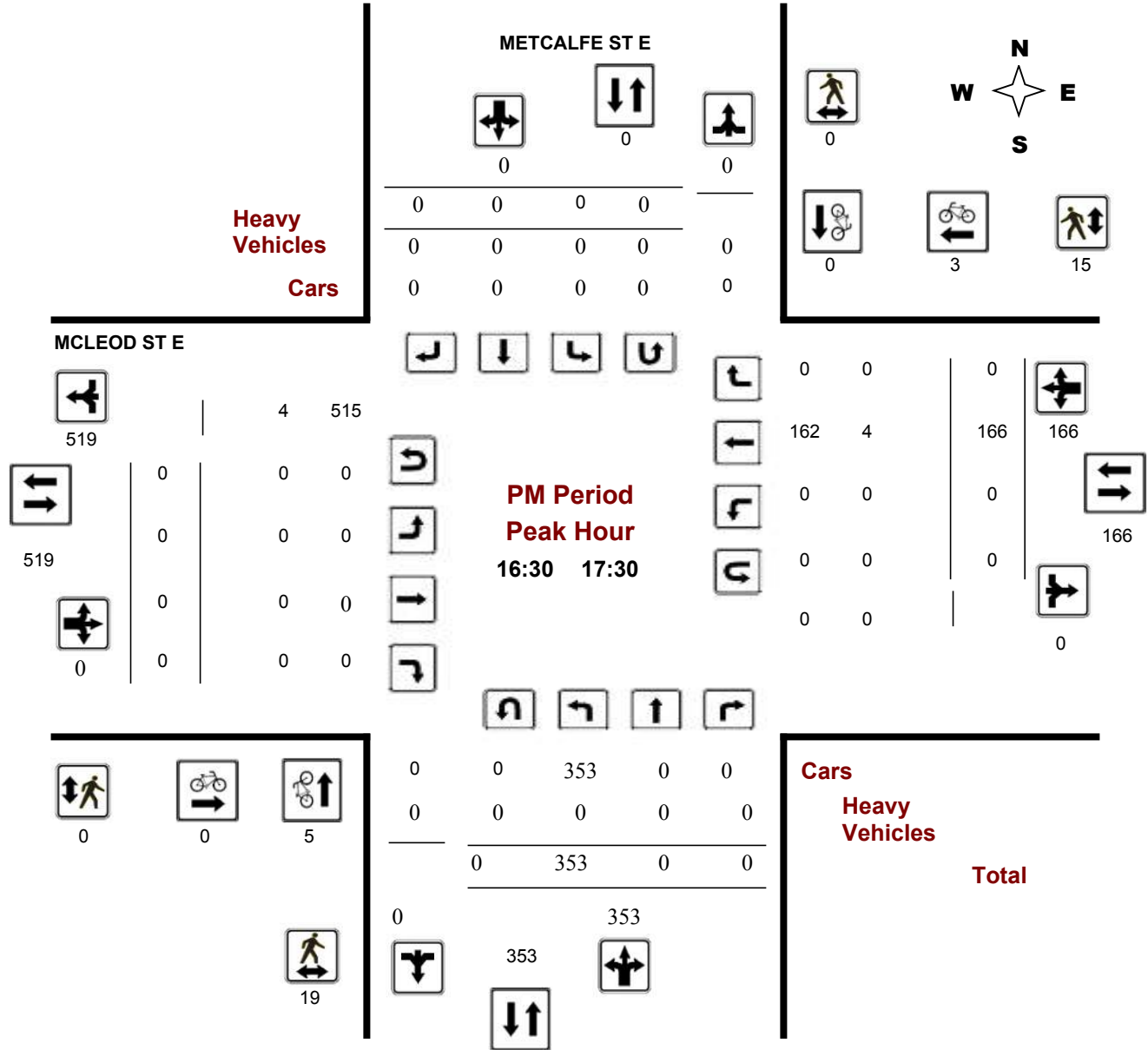
MCLEOD ST E @ METCALFE ST E

Survey Date: Tuesday, April 13, 2010

WO No: 33669

Start Time: 07:00

Device:





Turning Movement Count - Full Study Summary Report

MCLEOD ST W @ METCALFE ST

Survey Date: Tuesday, April 04, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

Period	METCALFE ST									MCLEOD ST W									Grand Total	
	Northbound				Southbound					Eastbound			Westbound							
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT		
07:00 08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	989	1049	1049	1049	
08:00 09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	1216	1291	1291	1291	
09:00 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	116	854	970	970	970	
11:30 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	396	492	492	492	
12:30 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	418	512	512	512	
15:00 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	107	387	494	494	494	
16:00 17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109	405	514	514	514	
17:00 18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	145	420	565	565	565	
Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	802	5085	5887	5887	5887	
U Turns				0						0				0						
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	802	5085	5887	5887	5887	
EQ 12Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1115	7068	8183	8183	8183	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39							
AVG 12Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1003	6361	7365	7365	7365	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90							
AVG 24Hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1314	8333	9648	9648	9648	
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 - Peak Hour Diagram

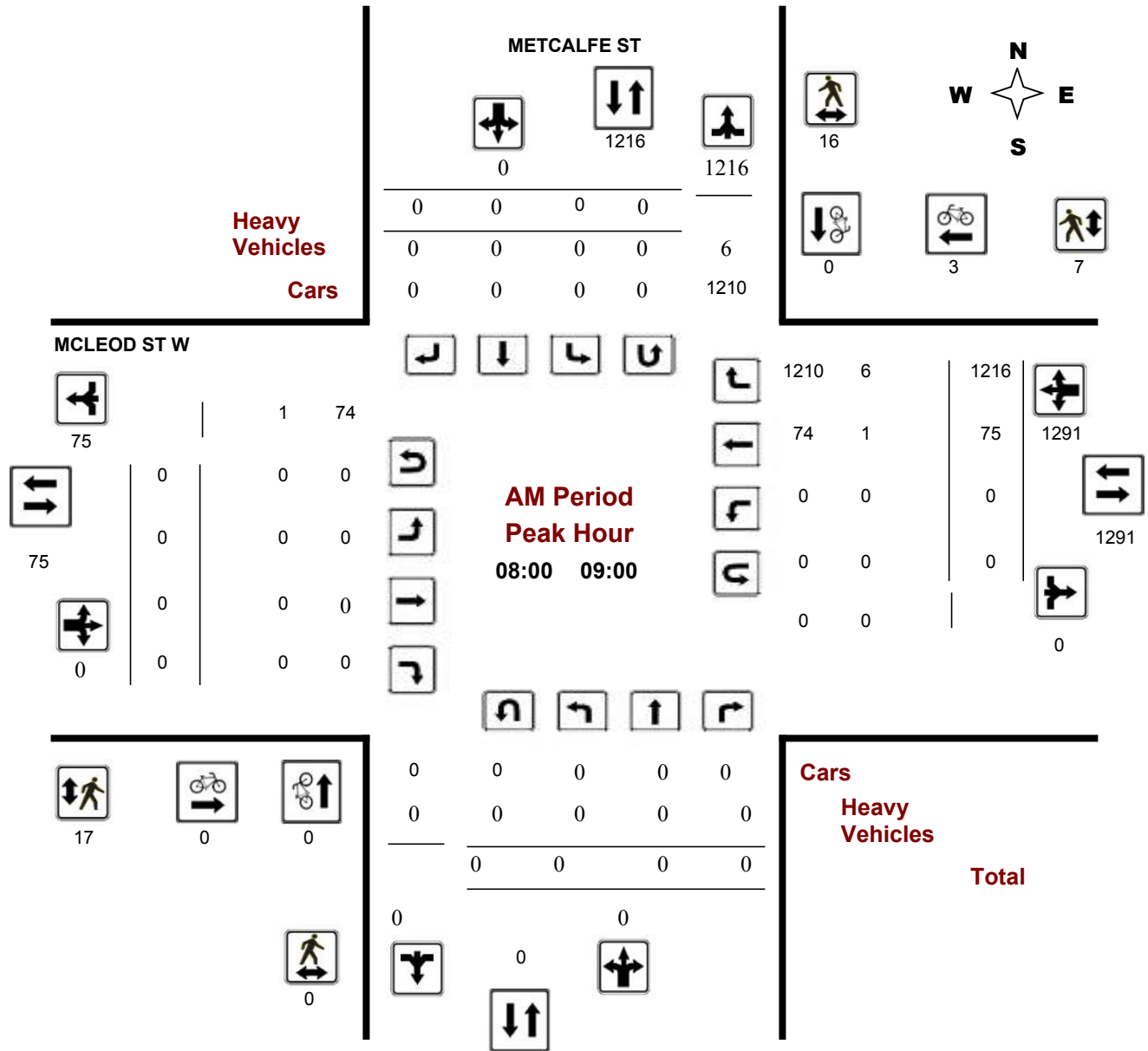
MCLEOD ST W @ METCALFE ST

Survey Date: Tuesday, April 04, 2017

Start Time: 07:00

WO No: 36832

Device: Miovision



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

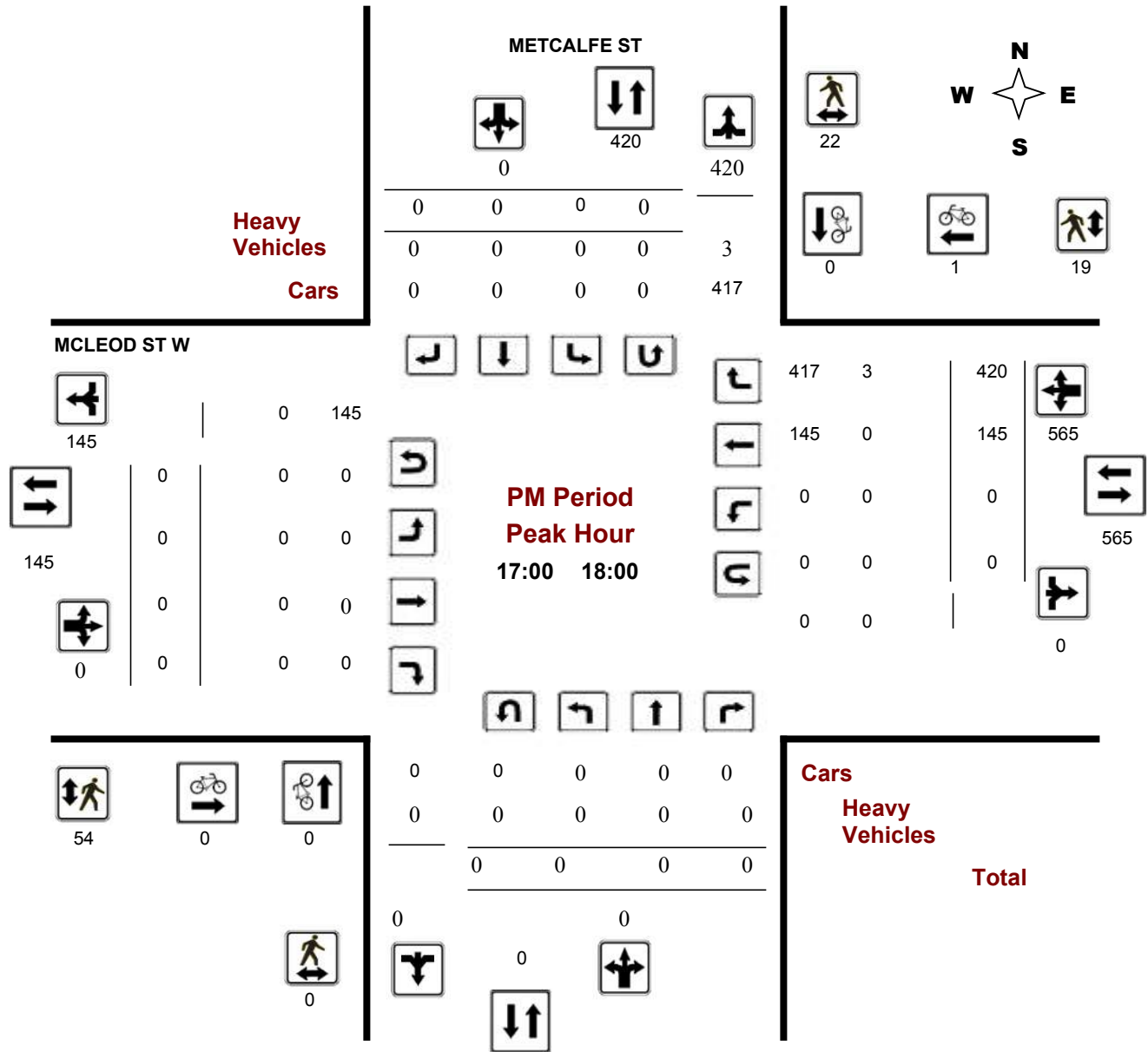
MCLEOD ST W @ METCALFE ST

Survey Date: Tuesday, April 04, 2017

Start Time: 07:00

WO No: 36832

Device: Miovision



Turning Movement Count - Full Study Summary Report

ARGYLE AVE N @ ELGIN ST

Survey Date: Wednesday, May 11, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

Period	ELGIN ST									ARGYLE AVE N									Grand Total	
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT					
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT		
07:00 08:00	0	336	0	336	0	253	0	253	589	387	0	105	492	0	0	0	0	492	1081	
08:00 09:00	0	426	0	426	0	315	0	315	741	536	0	126	662	0	0	0	0	662	1403	
09:00 10:00	0	243	0	243	0	293	0	293	536	398	0	127	525	0	0	0	0	525	1061	
11:30 12:30	0	190	0	190	0	384	0	384	574	319	0	162	481	0	0	0	0	481	1055	
12:30 13:30	0	159	0	159	0	441	1	442	601	279	0	107	386	0	0	0	0	386	987	
15:00 16:00	0	150	0	150	0	675	0	675	825	294	0	156	450	0	0	0	0	450	1275	
16:00 17:00	0	185	0	185	0	796	0	796	981	319	0	206	525	0	0	0	0	525	1506	
17:00 18:00	0	198	0	198	0	704	2	706	904	368	0	236	604	0	0	0	0	604	1508	
Sub Total	0	1887	0	1887	0	3861	3	3864	5751	2900	0	1225	4125	0	0	0	0	4125	9876	
U Turns				0				0	0				0				0	0	0	0
Total	0	1887	0	1887	0	3861	3	3864	5751	2900	0	1225	4125	0	0	0	0	4125	9876	
EQ 12Hr	0	2623	0	2623	0	5367	4	5371	7994	4031	0	1703	5734	0	0	0	0	5734	13728	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39							
AVG 12Hr	0	2361	0	2361	0	4830	4	4834	7195	3628	0	1532	5160	0	0	0	0	5160	12355	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90							
AVG 24Hr	0	3092	0	3092	0	6327	5	6332	9424	4753	0	2008	6760	0	0	0	0	6760	16184	
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.

Turning Movement Count - Peak Hour Diagram

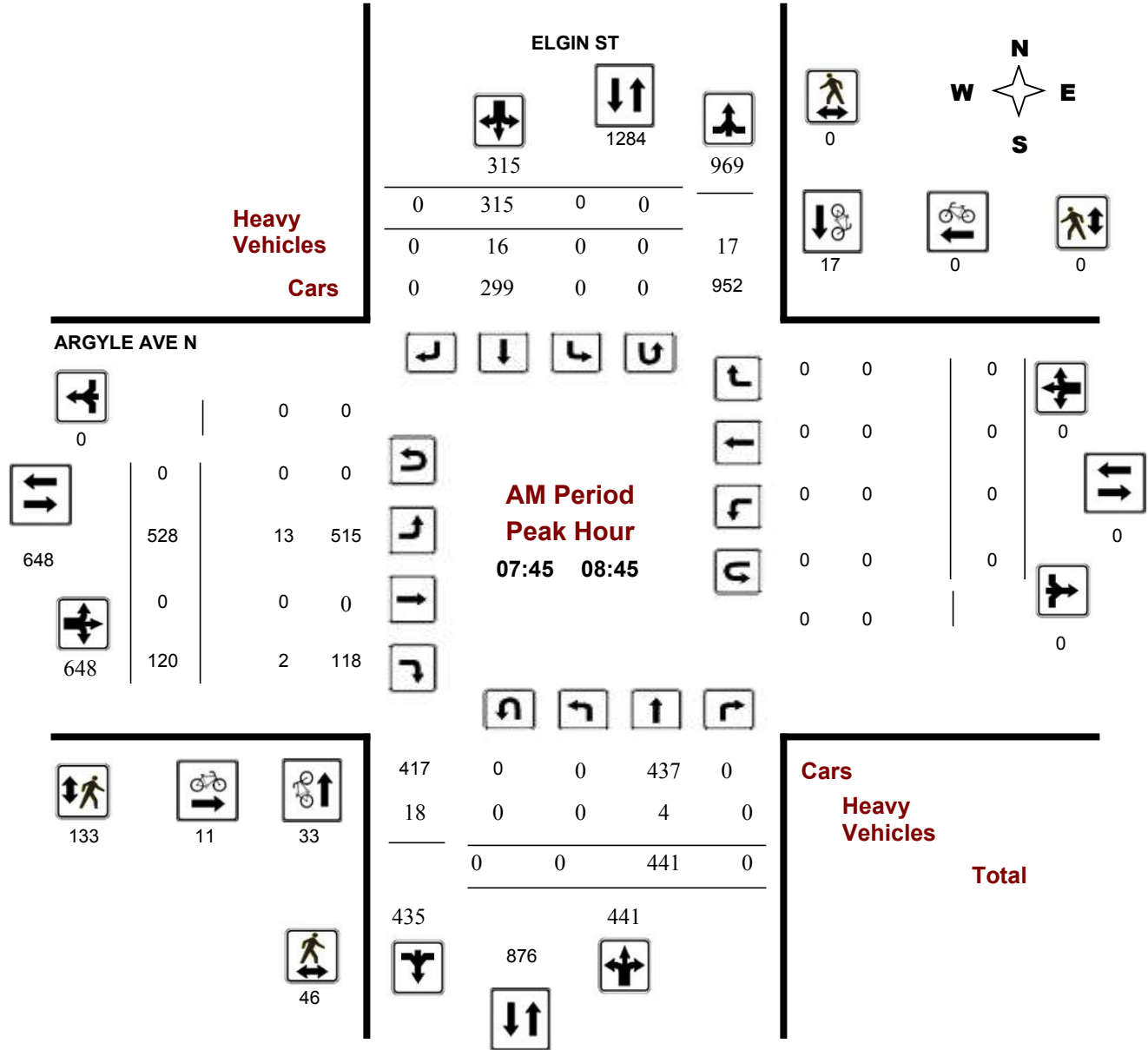
ARGYLE AVE N @ ELGIN ST

Survey Date: Wednesday, May 11, 2016

Start Time: 07:00

WO No: 35909

Device: Miovision



Turning Movement Count - Peak Hour Diagram

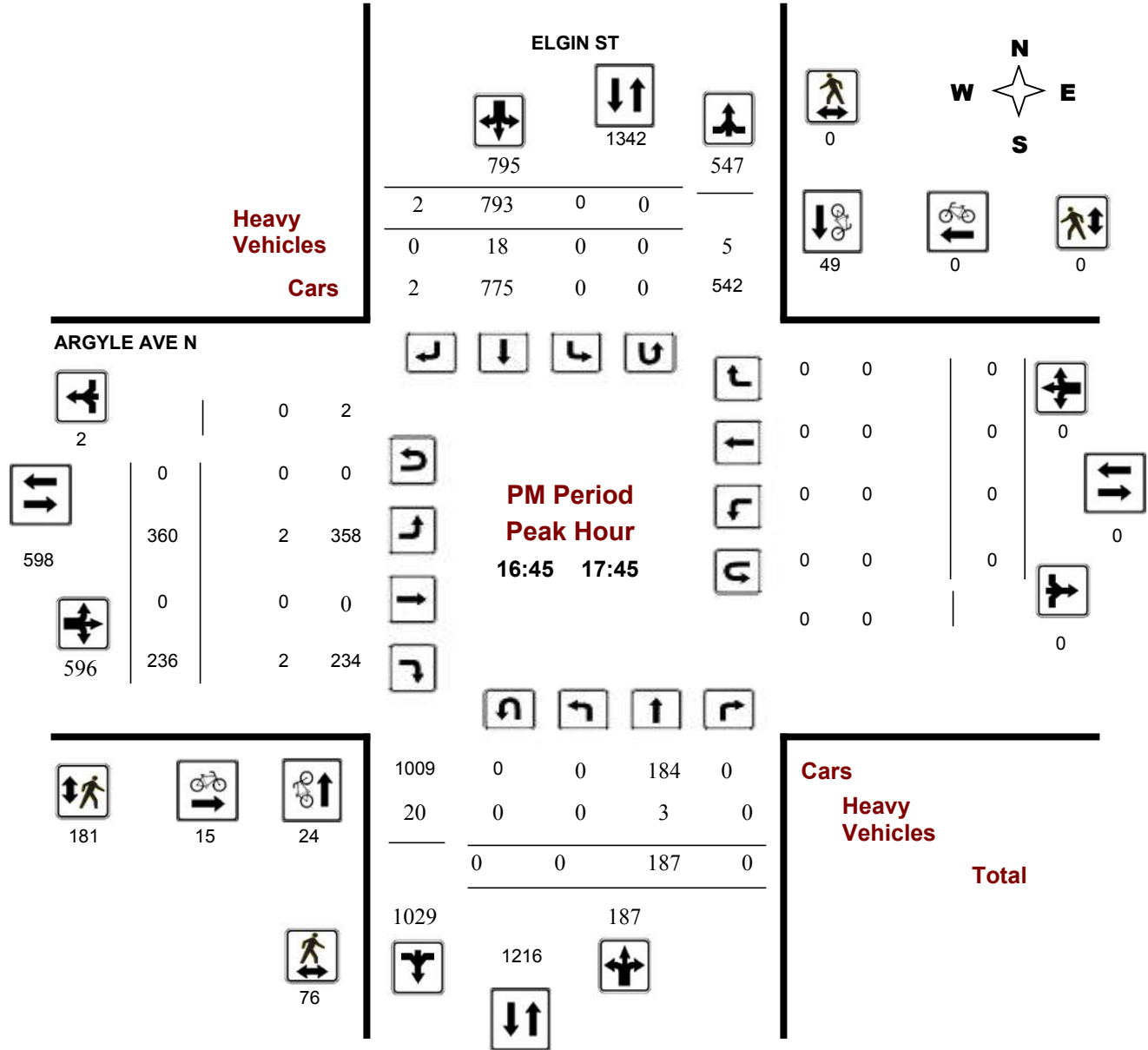
ARGYLE AVE N @ ELGIN ST

Survey Date: Wednesday, May 11, 2016

Start Time: 07:00

WO No: 35909

Device: Miovision



Turning Movement Count - Full Study Summary Report

CATHERINE ST @ ELGIN ST

Survey Date: Wednesday, May 11, 2016

Total Observed U-Turns

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

AADT Factor

.90

Full Study

Period	ELGIN ST									CATHERINE ST									Grand Total
	Northbound			Southbound			STR TOT	Eastbound			Westbound			WB TOT	STR TOT				
	LT	ST	RT	NB TOT	LT	ST		RT	SB TOT	LT	ST	RT	EB TOT			LT	ST	RT	
07:00 08:00	79	184	0	263	0	212	116	328	591	0	0	0	0	44	79	155	278	278	869
08:00 09:00	103	214	0	317	0	254	146	400	717	0	0	0	0	54	131	198	383	383	1100
09:00 10:00	73	128	0	201	0	229	162	391	592	0	0	0	0	41	88	95	224	224	816
11:30 12:30	66	113	0	179	0	327	204	531	710	0	0	0	0	61	102	61	224	224	934
12:30 13:30	79	103	0	182	0	313	216	529	711	0	0	0	0	43	94	50	187	187	898
15:00 16:00	76	75	0	151	0	565	245	810	961	0	0	0	0	107	155	82	344	344	1305
16:00 17:00	56	106	0	162	0	794	215	1009	1171	0	0	0	0	116	149	80	345	345	1516
17:00 18:00	55	90	0	145	0	678	199	877	1022	0	0	0	0	103	117	98	318	318	1340
Sub Total	587	1013	0	1600	0	3372	1503	4875	6475	0	0	0	0	569	915	819	2303	2303	8778
U Turns				0				1	1				0				0	0	1
Total	587	1013	0	1600	0	3372	1503	4876	6476	0	0	0	0	569	915	819	2303	2303	8779
EQ 12Hr	816	1408	0	2224	0	4687	2089	6778	9002	0	0	0	0	791	1272	1138	3201	3201	12203
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	734	1267	0	2002	0	4218	1880	6100	8102	0	0	0	0	712	1145	1025	2881	2881	10983
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	962	1660	0	2622	0	5526	2463	7991	10613	0	0	0	0	932	1500	1342	3774	3774	14387
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.

Turning Movement Count - Peak Hour Diagram

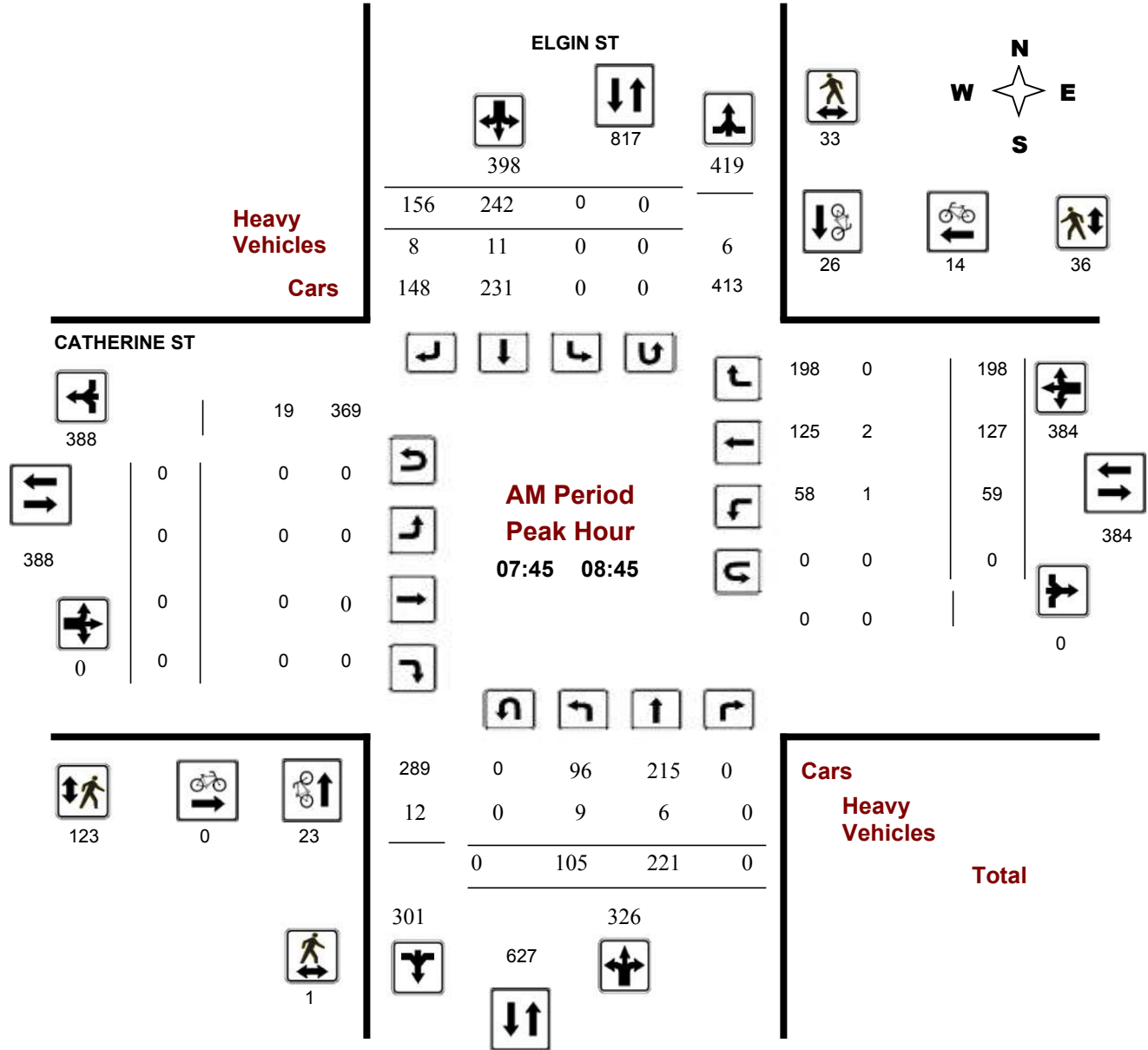
CATHERINE ST @ ELGIN ST

Survey Date: Wednesday, May 11, 2016

Start Time: 07:00

WO No: 35907

Device: Miovision



Turning Movement Count - Peak Hour Diagram

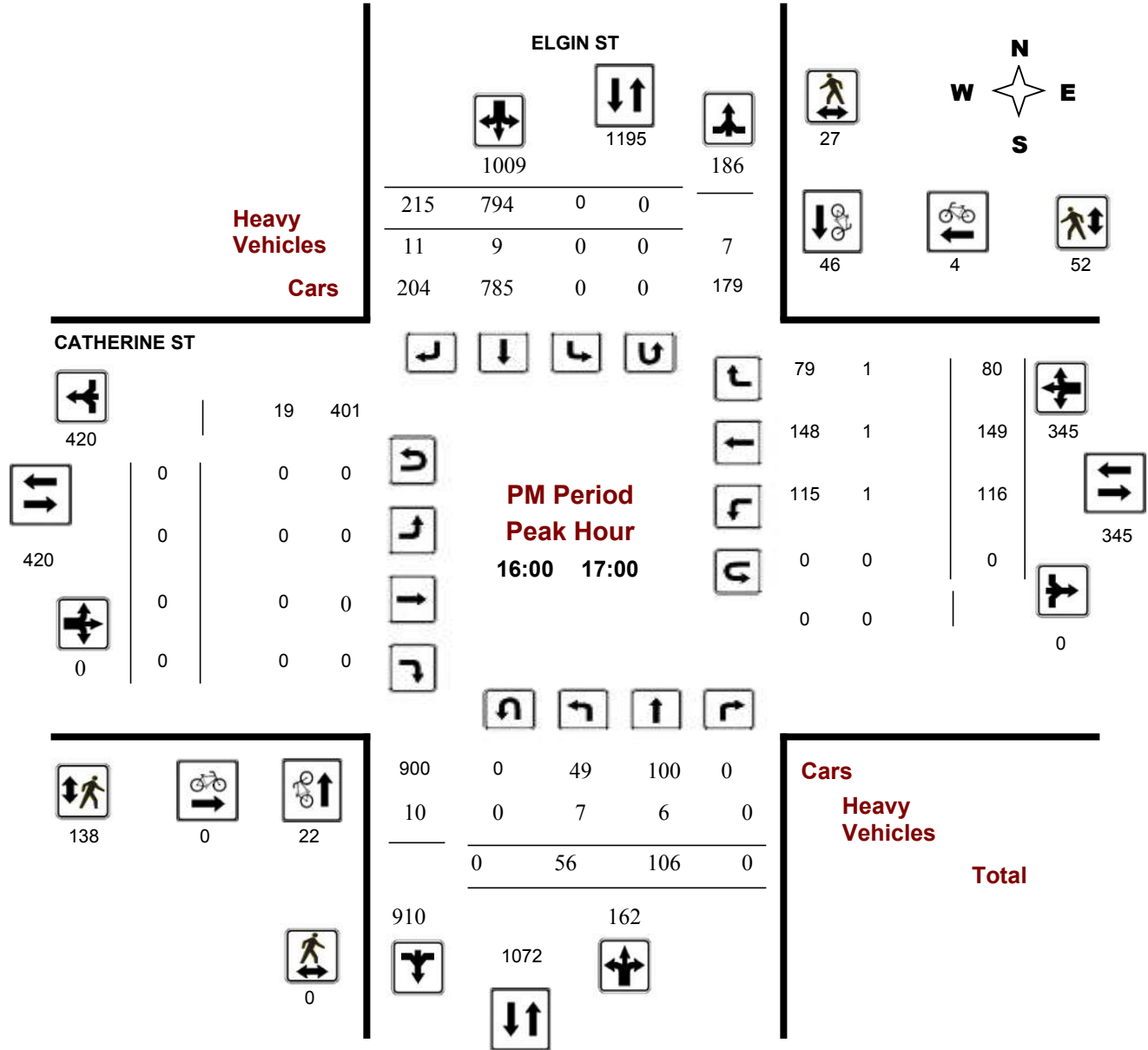
CATHERINE ST @ ELGIN ST

Survey Date: Wednesday, May 11, 2016

Start Time: 07:00

WO No: 35907

Device: Miovision



APPENDIX E

Collision Records



City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2013 **To:** December 31, 2017

Location: ARGYLE AVE @ O'CONNOR ST

Traffic Control: Traffic signal

Total Collisions: 35

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2013-Apr-20, Sat, 10:40	Clear	Sideswipe	P.D. only	Wet	South	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle	
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	
2013-Apr-24, Wed, 19:19	Rain	Angle	P.D. only	Wet	South	Going ahead	Passenger van	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
2013-Jun-13, Thu, 16:40	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Mar-13, Wed, 14:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Turning left	Pick-up truck	Other motor vehicle	
2013-Aug-13, Tue, 15:40	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2013-Aug-29, Thu, 15:27	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	

					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Nov-13, Wed,12:50	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Nov-26, Tue,08:45	Clear	SMV other	Non-fatal injury	Wet	South	Turning left	Passenger van	Pedestrian	1
2013-Dec-19, Thu,15:14	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2014-Jan-02, Thu,17:31	Clear	Angle	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jan-02, Thu,23:08	Clear	Turning movement	P.D. only	Packed snow	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jan-08, Wed,15:16	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Feb-11, Tue,08:20	Clear	Rear end	P.D. only	Loose snow	South	Overtaking	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Delivery van	Other motor vehicle	

2014-Feb-11, Tue,20:37	Clear	SMV other	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Pedestrian	1
2014-Feb-13, Thu,10:50	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Delivery van	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jun-02, Mon,13:57	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jul-14, Mon,18:20	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2014-Oct-25, Sat,21:23	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2014-Oct-25, Sat,23:42	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Dec-17, Wed,06:45	Rain	Angle	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
2015-Feb-04, Wed,14:16	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Pick-up truck	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	

2015-Feb-11, Wed,12:06	Clear	Angle	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle	
					East	Going ahead	Passenger van	Other motor vehicle	
2015-Mar-05, Thu,13:19	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-10, Fri,15:00	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Passenger van	Other motor vehicle	
2015-Jun-26, Fri,16:45	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2015-Sep-17, Thu,09:36	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Oct-24, Sat,09:06	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Pedestrian	1
2015-Nov-06, Fri,19:57	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Mar-16, Wed,15:53	Clear	Turning movement	P.D. only	Dry	South	Turning left	Unknown	Other motor vehicle	

					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Apr-28, Thu,10:29	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Ambulance	Other motor vehicle
2016-Nov-30, Wed,14:11	Rain	SMV other	P.D. only	Wet	South	Turning left	Truck - closed	Other
2017-Apr-27, Thu,15:10	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Cyclist
					South	Going ahead	Bicycle	Other motor vehicle
2017-May-05, Fri,20:47	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Sep-01, Fri,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle
2017-Nov-13, Mon,17:30	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Cyclist
					South	Going ahead	Bicycle	Other motor vehicle



City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2012 **To:** December 31, 2017

Location: ARGYLE AVE N @ ELGIN ST

Traffic Control: Traffic signal

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2012-May-04, Fri,09:30	Clear	Rear end	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Pick-up truck	Other motor vehicle	
2012-Nov-01, Thu,11:00	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Nov-23, Fri,20:15	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: ARGYLE AVE S @ ELGIN ST

Traffic Control: Stop sign

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2013-May-16, Thu,17:04	Clear	Other	P.D. only	Dry	East	Reversing	Truck - dump	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2013-Jun-06, Thu,17:20	Rain	Angle	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

2016-Aug-07, Sun,14:22	Clear	Angle	P.D. only	Dry	South	Turning left	Passenger van	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2017-Jan-18, Wed,14:17	Snow	Rear end	P.D. only	Packed snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Feb-11, Sat,05:00	Snow	Angle	P.D. only	Packed snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle

Location: ARGYLE AVE W @ METCALFE ST

Traffic Control: Traffic signal

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-03, Mon,22:00	Clear	Turning movement	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Jul-24, Fri,12:50	Clear	Sideswipe	Non-fatal injury	Dry	East	Going ahead	Bicycle	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jun-22, Wed,07:47	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	

2017-Mar-06, Mon,18:56	Freezing Rain	Sideswipe	P.D. only	Ice	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle

2017-Jul-12, Wed,23:30	Rain	SMV other	Non-fatal injury	Wet	North	Turning right	Automobile, station wagon	Curb
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Location: CATHERINE ST @ ELGIN ST

Traffic Control: Traffic signal

Total Collisions: 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2012-Jan-18, Wed,14:40	Rain	Angle	Non-fatal injury	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Apr-05, Thu,00:00	Clear	SMV other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Pole (utility, power)	
2012-Jun-26, Tue,18:50	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2012-Aug-15, Wed,12:09	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Nov-18, Sun,00:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

2012-Nov-22, Thu,09:33	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Feb-19, Tue,13:57	Snow	Rear end	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Police vehicle	Other motor vehicle
2013-May-21, Tue,20:40	Rain	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jul-05, Fri,15:06	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2013-Dec-13, Fri,15:26	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Dec-19, Thu,16:15	Clear	Turning movement	P.D. only	Slush	South	Turning right	Pick-up truck	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2014-Apr-08, Tue,11:46	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2014-Jul-23, Wed,17:14	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Aug-31, Sun,23:28	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-19, Wed,14:32	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-04, Wed,14:57	Snow	Rear end	Non-fatal injury	Loose snow	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-18, Wed,13:00	Clear	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-31, Sun,18:58	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-12, Tue,19:58	Snow	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-30, Sat,23:21	Clear	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle

					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Apr-05, Tue,09:58	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Apr-28, Thu,17:29	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-08, Thu,19:42	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Dec-16, Fri,18:10	Clear	Turning movement	Non-fatal injury	Slush	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2016-Dec-23, Fri,06:39	Clear	Angle	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Feb-15, Wed,08:20	Snow	Sideswipe	P.D. only	Loose snow	West	Turning left	Unknown	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Feb-15, Wed,19:11	Snow	Sideswipe	P.D. only	Loose snow	West	Turning right	Unknown	Other motor vehicle
					West	Overtaking	Automobile, station wagon	Other motor vehicle

2017-Feb-20, Mon,13:15	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jun-06, Tue,04:00	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jul-17, Mon,15:31	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2017-Nov-16, Thu,12:41	Clear	SMV other	P.D. only	Dry	West	Turning left	Automobile, station wagon	Ran off road
2017-Nov-23, Thu,17:59	Clear	Angle	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-23, Sat,14:21	Snow	Angle	Non-fatal injury	Loose snow	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

Location: CATHERINE ST @ METCALFE ST

Traffic Control: Traffic signal

Total Collisions: 55

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2012-Jan-10, Tue,09:00	Clear	Angle	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle	

					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Jan-10, Tue, 14:32	Clear	Angle	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Feb-05, Sun, 11:30	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2012-Feb-11, Sat, 16:25	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Feb-20, Mon, 12:27	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Passenger van	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Apr-10, Tue, 08:45	Clear	SMV other	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Pedestrian	1
2012-May-08, Tue, 14:02	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2012-May-10, Thu, 14:22	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	
					West	Going ahead	Truck - dump	Other motor vehicle	
2012-Dec-24, Mon, 11:37	Clear	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	

					West	Going ahead	Delivery van	Other motor vehicle
2013-Feb-09, Sat,20:09	Snow	SMV unattended vehicle	P.D. only	Loose snow	West	Unknown	Unknown	Unattended vehicle
2013-Feb-16, Sat,16:54	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Mar-11, Mon,01:36	Clear	Rear end	Non-fatal injury	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Police vehicle	Other motor vehicle
2013-Aug-30, Fri,00:59	Clear	Angle	P.D. only	Dry	North	Going ahead	Police vehicle	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2013-Sep-21, Sat,19:20	Rain	Turning movement	P.D. only	Wet	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2013-Dec-25, Wed,12:48	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jan-22, Wed,09:53	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2014-Mar-30, Sun,23:18	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Truck and trailer	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Apr-13, Sun,11:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Apr-26, Sat,22:25	Rain	Sideswipe	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-May-14, Wed,14:00	Clear	Other	P.D. only	Dry	East	Reversing	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-May-23, Fri,16:33	Clear	Turning movement	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jun-10, Tue,08:52	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jul-04, Fri,09:00	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2014-Jul-11, Fri,11:10	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	

2014-Jul-25, Fri,13:16	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-03, Wed,09:01	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-22, Mon,08:53	Clear	SMV other	P.D. only	Dry	North	Turning left	Truck and trailer	Pole (utility, power)
2014-Sep-25, Thu,12:17	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Oct-31, Fri,00:00	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-25, Sun,16:24	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-21, Sat,21:23	Snow	Rear end	P.D. only	Packed snow	West	Slowing or stopping	Police vehicle	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Apr-17, Fri,17:20	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle

					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Jun-14, Sun,22:20	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Overtaking	Automobile, station wagon	Other motor vehicle
2015-Jul-29, Wed,11:52	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Police vehicle	Other motor vehicle
2015-Aug-12, Wed,18:00	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2015-Aug-20, Thu,16:29	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-28, Fri,12:09	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Sep-09, Wed,13:59	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Sep-10, Thu,08:23	Clear	Rear end	P.D. only	Dry	West	Going ahead	Truck - dump	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2015-Oct-22, Thu,11:50	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-10, Thu,18:00	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-11, Mon,10:19	Snow	Rear end	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Municipal transit bus	Other motor vehicle
2016-Oct-06, Thu,09:35	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Nov-27, Sun,19:30	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Dec-23, Fri,07:57	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Changing lanes	Automobile, station wagon	Other motor vehicle
2017-Jan-06, Fri,20:00	Clear	Sideswipe	P.D. only	Wet	East	Unknown	Pick-up truck	Other motor vehicle
					East	Unknown	Truck and trailer	Other motor vehicle

2017-Feb-01, Wed,20:24	Snow	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Apr-01, Sat,18:51	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2017-Sep-04, Mon,13:00	Clear	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Nov-06, Mon,13:23	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Truck - dump	Other motor vehicle
2017-Nov-30, Thu,15:25	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Municipal transit bus	Other motor vehicle
2017-Dec-08, Fri,09:12	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-17, Mon,16:00	Clear	Rear end	P.D. only	Dry	West	Unknown	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jul-21, Fri,17:10	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Oct-09, Mon,19:40	Clear	Rear end	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

Location: CATHERINE ST btwn METCALFE ST & ELGIN ST

Traffic Control: No control

Total Collisions: 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2012-Jan-11, Wed,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	West	Unknown	Unknown	Unattended vehicle	
2012-Feb-20, Mon,13:00	Unknown	SMV other	P.D. only	Unknown	Unknown	Unknown	Police vehicle	Snowbank/drift	
2012-Dec-24, Mon,15:40	Clear	SMV unattended vehicle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Unattended vehicle	
2013-Jun-27, Thu,13:05	Clear	Other	P.D. only	Dry	North	Reversing	Police vehicle	Other motor vehicle	
					South	Stopped	Police vehicle	Other motor vehicle	
2014-Oct-03, Fri,10:55	Clear	SMV unattended vehicle	P.D. only	Dry	West	Going ahead	Police vehicle	Unattended vehicle	
2015-Jan-31, Sat,18:00	Snow	SMV unattended vehicle	P.D. only	Wet	Unknown	Unknown	Unknown	Unattended vehicle	
2016-Nov-03, Thu,12:59	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	

					West	Going ahead	Passenger van	Other motor vehicle
2017-May-02, Tue,12:38	Rain	SMV unattended vehicle	P.D. only	Wet	West	Going ahead	Pick-up truck	Unattended vehicle
2017-Oct-16, Mon,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle
2017-Nov-09, Thu,15:00	Clear	SMV unattended vehicle	P.D. only	Dry	West	Unknown	Unknown	Unattended vehicle

Location: CATHERINE ST btwn O'CONNOR ST & TO BE DETERMINED

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Aug-28, Wed,22:43	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Jan-12, Mon,11:08	Clear	Other	P.D. only	Wet	East	Going ahead	Snow plow	Pole (utility, power)	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2017-Nov-03, Fri,11:35	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	
					West	Stopped	Passenger van	Other motor vehicle	

Location: CATHERINE ST btwn TO BE DETERMINED & METCALFE ST (2)

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Sep-23, Tue,07:40	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Jan-08, Fri,17:34	Clear	Rear end	Non-fatal injury	Wet	West	Slowing or stopping	Police vehicle	Skidding/sliding	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-16, Thu,15:22	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: CATHERINE ST/HWY 417 O'CONN IC119BR76 @ O'CONN

Traffic Control: Traffic signal

Total Collisions: 95

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2012-Jan-03, Tue,16:25	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2012-Jun-27, Wed,10:36	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	

2012-Jul-17, Tue,23:07	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Jul-26, Thu,21:20	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Aug-09, Thu,00:15	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Aug-26, Sun,22:42	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Sep-01, Sat,00:04	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Changing lanes	Automobile, station wagon	Other motor vehicle
2012-Sep-02, Sun,19:04	Clear	Other	P.D. only	Dry	East	Reversing	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2012-Sep-25, Tue,21:30	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2012-Dec-25, Tue,21:10	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle

					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jan-17, Thu,09:31	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Changing lanes	Pick-up truck	Other motor vehicle
2013-Jan-23, Wed,09:57	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2013-Feb-08, Fri,11:43	Snow	Sideswipe	P.D. only	Loose snow	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2013-Feb-16, Sat,20:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2013-Feb-17, Sun,02:00	Clear	Rear end	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2013-Mar-20, Wed,09:41	Clear	Angle	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-May-29, Wed,12:45	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle

2013-Jun-03, Mon,12:20	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - dump	Other motor vehicle
					West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Stopped	Delivery van	Other motor vehicle

2013-Jun-11, Tue,15:30	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle

2013-Jun-14, Fri,11:04	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
					South	Stopped	Passenger van	Other motor vehicle

2013-Jun-22, Sat,16:10	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle

2013-Jun-24, Mon,12:10	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2013-Jul-07, Sun,08:00	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle

2013-Jul-15, Mon,12:28	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
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					West	Going ahead	Pick-up truck	Other motor vehicle
2013-Aug-19, Mon, 19:20	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Sep-16, Mon, 19:54	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Nov-06, Wed, 10:55	Clear	Turning movement	P.D. only	Dry	West	Turning left	Truck - tractor	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2013-Nov-12, Tue, 08:35	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2014-Jan-21, Tue, 20:01	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Feb-11, Tue, 11:35	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - dump	Other motor vehicle
					West	Changing lanes	Automobile, station wagon	Other motor vehicle
2014-May-01, Thu, 08:51	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-May-23, Fri,11:50	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jul-06, Sun,22:47	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jul-13, Sun,09:57	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2014-Jul-17, Thu,17:41	Clear	Turning movement	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-18, Thu,08:44	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Truck - dump	Other motor vehicle
2014-Sep-28, Sun,17:03	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-08, Mon,15:40	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck - closed	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle

2014-Dec-11, Thu,16:51	Clear	Other	P.D. only	Wet	East	Reversing	Passenger van	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2014-Dec-22, Mon,14:30	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-03, Sat,12:40	Snow	SMV other	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Ran off road
2015-Jan-04, Sun,18:43	Clear	Angle	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-15, Thu,10:39	Clear	Turning movement	P.D. only	Wet	West	Turning left	Truck and trailer	Other motor vehicle
					West	Turning left	Passenger van	Other motor vehicle
2015-Jan-16, Fri,19:00	Clear	Rear end	P.D. only	Slush	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-22, Thu,10:01	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Jan-27, Tue,08:10	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-02, Mon,10:04	Snow	SMV other	P.D. only	Packed snow	West	Going ahead	Automobile, station wagon	Pole (sign, parking meter)
2015-Mar-07, Sat,10:38	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Mar-13, Fri,14:12	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Mar-30, Mon,08:10	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Apr-26, Sun,20:58	Clear	SMV other	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Pole (sign, parking meter)
2015-May-01, Fri,14:58	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-07, Thu,22:04	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Jun-09, Tue,11:20	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Police vehicle	Other motor vehicle	
2015-Jun-10, Wed,21:38	Clear	Angle	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-01, Wed,12:30	Rain	Angle	P.D. only	Wet	West	Going ahead	Pick-up truck	Ran off road	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jul-03, Fri,15:20	Clear	Turning movement	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jul-23, Thu,16:57	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Passenger van	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Aug-14, Fri,11:53	Clear	SMV other	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Pedestrian	1
2015-Aug-18, Tue,16:07	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2015-Aug-26, Wed,13:22	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck - dump	Other motor vehicle	
					West	Turning left	Police vehicle	Other motor vehicle	

2015-Oct-22, Thu,10:38	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - dump	Other motor vehicle
					West	Changing lanes	Automobile, station wagon	Other motor vehicle
2015-Nov-29, Sun,14:28	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-23, Wed,18:09	Rain	Angle	Non-fatal injury	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-01, Tue,15:50	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Truck and trailer	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-19, Tue,14:18	Clear	Sideswipe	P.D. only	Loose snow	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-25, Mon,20:06	Clear	Angle	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-28, Thu,16:00	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2016-Feb-18, Thu,08:23	Snow	SMV other	P.D. only	Ice	South	Going ahead	Automobile, station wagon	Skidding/sliding

2016-May-14, Sat,13:44	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jul-04, Mon,16:21	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Truck and trailer	Other motor vehicle
2016-Jul-11, Mon,19:04	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jul-31, Sun,09:40	Clear	Other	P.D. only	Dry	East	Reversing	Pick-up truck	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2016-Aug-14, Sun,01:38	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-02, Sun,08:59	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Oct-13, Thu,09:06	Rain	Sideswipe	P.D. only	Wet	South	Unknown	Unknown	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle

2016-Oct-24, Mon,10:25	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Truck and trailer	Other motor vehicle
					West	Going ahead	Truck - tank	Other motor vehicle
2016-Dec-08, Thu,17:16	Snow	Sideswipe	P.D. only	Wet	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-May-30, Mon,09:35	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-31, Tue,14:50	Clear	Rear end	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Feb-11, Sat,15:35	Clear	Angle	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Mar-27, Mon,06:22	Freezing Rain	Angle	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2017-Apr-19, Wed,16:41	Rain	Sideswipe	P.D. only	Wet	South	Unknown	Unknown	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-01, Sat,16:30	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle

					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-07, Fri,09:40	Clear	Angle	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Aug-04, Fri,17:08	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Aug-17, Thu,07:35	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Sep-03, Sun,10:09	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Sep-12, Tue,15:43	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Nov-02, Thu,09:50	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-15, Wed,18:33	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Passenger van	Other motor vehicle
2017-Dec-09, Sat,16:56	Snow	Rear end	Non-fatal injury	Slush	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Dec-15, Fri,19:30	Snow	Sideswipe	P.D. only	Loose snow	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-21, Thu,02:14	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Jul-02, Sun,10:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

Location: ELGIN ST btwn ARGYLE AVE & ARGYLE AVE

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Aug-05, Fri,16:17	Clear	Other	P.D. only	Dry	South	Reversing	Construction equipment	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Oct-13, Fri,16:47	Clear	SMV unattended vehicle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Unattended vehicle	

Location: ELGIN ST btwn ARGYLE AVE & CATHERINE ST

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2013-Dec-20, Fri,09:45	Snow	Angle	P.D. only	Loose snow	North	Reversing	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Apr-01, Tue,10:20	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Sep-17, Thu,08:50	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Police vehicle	Pedestrian	1
2017-Jan-17, Tue,15:12	Other	Other	P.D. only	Other	Unknown	Unknown	Unknown	Other motor vehicle	
					North	Unknown	Automobile, station wagon	Other motor vehicle	

Location: METCALFE ST btwn ARGYLE AVE & CATHERINE ST

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jun-04, Wed,00:00	Unknown	SMV unattended vehicle	P.D. only	Unknown	West	Unknown	Unknown	Unattended vehicle	

Location: METCALFE ST btwn CATHERINE ST & CATHERINE ST

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-14, Sun,13:30	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Location: O'CONNOR ST btwn ARGYLE AVE & CATHERINE ST

Traffic Control: No control

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2012-Sep-17, Mon,19:10	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Truck-other	Other motor vehicle	
2014-Feb-14, Fri,15:25	Snow	Sideswipe	P.D. only	Loose snow	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2014-Sep-17, Wed,09:01	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2015-Sep-02, Wed,10:57	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Oct-20, Tue,15:50	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	



City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2012 **To:** December 31, 2017

Location: MCLEOD ST E @ METCALFE ST E

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Jul-22, Fri,09:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

APPENDIX F

Excerpts of Transportation Brief for 267 O'Connor Street

1. INTRODUCTION

From the information provided, a residential development consisting of approximately 510 high-rise condominium units and approximately 4,300 ft² of ground floor retail is being proposed, which will be constructed in 2 phases. The proposed site is bound by O'Connor Street to the west, MacLaren Street to the north and Gilmour Street to the south, with access to/from MacLaren Street. The site, which is municipally known as 267 O'Connor, is currently occupied by a 6 storey office building and a pay & display parking lot. The local context of the site is provided as Figure 1 and the proposed Site Plan is provided as Figure 2.

Figure 1: Local Context



Based on the ensuing trip generation and our review of the City's Transportation Impact Assessment Guidelines (TIA), the proposed development is projected to generate a net increase of less than the City's threshold for requiring a Transportation Impact Assessment. As such, no further traffic analysis is required. However, this modified Transportation Brief has been prepared to assist in the application/review process and captures only the relevant transportation issues, which are as follows:

- Existing traffic conditions at adjacent intersections;
- Future site trip generation; and
- Site Plan issues, including pedestrian access, proposed vehicle access, parking, loading and circulation layout.

For the purpose of this assessment, projected conditions assumes full build-out of Phases 1 and 2.

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		



267 O'Connor St.
Ottawa, Ontario
SITE PLAN
GROUND FLOOR

MASTERCRAFT STAIRWOOD
INTERIOR FINISHES 2011

1:1200
Mar 24, '14
352289
A-1.1

SEE RELEVANT REGULATIONS RE: OPEN SPACE REQUIREMENTS AND ACCESS TO OPEN SPACE. THIS PLAN IS FOR INFORMATION ONLY AND IS NOT TO BE USED FOR CONSTRUCTION. THE CLIENT ACCEPTS RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED AND THE DESIGNER ACCEPTS RESPONSIBILITY FOR THE DESIGN. THE DESIGNER IS NOT RESPONSIBLE FOR THE CONSTRUCTION OF THE PROJECT.

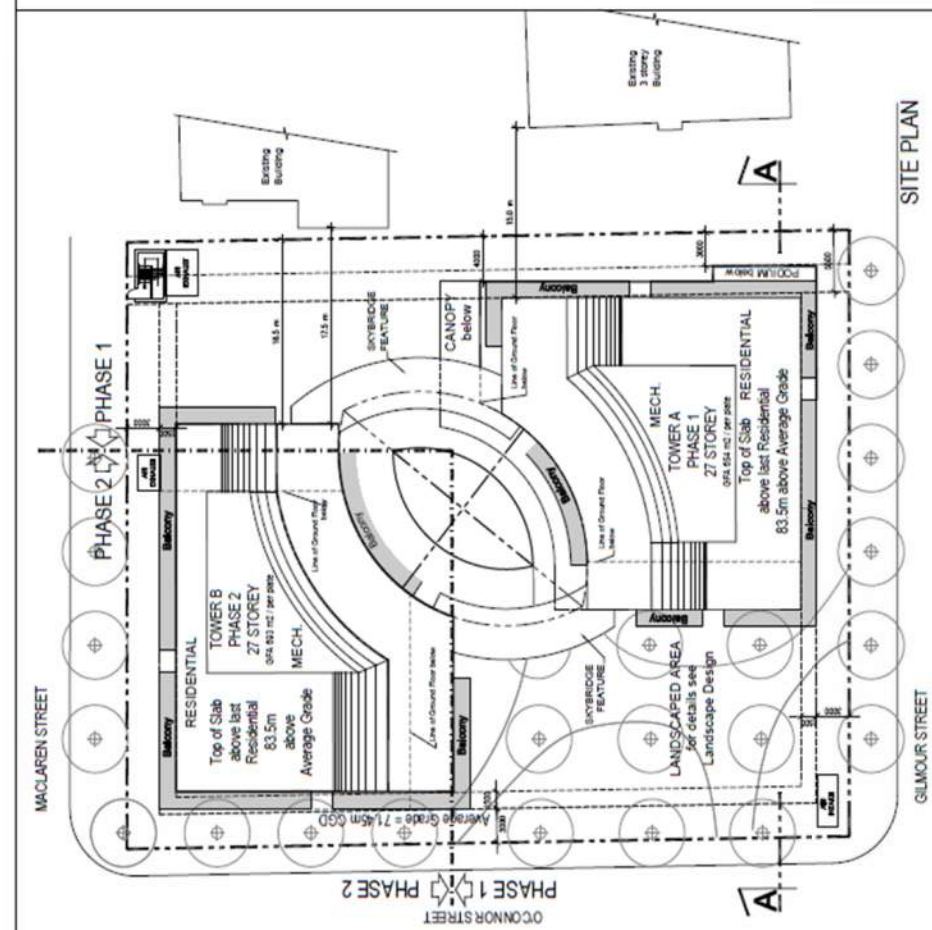
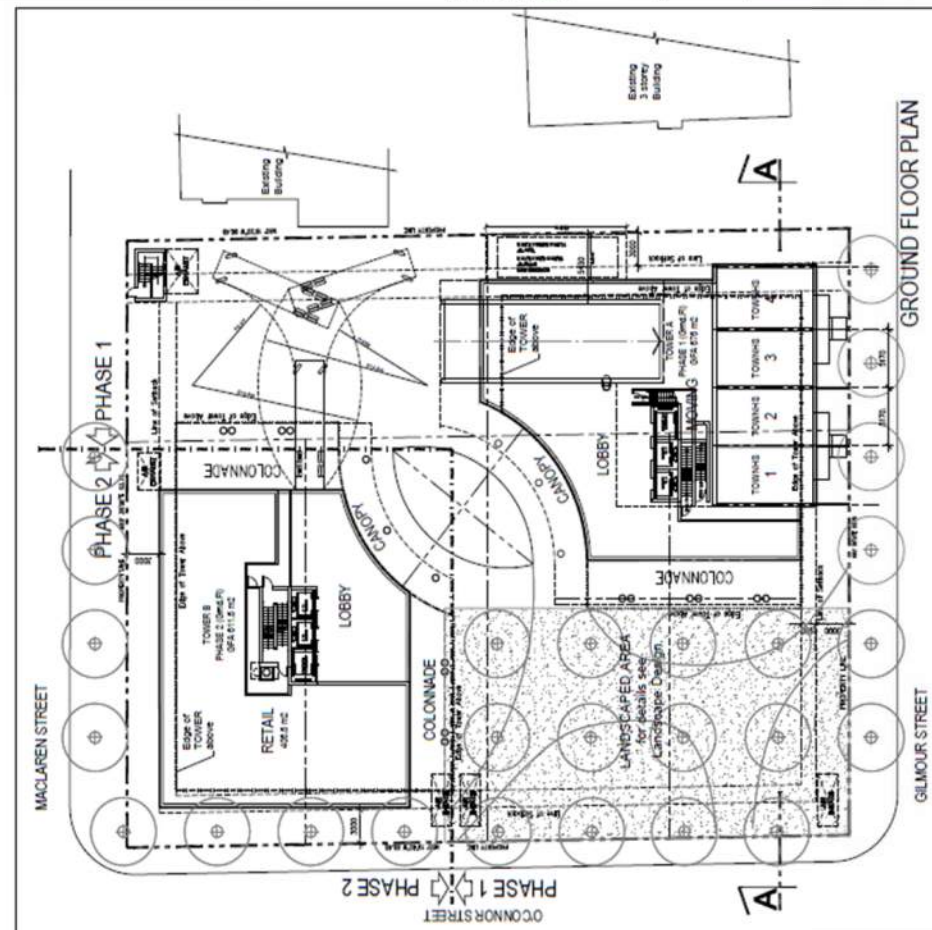
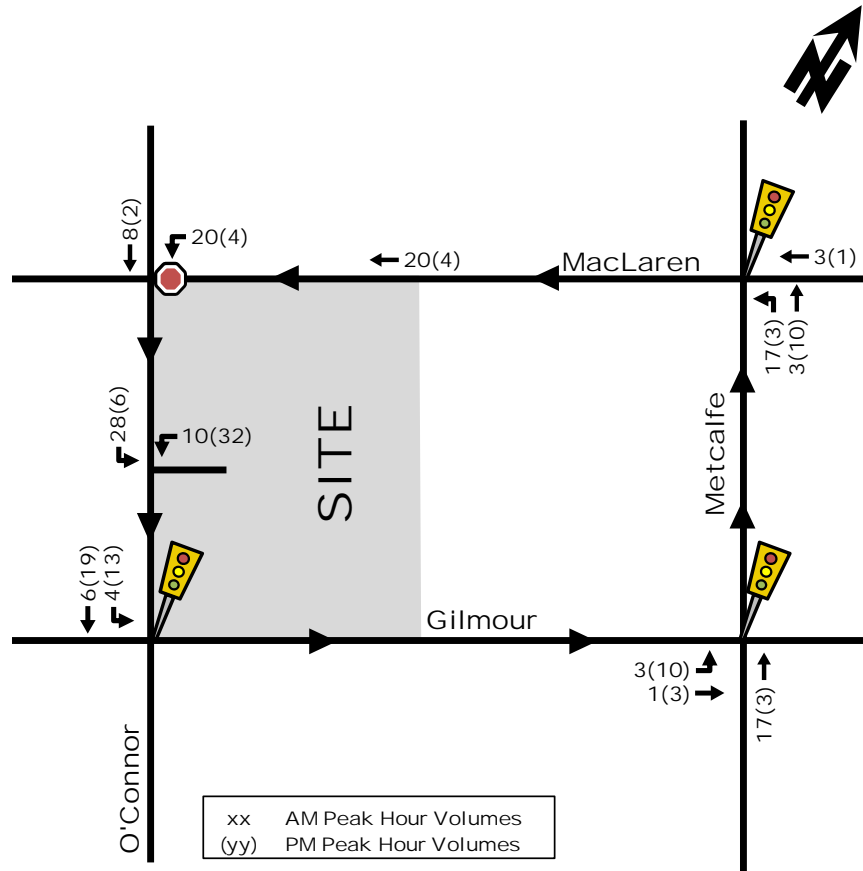


Figure 2: Proposed Site Plan

Given the proposed site is currently occupied by an approximate 50,000 ft² office building and a pay/display parking lot, which will be replaced by the proposed development, peak hour traffic counts were conducted at the existing site driveway connection to O'Connor Street to obtain existing peak hour site-generated trips. Assuming the same traffic distribution as the 'new' site-generated trips, the observed office/parking lot site-generated trips were removed from the study area network to obtain a 'net' increase in total projected peak hour traffic volumes. Existing office/parking lot site-generated traffic is illustrated as Figure 6 and it equates to 38 veh/h two-way total during both the morning and afternoon peak hours.

Removing the office/parking lot site-generated traffic, the projected 'net' increase in study area traffic is approximately 58 and 66 veh/h during the weekday morning and afternoon peak hours, respectively. This amount of 'new' traffic equates to approximately 1 new vehicle every minute.

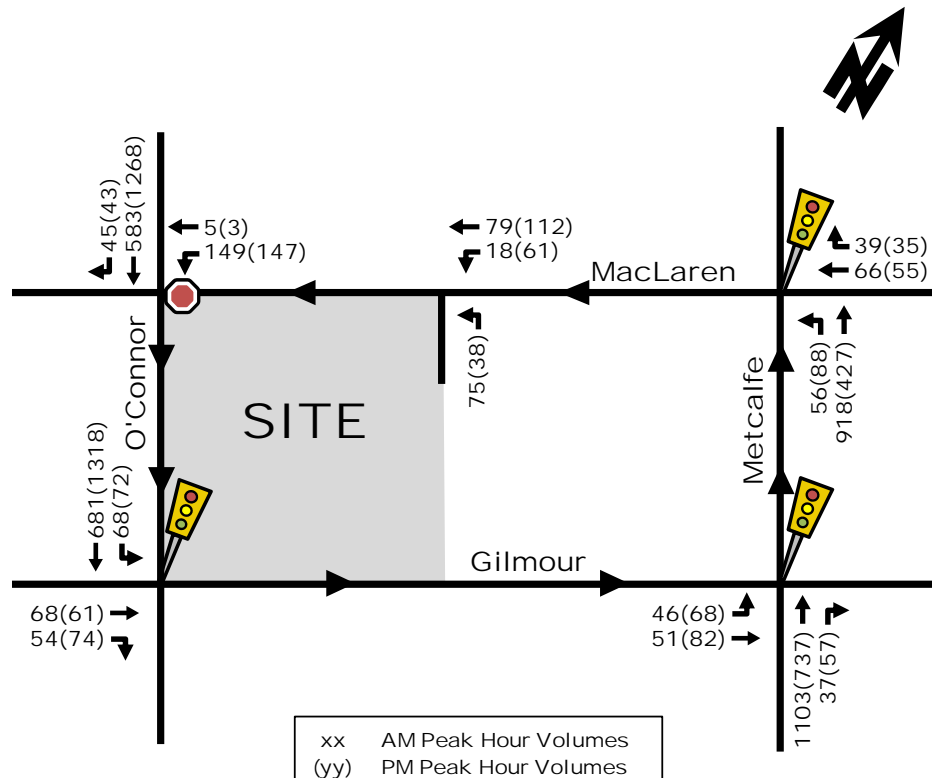
Figure 6: Existing Site-Generated Traffic Volumes



4. FUTURE TRAFFIC OPERATIONS

For the purpose of this study, the total projected traffic volumes were derived by superimposing site-generated traffic volumes (Figure 5) onto existing traffic volumes (Figure 3) and existing office/parking lot site-generated traffic volumes (Figure 6) were removed (i.e. Figure 5 + Figure 3 – Figure 6 = Total 'net' projected traffic volumes). The resulting total 'net' projected traffic volumes are illustrated as Figure 7.

Figure 7: Total Projected 'Net' Traffic Volumes



The following Table 7 provides a summary of projected performances of study area intersections at full site build-out. The SYNCHRO model output of projected conditions is provided within Appendix C.

Table 7: Projected Performance of Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	'Critical Movement'			'Intersection as a Whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Metcalfe/MacLaren	A(A)	0.35(0.20)	NBT(WBT)	3.3(3.0)	A(A)	0.34(0.19)
O'Connor/Gilmour	A(A)	0.34(0.38)	EBT(EBT)	7.3(7.2)	A(A)	0.26(0.37)
Metcalfe/Gilmour	A(A)	0.43(0.31)	NBT(NBT)	9.8(10.0)	A(A)	0.41(0.31)
O'Connor/MacLaren	B(B)	11.5(13.9)	WBL(WBL)	2.3(1.4)	-	-
MacLaren/Site	A(B)	9.6(10.4)	NBL(NBL)	5.0(4.1)	-	-

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

APPENDIX G

Transportation Demand Management

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

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

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
1. WALKING & CYCLING: ROUTES		
1.1 Building location & access points		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input checked="" type="checkbox"/>
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/>
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
1.2 Facilities for walking & cycling		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (<i>see Official Plan policy 4.3.3</i>)	<input type="checkbox"/> - N/A; no rapid transit routes in area
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (<i>see Official Plan policy 4.3.12</i>)	<input checked="" type="checkbox"/>

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

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

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

APPENDIX H

Intersection MMLOS

Intersection MMLOS Analysis

Review of the multi-modal levels of service has been conducted at the signalized intersections within the study area. The MMLOS evaluations are based on existing conditions for intersections at O'Connor Street and Metcalfe Street, and based on the Elgin Street Renewal for intersections at Elgin Street. The functional design of the Elgin Street Renewal within the study area is included in **Figure 5** of the TIA.

Pedestrian Level of Service (PLOS)

Exhibit 5 of the Addendum to the MMLOS guidelines has been used to evaluate the PLOS at all signalized intersections within the study area. Exhibit 22 of the MMLOS guidelines suggests a target PLOS B for Traditional Main Streets (Elgin Street) and a target PLOS C for all roadways within the General Urban Area (O'Connor Street, Metcalfe Street West, Argyle Avenue, and Catherine Street). The results of the intersection PLOS analysis are summarized in the following tables:

- Intersections at O'Connor Street: **Tables 1 and 2**;
- Intersections at Metcalfe Street West: **Tables 3 and 4**;
- Intersections at Elgin Street: **Tables 5 and 6**.

Bicycle Level of Service (BLOS)

Exhibit 12 of the MMLOS guidelines has been used to evaluate the BLOS at all signalized intersections within the study area. Within the General Urban Area, Exhibit 22 of the MMLOS guidelines suggests a target BLOS B for Cross-Town Bikeways (O'Connor Street), a target BLOS C for Spine Routes (Argyle Avenue between O'Connor Street and Metcalfe Street West, and Metcalfe Street West south of Argyle Avenue), and a target BLOS D for roadways with no bike classification (Catherine Street, and Argyle Avenue between Metcalfe Street West and Elgin Street). On Traditional Main Streets, Exhibit 22 of the MMLOS guidelines suggests a target BLOS C for Local Routes (Elgin Street). The results of the intersection BLOS analysis are summarized in the following tables:

- Intersections at O'Connor Street: **Table 7**;
- Intersections at Metcalfe Street West: **Table 8**;
- Intersections at Elgin Street: **Table 9**.

Transit Level of Service (TLOS)

Exhibit 16 of the MMLOS guidelines has been used to evaluate the existing TLOS at relevant intersections within the study area. Regardless of land use designation, Transit Priority Corridors with Isolated Measures (Elgin Street and Catherine Street) have a suggested target TLOS D. As no other roadways provide transit service, only Elgin Street and Catherine Street have been evaluated for TLOS.

- The results of the intersection TLOS analysis are summarized in **Table 10**.

Truck Level of Service (TkLOS)

Exhibit 21 of the MMLOS guidelines has been used to evaluate the TkLOS at all intersections within the study area. Within the General Urban Area, Exhibit 22 of the MMLOS guidelines suggests a target TkLOS D for arterial roadways designated as truck routes (O'Connor Street and Catherine Street), and a target TkLOS E for arterial roadways not designated as truck routes (Metcalf Street and Argyle Avenue between Metcalf Street West and East). On Traditional Main Streets, Exhibit 22 of the MMLOS guidelines suggests a target TkLOS D for arterial roadways designated as truck routes (Elgin Street). No targets for TkLOS are set for local roadways (Argyle Avenue between O'Connor Street and Metcalf Street West, and Argyle Avenue between Metcalf Street East and Elgin Street).

- The results of the intersection TkLOS analysis are summarized in **Table 11**.

Vehicular Level of Service (Auto LOS)

Exhibit 22 of the MMLOS guidelines suggests a target Auto LOS D for Traditional Main Streets and all roadways within the General Urban Area. Synchro analysis was performed to evaluate the performance of all intersections during the AM and PM peak hours. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 0.9). Signal timing plans are included in **Appendix I**. Detailed Synchro reports are included in **Appendix J**.

- The results of the intersection Auto LOS analysis are summarized in **Table 12**.
- Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths are summarized in **Table 13**.

Intersection MMLOS Summary

A summary of the results of the intersection MMLOS analysis is provided in the following tables:

- Intersections at O'Connor Street: **Table 14**;
- Intersections at Metcalf Street West: **Table 15**;
- Intersections at Elgin Street: **Table 16**.

Table 1: PLOS Intersection Analysis – O’Connor Street/Argyle Avenue

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	88	No	88	No	120	No	120
Lanes Crossed (3.5m Lane Width)	4		4		2		2	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	No Left Turn/Prohibited	0	No Left Turn/Prohibited	0	Permissive	-8	No Left Turn/Prohibited	0
Right Turn Conflict	No Right Turn/Prohibited	0	Permissive or Yield	-5	No Right Turn/Prohibited	0	No Right Turn/Prohibited	0
Right Turn on Red	N/A	0	RTOR Allowed	-3	N/A	0	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	No Right Turn	0	> 5m to 10m	-5	No Right Turn	0	No Right Turn	0
Parallel Right Turn Channel	No Right Turn	0	No Right Turn Channel	-4	No Right Turn	0	No Right Turn	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
	PETSI SCORE	79		62		103		111
	LOS	B		C		A		A
DELAY SCORE								
Cycle Length		100		100		100		100
Pedestrian Walk Time		10.4		10.4		61.8		61.8
	DELAY SCORE	40.1		40.1		7.3		7.3
	LOS	E		E		A		A
OVERALL		E		E		A		A

Table 2: PLOS Intersection Analysis – O’Connor Street/Catherine Street

CRITERIA	North Approach		South Approach		East Approach		West Approach		Southwest Approach	
PETSI SCORE										
<i>CROSSING DISTANCE CONDITIONS</i>										
Median > 2.4m in Width	No	88	No	88	No	72	No	88	No	120
Lanes Crossed (3.5m Lane Width)	4		4		5		4		2	
<i>SIGNAL PHASING AND TIMING</i>										
Left Turn Conflict	No Left Turn/Prohibited	0	Permissive	-8	No Left Turn/Prohibited	0	No Left Turn/Prohibited	0	Permissive	-8
Right Turn Conflict	No Right Turn/Prohibited	0	No Right Turn/Prohibited	0	No Right Turn/Prohibited	0	Permissive or Yield	-5	No Right Turn/Prohibited	0
Right Turn on Red	N/A	0	N/A	0	N/A	0	RTOR Allowed	-3	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2	No	-2
<i>CORNER RADIUS</i>										
Parallel Radius	No Right Turn	0	No Right Turn	0	No Right Turn	0	> 3m to 5m	-4	No Right Turn	0
Parallel Right Turn Channel	No Right Turn	0	No Right Turn	0	No Right Turn	0	No Right Turn Channel	-4	No Right Turn	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>										
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7	Standard	-7
	PETSI SCORE	79		71		63		63		103
	LOS	B		C		C		C		A
DELAY SCORE										
Cycle Length		100		100		90		90		100
Pedestrian Walk Time		26.1		26.1		30.1		30.1		7.1
	DELAY SCORE	27.3		27.3		19.9		19.9		43.2
	LOS	C		C		B		B		E
OVERALL		C		C		C		C		E

Table 3: PLOS Intersection Analysis – Metcalfe Street West/Argyle Avenue

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	N/A	0	No	88	N/A	0	No	120
Lanes Crossed (3.5m Lane Width)	N/A		4		N/A		2	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	N/A	0	No Left Turn/Prohibited	0	N/A	0	No Left Turn/Prohibited	0
Right Turn Conflict	N/A	0	No Right Turn/Prohibited	0	N/A	0	No Right Turn/Prohibited	0
Right Turn on Red	N/A	0	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	N/A	0	No	-2	N/A	0	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	N/A	0	No Right Turn	0	N/A	0	No Right Turn	0
Parallel Right Turn Channel	N/A	0	No Right Turn	0	N/A	0	No Right Turn	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	N/A	0	Standard	-7	N/A	0	Standard	-7
	PETSI SCORE			79				111
	LOS			B				A
DELAY SCORE								
Cycle Length		-		100		-		100
Pedestrian Walk Time		-		12.6		-		63.5
	DELAY SCORE			38.2				6.7
	LOS			D				A
OVERALL		-		D		-		A

Table 4: PLOS Intersection Analysis – Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	88	N/A	0	N/A	0	Yes	30
Lanes Crossed (3.5m Lane Width)	4		N/A		N/A		8	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	No Left Turn/Prohibited	0	N/A	0	N/A	0	Permissive	-8
Right Turn Conflict	Protected	0	N/A	0	N/A	0	No Right Turn/Prohibited	0
Right Turn on Red	RTOR Prohibited	0	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	No	-2	N/A	0	N/A	0	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	> 5m to 10m	-5	N/A	0	N/A	0	No Right Turn	0
Parallel Right Turn Channel	No Right Turn Channel	-4	N/A	0	N/A	0	No Right Turn	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Standard	-7	N/A	0	N/A	0	Standard	-7
	PETSI SCORE			70				13
	LOS			C				F
DELAY SCORE								
Cycle Length		90		-		-		100
Pedestrian Walk Time		7.7		-		-		19.7
	DELAY SCORE			37.6				32.2
	LOS			D				D
OVERALL		D		D		D		F

Table 5: PLOS Intersection Analysis – Elgin Street/Argyle Avenue

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	N/A	0	No	105	N/A	0	No	105
Lanes Crossed (3.5m Lane Width)	N/A		3		N/A		3	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	N/A	0	No Left Turn/Prohibited	0	N/A	0	No Left Turn/Prohibited	0
Right Turn Conflict	N/A	0	Permissive or Yield	-5	N/A	0	No Right Turn/Prohibited	0
Right Turn on Red	N/A	0	RTOR Allowed	-3	N/A	0	N/A	0
Leading Pedestrian Interval	N/A	0	No	-2	N/A	0	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	N/A	0	> 5m to 10m	-5	N/A	0	No Right Turn	0
Parallel Right Turn Channel	N/A	0	No Right Turn Channel	-4	N/A	0	No Right Turn	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	N/A	0	Standard	-7	N/A	0	Standard	-7
	PETSI SCORE			79				96
	LOS			B				A
DELAY SCORE								
Cycle Length		-		75		-		75
Pedestrian Walk Time		-		16.1		-		31.4
	DELAY SCORE			23.1				12.7
	LOS			C				B
	OVERALL			C				B

Table 6: PLOS Intersection Analysis – Elgin Street/Catherine Street

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSI SCORE								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	88	N/A	0	No	120	No	105
Lanes Crossed (3.5m Lane Width)	4		N/A		2		3	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	No Left Turn/Prohibited	0	N/A	0	No Left Turn/Prohibited	0	Permissive	-8
Right Turn Conflict	Permissive or Yield	-5	N/A	0	No Right Turn/Prohibited	0	Permissive or Yield	-5
Right Turn on Red	RTOR Allowed	-3	N/A	0	N/A	0	RTOR Allowed	-3
Leading Pedestrian Interval	No	-2	N/A	0	No	-2	No	-2
<i>CORNER RADIUS</i>								
Parallel Radius	> 5m to 10m	-5	N/A	0	No Right Turn	0	> 10m to 15m	-6
Parallel Right Turn Channel	No Right Turn Channel	-4	N/A	0	No Right Turn	0	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Standard	-7	N/A	0	Standard	-7	Standard	-7
	PETSI SCORE					111		70
	LOS					A		C
DELAY SCORE								
Cycle Length		75		-		75		75
Pedestrian Walk Time		6.9		-		24.4		24.4
	DELAY SCORE					17.1		17.1
	LOS					B		B
	OVERALL					B		C

Table 7: BLOS Intersection Analysis – O'Connor Street

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
O'Connor Street/Argyle Avenue				
North Approach	Cycle Track	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	No lanes crossed, cyclists to the left of vehicular traffic	A
South Approach	Cycle Track	Right Turn Lane Characteristics	Cycle track remains to the right of right turn lane	A
		Left Turn Accommodation	No left turn	-
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No left turn	-
O'Connor Street/Catherine Street				
North Approach	Cycle Track	Right Turn Lane Characteristics	Two-stage bike box (may be used for right turns)	A
		Left Turn Accommodation	No left turn	-
South Approach	Cycle Track	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	Two-stage bike box	A
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F

Table 8: BLOS Intersection Analysis – Metcalfe Street West

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
Metcalfe Street/Argyle Avenue				
South Approach	Mixed Traffic	Right Turn Lane Characteristics	No through	-
		Left Turn Accommodation	No left turn	-
West Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	No left turn	-
Metcalfe Street/Catherine Street/Highway 417 (Exit 119)				
South Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F
East Approach (Catherine Street)	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No left turn	-

Table 9: BLOS Intersection Analysis – Elgin Street

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
Elgin Street/Argyle Avenue				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	No left turn	-
South Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	No left turn	-
West Approach	Mixed Traffic	Right Turn Lane Characteristics	No through	A
		Left Turn Accommodation	Dual left turn lanes	F
Elgin Street/Catherine Street				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No left turn	-
South Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	One lane crossed; ≥ 50 km/h	F
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane between 25m and 50m, turning speed ≤ 25 km/h	D
		Left Turn Accommodation	No lane crossed; ≥ 50 km/h	D

Table 10: TLOS Intersection Analysis

Approach	Delay ⁽¹⁾	TLOS
O'Connor Street/Catherine Street		
East Approach	30 sec	D
Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)		
East Approach (Catherine Street) ⁽²⁾	35 sec	E
Elgin Street/Argyle Avenue		
North Approach	10 sec	B
South Approach	10 sec	B
Elgin Street/Catherine Street		
North Approach	15 sec	C
South Approach	15 sec	C

1. Delay based on existing traffic outputs from Synchro analysis
 2. Transit service approaches intersection from Catherine Street only

Table 11: TkLOS Intersection Analysis

Approach	Effective Corner Radius	Number of Receiving Lanes on Departure from Intersection	TkLOS
O'Connor Street/Argyle Avenue			
West Approach	< 10m	3	D
O'Connor Street/Catherine Street			
North Approach	< 10m	3	D
Metcalf Street West/Argyle Avenue			
South Approach	< 10m	2	D
Metcalf Street West/Catherine Street/Highway 417 (Exit 119)			
East Approach	10m to 15m	2	B
Southeast Approach	> 15m	2	A
Elgin Street/Argyle Avenue			
West Approach	< 10m	1	F
Elgin Street/Catherine Street			
North Approach	10m to 15m	1	E
East Approach	< 10m	2	D

Table 12: Auto LOS Intersection Analysis – Existing

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
O'Connor Street/Argyle Avenue	0.44	A	EBT	0.84	D	EBT
O'Connor Street/Catherine Street	0.67	B	SBR	0.86	D	SBR
Metcalf Street West/Argyle Avenue	0.91	E	NBR	0.72	C	EBT
Metcalf Street West/Catherine Street/Highway 417 (Exit 119)	1.11	F	NWBR	0.77	C	NWBR
Elgin Street/Argyle Avenue	0.71	C	EBL	0.79	C	SBT
Elgin Street/Catherine Street	0.33	A	NBT/WBR	0.74	C	SBT
Metcalf Street East/McLeod Street ⁽¹⁾	26 sec	D	WBT	11 sec	B	WBT
Argyle Avenue/Site Access ⁽¹⁾	14 sec	B	NBR	11 sec	B	NBR

1. Unsignalized intersection

Table 13: Existing Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
O'Connor Street/ Argyle Avenue	SBT	0.41	A	27	36	0.76	C	90	#115
O'Connor Street/ Catherine Street	SBR	0.67	B	41	#111	0.86	D	22	m#189
Metcalfe Street West/ Catherine Street/ Hwy 417 (Exit 119)	NBT	0.96	E	~83	#120	0.40	A	28	40
Elgin Street/ Argyle Avenue	SBT	0.33	A	20	41	0.79	C	71	#175

m: volume for the 95th percentile queue is metered by an upstream signal

#: volume for the 95th percentile cycle exceeds capacity

~: approach is above capacity

Table 14: Intersection MMLOS Summary – O’Connor Street

	Intersection	O’Connor Street/Argyle Avenue				O’Connor Street/Catherine Street				
		North	South	East	West	North	South	East	West	Southwest
Pedestrian	Island Refuge	No	No	No	No	No	No	No	No	No
	Lanes	4	4	2	2	4	4	5	4	2
	Conflicting Left Turns	No Left Turn	No Left Turn	Permissive	No Left Turn	No Left Turn	Permissive	No Left Turn	No Left Turn	Permissive
	Conflicting Right Turns	No Right Turn	Permissive/Yield	No Right Turn	No Right Turn	No Right Turn	No Right Turn	No Right Turn	Permissive/Yield	No Right Turn
	Right Turn on Red	-	RTOR Allowed	-	-	-	-	-	RTOR Allowed	-
	Ped Leading Interval	No	No	No	No	No	No	No	No	No
	Parallel Radius	-	> 5m to 10m	-	-	-	-	-	> 3m to 5m	-
	Parallel Channel	-	No Channel	-	-	-	-	-	No Channel	-
	Perpendicular Radius	-	-	-	-	-	-	-	-	-
	Perpendicular Channel	-	-	-	-	-	-	-	-	-
	Crosswalk Type	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	PETSI Score	79	62	103	111	79	71	63	63	103
	Delay Score	40.1	40.1	7.3	7.3	27.3	27.3	19.9	19.9	43.2
Level of Service	E	E	A	A	C	C	C	C	E	
Target	E				E					
	C				C					
Cyclist	Type of Bikeway	Cycle Track	Cycle Track	-	Mixed Traffic	Cycle Track	Cycle Track	Mixed Traffic	-	-
	Turning Speed	Slow	Slow	-	Slow	Slow	Slow	Slow	-	-
	Right Turn Storage	-	-	-	-	-	-	-	-	-
	Dual Right Turn Lanes	-	-	-	No	No	-	No	-	-
	Shared Through-Right Lane	-	-	-	Yes	Yes	-	Yes	-	-
	Bike Box	No	-	-	-	Yes	Yes	No	-	-
	Lanes Crossed for Left Turns	0	-	-	-	-	-	2	-	-
	Dual Left Turn Lanes	No	-	-	-	-	No	No	-	-
	Approach Speed	60 km/h	60 km/h	-	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	-
	Level of Service	A	A	-	A	A	A	F	-	-
Target	A				F					
	B				B					
Transit	Average Signal Delay	-	-	-	-	-	-	30 sec	-	-
	Level of Service	-	-	-	-	-	-	D	-	-
	Target	-				D				
Truck	Turning Radius	-	-	-	< 10m	< 10m	-	-	-	-
	Receiving Lanes	-	-	-	3	3	-	-	-	-
	Level of Service	-	-	-	D	D	-	-	-	-
Target	D				D					
Auto	Level of Service	D				D				
	Target	D				D				

Table 15: Intersection MMLOS Summary – Metcalfe Street West

Intersection	Metcalfe Street West/Argyle Avenue				Metcalfe Street West/Catherine Street/Highway 417 (Exit 119)					
	North	South	East	West	North	South	East	West	Southeast	
Pedestrian	Island Refuge	-	No	-	No	No	-	-	Yes	-
	Lanes	-	4	-	2	4	-	-	8	-
	Conflicting Left Turns	-	No Left Turn	-	No Left Turn	No Left Turn	-	-	Permissive	-
	Conflicting Right Turns	-	No Right Turn	-	No Right Turn	Protected	-	-	No Right Turn	-
	Right Turn on Red	-	-	-	-	RTOR Prohibited	-	-	-	-
	Ped Leading Interval	-	No	-	No	No	-	-	No	-
	Parallel Radius	-	-	-	-	> 5m to 10m	-	-	-	-
	Parallel Channel	-	-	-	-	No Channel	-	-	-	-
	Perpendicular Radius	-	-	-	-	-	-	-	-	-
	Perpendicular Channel	-	-	-	-	-	-	-	-	-
	Crosswalk Type	-	Standard	-	Standard	Standard	-	-	Standard	-
	PETSI Score	-	79	-	111	70	-	-	13	-
	Delay Score	-	38.2	-	6.7	37.6	-	-	32.2	-
Level of Service	-	D	-	A	D	-	-	F	-	
Target	D				F					
	C				C					
Cyclist	Type of Bikeway	-	Mixed Traffic	-	Mixed Traffic	-	Mixed Traffic	Mixed Traffic	-	-
	Turning Speed	-	Slow	-	-	-	Slow	Slow	-	-
	Right Turn Storage	-	-	-	-	-	-	-	-	-
	Dual Right Turn Lanes	-	-	-	-	-	-	No	-	-
	Shared Through-Right Lane	-	No	-	-	-	-	Yes	-	-
	Bike Box	-	-	-	-	-	No	-	-	-
	Lanes Crossed for Left Turns	-	-	-	-	-	2	-	-	-
	Dual Left Turn Lanes	-	-	-	-	-	No	-	-	-
	Approach Speed	-	60 km/h	-	60 km/h	-	60 km/h	60 km/h	-	-
Level of Service	-	-	-	-	-	F	A	-	-	
Target	-				F					
	C				C					
Transit	Average Signal Delay	-	-	-	-	-	-	35 sec	-	-
	Level of Service	-	-	-	-	-	-	E	-	-
	Target	-				E				
	-				D					
Truck	Turning Radius	-	< 10m	-	-	-	-	10m to 15m	-	> 15m
	Receiving Lanes	-	2	-	-	-	-	2	-	2
	Level of Service	-	D	-	-	-	-	B	-	A
Target	D				B					
	E				D					
Auto	Level of Service	E				F				
	Target	D				D				

Table 16: Intersection MMLOS Summary – Elgin Street

Intersection	Elgin Street/Argyle Avenue				Elgin Street/Catherine Street				
	North	South	East	West	North	South	East	West	
Pedestrian	Island Refuge	-	No	-	No	No	-	No	No
	Lanes	-	3	-	3	4	-	2	3
	Conflicting Left Turns	-	No Left Turn	-	No Left Turn	No Left Turn	-	No Left Turn	Permissive
	Conflicting Right Turns	-	Permissive/Yield	-	No Right Turn	Permissive/Yield	-	No Right Turn	Permissive/Yield
	Right Turn on Red	-	RTOR Allowed	-	-	RTOR Allowed	-	-	RTOR Allowed
	Ped Leading Interval	-	No	-	No	No	-	No	No
	Parallel Radius	-	> 5m to 10m	-	-	> 5m to 10m	-	-	> 10m to 15m
	Parallel Channel	-	No Channel	-	-	No Channel	-	-	No Channel
	Perpendicular Radius	-	-	-	-	-	-	-	-
	Perpendicular Channel	-	-	-	-	-	-	-	-
	Crosswalk Type	-	Standard	-	Standard	Standard	-	Standard	Standard
	PETSI Score	-	79	-	96	62	-	111	70
	Delay Score	-	23.1	-	12.7	30.9	-	17.1	17.1
Level of Service	-	C	-	B	D	-	B	C	
Target	C				D				
	B				B				
Cyclist	Type of Bikeway	Mixed Traffic	Mixed Traffic	-	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	-
	Turning Speed	-	-	-	Slow	Slow	Slow	Slow	-
	Right Turn Storage	-	-	-	-	-	-	25m to 50m	-
	Dual Right Turn Lanes	-	-	-	No	No	-	No	-
	Shared Through-Right Lane	-	-	-	No	Yes	-	No	-
	Bike Box	-	-	-	No	-	No	No	-
	Lanes Crossed for Left Turns	-	-	-	1	-	1	1	-
	Dual Left Turn Lanes	-	-	-	Yes	-	No	No	-
	Approach Speed	60 km/h	60 km/h	-	60 km/h	60 km/h	60 km/h	60 km/h	-
Level of Service	-	-	-	F	A	F	D	-	
Target	F				F				
	C				C				
Transit	Average Signal Delay	10 sec	10 sec	-	-	15 sec	15 sec	-	-
	Level of Service	B	B	-	-	C	C	-	-
	Target	B				C			
	D				D				
Truck	Turning Radius	-	-	-	< 10m	10m to 15m	-	< 10m	-
	Receiving Lanes	-	-	-	1	1	-	2	-
	Level of Service	-	-	-	F	E	-	D	-
Target	F				E				
	D				D				
Auto	Level of Service	C				C			
	Target	D				D			

APPENDIX I

Signal Timing Plans

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

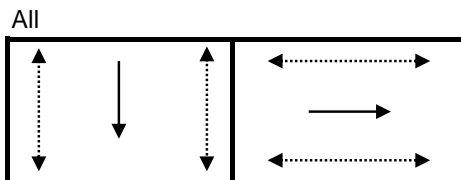
Intersection:	Main: O'Connor	Side: Argyle
Controller:	ATC-3	TSD: 5488
Author:	Sarah Saade	Date: 19-Jul-2018

Existing Timing Plans[†]

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Walk	DW	A+R
Cycle	90	80	100	65			
Offset	16	4	17	6			
SB Thru	66	53	73	38	14	6	3.3+1.9
EB Thru	24	27	27	27	7	11	3.3+2.3

Phasing Sequence[‡]

Plan:



Schedule

Weekday

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

Weekend

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

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

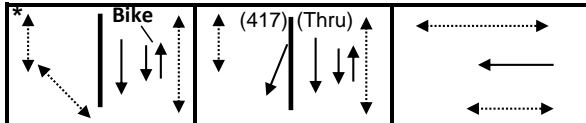
Intersection:	Main: O'Connor	Side: Catherine
Controller:	MS-3200	TSD: 5031
Author:	Sarah Saade	Date: 19-Jul-2018

Existing Timing Plans[†]

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Walk	DW	A+R
Cycle	90	80	100	70			
Offset	40	5	25	5			
SB Thru	48	53	59	47	7	12	3.3+2.6
NB/SB Bike	48	53	59	47	7	12	3.3+2.6
Ped Xing 417 Ramp	18	18	18	20	7	5	3.3+2.6
SB 417	30	35	41	27	-	-	3.3+2.6
WB Thru	42	27	41	23	7	9	3.3+2.6

Phasing Sequence[‡]

Plan: All



Notes:

- 1) The NS and EW ped crossings have a ped recall
- 2) The SB 417 movement has a maximum recall
- 3) If the 417 ped crossing is not actuated, the time will be given to the SB 417 movement

Schedule

Weekday

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

Weekend

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

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

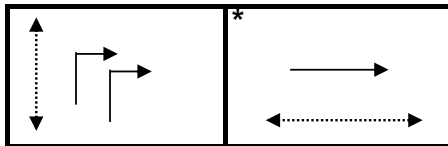
Intersection:	Main: Metcalfe	Side: Argyle
Controller:	MS-3200	TSD: 6626
Author:	Sarah Saade	Date: 19-Jan-2018

Existing Timing Plans†

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Walk	DW	A+R
Cycle	90	80	100	65			
Offset	75	12	18	X			
NB Thru	69	59	74	44	33	5	3.3+2.2
EB Thru	21	21	26	21	7	8	3.3+2.1

Phasing Sequence‡

Plan: All



Notes: 1) NB right on red is prohibited.

Schedule

Weekday

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

Weekend

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

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

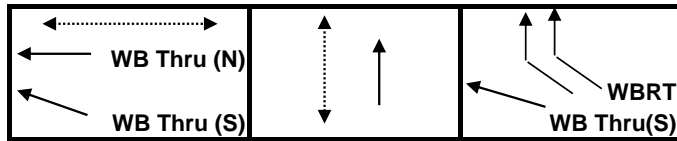
Intersection:	Main: Catherine / 417 WB	Side: Metcalfe
Controller:	MS-3200	TSD: 5078
Author:	Sarah Saade	Date: 19-Jul-2018

Existing Timing Plans[†]

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Walk	DW	A+R
Cycle	90	80	100	70			
Offset	45	47	63	47			
WB Thru (N)	26	30	41	25	7	12	3.3+3.0
WB Thru (S)	56	50	67	42	-	-	3.3+3.0
NB Thru	34	30	33	28	15	7	3.3+3.0
WB Right (fp)	30	20	26	17	-	-	3.3+2.0

Phasing Sequence[‡]

Plan: All



Schedule

Weekday

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

Weekend

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

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

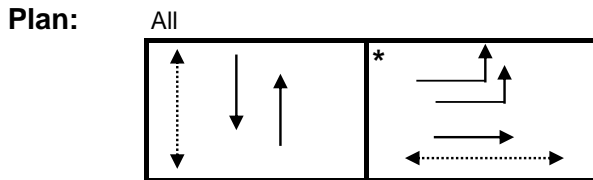
Traffic Signal Operations Unit

Intersection:	Main: Elgin	Side: Argyle
Controller:	MS-3200	TSD: 5087
Author:	Sarah Saade	Date: 19-Jul-2018

Existing Timing Plans[†]

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Walk	DW	A+R
Cycle	75	65	75	60			
Offset	5	59	3	45			
NB Thru	45	40	45	35	-	-	3.3+2.3
SB Thru	45	40	45	35	7	8	3.3+2.3
EB	30	25	30	25	7	9	3.3+1.6

Phasing Sequence[‡]



Schedule

Weekday

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

Weekend

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

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

Cost is \$56.50 (\$50 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

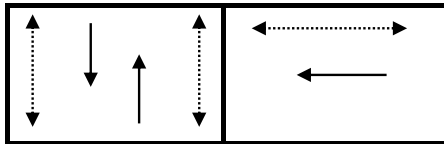
Intersection:	Main: Elgin	Side: Catherine
Controller:	ATC-3	TSD: 5261
Author:	Sarah Saade	Date: 19-Jul-2018

Existing Timing Plans†

	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Walk	DW	A+R
Cycle	75	65	75	60			
Offset	2	63	7	45			
NB Thru	42	32	42	27	8	12	3.3+2.3
SB Thru	42	32	42	27	8	12	3.3+2.3
WB Thru	33	33	33	33	7	20	3.3+2.8

Phasing Sequence‡

Plan: All



Schedule

Weekday

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

Weekend

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

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

Cost is \$56.50 (\$50 + HST)

APPENDIX J

Synchro Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕									↕↕	
Traffic Volume (vph)	0	63	62	0	0	0	0	0	0	35	742	0
Future Volume (vph)	0	63	62	0	0	0	0	0	0	35	742	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.93									0.99	
Frt		0.933										
Flt Protected											0.998	
Satd. Flow (prot)	0	1341	0	0	0	0	0	0	0	0	3158	0
Flt Permitted											0.998	
Satd. Flow (perm)	0	1341	0	0	0	0	0	0	0	0	3122	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)		50									32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		170.3			173.0			119.0			124.7	
Travel Time (s)		12.3			12.5			8.6			9.0	
Confl. Peds. (#/hr)			81							113		
Confl. Bikes (#/hr)			1									16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	5%	0%	0%	0%	0%	0%	0%	0%	4%	2%
Parking (#/hr)		0									0	
Adj. Flow (vph)	0	70	69	0	0	0	0	0	0	39	824	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	139	0	0	0	0	0	0	0	0	863	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		2.0			-2.0			0.0			0.0	
Crosswalk Width(m)		4.0			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.13	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA								Perm	NA	
Protected Phases		4									6	
Permitted Phases										6		
Minimum Split (s)		23.6								25.2	25.2	
Total Split (s)		24.0								66.0	66.0	
Total Split (%)		26.7%								73.3%	73.3%	
Maximum Green (s)		18.4								60.8	60.8	
Yellow Time (s)		3.3								3.3	3.3	
All-Red Time (s)		2.3								1.9	1.9	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		5.6									5.2	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		7.0								14.0	14.0	
Flash Dont Walk (s)		11.0								6.0	6.0	
Pedestrian Calls (#/hr)		40								40	40	
Act Effct Green (s)		18.4									60.8	
Actuated g/C Ratio		0.20									0.68	
v/c Ratio		0.44									0.41	
Control Delay		25.2									6.9	
Queue Delay		0.0									0.0	
Total Delay		25.2									6.9	



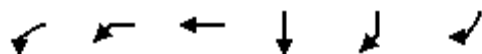
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C									A	
Approach Delay		25.2									6.9	
Approach LOS		C									A	
Queue Length 50th (m)		12.2									27.0	
Queue Length 95th (m)		28.1									36.2	
Internal Link Dist (m)		146.3			149.0			95.0			100.7	
Turn Bay Length (m)												
Base Capacity (vph)		313									2119	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									0	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.44									0.41	

Intersection Summary

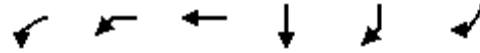
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	16 (18%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	9.5
Intersection LOS:	A
Intersection Capacity Utilization	77.6%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: O'Connor & Argyle





Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Lane Configurations							
Traffic Volume (vph)	109	221	889	398	318	83	
Future Volume (vph)	109	221	889	398	318	83	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	0.91	0.95	1.00	0.95	
Ped Bike Factor	0.96				0.93		
Frt					0.850		
Flt Protected	0.950		0.990				
Satd. Flow (prot)	1647	0	4712	3293	1519	0	
Flt Permitted	0.950		0.990				
Satd. Flow (perm)	1577	0	4712	3293	1419	0	
Right Turn on Red	Yes					Yes	
Satd. Flow (RTOR)	121				107		
Link Speed (k/h)			50	50			
Link Distance (m)			92.1	119.0			
Travel Time (s)			6.6	8.6			
Confl. Peds. (#/hr)	25					49	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	5%	2%	5%	5%	1%	5%	
Adj. Flow (vph)	121	246	988	442	353	92	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	121	0	1234	442	445	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(m)			3.7	0.0			
Link Offset(m)			0.0	0.0			
Crosswalk Width(m)			4.9	4.9			
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24	24			24	14	
Number of Detectors	1	1	2	2	1		
Detector Template	Left	Left	Thru	Thru	Right		
Leading Detector (m)	6.1	6.1	30.5	30.5	6.1		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	6.1	6.1	1.8	1.8	6.1		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)			28.7	28.7			
Detector 2 Size(m)			1.8	1.8			
Detector 2 Type			Cl+Ex	Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)			0.0	0.0			
Turn Type	Perm	Perm	NA	NA	custom		
Protected Phases			8	1		5	
Permitted Phases	8	8			6		
Detector Phase	8	8	8	1	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	21.9	21.9	21.9	24.9	15.9	17.9	
Total Split (s)	42.0	42.0	42.0	48.0	30.0	18.0	

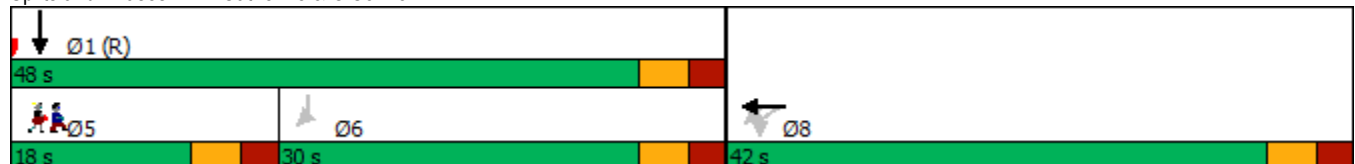


Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Total Split (%)	46.7%	46.7%	46.7%	53.3%	33.3%		20%
Maximum Green (s)	36.1	36.1	36.1	42.1	24.1		12.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6		2.6
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	Max	Max	C-Max	Max		None
Walk Time (s)	7.0	7.0	7.0	7.0	0.0		7.0
Flash Dont Walk (s)	9.0	9.0	9.0	12.0	0.0		5.0
Pedestrian Calls (#/hr)	30	30	30	20	0		15
Act Effct Green (s)	36.1		36.1	42.1	38.5		
Actuated g/C Ratio	0.40		0.40	0.47	0.43		
v/c Ratio	0.17		0.65	0.29	0.67		
Control Delay	11.9		33.3	10.6	19.4		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	11.9		33.3	10.6	19.4		
LOS	B		C	B	B		
Approach Delay			31.4	15.0			
Approach LOS			C	B			
Queue Length 50th (m)	3.1		63.6	22.9	40.5		
Queue Length 95th (m)	m17.9		78.2	32.8	#111.0		
Internal Link Dist (m)			68.1	95.0			
Turn Bay Length (m)							
Base Capacity (vph)	705		1890	1540	668		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.17		0.65	0.29	0.67		

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 40 (44%), Referenced to phase 1:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 24.9
 Intersection LOS: C
 Intersection Capacity Utilization 58.9%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Catherine & O'Connor



3: Metcalfe W & Argyle
AM Peak Hour

100 Argyle Avenue
2018 Existing Traffic



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑↑
Traffic Volume (vph)	113	0	0	0	0	1629
Future Volume (vph)	113	0	0	0	0	1629
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Fr _t						0.850
Flt Protected						
Satd. Flow (prot)	1575	0	0	0	0	2696
Flt Permitted						
Satd. Flow (perm)	1575	0	0	0	0	2696
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	173.0			76.9	69.3	
Travel Time (s)	12.5			5.5	5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	0%	0%	0%	0%	1%
Parking (#/hr)	0					
Adj. Flow (vph)	126	0	0	0	0	1810
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	0	0	0	0	1810
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Left
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	1.0	
Crosswalk Width(m)	8.0			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.21	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	24
Number of Detectors	2					1
Detector Template	Thru					Right
Leading Detector (m)	30.5					6.1
Trailing Detector (m)	0.0					0.0
Detector 1 Position(m)	0.0					0.0
Detector 1 Size(m)	1.8					6.1
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(m)	28.7					
Detector 2 Size(m)	1.8					
Detector 2 Type	Cl+Ex					
Detector 2 Channel						
Detector 2 Extend (s)	0.0					
Turn Type	NA					Prot
Protected Phases	4					2
Permitted Phases						
Detector Phase	4					2
Switch Phase						
Minimum Initial (s)	10.0					10.0
Minimum Split (s)	20.4					43.5
Total Split (s)	21.0					69.0
Total Split (%)	23.3%					76.7%



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Maximum Green (s)	15.6					63.5
Yellow Time (s)	3.3					3.3
All-Red Time (s)	2.1					2.2
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	5.4					5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					33.0
Flash Dont Walk (s)	8.0					5.0
Pedestrian Calls (#/hr)	30					10
Act Effct Green (s)	12.7					66.4
Actuated g/C Ratio	0.14					0.74
v/c Ratio	0.57					0.91
Control Delay	48.4					5.7
Queue Delay	0.0					22.7
Total Delay	48.4					28.4
LOS	D					C
Approach Delay	48.4				28.4	
Approach LOS	D				C	
Queue Length 50th (m)	20.2					17.4
Queue Length 95th (m)	36.2					m12.0
Internal Link Dist (m)	149.0			52.9	45.3	
Turn Bay Length (m)						
Base Capacity (vph)	273					1989
Starvation Cap Reductn	0					254
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.46					1.04

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 75 (83%), Referenced to phase 2:NBR, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 29.7

Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

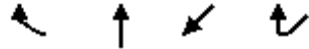
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Metcalfe W & Argyle





Lane Group	WBR	NBT	SWT	SWR	Ø6
Lane Configurations					
Traffic Volume (vph)	737	912	357	42	
Future Volume (vph)	737	912	357	42	
Ideal Flow (vphpl)	1800	1800	1800	1800	
Storage Length (m)	0.0			200.0	
Storage Lanes	2			1	
Taper Length (m)					
Lane Util. Factor	0.88	0.95	0.95	0.95	
Ped Bike Factor			1.00		
Frt	0.850		0.984		
Flt Protected					
Satd. Flow (prot)	2696	3424	3290	0	
Flt Permitted					
Satd. Flow (perm)	2696	3424	3290	0	
Right Turn on Red				No	
Satd. Flow (RTOR)					
Link Speed (k/h)		50	50		
Link Distance (m)		22.1	184.1		
Travel Time (s)		1.6	13.3		
Confl. Peds. (#/hr)				18	
Confl. Bikes (#/hr)				2	
Peak Hour Factor	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	1%	1%	3%	3%	
Adj. Flow (vph)	819	1013	397	47	
Shared Lane Traffic (%)					
Lane Group Flow (vph)	819	1013	444	0	
Enter Blocked Intersection	No	No	No	No	
Lane Alignment	Right	Left	Left	Right	
Median Width(m)		0.0	0.0		
Link Offset(m)		0.0	0.0		
Crosswalk Width(m)		2.0	10.0		
Two way Left Turn Lane					
Headway Factor	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24			14	
Turn Type	Prot	NA	NA		
Protected Phases	1	8	2	6	
Permitted Phases					
Minimum Split (s)	15.3	28.3	25.3	16.3	
Total Split (s)	30.0	34.0	26.0	56.0	
Total Split (%)	33.3%	37.8%	28.9%	62%	
Maximum Green (s)	24.7	27.7	19.7	49.7	
Yellow Time (s)	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	5.3	6.3	6.3		
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Walk Time (s)	0.0	15.0	7.0	0.0	
Flash Dont Walk (s)	0.0	7.0	12.0	0.0	
Pedestrian Calls (#/hr)	0	5	10	0	
Act Effct Green (s)	24.7	27.7	19.7		
Actuated g/C Ratio	0.27	0.31	0.22		
v/c Ratio	1.11	0.96	0.62		
Control Delay	99.4	14.2	36.1		

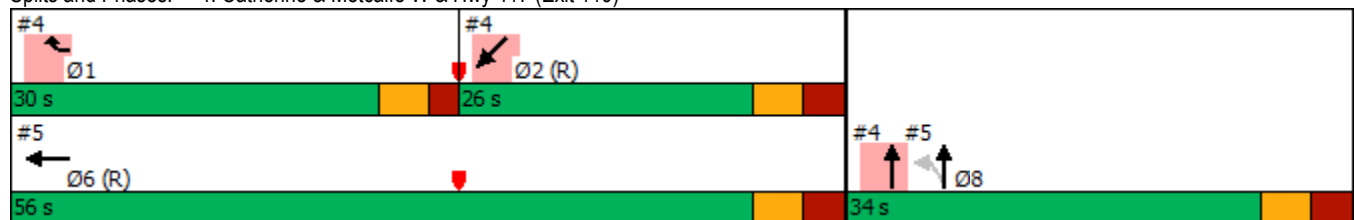














Lane Group	WBR	NBT	SWT	SWR	Ø6
Queue Delay	0.7	0.0	0.0		
Total Delay	100.1	14.2	36.1		
LOS	F	B	D		
Approach Delay		14.2	36.1		
Approach LOS		B	D		
Queue Length 50th (m)	~85.3	1.9	33.7		
Queue Length 95th (m)	#120.7	m#5.6	48.0		
Internal Link Dist (m)		0.1	160.1		
Turn Bay Length (m)					
Base Capacity (vph)	739	1053	720		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	81	0	0		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	1.24	0.96	0.62		

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 45 (50%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 49.4
 Intersection LOS: D
 Intersection Capacity Utilization 84.6%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Catherine & Metcalfe W & Hwy 417 (Exit 119)



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Traffic Volume (vph)	0	0	0	0	755	0	82	912	0	0	0	0
Future Volume (vph)	0	0	0	0	755	0	82	912	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99											
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	3390	0	1712	3424	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	3390	0	1697	3424	0	0	0	0
Right Turn on Red	Yes			No			No			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	50				50				50			
Link Distance (m)	82.6				121.1				97.0			
Travel Time (s)	5.9				8.7				7.0			
Confl. Peds. (#/hr)							7					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	839	0	91	1013	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	839	0	91	1013	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0				0.0				3.7			
Link Offset(m)	0.0				0.0				-1.0			
Crosswalk Width(m)	2.0				2.0				6.0			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type					NA				Perm			
Protected Phases					6				8			
Permitted Phases									8			
Minimum Split (s)					16.3				28.3			
Total Split (s)					56.0				34.0			
Total Split (%)					62.2%				37.8%			
Maximum Green (s)					49.7				27.7			
Yellow Time (s)					3.3				3.3			
All-Red Time (s)					3.0				3.0			
Lost Time Adjust (s)					0.0				0.0			
Total Lost Time (s)					6.3				6.3			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)					0.0				15.0			
Flash Dont Walk (s)					0.0				7.0			
Pedestrian Calls (#/hr)					0				5			
Act Effct Green (s)					49.7				27.7			
Actuated g/C Ratio					0.55				0.31			
v/c Ratio					0.45				0.17			
Control Delay					13.0				24.0			
Queue Delay					0.0				0.0			
Total Delay					13.0				24.0			
LOS					B				C			
Approach Delay					13.0				50.0			

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Minimum Split (s)	15.3	25.3
Total Split (s)	30.0	26.0
Total Split (%)	33%	29%
Maximum Green (s)	24.7	19.7
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	3.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	0.0	12.0
Pedestrian Calls (#/hr)	0	10
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

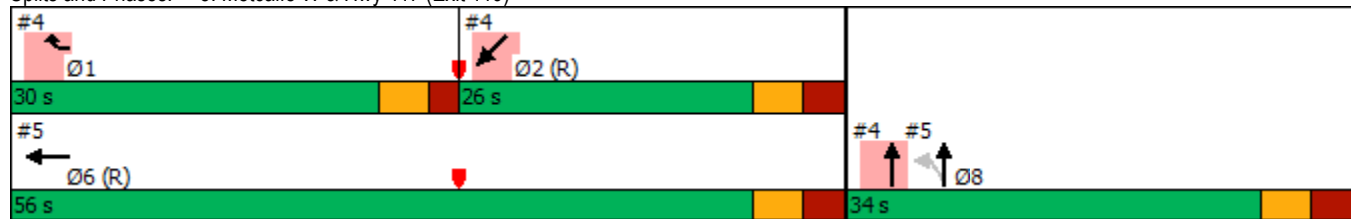


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					B			D				
Queue Length 50th (m)					39.2		10.6	82.8				
Queue Length 95th (m)					51.6		20.8	#120.3				
Internal Link Dist (m)		58.6			97.1			73.0			0.1	
Turn Bay Length (m)												
Base Capacity (vph)					1872		522	1053				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	5				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.45		0.17	0.97				

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 45 (50%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 34.0
 Intersection LOS: C
 Intersection Capacity Utilization 59.1%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Metcalfe W & Hwy 417 (Exit 119)



Lane Group	Ø1	Ø2
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		

6: Elgin & Argyle
AM Peak Hour

100 Argyle Avenue
2018 Existing Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↖	↗		↑↑	↑	
Traffic Volume (vph)	528	120	0	441	315	0
Future Volume (vph)	528	120	0	441	315	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0	0.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	10.0		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.86				
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3288	1365	0	3424	1733	0
Flt Permitted	0.950					
Satd. Flow (perm)	3288	1179	0	3424	1733	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		133				
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.8			118.2	109.3	
Travel Time (s)	4.8			8.5	7.9	
Confl. Peds. (#/hr)		46				
Confl. Bikes (#/hr)		11				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	0%	1%	5%	0%
Parking (#/hr)		0				
Adj. Flow (vph)	587	133	0	490	350	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	587	133	0	490	350	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.4			0.0	0.0	
Link Offset(m)	1.0			0.0	0.0	
Crosswalk Width(m)	2.0			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				

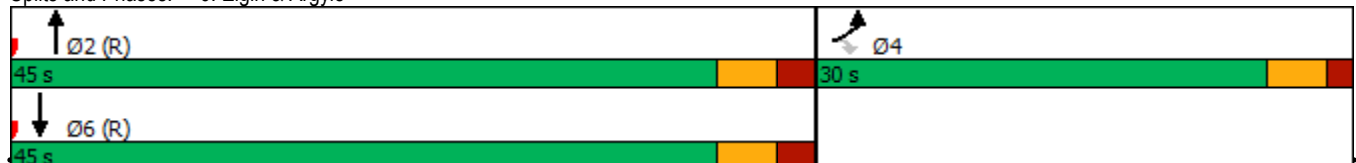


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.9	20.9		20.6	20.6	
Total Split (s)	30.0	30.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	25.1	25.1		39.4	39.4	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.9	4.9		5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		8.0	8.0	
Pedestrian Calls (#/hr)	20	20		50	50	
Act Effct Green (s)	19.0	19.0		45.5	45.5	
Actuated g/C Ratio	0.25	0.25		0.61	0.61	
v/c Ratio	0.71	0.33		0.24	0.33	
Control Delay	29.9	6.4		5.2	9.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.9	6.4		5.2	9.2	
LOS	C	A		A	A	
Approach Delay	25.6			5.2	9.2	
Approach LOS	C			A	A	
Queue Length 50th (m)	36.0	0.0		6.8	19.7	
Queue Length 95th (m)	45.3	10.0		17.0	40.6	
Internal Link Dist (m)	42.8			94.2	85.3	
Turn Bay Length (m)	40.0					
Base Capacity (vph)	1100	483		2077	1051	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.53	0.28		0.24	0.33	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 5 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 15.5
 Intersection LOS: B
 Intersection Capacity Utilization 42.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Elgin & Argyle



7: Elgin & Catherine
AM Peak Hour

100 Argyle Avenue
2018 Existing Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗		↕			↕	↕
Traffic Volume (vph)	0	0	0	59	127	198	105	221	0	0	242	156
Future Volume (vph)	0	0	0	59	127	198	105	221	0	0	242	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		45.0
Storage Lanes	0		0	0		1	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.95		0.96			0.90	
Frt						0.850					0.941	
Flt Protected					0.984			0.984				
Satd. Flow (prot)	0	0	0	0	1773	1532	0	3233	0	0	2809	0
Flt Permitted					0.984			0.706				
Satd. Flow (perm)	0	0	0	0	1773	1459	0	2226	0	0	2809	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						220						173
Link Speed (k/h)		50			50			50				50
Link Distance (m)		184.1			122.5			274.3				118.2
Travel Time (s)		13.3			8.8			19.7				8.5
Confl. Peds. (#/hr)						33	123					123
Confl. Bikes (#/hr)						14						26
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	10%	3%	0%	0%	4%	4%
Adj. Flow (vph)	0	0	0	66	141	220	117	246	0	0	269	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	207	220	0	363	0	0	442	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Minimum Split (s)				33.0	33.0	33.0	25.6	25.6				25.6
Total Split (s)				33.0	33.0	33.0	42.0	42.0				42.0
Total Split (%)				44.0%	44.0%	44.0%	56.0%	56.0%				56.0%
Maximum Green (s)				26.9	26.9	26.9	36.4	36.4				36.4
Yellow Time (s)				3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)				2.8	2.8	2.8	2.3	2.3				2.3
Lost Time Adjust (s)					0.0	0.0		0.0				0.0
Total Lost Time (s)					6.1	6.1		5.6				5.6
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	8.0	8.0				8.0
Flash Dont Walk (s)				19.9	19.9	19.9	12.0	12.0				12.0
Pedestrian Calls (#/hr)				15	15	15	50	50				50
Act Effct Green (s)					26.9	26.9		36.4				36.4
Actuated g/C Ratio					0.36	0.36		0.49				0.49
v/c Ratio					0.33	0.33		0.34				0.30
Control Delay					19.3	4.2		13.0				4.1

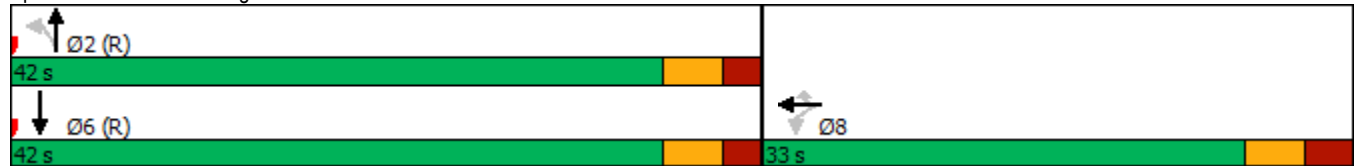


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					19.3	4.2		13.0			4.1	
LOS					B	A		B			A	
Approach Delay					11.5			13.0			4.1	
Approach LOS					B			B			A	
Queue Length 50th (m)					19.2	0.0		14.5			2.6	
Queue Length 95th (m)					33.7	11.7		22.7			3.6	
Internal Link Dist (m)		160.1			98.5			250.3			94.2	
Turn Bay Length (m)												
Base Capacity (vph)					635	664		1080			1452	
Starvation Cap Reductn					0	0		0			0	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.33	0.33		0.34			0.30	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	2 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.34
Intersection Signal Delay:	9.3
Intersection LOS:	A
Intersection Capacity Utilization:	63.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Elgin & Catherine

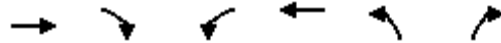




Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	242	1107	0	0	0
Future Volume (vph)	0	242	1107	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frnt	0.865					
Flt Protected						
Satd. Flow (prot)	0	1559	3424	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1559	3424	0	0	0
Link Speed (k/h)	50		50			50
Link Distance (m)	66.5		123.3			115.3
Travel Time (s)	4.8		8.9			8.3
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Adj. Flow (vph)	0	269	1230	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	269	1230	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	3.7		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 57.7%	ICU Level of Service B
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1753	7	0	0	0	2
Future Volume (vph)	1753	7	0	0	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	4704	0	0	0	0	1574
Flt Permitted						
Satd. Flow (perm)	4704	0	0	0	0	1574
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.9			40.1	59.5	
Travel Time (s)	5.5			2.9	4.3	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Parking (#/hr)	0					
Adj. Flow (vph)	1948	8	0	0	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1956	0	0	0	0	2
Enter Blocked Intersection	Yes	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.10	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.9%
	ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1107	648	0	0	0	0
Future Volume (vph)	1107	648	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected	0.950	0.978				
Satd. Flow (prot)	1543	3176	0	0	0	0
Flt Permitted	0.950	0.978				
Satd. Flow (perm)	1543	3176	0	0	0	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		40.1	66.8		123.3	
Travel Time (s)		2.9	4.8		8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Adj. Flow (vph)	1230	720	0	0	0	0
Shared Lane Traffic (%)	48%					
Lane Group Flow (vph)	640	1310	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		-2.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.7%
ICU Level of Service	B
Analysis Period (min)	15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕									↕↕	
Traffic Volume (vph)	0	86	143	0	0	0	0	0	0	74	1410	0
Future Volume (vph)	0	86	143	0	0	0	0	0	0	74	1410	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.86									0.98	
Frt		0.916										
Flt Protected											0.998	
Satd. Flow (prot)	0	1247	0	0	0	0	0	0	0	0	3246	0
Flt Permitted											0.998	
Satd. Flow (perm)	0	1247	0	0	0	0	0	0	0	0	3184	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)		49									28	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		170.3			173.0			119.0			124.7	
Travel Time (s)		12.3			12.5			8.6			9.0	
Confl. Peds. (#/hr)			133							155		
Confl. Bikes (#/hr)			2									13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%	0%	0%	0%	1%	1%	0%
Parking (#/hr)		0									0	
Adj. Flow (vph)	0	96	159	0	0	0	0	0	0	82	1567	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	0	0	0	0	0	0	1649	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		2.0			-2.0			0.0			0.0	
Crosswalk Width(m)		4.0			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.13	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA								Perm	NA	
Protected Phases		4									6	
Permitted Phases										6		
Minimum Split (s)		23.6								25.2	25.2	
Total Split (s)		27.0								73.0	73.0	
Total Split (%)		27.0%								73.0%	73.0%	
Maximum Green (s)		21.4								67.8	67.8	
Yellow Time (s)		3.3								3.3	3.3	
All-Red Time (s)		2.3								1.9	1.9	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		5.6									5.2	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		7.0								14.0	14.0	
Flash Dont Walk (s)		11.0								6.0	6.0	
Pedestrian Calls (#/hr)		50								50	50	
Act Effct Green (s)		21.4								67.8	67.8	
Actuated g/C Ratio		0.21								0.68	0.68	
v/c Ratio		0.84								0.76	0.76	
Control Delay		54.7								13.5	13.5	
Queue Delay		0.0								0.0	0.0	
Total Delay		54.7								13.5	13.5	



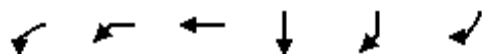
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D									B	
Approach Delay		54.7									13.5	
Approach LOS		D									B	
Queue Length 50th (m)		35.9									89.9	
Queue Length 95th (m)		#75.0									115.4	
Internal Link Dist (m)		146.3			149.0			95.0			100.7	
Turn Bay Length (m)												
Base Capacity (vph)		305									2167	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									7	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.84									0.76	

Intersection Summary

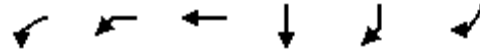
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	17 (17%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	65
Control Type:	Pretimed
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	19.0
Intersection LOS:	B
Intersection Capacity Utilization:	70.7%
ICU Level of Service:	C
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: O'Connor & Argyle





Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Lane Configurations							
Traffic Volume (vph)	196	216	682	965	471	128	
Future Volume (vph)	196	216	682	965	471	128	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	0.91	0.95	1.00	0.95	
Ped Bike Factor	0.98				0.96		
Frt					0.850		
Flt Protected	0.950		0.988				
Satd. Flow (prot)	1647	0	4753	3390	1522	0	
Flt Permitted	0.950		0.988				
Satd. Flow (perm)	1607	0	4753	3390	1460	0	
Right Turn on Red	Yes					Yes	
Satd. Flow (RTOR)	96				96		
Link Speed (k/h)			50	50			
Link Distance (m)			92.1	119.0			
Travel Time (s)			6.6	8.6			
Confl. Peds. (#/hr)	13					34	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	5%	1%	4%	2%	1%	4%	
Adj. Flow (vph)	218	240	758	1072	523	142	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	218	0	998	1072	665	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(m)			3.7	0.0			
Link Offset(m)			0.0	0.0			
Crosswalk Width(m)			4.9	4.9			
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24	24			24	14	
Number of Detectors	1	1	2	2	1		
Detector Template	Left	Left	Thru	Thru	Right		
Leading Detector (m)	6.1	6.1	30.5	30.5	6.1		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	6.1	6.1	1.8	1.8	6.1		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)			28.7	28.7			
Detector 2 Size(m)			1.8	1.8			
Detector 2 Type			Cl+Ex	Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)			0.0	0.0			
Turn Type	Perm	Perm	NA	NA	custom		
Protected Phases			8	1		5	
Permitted Phases	8	8			6		
Detector Phase	8	8	8	1	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	21.9	21.9	21.9	24.9	15.9	17.9	
Total Split (s)	41.0	41.0	41.0	59.0	41.0	18.0	

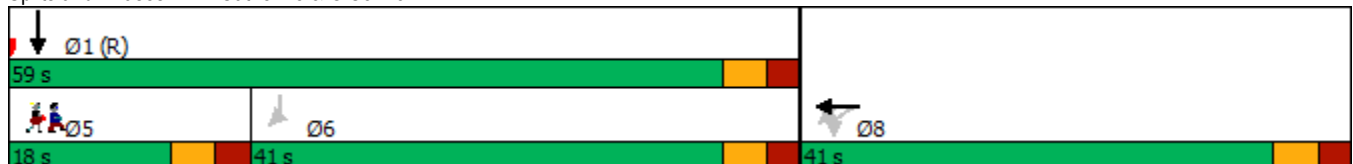


Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Total Split (%)	41.0%	41.0%	41.0%	59.0%	41.0%		18%
Maximum Green (s)	35.1	35.1	35.1	53.1	35.1		12.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6		2.6
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	Max	Max	C-Max	Max		None
Walk Time (s)	7.0	7.0	7.0	7.0	0.0		7.0
Flash Dont Walk (s)	9.0	9.0	9.0	12.0	0.0		5.0
Pedestrian Calls (#/hr)	10	10	10	15	0		15
Act Effct Green (s)	35.1		35.1	53.1	49.5		
Actuated g/C Ratio	0.35		0.35	0.53	0.50		
v/c Ratio	0.35		0.60	0.60	0.86		
Control Delay	13.4		21.2	9.7	21.9		
Queue Delay	0.0		0.0	0.7	3.1		
Total Delay	13.4		21.2	10.4	25.0		
LOS	B		C	B	C		
Approach Delay			19.8	16.0			
Approach LOS			B	B			
Queue Length 50th (m)	23.8		58.9	28.1	21.9		
Queue Length 95th (m)	43.7		74.5	37.7	m#189.0		
Internal Link Dist (m)			68.1	95.0			
Turn Bay Length (m)							
Base Capacity (vph)	626		1668	1800	771		
Starvation Cap Reductn	0		0	376	49		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.35		0.60	0.75	0.92		

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 25 (25%), Referenced to phase 1:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 17.6
 Intersection LOS: B
 Intersection Capacity Utilization 67.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Catherine & O'Connor



3: Metcalfe W & Argyle
PM Peak Hour

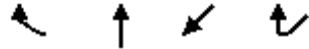
100 Argyle Avenue
2018 Existing Traffic



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑↑
Traffic Volume (vph)	170	0	0	0	0	925
Future Volume (vph)	170	0	0	0	0	925
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Fr _t						0.850
Flt Protected						
Satd. Flow (prot)	1622	0	0	0	0	2696
Flt Permitted						
Satd. Flow (perm)	1622	0	0	0	0	2696
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	173.0			76.9	69.3	
Travel Time (s)	12.5			5.5	5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%
Parking (#/hr)	0					
Adj. Flow (vph)	189	0	0	0	0	1028
Shared Lane Traffic (%)						
Lane Group Flow (vph)	189	0	0	0	0	1028
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Left
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	1.0	
Crosswalk Width(m)	8.0			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.21	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	24
Number of Detectors	2					1
Detector Template	Thru					Right
Leading Detector (m)	30.5					6.1
Trailing Detector (m)	0.0					0.0
Detector 1 Position(m)	0.0					0.0
Detector 1 Size(m)	1.8					6.1
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(m)	28.7					
Detector 2 Size(m)	1.8					
Detector 2 Type	Cl+Ex					
Detector 2 Channel						
Detector 2 Extend (s)	0.0					
Turn Type	NA					Prot
Protected Phases	4					2
Permitted Phases						
Detector Phase	4					2
Switch Phase						
Minimum Initial (s)	10.0					10.0
Minimum Split (s)	20.4					43.5
Total Split (s)	26.0					74.0
Total Split (%)	26.0%					74.0%



Lane Group	WBR	NBT	SWT	SWR	Ø6
Lane Configurations					
Traffic Volume (vph)	385	329	360	61	
Future Volume (vph)	385	329	360	61	
Ideal Flow (vphpl)	1800	1800	1800	1800	
Storage Length (m)	0.0			200.0	
Storage Lanes	2			1	
Taper Length (m)					
Lane Util. Factor	0.88	0.95	0.95	0.95	
Ped Bike Factor			1.00		
Frt	0.850		0.978		
Flt Protected					
Satd. Flow (prot)	2696	3424	3270	0	
Flt Permitted					
Satd. Flow (perm)	2696	3424	3270	0	
Right Turn on Red				No	
Satd. Flow (RTOR)					
Link Speed (k/h)		50	50		
Link Distance (m)		22.1	184.1		
Travel Time (s)		1.6	13.3		
Confl. Peds. (#/hr)				11	
Peak Hour Factor	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	1%	1%	3%	3%	
Adj. Flow (vph)	428	366	400	68	
Shared Lane Traffic (%)					
Lane Group Flow (vph)	428	366	468	0	
Enter Blocked Intersection	No	No	No	No	
Lane Alignment	Right	Left	Left	Right	
Median Width(m)		0.0	0.0		
Link Offset(m)		0.0	0.0		
Crosswalk Width(m)		2.0	10.0		
Two way Left Turn Lane					
Headway Factor	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24			14	
Turn Type	Prot	NA	NA		
Protected Phases	1	8	2	6	
Permitted Phases					
Minimum Split (s)	15.3	28.3	25.3	16.3	
Total Split (s)	26.0	33.0	41.0	67.0	
Total Split (%)	26.0%	33.0%	41.0%	67%	
Maximum Green (s)	20.7	26.7	34.7	60.7	
Yellow Time (s)	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	5.3	6.3	6.3		
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Walk Time (s)	0.0	15.0	7.0	0.0	
Flash Dont Walk (s)	0.0	7.0	12.0	0.0	
Pedestrian Calls (#/hr)	0	5	10	0	
Act Effct Green (s)	20.7	26.7	34.7		
Actuated g/C Ratio	0.21	0.27	0.35		
v/c Ratio	0.77	0.40	0.41		
Control Delay	47.7	2.4	26.3		
Queue Delay	0.0	0.0	0.0		

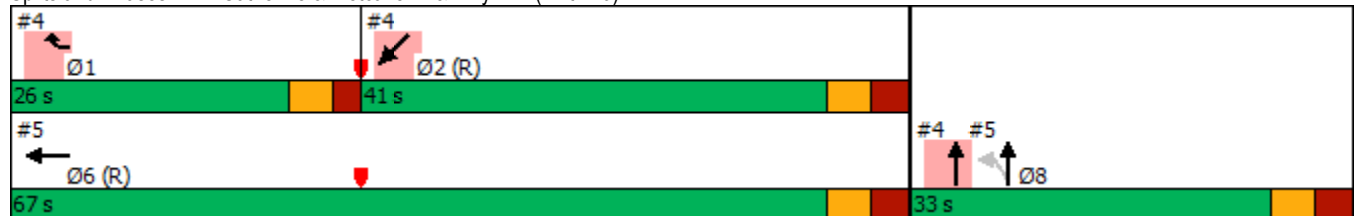














Lane Group	WBR	NBT	SWT	SWR	Ø6
Total Delay	47.7	2.4	26.3		
LOS	D	A	C		
Approach Delay		2.4	26.3		
Approach LOS		A	C		
Queue Length 50th (m)	41.1	0.5	33.1		
Queue Length 95th (m)	#59.8	0.8	45.8		
Internal Link Dist (m)		0.1	160.1		
Turn Bay Length (m)					
Base Capacity (vph)	558	914	1134		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	0	0	0		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	0.77	0.40	0.41		

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 63 (63%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 70
 Control Type: Pretimed
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 26.6
 Intersection Capacity Utilization 54.6%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: Catherine & Metcalfe W & Hwy 417 (Exit 119)



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Traffic Volume (vph)	0	0	0	0	819	0	48	329	0	0	0	0
Future Volume (vph)	0	0	0	0	819	0	48	329	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99											
Fr												
Flt Protected	0.950											
Satd. Flow (prot)	0	0	0	0	3390	0	1712	3424	0	0	0	0
Flt Permitted	0.950											
Satd. Flow (perm)	0	0	0	0	3390	0	1696	3424	0	0	0	0
Right Turn on Red	Yes			No			No			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	82.6			121.1			97.0			22.1		
Travel Time (s)	5.9			8.7			7.0			1.6		
Confl. Peds. (#/hr)	7											
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	910	0	53	366	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	910	0	53	366	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0			0.0			3.7			3.7		
Link Offset(m)	0.0			0.0			-1.0			0.0		
Crosswalk Width(m)	2.0			2.0			6.0			2.0		
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type					NA		Perm		NA			
Protected Phases					6				8			
Permitted Phases	8											
Minimum Split (s)					16.3		28.3		28.3			
Total Split (s)					67.0		33.0		33.0			
Total Split (%)					67.0%		33.0%		33.0%			
Maximum Green (s)					60.7		26.7		26.7			
Yellow Time (s)					3.3		3.3		3.3			
All-Red Time (s)					3.0		3.0		3.0			
Lost Time Adjust (s)					0.0		0.0		0.0			
Total Lost Time (s)					6.3		6.3		6.3			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)					0.0		15.0		15.0			
Flash Dont Walk (s)					0.0		7.0		7.0			
Pedestrian Calls (#/hr)					0		5		5			
Act Effct Green (s)					60.7		26.7		26.7			
Actuated g/C Ratio					0.61		0.27		0.27			
v/c Ratio					0.44		0.12		0.40			
Control Delay					11.4		28.7		31.7			
Queue Delay					0.0		0.0		0.0			
Total Delay					11.4		28.7		31.7			
LOS					B		C		C			
Approach Delay					11.4		31.3					

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Minimum Split (s)	15.3	25.3
Total Split (s)	26.0	41.0
Total Split (%)	26%	41%
Maximum Green (s)	20.7	34.7
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	3.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	0.0	12.0
Pedestrian Calls (#/hr)	0	10
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					B			C				
Queue Length 50th (m)					42.4		7.2	28.2				
Queue Length 95th (m)					54.5		15.9	40.3				
Internal Link Dist (m)		58.6			97.1			73.0			0.1	
Turn Bay Length (m)												
Base Capacity (vph)					2057		452	914				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.44		0.12	0.40				

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	63 (63%), Referenced to phase 2:SWT and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	17.7
Intersection LOS:	B
Intersection Capacity Utilization:	44.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 5: Metcalfe W & Hwy 417 (Exit 119)



Lane Group	Ø1	Ø2
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		

6: Elgin & Argyle
PM Peak Hour

100 Argyle Avenue
2018 Existing Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	360	236	0	187	793	0
Future Volume (vph)	360	236	0	187	793	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0	0.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	10.0		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.79				
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3321	1379	0	3390	1767	0
Flt Permitted	0.950					
Satd. Flow (perm)	3321	1092	0	3390	1767	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		119				
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.8			118.2	109.3	
Travel Time (s)	4.8			8.5	7.9	
Confl. Peds. (#/hr)		76				
Confl. Bikes (#/hr)		15				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	2%	3%	0%
Parking (#/hr)		0				
Adj. Flow (vph)	400	262	0	208	881	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	400	262	0	208	881	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.4			0.0	0.0	
Link Offset(m)	1.0			0.0	0.0	
Crosswalk Width(m)	2.0			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				

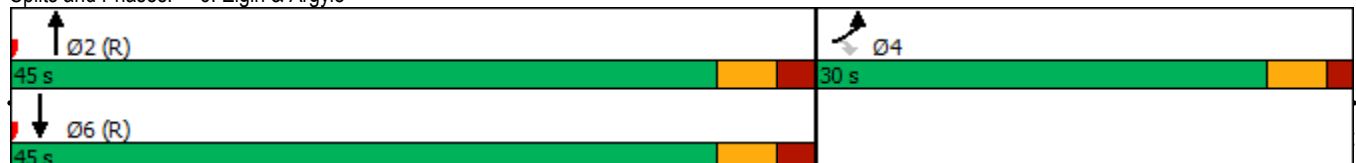


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.9	20.9		20.6	20.6	
Total Split (s)	30.0	30.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	25.1	25.1		39.4	39.4	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.9	4.9		5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		8.0	8.0	
Pedestrian Calls (#/hr)	30	30		50	50	
Act Effct Green (s)	17.2	17.2		47.3	47.3	
Actuated g/C Ratio	0.23	0.23		0.63	0.63	
v/c Ratio	0.53	0.77		0.10	0.79	
Control Delay	26.9	28.8		5.5	19.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	26.9	28.8		5.5	19.6	
LOS	C	C		A	B	
Approach Delay	27.7			5.5	19.6	
Approach LOS	C			A	B	
Queue Length 50th (m)	24.0	17.5		3.1	71.2	
Queue Length 95th (m)	30.0	35.9		9.0	#174.9	
Internal Link Dist (m)	42.8			94.2	85.3	
Turn Bay Length (m)	40.0					
Base Capacity (vph)	1111	444		2138	1114	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.36	0.59		0.10	0.79	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 21.0
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Elgin & Argyle



7: Elgin & Catherine
PM Peak Hour

100 Argyle Avenue
2018 Existing Traffic



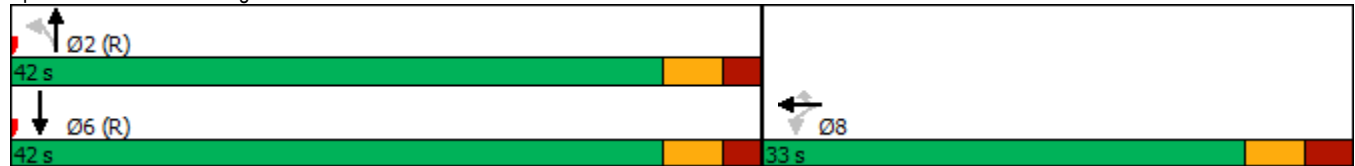
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗		↕↗			↕↗	
Traffic Volume (vph)	0	0	0	116	149	80	56	106	0	0	794	215
Future Volume (vph)	0	0	0	116	149	80	56	106	0	0	794	215
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		45.0
Storage Lanes	0		0	0		1	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.96		0.99			0.94	
Frt						0.850					0.968	
Flt Protected					0.979			0.983				
Satd. Flow (prot)	0	0	0	0	1764	1532	0	3185	0	0	3059	0
Flt Permitted					0.979			0.618				
Satd. Flow (perm)	0	0	0	0	1764	1476	0	1977	0	0	3059	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						89						64
Link Speed (k/h)		50			50			50				50
Link Distance (m)		184.1			122.5			274.3				118.2
Travel Time (s)		13.3			8.8			19.7				8.5
Confl. Peds. (#/hr)						27	138					138
Confl. Bikes (#/hr)						4						46
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	10%	5%	0%	0%	2%	4%
Adj. Flow (vph)	0	0	0	129	166	89	62	118	0	0	882	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	295	89	0	180	0	0	1121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Minimum Split (s)				33.0	33.0	33.0	25.6	25.6				25.6
Total Split (s)				33.0	33.0	33.0	42.0	42.0				42.0
Total Split (%)				44.0%	44.0%	44.0%	56.0%	56.0%				56.0%
Maximum Green (s)				26.9	26.9	26.9	36.4	36.4				36.4
Yellow Time (s)				3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)				2.8	2.8	2.8	2.3	2.3				2.3
Lost Time Adjust (s)					0.0	0.0		0.0				0.0
Total Lost Time (s)					6.1	6.1		5.6				5.6
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	8.0	8.0				8.0
Flash Dont Walk (s)				19.9	19.9	19.9	12.0	12.0				12.0
Pedestrian Calls (#/hr)				10	10	10	50	50				50
Act Effct Green (s)					26.9	26.9		36.4				36.4
Actuated g/C Ratio					0.36	0.36		0.49				0.49
v/c Ratio					0.47	0.15		0.19				0.74
Control Delay					21.5	4.9		11.6				12.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay					0.0	0.0		0.0			0.4	
Total Delay					21.5	4.9		11.6			12.5	
LOS					C	A		B			B	
Approach Delay					17.7			11.6			12.5	
Approach LOS					B			B			B	
Queue Length 50th (m)					29.0	0.0		6.6			40.1	
Queue Length 95th (m)					48.3	7.7		11.7			35.2	
Internal Link Dist (m)		160.1			98.5			250.3			94.2	
Turn Bay Length (m)												
Base Capacity (vph)					632	586		959			1517	
Starvation Cap Reductn					0	0		0			95	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.47	0.15		0.19			0.79	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 7 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Pretimed
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 13.6 Intersection LOS: B
 Intersection Capacity Utilization 77.0% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 7: Elgin & Catherine





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	166	353	0	0	0
Future Volume (vph)	0	166	353	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frnt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1543	3424	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1543	3424	0	0	0
Link Speed (k/h)	50		50			50
Link Distance (m)	66.1		123.1			95.9
Travel Time (s)	4.8		8.9			6.9
Confl. Peds. (#/hr)	19					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	184	392	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	184	392	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	3.7		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

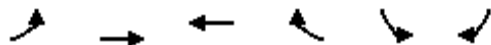
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 27.8%	ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	941	2	0	0	0	8
Future Volume (vph)	941	2	0	0	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	4756	0	0	0	0	1574
Flt Permitted						
Satd. Flow (perm)	4756	0	0	0	0	1574
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.9			40.1	59.5	
Travel Time (s)	5.5			2.9	4.3	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Parking (#/hr)	0					
Adj. Flow (vph)	1046	2	0	0	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1048	0	0	0	0	9
Enter Blocked Intersection	Yes	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.10	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.2%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	353	596	0	0	0	0
Future Volume (vph)	353	596	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected	0.950	0.996				
Satd. Flow (prot)	1558	3266	0	0	0	0
Flt Permitted	0.950	0.996				
Satd. Flow (perm)	1558	3266	0	0	0	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		40.1	66.8		123.1	
Travel Time (s)		2.9	4.8		8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	392	662	0	0	0	0
Shared Lane Traffic (%)	13%					
Lane Group Flow (vph)	341	713	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		-2.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.8%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕									↕↕	
Traffic Volume (vph)	0	63	62	0	0	0	0	0	0	35	782	0
Future Volume (vph)	0	63	62	0	0	0	0	0	0	35	782	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.93									0.99	
Frt		0.933										
Flt Protected											0.998	
Satd. Flow (prot)	0	1341	0	0	0	0	0	0	0	0	3158	0
Flt Permitted											0.998	
Satd. Flow (perm)	0	1341	0	0	0	0	0	0	0	0	3123	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)		49									32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		170.3			173.0			119.0			124.7	
Travel Time (s)		12.3			12.5			8.6			9.0	
Confl. Peds. (#/hr)			81							113		
Confl. Bikes (#/hr)			1									16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	8%	5%	0%	0%	0%	0%	0%	0%	0%	4%	2%
Parking (#/hr)		0									0	
Adj. Flow (vph)	0	63	62	0	0	0	0	0	0	35	782	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	0	0	0	0	0	0	817	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		2.0			-2.0			0.0			0.0	
Crosswalk Width(m)		4.0			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.13	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA								Perm	NA	
Protected Phases		4									6	
Permitted Phases										6		
Minimum Split (s)		23.6								25.2	25.2	
Total Split (s)		24.0								66.0	66.0	
Total Split (%)		26.7%								73.3%	73.3%	
Maximum Green (s)		18.4								60.8	60.8	
Yellow Time (s)		3.3								3.3	3.3	
All-Red Time (s)		2.3								1.9	1.9	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		5.6									5.2	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		7.0								14.0	14.0	
Flash Dont Walk (s)		11.0								6.0	6.0	
Pedestrian Calls (#/hr)		40								40	40	
Act Effct Green (s)		18.4									60.8	
Actuated g/C Ratio		0.20									0.68	
v/c Ratio		0.40									0.39	
Control Delay		23.7									6.7	
Queue Delay		0.0									0.0	
Total Delay		23.7									6.7	



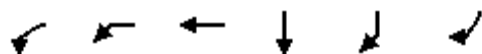
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C									A	
Approach Delay		23.7									6.7	
Approach LOS		C									A	
Queue Length 50th (m)		10.3									25.0	
Queue Length 95th (m)		24.9									33.6	
Internal Link Dist (m)		146.3			149.0			95.0			100.7	
Turn Bay Length (m)												
Base Capacity (vph)		313									2120	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									0	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.40									0.39	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	16 (18%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	9.0
Intersection LOS:	A
Intersection Capacity Utilization	77.4%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: O'Connor & Argyle

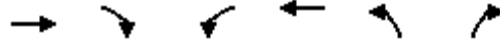




Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Lane Configurations							
Traffic Volume (vph)	109	221	889	398	358	83	
Future Volume (vph)	109	221	889	398	358	83	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	0.91	0.95	1.00	0.95	
Ped Bike Factor	0.96				0.93		
Frt					0.850		
Flt Protected	0.950		0.990				
Satd. Flow (prot)	1647	0	4711	3293	1520	0	
Flt Permitted	0.950		0.990				
Satd. Flow (perm)	1577	0	4711	3293	1420	0	
Right Turn on Red	Yes					Yes	
Satd. Flow (RTOR)	109				107		
Link Speed (k/h)			50	50			
Link Distance (m)			92.1	119.0			
Travel Time (s)			6.6	8.6			
Confl. Peds. (#/hr)	25					49	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	5%	2%	5%	5%	1%	5%	
Adj. Flow (vph)	109	221	889	398	358	83	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	109	0	1110	398	441	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(m)			3.7	0.0			
Link Offset(m)			0.0	0.0			
Crosswalk Width(m)			4.9	4.9			
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24	24			24	14	
Number of Detectors	1	1	2	2	1		
Detector Template	Left	Left	Thru	Thru	Right		
Leading Detector (m)	6.1	6.1	30.5	30.5	6.1		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	6.1	6.1	1.8	1.8	6.1		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)			28.7	28.7			
Detector 2 Size(m)			1.8	1.8			
Detector 2 Type			Cl+Ex	Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)			0.0	0.0			
Turn Type	Perm	Perm	NA	NA	custom		
Protected Phases			8	1		5	
Permitted Phases	8	8			6		
Detector Phase	8	8	8	1	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	21.9	21.9	21.9	24.9	15.9	17.9	
Total Split (s)	42.0	42.0	42.0	48.0	30.0	18.0	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑↑
Traffic Volume (vph)	113	0	0	0	0	1624
Future Volume (vph)	113	0	0	0	0	1624
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	1575	0	0	0	0	2696
Flt Permitted						
Satd. Flow (perm)	1575	0	0	0	0	2696
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	173.0			76.9	69.3	
Travel Time (s)	12.5			5.5	5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	0%	0%	0%	1%
Parking (#/hr)	0					
Adj. Flow (vph)	113	0	0	0	0	1624
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	0	0	0	1624
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Left
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	1.0	
Crosswalk Width(m)	8.0			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.21	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	24
Number of Detectors	2					1
Detector Template	Thru					Right
Leading Detector (m)	30.5					6.1
Trailing Detector (m)	0.0					0.0
Detector 1 Position(m)	0.0					0.0
Detector 1 Size(m)	1.8					6.1
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(m)	28.7					
Detector 2 Size(m)	1.8					
Detector 2 Type	Cl+Ex					
Detector 2 Channel						
Detector 2 Extend (s)	0.0					
Turn Type	NA					Prot
Protected Phases	4					2
Permitted Phases						
Detector Phase	4					2
Switch Phase						
Minimum Initial (s)	10.0					10.0
Minimum Split (s)	20.4					43.5
Total Split (s)	21.0					69.0
Total Split (%)	23.3%					76.7%



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Maximum Green (s)	15.6					63.5
Yellow Time (s)	3.3					3.3
All-Red Time (s)	2.1					2.2
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	5.4					5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					33.0
Flash Dont Walk (s)	8.0					5.0
Pedestrian Calls (#/hr)	30					10
Act Effct Green (s)	12.5					70.8
Actuated g/C Ratio	0.14					0.79
v/c Ratio	0.52					0.77
Control Delay	46.9					3.7
Queue Delay	0.0					1.0
Total Delay	46.9					4.8
LOS	D					A
Approach Delay	46.9				4.8	
Approach LOS	D				A	
Queue Length 50th (m)	18.1					14.3
Queue Length 95th (m)	33.2					m9.9
Internal Link Dist (m)	149.0			52.9	45.3	
Turn Bay Length (m)						
Base Capacity (vph)	273					2121
Starvation Cap Reductn	0					254
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.41					0.87

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 75 (83%), Referenced to phase 2:NBR, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 7.5

Intersection LOS: A

Intersection Capacity Utilization 77.4%

ICU Level of Service D

Analysis Period (min) 15

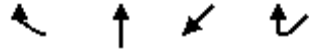
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Metcalfe W & Argyle





Lane Group	WBR	NBT	SWT	SWR	Ø6
Lane Configurations	↖↖	↑↑	↗↗		
Traffic Volume (vph)	737	907	357	42	
Future Volume (vph)	737	907	357	42	
Ideal Flow (vphpl)	1800	1800	1800	1800	
Storage Length (m)	0.0			200.0	
Storage Lanes	2			1	
Taper Length (m)					
Lane Util. Factor	0.88	0.95	0.95	0.95	
Ped Bike Factor			1.00		
Frt	0.850		0.984		
Flt Protected					
Satd. Flow (prot)	2696	3424	3290	0	
Flt Permitted					
Satd. Flow (perm)	2696	3424	3290	0	
Right Turn on Red				No	
Satd. Flow (RTOR)					
Link Speed (k/h)		50	50		
Link Distance (m)		22.1	184.1		
Travel Time (s)		1.6	13.3		
Confl. Peds. (#/hr)				18	
Confl. Bikes (#/hr)				2	
Peak Hour Factor	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	1%	3%	3%	
Adj. Flow (vph)	737	907	357	42	
Shared Lane Traffic (%)					
Lane Group Flow (vph)	737	907	399	0	
Enter Blocked Intersection	No	No	No	No	
Lane Alignment	Right	Left	Left	Right	
Median Width(m)		0.0	0.0		
Link Offset(m)		0.0	0.0		
Crosswalk Width(m)		2.0	10.0		
Two way Left Turn Lane					
Headway Factor	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24			14	
Turn Type	Prot	NA	NA		
Protected Phases	1	8	2	6	
Permitted Phases					
Minimum Split (s)	15.3	28.3	25.3	16.3	
Total Split (s)	30.0	34.0	26.0	56.0	
Total Split (%)	33.3%	37.8%	28.9%	62%	
Maximum Green (s)	24.7	27.7	19.7	49.7	
Yellow Time (s)	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	5.3	6.3	6.3		
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Walk Time (s)	0.0	15.0	7.0	0.0	
Flash Dont Walk (s)	0.0	7.0	12.0	0.0	
Pedestrian Calls (#/hr)	0	5	10	0	
Act Effct Green (s)	24.7	27.7	19.7		
Actuated g/C Ratio	0.27	0.31	0.22		
v/c Ratio	1.00	0.86	0.55		
Control Delay	66.6	7.7	34.7		

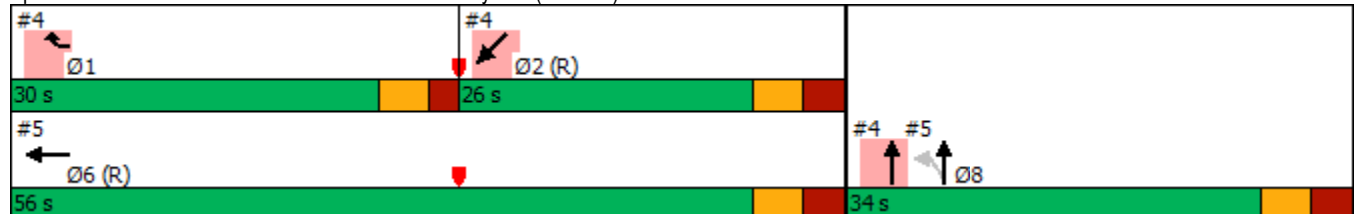



















Lane Group	WBR	NBT	SWT	SWR	Ø6
Queue Delay	13.2	0.0	0.0		
Total Delay	79.9	7.7	34.7		
LOS	E	A	C		
Approach Delay		7.7	34.7		
Approach LOS		A	C		
Queue Length 50th (m)	66.4	1.4	29.8		
Queue Length 95th (m)	#104.0	m#5.6	43.0		
Internal Link Dist (m)		0.1	160.1		
Turn Bay Length (m)					
Base Capacity (vph)	739	1053	720		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	32	0	0		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	1.04	0.86	0.55		

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 45 (50%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 39.0 Intersection LOS: D
 Intersection Capacity Utilization 84.4% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Catherine & Metcalfe W & Hwy 417 (Exit 119)



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 			 				
Traffic Volume (vph)	0	0	0	0	755	0	82	907	0	0	0	0
Future Volume (vph)	0	0	0	0	755	0	82	907	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99											
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	3390	0	1712	3424	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	3390	0	1697	3424	0	0	0	0
Right Turn on Red	Yes			No			No			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	82.6			121.1			97.0			22.1		
Travel Time (s)	5.9			8.7			7.0			1.6		
Confl. Peds. (#/hr)							7					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	755	0	82	907	0	0	0	0
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	0	0	0	0	755	0	82	907	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0			0.0			3.7			3.7		
Link Offset(m)	0.0			0.0			-1.0			0.0		
Crosswalk Width(m)	2.0			2.0			6.0			2.0		
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type					NA		Perm		NA			
Protected Phases					6		8					
Permitted Phases							8					
Minimum Split (s)					16.3		28.3		28.3			
Total Split (s)					56.0		34.0		34.0			
Total Split (%)					62.2%		37.8%		37.8%			
Maximum Green (s)					49.7		27.7		27.7			
Yellow Time (s)					3.3		3.3		3.3			
All-Red Time (s)					3.0		3.0		3.0			
Lost Time Adjust (s)					0.0		0.0		0.0			
Total Lost Time (s)					6.3		6.3		6.3			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)					0.0		15.0		15.0			
Flash Dont Walk (s)					0.0		7.0		7.0			
Pedestrian Calls (#/hr)					0		5		5			
Act Effct Green (s)					49.7		27.7		27.7			
Actuated g/C Ratio					0.55		0.31		0.31			
v/c Ratio					0.40		0.16		0.86			
Control Delay					12.4		23.7		39.3			
Queue Delay					0.0		0.0		0.0			
Total Delay					12.4		23.7		39.4			
LOS					B		C		D			
Approach Delay					12.4		38.1					

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Minimum Split (s)	15.3	25.3
Total Split (s)	30.0	26.0
Total Split (%)	33%	29%
Maximum Green (s)	24.7	19.7
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	3.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	0.0	12.0
Pedestrian Calls (#/hr)	0	10
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

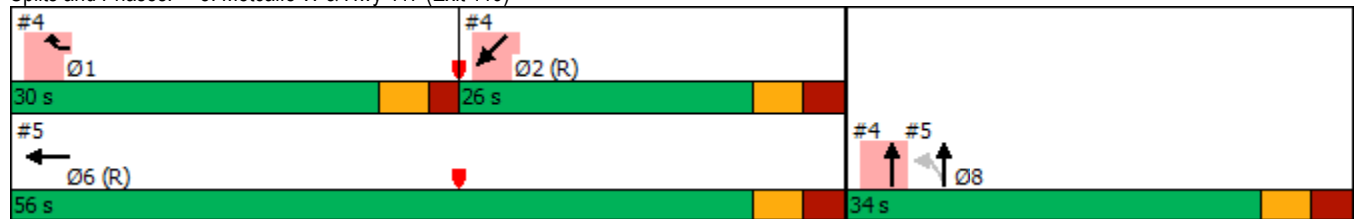


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					B			D				
Queue Length 50th (m)					34.1		9.4	71.1				
Queue Length 95th (m)					45.5		19.1	#100.5				
Internal Link Dist (m)		58.6			97.1			73.0			0.1	
Turn Bay Length (m)												
Base Capacity (vph)					1872		522	1053				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	2				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.40		0.16	0.86				

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 45 (50%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 27.0
 Intersection LOS: C
 Intersection Capacity Utilization 59.0%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Metcalfe W & Hwy 417 (Exit 119)



Lane Group	Ø1	Ø2
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		

6: Elgin & Argyle
AM Peak Hour

100 Argyle Avenue
2023/2028 Background Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	528	120	0	441	315	0
Future Volume (vph)	528	120	0	441	315	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0	0.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	10.0		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.86				
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3288	1365	0	3424	1733	0
Flt Permitted	0.950					
Satd. Flow (perm)	3288	1179	0	3424	1733	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		120				
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.8			118.2	109.3	
Travel Time (s)	4.8			8.5	7.9	
Confl. Peds. (#/hr)		46				
Confl. Bikes (#/hr)		11				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	0%	1%	5%	0%
Parking (#/hr)		0				
Adj. Flow (vph)	528	120	0	441	315	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	120	0	441	315	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.4			0.0	0.0	
Link Offset(m)	1.0			0.0	0.0	
Crosswalk Width(m)	2.0			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				

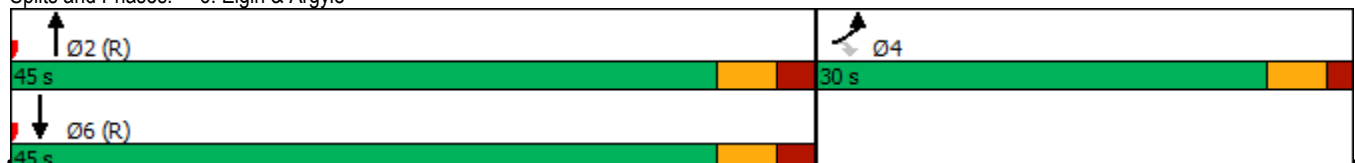


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.9	20.9		20.6	20.6	
Total Split (s)	30.0	30.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	25.1	25.1		39.4	39.4	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.9	4.9		5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		8.0	8.0	
Pedestrian Calls (#/hr)	20	20		50	50	
Act Effct Green (s)	17.6	17.6		46.9	46.9	
Actuated g/C Ratio	0.23	0.23		0.63	0.63	
v/c Ratio	0.69	0.33		0.21	0.29	
Control Delay	30.6	7.0		4.7	8.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	30.6	7.0		4.7	8.1	
LOS	C	A		A	A	
Approach Delay	26.3			4.7	8.1	
Approach LOS	C			A	A	
Queue Length 50th (m)	32.6	0.0		5.8	16.3	
Queue Length 95th (m)	42.3	10.0		14.8	33.4	
Internal Link Dist (m)	42.8			94.2	85.3	
Turn Bay Length (m)	40.0					
Base Capacity (vph)	1100	474		2141	1084	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.48	0.25		0.21	0.29	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 5 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 15.4
 Intersection LOS: B
 Intersection Capacity Utilization 42.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Elgin & Argyle



7: Elgin & Catherine
AM Peak Hour

100 Argyle Avenue
2023/2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗		↕↗			↕↗	
Traffic Volume (vph)	0	0	0	59	127	198	105	221	0	0	242	156
Future Volume (vph)	0	0	0	59	127	198	105	221	0	0	242	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		45.0
Storage Lanes	0		0	0		1	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.95		0.96				0.90
Fr						0.850						0.941
Flt Protected					0.984			0.984				
Satd. Flow (prot)	0	0	0	0	1773	1379	0	3233	0	0	2808	0
Flt Permitted					0.984			0.727				
Satd. Flow (perm)	0	0	0	0	1773	1313	0	2286	0	0	2808	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						198						156
Link Speed (k/h)		50			50			50				50
Link Distance (m)		184.1			122.5			274.3				118.2
Travel Time (s)		13.3			8.8			19.7				8.5
Confl. Peds. (#/hr)						33	123					123
Confl. Bikes (#/hr)						14						26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	10%	3%	0%	0%	4%	4%
Parking (#/hr)						0						
Adj. Flow (vph)	0	0	0	59	127	198	105	221	0	0	242	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	186	198	0	326	0	0	398	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Minimum Split (s)				33.0	33.0	33.0	25.6	25.6				25.6
Total Split (s)				33.0	33.0	33.0	42.0	42.0				42.0
Total Split (%)				44.0%	44.0%	44.0%	56.0%	56.0%				56.0%
Maximum Green (s)				26.9	26.9	26.9	36.4	36.4				36.4
Yellow Time (s)				3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)				2.8	2.8	2.8	2.3	2.3				2.3
Lost Time Adjust (s)					0.0	0.0		0.0				0.0
Total Lost Time (s)					6.1	6.1		5.6				5.6
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	8.0	8.0				8.0
Flash Dont Walk (s)				19.9	19.9	19.9	12.0	12.0				12.0
Pedestrian Calls (#/hr)				15	15	15	50	50				50
Act Effct Green (s)					26.9	26.9		36.4				36.4
Actuated g/C Ratio					0.36	0.36		0.49				0.49
v/c Ratio					0.29	0.33		0.29				0.28



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					18.8	4.5		12.5			4.1	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					18.8	4.5		12.5			4.1	
LOS					B	A		B			A	
Approach Delay					11.4			12.5			4.1	
Approach LOS					B			B			A	
Queue Length 50th (m)					17.0	0.0		12.6			2.3	
Queue Length 95th (m)					30.4	11.2		20.2			8.3	
Internal Link Dist (m)		160.1			98.5			250.3			94.2	
Turn Bay Length (m)												
Base Capacity (vph)					635	597		1109			1443	
Starvation Cap Reductn					0	0		0			0	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.29	0.33		0.29			0.28	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	2 (3%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	9.1
Intersection LOS:	A
Intersection Capacity Utilization:	63.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Elgin & Catherine





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	242	1102	0	0	0
Future Volume (vph)	0	242	1102	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1559	3424	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1559	3424	0	0	0
Link Speed (k/h)	50		50			50
Link Distance (m)	74.6		120.8			108.0
Travel Time (s)	5.4		8.7			7.8
Confl. Peds. (#/hr)	4					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Adj. Flow (vph)	0	242	1102	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	242	1102	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	3.7		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 57.6%	ICU Level of Service B
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1750	0	0	0	0	0
Future Volume (vph)	1750	0	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	4709	0	0	0	0	1820
Flt Permitted						
Satd. Flow (perm)	4709	0	0	0	0	1820
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.9			40.1	59.5	
Travel Time (s)	5.5			2.9	4.3	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Parking (#/hr)	0					
Adj. Flow (vph)	1750	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1750	0	0	0	0	0
Enter Blocked Intersection	Yes	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.10	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.0%
	ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1102	648	0	0	0	0
Future Volume (vph)	1102	648	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected	0.950	0.978				
Satd. Flow (prot)	1543	3176	0	0	0	0
Flt Permitted	0.950	0.978				
Satd. Flow (perm)	1543	3176	0	0	0	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		40.1	66.8		120.8	
Travel Time (s)		2.9	4.8		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Adj. Flow (vph)	1102	648	0	0	0	0
Shared Lane Traffic (%)	48%					
Lane Group Flow (vph)	573	1177	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		-2.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.6%
ICU Level of Service	B
Analysis Period (min)	15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕									↕↕	
Traffic Volume (vph)	0	86	143	0	0	0	0	0	0	74	1415	0
Future Volume (vph)	0	86	143	0	0	0	0	0	0	74	1415	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.86									0.98	
Frt		0.916										
Flt Protected											0.998	
Satd. Flow (prot)	0	1247	0	0	0	0	0	0	0	0	3246	0
Flt Permitted											0.998	
Satd. Flow (perm)	0	1247	0	0	0	0	0	0	0	0	3184	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)		67									28	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		170.3			173.0			119.0			124.7	
Travel Time (s)		12.3			12.5			8.6			9.0	
Confl. Peds. (#/hr)			133							155		
Confl. Bikes (#/hr)			2									13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%	0%	0%	0%	1%	1%	0%
Parking (#/hr)		0									0	
Adj. Flow (vph)	0	86	143	0	0	0	0	0	0	74	1415	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	229	0	0	0	0	0	0	0	0	1489	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		2.0			-2.0			0.0			0.0	
Crosswalk Width(m)		4.0			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.13	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA								Perm	NA	
Protected Phases		4									6	
Permitted Phases										6		
Minimum Split (s)		23.6								25.2	25.2	
Total Split (s)		27.0								73.0	73.0	
Total Split (%)		27.0%								73.0%	73.0%	
Maximum Green (s)		21.4								67.8	67.8	
Yellow Time (s)		3.3								3.3	3.3	
All-Red Time (s)		2.3								1.9	1.9	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		5.6									5.2	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		7.0								14.0	14.0	
Flash Dont Walk (s)		11.0								6.0	6.0	
Pedestrian Calls (#/hr)		50								50	50	
Act Effct Green (s)		21.4									67.8	
Actuated g/C Ratio		0.21									0.68	
v/c Ratio		0.72									0.69	
Control Delay		39.7									11.6	
Queue Delay		0.0									0.0	
Total Delay		39.7									11.6	



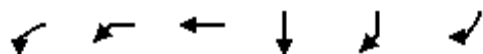
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D									B	
Approach Delay		39.7									11.6	
Approach LOS		D									B	
Queue Length 50th (m)		27.1									73.3	
Queue Length 95th (m)		#57.2									93.8	
Internal Link Dist (m)		146.3			149.0			95.0			100.7	
Turn Bay Length (m)												
Base Capacity (vph)		319									2167	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									4	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.72									0.69	

Intersection Summary

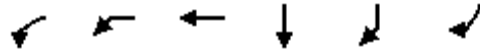
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 17 (17%), Referenced to phase 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 15.3
 Intersection LOS: B
 Intersection Capacity Utilization 70.8%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: O'Connor & Argyle





Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Lane Configurations							
Traffic Volume (vph)	196	216	682	965	476	128	
Future Volume (vph)	196	216	682	965	476	128	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	0.91	0.95	1.00	0.95	
Ped Bike Factor	0.98				0.96		
Frt					0.850		
Flt Protected	0.950		0.988				
Satd. Flow (prot)	1647	0	4753	3390	1522	0	
Flt Permitted	0.950		0.988				
Satd. Flow (perm)	1607	0	4753	3390	1460	0	
Right Turn on Red	Yes						Yes
Satd. Flow (RTOR)	98				96		
Link Speed (k/h)			50	50			
Link Distance (m)			92.1	119.0			
Travel Time (s)			6.6	8.6			
Confl. Peds. (#/hr)	13					34	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	5%	1%	4%	2%	1%	4%	
Adj. Flow (vph)	196	216	682	965	476	128	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	196	0	898	965	604	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(m)			3.7	0.0			
Link Offset(m)			0.0	0.0			
Crosswalk Width(m)			4.9	4.9			
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24	24			24	14	
Number of Detectors	1	1	2	2	1		
Detector Template	Left	Left	Thru	Thru	Right		
Leading Detector (m)	6.1	6.1	30.5	30.5	6.1		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	6.1	6.1	1.8	1.8	6.1		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)			28.7	28.7			
Detector 2 Size(m)			1.8	1.8			
Detector 2 Type			Cl+Ex	Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)			0.0	0.0			
Turn Type	Perm	Perm	NA	NA	custom		
Protected Phases			8	1		5	
Permitted Phases	8	8			6		
Detector Phase	8	8	8	1	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	21.9	21.9	21.9	24.9	15.9	17.9	
Total Split (s)	41.0	41.0	41.0	59.0	41.0	18.0	

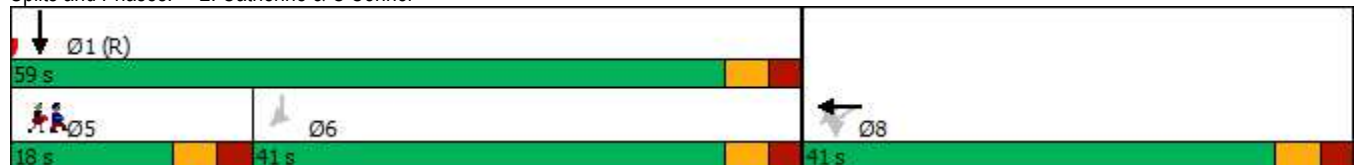


Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Total Split (%)	41.0%	41.0%	41.0%	59.0%	41.0%		18%
Maximum Green (s)	35.1	35.1	35.1	53.1	35.1		12.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6		2.6
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	Max	Max	C-Max	Max		None
Walk Time (s)	7.0	7.0	7.0	7.0	0.0		7.0
Flash Dont Walk (s)	9.0	9.0	9.0	12.0	0.0		5.0
Pedestrian Calls (#/hr)	10	10	10	15	0		15
Act Effct Green (s)	35.1		35.1	53.1	49.5		
Actuated g/C Ratio	0.35		0.35	0.53	0.50		
v/c Ratio	0.31		0.54	0.54	0.78		
Control Delay	12.8		20.4	9.4	18.7		
Queue Delay	0.0		0.0	0.4	1.1		
Total Delay	12.8		20.4	9.8	19.8		
LOS	B		C	A	B		
Approach Delay			19.0	13.7			
Approach LOS			B	B			
Queue Length 50th (m)	20.1		51.7	22.1	18.7		
Queue Length 95th (m)	38.5		65.9	31.3	#170.8		
Internal Link Dist (m)			68.1	95.0			
Turn Bay Length (m)							
Base Capacity (vph)	627		1668	1800	771		
Starvation Cap Reductn	0		0	375	46		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.31		0.54	0.68	0.83		

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 25 (25%), Referenced to phase 1:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 15.9
 Intersection LOS: B
 Intersection Capacity Utilization 67.8%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Catherine & O'Connor

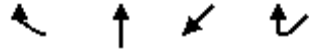




Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑↑
Traffic Volume (vph)	170	0	0	0	0	960
Future Volume (vph)	170	0	0	0	0	960
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Fr _t						0.850
Flt Protected						
Satd. Flow (prot)	1622	0	0	0	0	2696
Flt Permitted						
Satd. Flow (perm)	1622	0	0	0	0	2696
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	173.0			76.9	69.3	
Travel Time (s)	12.5			5.5	5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%
Parking (#/hr)	0					
Adj. Flow (vph)	170	0	0	0	0	960
Shared Lane Traffic (%)						
Lane Group Flow (vph)	170	0	0	0	0	960
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Left
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	1.0	
Crosswalk Width(m)	8.0			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.21	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	24
Number of Detectors	2					1
Detector Template	Thru					Right
Leading Detector (m)	30.5					6.1
Trailing Detector (m)	0.0					0.0
Detector 1 Position(m)	0.0					0.0
Detector 1 Size(m)	1.8					6.1
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(m)	28.7					
Detector 2 Size(m)	1.8					
Detector 2 Type	Cl+Ex					
Detector 2 Channel						
Detector 2 Extend (s)	0.0					
Turn Type	NA					Prot
Protected Phases	4					2
Permitted Phases						
Detector Phase	4					2
Switch Phase						
Minimum Initial (s)	10.0					10.0
Minimum Split (s)	20.4					43.5
Total Split (s)	26.0					74.0
Total Split (%)	26.0%					74.0%



Lane Group	WBR	NBT	SWT	SWR	Ø6
Lane Configurations					
Traffic Volume (vph)	385	363	360	61	
Future Volume (vph)	385	363	360	61	
Ideal Flow (vphpl)	1800	1800	1800	1800	
Storage Length (m)	0.0			200.0	
Storage Lanes	2			1	
Taper Length (m)					
Lane Util. Factor	0.88	0.95	0.95	0.95	
Ped Bike Factor			1.00		
Frt	0.850		0.978		
Flt Protected					
Satd. Flow (prot)	2696	3424	3270	0	
Flt Permitted					
Satd. Flow (perm)	2696	3424	3270	0	
Right Turn on Red				No	
Satd. Flow (RTOR)					
Link Speed (k/h)		50	50		
Link Distance (m)		22.1	184.1		
Travel Time (s)		1.6	13.3		
Confl. Peds. (#/hr)				11	
Peak Hour Factor	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	1%	3%	3%	
Adj. Flow (vph)	385	363	360	61	
Shared Lane Traffic (%)					
Lane Group Flow (vph)	385	363	421	0	
Enter Blocked Intersection	No	No	No	No	
Lane Alignment	Right	Left	Left	Right	
Median Width(m)		0.0	0.0		
Link Offset(m)		0.0	0.0		
Crosswalk Width(m)		2.0	10.0		
Two way Left Turn Lane					
Headway Factor	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24			14	
Turn Type	Prot	NA	NA		
Protected Phases	1	8	2	6	
Permitted Phases					
Minimum Split (s)	15.3	28.3	25.3	16.3	
Total Split (s)	26.0	33.0	41.0	67.0	
Total Split (%)	26.0%	33.0%	41.0%	67%	
Maximum Green (s)	20.7	26.7	34.7	60.7	
Yellow Time (s)	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	5.3	6.3	6.3		
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Walk Time (s)	0.0	15.0	7.0	0.0	
Flash Dont Walk (s)	0.0	7.0	12.0	0.0	
Pedestrian Calls (#/hr)	0	5	10	0	
Act Effct Green (s)	20.7	26.7	34.7		
Actuated g/C Ratio	0.21	0.27	0.35		
v/c Ratio	0.69	0.40	0.37		
Control Delay	44.0	2.4	25.7		
Queue Delay	0.0	0.0	0.0		



Lane Group	WBR	NBT	SWT	SWR	Ø6
Total Delay	44.0	2.4	25.7		
LOS	D	A	C		
Approach Delay		2.4	25.7		
Approach LOS		A	C		
Queue Length 50th (m)	36.4	0.5	29.3		
Queue Length 95th (m)	52.3	0.7	41.2		
Internal Link Dist (m)		0.1	160.1		
Turn Bay Length (m)					
Base Capacity (vph)	558	914	1134		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	0	0	0		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	0.69	0.40	0.37		













Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 63 (63%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 70
 Control Type: Pretimed
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 24.5
 Intersection Capacity Utilization 55.6%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 4: Catherine & Metcalfe W & Hwy 417 (Exit 119)



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Traffic Volume (vph)	0	0	0	0	819	0	48	364	0	0	0	0
Future Volume (vph)	0	0	0	0	819	0	48	364	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99											
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	3390	0	1712	3424	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	3390	0	1696	3424	0	0	0	0
Right Turn on Red	Yes			No			No			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	50				50				50			
Link Distance (m)	82.6				121.1				97.0			
Travel Time (s)	5.9				8.7				7.0			
Confl. Peds. (#/hr)							7					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	819	0	48	364	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	819	0	48	364	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0				0.0				3.7			
Link Offset(m)	0.0				0.0				-1.0			
Crosswalk Width(m)	2.0				2.0				6.0			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14		24		14		24		14	
Turn Type					NA				Perm			
Protected Phases					6				8			
Permitted Phases									8			
Minimum Split (s)					16.3				28.3			
Total Split (s)					67.0				33.0			
Total Split (%)					67.0%				33.0%			
Maximum Green (s)					60.7				26.7			
Yellow Time (s)					3.3				3.3			
All-Red Time (s)					3.0				3.0			
Lost Time Adjust (s)					0.0				0.0			
Total Lost Time (s)					6.3				6.3			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)					0.0				15.0			
Flash Dont Walk (s)					0.0				7.0			
Pedestrian Calls (#/hr)					0				5			
Act Effct Green (s)					60.7				26.7			
Actuated g/C Ratio					0.61				0.27			
v/c Ratio					0.40				0.11			
Control Delay					10.9				28.5			
Queue Delay					0.0				0.0			
Total Delay					10.9				28.5			
LOS					B				C			
Approach Delay					10.9				31.3			

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Minimum Split (s)	15.3	25.3
Total Split (s)	26.0	41.0
Total Split (%)	26%	41%
Maximum Green (s)	20.7	34.7
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	3.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	0.0	12.0
Pedestrian Calls (#/hr)	0	10
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

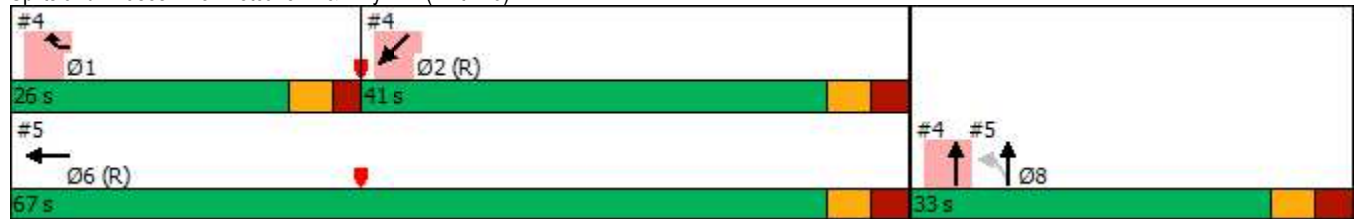


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					B			C				
Queue Length 50th (m)					36.8		6.5	28.0				
Queue Length 95th (m)					47.8		14.5	40.0				
Internal Link Dist (m)		58.6			97.1			73.0			0.1	
Turn Bay Length (m)												
Base Capacity (vph)					2057		452	914				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.40		0.11	0.40				

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	63 (63%), Referenced to phase 2:SWT and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	17.7
Intersection LOS:	B
Intersection Capacity Utilization:	45.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 5: Metcalfe W & Hwy 417 (Exit 119)



Lane Group	Ø1	Ø2
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	360	236	0	187	793	0
Future Volume (vph)	360	236	0	187	793	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0	0.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	10.0		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.79				
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3321	1379	0	3390	1767	0
Flt Permitted	0.950					
Satd. Flow (perm)	3321	1092	0	3390	1767	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		150				
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.8			118.2	109.3	
Travel Time (s)	4.8			8.5	7.9	
Confl. Peds. (#/hr)		76				
Confl. Bikes (#/hr)		15				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	2%	3%	0%
Parking (#/hr)		0				
Adj. Flow (vph)	360	236	0	187	793	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	360	236	0	187	793	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.4			0.0	0.0	
Link Offset(m)	1.0			0.0	0.0	
Crosswalk Width(m)	2.0			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				

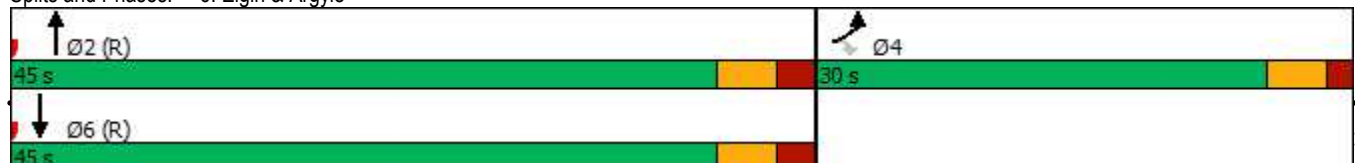


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.9	20.9		20.6	20.6	
Total Split (s)	30.0	30.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	25.1	25.1		39.4	39.4	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.9	4.9		5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		8.0	8.0	
Pedestrian Calls (#/hr)	30	30		50	50	
Act Effct Green (s)	15.0	15.0		49.5	49.5	
Actuated g/C Ratio	0.20	0.20		0.66	0.66	
v/c Ratio	0.54	0.70		0.08	0.68	
Control Delay	29.1	21.7		4.7	13.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.1	21.7		4.7	13.6	
LOS	C	C		A	B	
Approach Delay	26.2			4.7	13.6	
Approach LOS	C			A	B	
Queue Length 50th (m)	22.5	10.1		2.5	50.0	
Queue Length 95th (m)	28.0	26.9		8.0	#143.4	
Internal Link Dist (m)	42.8			94.2	85.3	
Turn Bay Length (m)	40.0					
Base Capacity (vph)	1111	465		2236	1165	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.32	0.51		0.08	0.68	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 17.3
 Intersection LOS: B
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Elgin & Argyle















7: Elgin & Catherine
PM Peak Hour

100 Argyle Avenue
2023/2028 Background Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗		↕↗			↕↗	
Traffic Volume (vph)	0	0	0	116	149	80	56	106	0	0	794	215
Future Volume (vph)	0	0	0	116	149	80	56	106	0	0	794	215
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		45.0
Storage Lanes	0		0	0		1	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.96		0.98				0.94
Frt						0.850						0.968
Flt Protected					0.979			0.983				
Satd. Flow (prot)	0	0	0	0	1764	1379	0	3185	0	0	3059	0
Flt Permitted					0.979			0.653				
Satd. Flow (perm)	0	0	0	0	1764	1328	0	2081	0	0	3059	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						80						63
Link Speed (k/h)		50			50			50				50
Link Distance (m)		184.1			122.5			274.3				118.2
Travel Time (s)		13.3			8.8			19.7				8.5
Confl. Peds. (#/hr)						27	138					138
Confl. Bikes (#/hr)						4						46
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	10%	5%	0%	0%	2%	4%
Parking (#/hr)						0						
Adj. Flow (vph)	0	0	0	116	149	80	56	106	0	0	794	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	265	80	0	162	0	0	1009	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Minimum Split (s)				33.0	33.0	33.0	25.6	25.6				25.6
Total Split (s)				33.0	33.0	33.0	42.0	42.0				42.0
Total Split (%)				44.0%	44.0%	44.0%	56.0%	56.0%				56.0%
Maximum Green (s)				26.9	26.9	26.9	36.4	36.4				36.4
Yellow Time (s)				3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)				2.8	2.8	2.8	2.3	2.3				2.3
Lost Time Adjust (s)					0.0	0.0		0.0				0.0
Total Lost Time (s)					6.1	6.1		5.6				5.6
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	8.0	8.0				8.0
Flash Dont Walk (s)				19.9	19.9	19.9	12.0	12.0				12.0
Pedestrian Calls (#/hr)				10	10	10	50	50				50
Act Effct Green (s)					26.9	26.9		36.4				36.4
Actuated g/C Ratio					0.36	0.36		0.49				0.49
v/c Ratio					0.42	0.15		0.16				0.67

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					20.7	5.2		11.3			11.2	
Queue Delay					0.0	0.0		0.0			0.2	
Total Delay					20.7	5.2		11.3			11.4	
LOS					C	A		B			B	
Approach Delay					17.1			11.3			11.4	
Approach LOS					B			B			B	
Queue Length 50th (m)					25.6	0.0		5.8			44.2	
Queue Length 95th (m)					43.2	7.3		10.6			30.4	
Internal Link Dist (m)		160.1			98.5			250.3			94.2	
Turn Bay Length (m)												
Base Capacity (vph)					632	527		1009			1517	
Starvation Cap Reductn					0	0		0			92	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.42	0.15		0.16			0.71	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	7 (9%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization:	77.0%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 7: Elgin & Catherine





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	166	388	0	0	0
Future Volume (vph)	0	166	388	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frts		0.865				
Flt Protected						
Satd. Flow (prot)	0	1543	3424	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1543	3424	0	0	0
Link Speed (k/h)	50		50			50
Link Distance (m)	75.2		125.3			104.0
Travel Time (s)	5.4		9.0			7.5
Confl. Peds. (#/hr)	19					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	166	388	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	166	388	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	3.7		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

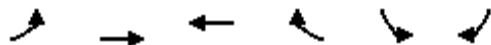
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 28.8%	ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	984	0	0	0	0	0
Future Volume (vph)	984	0	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	4755	0	0	0	0	1820
Flt Permitted						
Satd. Flow (perm)	4755	0	0	0	0	1820
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.9			40.1	59.5	
Travel Time (s)	5.5			2.9	4.3	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Parking (#/hr)	0					
Adj. Flow (vph)	984	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	984	0	0	0	0	0
Enter Blocked Intersection	Yes	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.10	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.4%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	388	596	0	0	0	0
Future Volume (vph)	388	596	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected	0.950	0.995				
Satd. Flow (prot)	1558	3263	0	0	0	0
Flt Permitted	0.950	0.995				
Satd. Flow (perm)	1558	3263	0	0	0	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		40.1	66.8		125.3	
Travel Time (s)		2.9	4.8		9.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	388	596	0	0	0	0
Shared Lane Traffic (%)	18%					
Lane Group Flow (vph)	318	666	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		-2.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	63	62	0	0	0	0	0	0	37	782	0
Future Volume (vph)	0	63	62	0	0	0	0	0	0	37	782	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.93									0.99	
Frt		0.933										
Flt Protected											0.998	
Satd. Flow (prot)	0	1341	0	0	0	0	0	0	0	0	3158	0
Flt Permitted											0.998	
Satd. Flow (perm)	0	1341	0	0	0	0	0	0	0	0	3122	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)		49									32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		170.3			173.0			119.0			124.7	
Travel Time (s)		12.3			12.5			8.6			9.0	
Confl. Peds. (#/hr)			81							113		
Confl. Bikes (#/hr)			1									16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	8%	5%	0%	0%	0%	0%	0%	0%	0%	4%	2%
Parking (#/hr)		0									0	
Adj. Flow (vph)	0	63	62	0	0	0	0	0	0	37	782	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	0	0	0	0	0	0	819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		2.0			-2.0			0.0			0.0	
Crosswalk Width(m)		4.0			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.13	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA								Perm	NA	
Protected Phases		4									6	
Permitted Phases										6		
Minimum Split (s)		23.6								25.2	25.2	
Total Split (s)		24.0								66.0	66.0	
Total Split (%)		26.7%								73.3%	73.3%	
Maximum Green (s)		18.4								60.8	60.8	
Yellow Time (s)		3.3								3.3	3.3	
All-Red Time (s)		2.3								1.9	1.9	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		5.6									5.2	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		7.0								14.0	14.0	
Flash Dont Walk (s)		11.0								6.0	6.0	
Pedestrian Calls (#/hr)		40								40	40	
Act Effct Green (s)		18.4									60.8	
Actuated g/C Ratio		0.20									0.68	
v/c Ratio		0.40									0.39	
Control Delay		23.7									6.7	
Queue Delay		0.0									0.0	
Total Delay		23.7									6.7	



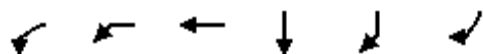
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C									A	
Approach Delay		23.7									6.7	
Approach LOS		C									A	
Queue Length 50th (m)		10.3									25.0	
Queue Length 95th (m)		24.9									33.8	
Internal Link Dist (m)		146.3			149.0			95.0			100.7	
Turn Bay Length (m)												
Base Capacity (vph)		313									2119	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									0	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.40									0.39	

Intersection Summary

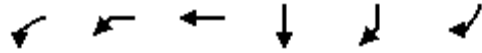
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	16 (18%), Referenced to phase 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	9.0
Intersection LOS:	A
Intersection Capacity Utilization:	77.3%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 1: O'Connor & Argyle





Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Lane Configurations							
Traffic Volume (vph)	111	224	894	398	358	83	
Future Volume (vph)	111	224	894	398	358	83	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	0.91	0.95	1.00	0.95	
Ped Bike Factor	0.96				0.93		
Frt					0.850		
Flt Protected	0.950		0.990				
Satd. Flow (prot)	1647	0	4712	3293	1520	0	
Flt Permitted	0.950		0.990				
Satd. Flow (perm)	1577	0	4712	3293	1420	0	
Right Turn on Red	Yes					Yes	
Satd. Flow (RTOR)	111				107		
Link Speed (k/h)			50	50			
Link Distance (m)			92.1	119.0			
Travel Time (s)			6.6	8.6			
Confl. Peds. (#/hr)	25					49	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	5%	2%	5%	5%	1%	5%	
Adj. Flow (vph)	111	224	894	398	358	83	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	111	0	1118	398	441	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(m)			3.7	0.0			
Link Offset(m)			0.0	0.0			
Crosswalk Width(m)			4.9	4.9			
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24	24			24	14	
Number of Detectors	1	1	2	2	1		
Detector Template	Left	Left	Thru	Thru	Right		
Leading Detector (m)	6.1	6.1	30.5	30.5	6.1		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	6.1	6.1	1.8	1.8	6.1		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)			28.7	28.7			
Detector 2 Size(m)			1.8	1.8			
Detector 2 Type			Cl+Ex	Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)			0.0	0.0			
Turn Type	Perm	Perm	NA	NA	custom		
Protected Phases			8	1		5	
Permitted Phases	8	8			6		
Detector Phase	8	8	8	1	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	21.9	21.9	21.9	24.9	15.9	17.9	
Total Split (s)	42.0	42.0	42.0	48.0	30.0	18.0	



Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Total Split (%)	46.7%	46.7%	46.7%	53.3%	33.3%		20%
Maximum Green (s)	36.1	36.1	36.1	42.1	24.1		12.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6		2.6
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	Max	Max	C-Max	Max		None
Walk Time (s)	7.0	7.0	7.0	7.0	0.0		7.0
Flash Dont Walk (s)	9.0	9.0	9.0	12.0	0.0		5.0
Pedestrian Calls (#/hr)	30	30	30	20	0		15
Act Effct Green (s)	36.1		36.1	42.1	38.5		
Actuated g/C Ratio	0.40		0.40	0.47	0.43		
v/c Ratio	0.16		0.59	0.26	0.66		
Control Delay	11.6		31.1	10.3	19.2		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	11.6		31.1	10.3	19.2		
LOS	B		C	B	B		
Approach Delay			29.4	15.0			
Approach LOS			C	B			
Queue Length 50th (m)	2.3		56.1	20.3	39.6		
Queue Length 95th (m)	m17.0		70.4	29.4	#109.1		
Internal Link Dist (m)			68.1	95.0			
Turn Bay Length (m)							
Base Capacity (vph)	699		1890	1540	669		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.16		0.59	0.26	0.66		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 1:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 61.7%

ICU Level of Service B

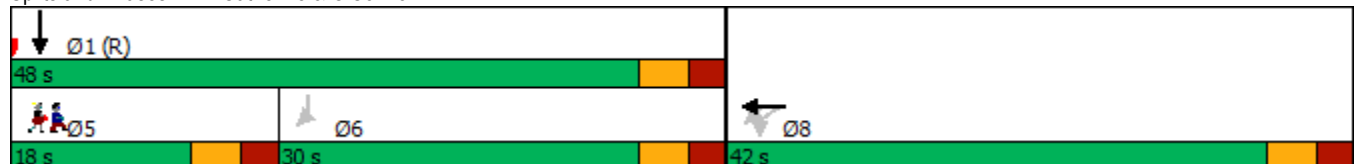
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Catherine & O'Connor



	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↗↗
Traffic Volume (vph)	115	0	0	0	0	1623
Future Volume (vph)	115	0	0	0	0	1623
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Fr _t						0.850
Flt Protected						
Satd. Flow (prot)	1575	0	0	0	0	2696
Flt Permitted						
Satd. Flow (perm)	1575	0	0	0	0	2696
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	173.0			76.9	69.3	
Travel Time (s)	12.5			5.5	5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	0%	0%	0%	1%
Parking (#/hr)	0					
Adj. Flow (vph)	115	0	0	0	0	1623
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	0	0	0	0	1623
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Left
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	1.0	
Crosswalk Width(m)	8.0			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.21	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	24
Number of Detectors	2					1
Detector Template	Thru					Right
Leading Detector (m)	30.5					6.1
Trailing Detector (m)	0.0					0.0
Detector 1 Position(m)	0.0					0.0
Detector 1 Size(m)	1.8					6.1
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(m)	28.7					
Detector 2 Size(m)	1.8					
Detector 2 Type	Cl+Ex					
Detector 2 Channel						
Detector 2 Extend (s)	0.0					
Turn Type	NA					Prot
Protected Phases	4					2
Permitted Phases						
Detector Phase	4					2
Switch Phase						
Minimum Initial (s)	10.0					10.0
Minimum Split (s)	20.4					43.5
Total Split (s)	21.0					69.0
Total Split (%)	23.3%					76.7%



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Maximum Green (s)	15.6					63.5
Yellow Time (s)	3.3					3.3
All-Red Time (s)	2.1					2.2
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	5.4					5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					33.0
Flash Dont Walk (s)	8.0					5.0
Pedestrian Calls (#/hr)	30					10
Act Effct Green (s)	12.5					70.8
Actuated g/C Ratio	0.14					0.79
v/c Ratio	0.53					0.77
Control Delay	47.0					3.7
Queue Delay	0.0					1.0
Total Delay	47.0					4.7
LOS	D					A
Approach Delay	47.0				4.7	
Approach LOS	D				A	
Queue Length 50th (m)	18.4					14.2
Queue Length 95th (m)	33.6					m9.9
Internal Link Dist (m)	149.0			52.9	45.3	
Turn Bay Length (m)						
Base Capacity (vph)	273					2121
Starvation Cap Reductn	0					254
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.42					0.87

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 75 (83%), Referenced to phase 2:NBR, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 7.5

Intersection LOS: A

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 3: Metcalfe W & Argyle





Lane Group	WBR	NBT	SWT	SWR	Ø6
Lane Configurations					
Traffic Volume (vph)	736	906	367	43	
Future Volume (vph)	736	906	367	43	
Ideal Flow (vphpl)	1800	1800	1800	1800	
Storage Length (m)	0.0			200.0	
Storage Lanes	2			1	
Taper Length (m)					
Lane Util. Factor	0.88	0.95	0.95	0.95	
Ped Bike Factor			1.00		
Frt	0.850		0.984		
Flt Protected					
Satd. Flow (prot)	2696	3424	3290	0	
Flt Permitted					
Satd. Flow (perm)	2696	3424	3290	0	
Right Turn on Red				No	
Satd. Flow (RTOR)					
Link Speed (k/h)		50	50		
Link Distance (m)		22.1	184.1		
Travel Time (s)		1.6	13.3		
Confl. Peds. (#/hr)				18	
Confl. Bikes (#/hr)				2	
Peak Hour Factor	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	1%	3%	3%	
Adj. Flow (vph)	736	906	367	43	
Shared Lane Traffic (%)					
Lane Group Flow (vph)	736	906	410	0	
Enter Blocked Intersection	No	No	No	No	
Lane Alignment	Right	Left	Left	Right	
Median Width(m)		0.0	0.0		
Link Offset(m)		0.0	0.0		
Crosswalk Width(m)		2.0	10.0		
Two way Left Turn Lane					
Headway Factor	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24			14	
Turn Type	Prot	NA	NA		
Protected Phases	1	8	2	6	
Permitted Phases					
Minimum Split (s)	15.3	28.3	25.3	16.3	
Total Split (s)	30.0	34.0	26.0	56.0	
Total Split (%)	33.3%	37.8%	28.9%	62%	
Maximum Green (s)	24.7	27.7	19.7	49.7	
Yellow Time (s)	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	5.3	6.3	6.3		
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Walk Time (s)	0.0	15.0	7.0	0.0	
Flash Dont Walk (s)	0.0	7.0	12.0	0.0	
Pedestrian Calls (#/hr)	0	5	10	0	
Act Effct Green (s)	24.7	27.7	19.7		
Actuated g/C Ratio	0.27	0.31	0.22		
v/c Ratio	1.00	0.86	0.57		
Control Delay	66.3	7.7	35.0		

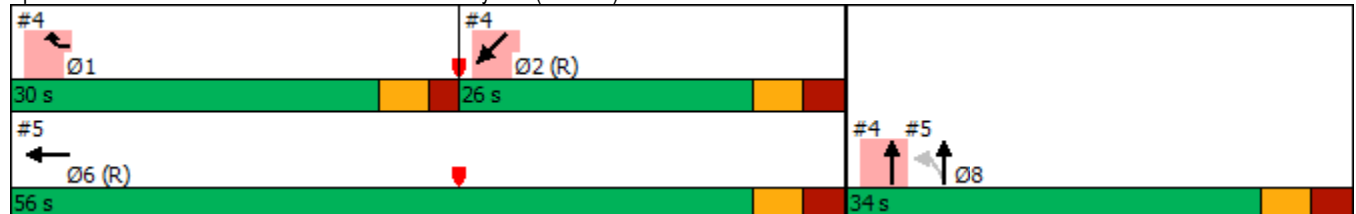














Lane Group	WBR	NBT	SWT	SWR	Ø6
Queue Delay	12.6	0.0	0.0		
Total Delay	78.9	7.7	35.0		
LOS	E	A	C		
Approach Delay		7.7	35.0		
Approach LOS		A	C		
Queue Length 50th (m)	66.4	1.4	30.8		
Queue Length 95th (m)	#103.8	m#5.6	44.3		
Internal Link Dist (m)		0.1	160.1		
Turn Bay Length (m)					
Base Capacity (vph)	739	1053	720		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	31	0	0		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	1.04	0.86	0.57		

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 45 (50%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 38.7 Intersection LOS: D
 Intersection Capacity Utilization 84.4% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Catherine & Metcalfe W & Hwy 417 (Exit 119)



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Traffic Volume (vph)	0	0	0	0	755	0	82	906	0	0	0	0
Future Volume (vph)	0	0	0	0	755	0	82	906	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99											
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	3390	0	1712	3424	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	3390	0	1697	3424	0	0	0	0
Right Turn on Red	Yes			No			No			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	50				50				50			
Link Distance (m)	82.6				121.1				97.0			
Travel Time (s)	5.9				8.7				7.0			
Confl. Peds. (#/hr)							7					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	755	0	82	906	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	755	0	82	906	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0				0.0				3.7			
Link Offset(m)	0.0				0.0				-1.0			
Crosswalk Width(m)	2.0				2.0				6.0			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14		24		14		24		14	
Turn Type					NA				Perm			
Protected Phases					6				8			
Permitted Phases									8			
Minimum Split (s)					16.3				28.3			
Total Split (s)					56.0				34.0			
Total Split (%)					62.2%				37.8%			
Maximum Green (s)					49.7				27.7			
Yellow Time (s)					3.3				3.3			
All-Red Time (s)					3.0				3.0			
Lost Time Adjust (s)					0.0				0.0			
Total Lost Time (s)					6.3				6.3			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)					0.0				15.0			
Flash Dont Walk (s)					0.0				7.0			
Pedestrian Calls (#/hr)					0				5			
Act Effct Green (s)					49.7				27.7			
Actuated g/C Ratio					0.55				0.31			
v/c Ratio					0.40				0.16			
Control Delay					12.4				23.7			
Queue Delay					0.0				0.0			
Total Delay					12.4				23.7			
LOS					B				C			
Approach Delay					12.4				38.0			

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Minimum Split (s)	15.3	25.3
Total Split (s)	30.0	26.0
Total Split (%)	33%	29%
Maximum Green (s)	24.7	19.7
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	3.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	0.0	12.0
Pedestrian Calls (#/hr)	0	10
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

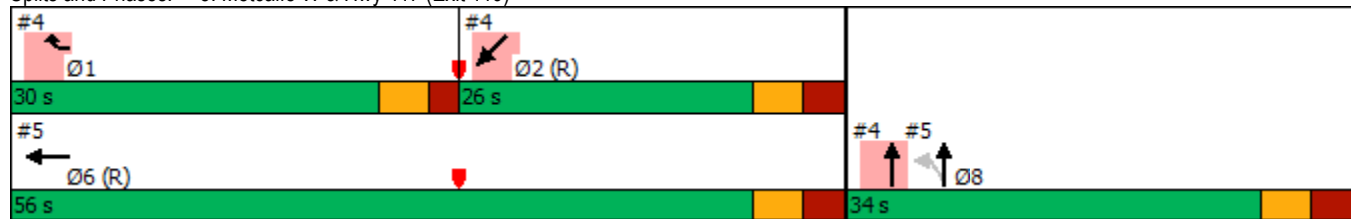


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					B			D				
Queue Length 50th (m)					34.1		9.4	71.0				
Queue Length 95th (m)					45.5		19.1	#100.4				
Internal Link Dist (m)		58.6			97.1			73.0			0.1	
Turn Bay Length (m)												
Base Capacity (vph)					1872		522	1053				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	2				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.40		0.16	0.86				

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 45 (50%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 26.9
 Intersection LOS: C
 Intersection Capacity Utilization 59.0%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Metcalfe W & Hwy 417 (Exit 119)



Lane Group	Ø1	Ø2
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	533	132	0	441	316	0
Future Volume (vph)	533	132	0	441	316	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0	0.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	10.0		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.86				
Fr t		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3288	1365	0	3424	1733	0
Flt Permitted	0.950					
Satd. Flow (perm)	3288	1179	0	3424	1733	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		132				
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.8			118.2	109.3	
Travel Time (s)	4.8			8.5	7.9	
Confl. Peds. (#/hr)		46				
Confl. Bikes (#/hr)		11				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	0%	1%	5%	0%
Parking (#/hr)		0				
Adj. Flow (vph)	533	132	0	441	316	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	533	132	0	441	316	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.4			0.0	0.0	
Link Offset(m)	1.0			0.0	0.0	
Crosswalk Width(m)	2.0			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				

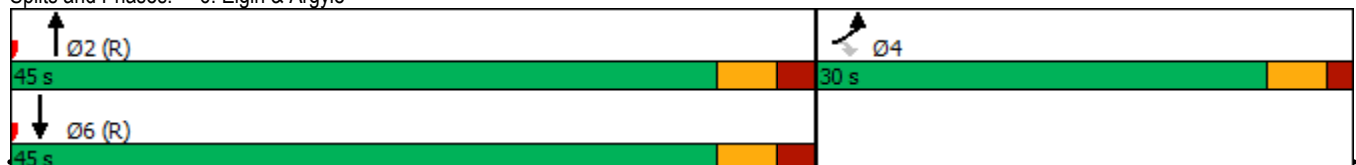


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.9	20.9		20.6	20.6	
Total Split (s)	30.0	30.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	25.1	25.1		39.4	39.4	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.9	4.9		5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		8.0	8.0	
Pedestrian Calls (#/hr)	20	20		50	50	
Act Effct Green (s)	17.7	17.7		46.8	46.8	
Actuated g/C Ratio	0.24	0.24		0.62	0.62	
v/c Ratio	0.69	0.35		0.21	0.29	
Control Delay	30.6	7.0		4.7	8.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	30.6	7.0		4.7	8.1	
LOS	C	A		A	A	
Approach Delay	25.9			4.7	8.1	
Approach LOS	C			A	A	
Queue Length 50th (m)	32.8	0.0		5.8	16.5	
Queue Length 95th (m)	42.5	10.4		14.9	33.7	
Internal Link Dist (m)	42.8			94.2	85.3	
Turn Bay Length (m)	40.0					
Base Capacity (vph)	1100	482		2137	1081	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.48	0.27		0.21	0.29	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 5 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 15.4
 Intersection LOS: B
 Intersection Capacity Utilization 42.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Elgin & Argyle



7: Elgin & Catherine
AM Peak Hour

100 Argyle Avenue
2023/2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗		↕↗			↕↗	
Traffic Volume (vph)	0	0	0	59	127	198	105	221	0	0	244	167
Future Volume (vph)	0	0	0	59	127	198	105	221	0	0	244	167
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		45.0
Storage Lanes	0		0	0		1	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor							0.95	0.96				0.89
Fr							0.850					0.939
Flt Protected					0.984			0.984				
Satd. Flow (prot)	0	0	0	0	1773	1379	0	3233	0	0	2791	0
Flt Permitted					0.984			0.723				
Satd. Flow (perm)	0	0	0	0	1773	1313	0	2276	0	0	2791	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						198						167
Link Speed (k/h)		50			50			50				50
Link Distance (m)		184.1			122.5			274.3				118.2
Travel Time (s)		13.3			8.8			19.7				8.5
Confl. Peds. (#/hr)						33	123					123
Confl. Bikes (#/hr)						14						26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	10%	3%	0%	0%	4%	4%
Parking (#/hr)						0						
Adj. Flow (vph)	0	0	0	59	127	198	105	221	0	0	244	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	186	198	0	326	0	0	411	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Minimum Split (s)				33.0	33.0	33.0	25.6	25.6				25.6
Total Split (s)				33.0	33.0	33.0	42.0	42.0				42.0
Total Split (%)				44.0%	44.0%	44.0%	56.0%	56.0%				56.0%
Maximum Green (s)				26.9	26.9	26.9	36.4	36.4				36.4
Yellow Time (s)				3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)				2.8	2.8	2.8	2.3	2.3				2.3
Lost Time Adjust (s)					0.0	0.0		0.0				0.0
Total Lost Time (s)					6.1	6.1		5.6				5.6
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	8.0	8.0				8.0
Flash Dont Walk (s)				19.9	19.9	19.9	12.0	12.0				12.0
Pedestrian Calls (#/hr)				15	15	15	50	50				50
Act Effct Green (s)					26.9	26.9		36.4				36.4
Actuated g/C Ratio					0.36	0.36		0.49				0.49
v/c Ratio					0.29	0.33		0.30				0.29

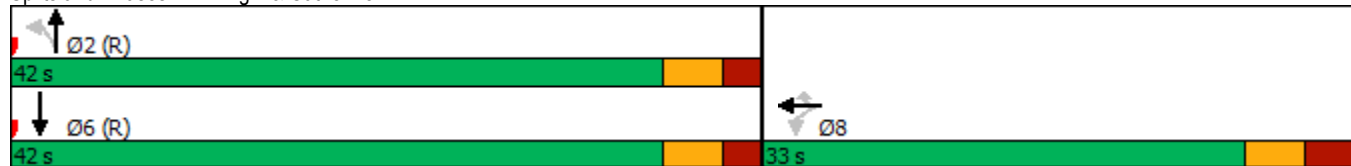


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					18.8	4.5		12.5			4.1	
Queue Delay					0.0	0.0		0.0			0.0	
Total Delay					18.8	4.5		12.5			4.1	
LOS					B	A		B			A	
Approach Delay					11.4			12.5			4.1	
Approach LOS					B			B			A	
Queue Length 50th (m)					17.0	0.0		12.6			2.3	
Queue Length 95th (m)					30.4	11.2		20.2			8.6	
Internal Link Dist (m)		160.1			98.5			250.3			94.2	
Turn Bay Length (m)												
Base Capacity (vph)					635	597		1104			1440	
Starvation Cap Reductn					0	0		0			0	
Spillback Cap Reductn					0	0		0			0	
Storage Cap Reductn					0	0		0			0	
Reduced v/c Ratio					0.29	0.33		0.30			0.29	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	2 (3%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	9.1
Intersection LOS:	A
Intersection Capacity Utilization:	63.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Elgin & Catherine

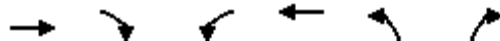




Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	242	1110	0	0	0
Future Volume (vph)	0	242	1110	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frnt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1559	3424	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1559	3424	0	0	0
Link Speed (k/h)	50		50			50
Link Distance (m)	75.0		124.2			94.7
Travel Time (s)	5.4		8.9			6.8
Confl. Peds. (#/hr)	4					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Adj. Flow (vph)	0	242	1110	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	242	1110	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	3.7		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 58.1%	ICU Level of Service B
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	1748	8	0	0	0	27
Future Volume (vph)	1748	8	0	0	0	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	4705	0	0	0	0	1574
Flt Permitted						
Satd. Flow (perm)	4705	0	0	0	0	1574
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.9			40.1	59.5	
Travel Time (s)	5.5			2.9	4.3	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Parking (#/hr)	0					
Adj. Flow (vph)	1748	8	0	0	0	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1756	0	0	0	0	27
Enter Blocked Intersection	Yes	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.10	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.8%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1110	665	0	0	0	0
Future Volume (vph)	1110	665	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected	0.950	0.978				
Satd. Flow (prot)	1543	3176	0	0	0	0
Flt Permitted	0.950	0.978				
Satd. Flow (perm)	1543	3176	0	0	0	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		40.1	66.8		124.2	
Travel Time (s)		2.9	4.8		8.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%
Adj. Flow (vph)	1110	665	0	0	0	0
Shared Lane Traffic (%)	48%					
Lane Group Flow (vph)	577	1198	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		-2.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.1%
ICU Level of Service	B
Analysis Period (min)	15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	86	143	0	0	0	0	0	0	81	1415	0
Future Volume (vph)	0	86	143	0	0	0	0	0	0	81	1415	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.86									0.98	
Frt		0.916										
Flt Protected											0.997	
Satd. Flow (prot)	0	1247	0	0	0	0	0	0	0	0	3243	0
Flt Permitted											0.997	
Satd. Flow (perm)	0	1247	0	0	0	0	0	0	0	0	3175	0
Right Turn on Red			Yes			Yes			Yes	Yes		Yes
Satd. Flow (RTOR)		67									28	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		170.3			173.0			119.0			124.7	
Travel Time (s)		12.3			12.5			8.6			9.0	
Confl. Peds. (#/hr)			133							155		
Confl. Bikes (#/hr)			2									13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	0%	0%	0%	0%	0%	0%	1%	1%	0%
Parking (#/hr)		0									0	
Adj. Flow (vph)	0	86	143	0	0	0	0	0	0	81	1415	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	229	0	0	0	0	0	0	0	0	1496	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		2.0			-2.0			0.0			0.0	
Crosswalk Width(m)		4.0			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.13	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA								Perm	NA	
Protected Phases		4									6	
Permitted Phases										6		
Minimum Split (s)		23.6								25.2	25.2	
Total Split (s)		27.0								73.0	73.0	
Total Split (%)		27.0%								73.0%	73.0%	
Maximum Green (s)		21.4								67.8	67.8	
Yellow Time (s)		3.3								3.3	3.3	
All-Red Time (s)		2.3								1.9	1.9	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		5.6									5.2	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)		7.0								14.0	14.0	
Flash Dont Walk (s)		11.0								6.0	6.0	
Pedestrian Calls (#/hr)		50								50	50	
Act Effct Green (s)		21.4									67.8	
Actuated g/C Ratio		0.21									0.68	
v/c Ratio		0.72									0.69	
Control Delay		39.7									11.7	
Queue Delay		0.0									0.0	
Total Delay		39.7									11.7	



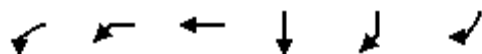
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D									B	
Approach Delay		39.7									11.7	
Approach LOS		D									B	
Queue Length 50th (m)		27.1									74.1	
Queue Length 95th (m)		#57.2									95.1	
Internal Link Dist (m)		146.3			149.0			95.0			100.7	
Turn Bay Length (m)												
Base Capacity (vph)		319									2161	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									3	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.72									0.69	

Intersection Summary

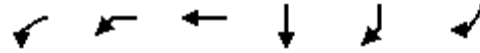
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 17 (17%), Referenced to phase 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 15.4
 Intersection LOS: B
 Intersection Capacity Utilization 71.0%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: O'Connor & Argyle





Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Lane Configurations							
Traffic Volume (vph)	195	217	684	965	476	128	
Future Volume (vph)	195	217	684	965	476	128	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Lane Util. Factor	1.00	0.91	0.91	0.95	1.00	0.95	
Ped Bike Factor	0.98				0.96		
Frt					0.850		
Flt Protected	0.950		0.988				
Satd. Flow (prot)	1647	0	4753	3390	1522	0	
Flt Permitted	0.950		0.988				
Satd. Flow (perm)	1607	0	4753	3390	1460	0	
Right Turn on Red	Yes						Yes
Satd. Flow (RTOR)	98				96		
Link Speed (k/h)			50	50			
Link Distance (m)			92.1	119.0			
Travel Time (s)			6.6	8.6			
Confl. Peds. (#/hr)	13					34	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	5%	1%	4%	2%	1%	4%	
Adj. Flow (vph)	195	217	684	965	476	128	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	195	0	901	965	604	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(m)			3.7	0.0			
Link Offset(m)			0.0	0.0			
Crosswalk Width(m)			4.9	4.9			
Two way Left Turn Lane							
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24	24			24	14	
Number of Detectors	1	1	2	2	1		
Detector Template	Left	Left	Thru	Thru	Right		
Leading Detector (m)	6.1	6.1	30.5	30.5	6.1		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	6.1	6.1	1.8	1.8	6.1		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)			28.7	28.7			
Detector 2 Size(m)			1.8	1.8			
Detector 2 Type			Cl+Ex	Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)			0.0	0.0			
Turn Type	Perm	Perm	NA	NA	custom		
Protected Phases			8	1		5	
Permitted Phases	8	8			6		
Detector Phase	8	8	8	1	6		
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	21.9	21.9	21.9	24.9	15.9	17.9	
Total Split (s)	41.0	41.0	41.0	59.0	41.0	18.0	

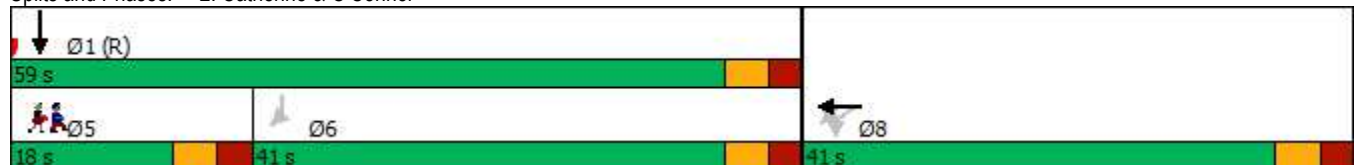


Lane Group	WBL2	WBL	WBT	SBT	SBR	SBR2	Ø5
Total Split (%)	41.0%	41.0%	41.0%	59.0%	41.0%		18%
Maximum Green (s)	35.1	35.1	35.1	53.1	35.1		12.1
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3
All-Red Time (s)	2.6	2.6	2.6	2.6	2.6		2.6
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	5.9		
Lead/Lag					Lag		Lead
Lead-Lag Optimize?					Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	Max	Max	C-Max	Max		None
Walk Time (s)	7.0	7.0	7.0	7.0	0.0		7.0
Flash Dont Walk (s)	9.0	9.0	9.0	12.0	0.0		5.0
Pedestrian Calls (#/hr)	10	10	10	15	0		15
Act Effct Green (s)	35.1		35.1	53.1	49.5		
Actuated g/C Ratio	0.35		0.35	0.53	0.50		
v/c Ratio	0.31		0.54	0.54	0.78		
Control Delay	12.7		20.4	9.4	18.6		
Queue Delay	0.0		0.0	0.5	1.1		
Total Delay	12.7		20.4	9.8	19.8		
LOS	B		C	A	B		
Approach Delay			19.0	13.6			
Approach LOS			B	B			
Queue Length 50th (m)	19.6		51.9	22.1	18.7		
Queue Length 95th (m)	38.3		66.1	31.3	#170.9		
Internal Link Dist (m)			68.1	95.0			
Turn Bay Length (m)							
Base Capacity (vph)	627		1668	1800	771		
Starvation Cap Reductn	0		0	379	48		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.31		0.54	0.68	0.84		

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 25 (25%), Referenced to phase 1:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 15.8
 Intersection LOS: B
 Intersection Capacity Utilization 67.9%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Catherine & O'Connor





Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑					↑↑
Traffic Volume (vph)	177	0	0	0	0	974
Future Volume (vph)	177	0	0	0	0	974
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Fr _t						0.850
Flt Protected						
Satd. Flow (prot)	1622	0	0	0	0	2696
Flt Permitted						
Satd. Flow (perm)	1622	0	0	0	0	2696
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	173.0			76.9	69.3	
Travel Time (s)	12.5			5.5	5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%
Parking (#/hr)	0					
Adj. Flow (vph)	177	0	0	0	0	974
Shared Lane Traffic (%)						
Lane Group Flow (vph)	177	0	0	0	0	974
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	1.0	
Crosswalk Width(m)	8.0			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.21	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	24
Number of Detectors	2					1
Detector Template	Thru					Right
Leading Detector (m)	30.5					6.1
Trailing Detector (m)	0.0					0.0
Detector 1 Position(m)	0.0					0.0
Detector 1 Size(m)	1.8					6.1
Detector 1 Type	Cl+Ex					Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0					0.0
Detector 1 Queue (s)	0.0					0.0
Detector 1 Delay (s)	0.0					0.0
Detector 2 Position(m)	28.7					
Detector 2 Size(m)	1.8					
Detector 2 Type	Cl+Ex					
Detector 2 Channel						
Detector 2 Extend (s)	0.0					
Turn Type	NA					Prot
Protected Phases	4					2
Permitted Phases						
Detector Phase	4					2
Switch Phase						
Minimum Initial (s)	10.0					10.0
Minimum Split (s)	20.4					43.5
Total Split (s)	26.0					74.0
Total Split (%)	26.0%					74.0%



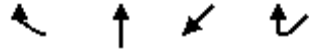
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Maximum Green (s)	20.6					68.5
Yellow Time (s)	3.3					3.3
All-Red Time (s)	2.1					2.2
Lost Time Adjust (s)	0.0					0.0
Total Lost Time (s)	5.4					5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Walk Time (s)	7.0					33.0
Flash Dont Walk (s)	8.0					5.0
Pedestrian Calls (#/hr)	30					10
Act Effct Green (s)	15.8					73.3
Actuated g/C Ratio	0.16					0.73
v/c Ratio	0.69					0.49
Control Delay	53.7					3.6
Queue Delay	0.0					0.4
Total Delay	53.7					4.0
LOS	D					A
Approach Delay	53.7				4.0	
Approach LOS	D				A	
Queue Length 50th (m)	28.3					5.2
Queue Length 95th (m)	m39.1					54.3
Internal Link Dist (m)	149.0			52.9	45.3	
Turn Bay Length (m)						
Base Capacity (vph)	334					1976
Starvation Cap Reductn	0					473
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.53					0.65

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 18 (18%), Referenced to phase 2:NBR, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 11.6
 Intersection LOS: B
 Intersection Capacity Utilization 71.0%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Metcalfe W & Argyle





Lane Group	WBR	NBT	SWT	SWR	Ø6
Lane Configurations					
Traffic Volume (vph)	389	367	362	68	
Future Volume (vph)	389	367	362	68	
Ideal Flow (vphpl)	1800	1800	1800	1800	
Storage Length (m)	0.0			200.0	
Storage Lanes	2			1	
Taper Length (m)					
Lane Util. Factor	0.88	0.95	0.95	0.95	
Ped Bike Factor			1.00		
Frt	0.850		0.976		
Flt Protected					
Satd. Flow (prot)	2696	3424	3262	0	
Flt Permitted					
Satd. Flow (perm)	2696	3424	3262	0	
Right Turn on Red				No	
Satd. Flow (RTOR)					
Link Speed (k/h)		50	50		
Link Distance (m)		22.1	184.1		
Travel Time (s)		1.6	13.3		
Confl. Peds. (#/hr)				11	
Peak Hour Factor	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	1%	3%	3%	
Adj. Flow (vph)	389	367	362	68	
Shared Lane Traffic (%)					
Lane Group Flow (vph)	389	367	430	0	
Enter Blocked Intersection	No	No	No	No	
Lane Alignment	Right	Left	Left	Right	
Median Width(m)		0.0	0.0		
Link Offset(m)		0.0	0.0		
Crosswalk Width(m)		2.0	10.0		
Two way Left Turn Lane					
Headway Factor	1.06	1.06	1.06	1.06	
Turning Speed (k/h)	24			14	
Turn Type	Prot	NA	NA		
Protected Phases	1	8	2	6	
Permitted Phases					
Minimum Split (s)	15.3	28.3	25.3	16.3	
Total Split (s)	26.0	33.0	41.0	67.0	
Total Split (%)	26.0%	33.0%	41.0%	67%	
Maximum Green (s)	20.7	26.7	34.7	60.7	
Yellow Time (s)	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	5.3	6.3	6.3		
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Walk Time (s)	0.0	15.0	7.0	0.0	
Flash Dont Walk (s)	0.0	7.0	12.0	0.0	
Pedestrian Calls (#/hr)	0	5	10	0	
Act Effct Green (s)	20.7	26.7	34.7		
Actuated g/C Ratio	0.21	0.27	0.35		
v/c Ratio	0.70	0.40	0.38		
Control Delay	44.3	2.4	25.8		
Queue Delay	0.0	0.0	0.0		



Lane Group	WBR	NBT	SWT	SWR	Ø6
Total Delay	44.3	2.4	25.8		
LOS	D	A	C		
Approach Delay		2.4	25.8		
Approach LOS		A	C		
Queue Length 50th (m)	36.8	0.6	30.1		
Queue Length 95th (m)	52.9	0.8	42.0		
Internal Link Dist (m)		0.1	160.1		
Turn Bay Length (m)					
Base Capacity (vph)	558	914	1131		
Starvation Cap Reductn	0	0	0		
Spillback Cap Reductn	0	0	0		
Storage Cap Reductn	0	0	0		
Reduced v/c Ratio	0.70	0.40	0.38		













Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 63 (63%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 70
 Control Type: Pretimed
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 24.6
 Intersection Capacity Utilization 55.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 4: Catherine & Metcalfe W & Hwy 417 (Exit 119)



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Traffic Volume (vph)	0	0	0	0	819	0	48	367	0	0	0	0
Future Volume (vph)	0	0	0	0	819	0	48	367	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99											
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	3390	0	1712	3424	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	3390	0	1696	3424	0	0	0	0
Right Turn on Red	Yes			No			No			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	50				50				50			
Link Distance (m)	82.6				121.1				97.0			
Travel Time (s)	5.9				8.7				7.0			
Confl. Peds. (#/hr)							7					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	0	819	0	48	367	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	819	0	48	367	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0				0.0				3.7			
Link Offset(m)	0.0				0.0				-1.0			
Crosswalk Width(m)	2.0				2.0				6.0			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14		24		14		24		14	
Turn Type					NA				Perm			
Protected Phases					6				8			
Permitted Phases									8			
Minimum Split (s)					16.3				28.3			
Total Split (s)					67.0				33.0			
Total Split (%)					67.0%				33.0%			
Maximum Green (s)					60.7				26.7			
Yellow Time (s)					3.3				3.3			
All-Red Time (s)					3.0				3.0			
Lost Time Adjust (s)					0.0				0.0			
Total Lost Time (s)					6.3				6.3			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)					0.0				15.0			
Flash Dont Walk (s)					0.0				7.0			
Pedestrian Calls (#/hr)					0				5			
Act Effct Green (s)					60.7				26.7			
Actuated g/C Ratio					0.61				0.27			
v/c Ratio					0.40				0.11			
Control Delay					10.9				28.5			
Queue Delay					0.0				0.0			
Total Delay					10.9				28.5			
LOS					B				C			
Approach Delay					10.9				31.3			

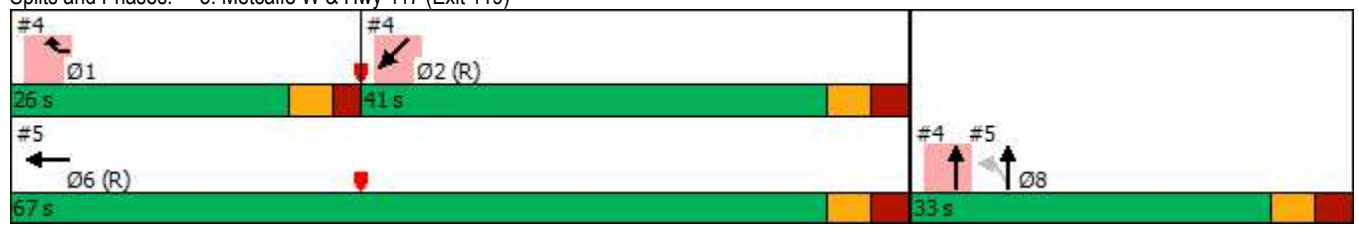
Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Minimum Split (s)	15.3	25.3
Total Split (s)	26.0	41.0
Total Split (%)	26%	41%
Maximum Green (s)	20.7	34.7
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	3.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)	0.0	7.0
Flash Dont Walk (s)	0.0	12.0
Pedestrian Calls (#/hr)	0	10
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS					B			C				
Queue Length 50th (m)					36.8		6.5	28.3				
Queue Length 95th (m)					47.8		14.5	40.3				
Internal Link Dist (m)		58.6			97.1			73.0			0.1	
Turn Bay Length (m)												
Base Capacity (vph)					2057		452	914				
Starvation Cap Reductn					0		0	0				
Spillback Cap Reductn					0		0	0				
Storage Cap Reductn					0		0	0				
Reduced v/c Ratio					0.40		0.11	0.40				

Intersection Summary
 Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 63 (63%), Referenced to phase 2:SWT and 6:, Start of Green
 Natural Cycle: 70
 Control Type: Pretimed
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 17.8
 Intersection LOS: B
 Intersection Capacity Utilization 45.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Metcalfe W & Hwy 417 (Exit 119)



Lane Group	Ø1	Ø2
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		

6: Elgin & Argyle
PM Peak Hour

100 Argyle Avenue
2023/2028 Total Traffic



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↗		↑↑	↑	
Traffic Volume (vph)	362	237	0	187	797	0
Future Volume (vph)	362	237	0	187	797	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0	0.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	10.0		2.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.79				
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3321	1379	0	3390	1767	0
Flt Permitted	0.950					
Satd. Flow (perm)	3321	1092	0	3390	1767	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		148				
Link Speed (k/h)	50			50	50	
Link Distance (m)	66.8			118.2	109.3	
Travel Time (s)	4.8			8.5	7.9	
Confl. Peds. (#/hr)		76				
Confl. Bikes (#/hr)		15				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	2%	3%	0%
Parking (#/hr)		0				
Adj. Flow (vph)	362	237	0	187	797	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	362	237	0	187	797	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.4			0.0	0.0	
Link Offset(m)	1.0			0.0	0.0	
Crosswalk Width(m)	2.0			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.21	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				

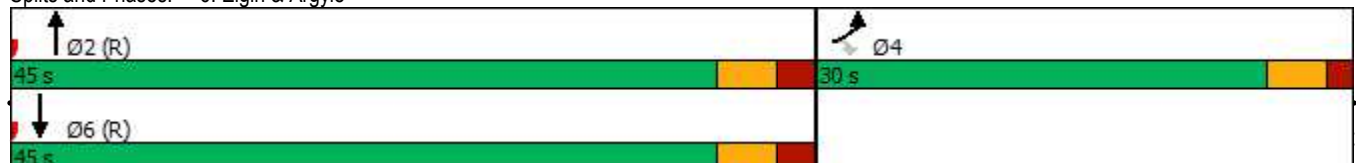


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.9	20.9		20.6	20.6	
Total Split (s)	30.0	30.0		45.0	45.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	25.1	25.1		39.4	39.4	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	1.6	1.6		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.9	4.9		5.6	5.6	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		8.0	8.0	
Pedestrian Calls (#/hr)	30	30		50	50	
Act Effct Green (s)	15.1	15.1		49.4	49.4	
Actuated g/C Ratio	0.20	0.20		0.66	0.66	
v/c Ratio	0.54	0.70		0.08	0.69	
Control Delay	29.0	22.1		4.8	13.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.0	22.1		4.8	13.9	
LOS	C	C		A	B	
Approach Delay	26.3			4.8	13.9	
Approach LOS	C			A	B	
Queue Length 50th (m)	22.6	10.5		2.5	50.9	
Queue Length 95th (m)	28.1	27.2		8.1	#145.1	
Internal Link Dist (m)	42.8			94.2	85.3	
Turn Bay Length (m)	40.0					
Base Capacity (vph)	1111	463		2232	1163	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.33	0.51		0.08	0.69	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 17.5
 Intersection LOS: B
 Intersection Capacity Utilization 73.7%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Elgin & Argyle



7: Elgin & Catherine
PM Peak Hour

100 Argyle Avenue
2023/2028 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗		↕↗			↕↗	
Traffic Volume (vph)	0	0	0	116	151	80	57	106	0	0	793	221
Future Volume (vph)	0	0	0	116	151	80	57	106	0	0	793	221
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		45.0
Storage Lanes	0		0	0		1	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor						0.96		0.98				0.93
Fr						0.850						0.967
Flt Protected					0.979			0.983				
Satd. Flow (prot)	0	0	0	0	1764	1379	0	3184	0	0	3051	0
Flt Permitted					0.979			0.649				
Satd. Flow (perm)	0	0	0	0	1764	1328	0	2068	0	0	3051	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						80						66
Link Speed (k/h)		50			50			50				50
Link Distance (m)		184.1			122.5			274.3				118.2
Travel Time (s)		13.3			8.8			19.7				8.5
Confl. Peds. (#/hr)						27	138					138
Confl. Bikes (#/hr)						4						46
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	10%	5%	0%	0%	2%	4%
Parking (#/hr)						0						
Adj. Flow (vph)	0	0	0	116	151	80	57	106	0	0	793	221
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	267	80	0	163	0	0	1014	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.21	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type				Perm	NA	Perm	Perm	NA				NA
Protected Phases					8			2				6
Permitted Phases				8		8	2					
Minimum Split (s)				33.0	33.0	33.0	25.6	25.6				25.6
Total Split (s)				33.0	33.0	33.0	42.0	42.0				42.0
Total Split (%)				44.0%	44.0%	44.0%	56.0%	56.0%				56.0%
Maximum Green (s)				26.9	26.9	26.9	36.4	36.4				36.4
Yellow Time (s)				3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)				2.8	2.8	2.8	2.3	2.3				2.3
Lost Time Adjust (s)					0.0	0.0		0.0				0.0
Total Lost Time (s)					6.1	6.1		5.6				5.6
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)				7.0	7.0	7.0	8.0	8.0				8.0
Flash Dont Walk (s)				19.9	19.9	19.9	12.0	12.0				12.0
Pedestrian Calls (#/hr)				10	10	10	50	50				50
Act Effct Green (s)					26.9	26.9		36.4				36.4
Actuated g/C Ratio					0.36	0.36		0.49				0.49
v/c Ratio					0.42	0.15		0.16				0.67



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay					20.8	5.2		11.3				11.2
Queue Delay					0.0	0.0		0.0				0.2
Total Delay					20.8	5.2		11.3				11.5
LOS					C	A		B				B
Approach Delay					17.2			11.3				11.5
Approach LOS					B			B				B
Queue Length 50th (m)					25.8	0.0		5.8				44.2
Queue Length 95th (m)					43.4	7.3		10.7				30.0
Internal Link Dist (m)		160.1			98.5			250.3				94.2
Turn Bay Length (m)												
Base Capacity (vph)					632	527		1003				1514
Starvation Cap Reductn					0	0		0				90
Spillback Cap Reductn					0	0		0				0
Storage Cap Reductn					0	0		0				0
Reduced v/c Ratio					0.42	0.15		0.16				0.71

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	7 (9%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization:	77.3%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 7: Elgin & Catherine





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	167	391	0	0	0
Future Volume (vph)	0	167	391	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frnt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1543	3424	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1543	3424	0	0	0
Link Speed (k/h)	50		50			50
Link Distance (m)	76.6		125.1			114.6
Travel Time (s)	5.5		9.0			8.3
Confl. Peds. (#/hr)	19					
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	167	391	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	167	391	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	0.0		0.0			0.0
Link Offset(m)	3.7		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 29.0%	ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑					↗
Traffic Volume (vph)	976	23	0	0	0	14
Future Volume (vph)	976	23	0	0	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.997					0.865
Flt Protected						
Satd. Flow (prot)	4742	0	0	0	0	1574
Flt Permitted						
Satd. Flow (perm)	4742	0	0	0	0	1574
Link Speed (k/h)	50			50	50	
Link Distance (m)	76.9			40.1	59.5	
Travel Time (s)	5.5			2.9	4.3	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Parking (#/hr)	0					
Adj. Flow (vph)	976	23	0	0	0	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	999	0	0	0	0	14
Enter Blocked Intersection	Yes	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.10	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.4%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	391	599	0	0	0	0
Future Volume (vph)	391	599	0	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected	0.950	0.995				
Satd. Flow (prot)	1558	3263	0	0	0	0
Flt Permitted	0.950	0.995				
Satd. Flow (perm)	1558	3263	0	0	0	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		40.1	66.8		125.1	
Travel Time (s)		2.9	4.8		9.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	391	599	0	0	0	0
Shared Lane Traffic (%)	18%					
Lane Group Flow (vph)	321	669	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		-2.0	
Crosswalk Width(m)		4.9	4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.0%
Analysis Period (min)	15
	ICU Level of Service A