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# **39** Years

# 1765 Montreal Road &

# 9 Beckenham Lane

**Transportation Impact Assessment** 

Proposed Residential Development 1765 Montreal Road & 9 Beckenham Lane Transportation Impact Assessment

Prepared By:

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December 2022

Novatech File: 121060 Ref: R-2021-159



December 16, 2022

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

# Attention: Mr. Mike Giampa Senior Transportation Engineer, Infrastructure Applications

#### Reference: 1765 Montreal Road & 9 Beckenham Lane TIA Report Our File No.: 121060

We are pleased to submit the following Transportation Impact Assessment (TIA) Report in support of Zoning By-law Amendment and Site Plan Control applications for the above noted properties, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

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

Yours truly,

NOVATECH

- Van With

Trevor Van Wiechen, M.Eng. E.I.T. | Transportation

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# **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
- I am either a licensed<sup>1</sup> or registered<sup>2</sup> professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering □ or transportation planning □.

<sup>1,2</sup> 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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Signature of Individual certifier that s/he meets the above four criteria

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# EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) Report has been prepared in support of Zoning Bylaw Amendment and Site Plan Control applications for 1765 Montreal Road & 9 Beckenham Lane in Ward 11, Beacon Hill-Cyrville in Ottawa. The subject site has an area of approximately 0.80 hectares (1.98 acres) and is occupied by two single-family residential units.

The subject site is surrounded by the following:

- Cedar Road and existing residential developments to the north;
- Montfort Renaissance and existing residential developments to the east;
- Montreal Road and existing commercial developments to the south;
- Beckenham Lane and existing residential and commercial developments to the west.

The subject site has frontage on Montreal Road and is located in the Outer Urban Transect. Within the study area it has an Evolving Neighbourhood overlay and is classified as a 'Corridor - Mainstreet' within schedule B3 of the City of Ottawa's Official Plan.

The proposed development will replace the two existing single-family residential units with a ninestorey building containing 159 condominium units and 12 townhouse units, for a total of 169 residential units. The development is anticipated to be constructed in a single phase with full occupancy by 2023. The proposed development will be accessed via two driveways, one to Montreal Road and one to Beckenham Lane. The site will include 71 surface parking spaces and an underground parking garage with 123 parking spaces for a total of 194.

Based on the results of the analysis, the main conclusions and recommendations of this report are provided below.

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

#### Forecasting

• The proposed residential development is expected to generate 73 person trips in the AM peak hour (35 vehicle trips) and 74 person trips in the PM peak hour (36 vehicle trips).

#### Development Design

- Sidewalk connections will be provided between the proposed development and the existing sidewalk along Montreal Road.
- As new sidewalks within the Beckenham Lane and Cedar Road Right-of-Way will not provide system connectivity beyond the subject site, no new municipal sidewalks are proposed along these frontages.
- The transit stops within 400m walking distance of the subject site provide service to Routes 12 and 23.
- Garbage will be stored in the garbage room within the underground parking and will be wheeled up to surface level parking for collection. Fire route access for the 9-storey apartment building is provided along Montreal Road while fire route access for the proposed townhouses is provided along Cedar Road.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

#### <u>Parking</u>

- Eighty-eight bicycle parking spaces will be provided within the underground parking garage and surface level parking. The proposed bicycle parking will exceed the requirements of the City's ZBL.
- The site will include 71 surface parking spaces and an underground parking garage with 123 parking spaces for a total of 194. The proposed parking for the apartment building will not meet the requirements of the City's *Zoning By-law* (ZBL). As the proposed parking equates to 85% of the ZBL requirements, a further review of spillover parking is not required.

# Boundary Street Design

- All boundary streets do not meet the target pedestrian level of service (PLOS);
- Beckenham Lane and Cedar Road meet the target bicycle level of service (BLOS), while Montreal Road does not;
- Montreal Road does not meet the target transit level of service (TLOS);
- Montreal Road meets the target TkLOS. There is no target TkLOS for Beckenham Lane and Cedar Road; and
- The City's planned Montreal-Blair Transit Priority Project is anticipated to provide improved pedestrian and cycling facilities along the sites Montreal Road frontage.

# Access Design

- It is requested that the requirements of Section 25(t) of the PABL be waived as the 6% grade towards the road at the Montreal Road access is not anticipated to impact sight lines or create a traffic hazard.
- The proposed Montreal Road access is located 1.8m from the eastern property line and does not meet Section 25(p) of the Private Approach By-law. The proposed driveway location is recommended to maximize the distance to the Beckenham Lane intersection and to facilitate inbound/outbound movements through the existing median break along Montreal Road.
- The proposed accesses will be stop-controlled with free flow on Montreal Road and Beckenham Lane. It is anticipated that the proposed accesses will operate acceptably during both peak hours.
- As Beckenham Lane to the north of the Beckenham Lane/Cedar Road South intersection
  has an upwards grade and slight horizontal curvature, it is recommended that the City trim
  vegetation within the Right-of-Way on the west side of the road to improve sight lines for
  southbound traveling vehicles around the horizontal curve.

# Transportation Demand Management

- The proponent has committed to providing the following TDM measures:
  - Display local area maps with walking/cycling access routes and key destinations at major entrances;
  - Display relevant transit schedules and route maps at entrances:
  - Unbundle parking cost from purchase price/monthly rent; and
  - Provide a multimodal travel option information package to new residents.

# Neighbourhood Traffic Management

 The proposed development is anticipated to increase traffic along Beckenham Lane by 23-24 vehicles (two-way) during peak hours, equating to one vehicle every 2-3 minutes. As all traffic is anticipated to arrive and depart via Montreal Road, the proposed development is not anticipated to have a significant impact on traffic volumes within the adjacent community. No traffic calming measures are proposed as part of this development.

#### <u>Transit</u>

• The proposed development is anticipated to generate 23 transit trips during the AM and PM peak hours. Based on the transit distribution and transit frequency, two new transit trips per bus on Routes 12 and 23 are anticipated. It is anticipated that the proposed development will not have a significant impact on operations at the surrounding bus stops.

#### Intersection MMLOS

- None of the study area intersections meet the target PLOS.
- None of the study area intersections meet the target BLOS.
- All of the study area intersections meet the target TLOS.
- Montreal Road/Blair Road meets the target TkLOS while Montreal Road/Elwood Street and Montreal Road/Elmsmere Road do not.
- All of the study area intersections meet the target Auto LOS.
- The City's Montreal-Blair Transit Priority Project is anticipated to improve the LOS for all modes along the corridor.

#### Existing Intersection Operations

- At Montreal Road/Beckenham Lane the southbound approach does not meet the target Auto LOS D during the AM peak hour.
- The maximum (95th percentile) northbound left turn queue at the Montreal Road/Blair Road intersection is approximately 50m, exceeding the existing storage capacity. The maximum queues for all other movements within the study area do not exceed the existing auxiliary lane storage or extend through upstream intersections.

#### **Background Intersection Operations**

- At Montreal Road/Beckenham Lane the southbound approach does not meet the target Auto LOS D during the AM peak hour.
- To achieve the target LOS D at Montreal Road/Beckenham Lane, a reduction of four southbound left turning vehicles during 2023 traffic conditions and seven southbound left turning vehicles during 2028 traffic conditions is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel.
- The maximum (95th percentile) northbound left turn queue at the Montreal Road/Blair Road intersection is approximately 50m, exceeding the existing storage capacity. The maximum queues for all other movements within the study area do not exceed the existing auxiliary lane storage or extend through upstream intersections.

# Total Intersection Operations

- At Montreal Road/Beckenham Lane the southbound approach does not meet the target Auto LOS D during the AM peak hour.
- To achieve the target LOS D at Montreal Road/Beckenham Lane, a reduction of eight southbound left turning vehicles during 2023 traffic conditions and eleven southbound left turning vehicles during 2028 traffic conditions is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel.

- The City's Naskapi Drive traffic calming project may result in a reduced number of vehicles cutting through the community to Montreal Road via Beckenham Lane during the AM peak hour. It is recommended that the City monitor traffic at this intersection following implementation of the Naskapi Drive traffic calming measures.
- Should high delays continue at the Montreal Road/Beckenham Lane intersection, southbound left turning vehicles could be detoured to perform a westbound U-turn maneuver at the Montreal Road/Elwood Street intersection.

# 1.0 SCREENING

# 1.1 Introduction

This Transportation Impact Assessment (TIA) Report has been prepared in support of Zoning Bylaw Amendment and Site Plan Control applications for 1765 Montreal Road & 9 Beckenham Lane in Ward 11, Beacon Hill-Cyrville in Ottawa. The subject site (location shown in **Figure 1**) has an area of approximately 0.80 hectares (1.98 acres) and is occupied by two single-family residential units.

The subject site is surrounded by the following:

- Cedar Road and existing residential developments to the north;
- · Montfort Renaissance and existing residential developments to the east;
- Montreal Road and existing commercial developments to the south;
- Beckenham Lane and existing residential and commercial developments to the west.

# Montreal

# Figure 1: Site Location

# 1.2 Proposed Development

The subject site has frontage on Montreal Road and is located in the Outer Urban Transect. Within the study area it has an Evolving Neighbourhood overlay and is classified as a 'Corridor - Mainstreet' within schedule B3 of the City of Ottawa's Official Plan.

The proposed development (See **Appendix A**) will replace the two existing single-family residential units with a nine-storey building containing 159 condominium units and 12 townhouse units, for a total of 169 residential units. The development is anticipated to be constructed in a single phase with full occupancy by 2023. The proposed development will be accessed via two

driveways, one to Montreal Road and one to Beckenham Lane. The site will include 71 surface parking spaces and an underground parking garage with 123 parking spaces for a total of 194.

# 1.3 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 (See **Appendix B**). 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 located within the City's 'Design Priority Area'; further assessment is required based on this trigger.
- **Safety Triggers** The proposed development makes use of an existing median break; further assessment **is** required based on this trigger.

# 2.0 SCOPING

#### 2.1 Existing Conditions

#### 2.1.1 Roadways

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

**Montreal Road** is an arterial roadway that runs on an east-west alignment between North River Road and Highway 174. Montreal Road continues as St Joseph Boulevard east of Highway 174, and as Rideau Street West of North River Road. Within the study area, Montreal Road has a fourlane divided urban cross-section, sidewalks on both sides, and a posted speed limit of 60 km/h. Montreal Road is classified as a full-load truck route within the study area. On-street parking is not permitted. The City of Ottawa's Official Plan identifies a right-of-way (ROW) protection of 37.5 metres for Montreal Road between St. Laurent Boulevard and Highway 174. Across the site frontage, Montreal Road has a ROW of approximately 33.8m and a widening is required.

**Beckenham Lane** is a local roadway that runs on a north-south alignment between Montreal Road and Cedar Road. It has a two-lane undivided rural cross-section, and a posted speed limit of 40 km/h. Within the study area, Beckenham Lane is not classified as a truck route. South of Cedar Road (south), on-street parking is prohibited on the east side of the road.

**Blair Road** generally runs on a north-south alignment between Massey Lane and Innes Road. North of Montreal Road, Blair Road is classified as a major collector road and an arterial road south of Montreal Road. In this area, Blair Road has a two-lane undivided semi-urban crosssection, a sidewalk on the east side of the road, and a posted speed limit of 50 km/h. South of Montreal Road, Blair Road is classified as a truck route.

**Elwood Street** is a local roadway that runs on a north-south alignment between Montreal Road and Seguin Street. It has a two-lane undivided urban cross-section, no sidewalks on either side of the road, and a posted speed limit of 40 km/h. Elwood Street is not a truck route and prohibits on-street parking on both side of the road.

**Elmsmere Road** is a local roadway that runs on a north-south alignment between Montreal Road and Elmridge Drive. It has a two-lane undivided urban cross-section, a sidewalk on the west side of the roadway, and a posted speed limit of 40 km/h. Elmsmere Road is not a truck route and parking is permitted on the east side of the road.

**Cedar Road** is a local roadway that loops off Beckenham Lane. Cedar Road has a two-lane undivided rural cross-section, and an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. Cedar Road is not a truck route and parking is permitted on both sides of the road.

**Rothwell Drive** is a local roadway that runs on an east-west alignment between Cedar Road and Whippoorwill Drive. Within the study area, Rothwell Drive typically has a two-lane undivided urban cross-section, no sidewalks on both sides of the roadway, and an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. Rothwell Drive is not a truck route and permits on-street parking on both sides of the road.

**Rothwell Circle** is a local roadway that runs on a north-south alignment starting at Rothwell Drive and running south. Rothwell Circle has a two-lane undivided urban cross-section, no sidewalks on both sides of the roadway, and a posted speed limit of 40 km/h. It is not a truck route and permits on-street parking on both sides of the road.

# 2.1.2 Study Intersections

Montreal Road & Blair Road

- Signalized four-legged intersection
- North/South Approaches (Blair Road): One left-turn lane, one through lane, and one right-turn lane
- East/West Approaches (Montreal Road): One left-turn lane, two through lanes, and one right-turn lane
- Additional Information: Standard pedestrian crossing on all four legs; A pocket bike lane is provided on the north approach; Channelized islands for right turns on the north and west approaches

Montreal Road & Elwood Street

- Signalized four-legged intersection
- North/South Approaches: one leftturn/through/right-turn shared lane
- East/West Approaches: one left-turn lane, one through lane, and one through/right-turn shared lane
- Additional Information: standard pedestrian crossing on east, south and west legs and sidewalk crossing on the north leg





#### Montreal Road & Beckenham Lane

- Unsignalized four-legged intersection
- North/South Approaches: one left/through/right shared lane
- East/West Approaches: one left-turn lane, one through lane, and one through/right-turn shared lane
- Additional Information: standard pedestrian crossing on the north leg

# Montreal Road & Elmsmere Road

- Signalized three-legged intersection
- East Approach: one left-turn lane, two through lanes
- South Approach: one left-turn/through/rightturn shared lane
- West Approach: two through lanes and one right-turn lane
- Additional Information: standard pedestrian crossing on the east, south and west legs; OC Transpo stop with a bus bay on the east leg; west leg has a left turn lane not in use





# 2.1.3 Driveways

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

# Montreal Road (North Side)

- One private driveway to residential building at 1695 Montreal Road
- One private driveway to residential building at 1735 Montreal Road
- One commercial driveway to dental clinic at 1743 Montreal Road
- One private driveway to the Montfort Renaissance at 1777 Montreal Road
- One private driveway to residential building at 1815 Montreal Road

# Beckenham Lane (East Side)

• One private driveway to residential building at 1 Beckenham Lane

# Montreal Road (South Side)

- Two commercial driveways to businesses at 1730 Montreal Road
- Two commercial driveway to businesses at 1716 and 1722 Montreal Road
- Two commercial driveway to business at 1770 Montreal Road

# Beckenham Lane (West Side)

- Four private driveways to residential buildings at 4-10 Beckenham Lane
- Two commercial driveways to businesses at 1743 Montreal Road

#### Cedar Road (North Side)

• Three Private Driveways to residential buildings at 14-22 Cedar Road

#### Cedar Road (North Side)

• Three Private Driveways to residential buildings at 14-22 Cedar Road

# 2.1.4 Pedestrian and Cycling Facilities

Concrete and/or unit paver sidewalks are provided on both sides of Montreal Road and the east side of Elmsmere Road and Blair Road between Seguin Street and Nicol Street. Bike lanes or paved shoulders are also provided on Blair Road.

As per the City of Ottawa's primary cycling network, Montreal Road and Blair Road are classified as spine routes. Beckenham Lane, Elwood Street, Elmsmere Road, Cedar Road, Rothwell Drive, and Rothwell Circle do not have any classifications.

#### 2.1.5 Area Traffic Management

The following traffic calming measures have been implemented within the study area:

- 40km/hr MAX markings are provided on Elmsmere Road; and,
- 50km/hr MAX markings are provided on Blair Road.

The City of Ottawa has initiated a Neighbourhood Traffic Calming Study along Naskapi Drive (north of the study area) due to traffic concerns raised by residents. In Spring 2021, the City conducted a survey to gather feedback from the community. The main concerns identified by residents were speeding and school safety. Following the survey, the City developed a conceptual traffic calming plan for Naskapi Drive between Ogilvie Road and Rothwell Drive. In June 2022, the City conducted a second survey to gather feedback on the conceptual design. Following the second survey, the City prepared a final recommended traffic calming plan, which includes:

- three speed humps; and
- a raised pedestrian crosswalk at Naskapi Drive/Marquis Avenue and Naskapi Drive/Rothwell Drive

The recommended Naskapi Drive Traffic Calming Plan is included in Appendix C.

#### 2.1.6 Transit

There are several OC transit and bus stops within 400 metres of the subject site. A summary of the closest bus stops and routes along Montreal Road is provided as follows:

#### Montreal Road:

- Stop #8647 for Route 12, 23, 616
- Stop #2568 / Stop #2569 / Stop #2570 for Route 12, 616
- Stop #2571 / Stop #2572 / Stop #2573 / Stop #8648 / Stop #2574– for Route 12, 615, 616

#### Elwood Street:

• Stop #8644: for Route 23

The locations of these transit stops are shown in Figure 2.



# Figure 2: Transit Stops within 400m of Study Site

OC Transpo Route #12 travels between St. Laurent Station and Blair Station. The route operates every 15 to 40 minutes from 5:00 a.m. to 1:30 a.m. on weekdays, every 10 to 30 minutes on Saturdays from 5:00 a.m. to 1:00 a.m., and every 15 to 30 minutes from 6:00 a.m. to 12:30 a.m. on Sundays.

Route #23 travels between Rothwell Heights and Blair Station. The route operates every 30 to 120 minutes from 6:30 a.m. to 6:30 p.m. on weekdays. The route does not operate on the weekends.

Route #615 is a school route that runs from Lester B. Pearson High School to Parliament Station.

Route #616 is a school route that runs from Gloucester High School to Parliament Station.

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

#### 2.1.7 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:

•	Montreal Road & Blair Road	2018-Nov-15
•	Montreal Road & Elwood Street	2018-Nov-15
•	Beckenham Lane & Cedar Road South	2019-July-25
•	Rothwell Circle & Rothwell Drive	2019-July-17
•	Montreal Road & Elmsmere Road	2018-Mar-15

The 2019 traffic count completed at the Beckenham Lane/Cedar Road (South) intersection has been used to estimate the traffic volumes at the Montreal Road/Beckenham Lane intersection. It is noted that the City of Ottawa does not have any traffic counts at the Montreal Road and Beckenham Lane intersection. Turning movements at the Montreal Road/Beckenham Lane intersection have been estimated based on the Cedar Road (South) traffic count and existing traffic patterns along Montreal Road. Through traffic along Montreal Road has been estimated based on the Montreal Road/Elwood Street traffic count. Traffic count data is included in **Appendix E**. Traffic volumes within the study area are shown in **Figure 3**.



# **Figure 3: Existing Traffic Volumes**

# 2.1.8 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 F**.

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, 2016 to December 31, 2020 is summarized in **Table 1**.

Intersection/						
Roadway Segment	Angle	Rear-End	Sideswipe	Turning	SMV <sup>(1)</sup> / Other	Total
Montreal Rd at Blair Road	4	18	1	9	2	34
Montreal Road at Elwood Street	0	2	0	0	1	3
Montreal Road at Elmsmere Road	2	4	0	0	1	7
Montreal Road at Beckenham Lane	0	0	0	1	2	3
Montreal – Blair to Clovelly	1	2	0	0	1	4
Montreal – Clovelly to Elwood	1	0	1	0	0	2
Montreal – Elwood to Beckenham	0	1	0	0	2	3
Montreal – Chimney Hill to Elmsmere	0	0	1	0	1	2

# Table 1: Collision History Summary

#### Montreal Road & Blair Road

Ten of the thirty-four collisions caused injuries, but none caused fatalities. None of the collisions involved a cyclist or a pedestrian.

Of the thirty-four collisions, twenty-three occurred during clear conditions, eight in rain conditions, two in snow conditions, and one in strong wind. Additionally, of the thirty-four collisions, twenty-four of them occurred during daylight hours.

Of the rear-end collisions:

- two of the vehicles involved were heading northbound;
- twelve of the vehicles were heading eastbound; and,
- four of the vehicles were heading westbound.

As there are clear sight lines on the eastbound approach to the intersection, the rear-end collision pattern on this approach is likely attributable to high traffic volumes.

Of the turning movement collisions:

- five involved westbound left turning vehicles;
- one involved northbound left turning vehicles; and
- three involved eastbound left turning vehicles.

#### Montreal Road & Elwood Street

One of the three collisions caused injuries, but none caused fatalities. None of the collisions involved a cyclist but one involved a pedestrian.

#### Montreal Road & Elmsmere Road

Two of the seven collisions caused injuries, but none caused fatalities. None of the collisions involved cyclists or pedestrians.

#### Montreal Road & Beckenham Lane

One of the three collisions caused injuries, but none caused fatalities. None of the collisions involved a cyclist or a pedestrian.

#### Montreal Road between Blair Road and Clovelly Road

One of the four collisions caused injuries, but none caused fatalities. None of the collisions involved a cyclist or a pedestrian.

#### Montreal Road between Clovelly Road and Elwood Street

None of the two collisions caused injuries. None of the collisions involved a cyclist or a pedestrian.

#### Montreal Road between Elwood Street and Beckenham Lane

Two of the three collisions caused injuries, including one fatal collisions. All injury collisions (including the fatality) were single motor vehicle collisions between an eastbound travelling vehicle and a pedestrian and occurred in the dark. None of the collisions involved cyclists.

#### Montreal Road between Chimney Hill Road and Elmsmere Road

Neither of the collisions caused an injury and neither involved a cyclist or a pedestrian.

# 2.2 Planned Conditions

# 2.2.1 Transportation Projects

The City of Ottawa's 2013 Transportation Master Plan (TMP) does not identify any upcoming roadway projects within the study area in its 2031 Affordable Road Network or Road Network Concept. The 2031 Affordable Rapid Transit and Transit Priority (RTTP) Network identifies Montreal Road as a Transit Priority Corridor with continuous lanes between Cummings Bridge and Blair Road. The RTTP Network Concept continues the Transit Priority Corridor from Blair Road to Ogilvie Road, but is not anticipated to be complete until post 2031. The preliminary preferred design for the Montreal - Blair Transit Priority Corridor within the study area is shown in **Figure 4** and **5**.

There are no planned pedestrian or cycling projects within the study area.

# 2.2.2 Other Area Developments

In proximity of the proposed development, there are multiple other residential and mixed-use developments under construction, approved, or in the approval process, including:

- 741 Blair Road and 1649 Montreal Road: a proposed development with a 26-storey mixeduse building with a total of 243 residential dwelling units are being proposed with 773 square metres of commercial/retail space at-grade
- 971 Montreal Road: a proposed development to construct a nine-storey residential apartment building, containing 78 units, adjacent surface parking and a one-storey underground parking garage

# 2.3 Study Area and Time Periods

The study area for this report includes the boundary streets Montreal Road, Beckenham Lane, and Cedar Road, and the following study area intersections at:

- Montreal Road & Blair Road
- Montreal Road & Elwood Street
- Montreal Road & Beckenham Lane
- Montreal Road & Elmsmere Road

Analysis will be completed for the weekday AM and PM peak hours, as they represent the worstcase 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, this TIA considers the weekday AM and PM peak periods for the 2023 buildout year and the 2028 horizon year.



# Figure 4: Montreal - Blair Transit Priority Corridor (Montreal Road to Elwood Street)



Figure 5: Montreal - Blair Transit Priority Corridor (Beckenham Lane to Elmsmere Road)

# 2.4 Exemptions Review

This section reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the 2017 TIA Guidelines. The applicable exemptions for the site are shown below in **Table 2**.

Module	Element	Exemption Criteria	Exemption Status
<b>Design Review</b>	Component		
4.1	<i>4.1.2</i> Circulation and Access	Only required for site plans	Not exempt
Design	<i>4.1.3</i> New Street Networks	<ul> <li>Only required for plans of subdivision</li> </ul>	Exempt
4.2 Derking	<i>4.2.1</i> Parking Supply	Only required for site plans	Not exempt
Parking	<i>4.2.2</i> Spillover Parking	• Only required for site plans where parking supply is 15% below unconstrained demand	Exempt
Network Impac	ct Component		
4.5 Transportation Demand Management	All elements	<ul> <li>Not required for non-residential site plans expected to have fewer than 60 employees and/or students on location at any given time</li> </ul>	Not Exempt
4.6 Neighbourhood Traffic Management	<i>4.6.1</i> Adjacent Neighbourhoods	<ul> <li>Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds</li> </ul>	Not Exempt
4.8 Network Concept	All elements	<ul> <li>Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by the established zoning</li> </ul>	Exempt

Table 2: City	y of Ottawa Exem	ptions Review
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# 3.0 FORECASTING

# 3.1 Development-Generated Travel Demand

#### 3.1.1 Trip Generation

#### **Trips Generated from Existing Development**

Currently, the subject site is occupied by two single-family residential units and generates negligible traffic volumes during the AM and PM peak hours.

# Trips Generated from Proposed Development

The *TRANS Trip Generation Manual Summary Report* (October 2020, WSP), was used to estimate traffic generated by the proposed development. Peak period person trips generated by the proposed development have been estimated based on the Multifamily Housing (Low-Rise and High-Rise) rates presented in Table 3 of the *Trans Trip Generation Manual*. The directional

distribution of the peak period trips is identified in Table 9 of *TRANS Trip Generation Manual*. The peak period person trips generated by the proposed residential development during the weekday AM and PM peak periods are estimated in **Table 3** below.

Land Use	TRANS Rate per	Units	AM Peak Period PM Peal (ppp <sup>(1)</sup> ) (pp			Peak Pe (ppp <sup>(1)</sup> )	riod	
	Unit		IN	OUT	тот	IN	OUT	тот
High-Rise Multifamily Housing	AM: 0.80 PM: 0.90	159	39	88	127	83	60	143
Low-Rise Multifamily Housing	AM: 1.35 PM: 1.58	12	5	11	16	11	8	19
Т	OTAL		44	99	143	94	68	162

# Table 3: Peak Period Person Trips Generated

1. PPP = Person Trips per Peak Period

Table 8 of *TRANS Trip Generation Manual* includes recommended AM and PM peak hour modal shares for high-rise multifamily housing developments by district. Figure 1 of *TRANS Trip Generation Manual* identifies the subject site as being within the Beacon Hill district and therefore recommends the following modal shares for this high-rise residential development:

- Auto Driver: 48% AM, 52% PM
- Auto Passenger: 9% AM, 16% PM

- Transit: 30% AM, 28% PM
- Pedestrian: 10% AM, 4% PM
- Cyclist: 3% AM, 0% PM

For the purposes of this analysis, the AM and PM peak hour modal shares from the TRANS Trip Generation Manual were averaged and rounded to the nearest 5%. A full breakdown by modal share of the projected peak period person trips generated by the proposed development is included in **Table 4**.

Travel Mode	Modal	АМ	Peak Pe (ppp)	riod	PM Peak Period (ppp)		
	Snare	IN	OUT	ΤΟΤ	IN	OUT	тот
Person Trips		44	99	143	94	68	162
Auto Driver	50%	22	50	72	47	34	81
Auto Passenger	10%	4	10	14	9	7	16
Transit	30%	14	29	43	29	20	49
Cyclist	0%	0	0	0	0	0	0
Pedestrian	10%	4	10	14	9	7	16

# Table 4: Proposed Development - Peak Hour Person Trips by Modal Share

Table 4 of *TRANS Trip Generation Manual* includes adjustment factors to convert the estimated peak period person trips to peak hour person trips. A breakdown of the estimated peak hour person trips with site development is shown in **Table 5**.

Travel Mode	AM Pe	ak Hour	(pph <sup>(1)</sup> )	PM Peak Hour (pph <sup>(1)</sup> )			
	Feak Hour Factor	IN	OUT	тот	IN	OUT	тот
Auto Driver	AM: 0.48 PM: 0.44	11	24	35	21	15	36
Auto Passenger	AM: 0.48 PM: 0.44	2	5	7	4	3	7
Transit	AM: 0.55 PM: 0.47	7	16	23	13	10	23
Cyclist	AM: 0.58 PM: 0.48	0	0	0	0	0	0
Pedestrian	AM: 0.58 PM: 0.52	2	6	8	5	3	8
	Total	22	51	73	43	31	74

# Table 5: Peak Hour Person Trips Generated

1. pph: Person Trips per Peak Hour

Based on the previous table, the proposed residential development is expected to generate 73 person trips in the AM peak hour (35 vehicle trips) and 74 person trips in the PM peak hour (36 vehicle trips).

# 3.1.2 Trip Distribution

The assumed distribution of trips generated by the proposed development has been derived from existing commuter traffic patterns within the study area as well as a review of existing traffic movements exiting the study area during the AM peak hour and entering the study area during the PM peak hour. The anticipated trip distribution is:

- 5% to/from the north on Blair Road
- 20% to/from the south on Blair Road
- 25% to/from the east on Montreal Road
- 50% to/from the west on Montreal Road

The subject site is accessible via proposed accesses on Montreal Road or Beckenham Lane. Based on the relative sizes of parking lots, approximately one third of trips are expected to use the Montreal Road access and the reminder of the site trips will use the Beckenham Lane access. Estimated trips generated by the proposed site are shown in **Figure 6**.

# Figure 6: Site Generated Trips



# 3.2 Background Traffic

#### 3.2.1 Other Area Developments

A description of other study area developments is included in Section 2.2.

A review of the screening form for 971 Montreal Road suggest that the 78-unit apartment building does not meet the City's trip generation trigger and is expected to have a negligible impact on the study area roadways.

A TIA (May 2021) was prepared for the proposed 26-storey mixed-use building at 741 Blair Road & 1649 Montreal Road. Traffic volumes generated by that development have been added to the background traffic at all relevant intersections within the study area for this TIA.

Relevant excerpts from the respective traffic studies for the above developments are included in **Appendix G**.

#### 3.2.2 Background Growth Rate

A rate of background growth for the arterial road network within the study area has been established through a review of the city of Ottawa's Strategic Long-Range Model (comparing snapshots of 2011 and 2031 AM peak hour volumes) and the City of Ottawa's Historic Intersection Traffic Growth Rate figures (comparing traffic growth from 2000 and 2016 AM and PM peak hour volumes). The City's long range model snapshots suggest a growth rate of 1% per year for Montreal Road and Blair Road. This is consistent with the historic intersection traffic growth figures, which suggest traffic at the Montreal Road/Blair Road intersection typically grows between 0.2% and 2% annually.

For the purposes of this report, a 1% per annum growth rate has been applied to traffic along Montreal Road and Blair Road.

# 3.2.3 Future Traffic Conditions

The figures listed below present the following future traffic conditions:

- Background traffic volumes in 2023 are shown in Figure 7;
- Background traffic volumes in 2028 are shown in Figure 8;
- Total traffic volumes in 2023 are shown in Figure 9; and
- Total traffic volumes in 2028 are shown in Figure 10.

# Figure 7: 2023 Background Traffic Volumes



Figure 8: 2028 Background Traffic Volumes





# 3.3 Demand Rationalization

A review of the existing and background intersection operations has been conducted to determine if and when traffic volumes exceed capacity within the study area. Intersection parameters in the analysis are consistent with the City's TIA guidelines (saturation flow rate: 1800 vphpl, existing conditions PHF: 0.9, future conditions PHF: 1.0).

Per Exhibit 22 of the Multi-Modal Level of Service (MMLOS) Guidelines, the target vehicular level of service (Auto LOS) at all study area intersections is an Auto LOS D, which equates to a vehicle-to-capacity (v/c) ratio of 0.90 at signalized intersections, and a maximum delay of 35 seconds at unsignalized intersections.

Existing signal timing plans obtained from the City of Ottawa are included in **Appendix H**. Detailed *Synchro 10* analysis reports are included in **Appendix I**.

# 3.3.1 Existing Conditions

Intersection capacity analysis has been completed for the existing traffic volumes (See **Figure 3**) and summarized in **Table 6**.

	AM Peak			PM Peak			
Intersection	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt	
Montreal Rd & Blair Rd	0.61	В	WBT	0.72	С	NBL	
Montreal Rd & Elwood St	0.59	А	WBT	0.60	А	EBT	
Montreal Rd & Elmsmere Rd	0.53	А	WBT	0.53	А	EBT	
Montreal Rd & Beckenham Ln <sup>1</sup>	55 sec	F	SB	20 sec	С	SB	

# Table 6: Existing Traffic Operations

1. Unsignalized intersection

All study area signalized intersections currently operate at a Vehicle LOS C or better during the AM and PM peak hours. The maximum (95th percentile) northbound left turn queue at the Montreal Road/Blair Road intersection is approximately 50m, exceeding the existing storage capacity. The maximum queues for all other movements within the study area do not exceed the existing auxiliary lane storage or extend through upstream intersections.

During the AM peak hour, the southbound approach on Beckenham Lane at Montreal Road operates with a LOS F and an average delay of 55 seconds. To achieve the target LOS D at this intersection, a reduction of eight southbound left turning vehicles is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel. A further description of each option is provided in the subsequent sections.

# 3.3.2 2023 Background Traffic – Intersection Operations

Intersection capacity analysis has been conducted for the 2023 background traffic volumes (See **Figure 7**). The results of the analysis are summarized in **Table 7** for the weekday AM and PM peak hours.

		AM Peak		PM Peak			
Intersection	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt	
Montreal Rd & Blair Rd	0.59	А	NBL	0.71	С	NBL	
Montreal Rd & Elwood St	0.56	А	WBT	0.57	А	EBT	
Montreal Rd & Elmsmere Rd	0.51	А	WBT	0.50	А	EBT	
Montreal Rd & Beckenham Ln <sup>1</sup>	41 sec	E	SB	18 sec	С	SB	

# Table 7: 2023 Future Background Traffic Operations

1. Unsignalized intersection

Based on the previous tables, some of 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).

All study area signalized intersections in the 2023 background conditions are projected to operate at LOS C or better during the AM and PM peak hours. Consistent with the existing conditions,

the maximum northbound left turn queue at the Montreal Road/Blair Road intersection is approximately 50m, exceeding the existing storage capacity. The maximum queues for all other movements within the study area do not exceed the existing auxiliary lane storage or extend through upstream intersections.

During the AM peak hour, the southbound approach on Beckenham Lane at Montreal Road operates with a LOS E and an average delay of 41 seconds. To achieve the target LOS D at this intersection, a reduction of four southbound left turning vehicles is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel. A further description of each option is provided in the subsequent sections.

# 3.3.3 2028 Background Traffic – Intersection Operations

Intersection capacity analysis has been conducted for the 2028 background traffic volumes (See **Figure 8**). The results of the analysis are summarized in **Table 8** for the weekday AM and PM peak hours.

	AM Peak			PM Peak			
Intersection	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt	
Montreal Rd & Blair Rd	0.61	В	WBT, NBL	0.73	С	NBL	
Montreal Rd & Elwood St	0.58	А	WBT	0.60	А	EBT	
Montreal Rd & Elmsmere Rd	0.53	А	WBT	0.53	А	EBT	
Montreal Rd & Beckenham Ln <sup>1</sup>	49 sec	E	SB	19 sec	С	SB	

#### Table 8: 2028 Future Background Traffic Operations

1. Unsignalized intersection

There is a marginal increase in the v/c ratios and queue lengths at the study signalized intersections during the AM and PM peak hours compared to the 2023 background operations.

During the AM peak hour, the southbound approach on Beckenham Lane at Montreal Road operates with a LOS E and an average delay of 49 seconds. To achieve the target LOS D at this intersection, a reduction of seven southbound left turning vehicles is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel. A further description of each option is provided below.

#### Increased Use of Non-Auto Modes

As described in Section 2.2.1, the City's RTTP Network identifies the implementation of transit lanes along Montreal Road. This project is currently scheduled for post 2031 implementation. Advancement of this project is anticipated to reduce the auto demand along the corridor by increasing transit utilization along Montreal Road.

#### Alternative Travel Times

As congestion increases within the study area, some motorists may alter their travel to occur outside of the peak hours. This shift in travel times may result in a reduction of peak hour traffic volumes.

#### Alternative Routes

Based on the 2019 traffic counts conducted at the Beckenham Lane/Cedar Road (South) and Rothwell Circle/Rothwell Drive intersection, approximately 60 vehicles travel southbound/westbound on Rothwell Drive, turn left on Cedar Road, and left on Beckenham Lane during the AM peak hour. Based on the number of residential dwellings on Rothwell Drive north of Rothwell Circle, the high volume of vehicles traveling this route is evidence of cut through traffic between Naskapi Drive and Montreal Road.

As described in Section 2.1.5, the City recently completed a Neighbourhood Traffic Calming Plan for Naskapi Drive. The proposed vertical traffic calming measures along Naskapi Drive are anticipated to increase travel times along the corridor, which may result in a reduced number vehicles cutting through the community to Montreal Road via Beckenham Lane during the AM peak hour. It is recommended that the City monitor traffic at this intersection following implementation of the Naskapi Drive traffic calming measures.

Should high delays continue at this intersection, southbound left turning vehicles could be detoured to perform a westbound U-turn maneuver at the Montreal Road/Elwood Street intersection. Based on the collision history presented in Section 2.1.8, no turning movement collisions were reported at this intersection within the last five years. Based on the above analysis, this intersection has capacity to accommodate the additional U-turn movements.

#### 4.0 ANALYSIS

#### 4.1 Development Design

#### 4.1.1 Design for Sustainable Modes

Sidewalk connections will be provided between the high-rise building entrance and Montreal Road. There will also be paths from the townhome units to the parking lots as well as Montreal Road and Beckenham Lane. As new sidewalks within the Beckenham Lane and Cedar Road Right-of-Way will not provide system connectivity beyond the subject site, no new municipal sidewalks are proposed along these frontages.

Eighty-eight bicycle parking spaces will be provided within the underground parking garage and surface level parking. Further review of the number of bicycle parking spaces is included in Section 4.2: 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. All of the transit stops outlined in Section 2.1.6 are within the 400m distance. The stops within 400m walking distance of the subject site provide service to Routes 12 and 23.

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 J**. All required TDM-supportive design and infrastructure measures in the TDM checklist are met. In addition to the required measures, the proposed development also meets the following 'basic' or 'better' measures as defined on the TDM - Supportive Development Design and Infrastructure Checklist:

• The building will be located near the street and have no parking areas between the street and building entrances

- The location of the building entrances will minimize the walking distance to sidewalks and transit stops/stations
- The location of building doors and windows will ensure visibility of pedestrians from the building
- Walking routes from the development to nearby transit stops will be safe, direct, and attractive
- Walking routes from the development to nearby transit stops will be secure, visible, lighted, shaded, and wind protected whenever possible

# 4.1.2 Circulation and Access

Garbage will be stored in the garbage room within the underground parking and will be wheeled up to surface level parking for collection. Fire route access for the 9-storey apartment building is provided along Montreal Road while fire route access for the proposed townhouses is provided along Cedar Road.

# 4.2 Parking

The subject site is located in Area C of Schedule 1 and Schedule 1A of the City of Ottawa's *Zoning By-Law* (ZBL).

Section 101,102, and 111 of the ZBL summarizes the minimum vehicle and bicycle parking space rates for various land uses. The minimum required vehicle and bicycle parking spaces for the proposed development is summarized in **Table 9**.

Land Use	Rate	Units	Required	Provided					
Minimum Vehicle Parking									
High Dies	Tenant: 1.2 per dwelling unit	ing unit 159		162					
nigii nise	Visitor: 0.2 per dwelling unit			32					
Taumhauaaa	Tenant: 1.0 per dwelling unit	10	12	10					
Townhouses	Visitor: None Required		0	12					
		Total	235	206					
Minimum Bicyc	le Parking								
Apartment 0.5 per dwelling unit		159	80	88					
Townhouses None Required		12	0	0					
		Total	80	88					

#### Table 9: Minimum Required Vehicle Parking Spaces

The proposed bicycle parking will exceed the requirements of the City's ZBL. The proposed vehicle parking for the townhouses will meet the requirements of the City's ZBL. However, the proposed parking for the apartment building will not meet the requirements of the City's ZBL. As the proposed parking equates to 85% of the ZBL requirements, a further review of spillover parking is not required.

# 4.3 Boundary Streets

This section provides a review of the boundary streets, Montreal Road, Beckenham Lane, and Cedar Road 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.

Each boundary road is located within the General Urban Area (per Schedule B of the City's previous Official Plan, which is referenced by the MMLOS Guidelines). Montreal Road is designated as an arterial mainstreet roadway and Beckenham Lane is classified as a local roadway.

A detailed segment MMLOS review of the boundary streets is located in **Appendix K**. A summary of the segment MMLOS analysis is provided in the table below.

Segment	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Montreal Road	F	С	F	С	Е	D	А	D
Beckenham Lane	F	С	В	D	-	-	D	-
Cedar Road	F	С	В	D	_	-	D	-

#### Table 10: Segment MMLOS Summary

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

- All boundary streets do not meet the target pedestrian level of service (PLOS);
- Beckenham Lane and Cedar Road meet the target bicycle level of service (BLOS), while Montreal Road does not;
- Montreal Road does not meet the target transit level of service (TLOS); and
- Montreal Road meets the target TkLOS. There is no target TkLOS for Beckenham Lane and Cedar Road.

#### Pedestrian Level of Service

The target PLOS is not achieved along Montreal Road, Beckenham Lane, and Cedar Road. As described in Section 2.2.1, the City's planned Montreal-Blair Transit Priority Project is anticipated to provide a 2.5m sidewalk with 3.5-4m wide boulevard (including the proposed cycle track) along the site's frontage. The proposed pedestrian facility will provide an improved PLOS along Montreal Road adjacent to the site.

To achieve the target PLOS C along Beckenham Lane and Cedar Road, a 1.8m wide curbside sidewalk is required. This is identified for the City's consideration.

#### Bicycle Level of Service

Within the study area Montreal Road operates with mixed traffic on a road with an assumed operating speed of 70km/h. As described in Section 2.2.1, the City's planned Montreal-Blair Transit Priority Project is anticipated to provide cycle tracks along Montreal Road. The future cycle tracks will achieve a BLOS A along Montreal Road adjacent to the site.

#### Transit Level of Service

Within the study area Montreal Road operates with mixed traffic on a road with a medium exposure to driveway friction and potential incidents. As described in Section 2.2.1, the City's planned Montreal-Blair Transit Priority Project is anticipated to provide improved transit facilities along Montreal Road adjacent to the site.

# 4.4 Access Intersections

# 4.4.1 Access Design

The proposed development will be served by two full movement accesses, one along Montreal Road and one along Beckenham Lane. The access on Montreal Road leads to an at-grade parking lot with 57 surface parking spaces. The access on Beckenham Lane leads to an at-grade parking lot with 14 surface parking spaces and an underground parking garage with 123 parking spaces. The proposed access on Montreal Road will have a width of approximately 6.0m and will be located at the southeast corner of the property. The proposed access on Beckenham Lane will have a width of approximately 7.0m at the property line (6.7m within the site) and will be located near the northwest corner of the property. The design of each access has been evaluated using the relevant provisions of the City's Private Approach By-law (PABL) and ZBL.

Section 25(a) of the PABL identifies that, for sites with 46-150m of frontage to a given roadway, two two-way private approaches to that roadway are permitted. As one two-way approach is proposed on to each Montreal Road and Beckenham Lane the proposed development meets these requirements.

Section 25(c) of the PABL states that two-way accesses to have a width no greater than 9m, as measured at the street line. Furthermore, the City of Ottawa's ZBL identifies a minimum width of 6.0m and maximum width of 6.7m for a two-way driveway leading to a residential parking garage/lot with more than 20 spaces. The width of the proposed driveway adheres to the requirements of the PABL and ZBL.

Section 25(m)(ii) of the PABL states where a property abuts an arterial roadway and has less than 100 parking spaces, that the distance between the private approach and nearest intersecting street line be 18 metres. This is applicable to the surface parking lot access on Montreal Road. For an access serving 100 to 199 parking spaces, the distance between the private approach and nearest intersecting street line is to be 30m. This is applicable to the Beckenham Lane access. The Montreal Road access is located approximately 60m east of the Beckenham Lane Right-of-Way limit, conforming to PABL requirements. The Beckenham Lane access is located approximately 80m north of the Montreal Road Right-of-Way limit and 27m from the Cedar Road Right-of-Way limit. As the proposed access achieves the PABL requirements to Montreal Road, this is considered appropriate.

Section 25(p) of the PABL identifies a minimum spacing requirement of 3.0m between the nearest limit of a private approach and the property line, as measured at the street line. The proposed Montreal Road access is located approximately 1.8m from the eastern property line. Section 25(r) identifies that despite paragraph (p), a private approach may be constructed in such a manner that it is less than 3 metres from an adjoining property measured at the highway line and at the curb line or edge of the roadway if it is approved through Site Plan Control in accordance with the provision of the Planning Act and the City's Site Plan Control By-law. The proposed driveway location is recommended to maximize the distance to the Beckenham Lane intersection and to facilitate inbound/outbound movements through the existing median break along Montreal Road.

Section 25(u) of the PABL identifies a requirement that any private approach serving a parking area with more than 50 parking spaces shall not have a grade exceeding 2% for the first 9m inside the property line. The Beckenham Lane access adheres to this requirement. A 6% grade towards the road is proposed within the private property at the Montreal Road access. The proposed 6% grade is required to establish sufficient cover between the surface parking lot and the

underground parking garage. Section 25(v) identifies that despite paragraph (u), the General Manager may issue a permit for a private approach subject to such conditions and restrictions as the General Manager may deem necessary provided that the proposed access is located;

- a safe distance from the access serving the adjacent;
- in such a manner that there are adequate sight lines for vehicles exiting the property; and
- in such a manner that it does not create a traffic hazard.

As the 6% grade downgrade is not anticipated to impact sight lines or create a traffic hazard, a waiver to Section 25(t) of the PABL is recommended.

The Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads* identifies minimum intersection sight distance (ISD) and stopping sight distance (SSD) requirements, based on the roadway grade and design speed (taken as the speed limit plus 10 km/h). The required ISD and SSD for the two accesses are summarized as follows:

Beckenham Lane: ISD: 105m to turn left 95m to turn right SSD: 65m

Montreal Road:

ISD: 150mto turn left 130m to turn right SSD: 105m

As the access to Montreal Road meets the roadway at a perpendicular angle and no vertical or horizontal curves impact sightlines these requirements are met at this location. As Beckenham Lane to the north of the Beckenham Lane/Cedar Road South intersection has an upwards grade and slight horizontal curvature, it is recommended that the City trim vegetation within the Right-of-Way on the west side of the road to improve sight lines for southbound traveling vehicles around the horizontal curve.

The TAC *Geometric Design Guide for Canadian Roads* identifies minimum clear throat lengths based on road classification and land use. For an Apartment land use with less than 100 units a minimum clear throat length of 15m is required for arterial roads. The requirement is met as roughly 50m is provided at the Montreal Road access. While the proposed apartment building has over 100 units, the requirements for less than 100 units was used as the access to Montreal Road serves approximately one third of the total parking of the proposed development.

# 4.4.2 Access Operations

Analysis of the access intersection operations has been conducted in Synchro, with the results summarized in **Table 13**. The intersection parameters used in the analysis are consistent with the *2017 TIA Guidelines* (Saturated Flow Rate: 1,800 vphpl, Peak Hour Factor: 1.0 in future conditions).

Access	AM Peak Hour			PM Peak Hour					
	Delay	LOS	Mvmt	Delay	LOS	Mvmt			
2023 Traffic									
Montreal Road	17 sec	В	SBL/R	13 sec	В	SBL/R			
Beckenham Lane	9 sec	А	WBL/R	9 sec	А	WBL/R			
2028 Traffic									
Montreal Road	17 sec	В	SBL/R	14 sec	В	SBL/R			
Beckenham Lane	9 sec	A	WBL/R	9 sec	A	WBL/R			

#### Table 11: 2023/2028 Access Intersection Operations

Based on the foregoing, the proposed accesses to Montreal Road and Beckenham Lane are anticipated to operate with an acceptable vehicular level of service for the buildout year 2023 and horizon year 2028.

Based on the traffic projections presented in **Figure 6**, a total of three and five vehicles are anticipated to perform the eastbound left turn movement at the Montreal Road access during the AM and PM peak hours, respectively. Based on the Ministry of Transportation of Ontario (MTO) left turn storage lane warrants for four-lane divided roadways, a left turn lane is not required at this access. MTO left turn lane warrants are included in **Appendix L**.

# 4.5 Transportation Demand Management

#### 4.5.1 Context for TDM

The proposed development consists of a total of 172 residential units. The residential unit breakdown is provided as follows:

- 159 Dwelling Units in the High-Rise Building:
- 12 Dwelling Units in the Townhomes

# 4.5.2 Need and Opportunity

As first discussed in Section 3.1.1, the mode share targets for the proposed development are assumed to be generally consistent with the observed mode shares for the Beacon Hill region, as outlined in the *TRANS Trip Generation Manual*. These target shares include a 50% driver share.

Failure to meet the already observed driver shares for the Beacon Hill region are not anticipated, due to the proximity of the subject site to nearby frequent transit service and the reduced number of on-site parking spaces. Failure to meet the proposed mode share targets are anticipated to marginally increase congestion within the study area.

# 4.5.3 TDM Program

A review of the Transportation Demand Management (TDM) – Measures Checklist has been conducted by the proponent, who has committed to providing the following TDM measures within this development:

- Display local area maps with walking/cycling access routes and key destinations at major entrances;
- Display relevant transit schedules and route maps at entrances:
- Unbundle parking cost from purchase price/monthly rent;
• Provide a multimodal travel option information package to new residents.

A copy of the TDM checklist is included in **Appendix J**.

#### 4.6 Neighbourhood Traffic Management

The *2017 TIA Guidelines* identify two-way peak hour traffic volume thresholds for considering when a Neighbourhood Traffic Management (NTM) plan should be developed. The NTM two-way volume thresholds are as follows:

- Local Roadways: 120 vehicles during the peak hour, or 1,000 vehicles per day;
- Collector Roadways: 300 vehicles during the peak hour, or 2,500 vehicles per day;
- Major Collector Roadways: 600 vehicles during the peak hour, or 5,000 vehicles per day.

The proposed development will rely on the local road Beckenham Lane for direct access. Based on the 2028 background traffic projections presented in **Figure 8**, traffic along Beckenham Lane is expected to exceed the above NTM thresholds.

As previously mentioned in Section 2.1.5, a Neighbourhood Traffic Calming Study along Naskapi Drive was completed due to traffic concerns raised by residents. It is assumed that vehicles using Beckenham Lane as a shortcutting route from the north is causing projected volumes to exceed those of a typical local road. It is recommended that the City monitor traffic volumes within this community following the implementation of the Naskapi Drive traffic calming measures.

The proposed development is anticipated to increase traffic along Beckenham Lane by 23-24 vehicles (two-way) during peak hours, equating to one vehicle every 2-3 minutes. As all traffic is anticipated to arrive and depart via Montreal Road, the proposed development is not anticipated to have a significant impact on traffic volumes within the adjacent community. No traffic calming measures are proposed as part of this development.

#### 4.7 Transit

Based on the trip generation estimates presented in Section 3.1.1, the proposed development is anticipated to generate the following number of transit trips:

- AM Peak Hour: 23 transit trips, including 16 boarding and 7 alighting;
- PM Peak Hour: 23 transit trips, including 10 boarding and 13 alighting.

The distribution of transit trips to/from the development has been estimated using the same trip distribution assumptions outlined in Section 3.1.2, which are summarized as follows:

- 5% to/from the north via Blair Road;
- 20% to/from the south via Blair Road;
- 50% to/from the east via Montreal Road;
- 25% to/from the west via Montreal Road.

Projected boarding and alighting information are summarized in **Table 12**.

Stop	Location	Route (I	Direction)	Boarding (tph) <sup>(1)</sup>	Alighting (tph) <sup>(1)</sup>
AM Peak Hour					
#2572 and #2573	North side of Montreal Road	12	WB	8	4
#2569 and #2570	South side of Montreal Road	12	EB	4	2
#8644	Elwood Street	23	SB	4	2
PM Peak Hour					
#2572 and #2573	North side of Montreal Road	12	WB	5	6
#2569 and #2570	South side of Montreal Road	12	EB	2	3
#1386	Elwood Street	23	SB	3	4

#### Table 12: Existing and Projected Transit Utilization

During the peak hours Route 12 operates with 15-minute headways and Route 23 operates with 30-minute headways. Based on the above transit distribution, two new transit trips per bus on Route 12 and 23 are anticipated. The projected increase in transit trip volumes due to the proposed redevelopment is not anticipated to result in capacity problems 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.

#### 4.8 Intersection Design

#### 4.8.1 Intersection MMLOS Review

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 multimodal levels of service for each signalized intersection within the study area. All roadways have been evaluated based on the targets for Arterial Main Streets.

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

Intersection	PL	PLOS BLOS		TLOS		TkLOS		AutoLOS		
Intersection	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Montreal Road & Blair Road	F	С	F	С	С	D	С	D	С	D
Montreal Road & Elwood Street	F	С	F	С	В	D	F	D	А	D
Montreal Road & Elmsmere Road	F	С	F	С	В	D	F	D	А	D

#### Table 13: Intersection MMLOS Summary

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

- None of the study area intersections meet the target PLOS;
- None of the study area intersections meet the target BLOS;
- All of the study area intersections meet the target TLOS;
- Montreal Road/Blair Road meets the target TkLOS while Montreal Road/Elwood Street and Montreal Road/Elmsmere Road do not; and
- All intersections meet the target AutoLOS.

#### Montreal Road/Blair Road

The intersection does not meet the target PLOS C or BLOS C.

There is limited opportunity to improve the PLOS and BLOS at this intersection without reducing the number of lanes crossed and providing a designated cycling facility on all approaches.

No mitigation measures are proposed as part of the proposed development, as the City's planned Montreal-Blair Transit Priority Project is anticipated to provide improved pedestrian and cycling facilities along the Montreal Road corridor. This project will provide the following improvements to this intersection:

- reduced pedestrian crossing distance on all approaches;
- removal of the eastbound and southbound right turn channelization islands;
- ladder striped crosswalks on all approaches;
- two stage left-turn cyclist movements on all approaches (protected intersection); and
- east-west transit queue jump lanes.

#### Montreal Road/Elwood Street

The intersection does not meet the target PLOS C, BLOS C, or TkLOS.

There is limited opportunity to improve the PLOS and BLOS at this intersection without reducing the number of lanes crossed and providing a designated cycling facility on all approaches. The northbound and southbound right turn movements meet the target TkLOS but the eastbound and westbound right turn movements do not. As the north and south legs of the intersection do not form part of the City's truck routes, the eastbound and westbound right turn movements are considered acceptable.

No mitigation measures are proposed as part of the proposed development, as the City's planned Montreal-Blair Transit Priority Project is anticipated to provide improved pedestrian and cycling facilities along the Montreal Road corridor. This project will provide the following improvements to this intersection:

- reduced pedestrian crossing distance on all approaches;
- ladder striped crosswalks on all approaches; and
- two stage left-turn cyclist movements on all approaches (protected intersection).

#### Montreal Road/Elmsmere Road

The intersection does not meet the target PLOS C, BLOS C, or TkLOS.

There is limited opportunity to improve the PLOS and BLOS at this intersection without reducing the number of lanes crossed and providing a designated cycling facility on all approaches. The northbound right turn movement meets the target TkLOS but the eastbound right turn movement does not. As the south leg of the intersection does not form part of the City's truck routes, the eastbound right turn movement is considered acceptable.

No mitigation measures are proposed as part of the proposed development, as the City's planned Montreal-Blair Transit Priority Project is anticipated to provide improved pedestrian and cycling facilities along the Montreal Road corridor. This project will provide the following improvements to this intersection:

- reduced pedestrian crossing distance on all approaches;
- ladder striped crosswalks on all approaches; and
- two stage left-turn cyclist movements on all approaches (protected intersection).

#### 4.8.2 2023 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2023 total traffic conditions. The results of the analysis are summarized in **Table 14** for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

Table 14: 2023 Total Traffic Operation	Table 14:	2023 Total	<b>Traffic O</b>	perations
--	-----------	------------	------------------	-----------

	AM Peak			PM Peak		
Intersection	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt
Montreal Rd & Blair Rd	0.59	А	NBL	0.71	С	NBL
Montreal Rd & Elwood St	0.56	А	WBT/R	0.58	А	EBT/R
Montreal Rd & Elmsmere Rd	0.51	А	WBT	0.50	А	EBT
Montreal Rd & Beckenham Ln	50 sec.	F	SB	19 sec.	С	SB

Compared to the 2023 background traffic conditions, site-generated traffic is anticipated to have marginal impacts on traffic operations within the study area.

During the AM peak hour, the southbound approach on Beckenham Lane at Montreal Road operates with a LOS F and an average delay of 50 seconds. To achieve the target LOS D at this intersection, a reduction of eight southbound left turning vehicles is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel, as described in Section 3.3.3.

#### 4.8.3 2028 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2028 total traffic conditions. The results of the analysis are summarized in **Table 15** for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

		AM Peak			PM Peak		
Intersection	Max v/c or Delay	LOS	Mvmt	Max v/c or Delay	LOS	Mvmt	
Montreal Rd & Blair Rd	0.61	В	WBT/NBL	0.73	В	NBL	
Montreal Rd & Elwood St	0.59	А	WBT/R	0.60	А	EBT/R	
Montreal Rd & Elmsmere Rd	0.53	А	WBT	0.53	А	EBT	
Montreal Rd & Beckenham Ln	62 sec.	F	SB	20 sec.	С	SB	

#### Table 15: 2028 Total Traffic Operations

Compared to the 2029 background traffic conditions, site-generated traffic is anticipated to have marginal impacts on traffic operations within the study area.

During the AM peak hour, the southbound approach on Beckenham Lane at Montreal Road operates with a LOS F and an average delay of 62 seconds. Based on the 2028 total traffic volumes, traffic signals are anticipated to be 16% warranted. To achieve the target LOS D at this

intersection, a reduction of eleven southbound left turning vehicles is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel, as described in Section 3.3.3. Traffic signal warrants are included in **Appendix M**.

As traffic signal warrants are not met and since the City's Naskapi Drive traffic calming project is anticipated to reduce traffic along Beckenham Lane during the AM peak hour, no mitigation measures are identified as part of this development.

Should high delays continue at this intersection, southbound left turning vehicles could be detoured to perform a westbound U-turn maneuver at the Montreal Road/Elwood Street intersection. Based on the collision history presented in Section 2.1.8, no turning movement collisions were reported at this intersection within the last five years. Based on the above analysis, this intersection has capacity to accommodate the additional U-turn movements.

#### 5.0 CONCLUSIONS AND RECOMMENDATIONS

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

Forecasting

• The proposed residential development is expected to generate 73 person trips in the AM peak hour (35 vehicle trips) and 74 person trips in the PM peak hour (36 vehicle trips).

Development Design

- Sidewalk connections will be provided between the proposed development and the existing sidewalk along Montreal Road.
- As new sidewalks within the Beckenham Lane and Cedar Road Right-of-Way will not provide system connectivity beyond the subject site, no new municipal sidewalks are proposed along these frontages.
- The transit stops within 400m walking distance of the subject site provide service to Routes 12 and 23.
- Garbage will be stored in the garbage room within the underground parking and will be wheeled up to surface level parking for collection. Fire route access for the 9-storey apartment building is provided along Montreal Road while fire route access for the proposed townhouses is provided along Cedar Road.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

#### <u>Parking</u>

- Eighty-eight bicycle parking spaces will be provided within the underground parking garage and surface level parking. The proposed bicycle parking will exceed the requirements of the City's ZBL.
- The site will include 71 surface parking spaces and an underground parking garage with 123 parking spaces for a total of 194. The proposed parking for the apartment building will not meet the requirements of the City's *Zoning By-law* (ZBL). As the proposed parking equates to 85% of the ZBL requirements, a further review of spillover parking is not required.

#### Boundary Street Design

- All boundary streets do not meet the target pedestrian level of service (PLOS);
- Beckenham Lane and Cedar Road meet the target bicycle level of service (BLOS), while Montreal Road does not;
- Montreal Road does not meet the target transit level of service (TLOS);
- Montreal Road meets the target TkLOS. There is no target TkLOS for Beckenham Lane and Cedar Road; and
- The City's planned Montreal-Blair Transit Priority Project is anticipated to provide improved pedestrian and cycling facilities along the sites Montreal Road frontage.

#### Access Design

- It is requested that the requirements of Section 25(t) of the PABL be waived as the 6% grade towards the road at the Montreal Road access is not anticipated to impact sight lines or create a traffic hazard.
- The proposed Montreal Road access is located 1.8m from the eastern property line and does not meet Section 25(p) of the Private Approach By-law. The proposed driveway location is recommended to maximize the distance to the Beckenham Lane intersection and to facilitate inbound/outbound movements through the existing median break along Montreal Road.
- The proposed accesses will be stop-controlled with free flow on Montreal Road and Beckenham Lane. It is anticipated that the proposed accesses will operate acceptably during both peak hours.
- As Beckenham Lane to the north of the Beckenham Lane/Cedar Road South intersection has an upwards grade and slight horizontal curvature, it is recommended that the City trim vegetation within the Right-of-Way on the west side of the road to improve sight lines for southbound traveling vehicles around the horizontal curve.

#### Transportation Demand Management

- The proponent has committed to providing the following TDM measures:
  - Display local area maps with walking/cycling access routes and key destinations at major entrances;
  - Display relevant transit schedules and route maps at entrances:
  - Unbundle parking cost from purchase price/monthly rent; and
  - Provide a multimodal travel option information package to new residents.

#### Neighbourhood Traffic Management

 The proposed development is anticipated to increase traffic along Beckenham Lane by 23-24 vehicles (two-way) during peak hours, equating to one vehicle every 2-3 minutes. As all traffic is anticipated to arrive and depart via Montreal Road, the proposed development is not anticipated to have a significant impact on traffic volumes within the adjacent community. No traffic calming measures are proposed as part of this development.

#### <u>Transit</u>

• The proposed development is anticipated to generate 23 transit trips during the AM and PM peak hours. Based on the transit distribution and transit frequency, two new transit trips per bus on Routes 12 and 23 are anticipated. It is anticipated that the proposed development will not have a significant impact on operations at the surrounding bus stops.

#### Intersection MMLOS

- None of the study area intersections meet the target PLOS.
- None of the study area intersections meet the target BLOS.
- All of the study area intersections meet the target TLOS.
- Montreal Road/Blair Road meets the target TkLOS while Montreal Road/Elwood Street and Montreal Road/Elmsmere Road do not.
- All of the study area intersections meet the target Auto LOS.
- The City's Montreal-Blair Transit Priority Project is anticipated to improve the LOS for all modes along the corridor.

#### Existing Intersection Operations

- At Montreal Road/Beckenham Lane the southbound approach does not meet the target Auto LOS D during the AM peak hour.
- The maximum (95th percentile) northbound left turn queue at the Montreal Road/Blair Road intersection is approximately 50m, exceeding the existing storage capacity. The maximum queues for all other movements within the study area do not exceed the existing auxiliary lane storage or extend through upstream intersections.

#### Background Intersection Operations

- At Montreal Road/Beckenham Lane the southbound approach does not meet the target Auto LOS D during the AM peak hour.
- To achieve the target LOS D at Montreal Road/Beckenham Lane, a reduction of four southbound left turning vehicles during 2023 traffic conditions and seven southbound left turning vehicles during 2028 traffic conditions is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel.
- The maximum (95th percentile) northbound left turn queue at the Montreal Road/Blair Road intersection is approximately 50m, exceeding the existing storage capacity. The maximum queues for all other movements within the study area do not exceed the existing auxiliary lane storage or extend through upstream intersections.

#### Total Intersection Operations

- At Montreal Road/Beckenham Lane the southbound approach does not meet the target Auto LOS D during the AM peak hour.
- To achieve the target LOS D at Montreal Road/Beckenham Lane, a reduction of eight southbound left turning vehicles during 2023 traffic conditions and eleven southbound left turning vehicles during 2028 traffic conditions is required. The reduction in southbound left turning vehicles can be achieved by increased use of non-auto modes of transportation, alternative travel times (peak period spreading), and alternative routes of travel.
- The City's Naskapi Drive traffic calming project may result in a reduced number of vehicles cutting through the community to Montreal Road via Beckenham Lane during the AM peak hour. It is recommended that the City monitor traffic at this intersection following implementation of the Naskapi Drive traffic calming measures.
- Should high delays continue at the Montreal Road/Beckenham Lane intersection, southbound left turning vehicles could be detoured to perform a westbound U-turn maneuver at the Montreal Road/Elwood Street intersection.

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

#### NOVATECH

Prepared by:

to Van Wich

Trevor Van Wiechen, M.Eng. E.I.T. | Transportation

Reviewed by:



Brad Byvelds, P.Eng. Project Manager | Transportation

# APPENDIX A

Preliminary Site Plan



2	EXISTING STRUCTURE T
3	CONCRETE SIDEWALK
4	SOFT LANDSCAPING
5	DEPRESSED CURB
6	LINE OF CANOPY ABOVE
7	STEEL GUARD
8	6m CORNER SIGHT TRIA
9	EXISTING OVERHEAD W

# **APPENDIX B**

**TIA Screening Form** 



Transportation Impact Assessment Screening Form

#### City of Ottawa 2017 TIA Guidelines Screening Form

#### 1. Description of Proposed Development

Municipal Address	1765 Montreal Road & 9 Beckenham Lane
Description of Location	Northeast corner of Montreal Rd at Beckenham Lane
Land Use Classification	Residential
Development Size (units)	About 173 residential units
Development Size (m <sup>2</sup> )	
Number of Accesses and Locations	1 connection to Montreal Road and 1 connection to Beckenham Lane
Phase of Development	
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 <sup>2</sup>
Industrial	5,000 m <sup>2</sup>
Fast-food restaurant or coffee shop	100 m <sup>2</sup>
Destination retail	1,000 m <sup>2</sup>
Gas station or convenience market	75 m <sup>2</sup>

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

#### If the proposed development size is greater than the sizes identified above, <u>the Trip Generation</u> <u>Trigger is satisfied.</u>



#### **Transportation Impact Assessment Screening Form**

#### **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?*	$\checkmark$	

\*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?		$\checkmark$
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?	$\checkmark$	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		$\checkmark$
Does the development include a drive-thru facility?		$\checkmark$

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?	$\checkmark$	
Does the development satisfy the Location Trigger?	$\checkmark$	
Does the development satisfy the Safety Trigger?	$\checkmark$	

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

# APPENDIX C

Naskapi Drive Traffic Calming Plan



# Planning, Infrastructure and Economic Development Department Direction générale de la planification, de l'infrastructure et du développement économique







# LOCAL TRAFFIC CALMING - NASKAPI DRIVE MODÉRATION DE LA CIRCULATION LOCALE - PROMENADE NASKAPI



Scale / Échelle

# APPENDIX D

OC Transpo Route Maps



## 7 days a week / 7 jours par semaine

All day service Service toute la journée



Temporary routing due to Montréal Rd. construction Itinéraire temporaire en raison de la construction sur le ch. Montréal

Timepoint / Heures de passage

Detour adjustments may be required to accomodate construction requirements / Des ajustements aux déviations peuvent être nécessaires pour répondre aux exigences de construction

2021.04

Schedule / Horaire613-560-1000 Text / Texto
Customer Service Service à la clientèle <b>613-741-4390</b>
Lost and Found / Objets perdus <b>613-563-4011</b> Security / Sécurité
Effective April 18, 2021 En vigueur 18 avril 2021
CC Transpo INFO 613-741-4390 octranspo.com



Monday to Friday / Lundi au vendredi Limited Service. No weekend service Service limité. Aucun service la fin de semaine



0	Station
<b>A</b>	Timepoint / Heures de passage

2019.06

Schedule / Horaire	613-560-1000
Text / Texto	
Customer Service Service à la clientèle	
Lost and Found / Objets p	berdus 613-563-4011
Security / Sécurité	613-741-2478
Effective <i>A</i>	April 23, 2018
En vigueur	23 avril 2018
C Transpo	INFO 613-741-4390 octranspo.com





# APPENDIX E

Traffic Count Data



Turning Movement Count - Peak Hour Diagram BLAIR RD @ MONTREAL RD





Turning Movement Count - Peak Hour Diagram BLAIR RD @ MONTREAL RD





Turning Movement Count - Peak Hour Diagram ELWOOD ST @ MONTREAL RD





Turning Movement Count - Peak Hour Diagram ELWOOD ST @ MONTREAL RD





Turning Movement Count - Peak Hour Diagram BECKENHAM LANE @ CEDAR RD S





Turning Movement Count - Peak Hour Diagram BECKENHAM LANE @ CEDAR RD S





## Turning Movement Count - Peak Hour Diagram ROTHWELL CIRC @ ROTHWELL DR





## Turning Movement Count - Peak Hour Diagram ROTHWELL CIRC @ ROTHWELL DR





Turning Movement Count - Peak Hour Diagram ELMSMERE RD @ MONTREAL RD





Turning Movement Count - Peak Hour Diagram ELMSMERE RD @ MONTREAL RD



# **APPENDIX F**

**Collision Data** 



Location: BECKE	NHAM LANE	@ MONTREAL RE	)						
Traffic Control: Stop sign       Total Collisions: 3									
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-05, Tue,03:43	Clear	SMV other	P.D. only	Dry	West	Going ahead	Unknown	Ran off road	0
2018-Jan-14, Sun,12:18	Clear	SMV other	P.D. only	lce	South	Turning left	Automobile, station wagon	Skidding/sliding	0
2019-Jan-16, Wed,14:40	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
Location: BLAIR	RD @ MONTI	REAL RD							
Traffic Control: Tra	ffic signal						Total Collisions:	34	
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-25, Thu,18:13	Snow	Rear end	P.D. only	Ice	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
2016-Feb-25, Thu,18:28	Strong wind	Rear end	P.D. only	lce	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-26, Fri,12:06	Rain	Turning movement	P.D. only	Ice	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2016-Mar-02, Wed, 14:29	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Apr-19, Tue,08:27	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Aug-26, Fri,08:28	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-11, Fri,20:44	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	



Location: BLAIR	RD @ MONTI	REAL RD							
Traffic Control:       Traffic signal       Total Collisions:       34									
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	r Vehicle type	First Event	No. Ped
2017-Feb-01, Wed,11:30	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Mar-08, Wed, 13:30	Clear	Angle	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2017-Mar-31, Fri,14:56	Snow	Turning movement	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Jul-30, Sun,16:28	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-27, Sun,16:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-28, Thu,16:21	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	g Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Oct-14, Sat,08:50	Rain	SMV other	P.D. only	Wet	East	Turning right	Automobile, station wagon	Curb	0
2017-Oct-23, Mon,15:30	Clear	Other	P.D. only	Dry	North	Reversing	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-21, Tue,16:57	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-05, Tue,16:40	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2017-Dec-05, Tue,16:54	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-26, Mon,15:38	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	g Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	



Location: BLAIR	RD @ MONTI	REAL RD							
Traffic Control:       Traffic signal       Total Collisions:       34									
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuve	r Vehicle type	First Event	No. Ped
2018-Apr-08, Sun,13:52	Clear	Rear end	P.D. only	Dry	East	Unknown	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-20, Thu,15:35	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-30, Sun,19:38	Rain	Angle	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2018-Nov-02, Fri,11:52	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-05, Mon,17:30	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-22, Tue,08:20	Clear	Rear end	Non-fatal injury	lce	West	Slowing or stopping	g Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Feb-24, Sun,07:16	Rain	Rear end	Non-fatal injury	Wet	East	Slowing or stopping Automobile, station wagon		Skidding/sliding	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-May-24, Fri,08:30	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Aug-16, Fri,20:29	Clear	Turning movement	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Aug-19, Mon,16:25	Rain	Rear end	Non-fatal injury	Wet	East	Slowing or stopping	g Delivery van	Other motor vehicle	0
					East	Stopped	Unknown	Other motor vehicle	
2019-Aug-21, Wed,09:30	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Oct-10, Thu,12:52	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	



Location: BLAIR F	RD @ MONTI	REAL RD							
Traffic Control:       Traffic signal       Total Collisions:       34									
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Oct-17, Thu,09:40	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jul-24, Fri,11:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Oct-08, Thu,11:09	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
Location: ELMSM	IERE RD @ N	IONTREAL RD							
Traffic Control: Traf	fic signal						Total Collisions:	. 7	
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-02, Mon,11:36	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Jul-15, Fri,23:28	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-30, Wed,18:11	Rain	Rear end	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Tow truck	Other motor vehicle	
2018-Nov-16, Fri,14:30	Snow	Angle	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Skidding/sliding	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Apr-25, Thu,18:30	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Passenger van	Other motor vehicle	
2020-Jan-06, Mon,17:54	Snow	SMV other	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Skidding/sliding	0
2020-May-01, Fri,17:34	Clear	Rear end	Non-fatal injury	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Unknown	Pick-up truck	Other motor vehicle	
					East	Unknown	Unknown	Other motor vehicle	


# **Transportation Services - Traffic Services Collision Details Report - Public Version**

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

Location: ELWO	DD ST @ MON	ITREAL RD							
Traffic Control: Tra	ffic signal						Total Collisions:	3	
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Mar-23, Fri,14:13	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Pedestrian	1
2019-Mar-18, Mon,07:40	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2020-Feb-05, Wed,00:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
Location: MONTE	REAL RD btwn	BECKENHAM LA	NE & ELWOOD ST	-					
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
2017-Feb-15, Wed,17:20	Snow	SMV other	Non-fatal injury	Loose snow	East	Going ahead	Automobile, station wagon	Pedestrian	1
2017-Nov-26, Sun,19:31	Snow	Rear end	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
					East	Stopped	Municipal transit bus	Other motor vehicle	
2018-Oct-09, Tue, 19:13	Clear	SMV other	Fatal injury	Dry	East	Going ahead	Automobile, station wagon	Pedestrian	1
Location: MONTE	REAL RD btwn	BLAIR RD & CLO	VELLY RD						
Traffic Control: No	control						<b>Total Collisions:</b>	4	
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Oct-06, Thu,14:52	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	school bus	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2017-Aug-31, Thu,18:35	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Apr-03, Tue, 17:20	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-28, Tue,16:05	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Curb	0



# **Transportation Services - Traffic Services Collision Details Report - Public Version**

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

Location: MONT	REAL RD btwi	n CHIMNEY HIL	L WAY & ELMSME	RE RD					
Traffic Control: No	control						Total Collisions:	2	
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuve	r Vehicle type	First Event	No. Ped
2016-Dec-09, Fri,18:51	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Mar-08, Fri,00:04	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Ran off road	0
Location: MONT	REAL RD btwr	n CLOVELLY RE	0 & ELWOOD ST						
Traffic Control: No	control						Total Collisions:	2	
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuve	r Vehicle type	First Event	No. Ped
2016-Mar-18, Fri,15:23	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Passenger van	Other motor vehicle	0
					West	Stopped	Municipal transit bus	Other motor vehicle	
2020-Feb-10, Mon,09:00	Snow	Angle	P.D. only	Loose snow	South	Turning right	Unknown	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

# **APPENDIX G**

Other Area Developments

## 5.2 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the existing district travel and these patterns were applied based on the build-out of Beacon Hill. Table 12 below summarizes the distributions.

Table 12: OD Survey Distribution – Beacon Hill								
To/From	% of Trips	Via						
North	5%	Montreal Rd (W)						
South	30%	Blair Rd						
East	20%	Montreal Rd						
West	45%	25% Montreal Rd, 20% Blair Rd						
Total	100%	-						

#### 5.3 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. Figure 11 illustrates the new site generated and pass-by volumes.



## 6 Background Network Travel Demands

#### 6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Montreal-Blair Road Transit Priority Corridor is the only confirmed project within the study expected to impact traffic operations. The City's project team has noted that transit priority lanes, cycletracks, and wider sidewalks will be included along this portion of Montreal Road. This work is assumed to be planned for completion between the TIA study horizons and will be modelled in all 2029 future conditions.



# **APPENDIX H**

Signal Timing Plans

## **Traffic Signal Timing**

City of Ottawa, Public Works & Environmental Services Department

#### **Traffic Signal Operations Unit**

Intersection:	Main:	Montreal	S	ide:	Blair
Controller:	MS 3200			SD:	5477
Author:	Kymen K	wan		Date:	04-Oct-2021

#### **Existing Timing Plans<sup>†</sup>**

	Plan				Ped Minimum Time			
	AM Peak	Off Peak	PM Peak	Night	Evening	Walk	DW	A+R
	1	2	3	4	12			
Cycle	90	80	90	80	80			
Offset	14	54	1	Х	54			
EB Thru	44	34	43	34	34	7	20	3.7+2.7
WB Thru	44	34	43	34	34	7	20	3.7+2.7
NB Thru	46	46	47	46	46	7	32	3.3+3.8
SB Thru	46	46	47	46	46	7	32	3.3+3.8

#### Phasing Sequence<sup>‡</sup>





Note: 1) If the NS pedestrian phase is not actuated, the NS movements will receive a max green time of 35s

#### Schedule

Weekday			Weekend				
Time	Plan		Time	Plan			
0:15	4	-	0:15	4			
6:30	1	-	8:30	2			
9:30	2	-	22:30	4			
15:00	3	-					
18:30	12	-					
22:30	4	-					

#### Notes

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

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

Asterisk (\*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄····· Pedestrian signal

Cost is \$59.96 (\$53.06 + HST)

## **Traffic Signal Timing**

City of Ottawa, Public Works & Environmental Services Department

Traffic Signal Operations Unit							
Intersection:	Main:	Montreal	Side:	Elwood			
Controller:	MS 320	00	TSD:	5730			
Author:	Kymen	Kwan	Date:	04-Oct-2021			

#### **Existing Timing Plans<sup>+</sup>**

	Plan				Ped Minimum Time			
	AM Peak	Off Peak	PM Peak	Night	Evening	Walk	DW	A+R
	1	2	3	4	12			
Cycle	90	80	90	70	80			
Offset	7	11	8	Х	11			
EB Thru	53	43	53	33	43	7	10	3.7+1.9
WB Thru	53	43	53	33	43	7	10	3.7+1.9
NB Thru	37	37	37	37	37	10	21	3.0+3.7
SB Thru	37	37	37	37	37	10	21	3.0+3.7

#### Phasing Sequence<sup>‡</sup>



Note: 1) If the NS pedestrian phase is not actuated; the NS movement will receive a max green time of 25s

#### Schedule

Weekday			Weekend		
Time	Plan		Time	Plan	
0:15	4		0:15	4	
6:30	1	-	8:30	2	
9:30	2	-	22:30	4	
15:00	3				
18:30	12				
22:30	4				

#### Notes

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

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

Asterisk (\*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄······► Pedestrian signal

Cost is \$59.96 (\$53.06 + HST)

## **Traffic Signal Timing**

City of Ottawa, Public Works & Environmental Services Department

#### **Traffic Signal Operations Unit**

Intersection:	Main:	Montreal	Side:	Elmsmere
Controller:	MS 3200		TSD:	5163
Author:	Kymen k	Kwan	Date:	04-Oct-2021

#### **Existing Timing Plans<sup>†</sup>**

	Plan				Ped Minimum Time			
	AM Peak	Off Peak	PM Peak	Night	Evening	Walk	DW	A+R
	1	2	3	4	12			
Cycle	90	80	90	65	80			
Offset	50	42	52	х	42			
EB Thru	58	47	58	33	47	7	14	3.7+2.3
WB Thru	58	47	58	33	47	-	-	3.7+2.3
NB Thru	32	33	32	32	33	7	14	3.3+2.9
SB Thru	32	33	32	32	33	7	19	3.3+2.9

#### Phasing Sequence<sup>‡</sup>



#### Schedule

Weekday		Weekend				
Time	Plan		Time	Plan		
0:15	4		0:15	4		
6:30	1		8:30	2		
9:30	2		22:30	4		
15:00	3					
18:30	12					
22:30	4					

#### Notes

 $\ensuremath{\ensuremath{\mathsf{T}}}$  Time for each direction includes amber and all red intervals

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

Asterisk (\*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄····· Pedestrian signal

Cost is \$59.96 (\$53.06 + HST)

## **APPENDIX I**

Detailed Synchro Analysis

Lane Group EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT	SBR
Lane Configurations 7 44 7 7 44 7 7 4	1
Traffic Volume (vph) 31 522 165 170 1164 16 142 77 55 11 121	108
Future Volume (vph) 31 522 165 170 1164 16 142 77 55 11 121	108
Ideal Flow (vphpl) 1800 1800 1800 1800 1800 1800 1800 180	1800
Storage Length (m) 105.2 68.6 64.0 21.3 27.4 33.5 42.7	33.5
Storage Lanes 1 1 1 1 1 1 1 1	1
Taper length (m) 76 76 76 76 76	-
Lane Util, Factor 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00	1.00
Ped Bike Factor 1.00 0.97 0.98 1.00	0.99
Frt 0.850 0.850 0.850	0.850
Fit Protected 0.950 0.950 0.950 0.950	
Satd. Flow (prot) 1679 3293 1517 1695 3390 1517 1647 1717 1517 1192 1784	1517
Elt Permitted     0.159     0.429     0.671     0.701	
Satd Flow (nerm) 281 3293 1517 765 3390 1471 1163 1717 1493 877 1784	1498
Right Turn on Red Yes Yes Yes	Yes
Satd. Flow (RTOR) 183 50 61	41
Link Speed (k/h) $60   60   50   50$	
Link Distance (m) 495.7 372.4 636.1 459.9	
Travel Time (s) 29.7 22.3 45.8 33.1	
Confl Peds (#/br) 4 5 5	
Confl Bikes (#/hr) 4	1
Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.9	0.90
	2%
Adi Flow (vph) 34 580 183 189 1293 18 158 86 61 12 134	120
Shared Lane Traffic (%)	120
Lane Group Flow (vph) 34 580 183 189 1293 18 158 86 61 12 134	120
Enter Blocked Intersection No	No
Lane Alignment Left Left Right Left Right Left Right Left Right Left Left Right Left Left Left Left Left Left Left Lef	Right
Median Width(m) 37 37 37 37 37	rugite
Link Offset(m) 0.0 0.0 0.0 0.0	
Crosswalk Width(m) 4.9 4.9 4.9 4.9	
Two way left Turn Lane	
Headway Factor 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06	1.06
Turning Speed (k/h) 24 14 24 14 24 14 24	14
Number of Detectors     1     2     1	1
Detector Template Left Thru Right Left Thru Right Left Thru Right Left Thru	Right
Leading Detector (m) 6.1 30.5 6.1 6.1 30.5 6.1 6.1 30.5	6.1
Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0
Detector 1 Size(m) 6.1 1.8 6.1 6.1 1.8 6.1 6.1 1.8 6.1 6.1 1.8	6.1
Detector 1 Type CI+Ex	CI+Ex
Detector 1 Channel	-
Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.0
Detector 2 Position(m) 28.7 28.7 28.7 28.7 28.7	
Detector 2 Size(m) 1.8 1.8 1.8 1.8	
Detector 2 Type CI+Ex CI+Ex CI+Ex CI+Ex	
Detector 2 Channel	
Detector 2 Extend (s) 0.0 0.0 0.0 0.0	
Turn Type Perm NA Perm Perm NA Perm Perm NA Perm Perm NA	Perm
Protected Phases 2 6 8 4	. •
Permitted Phases 2 2 6 6 8 8 4	4
Detector Phase 2 2 2 6 6 6 8 8 8 4 4	4

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	48.9%	48.9%	48.9%	48.9%	48.9%	48.9%	51.1%	51.1%	51.1%	51.1%	51.1%	51.1%
Maximum Green (s)	37.6	37.6	37.6	37.6	37.6	37.6	38.9	38.9	38.9	38.9	38.9	38.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	0	0	0	4	4	4	5	5	5	0	0	0
Act Effct Green (s)	56.0	56.0	56.0	56.0	56.0	56.0	20.5	20.5	20.5	20.5	20.5	20.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.23	0.23	0.23	0.23	0.23	0.23
v/c Ratio	0.20	0.28	0.18	0.40	0.61	0.02	0.60	0.22	0.16	0.06	0.33	0.32
Control Delay	15.9	10.2	2.7	9.5	9.4	0.4	38.3	26.2	6.3	21.7	28.5	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	10.2	2.7	9.5	9.4	0.4	38.3	26.2	6.3	21.7	28.5	18.7
LOS	В	В	А	А	А	А	D	С	А	С	С	В
Approach Delay		8.7			9.3			28.5			23.8	
Approach LOS		А			А			С			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 14 (16%), Referenced	to phase 2:E	BTL and 6	:WBTL, St	art of Gree	en							
Natural Cycle: 90												
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.61												
Intersection Signal Delay: 12.	/: 12.5 Intersection LOS: B											
Intersection Capacity Utilization	on 85.2%			IC	CU Level o	f Service E						
Analysis Period (min) 15												
Splits and Phases: 1: Blair	Rd & Montrea	al Rd			_							
A												

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44 s	46 s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<b>X</b>	<b>≜1</b> ⊾		<b>X</b>	<b>≜1</b> ⊾							
Traffic Volume (vph)	2	552	9	15	1350	2	16	0	20	0	0	1
Future Volume (vph)	2	552	9	15	1350	2	16	0	20	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6		-	7.6		-	7.6		-	7.6		-
Lane Util, Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.00	1.00	1.00	0.00		0.99			0.98	
Frt		0.998						0.926			0.865	
Flt Protected	0.950	0.000		0.950				0.978				
Satd Flow (prot)	1695	3246	0	1695	3325	0	0	1587	0	0	1520	0
Elt Permitted	0 133	0210	v	0 4 1 4	0020	Ŭ	Ŭ	0.333	Ŭ	•	1020	v
Satd Flow (perm)	237	3246	0	737	3325	0	0	540	0	0	1520	0
Right Turn on Red	201	0210	Yes	101	0020	Yes	U	010	Yes	v	1020	Yes
Satd Flow (RTOR)		3	100			100		56	100		86	100
Link Speed (k/b)		60			60			40			40	
Link Distance (m)		372 /			113.5			96.5			81 /	
Travel Time (s)		22.4			6.8			87			73	
Confl Peds (#/br)	5	22.5	3	3	0.0	5	3	0.7	6	6	1.5	3
Confl. Rikes (#/hr)	J		J	J		J 1	J		U	0		J
Book Hour Easter	0.00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00
Hoppy Vohiolog (%)	0.30	6%	0.30	0.30	10/	0.30	20/	20/	20/	0.30	0.90	0.30
Pue Pleekages (#/br)	2 /0	0 /0	22 /0	2 /0	4 /0	2 /0	2 /0	2 /0	Z /0 5	2 /0	2 /0	2 /0
Adi Elow (uph)	0	613	10	17	1500	0	18	2		0	0	1
Shared Lane Traffic (%)	2	015	10	17	1500	2	10	0	22	0	0	1
Lano Group Flow (vob)	C	623	0	17	1502	٥	٥	40	٥	٥	1	0
Enter Blocked Intersection	Z No	025 No	No	No.	No	No	No	40	No	No	No	No
	INU Loft	INU Loft	Dight	INU Loff	INU Loft	Diaht	INU Loft	INU Loft	Dight	INU Loft	INU Loft	Dight
Modian Width(m)	Leit	2.7	Right	Leit	2.7	Right	Leit		Right	Leit	Leit	Right
Link Offect(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		0.0			0.0			0.0			0.0	
		4.9			4.9			4.9			4.9	
Two way Leit Tum Lane	1.06	1.06	1.06	1.06	1.00	1.00	1.06	1.07	1.06	1.06	1.06	1.06
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.07	1.00	1.00	1.00	1.00
Number of Detectors	24	n	14	24	n	14	24	0	14	24	0	14
Number of Detectors	l off	Z		l off	Z		l off	Z		l off	Z	
Detector rempiate	Leit	20.5		Leit	1111U		Leit	1 IIIU 20 5		Leit	20.5	
Trailing Detector (m)	0.1	30.5		0.1	0.0		0.1	30.5		0.1	30.5	
Detector 1 Desition(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(III)												
Detector 1 Type	CI+EX	UI+EX		CI+EX	CI+EX		CI+EX	CI+EX		CI+EX	UI+EX	
Detector I Channel	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector I Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)	-	0.0		-	0.0		-	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util Factor		
Ped Bike Factor		
Frt		
Fit Protected		
Satd Flow (prot)		
Elt Pormittod		
Fit Fermilieu		
Salu. Flow (perifi)		
Right Turn on Red		
Jink Chood (k/b)		
Link Speed (K/II)		
Link Distance (m)		
I ravel 1 lme (S)		
Confil. Peas. (#/nr)		
Confl. Bikes (#/nr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Protoctod Phases	3	7
FILLEGIEU FILASES	3	
Permitted Phases		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	3	3		5	5		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.25		0.03	0.59			0.37			0.00	
Control Delay	4.5	3.4		2.3	6.8			16.5			0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.5	3.4		2.3	6.8			16.5			0.0	
LOS	A	Α		A	A			В			A	
Approach Delay		3.4			6.8			16.5				
Approach LOS		A			A			В				
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 7 (8%), Referenced to	phase 2:EBT	L and 6:WE	3TL, Start o	of Green								
Natural Cycle: 80												
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.59												
Intersection Signal Delay: 6.0				In	Itersection	LOS: A						
Intersection Capacity Utilization	tilization 61.2% ICU Level of Service B											
Analysis Period (min) 15												
Splits and Phases: 2: Elwo	od Dr & Mont	real Rd										
→Ø2 (R)							A <sub>ØB</sub> 🖡	Ø4				

DEIN					
53 s		5 s		32 s	
₩ Ø6 (R)		*	i.	7 <b>1</b> ø8	
53 s		5 s		32 s	

Lane Group	Ø3	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	6	6
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

	-	$\mathbf{r}$	1	+	1	1
Lane Group	EDT	EDD	W/PL	W/PT	NPI	NPD
Lane Configurations			VVDL		NDL	NDR
	<b>TT</b>	<b>r</b> 25	10	1071	21	20
	500	30	19	1271	31	30
ruture volume (vpn)	500	35	19	12/1	31	30
Ideal Flow (vpnpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		42.7	79.2		0.0	0.0
Storage Lanes		1	1		1	U
raper Length (m)	A 45	4.00	1.6	0.05	1.6	1.00
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.97	1.00		0.98	
		0.850	0.070		0.925	
Fit Protected		1	0.950		0.978	
Satd. Flow (prot)	3262	1502	1558	3325	1557	0
Flt Permitted			0.444		0.978	
Satd. Flow (perm)	3262	1456	725	3325	1557	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		39			42	
Link Speed (k/h)	60			60	40	
Link Distance (m)	289.3			93.2	237.9	
Travel Time (s)	17.4			5.6	21.4	
Confl. Peds. (#/hr)		5	5		1	16
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adi, Flow (yph)	556	.39	21	1412	.34	42
Shared Lane Traffic (%)	000	00	21	1712	T	74
Lane Group Flow (yph)	556	30	21	1412	76	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Loff	Diaht	Loft	Loff	Loft	Diaht
Lane Alighthem	Leit	Right	Leit	27	LUIL	Right
vieulan vilutin(m)	3.7			3.1	3.1	
	0.0			0.0	0.0	
Crosswaik Width(m)	4.9			4.9	4.9	
I wo way Left Turn Lane	1.00	4 00	4.00	4.00	4.00	4.00
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	
Detector Template	Thru	Right	Left	Thru	Left	
Leading Detector (m)	30.5	6.1	6.1	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)	1.8	6.1	6.1	1.8	6.1	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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	0.0	0.0	28.7	0.0	
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	CI+Ev			CI±Ev		
Detector 2 Channel	OITEX			OFLA		
Detector 2 Extend (c)	0.0			0.0		
	0.0	Dorm	Dorm	0.0	Dorm	
	NA 0	Feim	reiiii	INA C	Fellil	
Protected Phases	2	0	0	0		
Permitted Phases		2	6	•	8	
Detector Phase	2	2	6	6	8	

	-	$\mathbf{r}$	1	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	14.0	14.0			14.0	
Pedestrian Calls (#/hr)	5	5			8	
Act Effct Green (s)	71.6	71.6	71.6	71.6	9.7	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
v/c Ratio	0.21	0.03	0.04	0.53	0.37	
Control Delay	2.9	2.3	4.6	6.1	23.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	2.9	2.3	4.6	6.1	23.2	
LOS	А	А	А	А	С	
Approach Delay	2.8			6.1	23.2	
Approach LOS	A			A	С	
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 50 (56%), Referenced t	o phase 2:E	BT and 6:\	NBTL, Sta	rt of Greer	ו	
Natural Cycle: 60						
Control Type: Actuated-Coordi	nated					
Maximum v/c Ratio: 0.53						
Intersection Signal Delay: 5.8				In	tersection	LOS: A
Intersection Capacity Utilization	n 57.5%			IC	CU Level of	Service B
Analysis Period (min) 15						

#### Splits and Phases: 3: Elmsmere Rd & Montreal Rd

₩ Ø2 (R)		
58 s		
₩ Ø6 (R)	<b>∞</b> 8	
58 s	32 s	

## 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

Existing Traffic AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	<b>*</b>		2	<b>≜</b> 16			\$			\$	
Traffic Volume (veh/h)	16	556	0	0	1314	6	0	0	0	17	0	53
Future Volume (Veh/h)	16	556	0	0	1314	6	0	0	0	17	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	618	0	0	1460	7	0	0	0	19	0	59
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1467			618			1443	2121	309	1808	2118	734
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1467			478			1352	2069	151	1739	2066	734
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	63	100	84
cM capacity (veh/h)	456			1020			83	49	820	51	49	363
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	18	309	309	0	973	494	0	78				
Volume Left	18	0	0	0	0	0	0	19				
Volume Right	0	0	0	0	0	7	0	59				
cSH	456	1700	1700	1700	1700	1700	1700	146				
Volume to Capacity	0.04	0.18	0.18	0.00	0.57	0.29	0.00	0.53				
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	0.0	0.0	20.0				
Control Delay (s)	13.2	0.0	0.0	0.0	0.0	0.0	0.0	54.9				
Lane LOS	В						А	F				
Approach Delay (s)	0.4			0.0			0.0	54.9				
Approach LOS							А	F				
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			49.6%	IC	U Level of	Service			A			
Analysis Period (min)			15									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	**	1	<b>N</b>	**	1	<b>3</b>	*	1	<b>N</b>	•	1
Traffic Volume (vph)	95	1048	146	64	602	8	226	83	187	36	82	57
Future Volume (vph)	95	1048	146	64	602	8	226	83	187	36	82	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2	1000	68.6	64.0	1000	21.3	27.4	1000	33.5	42 7	1000	33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	76		•	76		•	76		•	76		•
Lane Util Factor	1.00	0.95	1 00	1.00	0.95	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	1.00	0.00	0.98	1.00	0.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Frt	1.00		0.850	1.00		0.850	1.00		0.850	1.00		0.850
Fit Protected	0 950		0.000	0 950		0.000	0.950		0.000	0 950		0.000
Satd Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Flt Permitted	0 372	0200	1017	0 176	0000	1017	0.698	17.17	1017	0.697	1704	1017
Satd Flow (perm)	655	3203	1/182	31/	3300	1/17/	1205	1717	1/105	873	178/	1/102
Right Turn on Red	000	5255	Yes	514	0000	Yes	1200	17 17	Yes	015	1704	Yes
Satd Flow (RTOR)			162			50			/1			63
Link Speed (k/b)		60	102		60	50		50	11		50	00
Link Distance (m)		105 7			372 /			636.1			150 0	
Travel Time (s)		433.7 20.7			272. <del>4</del> 22.3			15.8			400.0	
Confl Peds (#/br)	5	29.1	1	1	22.5	5	6	45.0	3	3	55.1	6
Confl. Pikos (#/hr)	5		1	1		5	U		1	5		1
Book Hour Easter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20/	0.90 5%	0.90	0.90	0.90	0.90	0.90 5%	6%	0.90	0.90	0.90	0.90
Adi Flow (vob)	106	116/	2 /0 160	Z /0 71	2 /0 660	2 /0	0 /0 0 5 1	0 /0	2 /0	45%	2 /0	2 /0 62
Auj. Flow (vpl) Sharad Lana Traffia (%)	100	1104	102	11	009	9	201	92	200	40	91	03
Lana Croup Flow (uph)	106	1167	160	71	660	0	251	02	200	40	01	62
Enter Blocked Interpretion	No	1104 No	No.	/ I	No	9 No	ZOT	92 No	200	40 No	91 No	00 No
	INU Loff	INO	Dicht	INU	INU	N0 Diaht	INU	INU	Diaht	INU	INO	Diaht
Lane Alignment	Leit	2.7	Right	Leit	2.7	Right	Leit	2.7	Right	Leit	2.7	Right
Link Offect(m)		3.7			3.7			3.7			3.7	
Crocowelk Width(m)		0.0			0.0			0.0			0.0	
		4.9			4.9			4.9			4.9	
Headway Faster	1.00	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/n)	24	0	14	24	0	14	24	0	14	24	0	14
Number of Detectors	ا	Z	Dialat	ا ا	Z	Dialat	ا	Z	Dialat	املا	Z	Dialat
Leading Detector (m)	Leit 6.1	20.5	Right	Leit	20 5	Right	Leit	20.5	Right	Leit	20.5	Right 6.1
	0.1	30.5	0.1	0.1	30.5	0.1	0.1	30.5	0.1	0.1	30.5	0.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(III)												
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector I Delay (S)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)												
Detector 2 Type		CI+EX			CI+EX			CI+EX			CI+EX	
Detector 2 Channel								~ ~ ~				
Detector 2 Extend (s)	<b>P</b>	0.0	D	P	0.0	D	D	0.0	D	D	0.0	<b>_</b>
	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	_	2			6			8			4	-
Permitted Phases	2		2	6		6	8	-	8	4		4
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	43.0	43.0	43.0	43.0	43.0	43.0	47.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	52.2%	52.2%	52.2%	52.2%	52.2%	52.2%
Maximum Green (s)	36.6	36.6	36.6	36.6	36.6	36.6	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	1	1	1	5	5	5	3	3	3	6	6	6
Act Effct Green (s)	50.5	50.5	50.5	50.5	50.5	50.5	26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.56	0.56	0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.29	0.63	0.18	0.40	0.35	0.01	0.72	0.19	0.45	0.16	0.18	0.13
Control Delay	16.4	17.5	3.1	21.2	10.5	0.0	39.5	22.0	22.0	21.6	21.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	17.5	3.1	21.2	10.5	0.0	39.5	22.0	22.0	21.6	21.9	5.3
LOS	В	В	А	С	В	А	D	С	С	С	С	A
Approach Delay		15.8			11.4			30.0			16.4	
Approach LOS		В			В			С			В	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 1 (1%), Referenced to	phase 2:EBT	L and 6:W	BTL, Start	of Green								
Natural Cycle: 90												
Control Type: Actuated-Coor	dinated											
Maximum v/c Ratio: 0.72												
Intersection Signal Delay: 17	y: 17.4 Intersection LOS: B											
Intersection Capacity Utilizati	tilization 76.6% ICU Level of Service D											
Analysis Period (min) 15	unalysis Period (min) 15											
Splits and Phases: 1: Blair	Rd & Montrea	al Rd										
2 a												

🗢 Ø2 (R)		
43 s	47 s	
🖸 Ø6 (R)	<b>A</b>	
43 s	47 s	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	<b>A</b> 12		× 1	<b>A</b> 12			4			4	
Traffic Volume (vph)	3	1320	28	28	660	3	13	1	24	1	0	3
Future Volume (vph)	3	1320	28	28	660	3	13	1	24	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6	1000	0.0	33.5	1000	0.0	0.0	1000	0.0	0.0	1000	0.0
Storage Lanes	1		0.0	1		0.0	0.0		0.0	0.0		0.0
Taper Length (m)	76		v	76		Ŭ	76		Ŭ	76		Ŭ
Lane Litil Factor	1.00	0.95	0.95	1.00	0.95	0.95	1 00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	0.99	1.00	0.00	1.00	1.00	0.00	1.00	0.98	1.00	1.00	0.99	1.00
Frt	0.00	0 997			0 999			0.913			0.899	
Flt Protected	0.950	0.001		0.950	0.000			0.984			0.988	
Satd Flow (prot)	1695	3240	0	1695	3321	0	0	1563	0	0	1567	0
Flt Permitted	0.363	0210	v	0 134	0021	Ŭ	Ŭ	0 720	Ŭ	•	1001	U
Satd Flow (perm)	644	3240	0	239	3321	0	0	1143	0	0	1581	0
Right Turn on Red	011	0210	Yes	200	0021	Yes	Ū	1110	Yes	v	1001	Yes
Satd Flow (RTOR)		3	100		1	100		27	100		56	100
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113 5			96.5			81.4	
Travel Time (s)		22.4			6.8			8.7			73	
Confl Peds (#/br)	8	22.0	7	7	0.0	8	3	0.7	14	14	7.5	3
Confl Bikes (#/hr)	0		,	,		1	0		17	17		0
Peak Hour Factor	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90	0 90
Heavy Vehicles (%)	2%	6%	22%	2%	1%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/br)	2 /0	070	22 /0	2 /0	- 7/0 0	2 /0	270	270	270	2 /0	2 /0	2 /0
Adi Flow (vph)	2	1/67	31	31	733	3	1/	1	27	1	0	3
Shared Lane Traffic (%)	0	107	51	51	100	0	17	I	21	1	U	5
Lane Group Flow (uph)	3	1/08	٥	31	736	٥	٥	12	٥	٥	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Loft	Loft	Pight	Loft	Loft	Pight	Loft	Loft	Pight	Loft	Loft	Pight
Median Width(m)	LEIL	37	Night	Leit	37	Ttight	Leit		Ngn	Leit	0.0	Night
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.0			1.0			1.0			1.0	
		т.Ј			т.Ј			т.Ј			т.Ј	
Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1 07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	1.00	1.00	24	1.00	1.00	24	1.07	1.00	24	1.00	1.00
Number of Detectors	2 <del>1</del>	2	17		2	17	2 <del>1</del>	2	17	1	2	14
Detector Template	l eft	Thru		l eft	Thru		ا دft	Thru		l eft	Thru	
Leading Detector (m)	61	30.5		61	30.5		61	30.5		61	30.5	
Trailing Detector (m)	0.1	0.0		0.1	0.0		0.1	0.0		0.1	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.0	1.8		6.0	1.8		6.0	1.8	
Detector 1 Type	CI+Ev	CI+Ev			CI+Ev		CI+Ev	CI+Ev				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	28.7		0.0	28.7		0.0	28.7		0.0	28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type												
Detector 2 Channel												
Detector 2 Extend (c)		0.0			0.0			0.0			0.0	
	Porm	NA		Perm	NA		Perm	NA		Perm	NIA	
Protected Phases	1. GIIII	און ר		I CIIII	AVI A		1 CIIII	Q		1 enn	11/24	
Permitted Phases	2	2		6	U		8	U		1	4	
i onnitteu i nases	2			0			0			4		

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/b)		
Link Distance (m)		
Confl Deds (#/br)		
Confl Bikes (#/hll)		
Deak Hour Factor		
Rus Blockages (#/br)		
Adi Flow (uph)		
Auj. Flow (vpii)		
Shared Lane Trailic (%)		
Lane Group Flow (vpn)		
Enter Blocked Intersection		
Lane Alignment		
Crosswalk Width(m)		
I wo way Left I urn Lane		
Headway Factor		
i urning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	7	7		8	8		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.60		0.17	0.29			0.28			0.02	
Control Delay	3.7	4.9		6.2	4.0			24.8			0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.7	4.9		6.2	4.0			24.8			0.2	
LOS	А	А		А	А			С			А	
Approach Delay		4.9			4.1			24.8			0.3	
Approach LOS		А			А			С			Α	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 8 (9%), Referenced to	phase 2:EBT	L and 6:WI	3TL, Start	of Green								
Natural Cycle: 80												
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.60												
Intersection Signal Delay: 5.0				In	ntersection	LOS: A						
Intersection Capacity Utilizati	on 63.0%			IC	CU Level of	Service B						
Analysis Period (min) 15												
Splits and Phases: 2: Elwo	od Dr & Mont	real Rd										
A 22 (2)						1	L and	24				1

Ø2 (R)	Λ ΝΟβ 🖤 Ο4
53 s	5 s 32 s
🕈 Ø6 (R)	AL OF TOS
53 s	5 s 32 s

Lane Group	Ø3	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	5	5
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Lane Group	EDT	EDD	\//PL			NDD
Lane Configurations			VVBL		INBL	NDK
	1000	<b>r</b>	20	<b>TT</b>	<b>""</b>	20
Future Volume (vph)	1202	40	30	02 I 601	აა 22	39 20
Ideal Flow (uppal)	1202	40	1900	1900	1000	1000
Storage Length (m)	1000	1000	1000	1000	1000	1000
Storage Lanes		42.7	19.2		0.0	0.0
Tapor Longth (m)		1	76		76	U
	0.05	1.00	1.0	0.05	1.0	1 00
Pad Rike Factor	0.95	0.07	1.00	0.95	0.00	1.00
Frt		0.97	1.00		0.99	
Elt Protected		0.000	0.950		0.327	
Satd Elow (prot)	3060	1502	1558	3325	1560	٥
Elt Permitted	5202	1002	0 175	0020	0 077	0
Satd Flow (perm)	3262	1/56	287	3305	1568	0
Right Turn on Red	3202	1400 Vac	201	- JJZJ	1300	Vac
Satd Flow (RTOR)		/2			13	100
Link Speed (k/h)	60	40		60	40	
Link Opeeu (NII)	280.3			00 00	40 227 0	
	209.3			55.2	201.9	
Confl Pede (#/br)	17.4	5	5	0.0	21.4	7
Dock Hour Easter	0.00	0.00	0.00	0.00	0.00	0.00
	0.90	20/	110/	0.90	0.90	0.90
Adi Elow (vob)	0%	5%	11%	4%	0%	Z%
Auj. Flow (vpli) Sharod Lana Troffic (%)	1309	50	33	090	31	43
Lane Group Flow (upb)	1260	E0	22	600	٥Q	0
Enter Blocked Intersection	No	No	No	No	No	No
Liner Diockeu Intersection		Diabt			INU L off	Diabt
Lane Alignment Modion Width(m)		Right	Leit	2 7	27	Right
link Offeet(m)	3.7			3.7	3.7	
LINK UNSEL(III) Crosswalk Width(m)	0.0			0.0	0.0	
	4.9			4.9	4.9	
I wo way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00
	1.06	1.00	1.06	1.06	1.06	1.06
Luming Speed (K/N)	•	14	24	•	24	14
Number of Detectors	2	1	1-4	2	1-4	
Detector Template	i nru	Right	Lett	inru	Lett	
Leading Detector (m)	30.5	0.1	0.1	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)	1.8	6.1	6.1	1.8	6.1	
Detector 1 Type	CI+Ex	CI+EX	CI+EX	CI+EX	CI+EX	
Detector 1 Channel	0.0				• •	
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	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0	-	-	0.0	-	
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases		2	6		8	
Detector Phase	2	2	6	6	8	
Switch Phase						

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2		
Total Split (s)	58.0	58.0	58.0	58.0	32.0		
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%		
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8		
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3		
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		
Recall Mode	C-Max	C-Max	C-Max	C-Max	None		
Walk Time (s)	7.0	7.0			7.0		
Flash Dont Walk (s)	14.0	14.0			14.0		
Pedestrian Calls (#/hr)	5	5			7		
Act Effct Green (s)	71.5	71.5	71.5	71.5	9.8		
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.11		
v/c Ratio	0.53	0.04	0.14	0.26	0.38		
Control Delay	4.6	2.0	6.6	4.1	23.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	4.6	2.0	6.6	4.1	23.7		
LOS	A	A	A	A	С		
Approach Delay	4.5			4.2	23.7		
Approach LOS	A			A	С		
Intersection Summary							
Area Type:	Other						
Cycle Length: 90							
Actuated Cycle Length: 90							
Offset: 52 (58%), Referenced t	o phase 2:E	BI and 6:\	VBTL, Sta	rt of Green	l		
Natural Cycle: 60							
Control Type: Actuated-Coordi	nated						
Maximum V/c Ratio: 0.53				l.e.	<del></del> 1	00. 4	
Intersection Signal Delay: 5.1	- 52 60/			In	tersection I	LUS: A	
Intersection Capacity Utilization	n 53.6%			IC	U Level of	Service A	
Analysis Period (min) 15							
Splits and Phases: 3: Elmsn	nere Rd & M	ontreal Rd					
→ Ø2 (R)							
58 s							
1 (P)							- CR
58 c							32 c

## 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

Existing Traffic PM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	<b>*</b>		5	<b>∱1</b> }			4			\$	
Traffic Volume (veh/h)	71	1274	0	0	662	24	0	0	0	9	0	29
Future Volume (Veh/h)	71	1274	0	0	662	24	0	0	0	9	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	79	1416	0	0	736	27	0	0	0	10	0	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	763			1416			1974	2337	708	1616	2324	382
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	763			901			1640	2121	0	1165	2103	382
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			100			100	100	100	90	100	95
cM capacity (veh/h)	845			566			44	34	818	105	35	616
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	79	708	708	0	491	272	0	42				
Volume Left	79	0	0	0	0	0	0	10				
Volume Right	0	0	0	0	0	27	0	32				
cSH	845	1700	1700	1700	1700	1700	1700	285				
Volume to Capacity	0.09	0.42	0.42	0.00	0.29	0.16	0.00	0.15				
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0	0.0	0.0	3.9				
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	19.8				
Lane LOS	А						А	С				
Approach Delay (s)	0.5			0.0			0.0	19.8				
Approach LOS							А	С				
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			53.8%	IC	U Level of	Service			А			
Analysis Period (min)			15									

## 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

Existing Traffic AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	<b>*</b>		7	<b>≜1</b> }			4			\$	
Traffic Volume (veh/h)	16	556	0	0	1314	6	0	0	0	9	0	53
Future Volume (Veh/h)	16	556	0	0	1314	6	0	0	0	9	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	618	0	0	1460	7	0	0	0	10	0	59
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1467			618			1443	2121	309	1808	2118	734
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1467			478			1352	2069	151	1739	2066	734
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	80	100	84
cM capacity (veh/h)	456			1020			83	49	820	51	49	363
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	18	309	309	0	973	494	0	69				
Volume Left	18	0	0	0	0	0	0	10				
Volume Right	0	0	0	0	0	7	0	59				
cSH	456	1700	1700	1700	1700	1700	1700	193				
Volume to Capacity	0.04	0.18	0.18	0.00	0.57	0.29	0.00	0.36				
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	0.0	0.0	11.6				
Control Delay (s)	13.2	0.0	0.0	0.0	0.0	0.0	0.0	33.8				
Lane LOS	В						А	D				
Approach Delay (s)	0.4			0.0			0.0	33.8				
Approach LOS							А	D				
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			49.2%	IC	U Level of	Service			А			
Analysis Period (min)			15									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<b>X</b>	**	1	× 1	**	1	<b>X</b>	*	1	×.	*	1
Traffic Volume (vph)	41	548	173	179	1221	23	149	94	58	27	164	136
Future Volume (vph)	41	548	173	179	1221	23	149	94	58	27	164	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2		68.6	64.0		21.3	27.4		33.5	42.7		33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6		-	7.6		-	7.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.97			0.98	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd, Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Flt Permitted	0.180			0.447			0.653			0.696		
Satd, Flow (perm)	318	3293	1517	798	3390	1471	1132	1717	1493	871	1784	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173			50			58			41
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		495.7			372.4			636.1			459.9	
Travel Time (s)		29.7			22.3			45.8			33.1	
Confl. Peds. (#/hr)	4					4			5	5		
Confl. Bikes (#/hr)						4						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	45%	2%	2%
Adj. Flow (vph)	41	548	173	179	1221	23	149	94	58	27	164	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	548	173	179	1221	23	149	94	58	27	164	136
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	Cl+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			Cl+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	_	0.0	_	_	0.0	_	_	0.0	_	_	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	48.9%	48.9%	48.9%	48.9%	48.9%	48.9%	51.1%	51.1%	51.1%	51.1%	51.1%	51.1%
Maximum Green (s)	37.6	37.6	37.6	37.6	37.6	37.6	38.9	38.9	38.9	38.9	38.9	38.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	0	0	0	4	4	4	5	5	5	0	0	0
Act Effct Green (s)	56.3	56.3	56.3	56.3	56.3	56.3	20.2	20.2	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.21	0.27	0.17	0.36	0.58	0.02	0.59	0.24	0.15	0.14	0.41	0.37
Control Delay	15.5	10.0	2.8	8.1	8.1	0.3	38.3	26.9	6.3	24.5	30.5	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	10.0	2.8	8.1	8.1	0.3	38.3	26.9	6.3	24.5	30.5	20.4
LOS	В	В	А	А	А	А	D	С	А	С	С	С
Approach Delay		8.7			8.0			28.6			25.8	
Approach LOS		А			А			С			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 14 (16%), Referenced	to phase 2:E	BTL and 6	:WBTL, St	art of Gree	en							
Natural Cycle: 80												
Control Type: Actuated-Coord	inated											
Maximum v/c Ratio: 0.59												
Intersection Signal Delay: 12.4	ļ			In	tersection	LOS: B						
Intersection Capacity Utilizatio	n 86.8%			IC	CU Level o	f Service E	<u>.</u>					
Analysis Period (min) 15												
Splits and Phases: 1: Blair F	Rd & Montrea	al Rd										

	Ø4
44 s	46 s
◆	< <b>↑</b> Ø8
44 s	46 s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	2	<b>#1</b> 4		×	<b>≜</b> 1⊾			4			4	
Traffic Volume (vph)	2	595	9	15	1423	2	16	0	20	0	0	1
Future Volume (vph)	2	595	9	15	1423	2	16	0	20	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6		-	7.6		-	7.6		-	7.6		-
Lane Util Factor	1 00	0.95	0.95	1 00	0.95	0.95	1 00	1 00	1 00	1.00	1 00	1 00
Ped Bike Factor		1.00	0.00	1.00	1.00	0.00		0.99			0.98	
Frt		0.998						0.925			0.865	
Flt Protected	0.950			0.950				0.978				
Satd, Flow (prot)	1695	3247	0	1695	3325	0	0	1585	0	0	1520	0
Flt Permitted	0.149		· ·	0.423	0020		•	0.332	•	· ·		Ū
Satd Flow (perm)	266	3247	0	752	3325	0	0	537	0	0	1520	0
Right Turn on Red	200	0211	Yes	102	0020	Yes	Ŭ	001	Yes	•	1020	Yes
Satd Flow (RTOR)		2						56			91	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
Travel Time (s)		22.3			6.8			8.7			73	
Confl Peds (#/hr)	5	22.0	3	3	0.0	5	3	0.7	6	6	1.0	3
Confl Bikes (#/hr)	U		U	0		4	0		U	U		0
Peak Hour Factor	1 00	1 00	1.00	1 00	1.00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
	2%	6%	22%	2%	1.00	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/br)	2 /0	070	22 /0	2 /0	- /0	2 /0	270	270	270	2 /0	2 /0	2 /0
Adi Elow (uph)	2	505	0	15	1/23	2	16	0	20	0	0	1
Shared Lane Traffic (%)	2	000	5	10	1420	2	10	U	20	0	0	1
Lane Group Flow (vph)	2	604	٥	15	1/25	٥	٥	36	٥	٥	1	0
Enter Blocked Intersection	No	No.	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Loft	Loft	Pight	Loft	Loft	Right	Loft	Loft	Pight	Loft	Loft	Pight
Median Width(m)	Leit	2 7	Right	Leit	3.7	Right	Leit		Right	Leit		Right
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.0			1.0			1.0			1.0	
		4.3			4.3			4.3			4.3	
Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1 07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	2/	1.00	1/	2/	1.00	1.00	2/	1.07	1/	2/	1.00	1/
Number of Detectors		2	17		2	17	2 <del>1</del>	2	17	1	2	17
Number of Detectors	l off	Z		ı امt	Z		ı امt	Z		l off	Z	
Loading Detector (m)	6 1	20.5		61	20.5		61	20.5		61	30.5	
Trailing Detector (m)	0.1	0.0		0.1	0.0		0.1	0.0		0.1	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type												
Detector 1 Channel					OFEX		CITEX	OITEX		UITEX		
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position/m	0.0	28.7		0.0	28.7		0.0	28.7		0.0	28.7	
Detector 2 Size(m)		1.8			1.8			20.7			1.8	
Detector 2 Type												
Detector 2 Channel												
Detector 2 Extend (c)		0.0			0.0			0.0			0.0	
	Dorm	0.0		Porm	0.0		Porm	0.0			0.0	
Protocted Phases	Feilii	NA 0		Feilli	NA 6		Peilli	NA 0			NA A	
Protected Phases	0	2		G	0		0	0		4	4	
remitted Fliases	2			0			0			4		

Synchro 10 Report November 2021

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util Factor		
Ped Bike Factor		
Frt		
Elt Protected		
Satd Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOP)		
Link Spood (k/b)		
Link Opeeu (K/II)		
Confl Dode (#/br)		
Confl. Peus. (#/III)		
Dook Hour Easter		
Bus Blockages (#/hr)		
Auj. Flow (Vpf)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
LINK Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Protected Phases	3	7
Permitted Phases	5	,
i cittilleu i flases		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	3	3		5	5		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.24		0.03	0.56			0.33			0.00	
Control Delay	4.0	3.4		2.3	6.5			13.6			0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.0	3.4		2.3	6.5			13.6			0.0	
LOS	A	А		A	А			В			А	
Approach Delay		3.4			6.4			13.6				
Approach LOS		A			A			В				
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 7 (8%), Referenced to	phase 2:EBT	L and 6:WE	3TL, Start	of Green								
Natural Cycle: 80												
Control Type: Actuated-Coor	dinated											
Maximum v/c Ratio: 0.56												
Intersection Signal Delay: 5.7	action Signal Delay: 5.7 Intersection LOS: A											
Intersection Capacity Utilizati	ion 63.3%			IC	CU Level of	Service B						
Analysis Period (min) 15												
Splits and Phases: 2: Elwo	od Dr & Mont	real Rd										
							i∎øβ ↓	Ø4				

53 s	5 s		32 s
₩ Ø6 (R)	3	i.	7 <b>1</b> Ø8
53 s	5 s		32 s

Lane Group	Ø3	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	6	6
Act Effct Green (s)	-	
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Lane Group     EBT     EBR     WBL     WBT     NBL     NBR       Lane Configurations     Image: Colored Colore		-	$\mathbf{r}$	1	+	1	1
Lance Configurations     Lance A     P     P     P     P     P       Traffic Volume (vph)     540     35     19     1340     31     38       Future Volume (vph)     540     35     19     1340     31     38       Future Volume (vph)     1800 <t< th=""><th>Lane Group</th><th>FRT</th><th>FPD</th><th>W/RI</th><th>W/RT</th><th>NRI</th><th>NPD</th></t<>	Lane Group	FRT	FPD	W/RI	W/RT	NRI	NPD
Cane Comparations     TT     F     F     T     TT     TT <tht< th="">     TT     TT</tht<>	Lane Configurations					NDL	NDR
Hume volume (vph)     540     30     15     1940     31     30       Ideal Flow (vphp)     1800     1800     1800     1800     1800     1800     1800       Storage Length (m)     42.7     79.2     0.0     0.0       Taper Length (m)     7.6     7.6     7.6       Lane Util, Factor     0.95     1.00     1.00     0.95       Ped Bike Factor     0.97     1.00     0.93     1.00     1.00       Ped Bike Factor     0.951     0.00     0.936     1.00     1.00     1.00       Stati. Flow (prot)     3262     1502     1558     3325     1559     0       Stati. Flow (prot)     3262     1456     736     332     1.00     1.00       Stati. Flow (RTOR)     35     38     1.11     1     16     Confl. Eds. (#hr)     10     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00		<b>TT</b> 540	<b>['</b> 35	10	1340	<b>T</b> 31	28
House volume (vpn)     340     33     13     1400     1300     1800	Future Volume (vph)	540	35	19	1340	21	20
Index (yp.p)     1000	I deal Flow (vphpl)	1900	1800	1800	1800	1800	1800
Storage Lengen (m)     12.7     7.5.2     0.0     0.0     0.0       Taper Length (m)     7.6     7.6     7.6       Lane Util, Factor     0.95     1.00     1.00     0.95     1.00     1.00       Ped Bike Factor     0.97     1.00     0.95     0.978     Satel Flow (prot)     3262     1502     1558     3325     1559     0       Fit Promited     0.451     0.973     Satel Flow (prot)     3262     1456     736     3325     1558     0       Right Turn on Red     Yes     Yes     Yes     Yes     Yes     Yes       Satel. Flow (RTOR)     35     5     1     16     Confl. Peds. (#/hr)     1     1     1     1       Peak Hour Factor     1.00 <td>Storage Length (m)</td> <td>1000</td> <td>1000</td> <td>70.0</td> <td>1000</td> <td>1000</td> <td>1000</td>	Storage Length (m)	1000	1000	70.0	1000	1000	1000
Storage Lentes     1     0       Composition     281     Flow     0.95     1.00     1.00     0.95     0.978     Sature Flow (prot)     3262     1456     736     3325     1558     0     Right run on Red     Yes     Yes     Sature Flow (RTOR)     35     38     1ink Distance (m)     289.3     93.2     237.9     Travel Time (s)     17.4     5.6     21.4     Confl. Rice (Hr)     1     100     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1	Storage Lance		42.1	19.2		0.0	0.0
rape till     ractor     0.95     1.00     1.00     0.95     1.00       Ped Bike Factor     0.97     1.00     0.95     0.00     0.98       Fit     0.850     0.950     0.978     Stat.     Stat.     Stat.     Stat.     Flow (port)     3262     1502     3325     1558     0       Stat.     Flow (port)     3262     1456     736     3325     1558     0       Stat.     Flow (port)     3262     1456     736     3325     1558     0       Stat.     Flow (RTOR)     35     38     1ink Distance (m)     289.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4     Confl. Peds. (#hr)     1     1       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00     1.00       Heavy Vehicles (%)     6%     3%     11%     4%     6%     2%       Adi, Flow (vph)     540     35     19     1340     31     38	Tapor Longth (m)		I	76		76	U
Lane Gun, Factor     0.95     1.00     1.00     0.95     1.00     0.98       Frt     0.850     0.926     0.978     Satd. Flow (port)     3262     1502     1558     3325     1559     0       Fit Permitted     0.451     0.978     Satd. Flow (perm)     3262     1456     736     3325     1558     0       Right Turn on Red     Yes     Yes     Yes     Yes     Yes     Satd. Flow (RTOR)     35     38     1     1nk Speed (k/h)     60     60     40     1     1nb Speed (k/h)     17.4     5.6     21.4     Confl. Pets. (#hr)     1     1     1     1     100     1.0	Lape Litil Easter	0.05	1.00	0.1 1.00	0.05	1.0	1.00
Feu Dike Factor     0.97     1.00     0.98       Fit     0.850     0.950     0.978       Satd. Flow (port)     3262     1502     1558     3325     1559     0       Fit Protected     0.451     0.978     Satd. Flow (perm)     3262     1456     736     3325     1558     0       Right Turn on Red     Yes     Yes     Yes     Yes     Yes     Yes       Satd. Flow (RTOR)     35     38     1ink Distance (m)     269.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4     Confl. Bikes (#hr)     1       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00       Lane Group Flow (vph)     540     35     19     1340     69     0       Enter Blocked Intersection     No     No     No     No     No     No     No       Lane Group Flow (vph)     540		0.95	1.00	1.00	0.95	1.00	1.00
It     0.950     0.950     0.978       Fit Protected     0.950     0.978     Sature Flow (prot)     3262     1502     1558     3325     1559     0       Fit Permitted     0.451     0.978     Sature Flow (prot)     3262     1456     736     3325     1558     0       Right Turn on Red     Yes     Sature Flow (RTOR)     35     38     1	Feu Bike Factor		0.97	1.00		0.98	
rit Protected   0.900   0.978     Satd. Flow (prot)   3262   1558   3325   1559   0     Ript Turn on Red   Yes   Yes   Yes     Satd. Flow (RTOR)   35   38   1     Link Speed (k/h)   60   60   40     Link Distance (m)   289.3   93.2   237.9     Travel Time (s)   17.4   5.6   21.4     Confl. Biks (#/hr)   5   5   1   16     Confl. Biks (#/hr)   5   5   1   16     Confl. Biks (#/hr)   540   35   19   1340   31   38     Shared Lane Traffic (%)   6%   3%   11%   4%   6%   2%     Lane Group Flow (vph)   540   35   19   1340   31   38     Shared Lane Traffic (%)   2   1   18   18   18   18     Lane Alignment   Left   Right   Left   Right   16   10.6   1.06   1.06   1.06   1.06   1.06   1.06   1.06   1.06   1.06 <td< td=""><td></td><td></td><td>0.850</td><td>0.050</td><td></td><td>0.920</td><td></td></td<>			0.850	0.050		0.920	
Sate     1502     1503     3325     1559     0       Fit Permitted     0.451     0.978         Yes     Sate. Flow (RTOR)     35     38          Yes     Yes     Sate. Flow (RTOR)     35     38        Yes     Yes<	Fit Protected	2000	4500	0.950	2205	0.978	0
IT Fermitted     0.451     0.978       Satd. Flow (perm)     3262     1456     736     3325     1558     0       Right Turn on Red     Yes     Yes     Yes     Yes     Yes       Satd. Flow (RTOR)     35     38     1558     0       Link Speed (k/h)     60     60     40       Link Distance (m)     289.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4       Confl. Peds. (#/hr)     5     5     1     16       Confl. Peds. (#/hr)     50     1.00     1.00     1.00     1.00       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00       Heavy Vehicles (%)     6%     3%     11%     4%     6%     2%       Adj. Flow (vph)     540     35     19     1340     31     38       Shared Lane Traffic (%)     1     2     1     2     1     1     2     1       Lane Group Flow (vph)     3.7	Sata. Flow (prot)	3262	1502	1558	3325	1559	0
Sata. How (perm)     3262     1456     736     3325     1558     0       Right Turn on Red     Yes     35     38     Yes     38       Link Speed (k/h)     60     60     40     40     41       Link Distance (m)     289.3     93.2     237.9     7       Travel Time (s)     17.4     5.6     21.4     16       Confl. Bkes (#/hr)     5     5     1     16       Confl. Bkes (#/hr)     100     1.00     1.00     1.00     1.00       How Factor     1.00     1.00     1.00     1.00     1.00     1.00       Heak Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00       Shared Lane Traffic (%)     540     35     19     1340     69     0       Lane Group Flow (vph)     540     35     19     1340     69     0       Lane Alignment     Left     Right     Left     Right     Right     Right       Median Widh(m)     3.7	Fit Permitted	0000	4.1=0	0.451	000-	0.978	•
Right lum on Red     Yes     Yes       Satd. Flow (RTOR)     35     38       Link Speed (k/h)     60     40       Link Distance (m)     289.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4       Confl. Peds. (#/hr)     5     5     1     16       Confl. Bikes (#/hr)     5     5     1     100       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00       Peak Hour Factor     1.00     35     19     1340     31     38       Shared Lane Traffic (%)     2	Satd. Flow (perm)	3262	1456	736	3325	1558	0
Sata. How (RTOR)     35     38       Link Speed (k/h)     60     60     40       Link Distance (m)     289.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4       Confl. Peds. (#/hr)     5     5     1     16       Confl. Bikes (#/hr)     5     5     1     16       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00       Heavy Vehicles (%)     6%     3%     11%     4%     6%     2%       Adj. Flow (vph)     540     35     19     1340     31     38       Shared Lane Traffic (%)     Lane Alignment     Left     Right     Left     Left     Right     Right     Right     Right     Right     Right     Right     Heft     Right     Star     3.7     3.7     3.7       Link Offset(m)     0.0     0.0     0.0     0.0     0.0     Coxsswalk With(m)     4.9     4.9     4.9     4.9     4.9     4.9     4.9     4.9 <td>Right Turn on Red</td> <td></td> <td>Yes</td> <td></td> <td></td> <td></td> <td>Yes</td>	Right Turn on Red		Yes				Yes
Link Speed (k/h)     60     60     40       Link Distance (m)     289.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4       Confl. Peck (#/hr)     5     5     1     16       Confl. Bikes (#/hr)     1     100     1.00     1.00     1.00     1.00     1.00     1.00       Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00     1.00     1.00       Heav Yebricles (%)     6%     3%     11%     4%     6%     2%       Adj. Flow (vph)     540     35     19     1340     69     0       Enter Blocked Intersection     No     No     No     No     No     No       Link Offset(m)     0.0     0.0     0.0     0.0     Corcsswalk 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)     14     24     24     14	Satd. Flow (RTOR)		35			38	
Link Distance (m)     289.3     93.2     237.9       Travel Time (s)     17.4     5.6     21.4       Confl. Bikes (#hr)     5     5     1     16       Confl. Bikes (#hr)     100     1.00     1.00     1.00     1.00       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00       Heavy Vehicles (%)     6%     3%     11%     4%     6%     2%       Adj. Flow (vph)     540     35     19     1340     31     38       Shared Lane Traffic (%)     Lane Group Flow (vph)     540     35     19     1340     69     0       Lane Alignment     Left     Right     Left     Left     Right     Mo     No     No     No       Median Width(m)     3.7     3.7     3.7     3.7     1.7     Link Offset(m)     0.0     0.0     0.0     0.0     Concernswalk Width(m)     4.9     4.9     Two way Left Tum Lane     Headway Factor     1.06     1.06     1.06     1.06     1.06	Link Speed (k/h)	60			60	40	
Travel Time (s)   17.4   5.6   21.4     Confl. Peds. (#/hr)   5   5   1   16     Confl. Bikes (#/hr)   1.00   1.00   1.00   1.00   1.00   1.00     Peak Hour Factor   1.00   1.00   1.00   1.00   1.00   1.00   1.00     Heavy Vehicles (%)   6%   3%   11%   4%   6%   2%     Adj. Flow (vph)   540   35   19   1340   31   38     Shared Lane Traffic (%)   2   4   4   8   16   16   1.00   No   Si at 16   1.06 <td>Link Distance (m)</td> <td>289.3</td> <td></td> <td></td> <td>93.2</td> <td>237.9</td> <td></td>	Link Distance (m)	289.3			93.2	237.9	
Confl. Peds. (#/hr)     5     5     1     16       Confl. Bikes (#/hr)     1.00<	Travel Time (s)	17.4			5.6	21.4	
Confl. Bikes (#/hr)     1       Peak Hour Factor     1.00     1.00     1.00     1.00     1.00     1.00       Heavy Vehicles (%)     6%     3%     11%     4%     6%     2%       Adj. Flow (vph)     540     35     19     1340     31     38       Shared Lane Traffic (%)     Lane Group Flow (vph)     540     35     19     1340     69     0       Enter Blocked Intersection     No     No     No     No     No     No     No       Lane Group Flow (vph)     3.7     3.7     3.7     3.7     3.7     1.1     1     1     Edit     Left     Right     Median Width(m)     4.9     4.9     Two way Left Turn Lane     Two way Left Turn Lane     Two way Left Turn Lane     Turning Speed (k/h)     14     24     24     14       Number of Detectors     2     1     1     2     1     Detector Tare plate     Thru     Right     Left     Thru     Left     Left     Left     Left     Left     Left     <	Confl. Peds. (#/hr)		5	5		1	16
Peak Hour Factor     1.00 <th1.00< th="">     1.00     1.00</th1.00<>	Confl. Bikes (#/hr)						1
Heavy Vehicles (%)   6%   3%   11%   4%   6%   2%     Adj. Flow (vph)   540   35   19   1340   31   38     Shared Lane Traffic (%)	Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)   540   35   19   1340   31   38     Shared Lane Traffic (%)	Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Shared Lane Traffic (%)     Stared Lane Traffic (%)       Lane Group Flow (vph)     540     35     19     1340     69     0       Enter Blocked Intersection     No     No     No     No     No     No     No     No       Lane Alignment     Left     Right     Left     Left     Right     Left     Right       Median Width(m)     3.7     3.7     3.7     3.7     1.7       Link Offset(m)     0.0     0.0     0.0     0.0     0.0       Crosswalk Width(m)     4.9     4.9     4.9     4.9     True       Headway Factor     1.06     1.06     1.06     1.06     1.06       Turning Speed (k/h)     14     24     24     14       Number of Detectors     2     1     1     2     1       Detector Template     Thru     Right     Left     Thru     Left     Left       Leading Detector (m)     0.0     0.0     0.0     0.0     0.0     Detector 1 Size(m)     1.8     6.	Adj. Flow (vph)	540	35	19	1340	31	38
Lane Group Flow (vph)     540     35     19     1340     69     0       Enter Blocked Intersection     No     No     No     No     No     No     No     No       Lane Alignment     Left     Right     Left     Left     Right     Left     Right       Median Width(m)     3.7     3.7     3.7     3.7     Image: Construct Struct Stru	Shared Lane Traffic (%)						
Enter Blocked Intersection     No     Na     Na <th< td=""><td>Lane Group Flow (vph)</td><td>540</td><td>35</td><td>19</td><td>1340</td><td>69</td><td>0</td></th<>	Lane Group Flow (vph)	540	35	19	1340	69	0
Lane Alignment     Left     Right     Left     Right     Left     Right       Median Width(m)     3.7     3.7     3.7     3.7     3.7       Link Offset(m)     0.0     0.0     0.0     0.0     0.0       Crosswalk Width(m)     4.9     4.9     4.9     4.9       Two way Left Turn Lane     Headway Factor     1.06     1.06     1.06     1.06     1.06     1.06       Turning Speed (k/h)     14     24     24     14       Number of Detectors     2     1     1     2     1       Detector Template     Thru     Right     Left     Thru     Left     Left       Leading Detector (m)     0.0 <td< td=""><td>Enter Blocked Intersection</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td></td<>	Enter Blocked Intersection	No	No	No	No	No	No
Median Width(m)     3.7     3.7     3.7     3.7       Link Offset(m)     0.0     0.0     0.0     0.0       Crosswalk Width(m)     4.9     4.9     4.9     4.9       Two way Left Turn Lane     Headway Factor     1.06     1.06     1.06     1.06     1.06     1.06     1.06       Turning Speed (k/h)     14     24     24     14       Number of Detectors     2     1     1     2     1       Detector Template     Thru     Right     Left     Thru     Left       Leading Detector (m)     30.5     6.1     6.1     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     0.0       Detector 1 Size(m)     1.8     6.1     6.1     1.8     6.1       Detector 1 Channel     Detector 1 Channel     Unit the stand (s)     0.0     0.0     0.0       Detector 1 Queue (s)     0.0	Lane Alignment	Left	Right	Left	Left	Left	Right
Link Offset(m)   0.0   0.0   0.0     Crosswalk Width(m)   4.9   4.9   4.9     Headway Factor   1.06   1.06   1.06   1.06   1.06     Turning Speed (k/h)   14   24   24   14     Number of Detectors   2   1   1   2   1     Detector Template   Thru   Right   Left   Thru   Left     Leading Detector (m)   30.5   6.1   6.1   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)   1.8   6.1   1.8   6.1     Detector 1 Channel   Detector 1 Channel   Units   0.0   0.0   0.0     Detector 1 Queue (s)   0.0   0.0   0.0   0.0   0.0   0.0     Detector 1 Queue (s)   0.0   0.0   0.0   0.0   0.0   0.0     Detector 2 Position(m)   28.7   28.7   28.7   28.7   28.7 <tr< td=""><td>Median Width(m)</td><td>37</td><td>. agric</td><td>Lon</td><td>37</td><td>37</td><td></td></tr<>	Median Width(m)	37	. agric	Lon	37	37	
Link Oroclam,     O.0     O.0     O.0     O.0       Crosswalk Width(m)     4.9     4.9     4.9     4.9       Two way Left Turn Lane	Link Offset(m)	0.0			0.7	0.0	
Two way Left Turn Lane   4.3   4.3   4.3     Headway Factor   1.06   1.06   1.06   1.06   1.06   1.06     Turning Speed (k/h)   14   24   24   14     Number of Detectors   2   1   1   2   1     Detector Template   Thru   Right   Left   Thru   Left     Leading Detector (m)   30.5   6.1   6.1   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)   1.8   6.1   1.8   6.1     Detector 1 Channel	Crosswalk Width(m)	0.0 / Q			1 Q	1 Q	
Headway Factor   1.06   1.06   1.06   1.06   1.06   1.06     Turning Speed (k/h)   14   24   24   14     Number of Detectors   2   1   1   2   1     Detector Template   Thru   Right   Left   Thru   Left     Leading Detector (m)   30.5   6.1   6.1   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)   1.8   6.1   6.1   1.8   6.1     Detector 1 Channel   U   U   U   U   U   U     Detector 1 Channel   U   U   U   U   U   U   U     Detector 2 Position(m)   28.7   Z8.7   Z8.7   Detector 2 Size(m)   U		4.3			4.3	4.3	
Turning Speed (k/h)   1.00	Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06
Turning opeed (MI)     14     24     24     14       Number of Detectors     2     1     1     2     1       Detector Template     Thru     Right     Left     Thru     Left       Leading Detector (m)     30.5     6.1     6.1     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)     1.8     6.1     6.1     1.8     6.1       Detector 1 Channel     E     CI+Ex     CI+Ex     CI+Ex     CI+Ex       Detector 1 Channel     E     E     E     E     E       Detector 1 Queue (s)     0.0     0.0     0.0     0.0     D     D       Detector 2 Position(m)     28.7     28.7     28.7     E     E     E     E     E     E     E     E     E     E     E     E     E     E     E     E     E     <	Turning Spood (k/h)	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors   2   1   1   2   1     Detector Template   Thru   Right   Left   Thru   Left     Leading Detector (m)   30.5   6.1   6.1   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)   1.8   6.1   6.1   1.8   6.1     Detector 1 Type   Cl+Ex   Cl+Ex   Cl+Ex   Cl+Ex   Cl+Ex     Detector 1 Channel	Number of Detectors	0	14	- 24	0	24	14
Detector rempiate     Intu     Right     Left     Intu     Left       Leading Detector (m)     30.5     6.1     6.1     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)     1.8     6.1     6.1     1.8     6.1       Detector 1 Type     Cl+Ex     Cl+Ex     Cl+Ex     Cl+Ex     Cl+Ex       Detector 1 Channel	Number of Detectors	Z	Diaht	ا	 Thru	ا 44	
Leading Detector (m)     30.5     6.1     6.1     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)     1.8     6.1     6.1     1.8     6.1       Detector 1 Type     CI+Ex     CI+Ex     CI+Ex     CI+Ex     CI+Ex       Detector 1 Channel			Right	Len		Lett	
Training 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)   1.8   6.1   6.1   1.8   6.1     Detector 1 Type   CI+Ex   CI+Ex   CI+Ex   CI+Ex   CI+Ex     Detector 1 Channel	Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	
Detector 1 Position(m)     0.0     0.0     0.0     0.0     0.0     0.0       Detector 1 Size(m)     1.8     6.1     6.1     1.8     6.1       Detector 1 Type     CI+Ex     CI+Ex     CI+Ex     CI+Ex     CI+Ex       Detector 1 Channel     0.0     0.0     0.0     0.0     0.0       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     28.7       Detector 2 Size(m)     1.8     1.8     1.8       Detector 2 Size(m)     1.8     1.8     1.8       Detector 2 Channel     0.0     0.0     0.0       Detector 2 Extend (s)     0.0     0.0     0.0       Turn Type     NA     Perm     NA     Perm       Protected Phases     2     6     8	Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)     1.8     6.1     6.1     1.8     6.1       Detector 1 Type     CI+Ex	Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Type     CI+Ex	Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	
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     CI+Ex     CI+Ex       Detector 2 Channel     0.0     0.0       Detector 2 Extend (s)     0.0     0.0       Turn Type     NA     Perm     Perm       Protected Phases     2     6     8	Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	Cl+Ex	
Detector 1 Extend (s)     0.0     0.0     0.0     0.0     0.0     0.0       Detector 1 Queue (s)     0.0     0.0     0.0     0.0     0.0     0.0       Detector 1 Delay (s)     0.0     0.0     0.0     0.0     0.0     0.0       Detector 2 Position(m)     28.7     28.	Detector 1 Channel						
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     28.7       Detector 2 Size(m)     1.8     1.8       Detector 2 Type     CI+Ex     CI+Ex       Detector 2 Channel     0.0     0.0       Detector 2 Extend (s)     0.0     0.0       Turn Type     NA     Perm     NA       Permitted Phases     2     6     8	Detector 1 Extend (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     20.0	Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)28.728.7Detector 2 Size(m)1.81.8Detector 2 TypeCI+ExCI+ExDetector 2 ChannelDetector 2 Extend (s)0.0Detector 2 Extend (s)0.00.0Turn TypeNAPermProtected Phases26Permitted Phases26	Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Size(m)1.81.8Detector 2 TypeCI+ExCI+ExDetector 2 Channel0.00.0Detector 2 Extend (s)0.00.0Turn TypeNAPermProtected Phases26Permitted Phases26Permitted Phases26	Detector 2 Position(m)	28.7			28.7		
Detector 2 Type CI+Ex CI+Ex   Detector 2 Channel 0.0 0.0   Turn Type NA Perm Perm   Protected Phases 2 6   Permitted Phases 2 6	Detector 2 Size(m)	1.8			1.8		
Detector 2 ChannelDetector 2 Extend (s)0.0Turn TypeNAProtected Phases266Permitted Phases268	Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Extend (s)0.00.0Turn TypeNAPermPermProtected Phases26Permitted Phases26	Detector 2 Channel						
Turn TypeNAPermPermNAPermProtected Phases26Permitted Phases268	Detector 2 Extend (s)	0.0			0.0		
Protected Phases26Permitted Phases268	Turn Type	NA	Perm	Perm	NA	Perm	
Permitted Phases 2 6 8	Protected Phases	2			6		
	Permitted Phases	-	2	6	·	8	
Detector Phase 2 2 6 6 8	Detector Phase	2	2	6	6	8	

	-	$\rightarrow$	1	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	14.0	14.0			14.0	
Pedestrian Calls (#/hr)	5	5			8	
Act Effct Green (s)	71.7	71.7	71.7	71.7	9.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
v/c Ratio	0.21	0.03	0.03	0.51	0.34	
Control Delay	3.0	2.5	4.5	5.8	23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.0	2.5	4.5	5.8	23.0	
LOS	A	A	A	A	C	
Approach Delay	2.9			5.8	23.0	
Approach LOS	A			A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 50 (56%), Referenced	to phase 2:E	BT and 6:\	VBTL, Sta	rt of Greer	ı	
Natural Cycle: 60						
Control Type: Actuated-Coord	linated					
Maximum v/c Ratio: 0.51						
Intersection Signal Delay: 5.6				In	tersection	LOS: A
Intersection Capacity Utilization	on 59.5%			IC	CU Level of	Service B
Analysis Period (min) 15						
	<b>D</b> 1 6 14					

#### Splits and Phases: 3: Elmsmere Rd & Montreal Rd

₩ Ø2 (R)	
58 s	
₩ Ø6 (R)	<sup>™</sup> Ø8
58 s	32 s
# 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

2023 FB Traffic AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>۲</u>	A¢		<u> </u>	A12≽			4			4	
Traffic Volume (veh/h)	16	599	0	0	1385	6	0	0	0	17	0	53
Future Volume (Veh/h)	16	599	0	0	1385	6	0	0	0	17	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	599	0	0	1385	6	0	0	0	17	0	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	1391			599			1376	2022	300	1720	2019	696
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1391			465			1286	1968	149	1648	1964	696
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	72	100	86
cM capacity (veh/h)	488			1035			97	57	825	60	57	384
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	16	399	200	0	923	468	0	70				
Volume Left	16	0	0	0	0	0	0	17				
Volume Right	0	0	0	0	0	6	0	53				
cSH	488	1700	1700	1700	1700	1700	1700	167				
Volume to Capacity	0.03	0.23	0.12	0.00	0.54	0.28	0.00	0.42				
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0	0.0	14.3				
Control Delay (s)	12.6	0.0	0.0	0.0	0.0	0.0	0.0	41.4				
Lane LOS	В						А	E				
Approach Delay (s)	0.3			0.0			0.0	41.4				
Approach LOS							А	E				
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			51.7%	IC	U Level of	Service			А			
Analysis Period (min)			15									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<b>3</b>	**	1	<b>X</b>	**	1	<b>X</b>	*	1	<b>X</b>	*	1
Traffic Volume (vph)	122	1098	153	67	631	23	237	121	196	49	108	74
Future Volume (vph)	122	1098	153	67	631	23	237	121	196	49	108	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2	1000	68.6	64.0	1000	21.3	27.4	1000	33.5	42 7	1000	33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	76			76			76		I	76		
Lane Litil Factor	1.00	0.95	1 00	1.0	0.95	1 00	1.0	1.00	1 00	1.00	1 00	1 00
Ped Bike Factor	1.00	0.55	0.08	1.00	0.55	0.07	1.00	1.00	0.00	1.00	1.00	0.08
Frt	1.00		0.50	1.00		0.57	1.00		0.55	1.00		0.50
Fit Protected	0.050		0.000	0.050		0.000	0.050		0.000	0.950		0.000
Sate Flow (prot)	1670	3003	1517	1605	3300	1517	1647	1717	1517	1102	179/	1517
Salu. Flow (plot)	0 202	3293	1017	0 100	3390	1317	0 697	17.17	1017	0.670	1704	1317
Sata Elow (parm)	0.393	2202	1/00	0.199	2200	1/7/	1107	1717	1/05	0.079	170/	1/02
Bight Turn on Rod	092	3293	1402 Voo	300	3390	1474 Voo	1107	1717	1490 Voo	001	1704	1492 Voo
Sata Elow (PTOP)			165			105 50			105			74
Salu. Flow (RTOR)		00	100		00	50		50	41		50	/4
Link Speed (k/n)		00			00			00			150.0	
		495.7			372.4			636.1			459.9	
I ravel Time (s)	_	29.7	4	4	22.3	-	0	45.8	0	0	33.1	0
Confl. Peds. (#/hr)	5		1	1		5	6		3	3		6
Confl. Bikes (#/hr)			1						1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	45%	2%	2%
Adj. Flow (vph)	122	1098	153	67	631	23	237	121	196	49	108	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	1098	153	67	631	23	237	121	196	49	108	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Fx			CI+Fx			CI+Ex			CI+Fx	
Detector 2 Channel					0. · LA			0 LA			Q. EA	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
	Perm	NΔ	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NΔ	Perm
Protected Phases	1 UIII	2		, citii	6			- 2	, onn	i onn	/	7 Unit
Permitted Phases	2	2	2	6	- 0	6	8	0	8	Λ	- <b>-</b>	٨
Detector Phase	2	2	2	6	6	6	8	8	8	- 1	1	-
	2	2	2	0	0	0	0	0	0			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	43.0	43.0	43.0	43.0	43.0	43.0	47.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	52.2%	52.2%	52.2%	52.2%	52.2%	52.2%
Maximum Green (s)	36.6	36.6	36.6	36.6	36.6	36.6	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	1	1	1	5	5	5	3	3	3	6	6	6
Act Effct Green (s)	51.2	51.2	51.2	51.2	51.2	51.2	25.3	25.3	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.31	0.59	0.17	0.33	0.33	0.03	0.71	0.25	0.44	0.21	0.22	0.16
Control Delay	16.3	16.2	3.1	16.5	10.2	0.5	39.4	23.7	21.7	23.0	23.0	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	16.2	3.1	16.5	10.2	0.5	39.4	23.7	21.7	23.0	23.0	5.2
LOS	В	В	А	В	В	А	D	С	С	С	С	A
Approach Delay		14.8			10.4			29.7			17.3	
Approach LOS		В			В			С			В	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 1 (1%), Referenced to	phase 2:EBT	L and 6:W	/BTL, Start	of Green								
Natural Cycle: 90												
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.71												
Intersection Signal Delay: 16.	.8			Ir	ntersection	LOS: B						
Intersection Capacity Utilization	on 89.4%			IC	CU Level o	f Service E						
Analysis Period (min) 15												
Splits and Phases: 1: Blair	Rd & Montrea	al Rd										

🗢 Ø2 (R)		
43 s	47 s	
🕈 Ø6 (R)	■ ¶øs	
43 s	47 s	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	<b>≜1</b> ⊾		5	<b>≜</b> 1⊾			4			4	
Traffic Volume (vph)	3	1395	28	28	707	3	13	1	24	1	0	3
Future Volume (vph)	3	1395	28	28	707	3	13	1	24	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00			1.00			0.98			0.99	
Frt		0.997			0.999			0.915			0.899	
Flt Protected	0.950			0.950				0.983			0.988	
Satd, Flow (prot)	1695	3240	0	1695	3321	0	0	1566	0	0	1567	0
Flt Permitted	0.374		-	0.150	••	-	-	0.715	-	-		-
Satd, Flow (perm)	663	3240	0	268	3321	0	0	1138	0	0	1581	0
Right Turn on Red			Yes			Yes	, in the second s		Yes	· ·		Yes
Satd, Flow (RTOR)		3			1			24			56	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
Travel Time (s)		22.3			6.8			87			7.3	
Confl Peds (#/hr)	8	22.0	7	7	0.0	8	3	0.1	14	14	1.0	3
Confl Bikes (#/hr)	v					1	Ū					Ŭ
Peak Hour Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Heavy Vehicles (%)	2%	6%	22%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/br)	0	0,0	0	2 /0	- 70	0	2 /0	270	5	2 /0	2 /0	2 /0
Adi Flow (vph)	3	1395	28	28	707	3	13	1	24	1	0	3
Shared Lane Traffic (%)	0	1000	20	20	101	0	10		<b>2</b> 7	1	U	Ū
Lane Group Flow (vpb)	3	1423	0	28	710	0	0	38	0	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	l off	l off	Right	l off	Loft	Right	L off	l off	Right	l off	l off	Right
Median Width(m)	Lon	37	rugin	Lon	37	rtight	Lon	0.0	rugitu	Lon	0.0	rtight
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		<u>4</u> 9			4.9			۵.0 ۷ ۹			0.0 4 9	
Two way Left Turn Lane		ч.5			т.у			т.у			т.5	
Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1 07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	1.00	14	24	1.00	14	24	1.07	14	24	1.00	14
Number of Detectors	1	2	17	1	2	17	1	2	17	1	2	17
Detector Template	l eft	Thru		l eft	Thru		l eft	Thru		l eft	Thru	
Leading Detector (m)	61	30.5		61	30.5		61	30.5		61	30.5	
Trailing Detector (m)	0.1	0.0		0.1	0.0		0.1	0.0		0.1	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.0	1.8		6.0	1.8		6.1	1.8		6.0	1.8	
Detector 1 Type	CI+Ev	CI+Ex			CI+Ev			CI+Ev		CI+Ev		
Detector 1 Channel		OILY										
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	28.7		0.0	28.7		0.0	28.7		0.0	28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ev						CI+Ev			CI+Ev	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
	Porm	NA		Perm	NIA		Perm	NA		Perm	NIA	
Protected Phases		2		I CIIII	AVI 6		1 enn	R R		I CIIII	1	
Permitted Dhases	2	۷		6	U		Q	0		1	4	
r Gillilleu i llases	2			0			0			4		

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/b)		
Link Distance (m)		
Confl Deds (#/br)		
Confl Bikes (#/hll)		
Deak Hour Factor		
Rus Blockages (#/br)		
Adi Flow (uph)		
Auj. Flow (vpii)		
Shared Lane Trailic (%)		
Lane Group Flow (vpn)		
Enter Blocked Intersection		
Lane Alignment		
Crosswalk Width(m)		
I wo way Left I urn Lane		
Headway Factor		
i urning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	7	7		8	8		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.57		0.14	0.28			0.26			0.02	
Control Delay	3.7	4.3		5.2	3.9			24.8			0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.7	4.3		5.2	3.9			24.8			0.2	
LOS	А	А		А	А			С			А	
Approach Delay		4.3			4.0			24.8			0.3	
Approach LOS		А			А			С			А	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 8 (9%), Referenced to	phase 2:EBT	L and 6:WE	3TL, Start	of Green								
Natural Cycle: 80												
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.57												
Intersection Signal Delay: 4.5				lr	Itersection I	LOS: A						
Intersection Capacity Utilization	on 65.2%			IC	CU Level of	Service C	;					
Analysis Period (min) 15												
Splits and Phases: 2: Elwo	od Dr & Mont	real Rd										
1000		-						24				2

•Ø2(R)	21 <b>−</b> 0β ▼ 04	
53 s	5 s 32 s	
🗸 Ø6 (R)	A & 07 08	
53 s	5 s 32 s	

Lane Group	Ø3	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	5	5
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

# 1765 Montreal Road TIA 3: Elmsmere Rd & Montreal Rd

	-	$\mathbf{r}$	1	+	1	1
Lane Group	FRT	FRR	WRL	WRT	NRI	NRR
Lane Configurations						
	1303	<b>1</b> 5	30	<b>T'T</b> 666	33	20
	1303	45	30	666	22	30
Ideal Flow (vnhpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	1000	42.7	79.2	1000	0.0	0.0
Storage Lanes		1.1	1 1		0.0	0.0
Taper Length (m)		-	76		76	0
Lane Util Factor	0.95	1.00	1.0	0.95	1.0	1 00
Ped Rike Factor	0.00	0.07	1.00	0.35	0 00	1.00
Frt		0.850	1.00		0.99	
Elt Protected		0.000	0.950		0.978	
Satd Flow (prot)	3262	1502	1558	3325	1571	0
Elt Permitted	3202	1302	0 101	0020	0 078	0
Satd Flow (perm)	3060	1/56	212	3375	1560	٥
Right Turn on Red	3202	1400 Voc	313	3325	1009	Voc
		105			20	res
Jak Speed (k/k)	00	41		00	39	
LINK Speea (K/N)	60			60	40	
LINK Distance (m)	289.3			93.2	237.9	
I ravel I ime (s)	17.4	-	-	5.6	21.4	-
Confl. Peds. (#/hr)		5	5	4.00	2	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adj. Flow (vph)	1303	45	30	666	33	39
Shared Lane Traffic (%)					_	_
Lane Group Flow (vph)	1303	45	30	666	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	
Detector Template	Thru	Right	Left	Thru	Left	
Leading Detector (m)	30.5	6.1	6.1	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)	1.8	6.0	6.0	1.8	6.1	
Detector 1 Type	CI+Ex	CI+EY	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (a)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delev (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Detay (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	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0	_	_	0.0	_	
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases		2	6		8	
Detector Phase	2	2	6	6	8	
Switch Phase						

# 1765 Montreal Road TIA <u>3: Elmsmere Rd & Montreal Rd</u>

	-	$\rightarrow$	-	-	1	1		
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR		
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0			
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2			
Total Split (s)	58.0	58.0	58.0	58.0	32.0			
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%			
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8			
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3			
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2			
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			
Recall Mode	C-Max	C-Max	C-Max	C-Max	None			
Walk Time (s)	7.0	7.0			7.0			
Flash Dont Walk (s)	14.0	14.0			14.0			
Pedestrian Calls (#/hr)	5	5			7			
Act Effct Green (s)	71.6	71.6	71.6	71.6	9.7			
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11			
v/c Ratio	0.50	0.04	0.12	0.25	0.35			
Control Delay	4.1	1.9	6.0	4.0	23.3			
Queue Delay	0.0	0.0	0.0	0.0	0.0			
Total Delay	4.1	1.9	6.0	4.0	23.3			
LOS	A	А	А	А	С			
Approach Delay	4.0			4.1	23.3			
Approach LOS	A			A	С			
Intersection Summary	0.4							
Area Type:	Other							
Cycle Length: 90								
Actuated Cycle Length: 90								
Offset: 52 (58%), Referenced	to phase 2:E	BI and 6:\	NBTL, Sta	rt of Green	1			
Natural Cycle: 60								
Control Type: Actuated-Coord	dinated							
Maximum V/c Ratio: 0.50						00.4		
Intersection Signal Delay: 4.7				In	itersection I	LUS: A		
Intersection Capacity Utilization	on 55.7%			IC	U Level of	Service B		
Analysis Period (min) 15								
Splits and Phases: 3: Elms	mere Rd & M	ontreal Rd					-	
→ Ø2 (R)								
58 s								
₹Ø6 (R)							Ø8	
58 s							32 s	

# 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

2023 FB Traffic PM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	<b>∱1</b> }		5	<b>≜1</b> }			\$			\$	
Traffic Volume (veh/h)	71	1347	0	0	709	24	0	0	0	9	0	29
Future Volume (Veh/h)	71	1347	0	0	709	24	0	0	0	9	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	71	1347	0	0	709	24	0	0	0	9	0	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.78			0.78	0.78	0.78	0.78	0.78	
vC, conflicting volume	733			1347			1872	2222	674	1536	2210	366
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	733			876			1551	2000	10	1119	1985	366
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			100	100	100	92	100	95
cM capacity (veh/h)	868			597			54	42	831	118	43	630
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	71	898	449	0	473	260	0	38				
Volume Left	71	0	0	0	0	0	0	9				
Volume Right	0	0	0	0	0	24	0	29				
cSH	868	1700	1700	1700	1700	1700	1700	310				
Volume to Capacity	0.08	0.53	0.26	0.00	0.28	0.15	0.00	0.12				
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1				
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	0.0	0.0	18.2				
Lane LOS	А						А	С				
Approach Delay (s)	0.5			0.0			0.0	18.2				
Approach LOS							А	С				
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			56.0%	IC	U Level of	Service			В			
Analysis Period (min)			15									

#### 4: Montreal Rd & Beckenham Ln AM Peak

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	<b>↑</b> ĵ≽		ሻ	A⊅			4			4	
Traffic Volume (veh/h)	16	599	0	0	1385	6	0	0	0	13	0	53
Future Volume (Veh/h)	16	599	0	0	1385	6	0	0	0	13	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	599	0	0	1385	6	0	0	0	13	0	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	1391			599			1376	2022	300	1720	2019	696
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1391			465			1286	1968	149	1648	1964	696
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	78	100	86
cM capacity (veh/h)	488			1035			97	57	825	60	57	384
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	16	399	200	0	923	468	0	66				
Volume Left	16	0	0	0	0	0	0	13				
Volume Right	0	0	0	0	0	6	0	53				
cSH	488	1700	1700	1700	1700	1700	1700	187				
Volume to Capacity	0.03	0.23	0.12	0.00	0.54	0.28	0.00	0.35				
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0	0.0	11.4				
Control Delay (s)	12.6	0.0	0.0	0.0	0.0	0.0	0.0	34.5				
Lane LOS	В						А	D				
Approach Delay (s)	0.3			0.0			0.0	34.5				
Approach LOS							А	D				
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilizati	on		51.5%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Lane Group         EBL         EBT         EBR         WBL         WBT         WBR         NBT         NBT         NBR         SBL         SBT         SBR           Lane Configurations         4         1         127         24         156         98         61         27         170         142           Future Volume (vph)         42         574         182         187         1279         24         156         98         61         27         170         142           Storage Langth (m)         105.2         68.6         64.0         21.3         27.4         33.5         42.7         33.5           Storage Langth (m)         7.6         7.6         7.6         7.6         7.6         0.98         0.00         <		≯	-	$\mathbf{r}$	4	-	•	•	t	1	1	ŧ	~
Lane Configurations         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         A         Y         Y         A         Y         Y         A         Y         Y         A         Y         Y         A         Y         Y         A         Y         Y         A         Y         Y         A         Y         Y         A         Y         Y         A	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (uph)         42         574         182         187         127         24         156         98         61         27         170         142           Ideal Flow (uph)         1800	Lane Configurations	5	**	1	×.	**	1	8	*	1	K	*	1
Piture Voume (whip)         42         574         182         187         127         24         156         38         61         27         170         142           Ideal Flow (var)         1800         100	Traffic Volume (vph)	42	574	182	187	1279	24	156	98	61	27	170	142
Interact Transmission         1800	Future Volume (vph)	42	574	182	187	1279	24	156	98	61	27	170	142
Storage Length (m)         105.2         000         21.3         27.4         000         21.3         27.4         000         23.5         42.7         000         33.5         42.7         000         33.5         54.7         100         1	Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Langes         1	Storage Length (m)	105.2	1000	68.6	64.0	1000	21.3	27.4	1000	33.5	42.7	1000	33.5
Tape Length (m)         7.6         7.6         7.6         7.6         7.6         7.6           Lane Ulti, Factor         1.00         0.95         1.00         0.950         0.950         0.950         0.950         0.950         0.950         0.950         0.950         0.950         0.950         0.954         0.854	Storage Lanes	1		1	1		1	1		1	1		1
Lane UNL Factor         100         0.95         1.00         1.00         0.97         0.93         1.00	Taper Length (m)	76		•	76		•	76		•	76		•
Deck Bike Factor         1.00         0.00	Lane Litil Factor	1.00	0.95	1 00	1 00	0.95	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Fri         Instruction         Instruction         O.850         O.950         D.950         O.950         O.950         O.950         O.950         D.950         O.950         D.950         O.950         D.950         O.950         D.950         O.950         D.950         D.950 <thd.950< th=""> <thd.950< th="">         D.950</thd.950<></thd.950<>	Ped Bike Factor	1.00	0.00	1.00	1.00	0.00	0.97	1.00	1.00	0.98	1.00	1.00	0.99
Fit Protected         0.950         0.050         0.950         0.050         0.950         0.050         0.950         0.950         0.950           Satd, Flow (prot)         1679         3293         1517         1695         3390         1517         1717         1182         1747         1118         1717         1192         1744         1517           Satd, Flow (perm)         288         3293         1517         771         3390         1471         1118         171         1493         888         1784         1498           Satd, Flow (perm)         288         3293         1517         771         3390         1471         1118         171         1493         888         1784         1498           Link Speed (lph)         60         60         50	Frt	1.00		0 850			0.850			0.850	1.00		0.850
State Flow (prot)         1679         3293         1517         1695         3390         1517         1647         1717         1517         1192         1784         1517           FI Permitted         0.163         0.432         0.645         0.645         0.694           Stati Flow (perm)         288         3293         1517         771         3301         1471         1118         1717         1493         868         1784         1498           Right Tum on Red         Yes	Flt Protected	0.950			0.950			0.950			0.950		
Pit Permitted         0.163         0.00         0.432         0.0432         0.0432         0.0432         0.044         101         0.03           Satd Flow (perm)         288         3293         1517         771         3390         1471         1118         1717         1493         8668         1784         1498           Satd Flow (PtOR)         182         50         61         41         41         1118         1771         1493         8668         1784         1498           Kispeed (khft)         60         60         50         50         50         50           Confl. Reds (kfthr)         4         4         5	Satd Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Satil Flow (perm)         288         3293         1517         771         3390         1471         1118         1717         1493         868         1784         1498           Right Turm on Red         Yes	Flt Permitted	0 163	0200		0 432	0000	1011	0.645		1011	0.694		1011
Right Tum on Red         Yes	Satd Flow (perm)	288	3293	1517	771	3390	1471	1118	1717	1493	868	1784	1498
Satil Flow (RTOR)         182         50         61         41           Link Desced (kh)         60         60         50         50           Link Distance (m)         495.7         372.4         636.1         459.9           Travel Time (s)         29.7         22.3         45.8         33.1           Confl. Peds (#hr)         4         5         5         7           Confl. Sikes (#hr)         4         0         1.00	Right Turn on Red	200	0200	Yes		0000	Yes	1110		Yes	000	1701	Yes
Dotation ((10)         Edite         Edit         Edite         Edite	Satd Flow (RTOR)			182			50			61			41
Link Distance (m)         495.7         372.4         636.1         459.9           Travel Time (s)         29.7         22.3         45.8         33.1           Confl. Peds, (#hr)         4         5         5           Peak Hour Factor         1.00         1	Link Speed (k/h)		60	102		60	00		50	01		50	
Link Diduktion         Housing         Housing         Housing         Housing           Confl. Rices (#hr)         4         4         5         5           Confl. Rices (#hr)         4         5         5           Confl. Rices (#hr)         4         5         5           Confl. Rices (#hr)         4         1         1           Peak Hour Factor         1.00 <td>Link Distance (m)</td> <td></td> <td>495.7</td> <td></td> <td></td> <td>372.4</td> <td></td> <td></td> <td>636 1</td> <td></td> <td></td> <td>459.9</td> <td></td>	Link Distance (m)		495.7			372.4			636 1			459.9	
Induction         Induction <t< td=""><td>Travel Time (s)</td><td></td><td>29.7</td><td></td><td></td><td>22.4</td><td></td><td></td><td>45.8</td><td></td><td></td><td>33.1</td><td></td></t<>	Travel Time (s)		29.7			22.4			45.8			33.1	
Cont. Bikes (Hr)         1         0         1         0         1         0         1         0         1         0         1         1         0         1         1         0         1 <th1< th=""> <th1< th=""> <th1< th="">         &lt;</th1<></th1<></th1<>	Confl Peds (#/hr)	4	20.1			22.0	4		-0.0	5	5	00.1	
Communication         Communic	Confl Bikes (#/hr)	т					4			0	0		1
Index         Index <th< td=""><td>Peak Hour Factor</td><td>1 00</td><td>1 00</td></th<>	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
Inder year.obs (v)         37.6         37.6         37.6         27.7         27.7         27.7         27.7         27.7         27.7         27.7         27.7         27.7         27.7         27.7         27.7         27.7 <td></td> <td>3%</td> <td>5%</td> <td>2%</td> <td>2%</td> <td>2%</td> <td>2%</td> <td>5%</td> <td>6%</td> <td>2%</td> <td>/5%</td> <td>2%</td> <td>2%</td>		3%	5%	2%	2%	2%	2%	5%	6%	2%	/5%	2%	2%
Instruction       Instru       Instruction       Instruction	Adi Flow (vph)	42	574	182	187	1279	270	156	98	61	-07	170	142
Onder Gradies         One of the section         Value         182         187         1279         24         156         98         61         27         170         142           Enter Blocked Intersection         No         No<	Shared Lane Traffic (%)	74	514	102	107	1215	27	100	50	01	21	170	172
Lance of outper form         Hz         No         No <td>Lane Group Flow (vph)</td> <td>42</td> <td>574</td> <td>182</td> <td>187</td> <td>1279</td> <td>24</td> <td>156</td> <td>98</td> <td>61</td> <td>27</td> <td>170</td> <td>142</td>	Lane Group Flow (vph)	42	574	182	187	1279	24	156	98	61	27	170	142
Link blocked intervention         Ho	Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lando migniment         Lond         Togin         Lond	Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Inclusion Video(Inf)       0.1       0.1       0.1       0.1         Link Offset(m)       0.0       0.0       0.0       0.0         Crosswalk Width(m)       4.9       4.9       4.9       4.9         Two way Left Turn Lane	Median Width(m)	Lon	37	rtigitt	Lon	37	rtigrit	Lon	37	rugin	Lon	37	rugin
Line Ondot(n)         0.3         0.3         0.3         0.3         0.3           Crosswalk With(m)         4.9         4.9         4.9         4.9         4.9           Two way Left Tum Lane         1.06 <t< td=""><td>Link Offset(m)</td><td></td><td>0.0</td><td></td><td></td><td>0.0</td><td></td><td></td><td>0.0</td><td></td><td></td><td>0.0</td><td></td></t<>	Link Offset(m)		0.0			0.0			0.0			0.0	
Order (hind)       1.0	Crosswalk Width(m)		4 9			49			49			4 9	
Hadway Eator       1.06 <td>Two way Left Turn Lane</td> <td></td> <td>т.<del>,</del></td> <td></td> <td></td> <td>т.5</td> <td></td> <td></td> <td>т.0</td> <td></td> <td></td> <td><del>т.</del>0</td> <td></td>	Two way Left Turn Lane		т. <del>,</del>			т.5			т.0			<del>т.</del> 0	
Index       Index <thindex< th=""> <thindex< th=""> <thin< td=""><td>Headway Eactor</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td><td>1.06</td></thin<></thindex<></thindex<>	Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Harming op Detectors         1         2         1	Turning Speed (k/h)	24	1.00	1.00	24	1.00	1.00	24	1.00	1.00	24	1.00	1.00
Indition of Detector Template         Left         Thru         Right         Left         Thru	Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector (m)         6.1         30.5         6.1         8.5	Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Detector (m)         0.1         0.0         0.0         0.0         0.1         0.1         0.0         0.1 <t< td=""><td>Leading Detector (m)</td><td>61</td><td>30.5</td><td>61</td><td>61</td><td>30.5</td><td>6 1</td><td>61</td><td>30.5</td><td>6 1</td><td>61</td><td>30.5</td><td>6.1</td></t<>	Leading Detector (m)	61	30.5	61	61	30.5	6 1	61	30.5	6 1	61	30.5	6.1
Intering Decision (in)         0.0	Trailing Detector (m)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1         Disc	Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Type       CI+Ex	Detector 1 Size(m)	6.1	1.8	6.0	6.0	1.8	6.0	6.0	1.8	6.0	6.0	1.8	6.0
Detector 1 Channel       0.0 </td <td>Detector 1 Type</td> <td>CI+Fx</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>Cl+Ex</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>CI+Ex</td> <td>CI+Fx</td>	Detector 1 Type	CI+Fx	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	Cl+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Fx
Detector 1 Extend (s)         0.0	Detector 1 Channel	OFFER	OT EX	OI - EX	OI * EX	OI LA	OT EX	OT EX	OI LA	OI LA	OI - EX	OFFER	
Detector 1 Queue (s)       0.0	Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)         0.0	Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)         28.7         28.7         28.7         28.7         28.7           Detector 2 Size(m)         1.8	Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Size(m)1.81.81.81.8Detector 2 TypeCI+ExCI+ExCI+ExCI+ExDetector 2 Channel0.00.00.00.0Detector 2 Extend (s)0.00.00.00.0Turn TypePermNAPermPermNAProtected Phases2684Permitted Phases226684Detector Phase2266844	Detector 2 Position(m)	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0
Detector 2 TypeCl+ExCl+ExCl+ExCl+ExDetector 2 Channel0.00.00.00.0Detector 2 Extend (s)0.00.00.00.0Turn TypePermNAPermPermNAPermProtected Phases2684Permitted Phases226684Detector Phase22668844	Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Channel         ON EX         ON EX         ON EX         ON EX         ON EX         ON EX           Detector 2 Channel         Detector 2 Extend (s)         0.0         0.0         0.0         0.0         0.0           Turn Type         Perm         NA         Perm         Perm         NA         Perm         NA         Perm         NA         Perm         NA         Perm         NA         Perm         NA         Perm         Perm         NA         Perm         NA         Perm         NA         Perm         NA         Perm         Perm         NA         Perm         NA         Perm	Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Extend (s)0.00.00.00.0Turn TypePermNAPermPermNAPermProtected Phases2684Permitted Phases226684Detector Phase2266844	Detector 2 Channel		OFER									OILA	
Turn Type         Perm         NA         Perm	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Protected Phases         2         6         8         4           Permitted Phases         2         2         6         8         4           Detector Phase         2         2         6         6         8         4		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Permitted Phases         2         2         6         6         8         4         4           Detector Phase         2         2         6         6         8         8         4         4	Protected Phases		2			6			8			4	
Detector Phase 2 2 2 6 6 6 8 8 8 4 4 4	Permitted Phases	2	2	2	6		6	8	U	8	4	— т	4
	Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4

Lane Group         EBL         EBT         EBR         WBL         WBT         WBR         NBL         NBT         NBR         SBL         SBT         SBR           Switch Phases         minimum finital (s)         10.0 </th <th></th> <th>٦</th> <th>-</th> <th><math>\mathbf{F}</math></th> <th>4</th> <th>•</th> <th>*</th> <th>1</th> <th>1</th> <th>۲</th> <th>1</th> <th>ţ</th> <th>~</th>		٦	-	$\mathbf{F}$	4	•	*	1	1	۲	1	ţ	~
Switch Phase         Ninimum Sinitial (s)         10.0         <	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)       10.0	Switch Phase												
Minimum Split (s)       33.4       33.4       33.4       33.4       33.4       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.1       46.0       46	Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)       44.0       44.0       44.0       44.0       44.0       46.0       37.6	Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (%)       48.9%       48.9%       48.9%       48.9%       51.1%	Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0	46.0
Maximum Green (s)       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.6       37.7       3.3       3.3	Total Split (%)	48.9%	48.9%	48.9%	48.9%	48.9%	48.9%	51.1%	51.1%	51.1%	51.1%	51.1%	51.1%
Yellow Time (s)       3.7       3.8	Maximum Green (s)	37.6	37.6	37.6	37.6	37.6	37.6	38.9	38.9	38.9	38.9	38.9	38.9
All-Red Time (s)       2.7       2.7       2.7       2.7       2.7       3.8 <td>Yellow Time (s)</td> <td>3.7</td> <td>3.7</td> <td>3.7</td> <td>3.7</td> <td>3.7</td> <td>3.7</td> <td>3.3</td> <td>3.3</td> <td>3.3</td> <td>3.3</td> <td>3.3</td> <td>3.3</td>	Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)       0.0	All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Total Lost Time (s)       6.4       6.4       6.4       6.4       6.4       7.1<	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LeadLag Optimize? Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead-Lag Optimize?         Vehicle Extension (s)       3.0 <td>Lead/Lag</td> <td></td>	Lead/Lag												
Vehicle Extension (s)       3.0       3.	Lead-Lag Optimize?												
Recall Mode         C-Max         C-Max         C-Max         C-Max         C-Max         C-Max         C-Max         None         None <td>Vehicle Extension (s)</td> <td>3.0</td>	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk Time (s)       7.0	Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Flash Dont Walk (s)       20.0       20.0       20.0       20.0       20.0       20.0       32.0	Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Pedestrian Calls (#/hr)       0       0       0       4       4       4       5       5       5       0       0       0         Act EftG Green (s)       55.9       55.9       55.9       55.9       55.9       55.9       55.9       20.6 <td< td=""><td>Flash Dont Walk (s)</td><td>20.0</td><td>20.0</td><td>20.0</td><td>20.0</td><td>20.0</td><td>20.0</td><td>32.0</td><td>32.0</td><td>32.0</td><td>32.0</td><td>32.0</td><td>32.0</td></td<>	Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Act Effct Green (s)       55.9       55.9       55.9       55.9       55.9       55.9       55.9       20.6	Pedestrian Calls (#/hr)	0	0	0	4	4	4	5	5	5	0	0	0
Actuated g/C Ratio       0.62       0.62       0.62       0.62       0.62       0.62       0.23       0.27       0.23       0.23       0	Act Effct Green (s)	55.9	55.9	55.9	55.9	55.9	55.9	20.6	20.6	20.6	20.6	20.6	20.6
v/c Ratio       0.24       0.28       0.18       0.39       0.61       0.03       0.61       0.25       0.16       0.14       0.42       0.38         Control Delay       17.0       10.3       2.7       9.3       9.2       0.7       39.1       26.7       6.2       24.2       30.3       20.7         Queue Delay       0.0	Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.23	0.23	0.23	0.23	0.23	0.23
Control Delay       17.0       10.3       2.7       9.3       9.2       0.7       39.1       26.7       6.2       24.2       30.3       20.7         Queue Delay       0.0	v/c Ratio	0.24	0.28	0.18	0.39	0.61	0.03	0.61	0.25	0.16	0.14	0.42	0.38
Queue Delay         0.0 <th< td=""><td>Control Delay</td><td>17.0</td><td>10.3</td><td>2.7</td><td>9.3</td><td>9.2</td><td>0.7</td><td>39.1</td><td>26.7</td><td>6.2</td><td>24.2</td><td>30.3</td><td>20.7</td></th<>	Control Delay	17.0	10.3	2.7	9.3	9.2	0.7	39.1	26.7	6.2	24.2	30.3	20.7
Total Delay       17.0       10.3       2.7       9.3       9.2       0.7       39.1       26.7       6.2       24.2       30.3       20.7         LOS       B       B       A       A       A       D       C       A       C       C       C         Approach Delay       8.9       9.1       28.9       25.8         Approach LOS       A       A       A       C       C       C         Intersection Summary       A       A       A       C       C       C         Area Type:       Other       Other       Cycle Length: 90       C       Actuated Cycle Length: 90       C       Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green       Natural Cycle: 90       C       C       C         Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.61       Intersection LOS: B       Intersection Capacity Utilization 88.5%       ICU Level of Service E       Analysis Period (min) 15       Splits and Phases:       1: Blair Rd & Montreal Rd	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS       B       B       A       A       A       D       C       A       C       Intersection C       C <thc< th=""></thc<>	Total Delay	17.0	10.3	2.7	9.3	9.2	0.7	39.1	26.7	6.2	24.2	30.3	20.7
Approach Delay       8.9       9.1       28.9       25.8         Approach LOS       A       A       C       C         Intersection Summary       A       A       C       C         Area Type:       Other       Other       Cycle Length: 90       Actuated Cycle Length: 90       Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green       Natural Cycle: 90       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.61       Intersection LOS: B       Intersection Signal Delay: 13.1       Intersection LOS: B         Intersection Capacity Utilization 88.5%       ICU Level of Service E       Analysis Period (min) 15         Splits and Phases:       1: Blair Rd & Montreal Rd       Image: Capacity Ca	LOS	В	В	А	А	А	А	D	С	А	С	С	С
Approach LOS       A       A       C       C         Intersection Summary       Area Type:       Other	Approach Delay		8.9			9.1			28.9			25.8	
Intersection Summary         Area Type:       Other         Cycle Length: 90       Other         Actuated Cycle Length: 90       Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green         Natural Cycle: 90       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.61       Intersection LOS: B         Intersection Capacity Utilization 88.5%       ICU Level of Service E         Analysis Period (min) 15       Splits and Phases: 1: Blair Rd & Montreal Rd	Approach LOS		А			А			С			С	
Area Type:       Other         Cycle Length: 90       Actuated Cycle Length: 90         Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green       Natural Cycle: 90         Natural Cycle: 90       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.61       Intersection LOS: B         Intersection Capacity Utilization 88.5%       ICU Level of Service E         Analysis Period (min) 15       Splits and Phases: 1: Blair Rd & Montreal Rd	Intersection Summary												
Cycle Length: 90 Actuated Cycle Length: 90 Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.61 Intersection Signal Delay: 13.1 Intersection LOS: B Intersection Capacity Utilization 88.5% ICU Level of Service E Analysis Period (min) 15 Splits and Phases: 1: Blair Rd & Montreal Rd	Area Type:	Other											
Actuated Cycle Length: 90 Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.61 Intersection Signal Delay: 13.1 Intersection LOS: B Intersection Capacity Utilization 88.5% ICU Level of Service E Analysis Period (min) 15 Splits and Phases: 1: Blair Rd & Montreal Rd	Cycle Length: 90												
Offset: 14 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.61 Intersection Signal Delay: 13.1 Intersection LOS: B Intersection Capacity Utilization 88.5% ICU Level of Service E Analysis Period (min) 15 Splits and Phases: 1: Blair Rd & Montreal Rd	Actuated Cycle Length: 90												
Natural Cycle: 90         Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.61         Intersection Signal Delay: 13.1         Intersection Capacity Utilization 88.5%         Intersection Capacity Utilization 88.5%         ICU Level of Service E         Analysis Period (min) 15         Splits and Phases:       1: Blair Rd & Montreal Rd	Offset: 14 (16%), Referenced	to phase 2:E	BTL and 6	:WBTL, St	art of Gree	en							
Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.61         Intersection Signal Delay: 13.1         Intersection Capacity Utilization 88.5%         ICU Level of Service E         Analysis Period (min) 15         Splits and Phases:       1: Blair Rd & Montreal Rd	Natural Cycle: 90												
Maximum v/c Ratio: 0.61       Intersection Signal Delay: 13.1       Intersection LOS: B         Intersection Capacity Utilization 88.5%       ICU Level of Service E         Analysis Period (min) 15       Splits and Phases: 1: Blair Rd & Montreal Rd	Control Type: Actuated-Coord	dinated											
Intersection Signal Delay: 13.1     Intersection LOS: B       Intersection Capacity Utilization 88.5%     ICU Level of Service E       Analysis Period (min) 15     Splits and Phases: 1: Blair Rd & Montreal Rd	Maximum v/c Ratio: 0.61												
Intersection Capacity Utilization 88.5% ICU Level of Service E Analysis Period (min) 15 Splits and Phases: 1: Blair Rd & Montreal Rd	Intersection Signal Delay: 13.	1			Ir	ntersection	LOS: B						
Analysis Period (min) 15 Splits and Phases: 1: Blair Rd & Montreal Rd	Intersection Capacity Utilization	on 88.5%			IC	CU Level o	f Service E						
Splits and Phases: 1: Blair Rd & Montreal Rd	Analysis Period (min) 15												
	Splits and Phases: 1: Blair	Rd & Montrea	al Rd										

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₩ Ø6 (R)	1 Ø8	
44 s	46 s	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	<b>≜1</b> ⊾		<b>N</b>	<b>≜1</b> ⊾			4			4	
Traffic Volume (vph)	2	622	9	15	1490	2	16	0	20	0	0	1
Future Volume (vph)	2	622	9	15	1490	2	16	0	20	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6	1000	0.0	33.5	1000	0.0	0.0	1000	0.0	0.0	1000	0.0
Storage Lanes	1		0.0	1		0.0	0.0		0.0	0.0		0.0
Taper Length (m)	76		v	76		Ŭ	76		Ŭ	76		U
Lane Util Factor	1.00	0.95	0.95	1.00	0.95	0.95	1 00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	1.00	1 00	0.00	1.00	1.00	0.00	1.00	0.99	1.00	1.00	0.98	1.00
Frt		0.998		1.00	1.00			0.925			0.865	
Elt Protected	0 950	0.000		0.950				0.978			0.000	
Satd Flow (prot)	1695	3247	0	1695	3325	0	0	1585	0	0	1520	0
Elt Permitted	0 135	0211	v	0 411	0020	Ŭ	Ū	0.332	U	v	1020	U
Satd Flow (perm)	241	3247	0	731	3325	0	0	537	0	0	1520	0
Right Turn on Red	271	02-11	Yes	701	0020	Yes	U	001	Yes	U	1020	Yes
Satd Flow (RTOR)		2	100			100		56	100		86	100
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372 /			113.5			96.5			81 /	
Travel Time (s)		22.4			6.8			87			73	
Confl Peds (#/br)	5	22.5	3	3	0.0	5	3	0.7	6	6	7.5	3
Confl Bikes (#/hr)	0		5	5		1	J		0	0		5
Pook Hour Easter	1.00	1 00	1.00	1 00	1.00	1 00	1 00	1 00	1.00	1 00	1 00	1 00
	20/	6%	220%	20/	1.00	20/	20/	20/	2%	20/	20/	2%
Pus Plockages (#/br)	2 /0	0 /0	22 /0	2 /0	4 /0	2 /0	2 /0	2 /0	2 /0	2 /0	2 /0	2 /0
Adi Flow (vph)	2	622	0	15	1/100	2	16	2	20	0	0	1
Shared Lane Traffic (%)	2	022	9	15	1490	2	10	0	20	0	0	1
	<b></b>	621	0	15	1/02	0	0	26	0	0	1	0
Enter Blocked Intersection	Z No	No	No	No	1492 No	No	No	No	No	No	No	No
Long Alignment	Loft	Loff	Dight	Loff	Loft	Dight	Loff	Loff	Dight	Loff	Loft	Dight
Median Width(m)	Leit	2 7	Right	Leit	3.7	Right	Leit		Right	Leit		Right
Link Offcot(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.0			1.0			1.0			1.0	
		4.9			4.3			4.9			4.9	
Headway Easter	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1 07	1.06	1.06	1.06	1.06
Turning Spood (k/h)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.07	1.00	1.00	1.00	1.00
Number of Detectors		2	14	24	2	14	24	2	14	24	2	14
Number of Detectors	l off	Z		l off	Z		l off	Z		Loft	Z	
Loading Detector (m)	E LEIL	20.5		6 1	20.5		6 1	20.5		6 1	30.5	
Trailing Detector (m)	0.1	0.0		0.1	0.0		0.1	0.0		0.1	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Sizo(m)	6.1	0.0		6.1	0.0		0.0	0.0 1 Q		6.1	0.0 1.0	
Detector 1 Type												
Detector 1 Channel				OITEX	OFEX					UITEX		
Detector 1 Extend (c)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	28.7		0.0	28.7		0.0	28.7		0.0	28.7	
Detector 2 Size(m)		20.7			20.7			20.7			20.7	
Detector 2 Type												
Detector 2 Channel												
Detector 2 Extend (c)		0.0			0.0			0.0			0.0	
Turn Tuno	Dorm	0.0		Dorm	0.0		Dorm	0.0			0.0	
Protocted Phases	Penn	INA O		Feim	INA G		Feilii	INA 0				
Protected Phases	0	2		G	0		0	0		4	4	
remilled mases	2			0			õ			4		

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/b)		
Link Distance (m)		
Confl Deds (#/br)		
Confl Bikes (#/hll)		
Deak Hour Factor		
Rus Blockages (#/br)		
Adi Flow (uph)		
Auj. Flow (vpii)		
Shared Lane Trailic (%)		
Lane Group Flow (vpn)		
Enter Blocked Intersection		
Lane Alignment		
Crosswalk Width(m)		
I wo way Left I urn Lane		
Headway Factor		
i urning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	3	3		5	5		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.25		0.03	0.58			0.33			0.00	
Control Delay	4.0	3.4		2.3	6.8			13.6			0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	4.0	3.4		2.3	6.8			13.6			0.0	
LOS	А	А		А	А			В			А	
Approach Delay		3.4			6.8			13.6				
Approach LOS		А			А			В				
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 7 (8%), Referenced to	phase 2:EBT	L and 6:WE	3TL, Start	of Green								
Natural Cycle: 80												
Control Type: Actuated-Coor	dinated											
Maximum v/c Ratio: 0.58												
Intersection Signal Delay: 5.9	)			lr	tersection	LOS: A						
Intersection Capacity Utilizati	on 65.3%			IC	CU Level of	Service C	;					
Analysis Period (min) 15												
Splits and Phases: 2: Elwo	od Dr & Mont	real Rd										
A												2

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53 s	5 s 32 s	
🗸 Ø6 (R)	<b>#k</b> ø7 <b>*1</b> ø8	
53 s	5 s 32 s	

Lane Group	Ø3	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	6	6
Act Effct Green (s)	-	
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

# 1765 Montreal Road TIA 3: Elmsmere Rd & Montreal Rd

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Lane Group	FRT	FRR	W/RL	WRT	NRI	NRR
Lane Configurations					NDL	- NDR
	<b>TT</b> 565	<b>[</b> ' 35	10	<b>TT</b>	<b>T</b> 31	28
Future Volume (vph)	565	35	19	1403	31	30
Ideal Elew (vphpl)	1800	1800	1900	1900	1900	1900
Storage Length (m)	1000	1000	70.2	1000	0.0	0.0
Storage Lanes		<u>۲۲.</u> 1	1 1		0.0	0.0
Taper Length (m)		1	76		76	U
Lane Litil Factor	0 95	1.00	1.0	0.95	1.0	1 00
Ped Bike Factor	0.55	0.97	1.00	0.55	0.98	1.00
Frt		0.57	1.00		0.00	
Flt Protected		0.000	0.950		0.978	
Satd Flow (prot)	3262	1502	1558	3325	1559	0
Elt Permitted	0202	1002	0 440	0020	0.978	U
Satd Flow (perm)	3262	1456	718	3325	1558	0
Right Turn on Red	0202	Yes	110	0020	1000	Yes
Satd Flow (RTOR)		35			38	100
Link Speed (k/h)	60			60	/0	
Link Distance (m)	280.3			02.2	237 Q	
Travel Time (s)	17 /			5.6	201.9	
Confl Pede (#/br)	17.4	5	5	5.0	۲۱.4 1	16
Confl Bikes (#/br)		- 5	- 0			1
Peak Hour Factor	1 00	1.00	1.00	1.00	1 00	1 00
Heavy Vehicles (%)	6%	30/	110/	1.00	6%	20/
Adi Elow (vob)	565	3%	10	4 70	21	2 70
Shared Lane Traffic (%)	505		19	1405	51	30
Lane Group Flow (uph)	565	35	10	1/02	60	0
Enter Blocked Intersection	000	35	19	1403	09	U
Enter Blocked Intersection	INO	N0	INO	INO	INO	N0
	Len	Right	Len	Len	Lett	Right
iviedian Width(m)	3.1			3.1	3.1	
	0.0			0.0	0.0	
Crosswaik vvidtn(m)	4.9			4.9	4.9	
Two way Left Turn Lane	4.00	4.00	4.00	4.00	4 00	4.00
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	-	14	24	^	24	14
Number of Detectors	- 2	1	1	- 2	1	
Detector Template	Thru	Right	Left	Thru	Left	
Leading Detector (m)	30.5	6.1	6.1	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)	1.8	6.1	6.1	1.8	6.1	
Detector 1 Type	CI+Ex	CI+Ex	CI+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	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases		2	6		8	
Detector Phase	2	2	6	6	8	

#### 1765 Montreal Road TIA 3: Elmsmere Rd & Montreal Rd

	-	$\rightarrow$	•	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	14.0	14.0			14.0	
Pedestrian Calls (#/hr)	5	5			8	
Act Effct Green (s)	71.7	71.7	71.7	71.7	9.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
v/c Ratio	0.22	0.03	0.03	0.53	0.34	
Control Delay	3.0	2.4	4.5	6.1	23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.0	2.4	4.5	6.1	23.0	
LOS	А	А	А	А	С	
Approach Delay	2.9			6.0	23.0	
Approach LOS	A			A	С	
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 50 (56%), Referenced	to phase 2:E	BT and 6:\	NBTL, Sta	rt of Greer		
Natural Cycle: 60						
Control Type: Actuated-Coord	inated					
Maximum v/c Ratio: 0.53						
Intersection Signal Delay: 5.7				In	tersection	LOS: A
Intersection Capacity Utilization	on 61.4%			IC	U Level of	Service B
Analysis Period (min) 15						

#### Splits and Phases: 3: Elmsmere Rd & Montreal Rd

→Ø2 (R)		
58 s		
₩ Ø6 (R)	- Ø8	
58 s	32 s	

# 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

2028 FB Traffic AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	<b>≜1</b> 6		5	<b>≜</b> 1₽			\$			\$	
Traffic Volume (veh/h)	16	627	0	0	1450	6	0	0	0	17	0	53
Future Volume (Veh/h)	16	627	0	0	1450	6	0	0	0	17	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	627	0	0	1450	6	0	0	0	17	0	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1456			627			1437	2115	314	1798	2112	728
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1456			483			1342	2061	151	1726	2058	728
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	68	100	86
cM capacity (veh/h)	461			1014			87	49	819	52	50	366
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	16	418	209	0	967	489	0	70				
Volume Left	16	0	0	0	0	0	0	17				
Volume Right	0	0	0	0	0	6	0	53				
cSH	461	1700	1700	1700	1700	1700	1700	149				
Volume to Capacity	0.03	0.25	0.12	0.00	0.57	0.29	0.00	0.47				
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0	0.0	16.5				
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	48.9				
Lane LOS	В						А	E				
Approach Delay (s)	0.3			0.0			0.0	48.9				
Approach LOS							А	E				
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			53.6%	IC	U Level of	Service			А			
Analysis Period (min)			15									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	**	1	×.	**	1	8	*	1	K	*	1
Traffic Volume (vph)	127	1151	161	70	661	24	249	125	206	51	112	77
Future Volume (vph)	127	1151	161	70	661	24	249	125	206	51	112	77
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2	1000	68.6	64.0	1000	21.3	27.4	1000	33.5	42 7	1000	33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	76		•	76		•	76		•	76		•
Lane Util Factor	1.00	0.95	1 00	1 00	0.95	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	1.00	0.00	0.98	1.00	0.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Frt	1.00		0.850	1.00		0.850	1.00		0.850	1.00		0.850
Fit Protected	0.950		0.000	0.950		0.000	0.950		0.000	0.950		0.000
Satd Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Flt Permitted	0.376	0200	1017	0 180	0000	1017	0.685		1017	0.677	1701	1011
Satd Flow (perm)	662	3293	1482	321	3390	1474	1183	1717	1495	848	1784	1492
Right Turn on Red	002	0200	Yes	021	0000	Yes	1100	17.17	Yes	0+0	1104	Yes
Satd Flow (RTOR)			161			50			41			77
Link Speed (k/b)		60	101		60	00		50	71		50	
Link Distance (m)		/05 7			372 /			636.1			150 0	
Travel Time (s)		20.7			22.4			/5.8			33.0	
Confl Peds (#/br)	5	23.1	1	1	22.5	5	6	45.0	3	3	55.1	6
Confl Bikes (#/hr)	J		1	1		5	0		1	0		1
Peak Hour Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1 00	1 00	1 00	1 00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	1.00	2%	2%
Adi Elow (vph)	107	1151	2 /0	2 /0	661	270	2/0	125	270	4J /0	2 /0	2 /0
Shared Lano Traffic (%)	121	1131	101	10	001	24	249	120	200	51	112	11
	107	1151	161	70	661	24	240	125	206	51	110	77
Enter Blocked Intersection	No	No	No	No	No	Z4 No	249 No	No	200 No	No	No	No
	Loft	Loff	Dicht	Loff	Loft	Dight	Loft	Loff	Dight	Loft	Loft	Dicht
Modian Width(m)	Leit	2.7	Right	Leit	2.7	Кіўні	Leit	2.7	Right	Leit	2.7	Right
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10			1.0			1.0			10	
		4.5			4.3			4.3			4.5	
Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turping Speed (k/b)	1.00	1.00	1.00	24	1.00	1.00	1.00	1.00	1.00	24	1.00	1.00
Number of Detectors	24	2	14	24	2	14	24	2	14	24	2	14
Detector Template	l off	Z	Picht	l off	Z	Pight	Loft	Z	Pight	Loft	Z	Picht
Leading Detector (m)	6 1	30.5	6 1	61	30.5	6 1	6 1	30.5	6 1	61	30.5	6 1
Trailing Detector (m)	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.0 6.1	1.8	6.1	6.1	0.0	0.0 6.1	6.1	0.0	6.1	6.1	1.8	6.1
Detector 1 Type	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev	CI+Ev
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Quouo (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0
Detector 2 Position(m)		1.0			1.0			1.0			1.0	
Detector 2 Type												
Detector 2 Channel												
Detector 2 Extend (c)		0.0			0.0			0.0			0.0	
	Porm	0.0 NA	Perm	Perm	0.0 NA	Perm	Perm		Perm	Perm	0.0 NA	Porm
Protected Phases	1. GIIII	- 2		i eiiii	N/A			N/۹.	i eiiii		11/4	i eiiii
Permitted Phases	2	2	2	6	U	6	Q	0	Q	Λ	4	Л
Notactor Phase	2	2	2	6	6	6	ں ع	8	0 	4	1	4
Detector i nase	2	2	2	0	0	0	0	0	0	4	4	4

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	43.0	43.0	43.0	43.0	43.0	43.0	47.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	52.2%	52.2%	52.2%	52.2%	52.2%	52.2%
Maximum Green (s)	36.6	36.6	36.6	36.6	36.6	36.6	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	1	1	1	5	5	5	3	3	3	6	6	6
Act Effct Green (s)	50.4	50.4	50.4	50.4	50.4	50.4	26.1	26.1	26.1	26.1	26.1	26.1
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.56	0.56	0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.34	0.62	0.18	0.39	0.35	0.03	0.73	0.25	0.45	0.21	0.22	0.16
Control Delay	17.4	17.4	3.1	20.3	10.5	0.6	39.9	23.3	21.8	22.6	22.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	17.4	3.1	20.3	10.5	0.6	39.9	23.3	21.8	22.6	22.6	5.0
LOS	В	В	А	С	В	А	D	С	С	С	С	A
Approach Delay		15.8			11.1			29.9			17.0	
Approach LOS		В			В			С			В	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 1 (1%). Referenced to	phase 2:EBT	L and 6:W	/BTL. Start	of Green								
Natural Cycle: 90			,									
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 17.	.4			Ir	tersection	LOS: B						
Intersection Capacity Utilizati	on 91.7%			IC	CU Level o	f Service F	:					
Analysis Period (min) 15												
Splits and Phases: 1: Blair	Rd & Montrea	al Rd										

🗢 Ø2 (R)		
43 s	47 s	
🕈 Ø6 (R)	Tos .	
43 s	47 s	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<b>X</b>	<b>A</b> 12		×.	<b>A</b> 12			4			4	
Traffic Volume (vph)	3	1461	28	28	740	3	13	1	24	1	0	3
Future Volume (vph)	3	1461	28	28	740	3	13	1	24	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6	1000	0.0	33.5	1000	0.0	0.0	1000	0.0	0.0	1000	0.0
Storage Lanes	1		0.0	1		0.0	0.0		0.0	0.0		0.0
Taper Length (m)	76		U	76		0	76		U	76		U
Lane Litil Factor	1.00	0.95	0.95	1.0	0.95	0.95	1.0	1 00	1 00	1.00	1 00	1 00
Ped Bike Factor	0.00	1.00	0.55	1.00	1.00	0.55	1.00	0.08	1.00	1.00	0.00	1.00
Frt	0.55	0 007			0 000			0.30			0.00	
Fit Protected	0 050	0.557		0 050	0.555			0.010			0.000	
Satd Flow (prot)	1605	32/11	٥	1605	3301	٥	٥	1566	٥	٥	1567	٥
Elt Dermitted	0.260	JZ4 I	U	0 126	JJZ I	0	0	0.715	U	0	1307	U
Fit Fermilled	0.300	2011	٥	0.130	2204	٥	٥	1120	٥	٥	1501	0
Bight Turn on Rod	030	3241	Voo	243	33Z I	Voo	U	1130	Voo	U	1001	Voo
Right Turn on Red		2	res		1	res		04	res		FC	res
Salu. Flow (RTOR)		د ۵			0			24			00	
Link Speed (k/n)		00			142 5			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
I ravel I ime (s)	•	22.3	-	-	6.8	•	•	8.7			7.3	•
Confl. Peds. (#/hr)	8		1	1		8	3		14	14		3
Confl. Bikes (#/hr)						1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	6%	22%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	2	2	5	0	0	0
Adj. Flow (vph)	3	1461	28	28	740	3	13	1	24	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1489	0	28	743	0	0	38	0	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	Cl+Ex		CI+Ex	Cl+Ex		CI+Ex	CI+Ex		CI+Ex	Cl+Ex	
Detector 1 Channel										-		
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	28.7		0.0	28.7		0.0	28.7		0.0	28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ev			CI+Ev			CI+Ev			CI+Ev	
Detector 2 Channel												
Detector 2 Extend (c)		0.0			0.0			0.0			0.0	
	Dorm	0.0		Dorm	0.0		Dorm	0.0		Dorm	0.0	
Protocted Phases	Femil	N/A O		Feim	INA G		Felli	0		Feilii		
Protected Phases	0	2		0	0		0	0		4	4	
remilled Phases	2			0			õ			4		

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/b)		
Link Distance (m)		
Confl Deds (#/br)		
Confl Bikes (#/hll)		
Deak Hour Factor		
Rus Blockages (#/br)		
Adi Flow (uph)		
Auj. Flow (vpii)		
Shared Lane Trailic (%)		
Lane Group Flow (vpn)		
Enter Blocked Intersection		
Lane Alignment		
Crosswalk Width(m)		
I wo way Left I urn Lane		
Headway Factor		
i urning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	7	7		8	8		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.60		0.15	0.29			0.26			0.02	
Control Delay	3.7	4.8		5.8	4.0			24.8			0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.7	4.8		5.8	4.0			24.8			0.2	
LOS	А	А		А	А			С			А	
Approach Delay		4.8			4.1			24.8			0.3	
Approach LOS		А			А			С			А	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 8 (9%), Referenced to	phase 2:EBT	L and 6:WE	BTL, Start	of Green								
Natural Cycle: 80												
Control Type: Actuated-Coordi	inated											
Maximum v/c Ratio: 0.60												
Intersection Signal Delay: 4.9				In	tersection I	LOS: A						
Intersection Capacity Utilizatio	n 67.1%			IC	CU Level of	Service C						
Analysis Period (min) 15												
Splits and Phases: 2. Elwoo	d Dr & Mont	real Rd										
						1	1					2

•Ø2(R)		-
53 s	5 s 32 s	
🗸 🖉 Ø6 (R)	ABOT TOS	
53 s	5 s 32 s	

Lane Group	Ø3	Ø7
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	5	5
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

# 1765 Montreal Road TIA 3: Elmsmere Rd & Montreal Rd

	-	$\mathbf{r}$	1	-	1	1
	EDT	EDD			NDL	NDD
	EBI	EBR	WBL	VBI	NBL	NBK
	<b>TT</b>	<u>r</u>	<b></b>	<b>TT</b>	M N	20
Traffic Volume (vpn)	1364	45	30	697	33	39
Future Volume (vph)	1364	45	30	697	33	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		42.7	79.2		0.0	0.0
Storage Lanes		1	1		1	0
Taper Length (m)			7.6		7.6	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	
Frt		0.850			0.927	
Flt Protected			0.950		0.978	
Satd. Flow (prot)	3262	1502	1558	3325	1571	0
Flt Permitted			0.177		0.978	
Satd. Flow (perm)	3262	1456	290	3325	1569	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		39			39	
Link Speed (k/h)	60			60	40	
Link Distance (m)	289.3			93.2	237.9	
Travel Time (s)	17.4			5.6	21.4	
Confl. Peds. (#/hr)		5	5		2	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adi, Flow (vph)	1364	45	30	697	33	39
Shared Lane Traffic (%)	1001	10	00	501	00	00
Lane Group Flow (vph)	1364	45	30	697	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alianment		Right	Loft			Right
Median Width(m)	2.7	Taynt	LEIL	3.7	27	Nyn
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	0.0			0.0	0.0	
	4.9			4.9	4.9	
Two way Leit Turn Lane	4.00	1.00	4.00	4.00	1.00	1.00
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	•	14	24	•	24	14
Number of Detectors	2	1	1	- 2	1	
Detector Template	Thru	Right	Left	l hru	Left	
Leading Detector (m)	30.5	6.1	6.1	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)	1.8	6.1	6.1	1.8	6.1	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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	CI+Fx			Cl+Fx		
Detector 2 Channel						
Detector 2 Extend (c)	0.0			0.0		
	0.0 NA	Perm	Perm	NA	Perm	
Protected Phases	۲۹/۲۱ ۲			AVI A		
Dormitted Dises	2	0	6	0	0	
Permitted Phases	^	2	0	^	ŏ	
Detector Phase	2	2	6	6	8	
Switch Phase						

# 1765 Montreal Road TIA 3: Elmsmere Rd & Montreal Rd

	-	$\mathbf{F}$	4	-	1	1		
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR		
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0			
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2			
Total Split (s)	58.0	58.0	58.0	58.0	32.0			
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%			
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8			
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3			
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2			
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			
Recall Mode	C-Max	C-Max	C-Max	C-Max	None			
Walk Time (s)	7.0	7.0			7.0			
Flash Dont Walk (s)	14.0	14.0			14.0			
Pedestrian Calls (#/hr)	5	5			7			
Act Effct Green (s)	71.6	71.6	71.6	71.6	9.7			
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11			
v/c Ratio	0.53	0.04	0.13	0.26	0.35			
Control Delay	4.5	2.0	6.3	4.1	23.3			
Queue Delay	0.0	0.0	0.0	0.0	0.0			
Total Delay	4.5	2.0	6.3	4.1	23.3			
LOS	A	А	А	А	С			
Approach Delay	4.4			4.2	23.3			
Approach LOS	A			A	С			
Intersection Summary	0.4							
Area Type:	Other							
Cycle Length: 90								
Actuated Cycle Length: 90								
Offset: 52 (58%), Referenced	to phase 2:E	BI and 6:\	NBTL, Sta	rt of Green	1			
Natural Cycle: 60								
Control Type: Actuated-Coord	inated							
Maximum V/c Ratio: 0.53						<u> </u>		
Intersection Signal Delay: 5.0				In	tersection	LOS: A		
Intersection Capacity Utilizatio	n 57.5%			IC	U Level of	Service B		
Analysis Period (min) 15								
Splits and Phases: 3: Elmsn	nere Rd & M	ontreal Rd						
58 s								
T 06 (R)							× 08	
58 s							32 s	

# 1765 Montreal Road TIA 4: Montreal Rd & Beckenham Ln

2028 FB Traffic PM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	<b>≜1</b> ≽		5	A12≽			\$			\$	
Traffic Volume (veh/h)	71	1410	0	0	742	24	0	0	0	9	0	29
Future Volume (Veh/h)	71	1410	0	0	742	24	0	0	0	9	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	71	1410	0	0	742	24	0	0	0	9	0	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.76			0.76	0.76	0.76	0.76	0.76	
vC, conflicting volume	766			1410			1952	2318	705	1601	2306	383
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	766			900			1616	2099	0	1152	2083	383
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			100	100	100	92	100	95
cM capacity (veh/h)	843			568			47	36	821	108	36	615
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	71	940	470	0	495	271	0	38				
Volume Left	71	0	0	0	0	0	0	9				
Volume Right	0	0	0	0	0	24	0	29				
cSH	843	1700	1700	1700	1700	1700	1700	291				
Volume to Capacity	0.08	0.55	0.28	0.00	0.29	0.16	0.00	0.13				
Queue Length 95th (m)	2.1	0.0	0.0	0.0	0.0	0.0	0.0	3.4				
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	19.2				
Lane LOS	А						А	С				
Approach Delay (s)	0.5			0.0			0.0	19.2				
Approach LOS							А	С				
Intersection Summarv												
Average Delay			0.6									
Intersection Capacity Utilization			57.8%	IC	U Level of	Service			В			
Analysis Period (min)			15						2			

#### 4: Montreal Rd & Beckenham Ln AM Peak

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ľ	<b>≜</b> î≽		ľ	<b>↑</b> ĵ≽			\$			÷	
Traffic Volume (veh/h)	16	627	0	0	1450	6	0	0	0	10	0	53
Future Volume (Veh/h)	16	627	0	0	1450	6	0	0	0	10	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	627	0	0	1450	6	0	0	0	10	0	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1456			627			1437	2115	314	1798	2112	728
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1456			483			1342	2061	151	1726	2058	728
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	81	100	86
cM capacity (veh/h)	461			1014			87	49	819	52	50	366
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	16	418	209	0	967	489	0	63				
Volume Left	16	0	0	0	0	0	0	10				
Volume Right	0	0	0	0	0	6	0	53				
cSH	461	1700	1700	1700	1700	1700	1700	188				
Volume to Capacity	0.03	0.25	0.12	0.00	0.57	0.29	0.00	0.34				
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0	0.0	10.6				
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	33.6				
Lane LOS	В						А	D				
Approach Delay (s)	0.3			0.0			0.0	33.6				
Approach LOS							А	D				
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization	on		53.2%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

#### 4: Blair Rd & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	**	1	5	**	1	<u>8</u>	*	1	<u>8</u>	*	1
Traffic Volume (vph)	41	553	173	184	1233	24	149	94	60	27	164	136
Future Volume (vph)	41	553	173	184	1233	24	149	94	60	27	164	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2	1000	68.6	64.0		21.3	27.4	1000	33.5	42.7		33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	76		•	76		•	76		•	76		
Lane Util Factor	1 00	0.95	1 00	1 00	0.95	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	1.00	0.00			0.00	0.97		1.00	0.98	1 00	1.00	0.99
Frt	1.00		0 850			0.850			0.850	1.00		0.850
Elt Protected	0 950		0.000	0 950		0.000	0 950		0.000	0 950		0.000
Satd Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Elt Permitted	0 176	0200	1017	0 4 4 4	0000	1011	0.653		1011	0.696	1101	1011
Satd Flow (perm)	311	3293	1517	792	3390	1471	1132	1717	1493	871	1784	1498
Right Turn on Red	011	0200	Yes			Yes	1102		Yes	0.1		Yes
Satd Flow (RTOR)			173			50			60			41
Link Speed (k/h)		60			60			50			50	• •
Link Distance (m)		495 7			372.4			636 1			459.9	
Travel Time (s)		29.7			22.3			45.8			33.1	
Confl Peds (#/hr)	4	20.1			22.0	4		10.0	5	5	00.1	
Confl Bikes (#/hr)	•					4			•	•		1
Peak Hour Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	45%	2%	2%
Adi Flow (vph)	41	553	173	184	1233	24	149	94	60	27	164	136
Shared Lane Traffic (%)	••	000			.200		1.0	•				100
Lane Group Flow (vph)	41	553	173	184	1233	24	149	94	60	27	164	136
Enter Blocked Intersection	No	No	No	No	No	No.	No	No	No	No.	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Riaht	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	5.0	28.7		0.0	28.7	0.0		28.7	0.0		28.7	5.5
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			Cl+Fx			CI+Fx			CI+Ex	
Detector 2 Channel		. <u>_</u> ^			<u> </u>			. <u>_</u> ^			. <u>_</u> ^	

#### 4: Blair Rd & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	48.9%	48.9%	48.9%	48.9%	48.9%	48.9%	51.1%	51.1%	51.1%	51.1%	51.1%	51.1%
Maximum Green (s)	37.6	37.6	37.6	37.6	37.6	37.6	38.9	38.9	38.9	38.9	38.9	38.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	0	0	0	4	4	4	5	5	5	0	0	0
Act Effct Green (s)	56.3	56.3	56.3	56.3	56.3	56.3	20.2	20.2	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.21	0.27	0.17	0.37	0.58	0.03	0.59	0.24	0.16	0.14	0.41	0.37
Control Delay	15.8	10.0	2.8	8.5	8.4	0.4	38.3	26.9	6.3	24.5	30.5	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	10.0	2.8	8.5	8.4	0.4	38.3	26.9	6.3	24.5	30.5	20.4
LOS	В	В	A	A	A	A	D	C	A	C	C	C
Approach Delay		8.7			8.3			28.4			25.8	
Approach LOS		A			A			C			C	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 14 (16%), Reference	ed to phase	2:EBTL	and 6:WE	3TL, Start	of Green							
Natural Cycle: 80												
Control Type: Actuated-Coo	ordinated											
Maximum v/c Ratio: 0.59												
Intersection Signal Delay: 1	2.5			li	ntersectio	n LOS: B						
Intersection Capacity Utiliza	ation 87.2%	)		ļ	CU Level	of Service	εE					
Analysis Period (min) 15												
Onlite and Diseases A. Dis												





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# 7: Elwood Dr & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	<b>41</b>		5	<b>A</b> 1.			4			4	
Traffic Volume (vph)	2	602	9	15	1441	2	16	0	20	0	0	1
Future Volume (vph)	2	602	9	15	1441	2	16	0	20	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6		-	7.6		-	7.6		-	7.6		-
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00			0.99			0.98	
Frt		0.998						0.925			0.865	
Flt Protected	0.950			0.950				0.978				
Satd, Flow (prot)	1695	3247	0	1695	3325	0	0	1585	0	0	1520	0
Flt Permitted	0.145		-	0.420		-	-	0.332	-	-		-
Satd, Flow (perm)	259	3247	0	747	3325	0	0	537	0	0	1520	0
Right Turn on Red			Yes			Yes	-		Yes	-		Yes
Satd, Flow (RTOR)		2						56			89	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
Travel Time (s)		22.3			6.8			8.7			7.3	
Confl. Peds. (#/hr)	5		3	3	0.0	5	3	•	6	6		3
Confl. Bikes (#/hr)			, T	· ·		4	•		•	, e		•
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	6%	22%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	2	2	5	0	0	0
Adi, Flow (vph)	2	602	9	15	1441	2	16	0	20	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	611	0	15	1443	0	0	36	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7	<b>J</b> •		3.7	<b>J</b> -		0.0	<b>J</b> -		0.0	<b>J</b> -
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util, Factor		
Ped Bike Factor		
Frt		
Elt Protected		
Satd Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl Peds (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Adi, Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		

#### 7: Elwood Dr & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		1	6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	2.0	2.0		2.0	2.0		Yes	Yes		Yes	Yes	
Venicle Extension (s)	3.U	3.U		3.U	3.U		3.0	3.U		3.U	3.0	
					C-Max		None	None		None	None	
VValk Time (S)	10.0	10.0		10.0	10.0		0.U 01.0	0.U 01.0		5.U 21.0	0.U	
Plash Done Walk (S)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
A of Effort Croop (a)	5 60 4	5 60 4		5 60 4	60.4		0	10.0		0	10.0	
Actuated a/C Patio	09.4	09.4		09.4	09.4			0.11			0.11	
v/c Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
Control Delay	1.0	3.4		2.4	6.6			13.6			0.00	
	4.0 0.0	0.0		2.4	0.0			0.0			0.0	
Total Delay	4.0	3.4		2.4	6.6			13.6			0.0	
	۰.۴ ۵	0.+ A		Δ.4	0.0 A			10.0 B			0.0 A	
Approach Delay	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	34		7.	6.6			13.6			7.	
Approach LOS		A			A			B				
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 7 (8%), Referenced	to phase 2:	EBTL and	6:WBTL	, Start of	Green							
Natural Cycle: 80												
Control Type: Actuated-Cod	ordinated											
Maximum v/c Ratio: 0.56												
Intersection Signal Delay: 5	5.8			Ir	ntersection	LOS: A						
Intersection Capacity Utiliza	ation 63.9%			10	CU Level o	of Service	B					
Analysis Period (min) 15												

#### Splits and Phases: 7: Elwood Dr & Montreal Rd





Lane Group	Ø3	Ø7
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	6	6
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		
# 13: Elmsmere Rd & Montreal Rd AM Peak

	-	$\rightarrow$	-	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	**	1	3	**	M	
Traffic Volume (vph)	546	35	19	1343	31	38
Future Volume (vph)	546	35	19	1343	31	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	1000	42 7	79.2	1000	0.0	0.0
Storage Lanes		11	1		1	0.0
Taper Length (m)			76		76	0
Lane I Itil Factor	0 95	1.00	1.00	0 95	1.00	1.00
Ped Bike Factor	0.00	0.07	1.00	0.00	0.08	1.00
Frt		0.850	1.00		0.00	
Flt Protected		0.000	0.950		0.020	
Satd Flow (prot)	3060	1502	1558	3305	1550	0
Elt Dermitted	5202	1002	0 / / 9	3325	0 079	0
Fit Fernilleu	3060	1/56	0.440 724	2205	0.9/0	0
Salu. Flow (periff)	3202	1450	131	JJZD	1000	Vaa
		res			20	res
Said. Flow (KTUK)	00	35		00	38	
LINK Speed (K/h)	60			60	40	
LINK Distance (m)	289.3			93.2	237.9	
Travel Time (s)	17.4	_	_	5.6	21.4	
Confl. Peds. (#/hr)		5	5		1	16
Confl. Bikes (#/hr)						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adj. Flow (vph)	546	35	19	1343	31	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	546	35	19	1343	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	
Detector Template	_ Thru	Right	Left	 Thru	Left	
Leading Detector (m)	30.5	6.1	6.1	30.5	6.1	
Trailing Detector (m)	0.0	0.1	0.1	0.0	0.1	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	1.8	6.1	6.1	1.8	6.1	
Detector 1 Type						
Detector 1 Channel						
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delev (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	CI+Ex			CI+Ex		
Detector 2 Channel						

	-	$\rightarrow$	•	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases		2	6		8	
Detector Phase	2	2	6	6	8	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	14.0	14.0			14.0	
Pedestrian Calls (#/hr)	5	5	74 7	74 7	8	
Act Effect Green (s)	/1./	/1./	/1./	/1./	9.6	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
V/C Ratio	0.21	0.03	0.03	0.51	0.34	
Control Delay	3.0	2.4	4.5	5.8	23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
	3.0	2.4	4.5	5.8	23.0	
LUS Approach Delay	A	A	A	A E O	22.0	
Approach LOS	2.9			5.ð	23.0	
Approach LOS	A			A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 50 (56%), Reference	ced to phase	e 2:EBT a	nd 6:WBT	L, Start c	of Green	
Natural Cycle: 60						
Control Type: Actuated-Co	ordinated					
Maximum v/c Ratio: 0.51						
Intersection Signal Delay:	5.6			Ir	ntersection	n LOS: A
Intersection Capacity Utiliz	ation 59.6%	1		(	JU Level	of Service B
Analysis Period (min) 15						

Splits and Phases: 13: Elmsmere Rd & Montreal Rd



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲.	<b>≜</b> 1₽		۲.	A			4			\$	
Traffic Volume (veh/h)	21	601	0	0	1391	8	0	0	0	21	0	65
Future Volume (Veh/h)	21	601	0	0	1391	8	0	0	0	21	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	601	0	0	1391	8	0	0	0	21	0	65
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	1399			601			1404	2042	300	1738	2038	700
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1399			466			1314	1988	149	1667	1984	700
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	64	100	83
cM capacity (veh/h)	484			1033			88	55	825	58	55	382
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	21	401	200	0	927	472	0	86				
Volume Left	21	0	0	0	0	0	0	21				
Volume Right	0	0	0	0	0	8	0	65				
cSH	484	1700	1700	1700	1700	1700	1700	161				
Volume to Capacity	0.04	0.24	0.12	0.00	0.55	0.28	0.00	0.53				
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0	20.3				
Control Delay (s)	12.8	0.0	0.0	0.0	0.0	0.0	0.0	50.3				
Lane LOS	В						А	F				
Approach Delay (s)	0.4			0.0			0.0	50.3				
Approach LOS							А	F				
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilizati	ion		53.0%	IC	CU Level of	of Service			А			
Analysis Period (min)			15									

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		att	<b>≜</b> 15		¥		 
Traffic Volume (veh/h)	2	621	1393	1	2	6	
Future Volume (Veh/h)	2	621	1393	1	2	6	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	2	621	1393	1	2	6	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)		204	326				
pX, platoon unblocked	0.84				0.86	0.84	
vC, conflicting volume	1394				1708	697	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1092				1304	264	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				98	99	
cM capacity (veh/h)	534				130	618	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1		
Volume Total	209	414	929	465	8		
Volume Left	2	0	0	0	2		
Volume Right	0	0	0	1	6		
cSH	534	1700	1700	1700	319		
Volume to Capacity	0.00	0.24	0.55	0.27	0.03		
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.6		
Control Delay (s)	0.2	0.0	0.0	0.0	16.6		
Lane LOS	Α				С		
Approach Delay (s)	0.1		0.0		16.6		
Approach LOS					С		
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilizat	ion		50.7%	IC	U Level c	of Service	А
Analysis Period (min)			15				

	<ul><li>✓</li></ul>	•	<b>†</b>	1	1	Ŧ	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	¥		1.			4	Ī
Traffic Volume (veh/h)	16	0	22	7	0	70	
Future Volume (Veh/h)	16	0	22	7	0	70	
Sign Control	Stop	Ţ	Free		Ţ	Free	
Grade	0%		0%			0%	
Peak Hour Factor	1.00	1 00	1 00	1 00	1 00	1 00	
Hourly flow rate (vph)	16	0	22	7	0	70	
Pedestrians	10	Ŭ		,	Ŭ	10	
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)			10110			110110	
Upstream signal (m)							
pX, platoon unblocked							
vC. conflicting volume	96	26			29		
vC1_stage 1 conf vol		20			20		
vC2, stage 2 conf vol							
vCu, unblocked vol	96	26			29		
tC, single (s)	6.4	6.2			4.1		
tC, 2 stage (s)							
tF (s)	3.5	33			22		
p0 queue free %	98	100			100		
cM capacity (veh/h)	904	1050			1584		
Direction Lone #	\//D 1	ND 1	<b>CD 1</b>				
Direction, Lane #							
	16	29	/0				
Volume Left	16	0	0				
	0	1700	0				
CSH	904	1700	1584				
Volume to Capacity	0.02	0.02	0.00				
Queue Length 95th (m)	0.4	0.0	0.0				
Control Delay (s)	9.1	0.0	0.0				
Lane LOS	A						
Approach Delay (s)	9.1	0.0	0.0				
Approach LOS	A						
Intersection Summary							
Average Delay			1.3				
Intersection Capacity Utili	ization		13.9%	IC	U Level o	of Service	
Analysis Period (min)			15				

## 4: Blair Rd & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	**	1	5	**	1	<b>N</b>	•	1	5	*	1
Traffic Volume (vph)	122	1109	173	70	639	24	237	121	200	50	108	74
Future Volume (vph)	122	1109	173	70	639	24	237	121	200	50	108	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2		68.6	64.0		21.3	27.4		33.5	42.7		33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6		•	7.6			7.6		•
Lane Util Factor	1 00	0.95	1 00	1 00	0.95	1 00	1.00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	1.00		0.98	1.00	0.00	0.97	1.00		0.99	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Flt Permitted	0.389	0200	1011	0 196	0000	1011	0.687		1011	0.679	1101	1011
Satd Flow (perm)	685	3293	1482	350	3390	1474	1187	1717	1495	851	1784	1492
Right Turn on Red		0200	Yes	000		Yes			Yes	001		Yes
Satd Flow (RTOR)			173			50			41			74
Link Speed (k/h)		60	110		60	00		50	••		50	
Link Distance (m)		495.7			372.4			636 1			459.9	
Travel Time (s)		29.7			22.3			45.8			33.1	
Confl Peds (#/hr)	5	20.1	1	1	22.0	5	6	10.0	3	3	00.1	6
Confl Bikes (#/hr)	Ŭ		1			Ŭ	Ū		1	v		1
Peak Hour Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	45%	2%	2%
Adi Flow (vph)	122	1109	173	70	639	24	237	121	200	50	108	74
Shared Lane Traffic (%)	122	1100	110	10	000	21	201	121	200	00	100	
Lane Group Flow (yph)	122	1109	173	70	639	24	237	121	200	50	108	74
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)	Lon	3.7	rugitu	Lon	37	rugin	Lon	3.7	rugin	Lon	3.7	rugin
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					1.0							
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	1.00	14	24	1.00	14	24	1.00	14	24	1.00	14
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	l eft	Thru	Right	l eft	Thru	Right	l eft	Thru	Right
Leading Detector (m)	61	30.5	61	61	30.5	6 1	61	30.5	61	61	30.5	61
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.0	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.0	6.1	1.8	6.0
Detector 1 Type	Cl+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Fx	Cl+Ex	CI+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel	OF EX	OI EX	OT EX	OF EX	OF EX	OT EX	OT EX	OF EX	OF EX	OF EX	OF EX	OF EX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			Cl+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												

## 4: Blair Rd & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	43.0	43.0	43.0	43.0	43.0	43.0	47.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	52.2%	52.2%	52.2%	52.2%	52.2%	52.2%
Maximum Green (s)	36.6	36.6	36.6	36.6	36.6	36.6	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lood/Log	0.4	0.4	0.4	0.4	0.4	0.4	1.1	1.1	1.1	1.1	1.1	1.1
Leau/Lag												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-May	C-May	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	7 0	7 0	7 0	7 0	7 0	7 0						7 0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/hr)	1	1	20.0	5	5	5	3	3	3	6	6	6
Act Effct Green (s)	51.2	51.2	51.2	51.2	51.2	51.2	25.3	25.3	25.3	25.3	25.3	25.3
Actuated q/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.31	0.59	0.19	0.35	0.33	0.03	0.71	0.25	0.44	0.21	0.22	0.16
Control Delay	16.4	16.4	3.1	17.2	10.2	0.6	39.4	23.7	22.0	23.1	23.0	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	16.4	3.1	17.2	10.2	0.6	39.4	23.7	22.0	23.1	23.0	5.2
LOS	В	В	А	В	В	А	D	С	С	С	С	A
Approach Delay		14.7			10.6			29.7			17.3	
Approach LOS		В			В			С			В	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90	I											
Offset: 1 (1%), Referenced	to phase 2	:EBTL an	d 6:WBTL	., Start of	Green							
Natural Cycle: 90												
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.71												
Intersection Signal Delay:	16.8			lı	ntersectio	n LOS: B	_					
Intersection Capacity Utiliz	ation 89.8%	)			CU Level	of Service	εE					
Analysis Period (min) 15												
Calita and Dhasas 4: Di	air Dd 9 Ma	ntraal Dd										





# 7: Elwood Dr & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲	A12		<u>۲</u>	<b>≜1</b> }			4			\$	
Traffic Volume (vph)	3	1410	28	28	719	3	13	1	24	1	0	3
Future Volume (vph)	3	1410	28	28	719	3	13	1	24	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00			1.00			0.98			0.99	
Frt		0.997			0.999			0.915			0.899	
Flt Protected	0.950			0.950				0.983			0.988	
Satd. Flow (prot)	1695	3241	0	1695	3321	0	0	1566	0	0	1567	0
Flt Permitted	0.369			0.146				0.715				
Satd. Flow (perm)	654	3241	0	261	3321	0	0	1138	0	0	1581	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1			24			56	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
Travel Time (s)		22.3			6.8			8.7			7.3	
Confl. Peds. (#/hr)	8		7	7		8	3		14	14		3
Confl. Bikes (#/hr)						1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	6%	22%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	2	2	5	0	0	0
Adj. Flow (vph)	3	1410	28	28	719	3	13	1	24	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1438	0	28	722	0	0	38	0	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel								• •				
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			Cl+Ex			CI+Ex			CI+Ex	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		

## 7: Elwood Dr & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase				(0.0								
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (S)	1.9	1.9		1.9	1.9		3.1	3.7		3.7	3.7	
Total Lost Time (s)	0.0	0.0		0.0	0.0			0.0			0.0	
	5.0	5.0		5.0	5.0		ne l	1.0		ne l	1.0	
Leau/Lay							Lay Yes	Lay Yes		Lay Yes	Lay Yes	
Vehicle Extension (s)	3.0	30		3.0	30		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7 0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	7	7		8	8		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4			10.0			10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.58		0.14	0.28			0.26			0.02	
Control Delay	3.7	4.4		5.4	4.0			24.8			0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.7	4.4		5.4	4.0			24.8			0.2	
LOS	А	Α		А	Α			С			Α	
Approach Delay		4.4			4.0			24.8			0.3	
Approach LOS		А			А			С			A	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 8 (9%), Referenced f	o phase 2	EBTL and	6:WBTL	., Start of	Green							
Natural Cycle: 80												
Control Type: Actuated-Coo	rdinated											
Maximum v/c Ratio: 0.58												
Intersection Signal Delay: 4.	6			Ir	ntersectior	LOS: A						
Intersection Capacity Utiliza	tion 65.7%			[(	CU Level o	ot Service	ЭC					
Analysis Period (min) 15												

#### Splits and Phases: 7: Elwood Dr & Montreal Rd





Lane Group	Ø3	Ø7
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	5	5
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		

# 13: Elmsmere Rd & Montreal Rd PM Peak

	-	$\rightarrow$	-	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	**	1	*	**	M	
Traffic Volume (voh)	1306	45	30	671	33	39
Future Volume (vph)	1306	45	30	671	33	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	1000	42 7	79.2	1000	0.0	0.0
Storage Lanes		۰. 1	1		0.0	0.0
Taper Length (m)			76		76	Ū
Lane I Itil Factor	0 95	1.00	1.0	0 95	1.00	1.00
Pod Rike Factor	0.30	0.07	1.00	0.30	0.00	1.00
Frt		0.57	1.00		0.99	
Elt Protected		0.000	0.050		0.321	
Sata Elow (prot)	2060	1500	1550	330E	0.370	0
Salu. Flow (pill)	3202	1902	0.400	3323	0.070	U
	2000	4450	0.190	2205	0.978	0
Said. Flow (perm)	3262	1450	311	3325	1569	U
Right Lurn on Red		Yes				Yes
Satd. Flow (RTOR)		41			39	
Link Speed (k/h)	60			60	40	
Link Distance (m)	289.3			93.2	237.9	
Iravel Time (s)	17.4			5.6	21.4	
Confl. Peds. (#/hr)		5	5		2	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adj. Flow (vph)	1306	45	30	671	33	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1306	45	30	671	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7	Ŭ		3.7	3.7	Ŭ
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	1.00	14	24	1.00	24	14
Number of Detectors	2	1	1	2	1	17
Detector Template	Thru	Right	∩ft	Thru	، ft ا	
Leading Detector (m)	30.5	6 1	6 1	30.5	6 1	
Trailing Detector (m)	50.5	0.1	0.1	0.0	0.1	
Detector 1 Desition(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)	1.8	0.1	6.1	1.8	6.1	
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX	CI+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			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

	-	$\rightarrow$	-	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases		2	6		8	
Detector Phase	2	2	6	6	8	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	14.0	14.0			14.0	
Pedestrian Calls (#/hr)	5	5			7	
Act Effct Green (s)	71.6	71.6	71.6	71.6	9.7	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
v/c Ratio	0.50	0.04	0.12	0.25	0.35	
Control Delay	4.2	1.9	6.0	4.0	23.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.2	1.9	6.0	4.0	23.3	
LOS	A	A	A	A	C	
Approach Delay	4.1			4.1	23.3	
Approach LOS	A			A	C	
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 90				-		
Offset: 52 (58%), Reference	ced to phase	e 2:EBT a	nd 6:WBT	L, Start o	f Green	
Natural Cycle: 60						
Control Type: Actuated-Co	ordinated					
Maximum v/c Ratio: 0.50						
Intersection Signal Delay:	4.7			lr	ntersectio	n LOS: A
Intersection Capacity Utiliz	ation 55.8%			10	U Level	ot Service B
Analysis Period (min) 15						

Splits and Phases: 13: Elmsmere Rd & Montreal Rd



	٦	-	$\rightarrow$	1	+	•	٩.	1	1	1	Ŧ	~
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲	<b>≜</b> 1,		٦	A			\$			\$	
Traffic Volume (veh/h)	81	1352	0	0	713	27	0	0	0	11	0	37
Future Volume (Veh/h)	81	1352	0	0	713	27	0	0	0	11	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	81	1352	0	0	713	27	0	0	0	11	0	37
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	740			1352			1908	2254	676	1564	2240	370
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	740			872			1589	2037	0	1146	2019	370
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			100			100	100	100	90	100	94
cM capacity (veh/h)	862			596			49	39	840	111	40	627
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	81	901	451	0	475	265	0	48				
Volume Left	81	0	0	0	0	0	0	11				
Volume Right	0	0	0	0	0	27	0	37				
cSH	862	1700	1700	1700	1700	1700	1700	303				
Volume to Capacity	0.09	0.53	0.27	0.00	0.28	0.16	0.00	0.16				
Queue Length 95th (m)	2.4	0.0	0.0	0.0	0.0	0.0	0.0	4.2				
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0	0.0	19.1				
Lane LOS	А						А	С				
Approach Delay (s)	0.5			0.0			0.0	19.1				
Approach LOS							А	С				
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utiliza	tion		56.1%	IC	CU Level of	of Service			В			
Analysis Period (min)			15									

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		Afb	<b>≜</b> 15		¥		
Traffic Volume (veh/h)	5	1358	737	2	1	4	
Future Volume (Veh/h)	5	1358	737	2	1	4	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	5	1358	737	2	1	4	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)		205	325				
pX, platoon unblocked	1.00				0.78	1.00	
vC, conflicting volume	739				1427	370	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	731				962	360	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	99				99	99	
cM capacity (veh/h)	866				197	634	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1		
Volume Total	458	905	491	248	5		
Volume Left	5	0	0	0	1		
Volume Right	0	0	0	2	4		
cSH	866	1700	1700	1700	439		
Volume to Capacity	0.01	0.53	0.29	0.15	0.01		
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.3		
Control Delay (s)	0.2	0.0	0.0	0.0	13.3		
Lane LOS	А				В		
Approach Delay (s)	0.1		0.0		13.3		
Approach LOS					В		
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilizat	ion		53.3%	IC	U Level o	of Service	
Analysis Period (min)			15				

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	- Y		4			स्	
Traffic Volume (veh/h)	10	0	95	13	0	38	
Future Volume (Veh/h)	10	0	95	13	0	38	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	10	0	95	13	0	38	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	140	102			108		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	140	102			108		
tC, single (s)	6.4	6.2			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	99	100			100		
cM capacity (veh/h)	854	954			1483		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	10	108	38				
Volume Left	10	0	0				
Volume Right	0	13	0				
cSH	854	1700	1483				
Volume to Capacity	0.01	0.06	0.00				
Queue Length 95th (m)	0.3	0.0	0.0				
Control Delay (s)	9.3	0.0	0.0				
Lane LOS	А						
Approach Delay (s)	9.3	0.0	0.0				
Approach LOS	А						
Intersection Summary							
Average Delay			0.6				
Intersection Capacity Utilization	on		16.1%	IC	CU Level o	of Service	А
Analysis Period (min)			15				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲	A		ሻ	¥î≽			4			\$	
Traffic Volume (veh/h)	21	601	0	0	1391	8	0	0	0	13	0	65
Future Volume (Veh/h)	21	601	0	0	1391	8	0	0	0	13	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	601	0	0	1391	8	0	0	0	13	0	65
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	1399			601			1404	2042	300	1738	2038	700
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1399			466			1314	1988	149	1667	1984	700
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	78	100	83
cM capacity (veh/h)	484			1033			88	55	825	58	55	382
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	21	401	200	0	927	472	0	78				
Volume Left	21	0	0	0	0	0	0	13				
Volume Right	0	0	0	0	0	8	0	65				
cSH	484	1700	1700	1700	1700	1700	1700	198				
Volume to Capacity	0.04	0.24	0.12	0.00	0.55	0.28	0.00	0.39				
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3				
Control Delay (s)	12.8	0.0	0.0	0.0	0.0	0.0	0.0	34.6				
Lane LOS	В						А	D				
Approach Delay (s)	0.4			0.0			0.0	34.6				
Approach LOS							А	D				
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utiliza	ation		52.5%	IC	CU Level of	of Service			А			
Analysis Period (min)			15									

## 4: Blair Rd & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	**	1	ሻ	**	1	5	•	1	5	•	1
Traffic Volume (vph)	42	579	182	192	1291	25	156	98	63	27	170	142
Future Volume (vph)	42	579	182	192	1291	25	156	98	63	27	170	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2		68.6	64.0		21.3	27.4		33.5	42.7		33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util, Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.97			0.98	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd, Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Flt Permitted	0.159			0.430			0.645			0.694		
Satd, Flow (perm)	281	3293	1517	767	3390	1471	1118	1717	1493	868	1784	1498
Right Turn on Red		0200	Yes			Yes			Yes			Yes
Satd, Flow (RTOR)			182			50			63			41
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		495.7			372.4			636.1			459.9	
Travel Time (s)		29.7			22.3			45.8			33.1	
Confl. Peds. (#/hr)	4					4			5	5		
Confl. Bikes (#/hr)						4				•		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	45%	2%	2%
Adi, Flow (vph)	42	579	182	192	1291	25	156	98	63	27	170	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	579	182	192	1291	25	156	98	63	27	170	142
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	Cl+Ex	CI+Ex	CI+Ex	CI+Ex	Cl+Ex	CI+Ex	CI+Ex
Detector 1 Channel	0. 2.0	•. =	••• =••	• =	•	•	0. =/	••• =••	<b>•</b> . <b>-</b>	•. =	• =	<b>•</b> . <b>–</b> <i>n</i>
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Fx			CI+Ex			CI+Ex	
Detector 2 Channel												

## 4: Blair Rd & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	48.9%	48.9%	48.9%	48.9%	48.9%	48.9%	51.1%	51.1%	51.1%	51.1%	51.1%	51.1%
Maximum Green (s)	37.6	37.6	37.6	37.6	37.6	37.6	38.9	38.9	38.9	38.9	38.9	38.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)	1.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0	32.0	32.0	32.0	32.0	32.0	32.0
Pedestrian Calls (#/nr)	0	55.0	0	4	4	4	5	5	00.6	0	0	0
Act Effect Green (S)	0.60	0.60	0.62	0.60	0.60	0.60	20.0	20.0	20.0	20.0	20.0	20.0
Actualed g/C Rallo	0.02	0.02	0.02	0.02	0.62	0.02	0.23	0.25	0.23	0.23	0.23	0.23
V/C Rallo Control Dolov	17 /	0.20	0.10	0.40	0.01	0.03	20.1	0.20	0.10	0.14	20.3	20.7
	0.0	10.5	2.7	9.7	9.5	0.0	0.0	20.7	0.1	24.2	0.0	20.7
Total Delay	17 /	10.3	2.7	0.0	0.0	0.0	30.1	26.7	6.1	24.2	30.3	20.7
	17. <del>4</del> R	10.5 B	Δ	Δ	Δ	0.0	55.1 D	20.7	Δ	24.2	00.0 C	20.7
Approach Delay	U	9.0	Π	А	93	Л	U	28.7		0	25.8	0
Approach LOS		υ.υ Δ			Δ			20.7 C			20.0 C	
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Ū			Ū	
	Other											
Area Type.	Other											
Actuated Cycle Length: 00												
Offect: 14 (16%) Peterope	od to phace		and 6:\ME		of Groon							
Natural Cycle: 00	eu lo priase	Z.EDIL		ore, Start	of Green							
Control Type: Actuated Coc	rdinated											
Maximum v/c Ratio: 0.61	Junaleu											
Intersection Signal Delay: 1	3.2			h	ntersectio	n I OS· B						
Intersection Canacity Litiliza	0.2 ation 88 9%			1		of Service	۶F					
Analysis Period (min) 15	aon 00.370			ľ			, L					
Splite and Dhasas: 4: Pla	ir Dd 8 Ma	ntroal Dd										



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# 7: Elwood Dr & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲	<b>4</b> 16		ሻ	<b>≜</b> 16			\$			\$	
Traffic Volume (vph)	2	629	9	15	1508	2	16	0	20	0	0	1
Future Volume (vph)	2	629	9	15	1508	2	16	0	20	0	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00	1.00			0.99			0.98	
Frt		0.998						0.925			0.865	
Flt Protected	0.950			0.950				0.978				
Satd. Flow (prot)	1695	3248	0	1695	3325	0	0	1585	0	0	1520	0
Flt Permitted	0.132			0.407				0.332				
Satd. Flow (perm)	236	3248	0	724	3325	0	0	537	0	0	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2						56			85	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
Travel Time (s)		22.3			6.8			8.7			7.3	
Confl. Peds. (#/hr)	5		3	3		5	3		6	6		3
Confl. Bikes (#/hr)						4						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	6%	22%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	2	2	5	0	0	0
Adj. Flow (vph)	2	629	9	15	1508	2	16	0	20	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	638	0	15	1510	0	0	36	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	CI+Ex		Cl+Ex	CI+Ex		Cl+Ex	Cl+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd, Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl Peds (#/hr)		
Confl Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/br)		
Adi, Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		

## 7: Elwood Dr & Montreal Rd AM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6			6.7			6.7	
Lead/Lag							Lag	Lag		Lag	Lag	
Lead-Lag Optimize?					• •		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/nr)	3	3		5	C 4		0	10.0		U	10.0	
Act Effect Green (S)	09.4	09.4		09.4	0 77			10.0			10.0	
Actualed g/C Rallo	0.77	0.77		0.77	0.77			0.11			0.11	
V/C RallO Control Dolov	0.01	0.25		0.03	0.59			13.6			0.00	
	4.0	0.0		2.3	0.9			13.0			0.0	
Total Delay	0.0	0.0 3.4		23	6.0			13.6			0.0	
	4.0 Δ	Δ		Δ	Δ			13.0 R			Δ	
Approach Delay		34			6.8			13.6				
Approach LOS		A			A			B				
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 7 (8%), Referenced	to phase 2:	EBTL and	6:WBTL	. Start of	Green							
Natural Cycle: 80				,								
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.59												
Intersection Signal Delay: 5	5.9			Ir	ntersectior	LOS: A						
Intersection Capacity Utiliza	ation 65.8%			10	CU Level o	of Service	с					
Analysis Period (min) 15												

#### Splits and Phases: 7: Elwood Dr & Montreal Rd





Lane Group	Ø3	Ø7
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	6	6
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

# 13: Elmsmere Rd & Montreal Rd AM Peak

	-	$\rightarrow$	-	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	**	1	3	**	M	
Traffic Volume (vph)	571	35	19	1406	31	38
Future Volume (vph)	571	35	19	1406	31	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	1000	42 7	79.2	1000	0.0	0.0
Storage Lanes		1	1		1	0.0
Taper Length (m)			76		76	U
Lane Litil Factor	0 95	1 00	1 00	0 95	1 00	1 00
Ped Bike Factor	0.00	0.97	1.00	0.00	0.98	1.00
Frt		0.850	1.00		0.926	
Flt Protected		0.000	0 950		0.978	
Satd Flow (prot)	3262	1502	1558	3325	1559	0
Elt Permitted	0202	1302	0 / 37	0020	0 078	U
Satd Flow (nerm)	3060	1/56	712	3305	1552	0
Dight Turn on Pod	5202	1400 Voc	113	5525	1000	Voc
		1 85			20	res
Salu. Flow (KTUK)	60	35		60	38	
Link Speed (k/n)	00			00	40	
LINK DIStance (m)	289.3			93.2	237.9	
Travel Time (S)	17.4	-	-	5.6	21.4	40
Confil. PedS. (#/nr)		5	5		1	16
Confl. Bikes (#/hr)	4.00	4.00	1.00	4.00	4.00	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adj. Flow (vph)	571	35	19	1406	31	38
Shared Lane Traffic (%)						•
Lane Group Flow (vph)	571	35	19	1406	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2	1	1	2	1	
Detector Template	Thru	Right	Left	Thru	Left	
Leading Detector (m)	30.5	6.1	6.1	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)	1.8	6.1	6.1	1.8	6.1	
Detector 1 Type	CI+Fx	Cl+Ex	CI+Ex	Cl+Fx	CI+Ex	
Detector 1 Channel	OT EX	OF EX	OF EX			
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 (e)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	28.7	0.0	0.0	28.7	0.0	
Detector 2 Sizo(m)	20.7 1 Ω			20.7 1 Ω		
Detector 2 Jize(III)						
Detector 2 Channel	OI+EX			UI+EX		
Defector Z Unannel						

Lane Group         EBT         EBR         WBL         WBT         NBL         NBR           Detector 2 Extend (s)         0.0         0.0         0.0         0.0           Turn Type         NA         Perm         NA         Perm           Protected Phases         2         6         8           Detector Phase         2         2         6         8           Detector Phase         2         2         6         8           Minimum Initial (s)         10.0         10.0         10.0         5.0           Minimum Split (s)         27.0         27.0         16.0         16.0         27.2           Total Split (%)         64.4%         64.4%         64.4%         35.6%         Maximum Green (s)         32.0         Total Split (%)         37.3         7.3.7         3.3         All-Red Time (s)         3.7         3.7         3.3         All-Red Time (s)         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.3         2.4         2.4         2.4         2.4         2.4         2.4         2.4         2.4         2.4         2.4         2.5		-	$\rightarrow$	•	-	1	1
Detector 2 Extend (s)         0.0         0.0           Turn Type         NA         Perm         NA         Perm           Protected Phases         2         6         8           Permitted Phases         2         6         8           Detector Phase         2         2         6         8           Switch Phase         2         2         6         8           Total Split (s)         0.0         0.0         32.0         7         7         3.3         3.1         3.0         3.0         3.0         3.0         3.0         3.0         3.0         <	Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type         NA         Perm         Perm         NA         Perm           Protected Phases         2         6         8           Detector Phase         2         2         6         8           Detector Phase         2         2         6         8           Minimum Initial (s)         10.0         10.0         10.0         5.0           Minimum Split (s)         27.0         27.0         16.0         16.0         27.2           Total Split (s)         58.0         58.0         58.0         32.0         Total Split (s)         52.0         52.0         52.0         52.0         25.8           Yellow Time (s)         3.7         3.7         3.7         3.7         3.3         All-Red Time (s)         2.3         2.3         2.3         2.9         Lost Time Adjust (s)         0.0         0.0         0.0         0.0         1.0         Total Lost Time (s)         6.0         6.0         6.2         Lead/Lag         Lead/Lag         Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0         3.0         3.0         Rome         Real Mode         C-Max         C-Max         C-Max         None         Vehicle Extension (s)         7	Detector 2 Extend (s)	0.0			0.0		
Protected Phases         2         6           Permitted Phases         2         6         8           Detector Phase         2         2         6         8           Switch Phase          10.0         10.0         10.0         5.0           Minimum Initial (s)         10.0         10.0         10.0         5.0         50.0           Minimum Initial (s)         27.0         27.0         16.0         16.0         27.2           Total Split (s)         58.0         58.0         58.0         32.0         52.0         52.0         52.0         25.8           Yellow Time (s)         3.7         3.7         3.7         3.7         3.3         All-Red Time (s)         2.3         2.3         2.3         2.9         Lost Time Adjust (s)         0.0         0.0         0.0         0.0         0.0         1.0         1.0         1.0         Total Lost Time (s)         5.0         6.0         6.0         6.2         Lead/Lag         Lead/Lag         Lead/Lag         Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0         3.0         3.0         1.0         Total Lost Time (s)         7.0         Total Lost Time (s)         7.0 <t< td=""><td>Turn Type</td><td>NA</td><td>Perm</td><td>Perm</td><td>NA</td><td>Perm</td><td></td></t<>	Turn Type	NA	Perm	Perm	NA	Perm	
Permitted Phases         2         6         8           Detector Phase         2         2         6         6         8           Switch Phase         7.0         10.0         10.0         10.0         5.0           Minimum Initial (s)         10.0         10.0         10.0         16.0         27.2           Total Split (s)         58.0         58.0         58.0         32.0         Total Split (%)         64.4%         64.4%         64.4%         35.6%           Maximum Green (s)         52.0         52.0         52.0         52.0         25.8         Yellow Time (s)         3.7         3.7         3.7         3.3           All-Red Time (s)         2.3         2.3         2.3         2.9         Lost Time Adjust (s)         0.0         0.0         0.0         0.0         1.0         1.0         Total Lost Time (s)         6.0         6.0         6.0         6.2         Lead/Lag         Lead/Lag         Recall Mode         C-Max         C-Max         C-Max         None         Walk Time (s)         7.0         7.0         Total Lost Time (s)         7.0         Total Log C-Max         None         C-Max         None         Walk Time (s)         7.1.7         71.7         71.7	Protected Phases	2			6		
Detector Phase         2         2         6         6         8           Switch Phase         Minimum Initial (s)         10.0         10.0         10.0         10.0         5.0           Minimum Split (s)         27.0         27.0         16.0         27.2         Total Split (s)         58.0         58.0         58.0         32.0           Total Split (s)         52.0         52.0         52.0         52.0         25.8         Yellow Time (s)         3.7         3.7         3.7         3.3           All-Red Time (s)         2.3         2.3         2.3         2.3         2.9         Lost Time Adjust (s)         0.0         0.0         0.0           Lost Time Adjust (s)         0.0         0.0         0.0         0.0         0.0         0.0         1.0         1.0         1.1         Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0 <td>Permitted Phases</td> <td></td> <td>2</td> <td>6</td> <td></td> <td>8</td> <td></td>	Permitted Phases		2	6		8	
Switch Phase         Minimum Initial (s)       10.0       10.0       10.0       5.0         Minimum Split (s)       27.0       27.0       16.0       16.0       27.2         Total Split (s)       58.0       58.0       58.0       58.0       32.0         Total Split (s)       64.4%       64.4%       64.4%       64.4%       65.6%         Maximum Green (s)       52.0       52.0       52.0       25.8       23       2.3       2.3       2.9         Lost Time Adjust (s)       0.0       0.0       0.0       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.0       6.2       Lead/Lag         Lead/Lag       Lead/Lag       Lead/Lag       Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0         Recall Mode       C-Max       C-Max       C-Max       None       Walk       Minimum Pedestrian Calls (#hr)       5       5       8         Act Effot Green (s)       71.7       71.7       71.7       71.7       9.6       Actated g/C Ratio       0.80       0.80       0.80       0.11       v/c Ratio       0.22       0.03       0.33       0.34	Detector Phase	2	2	6	6	8	
Minimum Initial (s)       10.0       10.0       10.0       10.0       5.0         Minimum Split (s)       27.0       27.0       16.0       16.0       27.2         Total Split (s)       58.0       58.0       58.0       58.0       32.0         Total Split (%)       64.4%       64.4%       64.4%       64.4%       35.6%         Maximum Green (s)       52.0       52.0       52.0       52.8       Yellow Time (s)       3.7       3.7       3.7       3.3         All-Red Time (s)       2.3       2.3       2.3       2.3       2.9       Lost Time Adjust (s)       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.0       6.2       Lead/Lag         Lead-Lag Optimize?       Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0         Vehicle Extension (s)       7.0       7.0       7.0       7.0       7.0         Flash Dont Walk (s)       14.0       14.0       14.0       14.0       Pedestrian Calls (#/hr)       5       5       8         Act Effet Green (s)       71.7       71.7       71.7       71.7       9.6       Actuated g/C Ratio       0.22 <td>Switch Phase</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Switch Phase						
Minimum Split (s)       27.0       27.0       16.0       16.0       27.2         Total Split (s)       58.0       58.0       58.0       58.0       32.0         Total Split (%)       64.4%       64.4%       64.4%       64.4%       35.6%         Maximum Green (s)       52.0       52.0       52.0       25.8         Yellow Time (s)       3.7       3.7       3.7       3.3         All-Red Time (s)       2.3       2.3       2.3       2.9       Lost Time Adjust (s)       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.2       Lead/Lag       Lead/Lag       Lead/Lag       Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0       Rone       Walk Time (s)       7.0       7.0       7.0       7.0       Flash Dont Walk (s)       14.0       14.0       Pedestrian Calls (#/hr)       5       5       8       Act Effect Green (s)       71.7       71.7       71.7       9.6       Actuated g/C Ratio       0.80       0.80       0.80       0.31       v/c Ratio       0.22       0.03       0.33       0.34       Control Delay       3.0       2.4       4.5       6.1       23.0       <	Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Total Split (s)       58.0       58.0       58.0       58.0       32.0         Total Split (%)       64.4%       64.4%       64.4%       64.4%       35.6%         Maximum Green (s)       52.0       52.0       52.0       25.8         Yellow Time (s)       3.7       3.7       3.7       3.7       3.3         All-Red Time (s)       2.3       2.3       2.3       2.9       Lost Time Adjust (s)       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.0       6.2       Lead/Lag         Lead/Lag         7.0       7.0       7.0         Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0         Recall Mode       C-Max       C-Max       C-Max       None         Walk Time (s)       7.0       7.0       7.0         Flash Dont Walk (s)       14.0       14.0       14.0         Pedestrian Calls (#/hr)       5       5       8         Act Effot Green (s)       71.7       71.7       71.7       9.6         Actuated g/C Ratio       0.80       0.80       0.80       0.11       v/c Ratio	Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (%)       64.4%       64.4%       64.4%       64.4%       35.6%         Maximum Green (s)       52.0       52.0       52.0       52.0       25.8         Yellow Time (s)       3.7       3.7       3.7       3.7       3.3         All-Red Time (s)       2.3       2.3       2.3       2.3       2.9         Lost Time Adjust (s)       0.0       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.2       Lead/Lag         Lead-Lag       Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0         Recall Mode       C-Max       C-Max       C-Max       None       Walk Time (s)       7.0       7.0         Flash Dont Walk (s)       14.0       14.0       14.0       14.0       14.0       14.0         Pedestrian Calls (#hr)       5       5       8       Act Effct Green (s)       71.7       71.7       71.7       9.6         ActLated g/C Ratio       0.80       0.80       0.80       0.80       0.11       w/c Ratio         V/c Ratio       0.22       0.03       0.03       0.53       0.34         Control Delay	Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Maximum Green (s)       52.0       52.0       52.0       52.0       25.8         Yellow Time (s)       3.7       3.7       3.7       3.7       3.3         All-Red Time (s)       2.3       2.3       2.3       2.3       2.9         Lost Time Adjust (s)       0.0       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.2       Lead/Lag         Lead/Lag       Lead/Lag       Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0         Vehicle Extension (s)       7.0       7.0       7.0       7.0       Flash Dont Walk (s)       14.0       14.0         Pedestrian Calls (#hr)       5       5       8       Act Effct Green (s)       71.7       71.7       71.7       9.6         Act Effct Green (s)       71.7       71.7       71.7       71.7       9.6       Act ated g/C Ratio       0.80       0.80       0.80       0.11         v/c Ratio       0.22       0.03       0.03       0.53       0.34       Control Delay       3.0       2.4       4.5       6.1       23.0         Queue Delay       0.0       0.0       0.0       0.0       0	Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Yellow Time (s)       3.7       3.7       3.7       3.7       3.7       3.8         All-Red Time (s)       2.3       2.3       2.3       2.3       2.9         Lost Time Adjust (s)       0.0       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.2       Lead/Lag         Lead-Lag Optimize?       Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0         Vehicle Extension (s)       3.0       3.0       3.0       3.0       3.0       3.0         Recall Mode       C-Max       C-Max       C-Max       None         Walk Time (s)       7.0       7.0       7.0         Flash Dont Walk (s)       14.0       14.0       14.0         Pedestrian Calls (#/hr)       5       5       8         Act Effct Green (s)       71.7       71.7       71.7       9.6         Actuated g/C Ratio       0.80       0.80       0.80       0.11       v/c Ratio         Veative Delay       3.0       2.4       4.5       6.1       23.0         Queue Delay       0.0       0.0       0.0       0.0       0.0         LOS	Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
All-Red Time (s)       2.3       2.3       2.3       2.3       2.9         Lost Time Adjust (s)       0.0       0.0       0.0       0.0       0.0         Total Lost Time (s)       6.0       6.0       6.0       6.2         Lead-Lag Optimize?       Vehicle Extension (s)       3.0       3.0       3.0       3.0         Vehicle Extension (s)       7.0       7.0       7.0       7.0         Flash Dont Walk (s)       14.0       14.0       14.0       Pedestrian Calls (#hr)       5       5       8         Act Effct Green (s)       71.7       71.7       71.7       9.6       Actuated g/C Ratio       0.80       0.80       0.80       0.11       w/c Ratio       0.22       0.03       0.03       0.53       0.34         Control Delay       3.0       2.4       4.5       6.1       23.0       23.0       LoS       A       A       A       C       Approach LOS       A       A       A       C       Approach LOS       A       A       A       C       Approach LOS       A       A       A       C       Actasted Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green       Natural Cycle: 60       Control Type: Actuated-Coordinated </td <td>Yellow Time (s)</td> <td>3.7</td> <td>3.7</td> <td>3.7</td> <td>3.7</td> <td>3.3</td> <td></td>	Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
Lost Time Adjust (s)         0.0         0.0         0.0         0.0         0.0           Total Lost Time (s)         6.0         6.0         6.0         6.0         6.2           Lead/Lag         Lead-Lag Optimize?         Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0           Recall Mode         C-Max         C-Max         C-Max         C-Max         None           Walk Time (s)         7.0         7.0         7.0         Flash Dont Walk (s)         14.0           Pedestrian Calls (#/hr)         5         5         8         Act Effct Green (s)         71.7         71.7         9.6           Actuated g/C Ratio         0.80         0.80         0.80         0.80         0.11         v/c Ratio         0.22         0.03         0.03         0.53         0.34           Control Delay         3.0         2.4         4.5         6.1         23.0         Queue Delay         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0	All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Total Lost Time (s)         6.0         6.0         6.0         6.0         6.0         6.2           Lead/Lag         Lead-Lag Optimize?         Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0           Weik Time (s)         7.0         7.0         7.0         7.0         Flash Dont Walk (s)         14.0         14.0         14.0           Pedestrian Calls (#/hr)         5         5         8         Act Effct Green (s)         71.7         71.7         71.7         9.6           Actuated g/C Ratio         0.80         0.80         0.80         0.80         0.11         w/c Ratio         0.22         0.03         0.03         0.53         0.34           Control Delay         3.0         2.4         4.5         6.1         23.0         Queue Delay         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         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         0.0 <t< td=""><td>Lost Time Adjust (s)</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td></td></t<>	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Lead/Lag Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 Recall Mode C-Max C-Max C-Max C-Max None Walk Time (s) 7.0 7.0 Flash Dont Walk (s) 14.0 14.0 Pedestrian Calls (#/hr) 5 5 8 Act Effct Green (s) 71.7 71.7 71.7 71.7 9.6 Actuated g/C Ratio 0.80 0.80 0.80 0.80 0.11 v/c Ratio 0.22 0.03 0.03 0.53 0.34 Control Delay 3.0 2.4 4.5 6.1 23.0 Queue Delay 0.0 0.0 0.0 0.0 0.0 Total Delay 3.0 2.4 4.5 6.1 23.0 Queue Delay 0.0 0.0 0.0 0.0 Total Delay 3.0 2.4 4.5 6.1 23.0 LOS A A A A A C Approach Delay 2.9 6.1 23.0 Approach LOS A A C Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 90 Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio 0.53 Intersection Signal Delay: 5.7 Intersection LOS: A Intersection Capacity Utilization 61.4% ICU Level of Service B	Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead-Lag Optimize?           Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0           Recall Mode         C-Max         C-Max         C-Max         C-Max         None           Walk Time (s)         7.0         7.0         7.0         7.0           Flash Dont Walk (s)         14.0         14.0         14.0         14.0           Pedestrian Calls (#/hr)         5         5         8           Act Effct Green (s)         71.7         71.7         71.7         9.6           Actuated g/C Ratio         0.80         0.80         0.80         0.11           v/c Ratio         0.22         0.03         0.03         0.53         0.34           Control Delay         3.0         2.4         4.5         6.1         23.0           Queue Delay         0.0         0.0         0.0         0.0         10.0         10.0           Total Delay         3.0         2.4         4.5         6.1         23.0         2.0           LOS         A         A         A         C         A         C         A           Approach LOS         A         A         A         C         A         C	Lead/Lag						
Vehicle Extension (s)         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         3.0         Recall Mode         C-Max         C-Max         C-Max         None           Walk Time (s)         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0         7.0	Lead-Lag Optimize?						
Recall Mode         C-Max         C-Max         C-Max         C-Max         C-Max         C-Max         None           Walk Time (s)         7.0         7.0         7.0         7.0         7.0           Flash Dont Walk (s)         14.0         14.0         14.0         14.0           Pedestrian Calls (#/hr)         5         5         8           Act Effet Green (s)         71.7         71.7         71.7         9.6           Actuated g/C Ratio         0.80         0.80         0.80         0.11           v/c Ratio         0.22         0.03         0.03         0.53         0.34           Control Delay         3.0         2.4         4.5         6.1         23.0           Queue Delay         0.0         0.0         0.0         0.0         0.0           Total Delay         3.0         2.4         4.5         6.1         23.0           LOS         A         A         A         C         Approach LOS         A         A         C           Approach LOS         A         A         A         C         C         Atera Type:         Other         Cycle Length: 90         Cycle Length: 90         Coffset: 50 (56%), Referenced to phase 2:EBT a	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Walk Time (s)         7.0         7.0         7.0           Flash Dont Walk (s)         14.0         14.0         14.0           Pedestrian Calls (#/hr)         5         5         8           Act Effct Green (s)         71.7         71.7         71.7         9.6           Actuated g/C Ratio         0.80         0.80         0.80         0.11           v/c Ratio         0.22         0.03         0.03         0.53         0.34           Control Delay         3.0         2.4         4.5         6.1         23.0           Queue Delay         0.0         0.0         0.0         0.0         10.0           Total Delay         3.0         2.4         4.5         6.1         23.0           Queue Delay         0.0         0.0         0.0         0.0         0.0           Total Delay         3.0         2.4         4.5         6.1         23.0           LOS         A         A         A         C         Approach LOS         A         A         C           Intersection Summary         2.9         6.1         23.0         Approach LOS         A         C         Intersection Sumary         Actuated Cycle Length: 90         Actua	Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Flash Dont Walk (s)       14.0       14.0       14.0         Pedestrian Calls (#/hr)       5       5       8         Act Effct Green (s)       71.7       71.7       71.7       71.7       9.6         Actuated g/C Ratio       0.80       0.80       0.80       0.80       0.11         v/c Ratio       0.22       0.03       0.03       0.53       0.34         Control Delay       3.0       2.4       4.5       6.1       23.0         Queue Delay       0.0       0.0       0.0       0.0       10.0         Total Delay       3.0       2.4       4.5       6.1       23.0         LOS       A       A       A       C       Approach Delay       2.9       6.1       23.0         LOS       A       A       A       C       Ac       A       C         Approach LOS       A       A       A       C       Ac       C       Intersection Summary         Area Type:       Other       Other       Cycle Length: 90       Green       Start of Green       Natural Cycle: 60       Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.53       Intersection Signal Delay: 5.7       Intersection LOS: A         Int	Walk Time (s)	7.0	7.0			7.0	
Pedestrian Calls (#/hr)       5       5       8         Act Effct Green (s)       71.7       71.7       71.7       71.7       9.6         Actuated g/C Ratio       0.80       0.80       0.80       0.80       0.11         v/c Ratio       0.22       0.03       0.03       0.53       0.34         Control Delay       3.0       2.4       4.5       6.1       23.0         Queue Delay       0.0       0.0       0.0       0.0       100         Total Delay       3.0       2.4       4.5       6.1       23.0         LOS       A       A       A       C       Approach Delay       2.9       6.1       23.0         LOS       A       A       A       C       Approach LOS       A       C         Approach LOS       A       A       A       C       C       Intersection Summary         Area Type:       Other       Other       C       C       C       Intersection Cape (See)       C       C         Offset: 50       (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green       Natural Cycle: 60       C       C       C         Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.53	Flash Dont Walk (s)	14.0	14.0			14.0	
Act Effet Green (s)       71.7       71.7       71.7       71.7       71.7       9.6         Actuated g/C Ratio       0.80       0.80       0.80       0.80       0.11         v/c Ratio       0.22       0.03       0.03       0.53       0.34         Control Delay       3.0       2.4       4.5       6.1       23.0         Queue Delay       0.0       0.0       0.0       0.0       0.0         Total Delay       3.0       2.4       4.5       6.1       23.0         LOS       A       A       A       C       Approach Delay       2.9       6.1       23.0         LOS       A       A       A       C       Intersection Summary       Acc         Area Type:       Other       Other       Cycle Length: 90       Actuated Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green       Natural Cycle: 60       Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.53       Intersection LOS: A       Intersection LOS: A         Intersection Signal Delay: 5.7       Intersection LOS: A       ICU Level of Service B	Pedestrian Calls (#/hr)	5	5			8	
Actuated g/C Ratio         0.80         0.80         0.80         0.80         0.11           v/c Ratio         0.22         0.03         0.03         0.53         0.34           Control Delay         3.0         2.4         4.5         6.1         23.0           Queue Delay         0.0         0.0         0.0         0.0         0.0           Total Delay         3.0         2.4         4.5         6.1         23.0           LOS         A         A         A         C         A           Approach Delay         2.9         6.1         23.0         Approach LOS         A         A         C           Approach LOS         A         A         A         C         C         Intersection Summary           Area Type:         Other         Other         C         C         C         C           Cycle Length: 90         Other         Other         C         C         C         C           Natural Cycle: 60         Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7         Intersection LOS: A           Intersection Capacity Utilization 61.4%         ICU Level of Service B         Academic Amin A/C         ICU Level of	Act Effect Green (s)	/1./	(1./	(1./	(1.7	9.6	
v/c Ratio       0.22       0.03       0.03       0.53       0.34         Control Delay       3.0       2.4       4.5       6.1       23.0         Queue Delay       0.0       0.0       0.0       0.0       0.0         Total Delay       3.0       2.4       4.5       6.1       23.0         LOS       A       A       A       C         Approach Delay       2.9       6.1       23.0         Approach LOS       A       A       C         Approach LOS       A       A       C         Intersection Summary       A       A       C         Area Type:       Other       Other       Cycle Length: 90         Actuated Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green       Natural Cycle: 60         Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.53       Intersection LOS: A         Intersection Signal Delay: 5.7       Intersection LOS: A       ICU Level of Service B         Anaching Dariad (min) 45       ICU Level of Service B       A	Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
Control Delay         3.0         2.4         4.5         6.1         23.0           Queue Delay         0.0         0.0         0.0         0.0         0.0           Total Delay         3.0         2.4         4.5         6.1         23.0           LOS         A         A         A         C         Approach Delay         2.9         6.1         23.0           Approach Delay         2.9         6.1         23.0         Approach LOS         A         A         C           Approach LOS         A         A         A         C         C         Intersection Summary         Area Type:         Other         Cycle Length: 90         Cycle Length: 90         Coffset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green         Natural Cycle: 60         Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7         Intersection LOS: A           Intersection Capacity Utilization 61.4%         ICU Level of Service B         Apachagin Dariad (min) 45         ICU Level of Service B	v/c Ratio	0.22	0.03	0.03	0.53	0.34	
Queue Delay         0.0         0.0         0.0         0.0         0.0         0.0           Total Delay         3.0         2.4         4.5         6.1         23.0           LOS         A         A         A         A         C           Approach Delay         2.9         6.1         23.0           Approach LOS         A         A         C           Intersection Summary         A         C           Area Type:         Other         C           Cycle Length: 90         Actuated Cycle Length: 90         Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green           Natural Cycle: 60         Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53         Intersection LOS: A           Intersection Signal Delay: 5.7         Intersection LOS: A         ICU Level of Service B           Analytic Daried (min) 45         ICU Level of Service B         ICU Level of Service B	Control Delay	3.0	2.4	4.5	6.1	23.0	
Total Delay       3.0       2.4       4.5       6.1       23.0         LOS       A       A       A       A       C         Approach Delay       2.9       6.1       23.0         Approach LOS       A       A       C         Intersection Summary       A       C         Area Type:       Other       C         Cycle Length: 90       Actuated Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green         Natural Cycle: 60       Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7       Intersection LOS: A         Intersection Capacity Utilization 61.4%       ICU Level of Service B	Queue Delay	0.0	0.0	0.0	0.0	0.0	
LOS       A       A       A       A       C         Approach Delay       2.9       6.1       23.0         Approach LOS       A       A       C         Intersection Summary       Area Type:       Other         Cycle Length: 90       Other       C         Actuated Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green         Natural Cycle: 60       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53       Intersection LOS: A         Intersection Capacity Utilization 61.4%       ICU Level of Service B	Total Delay	3.0	2.4	4.5	6.1	23.0	
Approach Delay       2.9       6.1       23.0         Approach LOS       A       A       C         Intersection Summary       Area Type:       Other       C         Cycle Length: 90       Actuated Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green         Natural Cycle: 60       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53       Intersection LOS: A         Intersection Capacity Utilization 61.4%       ICU Level of Service B	LUS	A	A	A	A		
Approach LOS       A       A       C         Intersection Summary       A       C         Area Type:       Other       C         Cycle Length: 90       Actuated Cycle Length: 90       Actuated Cycle Length: 90         Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green       Natural Cycle: 60         Control Type: Actuated-Coordinated       Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7       Intersection LOS: A         Intersection Capacity Utilization 61.4%       ICU Level of Service B	Approach Delay	2.9			6.1	23.0	
Intersection Summary         Area Type:       Other         Cycle Length: 90       Other         Actuated Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green         Natural Cycle: 60       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53       Intersection Signal Delay: 5.7         Intersection Capacity Utilization 61.4%       ICU Level of Service B	Approach LOS	A			A	U U	
Area Type:       Other         Cycle Length: 90       Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green         Natural Cycle: 60       Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53       Intersection Signal Delay: 5.7         Intersection Capacity Utilization 61.4%       ICU Level of Service B	Intersection Summary						
Cycle Length: 90 Actuated Cycle Length: 90 Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.53 Intersection Signal Delay: 5.7 Intersection LOS: A Intersection Capacity Utilization 61.4% ICU Level of Service B	Area Type:	Other					
Actuated Cycle Length: 90 Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.53 Intersection Signal Delay: 5.7 Intersection LOS: A Intersection Capacity Utilization 61.4% ICU Level of Service B	Cycle Length: 90						
Offset: 50 (56%), Referenced to phase 2:EBT and 6:WBTL, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.53 Intersection Signal Delay: 5.7 Intersection Capacity Utilization 61.4% ICU Level of Service B Analysis Decid (min) 45	Actuated Cycle Length: 90						
Natural Cycle: 60         Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7         Intersection Capacity Utilization 61.4%         ICU Level of Service B         Analysis Derived (min) 45	Offset: 50 (56%), Reference	ed to phase	e 2:EBT a	nd 6:WBT	L, Start c	of Green	
Control Type: Actuated-Coordinated         Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7         Intersection Capacity Utilization 61.4%         ICU Level of Service B         Analymic Derived (min) 45	Natural Cycle: 60						
Maximum v/c Ratio: 0.53         Intersection Signal Delay: 5.7         Intersection Capacity Utilization 61.4%         ICU Level of Service B         Analysis Derived (min) 45	Control Type: Actuated-Coo	ordinated					
Intersection Signal Delay: 5.7     Intersection LOS: A       Intersection Capacity Utilization 61.4%     ICU Level of Service B	Maximum v/c Ratio: 0.53						
Intersection Capacity Utilization 61.4% ICU Level of Service B	Intersection Signal Delay: 5	.7			Ir	ntersection	n LOS: A
Analysis Deviad (min) 15	Intersection Capacity Utiliza	tion 61.4%	1		(	CU Level	of Service B
Analysis Period (min) 15	Analysis Period (min) 15						

Splits and Phases: 13: Elmsmere Rd & Montreal Rd



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	<b>↑</b> ĵ₀		ľ	<b>∱1</b> ≱			\$			÷	
Traffic Volume (veh/h)	21	629	0	0	1456	8	0	0	0	21	0	65
Future Volume (Veh/h)	21	629	0	0	1456	8	0	0	0	21	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	629	0	0	1456	8	0	0	0	21	0	65
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1464			629			1464	2135	314	1816	2131	732
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1464			484			1370	2082	151	1744	2078	732
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	58	100	82
cM capacity (veh/h)	457			1013			79	47	819	50	48	364
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	21	419	210	0	971	493	0	86				
Volume Left	21	0	0	0	0	0	0	21				
Volume Right	0	0	0	0	0	8	0	65				
cSH	457	1700	1700	1700	1700	1700	1700	144				
Volume to Capacity	0.05	0.25	0.12	0.00	0.57	0.29	0.00	0.60				
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	0.0	0.0	23.6				
Control Delay (s)	13.3	0.0	0.0	0.0	0.0	0.0	0.0	61.5				
Lane LOS	В						А	F				
Approach Delay (s)	0.4			0.0			0.0	61.5				
Approach LOS							А	F				
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utiliza	ation		54.9%	IC	CU Level of	of Service			А			
Analysis Period (min)			15									

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	Y		eî 🕺			<del>با</del>	
Traffic Volume (veh/h)	16	0	22	7	0	70	
Future Volume (Veh/h)	16	0	22	7	0	70	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	16	0	22	7	0	70	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	96	26			29		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	96	26			29		
tC, single (s)	6.4	6.2			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	98	100			100		
cM capacity (veh/h)	904	1050			1584		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	16	29	70				
Volume Left	16	0	0				
Volume Right	0	7	0				
cSH	904	1700	1584				
Volume to Capacity	0.02	0.02	0.00				
Queue Length 95th (m)	0.4	0.0	0.0				
Control Delay (s)	9.1	0.0	0.0				
Lane LOS	А						
Approach Delay (s)	9.1	0.0	0.0				
Approach LOS	А						
Intersection Summary							
Average Delay			1.3				
Intersection Capacity Utilizati	on		13.9%	IC	CU Level o	of Service	А
Analysis Period (min)			15				

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		-۠	<b>≜</b> †Ъ		¥		
Traffic Volume (veh/h)	2	649	1459	1	2	6	
Future Volume (Veh/h)	2	649	1459	1	2	6	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	2	649	1459	1	2	6	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)		203	327				
pX, platoon unblocked	0.82				0.84	0.82	
vC, conflicting volume	1460				1788	730	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1130				1339	243	
tC, single (s)	4.1				6.8	6.9	
tC. 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				98	99	
cM capacity (veh/h)	506				121	624	
Direction Long #						-	
					<u>98 I</u>		
	218	433	9/3	487	ŏ		
	2	0	0	0	2		
Volume Right	0	0	0	1	6		
CSH	506	1/00	1700	1/00	306		
Volume to Capacity	0.00	0.25	0.57	0.29	0.03		
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.6		
Control Delay (s)	0.2	0.0	0.0	0.0	17.1		
Lane LOS	A				С		
Approach Delay (s)	0.1		0.0		17.1		
Approach LOS					С		
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utiliza	ation		52.6%	IC	U Level o	of Service	
Analysis Period (min)			15				

## 4: Blair Rd & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	**	1	5	**	1	<b>5</b>	•	1	5	•	1
Traffic Volume (vph)	127	1162	161	73	669	25	249	125	210	52	112	77
Future Volume (vph)	127	1162	161	73	669	25	249	125	210	52	112	77
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	105.2		68.6	64.0		21.3	27.4		33.5	42.7		33.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	76		•	76		•	76		•	76		•
Lane Util Factor	1 00	0.95	1 00	1 00	0.95	1 00	1.00	1 00	1 00	1 00	1 00	1 00
Ped Bike Factor	1.00	0.00	0.98	1.00	0.00	0.97	1.00		0.99	1 00		0.98
Frt	1.00		0.850	1.00		0.850	1.00		0.850	1.00		0 850
Flt Protected	0 950		0.000	0 950		0.000	0 950		0.000	0 950		0.000
Satd Flow (prot)	1679	3293	1517	1695	3390	1517	1647	1717	1517	1192	1784	1517
Fit Permitted	0.372	0200	1011	0 176	0000	1011	0.685		1011	0.677		1011
Satd Flow (perm)	655	3293	1482	314	3390	1474	1183	1717	1495	848	1784	1492
Right Turn on Red	000	0200	Yes	011	0000	Yes	1100		Yes	010		Yes
Satd Flow (RTOR)			161			50			41			77
Link Speed (k/h)		60	101		60			50			50	
Link Distance (m)		495.7			372.4			636.1			459.9	
Travel Time (s)		29.7			22.3			45.8			33.1	
Confl Peds (#/hr)	5	20.1	1	1	22.0	5	6	40.0	3	3	00.1	6
Confl Bikes (#/hr)	Ŭ		1	•		Ŭ	v		1	v		1
Peak Hour Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	5%	6%	2%	45%	2%	2%
Adi Flow (vph)	127	1162	161	73	669	25	249	125	210	52	112	77
Shared Lane Traffic (%)	121	1102	101	10	000	20	210	120	210	02	112	
Lane Group Flow (vph)	127	1162	161	73	669	25	249	125	210	52	112	77
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)	Lon	3.7	rugitu	Lon	37	rugin	Lon	3.7	rugit	Lon	3.7	rugin
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		49			49			49			49	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Eactor	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	1.00	14	24	1.00	14	24	1.00	14	24	1.00	14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	61	30.5	6.1	61	30.5	6.1	6.1	30.5	6.1	61	30.5	6 1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.0	1.8	6.0	6.1	1.8	6.1	6.0	1.8	6.1
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	Cl+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	OIVEX	OIVEX	OIVEX	OILX			OFEX	OIVEX			OILX	ONEX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0	0.0	28.7	0.0
Detector 2 Size(m)		1.8			1.8			1 8			1 8	
Detector 2 Type		CI+Ev			CI+Ev			CI+Ev			CI+Ev	
Detector 2 Channel												

## 4: Blair Rd & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	33.4	33.4	33.4	33.4	33.4	33.4	46.1	46.1	46.1	46.1	46.1	46.1
Total Split (s)	43.0	43.0	43.0	43.0	43.0	43.0	47.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%	47.8%	52.2%	52.2%	52.2%	52.2%	52.2%	52.2%
Maximum Green (s)	36.6	36.6	36.6	36.6	36.6	36.6	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	3.8	3.8	3.8	3.8	3.8	3.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4	6.4	7.1	7.1	7.1	7.1	7.1	7.1
Lead/Lag												
Lead-Lag Optimize?	0.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0
Venicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	C-Max		C-IVIAX	C-Max	C-Max	C-IVIAX	None	None	None	None	None	INONE
VValk Time (S)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Pident Done Walk (S)	20.0	20.0	20.0	20.0	20.0	20.0	ىدى 2	32.U 3	32.U 3	32.0	32.0 6	32.0
Act Effet Green (s)	50 /	50 /	50 /	50 /	50 /	50 /	26.1	26.1	26.1	26.1	26.1	26.1
Actuated a/C Patio	0.56	0.56	0.56	0.56	0.56	0.56	0.20.1	20.1	0.20.1	0.20.1	0.20.1	0.20.1
v/c Ratio	0.30	0.50	0.50	0.30	0.30	0.00	0.23	0.25	0.25	0.23	0.23	0.23
Control Delay	17.6	17.6	31	21.9	10.5	0.00	39.9	23.3	22.1	22.7	22.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	17.6	3.1	21.9	10.5	0.7	39.9	23.3	22.1	22.7	22.6	5.0
LOS	B	B	A	C	B	A	D	C	C	C	C	A
Approach Delay	_	16.0		-	11.3		_	29.9	-		17.0	
Approach LOS		В			В			С			В	
Intersection Summary												
	Other											
Cycle Length: 90	Outor											
Actuated Cycle Length: 90												
Offset: 1 (1%). Referenced	to phase 2	:EBTL an	d 6:WBTI	Start of	Green							
Natural Cycle: 90			u 0.11211	_, 01011101	Clock							
Control Type: Actuated-Co	ordinated											
Maximum v/c Ratio: 0.73												
Intersection Signal Delay:	17.6			li	ntersectio	n LOS: B						
Intersection Capacity Utiliz	ation 92.0%	)		l	CU Level	of Service	ə F					
Analysis Period (min) 15												
Cality and Diseases 4. Di		utus al Dal										





# 7: Elwood Dr & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲	<b>4</b> 16		۲	<b>4</b> 16			4			\$	
Traffic Volume (vph)	3	1476	28	28	752	3	13	1	24	1	0	3
Future Volume (vph)	3	1476	28	28	752	3	13	1	24	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	39.6		0.0	33.5		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00			1.00			0.98			0.99	
Frt		0.997			0.999			0.915			0.899	
Flt Protected	0.950			0.950				0.983			0.988	
Satd. Flow (prot)	1695	3241	0	1695	3321	0	0	1566	0	0	1567	0
Flt Permitted	0.355			0.133				0.715				
Satd. Flow (perm)	630	3241	0	237	3321	0	0	1138	0	0	1581	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1			24			56	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		372.4			113.5			96.5			81.4	
Travel Time (s)		22.3			6.8			8.7			7.3	
Confl. Peds. (#/hr)	8		7	7		8	3		14	14		3
Confl. Bikes (#/hr)						1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	6%	22%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	2	2	5	0	0	0
Adj. Flow (vph)	3	1476	28	28	752	3	13	1	24	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1504	0	28	755	0	0	38	0	0	4	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	CI+Ex	Cl+Ex		Cl+Ex	CI+Ex		Cl+Ex	Cl+Ex		Cl+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		CI+Ex			CI+Ex			Cl+Ex			CI+Ex	

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (m)		
Storage Lanes		
Taper Length (m)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd, Flow (prot)		
Elt Permitted		
Satd Flow (perm)		
Right Turn on Red		
Satd Flow (RTOR)		
Link Speed (k/h)		
Link Distance (m)		
Travel Time (s)		
Confl Peds (#/hr)		
Confl Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Bus Blockages (#/br)		
Adi, Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(m)		
Link Offset(m)		
Crosswalk Width(m)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (k/h)		
Number of Detectors		
Detector Template		
Leading Detector (m)		
Trailing Detector (m)		
Detector 1 Position(m)		
Detector 1 Size(m)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(m)		
Detector 2 Size(m)		
Detector 2 Type		

## 7: Elwood Dr & Montreal Rd PM Peak

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.6	22.6		22.6	22.6		32.7	32.7		32.7	32.7	
Total Split (s)	53.0	53.0		53.0	53.0		32.0	32.0		32.0	32.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%		35.6%	35.6%		35.6%	35.6%	
Maximum Green (s)	47.4	47.4		47.4	47.4		25.3	25.3		25.3	25.3	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.0	3.0		3.0	3.0	
All-Red Time (S)	1.9	1.9		1.9	1.9		3.7	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
	5.0	5.0		5.0	5.0		امم	0.7		امط	0.7	
Leau/Lay							Lay	Lay		Lay	Lay	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	30		30	3 0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)	7	7		8	8		0	0		0	0	
Act Effct Green (s)	69.4	69.4		69.4	69.4		-	10.0		-	10.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.11			0.11	
v/c Ratio	0.01	0.60		0.15	0.30			0.26			0.02	
Control Delay	3.7	4.9		6.0	4.1			24.8			0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	3.7	4.9		6.0	4.1			24.8			0.2	
LOS	А	А		А	А			С			А	
Approach Delay		4.9			4.1			24.8			0.3	
Approach LOS		А			А			С			А	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 8 (9%), Referenced t	to phase 2	EBTL and	6:WBTL	, Start of	Green							
Natural Cycle: 80												
Control Type: Actuated-Coo	rdinated											
Maximum v/c Ratio: 0.60												
Intersection Signal Delay: 5.	0			Ir	ntersectior	LOS: A						
Intersection Capacity Utiliza	tion 67.6%			10	CU Level o	of Service	C					
Analysis Period (min) 15												

#### Splits and Phases: 7: Elwood Dr & Montreal Rd





Lane Group	Ø3	Ø7
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Ped	Ped
Walk Time (s)	0.0	0.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	5	5
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		

# 13: Elmsmere Rd & Montreal Rd PM Peak

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	**	1	5	**	M	
Traffic Volume (vph)	1367	45	30	702	33	39
Future Volume (vph)	1367	45	30	702	33	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		42.7	79.2		0.0	0.0
Storage Lanes		1	1		1	0
Taper Length (m)			7.6		7.6	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	
Frt		0.850			0.927	
Flt Protected			0.950		0.978	
Satd, Flow (prot)	3262	1502	1558	3325	1571	0
Flt Permitted		,	0.176		0.978	-
Satd, Flow (perm)	3262	1456	288	3325	1569	0
Right Turn on Red		Yes				Yes
Satd, Flow (RTOR)		39			39	
Link Speed (k/h)	60			60	40	
Link Distance (m)	289.3			93.2	237.9	
Travel Time (s)	17.4			5.6	21.4	
Confl. Peds. (#/hr)	T. T	5	5	0.0	21.4	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	3%	11%	4%	6%	2%
Adi Flow (vph)	1367	45	30	702	33	39
Shared Lane Traffic (%)	1001	10	00	102	00	00
Lane Group Flow (vph)	1367	45	30	702	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	37	rugin	Lon	37	37	rugnu
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	49			4 9	49	
Two way Left Turn Lane	1.0			1.0	1.0	
Headway Eactor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	1.00	1.00	24	1.00	24	1.00
Number of Detectors	2	1	1	2	1	17
Number of Detectors	Thru	Right	، Left	Thru	، ft	
Leading Detector (m)	30.5	6 1	61	30.5	61	
Trailing Detector (m)	0.0	0.1	0.1	0.0	0.1	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Sizo(m)	1.0	6.1	6.1	1.0	6.1	
Detector 1 June						
Detector 1 Channel						
	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (a)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delev (s)	0.0	0.0	0.0	0.0	0.0	
Detector 7 Detay (S)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	20.7			20.7		
Detector 2 Size(III)						
Detector 2 Type	UI+EX			UI+EX		
Detector 2 Channel	0.0			0.0		
Detector 2 Extend (s)	0.0			0.0		

	-	$\rightarrow$	-	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	2			6		
Permitted Phases		2	6		8	
Detector Phase	2	2	6	6	8	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	
Minimum Split (s)	27.0	27.0	16.0	16.0	27.2	
Total Split (s)	58.0	58.0	58.0	58.0	32.0	
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	
Maximum Green (s)	52.0	52.0	52.0	52.0	25.8	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.2	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	
Walk Time (s)	7.0	7.0			7.0	
Flash Dont Walk (s)	14.0	14.0			14.0	
Pedestrian Calls (#/hr)	5	5			7	
Act Effct Green (s)	71.6	71.6	71.6	71.6	9.7	
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	
v/c Ratio	0.53	0.04	0.13	0.27	0.35	
Control Delay	4.6	2.0	6.3	4.1	23.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.6	2.0	6.3	4.1	23.3	
	A	A	A	A	C	
Approach Delay	4.5			4.2	23.3	
Approach LOS	A			A	С	
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 90	)					
Offset: 52 (58%), Referen	ced to phase	e 2:EBT a	nd 6:WBT	L, Start c	of Green	
Natural Cycle: 60						
Control Type: Actuated-Co	pordinated					
Maximum v/c Ratio: 0.53						
Intersection Signal Delay:	5.0			lr	ntersectio	n LOS: A
Intersection Capacity Utiliz	zation 57.5%	1		10	JU Level	of Service B
Analysis Period (min) 15						

Splits and Phases: 13: Elmsmere Rd & Montreal Rd


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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲. ۲	<b>≜1</b> ≱		ľ	<b>∱1</b> ≽			\$			\$	
Traffic Volume (veh/h)	81	1415	0	0	745	27	0	0	0	11	0	37
Future Volume (Veh/h)	81	1415	0	0	745	27	0	0	0	11	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	81	1415	0	0	745	27	0	0	0	11	0	37
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	772			1415			1986	2349	708	1628	2336	386
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	772			895			1654	2136	0	1178	2118	386
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			100	100	100	89	100	94
cM capacity (veh/h)	839			568			42	33	817	102	34	612
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	81	943	472	0	497	275	0	48				
Volume Left	81	0	0	0	0	0	0	11				
Volume Right	0	0	0	0	0	27	0	37				
cSH	839	1700	1700	1700	1700	1700	1700	285				
Volume to Capacity	0.10	0.55	0.28	0.00	0.29	0.16	0.00	0.17				
Queue Length 95th (m)	2.4	0.0	0.0	0.0	0.0	0.0	0.0	4.5				
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	20.2				
Lane LOS	А						А	С				
Approach Delay (s)	0.5			0.0			0.0	20.2				
Approach LOS							А	С				
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utiliza	ation		58.0%	IC	CU Level of	of Service			В			
Analysis Period (min)			15									

	≯	→	+	•	1	1	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		<b>≜</b> 12	<b>41</b>		M		
Traffic Volume (veh/h)	5	1422	772	2	1	4	
Future Volume (Veh/h)	5	1422	772	2	1	4	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	5	1422	772	2	1	4	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)		202	328				
pX, platoon unblocked	0.99				0.76	0.99	
vC, conflicting volume	774				1494	387	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	754				964	363	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	99				99	99	
cM capacity (veh/h)	845				191	628	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1		 
Volume Total	479	948	515	259	5		
Volume Left	5	0	0	0	1		
Volume Right	0	0	0	2	4		
cSH	845	1700	1700	1700	431		
Volume to Capacity	0.01	0.56	0.30	0.15	0.01		
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.3		
Control Delay (s)	0.2	0.0	0.0	0.0	13.5		
Lane LOS	А				В		
Approach Delay (s)	0.1		0.0		13.5		
Approach LOS					В		
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utiliz	ation		55.2%	IC	U Level c	of Service	В
Analysis Period (min)			15				

	4	•	Ť	1	1	Ļ	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	- Y		4			स्	
Traffic Volume (veh/h)	10	0	95	13	0	38	
Future Volume (Veh/h)	10	0	95	13	0	38	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	10	0	95	13	0	38	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	140	102			108		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	140	102			108		
tC, single (s)	6.4	6.2			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	99	100			100		
cM capacity (veh/h)	854	954			1483		
Direction, Lane #	WB 1	NB 1	SB 1				
Volume Total	10	108	38				
Volume Left	10	0	0				
Volume Right	0	13	0				
cSH	854	1700	1483				
Volume to Capacity	0.01	0.06	0.00				
Queue Length 95th (m)	0.3	0.0	0.0				
Control Delay (s)	9.3	0.0	0.0				
Lane LOS	А						
Approach Delay (s)	9.3	0.0	0.0				
Approach LOS	А						
Intersection Summary							
Average Delay			0.6				
Intersection Capacity Utilization	on		16.1%	IC	CU Level o	of Service	А
Analysis Period (min)			15				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	A12		7	<b>≜1</b> ≱			\$			\$	
Traffic Volume (veh/h)	21	629	0	0	1456	8	0	0	0	10	0	65
Future Volume (Veh/h)	21	629	0	0	1456	8	0	0	0	10	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	629	0	0	1456	8	0	0	0	10	0	65
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		113										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1464			629			1464	2135	314	1816	2131	732
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1464			484			1370	2082	151	1744	2078	732
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	80	100	82
cM capacity (veh/h)	457			1013			79	47	819	50	48	364
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	21	419	210	0	971	493	0	75				
Volume Left	21	0	0	0	0	0	0	10				
Volume Right	0	0	0	0	0	8	0	65				
cSH	457	1700	1700	1700	1700	1700	1700	198				
Volume to Capacity	0.05	0.25	0.12	0.00	0.57	0.29	0.00	0.38				
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	0.0	0.0	12.5				
Control Delay (s)	13.3	0.0	0.0	0.0	0.0	0.0	0.0	33.8				
Lane LOS	В						А	D				
Approach Delay (s)	0.4			0.0			0.0	33.8				
Approach LOS							А	D				
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilizat	ion		54.2%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

# **APPENDIX J**

Transportation Demand Management Checklists

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

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

	TDM-s	supportive design & infrastructure measures: Residential developments	Check if completed & add descriptions, explanations or plan/drawing references
	2.	WALKING & CYCLING: END-OF-TRIP FACILI	TIES
	2.1	Bicycle parking	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see Official Plan policy 4.3.6)	
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well- used areas ( <i>see Zoning By-law Section 111</i> )	
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 <i>(see Zoning By-law Section 111)</i>	$\boxtimes$
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	
	2.2	Secure bicycle parking	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see Zoning By-law Section 111)	
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi- family residential developments	
	2.3	Bicycle repair station	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	
	3.	TRANSIT	
	3.1	Customer amenities	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	

	TDM-s	supportive design & infrastructure measures: Residential developments	Check if completed & add descriptions, explanations or plan/drawing references
	4.	RIDESHARING	
	4.1	Pick-up & drop-off facilities	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	
	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 <i>(see Zoning By-law Section 94)</i>	
	5.2	Bikeshare station location	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	
	6.	PARKING	
	6.1	Number of parking spaces	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	$\boxtimes$
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly <i>(see Zoning By-law</i> <i>Section 104)</i>	
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 <i>(see Zoning By-law Section 111)</i>	
	6.2	Separate long-term & short-term parking areas	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	

# **TDM Measures Checklist:**

Residential Developments (multi-family, condominium or subdivision)

Legend
--------

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

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

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

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

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

TDM	I measures: Residential developments	Check if proposed & add descriptions
6.	TDM MARKETING & COMMUNICATION	S
6.1	Multimodal travel information	
BASIC ★ 6.1.1	Provide a multimodal travel option information package to new residents	
6.2	Personalized trip planning	
BETTER ★ 6.2.1	Offer personalized trip planning to new residents	

# APPENDIX K

Detailed MMLOS Analysis

## 1.0 SEGMENT MMLOS

## 1.1.1 Pedestrian Level of Service (PLOS)

Exhibit 4 of the MMLOS guidelines has been used to evaluate the segment PLOS of Montreal Road and Beckenham Lane. Exhibit 22 of the MMLOS guidelines suggests a target PLOS C for a local roadway in the general urban area and on arterial mainstreets. The results of the segment PLOS analysis are summarized in **Table 1**.

Sidewalk Width (m)	Boulevard Width (m)	Avg. Daily Curb Lane Traffic Volume	ily ne Orescence of On-Street Oper Parking Sp		Segment PLOS
Montreal Road	(North Curb)				
> 2.0	0.0	> 3000	No	70 km/h	F
Montreal Road	(South Curb)				
1.5	1.5	> 3000	No	70 km/h	E
Beckenham La	ne (East Curb)				
0.0	0.0	≤ 3000	No	50 km/h	F
Beckenham La	ne (West Curb)				
0.0	0.0	≤ 3000	Yes	50 km/h	F
Cedar Road (No	orth Curb)				
0.0	0.0	≤ 3000	No	50 km/h	F
Cedar Road (So	outh Curb)				
0.0	0.0	≤ 3000	Yes	50 km/h	F

#### Table 1: Segment PLOS

## 1.1.2 Bicycle Level of Service (BLOS)

Exhibit 11 of the MMLOS guidelines has been used to evaluate the segment BLOS of Montreal Road and Beckenham Lane. Exhibit 22 of the MMLOS guidelines suggests a target BLOS C for Montreal Road and BLOS D for Beckenham Lane. The results of the segment BLOS analysis are summarized in **Table 2**.

#### Table 2: Segment BLOS

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Operating Speed	Segment BLOS
Montreal Road					
Arterial Road	Spine Route	Mixed Traffic	4	70 km/h	F
Beckenham La	ne				
Local Road	-	Mixed Traffic	2	50 km/h	В
Cedar Road					
Local Road	-	Mixed Traffic	2	50 km/h	В

## 1.1.3 Transit Level of Service (TLOS)

Exhibit 15 of the MMLOS guidelines has been used to evaluate the segment TLOS of Montreal Road. Exhibit 22 of the MMLOS guidelines suggests a target TLOS D for arterial mainstreets along a transit priority corridor (isolated measures). Since Beckenham Lane does not provide

transit service, the transit level of service (TLOS) has not been evaluated. The results of the segment TLOS analysis are summarized in **Table 3**.

#### Table 3: Segment TLOS

Facility Type	Congestion	Frictions	Incident Potential	Segment TLOS
Montreal Road				
Mixed Traffic	Yes	Medium	Medium	E

### 1.1.4 Truck Level of Service (TkLOS)

Exhibit 20 of the MMLOS guidelines has been used to evaluate the segment TkLOS of Montreal Road and Beckenham Lane. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS D for Montreal Road and no target for Beckenham Lane. The results of the segment TkLOS analysis are summarized in **Table 4**.

#### Table 4: Segment TkLOS

Curb Lane Width	Number of Travel Lanes per Direction	Segment TkLOS						
Montreal Road								
> 3.7m	2	A						
Beckenham Lane								
< 3.3m	1	D						

#### 2.0 INTERSECTION MMLOS

#### 2.1.1 Pedestrian Level of Service (PLOS)

Exhibit 5 of the MMLOS guidelines has been used to evaluate the intersection PLOS at Montreal Road/Blair Road, Montreal Road/Elwood Drive, and Montreal Road/Elmsmere Drive. Exhibit 22 of the MMLOS guidelines suggests a target PLOS C for all intersections along arterial mainstreets. The results of the intersection PLOS analysis are shown in **Figures 1**, **2**, and **3**.

#### Figure 1: Montreal Road/Blair Road PLOS

Criteria	North Approach		South Approac	h	East Approac	h	West Approac	:h
Montreal Road/Blair Road	Aontreal Road/Blair Road							
			PETSI SCORE					
CROSSING DISTANCE CONDITI	ONS							
Median > 2.4m in Width	No		No	00	No	40	No	
Lanes Crossed (3.5m Lane Width)	6	55	8	23	10 +	-10	7	39
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	N/A	0	RTOR Allowed	-3	RTOR Allowed	-3	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	> 10m to 15m	-6	> 25m	-9	> 10m to 15m	-6	> 10m to 15m	-6
Parallel Right Turn Channel	No Right Turn Channel	-4	onventional without Receivir	0	No Right Turn Channel	-4	onventional without Receiving	0
Perpendicular Radius	> 15m to 25m	-8	N/A	0	N/A	0	> 25m	-9
Perpendicular Right Turn Channel	Conventional without Receiving	0	N/A	0	N/A	0	onventional without Receivir	<b>v</b> 0
CROSSING TREATMENT								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
	PETSI SCORE	15		-11		-45		2
	LOS	F		F		F		F
			DELAY SCORE					
Cycle Length		90		90		90		90
Pedestrian Walk Time		16.6		16.6		6.9		6.9
	DELAY SCORE	29.9		29.9		38.4		38.4
	LOS	С		С		D		D
	OVERALL	F		F		F		F

# Figure 2: Montreal Road/Elwood Street PLOS

Criteria	North Approach		South Approach		East Approach		West Approach		
Montreal Road/Elwood Ro	Iontreal Road/Elwood Road								
			PETSI SCORE						
CROSSING DISTANCE CONDITIO	ONS								
Median > 2.4m in Width	No	120	No	55	No	20	No	20	
Lanes Crossed (3.5m Lane Width)	2	120	6	- 55	7	39	7	- 39	
SIGNAL PHASING AND TIMING									
Left Turn Conflict	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8	
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	
Right Turn on Red	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	
Leading Pedestrian Interval	No	-2	No	-2	Yes	0	Yes	0	
CORNER RADIUS									
Parallel Radius	<3m	-3	> 10m to 15m	-6	> 5m to 10m	-5	<3m	-3	
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4	
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0	
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0	
CROSSING TREATMENT									
Treatment	Textured	-4	Standard	-7	Standard	-7	Standard	-7	
	PETSI SCORE	91		20		7		9	
	LOS	Α		F		F		F	
			DELAY SCORE						
Cycle Length		90		90		90		90	
Pedestrian Walk Time		37.4		37.4		9.3		9.3	
	DELAY SCORE	15.4		15.4		36.2		36.2	
	LOS	В		В		D		D	
	OVERALL	в		F		F		F	

Figure	3.	Montreal	<b>Boad/Flmsmere</b>	Road PLOS
iguie	э.	Montreat	nuau/Linisinere	HUAU FLOG

				-		-		
Criteria	North Approach		South Approach		East Approach		west Approach	
Montreal Road/Elmsmere	Road							
			PETSI SCORE					
CROSSING DISTANCE CONDITIC	DNS							
Median > 2.4m in Width			No	70	No		No	
Lanes Crossed (3.5m Lane Width)			5	72	7	39	7	- 39
SIGNAL PHASING AND TIMING	4							
Left Turn Conflict			Permissive	-8	Permissive	-8	Permissive	-8
Right Turn Conflict			Permissive or Yield	-5	Permissive or Yield	-5	No Right Turn/Prohibited	0
Right Turn on Red			RTOR Allowed	-3	N/A	0	RTOR Allowed	-3
Leading Pedestrian Interval			No	-2	No	-2	No	-2
CORNER RADIUS	·							
Parallel Radius			> 5m to 10m	-5	> 5m to 10m	-5	No Right Turn	0
Parallel Right Turn Channel			No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn	0
Perpendicular Radius		Ψ	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel			N/A	0	N/A	0	N/A	0
CROSSING TREATMENT								
Treatment			Standard	-7	Standard	-7	Standard	-7
	PETSI SCORE	N/A		38		8		19
	LOS	Α		E		F		F
	· · · · · ·		DELAY SCORE					
Cycle Length		90		90		90		90
Pedestrian Walk Time		10		6.8		38		38
DELAY SCORE		35.6		38.5		15		15
	LOS	D		D		В		В
	OVERALL	D	·	E		F		F

### 2.1.2 Bicycle Level of Service (BLOS)

Exhibit 12 of the MMLOS guidelines has been used to evaluate the intersection BLOS at Montreal Road/Blair Road, Montreal Road/Elwood Drive, and Montreal Road/Elmsmere Drive. Exhibit 22 of the MMLOS guidelines suggests a target BLOS C for arterial mainstreet intersections along spine cycling routes. The results of the segment BLOS analysis are summarized in **Table 5**.

Approach	Bikeway Facility Type	Criteria	Criteria Travel Lanes and/or Speed				
Montreal Road/Blair Road							
North Approach	Mixed Troffie	Right Turn Lane Characteristics	Right turn lane 25-50m long, <25km/h	D			
North Approach		xed Traffic Left Turn Accommodation Right Turn Lane Characteristics Left Turn	One lane crossed, 60km/hr	F			
South Approach	Mixed Troffie	Right Turn Lane Characteristics	Right turn lane 25-50m long, <25km/h	D			
South Approach	Mixed frame	Left Turn Accommodation	One lane crossed, 60km/hr	F			
Fact Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane 25-50m long, <25km/h	D			
East Approach		Left Turn Accommodation	Two lanes crossed, 60km/hr	F			
Most Approach	Mixed Troffie	Right Turn Lane Characteristics	Right turn lane 25-50m long, >25km/h	F			
west Approach		Left Turn Accommodation	Two lanes crossed, 70km/hr	F			
Montreal Road/E	Iwood Drive						
North Approach	Mixed Traffic	Right Turn Lane Characteristics	No impact to LTS	А			

#### Table 5: Intersection BLOS

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
		Left Turn Accommodation	No lane crossed, <50km/hr	В
South Approach	Mixed Traffic	Right Turn Lane Characteristics	No impact to LTS	Α
		Characteristics     No In       Left Turn     No Iane of Accommodation       Right Turn Lane     No in       Characteristics     No in       Left Turn     Two Ianes       Accommodation     Two Ianes       Right Turn Lane     No in       Characteristics     No in       Left Turn     Two Ianes       Characteristics     No in       Right Turn Lane     No in       Accommodation     Two Ianes       Right Turn Lane     No in	No lane crossed, <50km/hr	В
East Approach	Mixed Traffic	Right Turn Lane Characteristics	No impact to LTS	А
		Left Turn Accommodation	Two lanes crossed, 70km/hr	F
Most Approach	Mixed Troffie	Right Turn Lane Characteristics	No impact to LTS	А
west Approach		Left Turn Accommodation	Two lanes crossed, 70km/hr	F
Montreal Road/E	Elmsmere Road	ł		
South Approach	Mixed Troffie	Right Turn Lane Characteristics	No impact to LTS	А
		Left Turn Accommodation	No lanes crossed, 50km/hr	В
Fact Approach	Mixed Troffie	Right Turn Lane Characteristics	No right turn	-
East Approach		Left Turn Accommodation	Two lanes crossed, 70km/hr	F
Most Approach	Mixed Troffic	Right Turn Lane Characteristics	No impact to LTS	А
vvest Approach		Left Turn Accommodation	No left turn	-

# 2.1.3 Transit Level of Service (TLOS)

Exhibit 16 of the MMLOS guidelines has been used to evaluate the intersection TLOS at Montreal Road/Blair Road, Montreal Road/Elwood Drive, and Montreal Road/Elmsmere Drive. Exhibit 22 of the MMLOS guidelines suggests a target TLOS D for arterial roadways along a transit priority corridor (isolated measures). Since Beckenham Lane does not provide transit service, the transit level of service (TLOS) has not been evaluated. The results of the segment TLOS analysis are summarized in **Table 6**.

## Table 6: Intersection TLOS

Approach	Facility Type	Delay <sup>1</sup> AM (PM)	Movement	TLOS				
Montreal Road/Blair Road								
North Approach	Mixed Traffic (No TSP)	29 sec (22 sec)	SBT	С				
South Approach	Mixed Traffic (No TSP)	26 sec (22 sec)	NBT	С				
East Approach	Mixed Traffic (No TSP)	9 sec (11 sec)	WBT	С				

West Approach	Mixed Traffic (No TSP)	10 sec (18 sec)	EBT	С					
Montreal Road/Elwood Drive									
North Approach	No transit route	-	-	-					
South Approach	No transit route	-	-	-					
East Approach	Mixed Traffic (No TSP)	7 sec (4 sec)	WBT/R	В					
West Approach	Mixed Traffic (No TSP)	3 sec (5 sec)	EBT/R	В					
Montreal Road/Elmsmere Road									
North Approach	No transit route	-	-	-					
South Approach	No transit route	-	-	-					
East Approach	Mixed Traffic (No TSP)	6 sec (4 sec)	WBT	В					
West Approach	Mixed Traffic (No TSP)	3 sec (5 sec)	EBT	В					

1. Mixed traffic delay based on the critical approach delay in Synchro analysis

## 2.1.4 Truck Level of Service (TkLOS)

Exhibit 21 of the MMLOS guidelines has been used to evaluate the intersection PLOS at Montreal Road/Blair Road, Montreal Road/Elwood Drive, and Montreal Road/Elmsmere Drive. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS D for intersections along Montreal Road. The results of the segment TkLOS analysis are summarized in **Table 7**.

#### Table 7: Intersection TkLOS

Approach	Effective Corner Radius	Number of Receiving Lanes on Departure from Intersection	LOS					
Montreal Road/Blair Road								
North Approach	> 15m	Two	A					
South Approach	10-15m	Two	В					
East Approach	> 15m	One	С					
West Approach	> 15m	Two	A					
Montreal Road/Elwood Drive								
North Approach	< 10m	Тwo	D					
South Approach	< 10m	Two	D					
East Approach	< 10m	One	F					
West Approach	10-15m	One	E					
Montreal Road/Elmsmere Road								
South Approach	< 10m	Two	D					
East Approach	No Right Turn	-	-					
West Approach	< 10m	One	F					

# APPENDIX L

MTO Left Turn Lane Warrant



# APPENDIX M

OTM Traffic Signalization Warrant



#### **TRAFFIC SIGNAL JUSTIFICATION USING PROJECTED VOLUMES**

LOCATION: Montreal Road at Beckenham Lane

YEAR: 2028 (Total)

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT		COMPLIANCE		
		FREE FLOW	RESTRICTED FLOW	SECTIONAL		
		OPERATING SPEED > 70KM/H	OPERATING SPEED < 70 KM/H	NUMERICAL	PERCENT	% (2)
1. MINIMUM VEHICULAR WARRANT	A. Vehicle volume, all approaches (average hour)	576 720 (2 or more lane approach	864 1080 (2 or more lane approach	1130	157%	
	B. Vehicle volume along minor street (average hour)	144 216 (tee intersection)	204 306 (tee intersection)	34	16%	16%
2. DELAY TO CROSS TRAFFIC	A. Vehicle volume along major street (average hour)	576 720 (2 or more lane approach)	864 1080 (2 or more lane approach	1088	151%	13%
	B <sup>(1)</sup> . Combined vehicle and pedestrian volume <u>crossing</u> the major street (average hour)	60	90	8	13%	

#### **NOTES**

For definition of <u>crossing</u> volume refer to the Ontario Traffic Manual Book 12, Section 4.5 (Nov. 2007).
 The lowest sectional percentage governs the entire Justification.
 Average hourly volumes estimated from peak hour volumes, AHV = PM / 2 or AHV = (AM + PM) / 4.