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Giant Tiger Headquarters 2480 Walkley Road, Ottawa Transportation Impact Assessment

Engineering excellence. Planning precision. Inspired landscapes.

**Giant Tiger Headquarters
2480 Walkley Road**

Transportation Impact Assessment

Prepared By:

NOVATECH

Suite 200, 240 Michael Cowpland Drive
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Dated: January 2019

Revised: May 2019

Revised: July 2019

Novatech File: 117203

Ref: R-2018-111

July 12, 2019

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

Attention: Mr. Wally Dubyk
Project Manager, Infrastructure Approvals

Dear Mr. Dubyk:

Reference: 2480 Walkley Road
Transportation Impact Assessment
Novatech File No. 117203

We are pleased to submit the following revised Transportation Impact Assessment (TIA) in support of a Zoning By-Law Amendment and Site Plan Control Application for 2480 Walkley Road, 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).

The original TIA in support of this development was submitted to the City of Ottawa in January 2019, and a revision was submitted in May 2019. This revised TIA has been prepared to reflect updates in the proposed road modifications and address City comments.

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

Yours truly,

NOVATECH



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



TIA Plan Reports

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

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

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

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed¹ or registered² professional in good standing, whose field of expertise [check ☒ appropriate field(s)] is either transportation engineering ☒ or transportation planning ☐.

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


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Dated at Ottawa this 12th day of July, 2019.
(City)

Name: Jennifer Luong, P.Eng.
(Please Print)

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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) has been prepared in support of Zoning By-Law Amendment and Site Plan Control Applications for the property located at 2480 Walkley Road. The subject site will act as the headquarters for the retailer Giant Tiger, and currently contains approximately 40,389 ft² of retail space, 76,652 ft² of office space, and 302,002 ft² of warehouse space. There are approximately 472 parking spaces serving the existing development.

The subject site is designated as 'Urban Employment Area' on Schedule B of the City of Ottawa's Official Plan. The implemented zoning for the property is 'Light Industrial Zone' (IL), and there are no Secondary Plans or Community Design Plans applicable to the site. The retail component of the existing and proposed developments does not conform to the implemented zoning, and therefore a Zoning By-Law Amendment is required.

The proposed redevelopment will reconfigure the layout of the Giant Tiger retail store and corporate offices, and will contain approximately 30,962 ft² of retail space, 187,087 ft² of office space, and 182,685 ft² of warehouse space. Compared to the existing configuration, this equates to an increase of 110,435 ft² of office space, and a decrease of 9,427 ft² of retail space and 119,317 ft² of warehouse space. The amount of parking spaces provided will increase by 582 spaces. A majority of the parking provided in Block A is existing and will remain vacant in anticipation of further development, which will be subject to analysis as part of future applications.

Access to the site is currently provided by full movement accesses along Banton Street approximately 80m south of Walkley Road, and Walkley Road approximately 80m east of Melfort Street. Left turns into the access on Walkley Road is restricted between 4:00pm and 6:00pm, and use of this access is restricted for heavy vehicles at all hours. The proposed redevelopment will maintain the full movement access at Banton Street, and will convert the Walkley Road driveway into a right-in/right-out (RIRO) access through a modification of the existing median break. Per discussions with City staff, the median will be fully closed and left turns into the Confederation Court Community Housing at 2282 Russell Road will not be permitted. Additionally, a signalized full movement access is proposed at the intersection of Walkley Road/Melfort Street.

The study area for this report will include Walkley Road, St. Laurent Boulevard, Tawney Road, Banton Street, Melfort Street, Russell Road, and Lancaster Road. The study area includes the signalized intersections at Walkley Road/St. Laurent Boulevard, Walkley Road/Banton Street, Walkley Road/Melfort Street, Walkley Road/Russell Road, and Walkley Road/Lancaster Road, as well as the unsignalized intersection at Walkley Road/Tawney Road.

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The proposed redevelopment is expected to be completed with full occupancy by the year 2020. Therefore, the analysis will consider the buildout year 2020 and the horizon year 2025.

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

Forecasting

- The net increase in trips generated by the proposed redevelopment is approximately 99 person trips in the AM peak hour and 73 person trips in the PM peak hour, which includes an increase of approximately 67 vehicle trips in the AM peak hour and 50 vehicle trips in the PM peak hour.

Development Design and Parking

- Pedestrian facilities will be provided between the building entrances and the parking lot. Additionally, pedestrian facilities will connect the building to the existing sidewalks along Walkley Road and the proposed sidewalks on either side of the Melfort Street access. Sidewalks will be depressed and continuous across the existing Walkley Road access, in accordance with City standards. Crosswalks will be provided across the proposed Melfort Street access.
- The nearest transit stops which serve OC Transpo Routes 47 and 112 are within 300m walking distance from all entrances to the proposed redevelopment.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- Garbage collection, loading and deliveries will be accommodated directly east of the proposed retail and office building. Loading and garbage collection vehicles will enter the site via the Melfort Street access and reverse into the loading spaces. The number of loading spaces provided meet the minimum requirements outlined in the ZBL.
- In total, approximately 1,054 parking spaces will be provided for the entire subject site. The majority of the 429 spaces provided in Block A will remain vacant until further development. The 625 spaces provided in Block B meet the minimum requirements outlined in the ZBL. The number of bicycle parking spaces meet the minimum requirements outlined in the ZBL.
- Five retail accessible parking spaces, 18 office accessible parking spaces, and 20 warehouse accessible parking spaces will be provided, thereby meeting the requirements.

Boundary Streets

- The results of the segment MMLOS analysis can be summarized as follows:
 - Neither boundary street meets the target pedestrian level of service (PLOS);
 - As the only boundary street with a target, Walkley Road does not meet the target bicycle level of service (BLOS);
 - Walkley Road does not meet the target for rapid transit corridors (TLOS B);
 - Both boundary streets meet the target truck level of service (TkLOS);
 - Both boundary streets meet the target vehicular level of service (Auto LOS).
- The PLOS of Walkley Road is failing, which is attributable to a lack of separation between the sidewalk and the roadway, and average curb lane traffic volumes far greater than 3,000 vehicles/day. At an operating speed of 60 km/h, the target PLOS C can be achieved by implementing sidewalks with a minimum width of 2.0m and a minimum sidewalk boulevard width of 2.0m. The required ROW protection across the frontage of the site will accommodate

the minimum sidewalk and boulevard width to achieve the target PLOS if the City wishes to relocate the existing sidewalk in the future.

- The PLOS of Banton Street is currently failing, as no sidewalks are provided. At an operating speed of 50 km/h, the target PLOS C can be achieved by implementing a 1.5m sidewalk with 0.5m boulevard on one side of Banton Street. This is identified for the City's consideration as funding becomes available.
- The BLOS of Walkley Road is failing. The target BLOS C can be achieved by implementing bike lanes with a minimum width of 1.2m. OTM Book 18 states that 'a separated facility or an alternate road' should be considered. The implementation of a cycle track or other physically separated bikeway would improve the BLOS of this segment to a BLOS A. This is identified for the City's consideration as funding becomes available.
- The TLOS of Walkley Road does not achieve the target TLOS B. The target TLOS B can be achieved by implementing a bus lane with limited parking and driveway friction. The RTTP Network Concept identifies bus rapid transit (BRT) with at-grade crossing along Walkley Road between Heron Road and Russell Road.

Access Design

- The existing access on Walkley Road will be modified as part of the proposed redevelopment, and a new access at Walkley Road/Melfort Street will be constructed. Depressed curb and sidewalks will be constructed as per City standards. No changes to the existing access on Banton Street are proposed.
- Section 25 (a) of the *Private Approach By-Law* identifies a maximum number of private approaches that can be provided, based on the amount of frontage. With approximately 420m of frontage on Walkley Road, the proposed redevelopment meets the requirement by providing two two-way accesses.
- Section 25 (c) of the *Private Approach By-Law* identifies a maximum width requirement of 9.0m for any two-way private approach, although an exception for wider accesses is permitted under Section 25 (e) for transport loading areas. The proposed access at Walkley Road/Melfort Street is approximately 11m in width (17m at the future ROW), and therefore it is requested that this access be permitted to exceed the requirement, per Section 25 (e).
- Section 107 (1)(a) of the ZBL identifies a minimum width requirement of 6.7m for a two-way driveway to a parking lot. The proposed RIRO access on Walkley Road will be approximately 7.3m in width, thereby meeting the minimum requirement outlined in Section 107 (1)(a) and the maximum requirement outlined in Section 25 (c).
- Section 25 (f) of the *Private Approach By-Law* identifies a minimum separation distance of 9.0m between a two-way private approach and any other private approach, as measured at the street line. The distance between the proposed access at Walkley Road/Melfort Street and the proposed RIRO access on Walkley Road is approximately 80m, thereby meeting this requirement.
- Section 25 (l) of the *Private Approach By-Law* identifies a minimum distance requirement of 75m between the private approach and the nearest intersecting street line. The proposed

access at Walkley Road/Melfort Street will require a road modification to allow for a four-way intersection. The proposed RIRO access on Walkley Road will be approximately 80m east of Melfort Street, thereby meeting this requirement.

- Section 25 (o) of the *Private Approach By-Law* identifies a minimum spacing requirement of 3.0m between the nearest edge of a private approach and the property line, as measured at the street line. The spacing between the nearest edge of the proposed RIRO access on Walkley Road and the eastern property line is approximately 150m, thereby meeting this requirement.
- TAC identifies a minimum clear throat length requirement of 15m for shopping centres with less than 25,000 m² GFA, and 30m for general offices between 10,000 and 20,000 m² GFA. The proposed RIRO access on Walkley Road will serve the retail use exclusively and provides a clear throat length of 18m, thereby meeting the requirement. The proposed access at Walkley Road/Melfort Street will serve both the retail and office parking areas, and provides a clear throat length of approximately 36.5m, thereby meeting the requirement.
- Per OTM Book 12, a traffic signal is not warranted at the proposed Walkley Road/Melfort Street access, as the minor street volumes do not meet the minimum volume requirements. Without a signal however, delays for vehicles on the minor street would be in excess of 300 seconds in the AM peak hour and approximately 100 seconds in the PM peak hour, and it would be anticipated that drivers would begin choosing insufficient gaps to turn onto Walkley Road. For this reason, providing a full signalized intersection at Walkley Road/Melfort Street is recommended.
- The northbound through movement is recommended to be restricted during the PM peak hour to restrict office workers from cutting through the Hawthorne Meadows neighbourhood. Local shoppers will be able to drive onto Melfort Street from Giant Tiger outside of these hours.
- A WB-20 design vehicle (Tractor and Semi-Trailer) can be accommodated at the proposed Walkley Road/Melfort Street access, and can enter and exit the proposed redevelopment to/from the east and west on Walkley Road.
- The proposed median closure on Walkley Road approximately 80m east of Melfort Street will convert the retail access on the south side of the roadway and the Confederation Court Community Housing access on the north side of the roadway to become RIRO only. Per discussions with City staff, maintaining the left-in movement for the housing development is not recommended, as the proposed westbound left turn lane at Walkley Road/Melfort Street will eliminate the space within the median break that can be used by vehicles for a 'two stage' left turn into the residences. Left turning traffic volumes at the Confederation Court access are minimal, and any additional traffic turning onto Melfort Street to use Tupper Avenue and Russell Road, and effectively travel 'around the block,' is not anticipated to change the function of the local roadways.
- A monitoring program is proposed regarding a possible southbound left turn movement restriction at Walkley Road/Melfort Street, to address concerns of potential traffic avoiding the intersection of Walkley Road/St. Laurent Boulevard by cutting through the Hawthorne Meadows neighbourhood.

Transportation Demand Management

- The following TDM measures will be implemented upon opening of the proposed redevelopment:
 - Display local area maps with walking/cycling access routes and key destinations at major entrances;
 - Display relevant transit schedules and route maps at entrances;
 - Provide online links to OC Transpo and STO information;
 - Provide a dedicated ridematching portal at OttawaRideMatch.com;
 - Provide a multimodal travel option information package for employees;
 - Encourage flexible work hours and telework;
 - Provide on-site amenities/services to minimize midday or mid-commute errands.

Transit

- The proposed redevelopment is anticipated to result in a net increase of 12 transit trips during the AM peak hour and 9 transit trips during the PM peak hour.
- The additional transit trips generated by the proposed redevelopment are not anticipated to have a significant impact on the operations of OC Transpo Routes 47 and 112.

Intersection Design

- Based on the results of the intersection MMLOS analysis:
 - No intersections meet the target pedestrian level of service (PLOS);
 - No intersections meet the target bicycle level of service (BLOS);
 - Walkley Road/St. Laurent Boulevard and Walkley Road/Russell Road do not meet the target transit level of service (TLOS);
 - Among intersections with truck route designations, only Walkley Road/Russell Road meets the target truck level of service (TkLOS);
 - Walkley Road/Russell Road and Walkley Road/Lancaster Road does not meet the target vehicular level of service (Auto LOS).
- Pedestrian Level of Service:
 - No crosswalks crossing Walkley Road, St. Laurent Boulevard, Russell Road, and Lancaster Road can achieve the target PLOS C without significantly reducing the number of lanes and restricting turning movements, and there is limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.
 - The crosswalk crossing Melfort Street can achieve the target PLOS C by implementing textured or zebra-striped crosswalks, however the City's vehicle/pedestrian conflict threshold is not reached (400,000 vehicle/pedestrian conflicts over an eight-hour period).
- Bicycle Level of Service:
 - All approaches of Walkley Road/St. Laurent Boulevard do not achieve the target BLOS B. Curbside bike lanes or higher order facilities at the north and south approaches would be required to achieve the target based on right turn characteristics. Two-stage left turn bike boxes at all approaches would be required to achieve the target based on left turn characteristics. Alternatively, cyclists can travel east-west via the Pleasant Park Road Neighbourhood Bikeway instead of travelling

on Walkley Road, and travel east-west and north-south on the local residential streets to the north of Walkley Road. Widening on Walkley Road taken as part of this proposed redevelopment could be used to accommodate cycle tracks, should the City decide to implement them in the future.

- The south and east approaches of Walkley Road/Banton Street do not achieve the target BLOS C. Banton Street has no target BLOS, as it is a roadway with no bike route classification in the Employment Area. Any cyclists entering or exiting the proposed redevelopment are anticipated to access the site further east, as the western section of the site will be devoted to warehousing.
- The west approach of Walkley Road/Melfort Street does not meet the target BLOS C. The implementation of two-stage left turn bike boxes would improve the BLOS of the intersection to a BLOS A, based on left turn characteristics. Synchro analysis shows that this can be accommodated by the road network from a capacity perspective.
- All approaches of Walkley Road/Russell Road do not meet the target BLOS C. Given the high traffic volumes on both roadways, the existing right turn lanes and dual left turn lanes are required. Cyclists would be best served to perform turns at a different intersection.
- The north and west approaches of Walkley Road/Lancaster Road do not meet the target BLOS C. Based on the traffic volumes at this intersection, the existing dual left turn lanes and right turn lane at the north approach is required, as is the number of lanes a cyclist must cross to turn left at the west approach. At the north approach, cyclists can turn left outside of the dual left turn lane markings, as there is no through movement. The ultimate cycling network identifies a future major pathway south of Walkley Road, and a link connecting this pathway to Lancaster Road could be considered. A connection for eastbound cyclists on Walkley Road to turn left onto Lancaster Road, such as a jug handle, could also be considered. Implementation this would also require a cyclist traffic signal and an exclusive cyclist-actuated phase.
- Transit Level of Service:
 - All approaches of Walkley Road/St. Laurent Boulevard and Walkley Road/Russell Road do not achieve the target TLOS B. The RTTP Network Concept identifies at-grade BRT on Walkley Road and isolated transit priority measures on St. Laurent Boulevard north of Walkley Road, but will not be implemented until after 2031.
- Truck Level of Service:
 - The west approach of Walkley Road/St. Laurent Boulevard does not achieve the target TkLOS B. St. Laurent Boulevard is not classified as a truck route. The receiving lane is approximately 7.5m wide, wide enough to be considered two receiving lanes.
 - The west approach of Walkley Road/Banton Street does not achieve the target TkLOS B. The existing cross-section is currently used by large trucks accessing the subject site.
 - The east approach of Walkley Road/Lancaster Road does not achieve the target TkLOS B. As the existing corner radius is greater than 15m, only the implementation

of a second receiving lane on Lancaster Road can improve the TkLOS of the east approach beyond the existing TkLOS C. Based on the existing corner radius, no recommendations have been made in improving the TkLOS.

- Vehicular Level of Service:
 - The northbound, eastbound, and westbound approaches of Walkley Road/Russell Road do not achieve the target Auto LOS D during the PM peak hour. To achieve the target, a reduction in PM peak hour traffic volumes for the following movements are required:
 - Northbound right turn: reduction of approximately 130 vehicles;
 - Eastbound left turn: reduction of approximately 30 vehicles;
 - Eastbound through: reduction of approximately 165 vehicles;
 - Westbound left turn: reduction of approximately 90 vehicles.
 - The southbound approach of Walkley Road/Lancaster Road does not achieve the target Auto LOS D during the PM peak hour. This can be addressed by adding five seconds to the southbound green time and subtracting it from the eastbound/westbound green time, which would allow the southbound approach to operate acceptably. Effects on the eastbound and westbound approaches are projected to be minimal.
- In existing and future traffic conditions, capacity issues have been identified for the following movements:
 - Walkley Road/Russell Road
 - Northbound left turn (AM peak)
 - Northbound right turn (PM peak)
 - Eastbound left turn (PM peak)
 - Eastbound through (PM peak)
 - Westbound left turn (PM peak)
 - Westbound through (AM peak)
 - Walkley Road/Lancaster Road
 - Southbound left turn (PM peak)
 - Eastbound left turn (PM peak)
- Under the background traffic conditions, there is anticipated traffic growth on Walkley Road, St. Laurent Boulevard, and Russell Road. All intersections are anticipated to operate at approximately the same level of service. In 2025, the level of service for the critical movement at Walkley Road/St. Laurent Boulevard downgrades from LOS B to LOS C during the PM peak hour, and the level of service for the critical movement at Walkley Road/Banton Street downgrades from LOS A to LOS B during the PM peak hour.
- Under the total traffic conditions, marginal increases in v/c ratios and queue lengths within the study area are anticipated. The level of service at Walkley Road/Banton Street upgrades from LOS B to LOS A during the PM peak hour, due to a decrease in traffic entering and exiting the subject site via the Banton Street access.
- Based on the foregoing, the proposed redevelopment is recommended from a transportation perspective.

1.0 INTRODUCTION

This Transportation Impact Assessment (TIA) has been prepared in support of Zoning By-Law Amendment and Site Plan Control Applications for the property located at 2480 Walkley Road. The subject site will act as the headquarters for the retailer Giant Tiger, and currently contains approximately 40,389 ft² of retail space, 76,652 ft² of office space, and 302,002 ft² of warehouse space. There are approximately 472 parking spaces serving the existing development.

The proposed redevelopment reconfigures the layout of the site and will require the demolition of the existing retail and office spaces, along with approximately one-third of the warehouse space. The proposed concept plan is divided into two 'blocks,' with Block A containing the remaining 182,685 ft² of warehouse space and Block B containing 30,962 ft² of retail space and 187,087 ft² of office space.

Block A will maintain 429 of the existing parking spaces, however only a portion will be required to serve the warehouse use. The remaining spaces will remain vacant in anticipation of further development, which will be subject to analysis as part of future applications. Block B is the subject of the current applications and will contain 625 parking spaces, which will serve the retail and office uses exclusively.

The subject site is surrounded by the following:

- Walkley Road and residences to the north;
- Russell Road and vacant land to the east;
- The Walkley Rail Corridor and industrial/retail uses to the south;
- Barton Street and industrial/warehousing uses to the west.

A view of the subject site is provided in **Figure 1**. A copy of the conceptual site plan is included in **Appendix A**.

2.0 PROPOSED DEVELOPMENT

The subject site is designated as 'Urban Employment Area' on Schedule B of the City of Ottawa's Official Plan. The implemented zoning for the property is 'Light Industrial Zone' (IL), and there are no Secondary Plans or Community Design Plans applicable to the site. The retail component of the existing and proposed developments does not conform to the implemented zoning, and therefore a Zoning By-Law Amendment is required.

The proposed redevelopment will reconfigure the layout of the Giant Tiger retail store and corporate offices, and will contain approximately 30,962 ft² of retail space, 187,087 ft² of office space, and 182,685 ft² of warehouse space. Compared to the existing configuration, this equates to an increase of 110,435 ft² of office space, and a decrease of 9,427 ft² of retail space and 119,317 ft² of warehouse space.

The amount of parking spaces provided will increase by 582 spaces. As discussed in the previous section, a majority of the parking provided in Block A is existing and will remain vacant in anticipation of further development, which will be subject to analysis as part of future applications.

Figure 1: View of the Subject Site

Access to the site is currently provided by full movement accesses along Banton Street approximately 80m south of Walkley Road, and Walkley Road approximately 80m east of Melfort Street. Left turns into the access on Walkley Road is restricted between 4:00pm and 6:00pm, and use of this access is restricted for heavy vehicles at all hours. The proposed redevelopment will maintain the full movement access at Banton Street, and will convert the Walkley Road driveway into a right-in/right-out (RIRO) access through a modification of the existing median break. Per discussions with City staff, the median will be fully closed and left turns into the Confederation Court Community Housing at 2282 Russell Road will not be permitted. Additionally, a signalized full movement access is proposed at the intersection of Walkley Road/Melfort Street.

3.0 SCREENING

3.1 Screening Form

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

- Trip Generation Trigger – The subject site is expected to generate over 60 person trips/peak hour more than the existing development; further assessment is required based on this trigger.

- Location Triggers – The development is located along a Rapid Transit or Transit Priority (RTTP) Route and a Spine Cycling Route; further assessment is required based on this trigger.
- Safety Triggers – Proposed and existing accesses are within 150m of adjacent traffic signals, the existing access on Walkley Road is within an eastbound auxiliary right turn lane onto Russell Road, the proposed access at Walkley Road/Melfort Street will connect at an existing pedestrian signal, and there is a documented history of traffic concerns at multiple intersections on Walkley Road within 500m of the development. For these reasons, further assessment is required based on this trigger.

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

4.0 SCOPING

4.1 Existing Conditions

4.1.1 Roadways

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

Walkley Road is an arterial roadway that runs generally on an east-west alignment between Riverside Drive and Ramsayville Road. Within the study area, Walkley Road has a four-lane divided urban cross-section and sidewalks on both sides of the roadway. The posted speed limit is 50 km/h west of Russell Road and 80 km/h east of Russell Road. Walkley Road is classified as a truck route, allowing full loads. Street parking is not permitted. The right-of-way (ROW) at the subject site is approximately 32m to 33m, however the City of Ottawa's Official Plan identifies a ROW protection of 44.5m for Walkley Road throughout the entire study area. A widening is required as part of this application.

Russell Road is an arterial roadway that runs generally on a north-south alignment between St. Laurent Boulevard and Hawthorne Road. North of the intersection with St. Laurent Boulevard, the roadway continues as St. Laurent Boulevard. South of the intersection with Hawthorne Road, the roadway continues as Hawthorne Road until it terminates at Rideau Road, and the east leg becomes Russell Road. This leg of Russell Road then runs on a northwest-southeast alignment before terminating at Ramsayville Road. South of Walkley Road, Russell Road has a four-lane divided rural cross-section, narrowing to a two-lane undivided urban cross-section north of Walkley Road. It has sidewalks on both sides of the roadway and a posted speed limit of 50 km/h north of Walkley Road, and no sidewalks and a posted speed limit of 70 km/h south of Walkley Road. Russell Road is a truck route, allowing full loads. Street parking is not permitted.

St. Laurent Boulevard is a collector roadway that runs north-south and east-west between Don Reid Drive and Russell Road. Approximately 300m south of the intersection with Walkley Road, the roadway curves into an east-west alignment until terminating at Don Reid Drive. Approximately 175m west of Russell Road, St. Laurent Boulevard curves into an east-west alignment before terminating at Russell Road. The northern leg of this intersection then becomes St. Laurent Boulevard, which operates as an arterial roadway between Russell Road and Hemlock Road. North of Hemlock Road, St. Laurent Boulevard operates as a collector roadway until becoming Maxwell Bailey Private at Sandridge Road. Within the study area, St. Laurent Boulevard has a two-lane undivided urban cross-

section. Sidewalks are provided on both sides of the roadway north of Walkley Road and along the west side to the south of Walkley Road, and a posted speed limit of 50 km/h. St. Laurent Boulevard is not classified as a truck route. Street parking is not permitted north of Walkley Road, and is permitted on one side approximately 200m south of Walkley Road.

Lancaster Road is a collector roadway that runs generally on a north-south alignment between St. Laurent Boulevard and Walkley Road. West of St. Laurent Boulevard, the roadway continues as Smyth Road, an arterial roadway on an east-west alignment between St. Laurent Boulevard and the Rideau River. At the Rideau River, the roadway curves into a north-south alignment and becomes Main Street before terminating at Colonel By Drive. Within the study area, Lancaster Road has a two-lane undivided urban cross-section, sidewalks on both sides of the roadway, and an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. Lancaster Road is classified as a truck route, allowing full loads. Street parking is not permitted.

Tawney Road is a local roadway that runs generally on a north-south alignment between St. Laurent Boulevard and Walkley Road. Approximately 310m east of St. Laurent Boulevard, Tawney Road curves into an east-west alignment until terminating at St. Laurent Boulevard. Within the study area, Tawney Road has a two-lane undivided urban cross-section, no sidewalks, and an unposted regulatory speed limit of 50 km/h. Tawney Road is not classified as a truck route. Street parking is permitted.

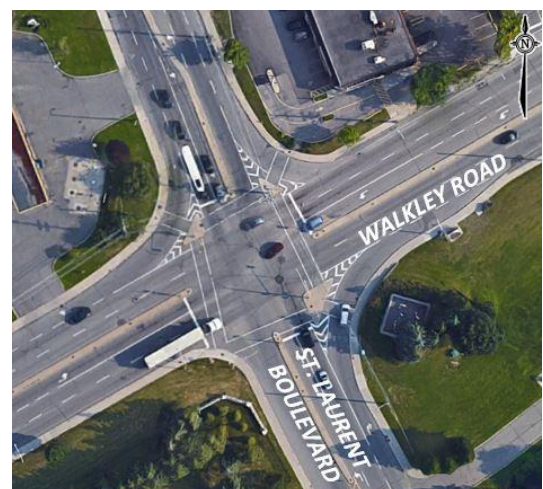
Banton Street is a local roadway that runs on a north-south alignment for approximately 100m south of Walkley Road. The roadway has a two-lane undivided urban cross-section, no sidewalks, and an unposted speed limit of 50 km/h. Banton Street is not classified as a truck route. Street parking is not permitted.

Melfort Street is a local roadway that runs generally on a north-south alignment between Joliffe Street and Walkley Road. At Joliffe Street, the roadway curves into an east-west alignment and continues as Joliffe Street before terminating at St. Laurent Boulevard. Melfort Street has a two-lane undivided urban cross-section, no sidewalks, and an unposted regulatory speed limit of 50 km/h. Melfort Street is not classified as a truck route. Street parking is not permitted.

4.1.2 Intersections

Walkley Road/St. Laurent Boulevard

- Signalized four-legged intersection
- North/South Approaches: one left turn lane, one through lane, and one channelized right turn
- East Approach: one left turn lane, two through lane, and one channelized right turn
- West Approach: one left turn lane, one through lane, and one shared through/right turn lane



Walkley Road/Tawney Road

- Unsignalized three-legged intersection
- Stop controlled on Tawney Road
- North Approach: one shared left turn/through/right turn lane
- East Approach: one through lane and one shared through/right turn lane
- West Approach: one left turn lane (two-way left turn lane), and two through lanes

Walkley Road/Banton Street

- Signalized three-legged intersection
- North Approach: driveways to two residences (approach is not signalized)
- South Approach: one left turn lane and one right turn lane
- East Approach: one left turn lane and two through lanes
- West Approach: one through lane and one shared through/right turn lane

Walkley Road/Melfort Street

- Three-legged intersection with Intersection Pedestrian Signal (IPS)
- North approach is stop-controlled, while the signal for the east and west approaches is pedestrian-actuated
- North Approach: one shared left turn/right turn lane
- East Approach: one through lane and one shared through/right turn lane
- West Approach: one left turn lane and two through lanes



Walkley Road/Russell Road

- Signalized four-legged intersection
- North/South Approaches: two left turn lanes, two through lanes, and one channelized right turn
- East Approach: two left turn lanes, two through lanes, and one right turn lane
- West Approach: one left turn lane, two through lanes, and one channelized right turn
- Bike lanes on south approach

Walkley Road/Lancaster Road

- Signalized three-legged intersection
- North Approach: two left turn lanes and one channelized right turn
- East Approach: three through lanes and one channelized right turn
- West Approach: one left turn lane and two through lanes



4.1.3 Driveways

In accordance with the City's 2017 TIA guidelines, a review of adjacent driveways along the boundary roads are provided as follows:

Walkley Road, North Side:

- 19 driveways to residences on Walkley Road and Russell Road
- 1 driveway to the Confederation Court Community Housing at 2282 Russell Road, directly north of existing site access

Banton Street, East Side:

- None

Walkley Road, South Side:

- 1 driveway to warehouses at 2370 Walkley Road

Banton Street, West Side:

- 3 driveways to warehouses at 2370 Walkley Road

4.1.4 Pedestrian and Cycling Facilities

Concrete sidewalks are provided on both sides of Walkley Road and Lancaster Road throughout the study area. Concrete or asphalt sidewalks are also provided on both sides of St. Laurent Boulevard and Russell Road north of Walkley Road. South of Walkley Road, a concrete sidewalk is provided on the west side of St. Laurent Boulevard. No sidewalks are provided on Tawney Road, Banton Street, Melfort Street, or Russell Road south of Walkley Road. Paved shoulders are provided on Russell Road south of Walkley Road, and are signed for both pedestrians and cyclists.

Walkley Road and Russell Road are classified as part of Ottawa's primary cycling network as Spine Routes. St. Laurent Boulevard and Lancaster Road are classified as Local Routes. All other study area roadways have no cycling designation. A major cycling pathway is designated along the Walkley Rail Corridor, which is adjacent to the southern property line of the subject site. Bike lanes are provided on St. Laurent Boulevard north of Walkley Road, and on Russell Road south of Walkley Road. A portion of Russell Road has paved shoulders between St. Laurent Boulevard and Walkley Road. No other cycling facilities have been implemented within the study area.

4.1.5 Area Traffic Management

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

4.1.6 Transit

Bus stops within 400m walking distance of the subject site are listed as follows:

Walkley Road

- Stop #2482 – for route 112
(located at the northeast corner of Walkley Road/St. Laurent Boulevard)
- Stop #8315 – for route 112
(located at the southeast corner of Walkley Road/St. Laurent Boulevard)
- Stop #8323 – for route 112
(located at the northwest corner of Walkley Road/Tawney Road)
- Stop #7289 – for route 112
(located on the south side of Walkley Road, approximately 65m west of Banton Street)
- Stop #8322 – for route 112
(located on the north side of Walkley Road, approximately 50m west of Melfort Street)
- Stop #7290 – for route 112
(located on the south side of Walkley Road, approximately 20m east of Melfort Street)
- Stop #7291 – for route 112
(located at the northwest corner of Walkley Road/Russell Road)

Russell Road

- Stop #6906 – for route 47
(located at the southeast corner of Walkley Road/Russell Road)
- Stop #6907 – for route 47
(located at the southwest corner of Walkley Road/Russell Road)

Locations of these bus stops are shown in **Figure 2**.

Figure 2: OC Transpo Bus Stop Locations



OC Transpo Route 47 travels between St. Laurent Station and Russell/Hydro. During the weekday AM peak period, the route operates from St. Laurent Station toward Russell/Hydro every 30 minutes between 6:00am and 9:00am. During the weekday PM peak period, the route operates from Russell/Hydro toward St. Laurent Station every 30 minutes between 3:30pm and 6:30pm. The route does not operate outside of these hours, or on weekends.

OC Transpo Route 112 travels between Billings Bridge Station and Elmvale Acres Shopping Centre or Walkley/Ryder. On weekdays, the route operates every 15-20 minutes from 7:00am to 12:00pm and 3:00pm to 6:30pm, and every 30 minutes from 4:30am to 7:00am and 6:30pm to 1:00am. On Saturdays, the route operates every 30 minutes between 6:00am and 1:00am. On Sundays, the route operates every 30 minutes between 9:30am and 9:00pm, and every 60 minutes from 7:30am to 9:30am and 9:00pm to 11:30pm.

OC Transpo maps for the routes outlined above are included in **Appendix C**.

4.1.7 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 D**.

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

Table 1: Reported Collisions

Intersection	Number of Reported Collisions
Walkley Road/St. Laurent Boulevard	90
Walkley Road/Tawney Road	4
Walkley Road/Banton Street	14
Walkley Road/Melfort Street	8
Walkley Road/Russell Road	116
Walkley Road/Lancaster Road	30

Walkley Road/St. Laurent Boulevard

A total of 90 collisions were reported at this intersection over the last five years, of which there were 42 rear-end impacts, 20 turning movement impacts, 12 sideswipe impacts, seven angle impacts, and nine single-vehicle/other impacts. Fourteen of the collisions caused injuries, but none caused fatalities.

Of the 42 rear-end impacts, eight occurred at the northbound approach (six through vehicle incidents and two right turn incidents), 11 occurred at the southbound approach (one left turn incident, two through vehicle incidents, and eight right turn incidents), 15 occurred at the eastbound approach (four left turn incidents, nine through vehicle incidents, and two right turn incidents), and eight occurred at the westbound approach (one left turn incident, six through vehicle incidents, and one right turn incident). Ten of the 42 impacts occurred in poor driving conditions. Each approach features at least six rear-end impacts for a particular movement, meeting the threshold to be considered a collision pattern. The high traffic volumes on both Walkley Road and St. Laurent Boulevard are likely a factor. Continuous right turn lanes to the grocery store and gas station at the northwest corner, in combination with the heavy channelized southbound right turn movement (470 vph during the PM peak hour), and the median opening at the westerly access to Walkley Road could also be a factor.

Of the 20 turning movement impacts, two involved left turns at the northbound approach, three involved left turns at the southbound approach, 11 involved left turns at the eastbound approach, and four involved left turns at the westbound approach. Seven of the 20 impacts occurred in poor driving conditions. Left turns at both the eastbound and westbound approaches have a protected and permitted phase. Left turn and through volumes for both of these approaches are significant, meaning the potential for conflicts between left turn and opposing through movements is high. Dual left turn lanes are typically considered at 300 vph, and this threshold is exceeded by the westbound left turn volumes during the AM peak hour (390 vph). Based on the major Hydro line on the north side of Walkley Road and grade differential on the south side of Walkley Road, there appears to be insufficient ROW to accommodate dual westbound left turn lanes. Impacts of a fully protected left turn phase for eastbound/westbound left turns at this intersection will be considered in the analysis of this TIA.

Of the 12 sideswipe impacts, one occurred at the northbound approach, nine occurred at the eastbound approach, and two occurred at the westbound approach. Two of the 12 impacts occurred in poor driving conditions. The eastbound approach is the only approach at this intersection without a dedicated right turn lane. The shared through/right turn lane may cause through vehicles to change

lanes suddenly, in an attempt to avoid waiting for a right turning vehicle in front to complete their turn.

Of the seven angle impacts, one involved a northbound vehicle and an eastbound vehicle, one involved a northbound vehicle and a westbound vehicle, two involved a southbound vehicle and an eastbound vehicle, and three involved a southbound vehicle and a westbound vehicle. Three of the seven impacts occurred in poor driving conditions.

Of the nine single-vehicle/other impacts, three occurred at the southbound approach (including two pedestrian impacts), three occurred at the eastbound approach, and three occurred at the westbound approach. Four of the nine impacts occurred in poor driving conditions.

Walkley Road/Tawney Road

A total of four collisions were reported at this intersection over the last five years, of which there was one sideswipe impact, one angle impact, and two single-vehicle/other impacts. No collisions caused injuries or fatalities. One of the four collisions occurred in poor driving conditions. Site observations during the traffic count performed on August 21, 2018 identified that improper use of the two-way left-turn lane and pedestrians illegally crossing onto the median led to several near misses.

Walkley Road/Banton Street

A total of 14 collisions were reported at this intersection over the last five years, of which there were eight rear-end impacts, two sideswipe impacts, and four angle impacts. Four of the collisions caused injuries, but none caused fatalities.

Of the eight rear-end impacts, three occurred at the eastbound approach (all through vehicle incidents) and five occurred at the westbound approach (all through vehicle incidents). Two of the eight impacts occurred in poor driving conditions.

Walkley Road/Melfort Street

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

Walkley Road/Russell Road

A total of 116 collisions were reported at this intersection over the last five years, of which there were 75 rear-end impacts, four turning movement impacts, 17 sideswipe impacts, 11 angle impacts, and nine single-vehicle/other impacts. Twenty-six of the collisions caused injuries, but none caused fatalities.

Of the 75 rear-end impacts, 30 occurred at the northbound approach (two left turn incidents, 12 through vehicle incidents, and 16 right turn incidents), 15 occurred at the southbound approach (one left turn incident, five through vehicle incidents, and nine right turn incidents), 19 occurred at the eastbound approach (13 through vehicle incidents and six right turn incidents), and 11 occurred at the westbound approach (one left turn incident and ten through vehicle incidents). Twenty-seven of the 75 impacts occurred in poor driving conditions. Each approach features at least six rear-end impacts for at least one movement, meeting the threshold to be considered a collision pattern. High traffic volumes, including a high percentage of heavy vehicle traffic, create the potential for more collisions of this type. Additionally, the speed limit of the northbound approach is 70 km/h, the speed limit of the westbound approach changes from 80km/h to 50 km/h within approximately 75m of the

intersection. All of these attributes may play a factor in the high number of rear-end collisions at this intersection. A red light camera has been implemented at this intersection.

Of the 17 sideswipe impacts, five occurred at the northbound approach, two occurred at the southbound approach, two occurred at the eastbound approach, and eight occurred at the westbound approach. Five of the 17 impacts occurred in poor driving conditions. As discussed previously, high traffic volumes and a high percentage of heavy vehicles create the potential for collisions of this type. For westbound traffic, the upstream signal at Walkley Road/Lancaster Road is approximately 220m east, measured stop bar to stop bar. The westbound left turn lane extends back through the intersection with Lancaster Road as a third “through” lane, which may contribute to westbound sideswipes.

Of the 11 angle impacts, three involved a northbound vehicle and an eastbound vehicle, one involved a northbound vehicle and a westbound vehicle, two involved a southbound vehicle and an eastbound vehicle, and five involved a southbound vehicle and a westbound vehicle. Three of the 11 impacts occurred in poor driving conditions.

Of the nine single-vehicle/other impacts, three occurred at the northbound approach (including one cyclist impact), one occurred at the southbound approach, and five occurred at the westbound approach. Two of the nine impacts occurred in poor driving conditions.

Walkley Road/Lancaster Road

A total of 30 collisions were reported at this intersection over the last five years, of which there were 19 rear-end impacts, one turning movement impact, six sideswipe impacts, and four angle impacts. Four of the collisions caused injuries, but none caused fatalities.

Of the 19 rear-end impacts, eight occurred at the southbound approach (five left turn incidents and three right turn incidents), seven occurred at the eastbound approach (one left turn incident and six through vehicle incidents), and four occurred at the westbound approach (two through vehicle incidents and two right turn incidents). Seven of the 19 impacts occurred in poor driving conditions. The speed limit of the eastbound approach increases to 80 km/h immediately east of the intersection at Walkley Road/Russell Road, approximately 200m west of Lancaster Road. There is therefore greater potential for collisions at this approach when considering the higher percentage of heavy trucks on Walkley Road, which cannot accelerate to 80 km/h or decelerate to a stop as quickly as smaller vehicles. Four of the seven eastbound rear-end impacts involved a truck or delivery van. Heavy traffic volumes may play a factor, with 500 vph making the southbound left turn movement and 1,700 vph making the eastbound through movement during the PM peak hour.

Of the six sideswipe impacts, two occurred at the eastbound approach and four occurred at the westbound approach. One of the six impacts occurred in poor driving conditions.

4.1.8 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:

- | | |
|--------------------------------------|-------------------|
| • Walkley Road/St. Laurent Boulevard | February 4, 2016 |
| • Walkley Road/Banton Street | November 8, 2016 |
| • Walkley Road/Melfort Street | April 11, 2017 |
| • Walkley Road/Russell Road | February 22, 2018 |
| • Walkley Road/Lancaster Road | February 22, 2018 |

Weekday traffic counts coordinated by Novatech were completed on the following day:

- | | |
|----------------------------|-----------------|
| • Walkley Road/Tawney Road | August 21, 2018 |
|----------------------------|-----------------|

Based on the count data, Walkley Road has an annual average daily traffic (AADT) of 28,680 vehicles/day, and Banton Street has an AADT of 2,937 vehicles/day. Traffic count data is included in **Appendix E**.

The median break at the existing site access on Walkley Road is also available for vehicles entering and exiting the Confederation Court Community Housing driveway across from the existing site access. The 134-unit development is accessed by two driveways to Russell Road in addition to the driveway on Walkley Road. Each driveway leads to a different parking area on-site, and the three parking areas are not connected to one another (i.e. vehicles must exit the site via the same driveway from which they entered). The following trip generation estimates are based solely on the Walkley Road access.

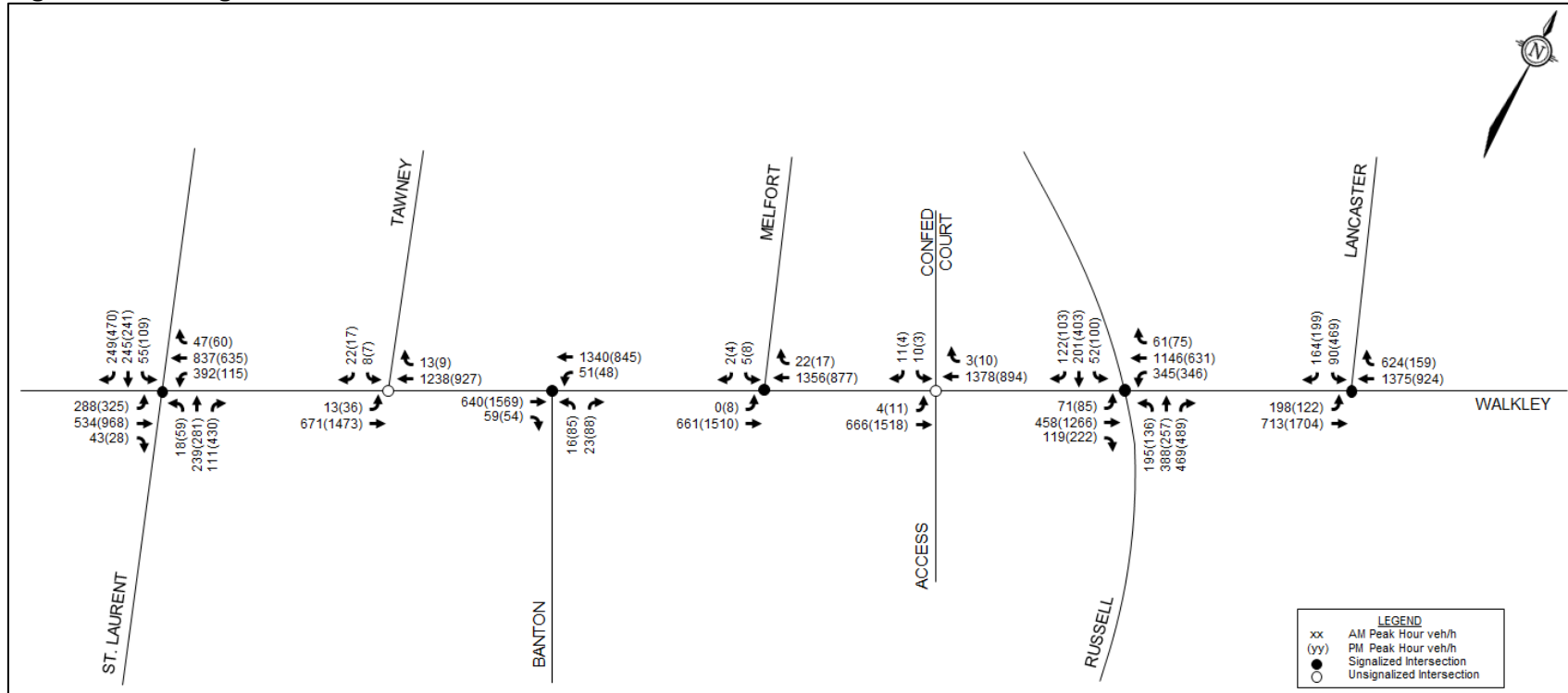
Considering the Walkley Road access only, this part of the development is served by approximately 35 parking spaces. The *ITE Traffic Engineering Handbook, 5th Edition* suggests the number of vehicle trips generated by a parking facility serving residences in the AM peak hour typically range from 5% to 10% of the total parking spaces for inbound trips, and 30% to 50% for outbound trips. In the PM peak hour, the number of vehicle trips generated typically range from 30% to 50% of the total parking spaces for inbound trips and 10% to 30% for outbound trips.

Peak hour rates of 20% for inbound trips and 60% for outbound trips have been assumed during the AM peak hour, and 60% for inbound trips and 20% for outbound trips have been assumed during the PM peak hour. This results in 7 inbound trips and 21 outbound trips during the AM peak hour, and 21 inbound trips and 7 outbound trips during the PM peak hour.

The east-west distribution at the access is anticipated to follow the traffic patterns associated with the typical commute (departing to work during the AM peak hour and arriving home during the PM peak hour). This approximately equates to a 45%/55% east/west split. Since it is anticipated that the traffic counts above include traffic generated by the community housing, these trip generation estimates serve to quantify the number of trips only at the Walkley Road access.

Traffic volumes within the study area are shown in **Figure 3**.

Figure 3: Existing Network Traffic Volumes



4.2 Planned Conditions

The City's 2013 Transportation Master Plan (TMP) does not identify any roadway projects within the study area in its Affordable Road Network.

The Rapid Transit and Transit Priority (RTTP) Network identifies a bus rapid transit (BRT) project within the study area. The Baseline/Heron/Walkley/St. Laurent BRT project will provide high-quality transit access to employment, commercial, and institutional land uses along this corridor. In the Affordable Network, at-grade BRT will connect from Baseline Station to Heron Station. In the Network Concept, at-grade BRT will connect from Bayshore Station to St. Laurent Station. The Network Concept will not be implemented until after 2031. The RTTP Network identifies several transit priority projects along St. Laurent Boulevard. Within the study area, the only applicable project is a Network Concept project to implement transit signal priority and queue jump lanes on St. Laurent Boulevard between Walkley Road and Russell Road.

The City's 2013 Ottawa Cycling Plan outlines two cycling infrastructure projects to be implemented within the study area. As a Phase 1 (2014-2019) project, the plan identifies the implementation of a shared use lane along Pleasant Park Road to create a neighbourhood bikeway (connecting Riverside Drive and St. Laurent Boulevard). As a Phase 2 (2019-2024) project, the plan identifies the implementation of bike lanes along St. Laurent Boulevard between Pleasant Park Road and Russell Road, as St. Laurent Boulevard is a spine route of the Walkley Employment Node network.

In March 2018, the City received a Site Plan Control application for the construction of an approximately 2,900 m² retail showroom and warehouse on the property immediately east of the subject site (2510 Russell Road). Based on the information provided by the City's Development Application Search Tool, it is anticipated that the retail showroom will be open in 2019. The site plan for this application proposes that a 1.8m raised cycle track and 1.8m sidewalk will replace the existing southbound paved shoulder on Russell Road. The TIA associated with this application is discussed further in the Forecasting section of this report.

4.3 Study Area and Time Periods

The study area for this report will include Walkley Road, St. Laurent Boulevard, Tawney Road, Banton Street, Melfort Street, Russell Road, and Lancaster Road. The study area includes the signalized intersections at Walkley Road/St. Laurent Boulevard, Walkley Road/Banton Street, Walkley Road/Melfort Street, Walkley Road/Russell Road, and Walkley Road/Lancaster Road, as well as the unsignalized intersection at Walkley Road/Tawney Road.

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The proposed redevelopment is expected to be completed with full occupancy by the year 2020. Therefore, the analysis will consider the buildout year 2020 and the horizon year 2025.

4.4 Exemptions Review

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

Table 2: TIA Exemptions

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

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

- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design
- Module 4.5: Transportation Demand Management
- Module 4.7: Transit
- Module 4.9: Intersection Design

5.0 FORECASTING

5.1 Development-Generated Travel Demand

5.1.1 Trip Generation

Currently, the subject site is occupied by approximately 40,389 ft² of retail space, 76,652 ft² of office space, and 302,002 ft² of warehouse space. The proposed reconfiguration of the site will contain approximately 30,962 ft² retail space, 187,087 ft² of office space, and 182,685 ft² of warehouse space. Trips generated by these land uses have been estimated using the *ITE Trip Generation Manual, 10th Edition*. Retail trips have been estimated based on the Free-Standing Discount Store land use (land use 815), office trips have been estimated based on the General Office Building land use (land use 710), and warehouse trips have been estimated based on the Warehousing land use (land use 150). It is noted that only a portion of the existing parking is required for the remaining warehouse use. As future development for this part of the subject site is unknown at this time, it is proposed that the existing parking be retained and remain vacant. The vacant parking in excess of the warehouse parking will not serve the existing or proposed land uses and is not expected to generate trips.

The estimated number of trips generated by the existing development and proposed redevelopment are shown in **Table 3**.

Table 3: Person Trip Generation

Land Use	ITE Code	GFA	AM Peak (PPH ⁽¹⁾)			PM Peak (PPH)		
			IN	OUT	TOT	IN	OUT	TOT
Existing Development								
Free-Standing Discount Store	815	40,389 ft²	41	19	60	125	125	250
General Office Building	710	76,652 ft²	109	18	127	18	95	113
Warehousing	150	302,002 ft²	61	18	79	22	60	82
Total			211	55	266	165	280	445
Proposed Redevelopment								
Free-Standing Discount Store	815	30,962 ft²	32	14	46	95	95	190
General Office Building	710	187,087 ft²	223	36	259	42	222	264
Warehousing	150	182,685 ft²	46	14	60	17	47	64
Total			301	64	365	154	364	518
Difference			90	9	99	-11	84	73

1. PPH: Persons Per Hour – ITE Trip to Person Trip Factor of 1.28 has been applied, consistent with the 2017 TIA Guidelines

From the previous table, the proposed redevelopment is projected to generate an additional 99 person trips during the AM peak hour and 73 person trips during the PM peak hour.

The modal shares for the existing development and proposed redevelopment are anticipated to be consistent with the modal shares outlined in the *2011 TRANS O-D Survey Report*, specific to the Alta Vista region. The modal share values applied to the existing and proposed office space are based on all trips to/within the Alta Vista district in the AM peak hour and all trips from/within the Alta Vista district in the PM peak hour, with an increase to the auto driver share based on location of the subject site. The modal share values applied to the retail and warehousing spaces are based on all

observed trips to/within the Alta Vista district. A full breakdown of the projected net increase in person trips by modal share are shown in **Table 4**.

Table 4: Person Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		IN	OUT	TOT	IN	OUT	TOT
Existing Development							
Retail Person Trips		41	19	60	125	125	250
Auto Driver	60%	25	11	36	75	75	150
Auto Passenger	15%	6	3	9	19	19	38
Transit	20%	8	4	12	25	25	50
Non-Auto	5%	2	1	3	6	6	12
Office Person Trips		109	18	127	18	95	113
Auto Driver	65%	71	11	82	11	62	73
Auto Passenger	15%	16	3	19	3	14	17
Transit	15%	16	3	19	3	14	17
Non-Auto	5%	6	1	7	1	5	6
Warehouse Person Trips		61	18	79	22	60	82
Auto Driver	60%	36	11	47	14	36	50
Auto Passenger	15%	9	3	12	3	9	12
Transit	20%	13	3	16	4	12	16
Non-Auto	5%	3	1	4	1	3	4
Auto Driver (Total)		132	33	165	100	173	273
Auto Passenger (Total)		31	9	40	25	42	67
Transit (Total)		37	10	47	32	51	83
Non-Auto (Total)		11	3	14	8	14	22
Proposed Redevelopment							
Retail Person Trips		32	14	46	95	95	190
Auto Driver	60%	19	8	27	56	56	112
Auto Passenger	15%	5	2	7	15	15	30
Transit	20%	6	3	9	20	20	40
Non-Auto	5%	2	1	3	4	4	8
Office Person Trips		223	36	259	42	222	264
Auto Driver	65%	145	24	169	28	145	173
Auto Passenger	15%	33	5	38	6	33	39
Transit	15%	33	5	38	6	33	39
Non-Auto	5%	12	2	14	2	11	13
Warehouse Person Trips		46	14	60	17	47	64
Auto Driver	60%	28	8	36	10	28	38
Auto Passenger	15%	7	2	9	3	7	10
Transit	20%	9	3	12	3	10	13
Non-Auto	5%	2	1	3	1	2	3
Auto Driver (Total)		192	40	232	94	229	323
Auto Passenger (Total)		45	9	54	24	55	79
Transit (Total)		48	11	59	29	63	92
Non-Auto (Total)		16	4	20	7	17	24
Auto Driver (Difference)		60	7	67	-6	56	50
Auto Pass. (Difference)		14	0	14	-1	13	12
Transit (Difference)		11	1	12	-3	12	9
Non-Auto (Difference)		5	1	6	-1	3	2

From the previous table, the proposed redevelopment is anticipated to generate an additional 67 vehicle trips during the AM peak hour and 50 vehicle trips during the PM peak hour.

A percentage of the trips generated by the proposed redevelopment are anticipated to be internally captured (for example, office workers making a trip to the retail store). It is likely that the number of trips of this nature will only make up a small proportion of the overall site-generated trip volume, and as such, no deduction has been made to account for internally-captured trips. All trips generated by the subject site are assumed to have an origin or destination beyond the subject site. This simplifying assumption also allows for a more conservative analysis.

The retail land use is expected to generate two types of external peak hour trips: primary and pass-by trips. Primary trips are made for the specific purpose of visiting the site, while pass-by trips are made as intermediate stops on the way to another destination. Peak hour pass-by trips have been estimated based on a pass-by rate of 17%, which is the average rate identified in the *ITE Trip Generation Handbook, 3rd Edition* for the Free-Standing Discount Store land use. The pass-by trips generated by the retail store are part of the observed background traffic, and do not constitute new trips on the adjacent road network.

The primary and pass-by trip generation for the existing and proposed retail stores is summarized in **Table 5**.

Table 5: Primary and Pass-By Trips

Trip Type	AM Peak			PM Peak		
	IN	OUT	TOT	IN	OUT	TOT
<i>Existing Retail Vehicle Trips</i>	25	11	36	75	75	150
Pass-by (17%)	3	3	6	13	13	26
Primary (83%)	22	8	30	62	62	124
<i>Proposed Retail Vehicle Trips</i>	19	8	27	56	56	112
Pass-by (17%)	2	2	4	10	10	20
Primary (83%)	17	6	23	46	46	92

5.1.2 Trip Distribution

The assumed distribution of trips generated by the subject site has been derived from existing traffic patterns within the study area. Each land use is anticipated to draw its respective trips from different areas. Considerations for each trip distribution is described below.

The distribution of trips generated by the retail land use anticipates a higher draw of customers in the areas proximally north and west of the subject site, and is based on the off-peak traffic counts within the study area.

The distribution of trips generated by the office and warehouse land uses is anticipated to follow the traffic patterns associated with the typical commute (arriving at work during the AM peak hour and departing from work during the PM peak hour).

The trip distribution for each land use is described as follows:

Retail Distribution

- 20% to/from the north via St. Laurent Boulevard
- 10% to/from the north via Russell Road
- 10% to/from the south via St. Laurent Boulevard
- 15% to/from the south via Russell Road
- 15% to/from the east via Walkley Road
- 30% to/from the west via Walkley Road

Office/Warehouse Distribution

- 10% to/from the north via St. Laurent Boulevard
- 10% to/from the north via Russell Road
- 15% to/from the south via Russell Road
- 45% to/from the east via Walkley Road
- 20% to/from the west via Walkley Road

5.1.3 Trip Assignment

The trip assignment in existing conditions and future conditions is assumed to be different, as a new signalized access is proposed at Melfort Street, and the existing access on Walkley Road will become a RIRO access by modifying the existing median.

In existing conditions, the easternmost access on Walkley Road restricts inbound left turns during the PM peak hour, requiring all inbound traffic from the east to enter via the access on Banton Street.

Trips generated by the existing development will be assigned to the accesses as follows:

Full-Movement Access at Banton Street

- 75% of trips arriving and departing to the north and south via St. Laurent Boulevard and the west via Walkley Road;
- 25% of AM peak trips arriving and departing to the north and south via Russell Road and the east via Walkley Road;
- 100% of PM peak trips arriving and 25% of PM peak trips departing to the north and south via Russell Road and the east via Walkley Road.

Full-Movement Access at Walkley Road (PM inbound left turns restricted)

- 25% of trips arriving and departing to the north and south via St. Laurent Boulevard and the west via Walkley Road;
- 75% of AM peak trips arriving and departing to the north and south via Russell Road and the east via Walkley Road;
- 75% of PM peak trips departing to the north and south via Russell Road and the east via Walkley Road.

In future conditions, the easternmost access on Walkley Road will become right-in/right-out only, and will exclusively access parking designated for retail customers. Employees will be directed to not park in this area, meaning no office or warehouse trips have been assigned to this access. The proposed signalized access at Walkley Road/Melfort Street will act as the main entrance and exit to the site, and the existing access on Banton Street will remain in place. Both of these driveways provide access to office and warehouse parking, as well as warehouse loading at the rear of the site. Therefore, office and warehouse trips have been assigned to both accesses.

Trips generated by the proposed redevelopment will be assigned to the accesses as follows:

Full-Movement Access at Banton Street

- 30% of office trips arriving and departing to the north and south via St. Laurent Boulevard and the west via Walkley Road;
- 100% of warehouse trips arriving and departing to the north and south via St. Laurent Boulevard and the west via Walkley Road.

Full-Movement Access at Walkley Road/Melfort Street

- 50% of retail trips arriving and 100% of retail trips departing to the north and south via St. Laurent Boulevard and the west via Walkley Road;
- 100% of retail trips arriving and 50% of retail trips departing to the north and south via Russell Road and the east via Walkley Road;
- 70% of office trips arriving and departing to the north and south via St. Laurent Boulevard and the west via Walkley Road;
- 100% of office trips arriving and departing to the north and south via Russell Road and the east via Walkley Road;
- 100% of warehouse trips arriving and departing to the north and south via Russell Road and the east via Walkley Road.

RIRO Access at Walkley Road

- 50% of retail trips arriving from the north and south via St. Laurent Boulevard and the west via Walkley Road;
- 50% of retail trips departing to the north and south via Russell Road and the east via Walkley Road.

Pass-by trips generated by the existing development have been distributed evenly to the accesses at Banton Street and Walkley Road. Pass-by trips generated by the proposed redevelopment have been assigned to the proposed signalized access at Walkley Road/Melfort Street.

It is anticipated that most vehicular traffic generated by the neighbourhoods north of Walkley Road currently avoid accessing Walkley Road from Melfort Street, given the high traffic volumes on Walkley Road. The analysis conservatively assumes more left-turning vehicular traffic will enter and exit Melfort Street in future background and total traffic conditions, upon implementation of the proposed four-way traffic signal.

5.2 Background Traffic

5.2.1 General Background Growth Rate

A rate of background growth has been established through a review of the City of Ottawa's 2013 TMP and Strategic Long Range Model (comparing snapshots of 2011 and 2031 AM peak volumes). The snapshots suggest a growth rate of -0.5% to 1.5% per annum on arterial roadways within the study area. For the 'Inner Suburbs' area of Ottawa, Exhibit 2.10 of the 2013 TMP projects a population growth rate of approximately 0.3% per annum and an employment growth rate of approximately 1.1% per annum. To reflect the study area's development as an employment area, a 1% background growth rate has been applied to Walkley Road, St. Laurent Boulevard, and Russell Road. A 0% growth rate has been applied to all other roadways within the study area.

5.2.2 Other Area Development

A TIA was prepared by Parsons in March 2018 in support of a retail showroom and warehouse at 2510 Russell Road, immediately east of the subject site. Due to the nature of the proposed business and remote location of the site, the report forecasts few transit and non-auto trips, and projects the site to generate 15 vehicle trips during the AM peak hour and 30 vehicle trips during the PM peak hour.

A Community Transportation Study/Transportation Impact Study (CTS/TIS) was prepared by Parsons in December 2015 in support of redevelopment of the Elmvale Acres Shopping Centre. The proposal includes the addition of approximately 800 residential units within four new mixed-use buildings and the redistribution of commercial space. A secondary plan was developed and implemented in August 2017 by the City, and the redevelopment is anticipated to occur in phases over the next 10 to 15 years. The CTS/TIS identifies that most of the traffic generated by the redevelopment will not enter the study area of this TIA, except for traffic coming to/from the south via St. Laurent Boulevard (approximately 32 vehicle trips during the AM peak hour and 53 vehicle trips during the PM peak hour). These trips are all assumed to enter or exit the study area west of St. Laurent Boulevard on Walkley Road. To maintain a conservative analysis, full buildout is assumed by the horizon year 2025.

The projected traffic volumes generated by the development at 2510 Russell Road and the proposed redevelopment of the Elmvale Acres Shopping Centre have been added to the background traffic at all relevant intersections within the study area. Relevant excerpts of the Parsons traffic studies for both sites are included in **Appendix F**.

The figures listed below present the following conditions:

- Trips generated by other developments in the area are shown in **Figure 4**;
- Background traffic volumes for the 2020 buildout year are shown in **Figure 5**;
- Background traffic volumes for the 2025 horizon year are shown in **Figure 6**;
- Trips generated by the existing development are shown in **Figure 7**;
- Trips generated by the proposed redevelopment are shown in **Figure 8**;
- Net increase in trips generated by the proposed redevelopment are shown in **Figure 9**;
- Total traffic volumes for the 2020 buildout year are shown in **Figure 10**;
- Total traffic volumes for the 2025 horizon year are shown in **Figure 11**.

Figure 4: Traffic Generated by Other Area Developments

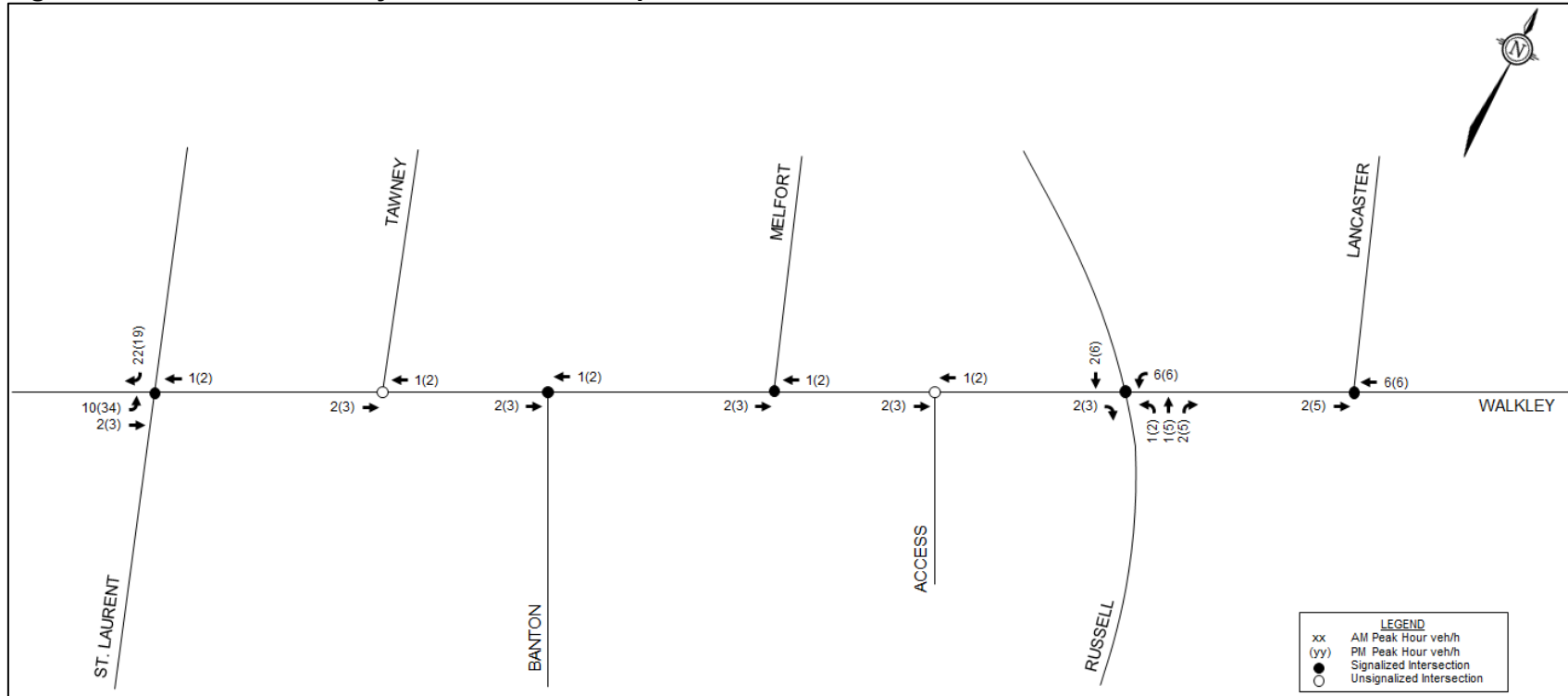


Figure 5: 2020 Background Traffic Volumes

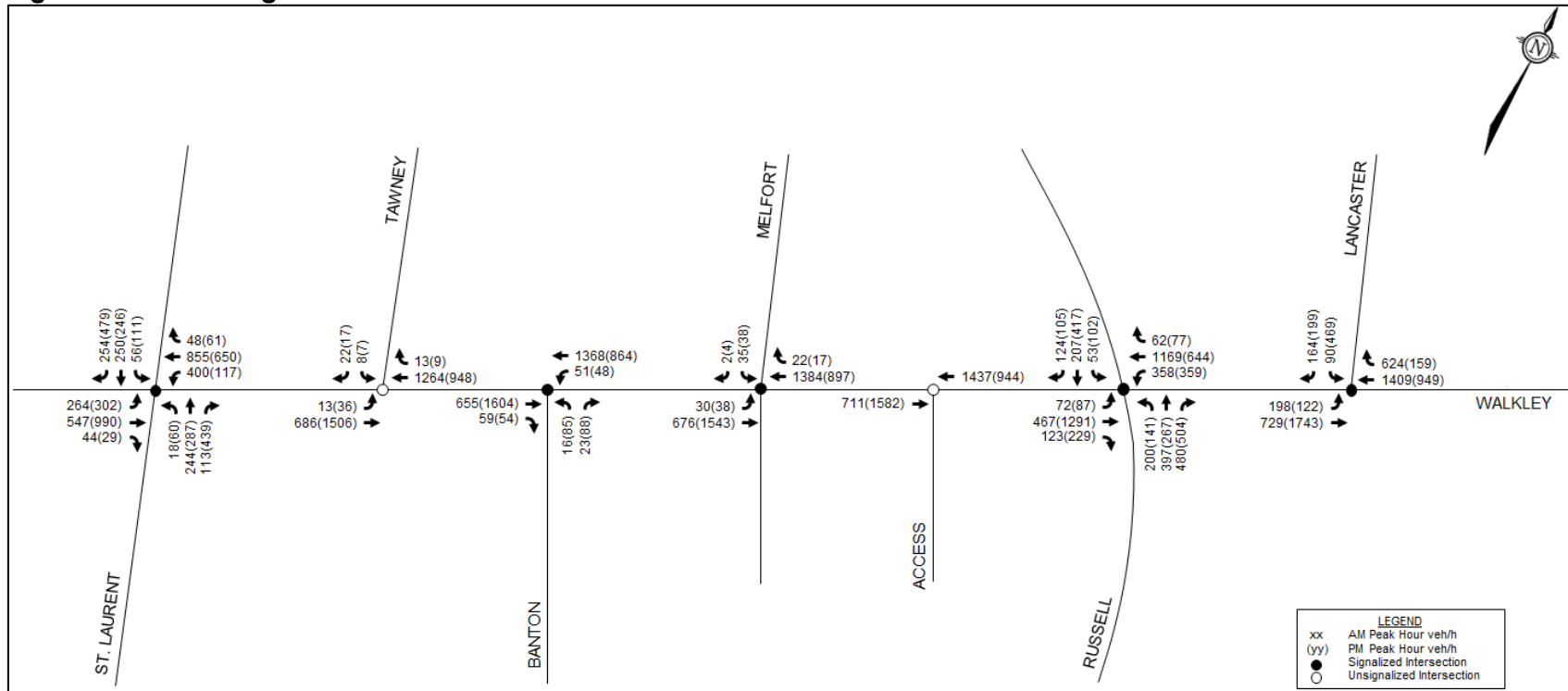


Figure 6: 2025 Background Traffic Volumes

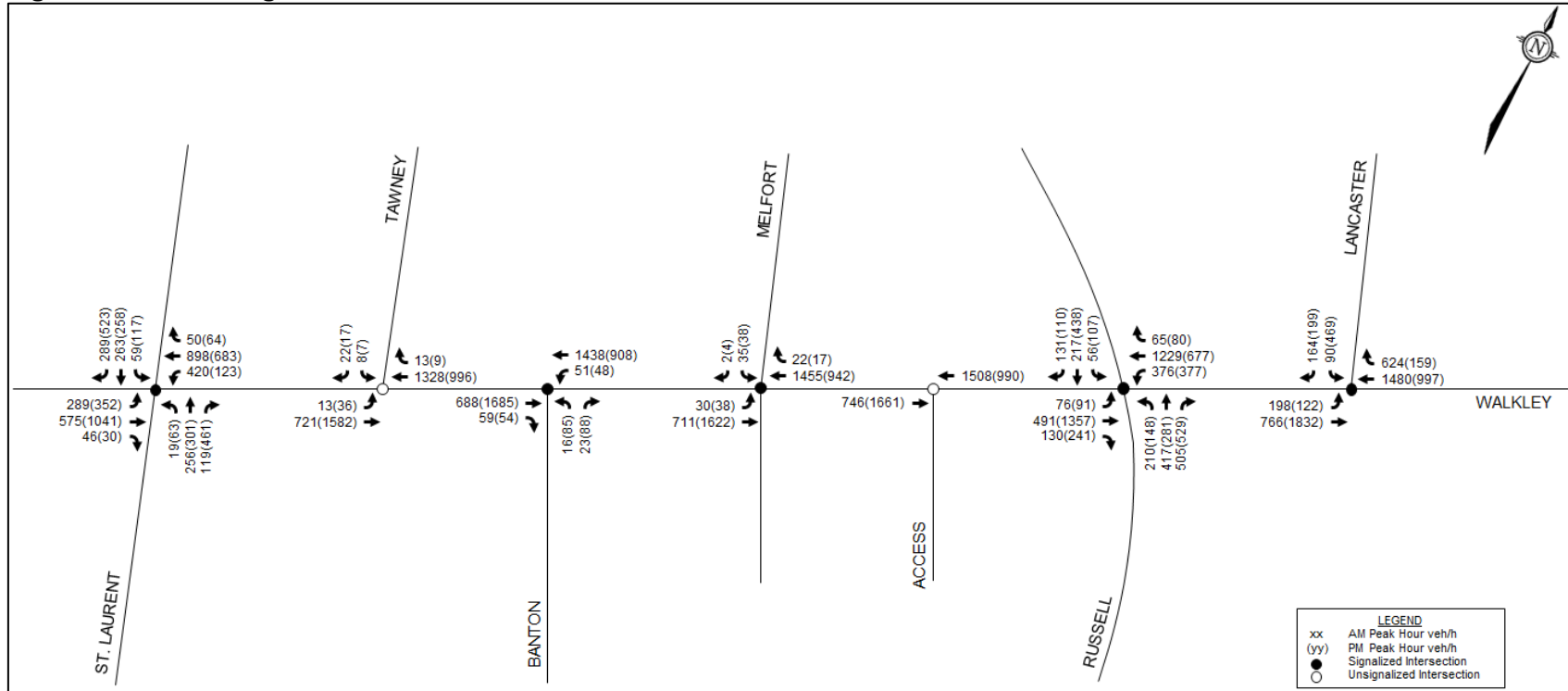


Figure 7: Existing Site-Generated Traffic

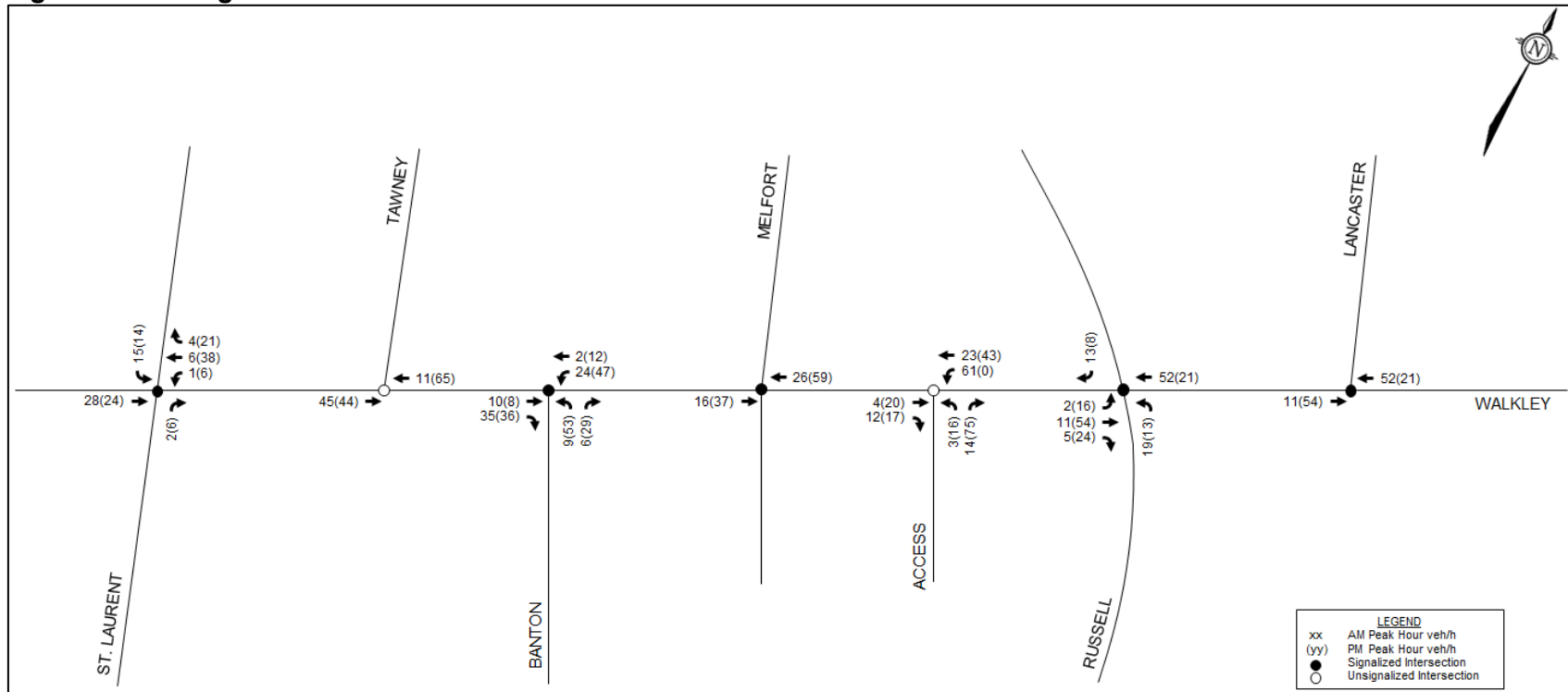


Figure 8: Proposed Site-Generated Traffic

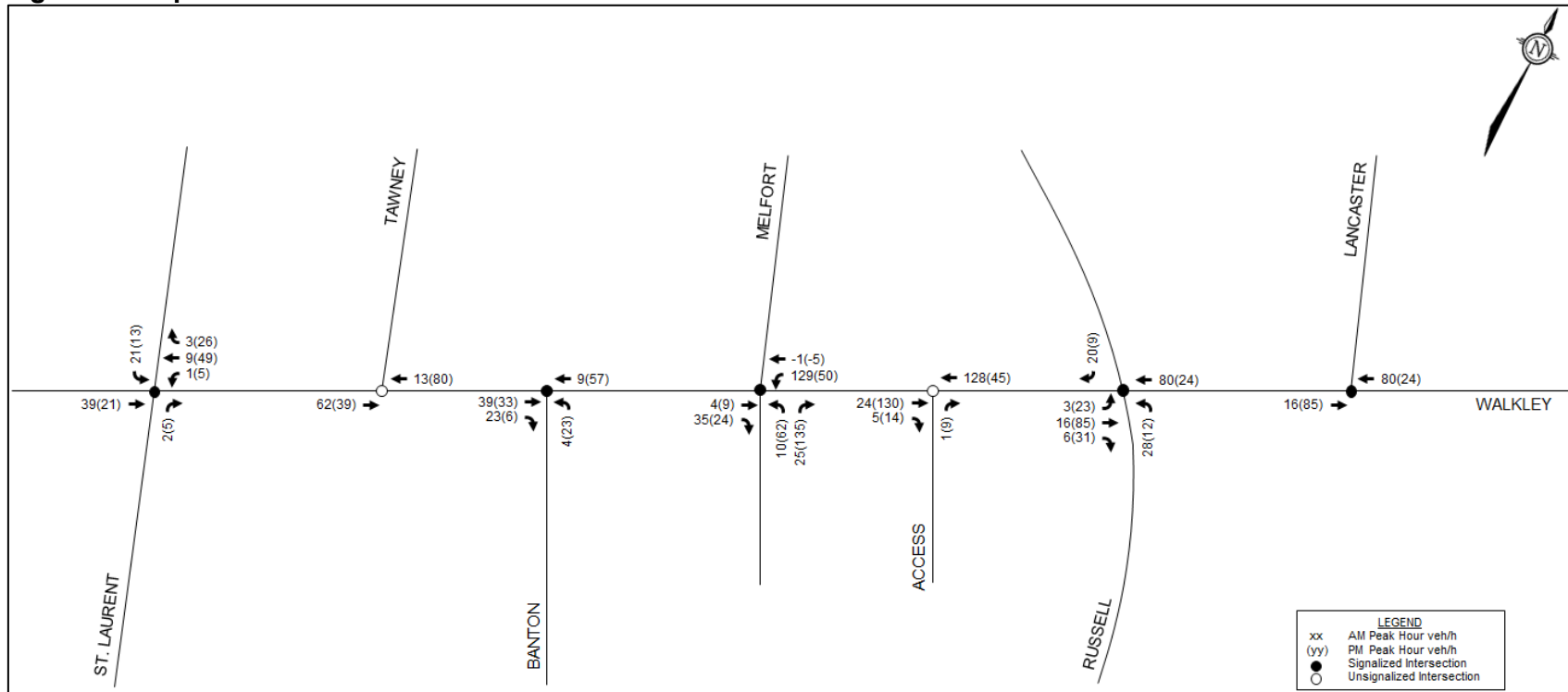


Figure 9: Net Site-Generated Traffic

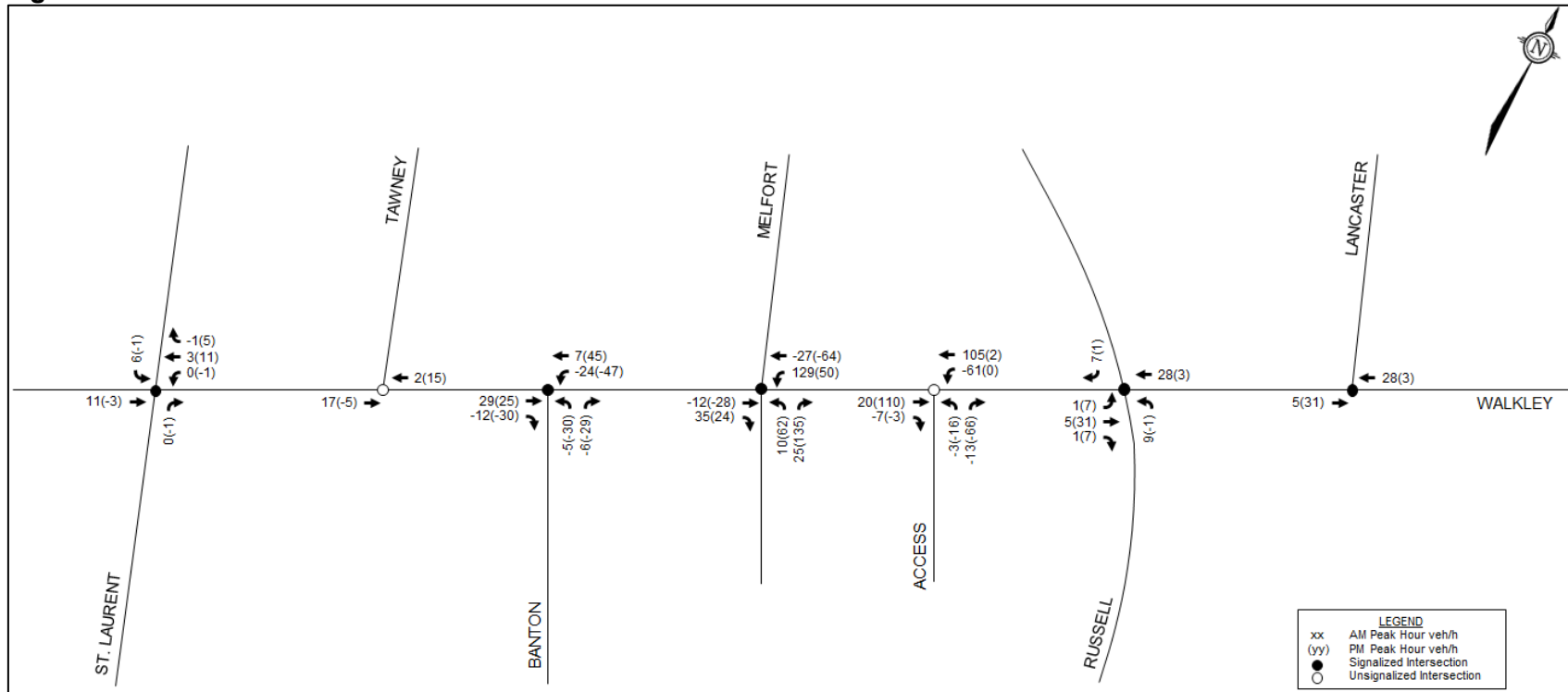


Figure 10: 2020 Total Traffic Volumes

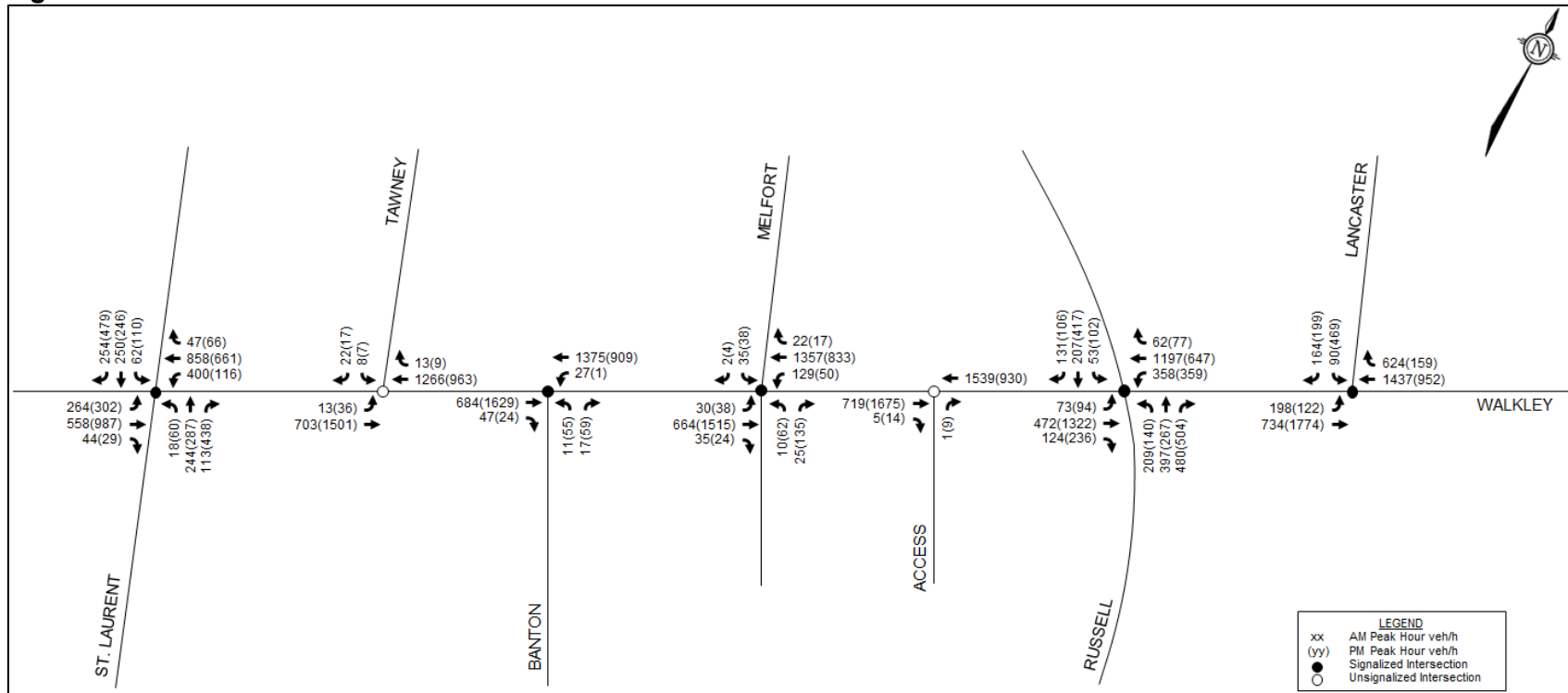
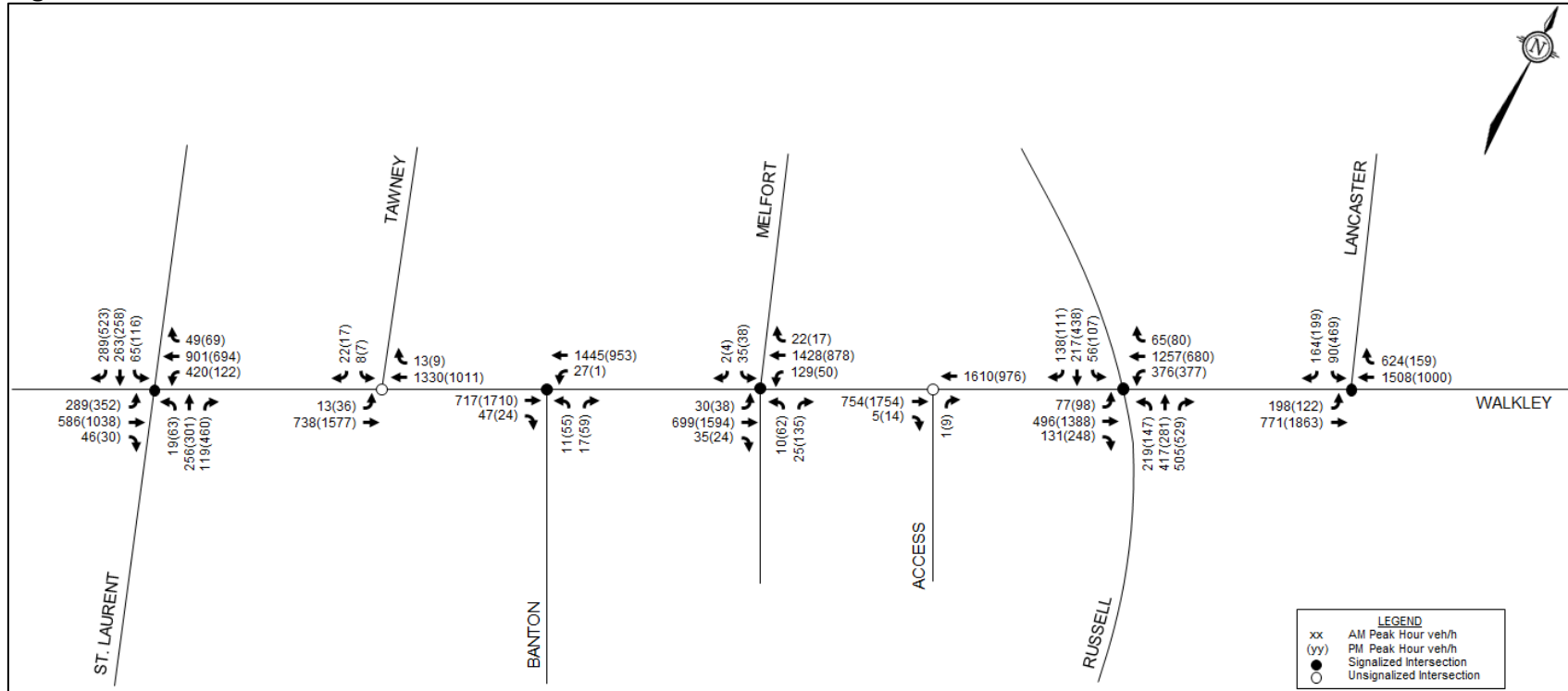


Figure 11: 2025 Total Traffic Volumes



6.0 ANALYSIS

6.1 Development Design

6.1.1 Design for Sustainable Modes

Pedestrian facilities will be provided between the building entrances and the parking lot. Additionally, pedestrian facilities will connect the building to the existing sidewalks along Walkley Road and the proposed sidewalks on either side of the Melfort Street access. Sidewalks will be depressed and continuous across the existing Walkley Road access, in accordance with City standards. Crosswalks will be provided across the proposed Melfort Street access.

The bus stops nearest to the subject site are reviewed in Section 4.1.6 and shown in **Figure 2**. Stops #6906, #6907, #7290, and #8322 are within a walking distance of approximately 300m of all building entrances to the proposed redevelopment.

Bicycle parking for the proposed development will be in accordance with the minimum requirement of the City of Ottawa's *Zoning By-Law* (ZBL). Further review of the parking space requirements is included in Section 6.2.

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

6.1.2 Circulation and Access

Garbage collection, loading and deliveries will be accommodated directly east of the proposed office building. Loading and garbage collection vehicles will enter the site via the Melfort Street access and reverse into the loading spaces. Further review of the number of loading spaces is included in Section 6.2. Figures of design vehicle turning movements are included in Section 6.4.

The fire route for the proposed redevelopment accesses the site via the proposed RIRO access on Walkley Road, and is shown on the site plan.

6.2 Parking

The subject site is located in Area C of Schedules 1 and 1A of the City's ZBL. Minimum vehicular and bicycle parking rates for the proposed redevelopment are identified in the ZBL, and summarized in **Table 6**.

The entire subject site provides a total of 1,054 parking spaces, because a majority of the existing parking spaces will remain in place after the demolition of the existing development. As future development is anticipated on the western half of the subject site (Block A), and may be served by these existing spaces, it is not reasonable to remove these excess spaces when they may need to be reconstructed at a future time. The proposed redevelopment provides 625 parking spaces for Block B of the subject site.

Table 6: Parking Requirements Per Zoning By-Law

Land Use	Rate	GFA	Required	Provided
<i>Vehicle Parking</i>				
Retail Store	3.4 per 100 m ² GFA	2,876 m ²	98	115
Office	2.4 per 100 m ² GFA	17,381 m ²	418	510
Warehouse	0.8 per 100 m ² GFA	16,972 m ²	136	429
Total			662	1,054
<i>Bicycle Parking</i>				
Retail Store	1.0 per 250 m ² GFA	2,876 m ²	12	12
Office	1.0 per 250 m ² GFA	17,381 m ²	70	89
Warehouse	1.0 per 2,000 m ² GFA	16,972 m ²	9	9
Total			91	110

Based on the foregoing table, the number of vehicle and bicycle parking spaces meet the minimum requirements outlined in the ZBL.

The City's *Accessibility Design Standards* outline minimum requirements for the number of accessible parking spaces that must be provided, based on the total number of parking spaces. For the retail use (a total number of parking spaces between 101 and 133), five accessible spaces are required. For the office use (a total number of parking spaces between 501 and 550), 13 accessible spaces are required. For the warehouse use (a total number of parking spaces between 401 and 450), 11 accessible spaces are required. Five retail parking spaces, 18 office parking spaces, and 20 warehouse parking spaces are accessible spaces, thereby meeting the minimum requirements.

The minimum number of loading spaces for the proposed redevelopment are identified in the ZBL, based on the land use and corresponding gross floor area. Table 113A of the ZBL identifies a minimum of two loading spaces for retail stores between 2,000 and 4,999 m² GFA and a minimum of two loading spaces for offices and warehouses between 15,000 and 24,999 m² GFA. The minimum requirements are met, as the proposed redevelopment provides two retail loading spaces, two office loading spaces, and 12 warehouse loading spaces.

6.3 Boundary Streets

This section provides a review of the boundary streets (Walkley Road and Banton Street) using complete streets principles. The *Multi-Modal Level of Service* (MMLOS) guidelines produced by IBI Group in October 2015 were used to evaluate the levels of service for the boundary roadways for each mode of transportation.

Schedule B of the City's Official Plan designates the lands north of Walkley Road and west of Lancaster Road as being within the General Urban Area, and the lands south of Walkley Road and east/west of Russell Road as being within the Employment Area. Banton Street is located exclusively within the Employment Area.

Exhibit 22 of the MMLOS guidelines denotes different targets for certain modes based on the policy area, and therefore the stricter target has been selected for evaluation for roadways within both

policy areas (for example, local cycling routes have a higher target BLOS in the General Urban Area, and truck routes have a higher target TkLOS in the Employment Area).

The boundary streets review evaluates the MMLOS for Walkley Road and Banton Street based on existing conditions.

6.3.1 Pedestrian Level of Service (PLOS)

Exhibit 4 of the MMLOS guidelines has been used to evaluate the segment PLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines suggest a target PLOS C for all roadway classes within the General Urban Area (Walkley Road) and Employment Area (Banton Street). The results of the segment PLOS analysis are summarized in **Table 7**.

Table 7: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed ⁽¹⁾	Segment PLOS
Walkley Road (north side)					
1.5m	2m	> 3000 vpd	No	60 km/h	E
Walkley Road (south side)					
2m	0m	> 3000 vpd	No	60 km/h	E
Banton Street (east side)					
No sidewalk		≤ 3000 vpd	No	60 km/h	F
Banton Street (west side)					
No sidewalk		≤ 3000 vpd	No	60 km/h	F

1. Operating speeds taken as the speed limit plus 10 km/h.

6.3.2 Bicycle Level of Service (BLOS)

Exhibit 11 of the MMLOS guidelines has been used to evaluate the segment BLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines suggest a target PLOS C for arterial spine routes within the General Urban Area (Walkley Road), and no target for local roadways with no bike classification within the Employment Area (Banton Street). The results of the segment BLOS analysis are summarize in **Table 8**.

Table 8: BLOS Segment Analysis

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Centerline Type	Operating Speed	Segment BLOS
Walkley Road (St. Laurent Boulevard to Russell Road)						
Arterial	Spine Route	Mixed Traffic	4	Raised Median	60 km/h	F
Banton Street (Walkley Road to 100m south of Walkley Road)						
Local	No Class	Mixed Traffic	2	Line Markings	60 km/h	F

6.3.3 Transit Level of Service (TLOS)

Exhibit 15 of the MMLOS guidelines has been used to evaluate the segment TLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines do not suggest a target TLOS for roadways without rapid transit or transit priority designations. As transit service is provided on Walkley Road, and Walkley Road is identified as a future rapid transit corridor in the RTTP Network Concept, the TLOS of Walkley Road has been evaluated. Banton Street has not been evaluated for TLOS. The results of the segment TLOS analysis are summarized in **Table 9**.

Table 9: TLOS Segment Analysis

Facility Type	Level/Exposure to Congestion Delay, Friction and Incidents			Segment TLOS
	Congestion	Friction	Incident Potential	
Walkley Road (St. Laurent Boulevard to Russell Road)				
Mixed Traffic – Limited Parking/Driveway Friction	Yes	Low	Medium	D

6.3.4 Truck Level of Service (TkLOS)

Exhibit 20 of the MMLOS guidelines has been used to evaluate the segment TkLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS B for arterial truck routes within the Employment Area (Walkley Road), and a target TkLOS E for local roadways with no truck route designation within the Employment Area (Banton Street). The results of the segment TkLOS analysis are summarized in **Table 10**.

Table 10: TkLOS Segment Analysis

Curb Lane Width	Number of Travel Lanes Per Direction	Segment TkLOS
Walkley Road (St. Laurent Boulevard to Russell Road)		
> 3.7m	2	A
Banton Street (Walkley Road to 100m south of Walkley Road)		
≤ 3.5m	1	C

6.3.5 Vehicular Level of Service (Auto LOS)

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

Table 11: Auto LOS Segment Analysis

Direction	Directional Capacity	Traffic Volumes		V/C Ratio and LOS			
		AM Peak	PM Peak	AM Peak		PM Peak	
				V/C	LOS	V/C	LOS
Walkley Road (St. Laurent Boulevard to Russell Road)							
Eastbound	2,000 vph	663	1,657	0.33	A	0.83	D
Westbound	2,000 vph	1,391	893	0.70	B	0.45	A
Banton Street (Walkley Road to 100m south of Walkley Road)							
Northbound	400 vph	39	173	0.10	A	0.43	A
Southbound	400 vph	110	102	0.28	A	0.26	A

6.3.6 Segment MMLOS Summary

A summary of the results of the segment MMLOS analysis for the boundary roadways are provided in **Table 12**.

Table 12: Segment MMLOS Summary

Segment		Walkley Road	Banton Street
Pedestrian	Sidewalk Width	1.5m	0m
	Boulevard Width	2m	0m
	Average Daily Curb Lane Traffic	> 3000 vpd	≤ 3000 vpd
	On-Street Parking	No	No
	Operating Speed	60 km/h	60 km/h
	Level of Service	E	F
	Target	C	C
Cyclist	Road Classification	Arterial	Local
	Bike Route Classification	Spine Route	No Class
	Type of Bikeway	Mixed Traffic	Mixed Traffic
	Travel Lanes	4	2
	Centerline Type	Raised Median	Line Markings
	Operating Speed	60 km/h	60 km/h
	Level of Service	F	F
	Target	C	-
Transit	Facility Type	Mixed Traffic	-
	Friction/Congestion/Incident Potential	Limited	-
	Level of Service	D	-
	Target	B	-
Truck	Lane Width	> 3.7m	≤ 3.5m
	Travel Lanes (per direction)	2	1
	Level of Service	A	C
	Target	B	E
Auto	Level of Service	D	A
	Target	D	D

Results of the segment MMLOS analysis can be summarized as follows:

- Neither boundary street meets the target pedestrian level of service (PLOS);
- As the only boundary street with a target, Walkley Road does not meet the target bicycle level of service (BLOS);
- Walkley Road does not meet the target for rapid transit corridors (TLOS B);
- Both boundary streets meet the target truck level of service (TkLOS);
- Both boundary streets meet the target vehicular level of service (Auto LOS).

The pedestrian level of service of Walkley Road does not achieve the target PLOS C. This is attributable to a lack of separation between the sidewalk and the roadway, and average curb lane traffic volumes far greater than 3,000 vehicles/day. At an operating speed of 60 km/h, the target PLOS C can be achieved by implementing sidewalks with a minimum width of 2.0m and a minimum sidewalk boulevard width of 2.0m. The required ROW protection across the frontage of the site will accommodate the minimum sidewalk and boulevard width to achieve the target PLOS if the City wishes to relocate the existing sidewalk in the future.

The pedestrian level of service of Banton Street is currently failing, as no sidewalks are provided. As discussed in Section 6.1.1, sidewalks will connect the proposed redevelopment to the existing sidewalks on Walkley Road. At an operating speed of 50 km/h, the target PLOS C can be achieved by implementing a 1.5m sidewalk with 0.5m boulevard on one side of Banton Street. This is identified for the City's consideration as funding becomes available.

The bicycle level of service of Walkley Road is currently failing. With an operating speed of 60 km/h, the target BLOS C can be achieved by implementing bike lanes with a minimum width of 1.2m. The *Ontario Traffic Manual* (OTM) – Book 18 describes the desirable cycling facility for a roadway, given the roadway's average annual daily traffic (AADT) and operating speed. For roadways with an AADT of over 15,000 vehicles per day and an operating speed of 60 km/h, OTM Book 18 states that 'a separated facility or an alternate road' should be considered. Per Exhibit 11 of the MMLOS guidelines, the implementation of a cycle track or other physically separated bikeway would improve the BLOS of this segment to a BLOS A. This is identified for the City's consideration as funding becomes available. No cycling projects are currently planned for Walkley Road as part of the City's 2031 Affordable Cycling Network.

The transit level of service of Walkley Road does not achieve the target TLOS B. The target TLOS B can be achieved by implementing a bus lane with limited parking and driveway friction. The RTTP Network Concept identifies bus rapid transit (BRT) with at-grade crossings along Walkley Road between Heron Road and Russell Road.

6.4 Access Design

The existing access on Walkley Road will be modified as part of the proposed redevelopment, and a new access at Walkley Road/Melfort Street will be constructed. Depressed curb, sidewalks, and a raised median will be constructed as per City standards. No changes to the existing access on Banton Street are proposed. Further review of this access can be performed in a future application in support of the redevelopment of Block A of the subject site.

Section 25 (a) of the City's *Private Approach By-Law* identifies a maximum number of private approaches that can be provided, based on the amount of frontage. For sites with 46m to 150m of

frontage, one two-way private approach and two one-way private approaches or two two-way private approaches are permitted. For every additional 90m of frontage in excess of 150m, the by-law permits another two-way private approach or two one-way private approaches. The subject site has approximately 420m of frontage on Walkley Road. Therefore, the number of accesses serving the proposed redevelopment meets this requirement.

Section 25 (c) of the *Private Approach By-Law* identifies a maximum width requirement of 9.0m for any two-way private approach, as measured at the street line, although an exception for wider accesses is permitted under Section 25 (e) for transport loading areas. The proposed access at Walkley Road/Melfort Street is approximately 11m in width (17m in width at the future ROW), but does provide access for loading vehicles. It is requested that this access be permitted to exceed the maximum width requirement, per Section 25 (e).

Section 107 (1)(a) of the *Zoning By-Law* identifies a minimum width requirement of 6.7m for a two-way driveway to a parking lot. The proposed RIRO access on Walkley Road will be approximately 7.3m in width, thereby meeting the minimum requirement outlined in Section 107 (1)(a) and the maximum requirement outlined in Section 25 (c).

Section 25 (f) of the *Private Approach By-Law* identifies a minimum separation distance of 9.0m between a two-way private approach and any other private approach, as measured at the street line. The distance between the proposed access at Walkley Road/Melfort Street and the proposed RIRO access on Walkley Road is approximately 80m, thereby meeting this requirement.

Section 25 (l) of the *Private Approach By-Law* identifies a requirement to provide a minimum distance of 75m at the street line between the private approach and the nearest intersecting street line. The proposed access at Walkley Road/Melfort Street will require a road modification to allow for a four-way intersection. The proposed RIRO access on Walkley Road will be approximately 80m east of Melfort Street, thereby meeting this requirement.

Section 25 (o) of the *Private Approach By-Law* identifies a minimum spacing requirement of 3.0m between the nearest edge of a private approach and the property line, as measured at the street line. The spacing between the nearest edge of the proposed RIRO access on Walkley Road and the eastern property line is approximately 150m, thereby meeting this requirement.

The Transportation Association of Canada (TAC) outlines minimum clear throat lengths for driveways based on the land use, development size, and type of roadway. On an arterial roadway, the minimum clear throat length for shopping centres with less than 25,000 m² GFA is 15m, and the minimum clear throat length for general offices between 10,000 to 20,000 m² GFA is 30m. The proposed RIRO access on Walkley Road serves the retail use exclusively, and provides a clear throat length of 18.0m, thereby meeting the requirement. The proposed access at Walkley Road/Melfort Street will serve both the retail and office parking areas, and provides a clear throat length of approximately 36.5m, thereby meeting the requirement.

OTM Book 12 includes warrant criteria for providing a traffic signal, based on projected traffic volumes. The heaviest traffic volumes at the proposed access at Walkley Road/Melfort Street are presented in the 2025 total traffic conditions, shown in **Figure 11**. Based on those volumes and the warrant criteria included in OTM Book 12, a traffic signal is not warranted, as the minor street volumes do not meet the minimum volume requirements. Without a signal however, delays for vehicles on the minor street would be in excess of 300 seconds in the AM peak hour and approximately 100 seconds in the PM peak hour. At this level of delay, it is anticipated that drivers

would begin choosing insufficient gaps to turn onto Walkley Road. For this reason, providing a fully signalized intersection at Walkley Road/Melfort Street is recommended, and further analysis of the 2020 and 2025 traffic conditions assumes a traffic signal at this location.

Justification of a traffic signal at Walkley Road/Melfort Street, which includes the OTM warrant criteria and Synchro analysis of an unsignalized intersection versus a signalized intersection, is included in **Appendix H**.

A road modification approval (RMA) package for the proposed signalized access at Walkley Road/Melfort Street and the proposed median modifications on Walkley Road approximately 80m east of Melfort Street has been submitted concurrently with this TIA. The 1:500 functional design of the proposed road modifications is included in **Appendix I**.

As it is anticipated that residents immediately north of Walkley Road will wish to shop at the Giant Tiger retail store, the northbound through movement is recommended to be restricted during the PM peak (4:00pm to 6:00pm, Monday to Friday), to restrict office workers from cutting through the Hawthorne Meadows neighbourhood. Local shoppers will be able to drive onto Melfort Street from Giant Tiger outside of these hours.

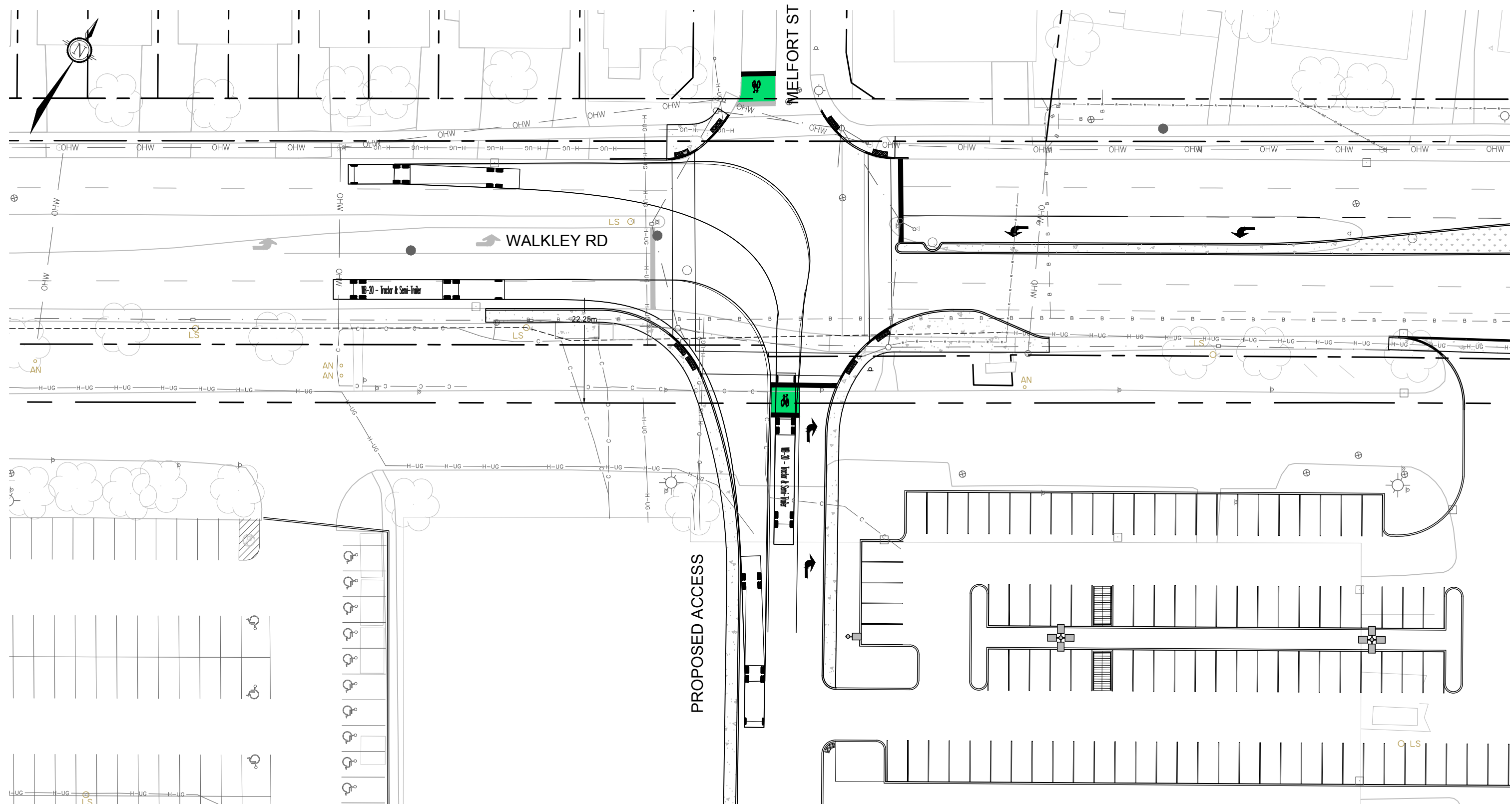
As the proposed access at Walkley Road/Melfort Street will accommodate large delivery vehicles, turning templates for the largest design vehicle have been included in **Figure 12** and **Figure 13**. These figures illustrate a WB-20 Truck (Tractor and Semi-Trailer) entering and exiting the subject site via the Walkley Road/Melfort Street access to/from the east and the west.

The proposed median modification on Walkley Road approximately 80m east of Melfort Street involves a closure of the median break, such that the retail access becomes right-in/right-out. The median closure will also change the access to the Confederation Court Community Housing property to a RIRO access. Regarding Confederation Court traffic, it is expected that inbound trips from the west and outbound trips to the east may use Melfort Street, Tupper Avenue and Russell Road to travel 'around the block' once left turns are restricted.

Previously, it was proposed that a break in the median be provided to maintain the left turn movement into the housing development. After further discussions with City staff, it was determined that maintaining the left-in movement for the housing development is not recommended, as the proposed westbound left turn lane at Walkley Road/Melfort Street will eliminate the space within the median break that can be used by vehicles for a 'two stage' left turn into the residences. Any vehicle performing a left turn into the community housing if a median break were maintained would likely result in blockage of an eastbound through lane, and affect operations at upstream intersections. Based on TAC requirements, the length and taper of the proposed westbound left turn lane cannot be shortened. As shown in **Figure 3**, left turning traffic volumes into and out of the Confederation Court access are minimal, and any additional traffic turning onto Melfort Street to use Tupper Avenue and Russell Road, and effectively travel 'around the block,' is not anticipated to change the function of the local roadways.

A monitoring program is proposed regarding a possible southbound left turn movement restriction at Walkley Road/Melfort Street, to address concerns of potential traffic avoiding the intersection of Walkley Road/St. Laurent Boulevard by cutting through the Hawthorne Meadows neighbourhood via Melfort Street and Joliffe Street. The monitoring program is described further in **Appendix M**, at the back of this report.

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GIANT TIGER WALKLEY

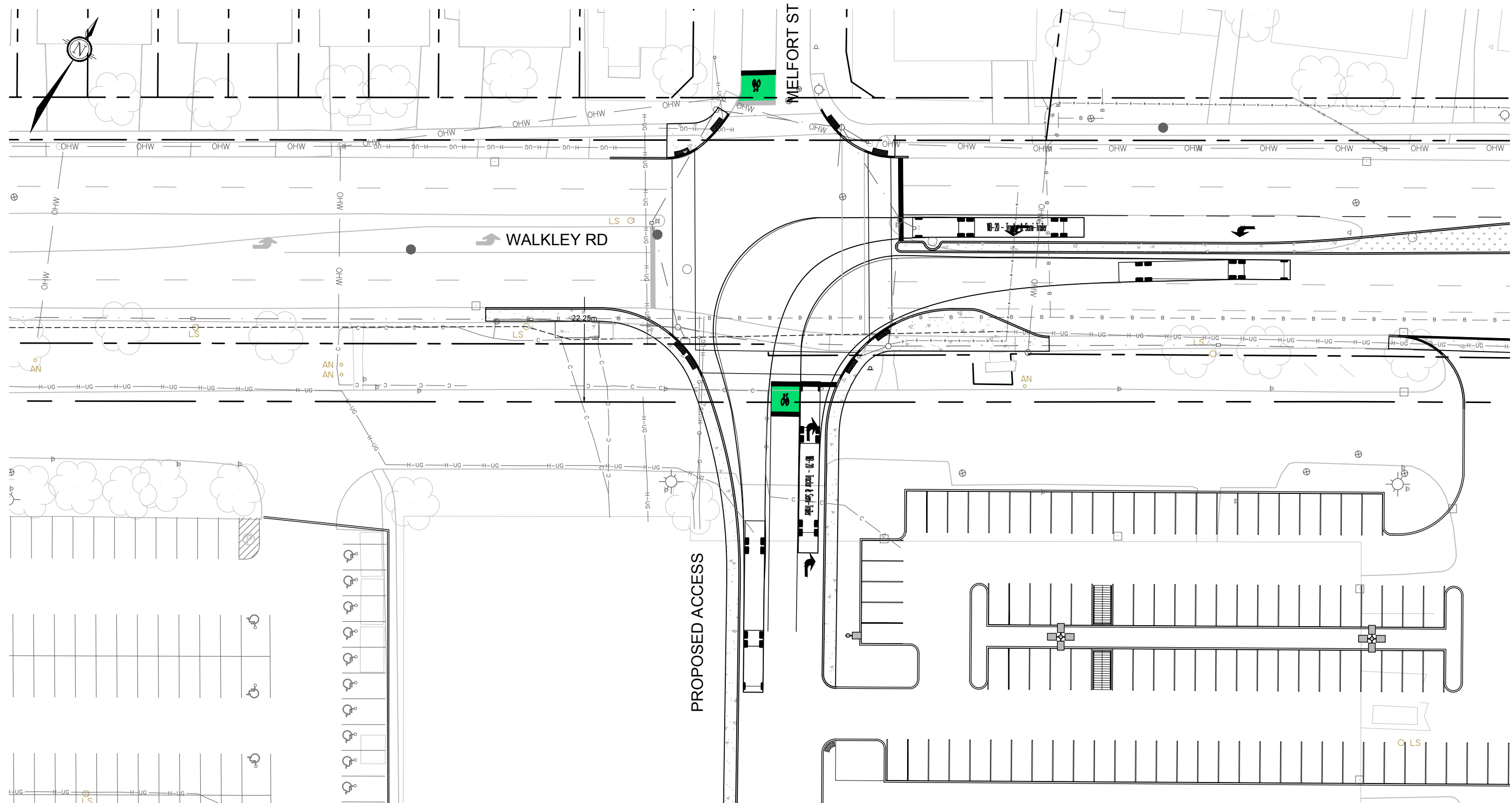
**VEHICLE TURNING
MOVEMENTS**

SCALE 1 : 500 0 5m 10m 20m

DATE MAY 2019 JOB 117203 FIGURE 12

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GIANT TIGER WALKLEY

**VEHICLE TURNING
MOVEMENTS**

SCALE 1 : 500 0 5m 10m 20m

DATE MAY 2019 JOB 117203 FIGURE 13

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6.5 Transportation Demand Management

A review of the Transportation Demand Management (TDM) – *Measures Checklist* has been conducted. A copy of the TDM checklist is included in **Appendix G**.

The following measures will be implemented upon opening of the proposed redevelopment:

- Display local area maps with walking/cycling access routes and key destinations at major entrances;
- Display relevant transit schedules and route maps at entrances;
- Provide online links to OC Transpo and STO information;
- Provide a dedicated ridematching portal at OttawaRideMatch.com;
- Provide a multimodal travel option information package for employees;
- Encourage flexible work hours and telework;
- Provide on-site amenities/services to minimize midday or mid-commute errands.

6.6 Transit

Based on the trip generation presented in Section 5.1.1, the proposed redevelopment is anticipated to result in a net increase of 12 transit trips during the AM peak hour and 9 transit trips during the PM peak hour. The increase in transit traffic is attributable solely to the increase in office space. For this reason, this transit review applies the office trip distribution described in Section 5.1.2. The net difference in transit trips is distributed as follows:

AM Peak Hour

- Stop #6906: 2 passengers on OC Transpo Route 47 (0 boarding, 2 alighting);
- Stop #6907: 5 passengers on OC Transpo Route 47 (0 boarding, 5 alighting);
- Stop #7290: 3 passengers on OC Transpo Route 112 (0 boarding, 3 alighting);
- Stop #8322: 2 passengers on OC Transpo Route 112 (1 boarding, 1 alighting).

PM Peak Hour

- Stop #6906: 4 passengers on OC Transpo Route 47 (5 boarding, -1 alighting);
- Stop #6907: 1 passenger on OC Transpo Route 47 (2 boarding, -1 alighting);
- Stop #7290: 1 passenger on OC Transpo Route 112 (1 boarding, 0 alighting);
- Stop #8322: 3 passengers on OC Transpo Route 112 (4 boarding, -1 alighting).

Based on the projected passenger volumes, no capacity problems are anticipated on the bus routes or at the bus stops listed above.

6.7 Intersection Design

6.7.1 Intersection MMLOS Analysis

This section provides a review of the study area intersections using complete streets principles. The MMLOS guidelines produced by IBI Group in October 2015 were used to evaluate the multi-modal levels of service for each signalized intersection. The vehicular level of service has also been evaluated for the unsignalized intersections within the study area.

Schedule B of the City's Official Plan designates the lands north of Walkley Road and west of Lancaster Road as being within the General Urban Area, and the lands south of Walkley Road and east/west of Russell Road as being within the Employment Area. Walkley Road, St. Laurent Boulevard, and Russell Road are located within both policy areas. Tawney Road and Melfort Street are located exclusively within the General Urban Area, while Banton Street and Lancaster Road are located exclusively within the Employment Area. The stricter target has been selected for evaluation for roadways within both policy areas.

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

Table 13: Intersection MMLOS Summary

Intersection	PLOS		BLOS		TLOS		TkLOS		Auto LOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Walkley Road/ St. Laurent Boulevard	F	C	F	B	E	B	E	B	D	D
Walkley Road/ Tawney Road ⁽¹⁾	-	-	-	-	-	-	-	-	C	D
Walkley Road/ Banton Street	F	C	F	C	B	B	C	B	B	D
Walkley Road/ Melfort Street ⁽²⁾	F	C	F	C	B	B	-	-	A	D
Walkley Road/ Russell Road	F	C	F	C	F	B	A	B	F	D
Walkley Road/ Lancaster Road	F	C	F	C	C	-	C	B	E	D
Walkley Road/ East Site Access ⁽¹⁾	-	-	-	-	-	-	-	-	B	D

1. Unsignalized intersection, evaluated for Auto LOS only

2. Considered fully signalized intersection, evaluated for all applicable modes

Based on the results of the intersection MMLOS analysis:

- No intersections meet the target pedestrian level of service (PLOS);
- No intersections meet the target bicycle level of service (BLOS);
- Walkley Road/St. Laurent Boulevard and Walkley Road/Russell Road do not meet the target transit level of service (TLOS);
- Among intersections with truck route designations, only Walkley Road/Russell Road meets the target truck level of service (TkLOS);
- Walkley Road/Russell Road and Walkley Road/Lancaster Road do not meet the target vehicular level of service (Auto LOS).

The following sections outline a further discussion for each intersection.

6.7.1.1 Walkley Road/St. Laurent Boulevard

Walkley Road/St. Laurent Boulevard does not meet the target PLOS C, BLOS B, TLOS B, or TkLOS B.

All approaches have a divided cross-section with a width equivalent to seven lanes crossed or more. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes or restricting turning movements. The level of comfort for pedestrians can be increased by implementing zebra-striped crosswalks. The north, east, and west approaches meet the City's vehicle/pedestrian conflict threshold for zebra-striped crosswalks (greater than 400,000 vehicle/pedestrian conflicts over an eight-hour period). There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.

The north and south approaches do not meet the target BLOS B based on both left and right turn characteristics, while the east and west approaches do not meet the target based on left turn characteristics only. To achieve the target BLOS B based on right turn characteristics, curbside bike lanes or higher order facilities would be required at the north and south approaches. For roadways with an AADT of approximately 14,000 vehicles per day and an operating speed of 60 km/h (St. Laurent Boulevard), OTM Book 18 states that 'a separated facility or an alternate road' should be considered. Based on left turn characteristics, Exhibit 12 of the MMLOS Guidelines identifies two-stage left turn bike boxes at all approaches as an improvement. As stated in Section 6.3.6, OTM Book 18 states that 'a separated facility or an alternate road' should be considered for Walkley Road. Cyclists can travel east-west via the Pleasant Park Road Neighbourhood Bikeway instead of travelling on Walkley Road, and travel east-west and north-south on the local residential streets to the north of Walkley Road (such as Tupper Avenue, which is identified as a local cycling route). ROW widenings along portions of Walkley Road are required to accommodate a higher-order cycling facility (such as a cycle track). Widening taken as part of this proposed redevelopment could be used to accommodate cycle tracks, should the City decide to implement them in the future.

All approaches do not meet the target TLOS B. The RTTP Network Concept identifies at-grade BRT on Walkley Road and isolated transit priority measures on St. Laurent Boulevard north of Walkley Road, but will not be implemented until after 2031.

The west approach does not meet the target TkLOS B for Walkley Road. While transit vehicles travel on St. Laurent Boulevard, the roadway is not classified as a truck route. For roadways in the Employment Area that are not truck routes, Exhibit 22 of the MMLOS Guidelines identifies a target of TkLOS D. The receiving lane is approximately 7.5m wide, wide enough to be considered two receiving lanes. With an effective corner radius of 12m and two receiving lanes, the west approach would achieve a TkLOS B. No recommendations have been made in improving the TkLOS at this intersection.

6.7.1.2 Walkley Road/Banton Street

Walkley Road/Banton Street does not meet the target PLOS C, BLOS C, or TkLOS B.

All approaches have a cross-section with a width equivalent to six lanes crossed or more. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes or restricting turning movements, and there is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.

The south and east approaches do not meet the target BLOS C, based on left turn characteristics only. Banton Street has no target BLOS, as it is a roadway with no bike route classification in the Employment Area. Any cyclists entering or exiting the proposed redevelopment are anticipated to access the site further east, as the western section of the site will be devoted to warehousing.

The west approach does not meet the target TkLOS B for Walkley Road. Exhibit 22 of the MMLOS Guidelines identify a target TkLOS E for Banton Street, a local roadway in the Employment Area. This target is achieved, and the undivided cross-section is used currently by large trucks. Therefore, no recommendations have been made in improving the TkLOS at this intersection.

6.7.1.3 Walkley Road/Melfort Street

Walkley Road/Melfort Street does not meet the target PLOS C or BLOS C.

The north approach has an undivided cross-section with a width equivalent to four lanes crossed. The target PLOS C can be achieved at this approach by implementing textured or zebra-striped crosswalks, however the City's vehicle/pedestrian conflict threshold is not reached. The east approach has a divided cross-section with a width equivalent to seven lanes crossed. There is limited opportunity in improving the PLOS at this approach without reducing the number of travel lanes. The level of comfort for pedestrians can be increased by implementing zebra-striped crosswalks at this approach, which meets the City's vehicle pedestrian conflict threshold. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.

The west approach does not meet the target BLOS C based on left turn characteristics. The implementation of two-stage left turn bike boxes would improve the BLOS of the intersection to a BLOS A, based on left turn characteristics. Upon completion of the proposed redevelopment, two-stage left-turn bike boxes could be considered for the north and south approaches to improve eastbound/westbound left turn movements for cyclists. The background and total traffic Synchro analysis in Sections 6.7.2 through 6.7.5 accounts for two-stage left-turn bike boxes at these approaches by restricting right turns on red at the north approach, and shows that they can be accommodated from a capacity perspective.

6.7.1.4 Walkley Road/Russell Road

Walkley Road/Russell Road does not meet the target PLOS C, BLOS C, TLOS B, or Auto LOS D.

All approaches have a divided cross-section with a width equivalent to ten lanes crossed or more. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes or restricting turning movements. The level of comfort for pedestrians can be increased by implementing zebra-striped crosswalks. The east approach meets the City's vehicle/pedestrian conflict threshold for zebra-striped crosswalks. There is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.

All approaches do not meet the target BLOS C based on both left and right turn characteristics. Given the high traffic volumes on both roadways, the existing right turn lanes and dual left turn lanes are required. Cyclists would be best served to perform turns at a different intersection. Therefore, no recommendations have been made in improving the BLOS at this intersection.

All approaches do not meet the target TLOS B. The RTTP Network Concept identifies at-grade BRT on Walkley Road, but will not be implemented until after 2031.

The northbound, eastbound, and westbound approaches do not meet the target Auto LOS D in the PM peak hour. To achieve the target, a reduction in PM peak hour traffic volumes for the following movements are required:

- Northbound right turn: reduction of approximately 130 vehicles;
- Eastbound left turn: reduction of approximately 30 vehicles;
- Eastbound through: reduction of approximately 165 vehicles;
- Westbound left turn: reduction of approximately 90 vehicles.

6.7.1.5 Walkley Road/Lancaster Road

Walkley Road/Lancaster Road does not meet the target PLOS C, BLOS C, TkLOS B, or Auto LOS D.

Both approaches have a divided cross-section with a width equivalent to nine lanes crossed or more. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes or restricting turning movements, and there is also limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.

The north approach does not meet the target BLOS C based on both left and right turn characteristics, while the west approach does not meet the target based on left turn characteristics only. Based on the traffic volumes at this intersection, the existing dual left turn lanes and right turn lane at the north approach is required, as is the number of lanes a cyclist must cross to turn left at the west approach. At the north approach, cyclists can turn left outside of the dual left turn lane markings, as there is no through movement. The ultimate cycling network identifies a major pathway south of Walkley Road and east of Russell Road. A link connecting this pathway to Lancaster Road could be considered when the pathway is constructed. A connection for eastbound cyclists on Walkley Road to turn left onto Lancaster Road, such as a jug handle, could also be considered. Implementing this would also require a cyclist traffic signal and an exclusive cyclist-actuated phase. At this time, no recommendations have been made in improving the BLOS at this intersection.

The east approach does not meet the target TkLOS B. The implementation of a second receiving lane on Lancaster Road would be required to improve the TkLOS of the east approach beyond the existing TkLOS C. As the existing corner radius is approximately 35m, no recommendations have been made in improving the TkLOS at this intersection.

The southbound approach does not meet the target Auto LOS D in the PM peak hour. This can be addressed by adding five seconds to the southbound green time and subtracting it from the eastbound/westbound green time, which would allow the southbound approach to operate acceptably. Effects on the eastbound and westbound approaches are projected to be minimal. A detailed Synchro report with this adjusted signal timing is included in **Appendix L**.

6.7.2 2020 Background Traffic – Intersection Operations

Intersection capacity analysis has been completed for the 2020 background traffic conditions. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 1.0). The results of the Synchro analysis for the AM and PM peak hours are summarized in **Table 14**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths in **Table 15**. Signal timing plans are included in **Appendix K**. Detailed Synchro reports are included in **Appendix L**.

Table 14: 2020 Background – Intersection Operations

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Walkley Road/ St. Laurent Boulevard	0.73	C	WBL	0.68	B	NBR/EBL
Walkley Road/ Tawney Road ⁽¹⁾	14 sec	B	SBL/SBR	13 sec	B	SBL/SBR
Walkley Road/ Banton Street	0.47	A	WBT	0.60	A	EBT
Walkley Road/ Melfort Street	0.49	A	WBT	0.54	A	EBT
Walkley Road/ Russell Road	0.80	C	WBL	1.26	F	EBL
Walkley Road/ Lancaster Road	0.70	B	EBL	0.85	D	SBL
Walkley Road/ East Site Access ⁽¹⁾	10 sec	A	NBR	9 sec	A	NBR

1. Unsignalized intersection

Table 15: 2020 Background – Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
Walkley Road/ Russell Road	NBL	0.80	C	28	#45	0.62	B	17	27
	NBR	0.73	C	0	33	1.08	F	~93	#155
	EBL	0.61	B	19	29	1.26	F	~26	#56
	EBT	0.35	A	47	68	0.95	E	156	#191
	WBL	0.77	C	46	55	1.14	F	~52	#81
Walkley Road/ Lancaster Road	SBL	0.38	A	12	20	0.85	D	55	#74
	EBL	0.70	B	55	m77	0.68	B	29	m30

m: queueing is metered by an upstream signal

#: volume for the 95th percentile cycle exceeds capacity

~: approach is above capacity

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

At Walkley Road/Russell Road, capacity issues were identified for the northbound right turn, eastbound left turn, eastbound through, and westbound left turn movements during the PM peak hour. The Synchro analysis also identifies that the 95th-percentile northbound right turn queue length is greater than the approximately 120m auxiliary lane during the PM peak hour, and the 95th-percentile eastbound through queue length extends through the eastern access to the subject site during the PM peak hour.

At Walkley Road/Lancaster Road, queueing issues were identified for the southbound left turn and eastbound left turn movements. The Synchro analysis identifies the 95th-percentile southbound left turn queue length is greater than the approximately 30m auxiliary lane during the PM peak hour. In the AM peak hour, the eastbound left turn queue exceeds the 70m storage length, however the 50th-

and 95th-percentile eastbound through queue lengths extend beyond the auxiliary left turn lane, likely blocking the lane before it reaches capacity.

6.7.3 2025 Background Traffic – Intersection Operations

Intersection capacity analysis has been completed for the 2025 background traffic conditions. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 1.0). The results of the Synchro analysis for the AM and PM peak hours are summarized in **Table 16**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths in **Table 17**. Signal timing plans are included in **Appendix K**. Detailed Synchro reports are included in **Appendix L**.

Table 16: 2025 Background – Intersection Operations

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Walkley Road/ St. Laurent Boulevard	0.78	C	EBL	0.77	C	EBL
Walkley Road/ Tawney Road ⁽¹⁾	15 sec	C	SBL/SBR	13 sec	B	SBL/SBR
Walkley Road/ Banton Street	0.49	A	WBT	0.63	B	EBT
Walkley Road/ Melfort Street	0.52	A	WBT	0.57	A	EBT
Walkley Road/ Russell Road	0.83	D	NBL	1.32	F	EBL
Walkley Road/ Lancaster Road	0.70	B	EBL/WBT	0.85	D	SBL
Walkley Road/ East Site Access ⁽¹⁾	10 sec	A	NBR	9 sec	A	NBR

1. Unsignalized intersection

Table 17: 2025 Background – Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
Walkley Road/ Russell Road	NBL	0.83	D	30	#46	0.65	B	18	28
	NBR	0.74	C	0	34	1.14	F	~106	#168
	EBL	0.63	B	20	31	1.32	F	~28	#60
	EBT	0.38	A	51	72	1.00	E	~169	#208
	WBL	0.78	C	46	57	1.20	F	~57	#87
	WBT	0.77	C	152	#208	0.43	A	26	34
Walkley Road/ Lancaster Road	SBL	0.38	A	12	20	0.85	D	55	#74
	EBL	0.70	B	55	m76	0.68	B	29	m29

m: queueing is metered by an upstream signal

#: volume for the 95th percentile cycle exceeds capacity

~: approach is above capacity

Based on the previous tables and compared to the 2020 background traffic conditions, marginal increases in v/c ratios and queue lengths are anticipated as a result of background growth within the study area.

The level of service for the critical movement at Walkley Road/St. Laurent Boulevard downgrades from LOS B to LOS C during the PM peak hour, due to an increase in traffic for the eastbound left turn associated with background growth and other area developments.

The level of service for the critical movement at Walkley Road/Banton Street downgrades from LOS A to LOS B during the PM peak hour, due to an increase in eastbound through volumes associated with background growth.

6.7.4 2020 Total Traffic – Intersection Operations

Intersection capacity analysis has been completed for the 2020 total traffic conditions. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 1.0). The results of the Synchro analysis for the AM and PM peak hours are summarized in **Table 18**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths in **Table 19**. Signal timing plans are included in **Appendix K**. Detailed Synchro reports are included in **Appendix L**.

Table 18: 2020 Total – Intersection Operations

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Walkley Road/ St. Laurent Boulevard	0.73	C	WBL	0.68	B	NBR/EBL
Walkley Road/ Tawney Road ⁽¹⁾	14 sec	B	SBL/SBR	13 sec	B	SBL/SBR
Walkley Road/ Banton Street	0.47	A	WBT	0.57	A	EBT
Walkley Road/ Melfort Street	0.50	A	WBT	0.59	A	NBR
Walkley Road/ Russell Road	0.83	C	NBL	1.36	F	EBL
Walkley Road/ Lancaster Road	0.70	B	EBL	0.85	D	SBL
Walkley Road/ East Site Access ⁽¹⁾	10 sec	A	NBR	9 sec	A	NBR

1. Unsignalized intersection

Table 19: 2020 Total – Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
Walkley Road/ Russell Road	NBL	0.83	D	30	#48	0.62	B	17	27
	NBR	0.73	C	0	33	1.08	F	~93	#155
	EBL	0.61	B	20	35	1.36	F	~30	#63
	EBT	0.35	A	48	70	0.98	E	162	#203
	WBL	0.77	C	46	55	1.14	F	~51	#81
Walkley Road/ Lancaster Road	SBL	0.38	A	12	20	0.85	D	55	#74
	EBL	0.70	B	55	m77	0.68	B	30	m31

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

#: volume for the 95th percentile cycle exceeds capacity

~: approach is above capacity

Based on the previous tables and compared to the 2020 background traffic conditions, marginal increases in v/c ratios and queue lengths within the study area are anticipated, as a result of increased traffic generated by the proposed redevelopment.

6.7.5 2025 Total Traffic – Intersection Operations

Intersection capacity analysis has been completed for the 2025 total traffic conditions. The intersection parameters used in the analysis are consistent with the 2017 TIA Guidelines (Saturation Flow Rate: 1800 vphpl, Peak Hour Factor: 1.0). The results of the Synchro analysis for the AM and PM peak hours are summarized in **Table 20**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths in **Table 21**. Signal timing plans are included in **Appendix K**. Detailed Synchro reports are included in **Appendix L**.

Table 20: 2025 Total – Intersection Operations

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Walkley Road/ St. Laurent Boulevard	0.79	C	EBL	0.78	C	EBL
Walkley Road/ Tawney Road ⁽¹⁾	15 sec	C	SBL/SBR	13 sec	B	SBL/SBR
Walkley Road/ Banton Street	0.50	A	WBT	0.60	A	EBT
Walkley Road/ Melfort Street	0.52	A	WBT	0.60	A	NBR
Walkley Road/ Russell Road	0.86	D	NBL	1.42	F	EBL
Walkley Road/ Lancaster Road	0.71	C	WBT	0.85	D	SBL
Walkley Road/ East Site Access ⁽¹⁾	10 sec	A	NBR	9 sec	A	NBR

1. Unsignalized intersection

Table 21: 2025 Total – Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
Walkley Road/ Russell Road	NBL	0.86	D	31	#52	0.65	B	18	28
	NBR	0.74	C	0	34	1.14	F	~106	#168
	EBL	0.63	B	21	36	1.42	F	~32	m#66
	EBT	0.38	A	53	75	1.03	F	~185	#221
	WBL	0.78	C	46	57	1.20	F	~57	#87
	WBT	0.79	C	157	#216	0.43	A	26	34
Walkley Road/ Lancaster Road	SBL	0.38	A	12	20	0.85	D	55	#74
	EBL	0.70	B	55	m76	0.68	B	29	m29

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

#: volume for the 95th percentile cycle exceeds capacity

~: approach is above capacity

Based on the previous tables and compared to the 2025 background traffic conditions, marginal increases in v/c ratios and queue lengths within the study area are anticipated, as a result of increased traffic generated by the proposed redevelopment.

The level of service for the critical movement at Walkley Road/Banton Street upgrades from LOS B to LOS A during the PM peak hour, due to a decrease in traffic exiting the subject site via the Banton Street access.

7.0 CONCLUSIONS AND RECOMMENDATIONS

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

Forecasting

- The net increase in trips generated by the proposed redevelopment is approximately 99 person trips in the AM peak hour and 73 person trips in the PM peak hour, which includes an increase of approximately 67 vehicle trips in the AM peak hour and 50 vehicle trips in the PM peak hour.

Development Design and Parking

- Pedestrian facilities will be provided between the building entrances and the parking lot. Additionally, pedestrian facilities will connect the building to the existing sidewalks along Walkley Road and the proposed sidewalks on either side of the Melfort Street access. Sidewalks will be depressed and continuous across the existing Walkley Road access, in accordance with City standards. Crosswalks will be provided across the proposed Melfort Street access.
- The nearest transit stops which serve OC Transpo Routes 47 and 112 are within 300m walking distance from all entrances to the proposed redevelopment.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

- Garbage collection, loading and deliveries will be accommodated directly east of the proposed retail and office building. Loading and garbage collection vehicles will enter the site via the Melfort Street access and reverse into the loading spaces. The number of loading spaces provided meet the minimum requirements outlined in the ZBL.
- In total, approximately 1,054 parking spaces will be provided for the entire subject site. The majority of the 429 spaces provided in Block A will remain vacant until further development. The 625 spaces provided in Block B meet the minimum requirements outlined in the ZBL. The number of bicycle parking spaces meet the minimum requirements outlined in the ZBL.
- Five retail accessible parking spaces, 18 office accessible parking spaces, and 20 warehouse accessible parking spaces will be provided, thereby meeting the requirements.

Boundary Streets

- The results of the segment MMLOS analysis can be summarized as follows:
 - Neither boundary street meets the target pedestrian level of service (PLOS);
 - As the only boundary street with a target, Walkley Road does not meet the target bicycle level of service (BLOS);
 - Walkley Road does not meet the target for rapid transit corridors (TLOS B);
 - Both boundary streets meet the target truck level of service (TkLOS);
 - Both boundary streets meet the target vehicular level of service (Auto LOS).
- The PLOS of Walkley Road is failing, which is attributable to a lack of separation between the sidewalk and the roadway, and average curb lane traffic volumes far greater than 3,000 vehicles/day. At an operating speed of 60 km/h, the target PLOS C can be achieved by implementing sidewalks with a minimum width of 2.0m and a minimum sidewalk boulevard width of 2.0m. The required ROW protection across the frontage of the site will accommodate the minimum sidewalk and boulevard width to achieve the target PLOS if the City wishes to relocate the existing sidewalk in the future.
- The PLOS of Banton Street is currently failing, as no sidewalks are provided. At an operating speed of 50 km/h, the target PLOS C can be achieved by implementing a 1.5m sidewalk with 0.5m boulevard on one side of Banton Street. This is identified for the City's consideration as funding becomes available.
- The BLOS of Walkley Road is failing. The target BLOS C can be achieved by implementing bike lanes with a minimum width of 1.2m. OTM Book 18 states that 'a separated facility or an alternate road' should be considered. The implementation of a cycle track or other physically separated bikeway would improve the BLOS of this segment to a BLOS A. This is identified for the City's consideration as funding becomes available.
- The TLOS of Walkley Road does not achieve the target TLOS B. The target TLOS B can be achieved by implementing a bus lane with limited parking and driveway friction. The RTP Network Concept identifies bus rapid transit (BRT) with at-grade crossing along Walkley Road between Heron Road and Russell Road.

Access Design

- The existing access on Walkley Road will be modified as part of the proposed redevelopment, and a new access at Walkley Road/Melfort Street will be constructed. Depressed curb and

sidewalks will be constructed as per City standards. No changes to the existing access on Banton Street are proposed.

- Section 25 (a) of the *Private Approach By-Law* identifies a maximum number of private approaches that can be provided, based on the amount of frontage. With approximately 420m of frontage on Walkley Road, the proposed redevelopment meets the requirement by providing two two-way accesses.
- Section 25 (c) of the *Private Approach By-Law* identifies a maximum width requirement of 9.0m for any two-way private approach, although an exception for wider accesses is permitted under Section 25 (e) for transport loading areas. The proposed access at Walkley Road/Melfort Street is approximately 11m in width (17m at the future ROW), and therefore it is requested that this access be permitted to exceed the requirement, per Section 25 (e).
- Section 107 (1)(a) of the ZBL identifies a minimum width requirement of 6.7m for a two-way driveway to a parking lot. The proposed RIRO access on Walkley Road will be approximately 7.3m in width, thereby meeting the minimum requirement outlined in Section 107 (1)(a) and the maximum requirement outlined in Section 25 (c).
- Section 25 (f) of the *Private Approach By-Law* identifies a minimum separation distance of 9.0m between a two-way private approach and any other private approach, as measured at the street line. The distance between the proposed access at Walkley Road/Melfort Street and the proposed RIRO access on Walkley Road is approximately 80m, thereby meeting this requirement.
- Section 25 (l) of the *Private Approach By-Law* identifies a minimum distance requirement of 75m between the private approach and the nearest intersecting street line. The proposed access at Walkley Road/Melfort Street will require a road modification to allow for a four-way intersection. The proposed RIRO access on Walkley Road will be approximately 80m east of Melfort Street, thereby meeting this requirement.
- Section 25 (o) of the *Private Approach By-Law* identifies a minimum spacing requirement of 3.0m between the nearest edge of a private approach and the property line, as measured at the street line. The spacing between the nearest edge of the proposed RIRO access on Walkley Road and the eastern property line is approximately 150m, thereby meeting this requirement.
- TAC identifies a minimum clear throat length requirement of 15m for shopping centres with less than 25,000 m² GFA, and 30m for general offices between 10,000 and 20,000 m² GFA. The proposed RIRO access on Walkley Road will serve the retail use exclusively and provides a clear throat length of 18m, thereby meeting the requirement. The proposed access at Walkley Road/Melfort Street will serve both the retail and office parking areas, and provides a clear throat length of approximately 36.5m, thereby meeting the requirement.
- Per OTM Book 12, a traffic signal is not warranted at the proposed Walkley Road/Melfort Street access, as the minor street volumes do not meet the minimum volume requirements. Without a signal however, delays for vehicles on the minor street would be in excess of 300 seconds in the AM peak hour and approximately 100 seconds in the PM peak hour, and it would be anticipated that drivers would begin choosing insufficient gaps to turn onto Walkley

Road. For this reason, providing a full signalized intersection at Walkley Road/Melfort Street is recommended.

- The northbound through movement is recommended to be restricted during the PM peak hour to restrict office workers from cutting through the Hawthorne Meadows neighbourhood. Local shoppers will be able to drive onto Melfort Street from Giant Tiger outside of these hours.
- A WB-20 design vehicle (Tractor and Semi-Trailer) can be accommodated at the proposed Walkley Road/Melfort Street access, and can enter and exit the proposed redevelopment to/from the east and west on Walkley Road.
- The proposed median closure on Walkley Road approximately 80m east of Melfort Street will convert the retail access on the south side of the roadway and the Confederation Court Community Housing access on the north side of the roadway to become R/O only. Per discussions with City staff, maintaining the left-in movement for the housing development is not recommended, as the proposed westbound left turn lane at Walkley Road/Melfort Street will eliminate the space within the median break that can be used by vehicles for a 'two stage' left turn into the residences. Left turning traffic volumes at the Confederation Court access are minimal, and any additional traffic turning onto Melfort Street to use Tupper Avenue and Russell Road, and effectively travel 'around the block,' is not anticipated to change the function of the local roadways.
- A monitoring program is proposed regarding a possible southbound left turn movement restriction at Walkley Road/Melfort Street, to address concerns of potential traffic avoiding the intersection of Walkley Road/St. Laurent Boulevard by cutting through the Hawthorne Meadows neighbourhood.

Transportation Demand Management

- The following TDM measures will be implemented upon opening of the proposed redevelopment:
 - Display local area maps with walking/cycling access routes and key destinations at major entrances;
 - Display relevant transit schedules and route maps at entrances;
 - Provide online links to OC Transpo and STO information;
 - Provide a dedicated ridematching portal at OttawaRideMatch.com;
 - Provide a multimodal travel option information package for employees;
 - Encourage flexible work hours;
 - Encourage telework;
 - Provide on-site amenities/services to minimize midday or mid-commute errands.

Transit

- The proposed redevelopment is anticipated to result in a net increase of 12 transit trips during the AM peak hour and 9 transit trips during the PM peak hour.
- The additional transit trips generated by the proposed redevelopment are not anticipated to have a significant impact on the operations of OC Transpo Routes 47 and 112.

Intersection Design

- Based on the results of the intersection MMLOS analysis:
 - No intersections meet the target pedestrian level of service (PLOS);
 - No intersections meet the target bicycle level of service (BLOS);
 - Walkley Road/St. Laurent Boulevard and Walkley Road/Russell Road do not meet the target transit level of service (TLOS);
 - Among intersections with truck route designations, only Walkley Road/Russell Road meets the target truck level of service (TkLOS);
 - Walkley Road/Russell Road and Walkley Road/Lancaster Road does not meet the target vehicular level of service (Auto LOS).
- Pedestrian Level of Service:
 - No crosswalks crossing Walkley Road, St. Laurent Boulevard, Russell Road, and Lancaster Road can achieve the target PLOS C without significantly reducing the number of lanes and restricting turning movements, and there is limited opportunity in improving the delay score for pedestrians without incurring major delays for vehicles.
 - The crosswalk crossing Melfort Street can achieve the target PLOS C by implementing textured or zebra-striped crosswalks, however the City's vehicle/pedestrian conflict threshold is not reached (400,000 vehicle/pedestrian conflicts over an eight-hour period).
- Bicycle Level of Service:
 - All approaches of Walkley Road/St. Laurent Boulevard do not achieve the target BLOS B. Curbside bike lanes or higher order facilities at the north and south approaches would be required to achieve the target based on right turn characteristics. Two-stage left turn bike boxes at all approaches would be required to achieve the target based on left turn characteristics. Alternatively, cyclists can travel east-west via the Pleasant Park Road Neighbourhood Bikeway instead of travelling on Walkley Road, and travel east-west and north-south on the local residential streets to the north of Walkley Road. Widening on Walkley Road taken as part of this proposed redevelopment could be used to accommodate cycle tracks, should the City decide to implement them in the future.
 - The south and east approaches of Walkley Road/Banton Street do not achieve the target BLOS C. Banton Street has no target BLOS, as it is a roadway with no bike route classification in the Employment Area. Any cyclists entering or exiting the proposed redevelopment are anticipated to access the site further east, as the western section of the site will be devoted to warehousing.
 - The west approach of Walkley Road/Melfort Street does not meet the target BLOS C. The implementation of two-stage left turn bike boxes would improve the BLOS of the intersection to a BLOS A, based on left turn characteristics. Synchro analysis shows that this can be accommodated by the road network from a capacity perspective.
 - All approaches of Walkley Road/Russell Road do not meet the target BLOS C. Given the high traffic volumes on both roadways, the existing right turn lanes and dual left turn lanes are required. Cyclists would be best served to perform turns at a different intersection.

- The north and west approaches of Walkley Road/Lancaster Road do not meet the target BLOS C. Based on the traffic volumes at this intersection, the existing dual left turn lanes and right turn lane at the north approach is required, as is the number of lanes a cyclist must cross to turn left at the west approach. At the north approach, cyclists can turn left outside of the dual left turn lane markings, as there is no through movement. The ultimate cycling network identifies a future major pathway south of Walkley Road, and a link connecting this pathway to Lancaster Road could be considered. A connection for eastbound cyclists on Walkley Road to turn left onto Lancaster Road, such as a jug handle, could also be considered. Implementation this would also require a cyclist traffic signal and an exclusive cyclist-actuated phase.
- Transit Level of Service:
 - All approaches of Walkley Road/St. Laurent Boulevard and Walkley Road/Russell Road do not achieve the target TLOS B. The RTTP Network Concept identifies at-grade BRT on Walkley Road and isolated transit priority measures on St. Laurent Boulevard north of Walkley Road, but will not be implemented until after 2031.
- Truck Level of Service:
 - The west approach of Walkley Road/St. Laurent Boulevard does not achieve the target TkLOS B. St. Laurent Boulevard is not classified as a truck route. The receiving lane is approximately 7.5m wide, wide enough to be considered two receiving lanes.
 - The west approach of Walkley Road/Banton Street does not achieve the target TkLOS B. The existing cross-section is currently used by large trucks accessing the subject site.
 - The east approach of Walkley Road/Lancaster Road does not achieve the target TkLOS B. As the existing corner radius is greater than 15m, only the implementation of a second receiving lane on Lancaster Road can improve the TkLOS of the east approach beyond the existing TkLOS C. Based on the existing corner radius, no recommendations have been made in improving the TkLOS.
- Vehicular Level of Service:
 - The northbound, eastbound, and westbound approaches of Walkley Road/Russell Road do not achieve the target Auto LOS D during the PM peak hour. To achieve the target, a reduction in PM peak hour traffic volumes for the following movements are required:
 - Northbound right turn: reduction of approximately 130 vehicles;
 - Eastbound left turn: reduction of approximately 30 vehicles;
 - Eastbound through: reduction of approximately 165 vehicles;
 - Westbound left turn: reduction of approximately 90 vehicles.
 - The southbound approach of Walkley Road/Lancaster Road does not achieve the target Auto LOS D during the PM peak hour. This can be addressed by adding five seconds to the southbound green time and subtracting it from the eastbound/westbound green time, which would allow the southbound approach to operate acceptably. Effects on the eastbound and westbound approaches are projected to be minimal.

- In existing and future traffic conditions, capacity issues have been identified for the following movements:
 - Walkley Road/Russell Road
 - Northbound left turn (AM peak)
 - Northbound right turn (PM peak)
 - Eastbound left turn (PM peak)
 - Eastbound through (PM peak)
 - Westbound left turn (PM peak)
 - Westbound through (AM peak)
 - Walkley Road/Lancaster Road
 - Southbound left turn (PM peak)
 - Eastbound left turn (PM peak)
- Under the background traffic conditions, there is anticipated traffic growth on Walkley Road, St. Laurent Boulevard, and Russell Road. All intersections are anticipated to operate at approximately the same level of service. In 2025, the level of service for the critical movement at Walkley Road/St. Laurent Boulevard downgrades from LOS B to LOS C during the PM peak hour, and the level of service for the critical movement at Walkley Road/Banton Street downgrades from LOS A to LOS B during the PM peak hour.
- Under the total traffic conditions, marginal increases in v/c ratios and queue lengths within the study area are anticipated. The level of service at Walkley Road/Banton Street upgrades from LOS B to LOS A during the PM peak hour, due to a decrease in traffic entering and exiting the subject site via the Banton Street access.
- Based on the foregoing, the proposed redevelopment is recommended from a transportation perspective.

NOVATECH

Prepared by:



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

Reviewed by:



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

APPENDIX A

Conceptual Site Plan

ALL THE INFORMATION RELATED TO THE SITE ARE ON THE PLAN PREPARED BY:

ANNIS, O'SULLIVAN, VOLLEBEKK LTD
FILE : 18938-18 GT PULL A C 5 RF GL T F

THIS BUILDING IS ORIENTED 9.14" FROM THE EASTERN
PROPERTY LINE. THE MASTER DIMENSION IS FROM THE JOB
BENCHMARK TO THE GRID LINE.

ALL POINTS OF CONNECTION SHOWN ARE CONCEPTUAL AND MAY BE MODIFIED ACCORDING TO THE NEEDS AND REQUIREMENTS OF THE PUBLIC AUTHORITIES CONCERNED, (SEWERS, AQUEDUCT, DISTRIBUTION OF NATURAL GAS AND ELECTRICITY, TELEPHONE SERVICE AND CABLE DISTRIBUTION); SITE CONDITIONS; NEEDS AND SUBCONTRACTORS COORDINATION. ANY MODIFICATION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED TO THE ARCHITECT FOR EXAMINATION AND COORDINATION BEFORE EXECUTION.

ALL BUILDING DIMENSIONS ARE TAKEN FROM THE EXTERIOR FACE OF THE WALLS AT 1'-0" ABOVE THE GROUND FLOOR.

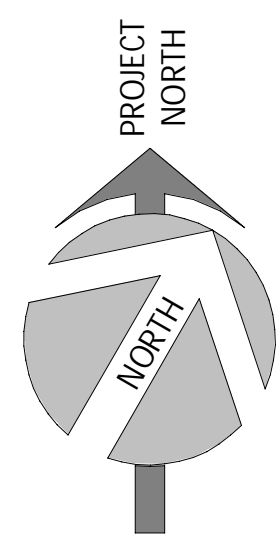
FIRE PROTECTION:
ALL FLOOR AREAS OF THIS BUILDING WILL BE PROTECTED BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL BUILDING CODE AND

CONSULT CIVIL ENGINEER'S DRAWINGS FOR: SITE LEVELS, DRAINAGE SLOPES, RETENTION BASINS, MANHOLES, CAT BASINS, AND ALL UNDERGROUND SERVICES.

SOIL TEST, CORE SAMPLING AND BEARING CAPACITY:
CONSULT THE SOIL REPORT PREPARED BY: GEMTEC
REPORT NO : 64153.93
DATE : 2018-10-05

* RELIEF REQUIRED





**SYMBOLS LEGEND - SITE
DETAIL**

- NEW BUILDINGS
- EXISTING BUILDINGS
- APHD ASPHALT PAVING, HEAVY DUTY, SEE CIVIL
- APLD ASPHALT PAVING, LIGHT DUTY, SEE CIVIL
- CC CONCRETE CURB, SEE LANDSCAPE
- CB CONCRETE BENCH, SEE LANDSCAPE
- CP CONCRETE PAVEMENT, SEE LANDSCAPE
- G GRASS OR OTHER LANDSCAPING, SEE LANDSCAPE
- ICB EXTERIOR CONCRETE BASE, SEE STRUCTURE FOR DETAILS
- FL FLAGPOLE, SEE STRUCTURE FOR BASE AND LANDSCAPE FOR POLE
- RW RETAINING WALL, SEE CIVIL
- NLP NEW LIGHT POLE REFER TO ELECTRICAL
- EXOC EXISTING CONCRETE CURB
- EXSW EXISTING SIDEWALK
- SW CONCRETE SIDEWALK, SEE CIVIL
- HC HANDICAP PARKING SIGN, SEE WAYFINDING
- STOP STOP SIGN, SEE WAYFINDING
- V VISITOR PARKING SIGN, SEE WAYFINDING
- PLE YELLOW PAINTED LINE - EXTERIOR
- GBE GALVANIZED BOLLARD EXTERIOR, SEE DETAIL
- GLBE GALVANIZED LIGHT BOLLARD EXTERIOR, SEE DETAIL
- GES GALVANIZED EXIT STAIR
- GVG GALVANIZED VENTILATION GRILLE, SEE MECHANICAL
- X-X-X-X NF NEW CHAINLINK FENCE, 8' HIGH
- HR HANDICAP RAMP, SEE CIVIL
- VHE CHARGER FOR ELECTRIC/HYBRID VEHICLES (DOUBLE), PROVIDE 100mm HIGH CONCRETE BASE, WHEN NOT POSITIONED ON A SIDEWALK, COORDINATE THE SIZE OF THE BASE WITH CHOSEN CHARGER MODEL, SEE SPEC. AND ELECTRICAL
- FH FIRE HYDRANT
- SC SHAMBER FIRE DEPT CONNECTION, SEE CIVIL AND FIRE PROTECTION
- CA POLE OR WALL MOUNTED CCTV SECURITY CAMERA, SEE ELECTRICAL AND COMMUNICATION

No.	Date	Revision	By
3	2019-04-11	REVISED PER CITY COMMENTS	CP
2	2019-04-09	COMMUNITY MEETING	CP
1	2019-03-29	SCHEMATIC DESIGN	CP
0	2019-01-18	SITE PLAN APPLICATION	CP



GIANT TIGER HEAD OFFICE

OTTAWA ONTARIO



Copyright GKC Architects. Not to be used for any other project without the architect's written consent. All dimensions and coordinates must be verified on site. The architect's responsibility is to verify all work is correct, to meet current applicable norms, bylaws and codes for all plans made.

ARCHITECTURE

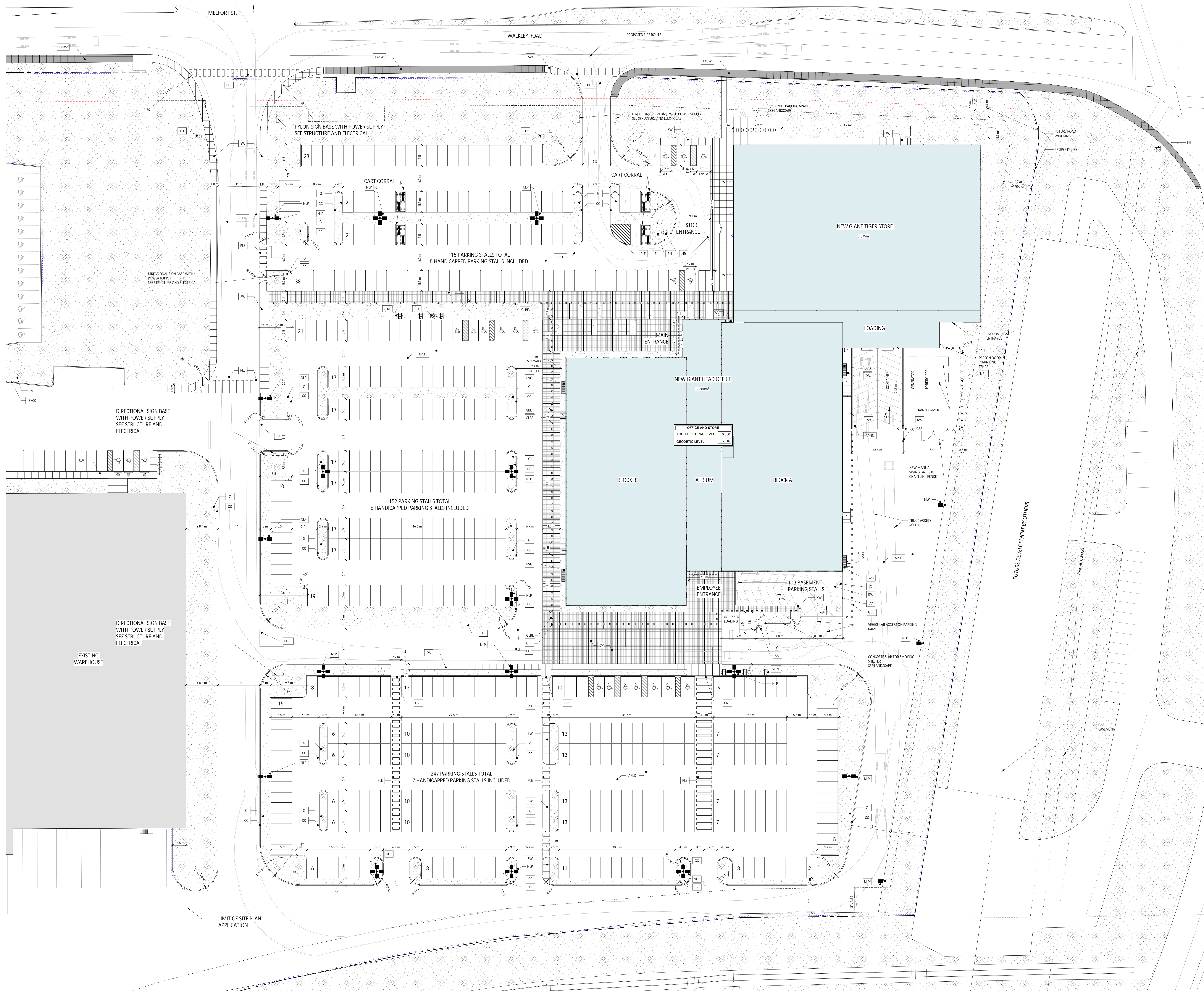
ENLARGED SITE PLAN 1/2

DRAWN BY: CP CHECKED BY: FL

SCALE: As indicated

FOUR: 17109 A101 R3

007-12-19-006
#12420



APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	2480 Walkley Road
Description of Location	Located south of Walkley Road/Melfort Street
Land Use Classification	Office
Development Size (units)	-
Development Size (m ²)	10,350 m² of new office space (removing 875 m² of retail space and 11,085 m² of warehouse space)
Number of Accesses and Locations	<ul style="list-style-type: none"> • Existing accesses on Banton Street and Walkley Road 80m east of Melfort Street • Proposed access at Walkley Road/Melfort Street and closure of the existing median break at Walkley Road 80m east of Melfort Street
Phase of Development	1
Buildout Year	2020

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 m²
Industrial	5,000 m ²
Fast-food restaurant or coffee shop	100 m ²
Destination retail	1,000 m ²
Gas station or convenience market	75 m ²

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

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

3. Location Triggers

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

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

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

4. Safety Triggers

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

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

5. Summary

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

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

APPENDIX C

OC Transpo Route Maps

FORMER / ANCIEN 192

47

Local

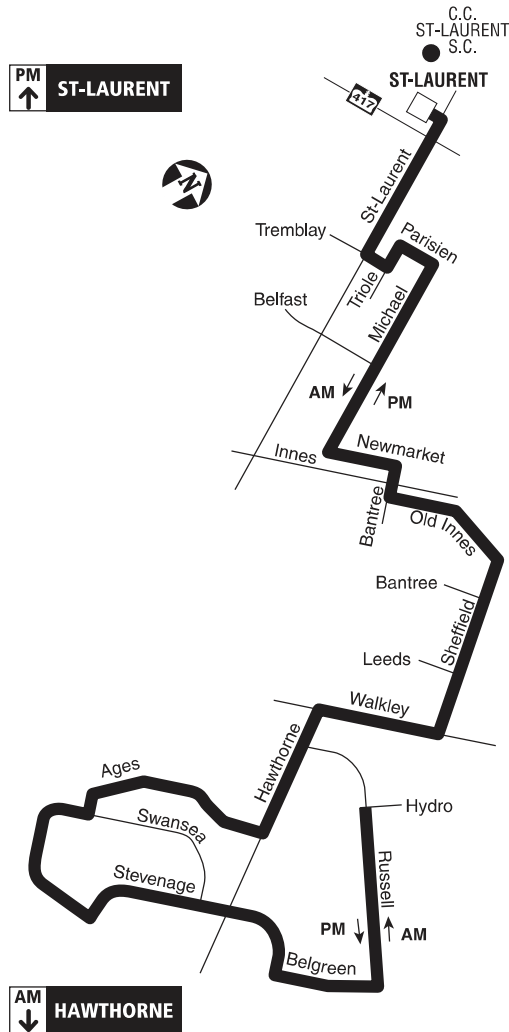
HAWTHORNE
ST-LAURENT

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement

PM
↑
ST-LAURENT



AM
↓
HAWTHORNE

Legend • Légende



Transitway station / Station du Transitway

2017.06



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

Text / Texto560560

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

Customer Relations

Service à la clientèle 613-842-3600

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

Security / Sécurité..... 613-741-2478

Effective June 25, 2017

En vigueur 25 juin 2017



INFO 613-741-4390
octranspo.com

112

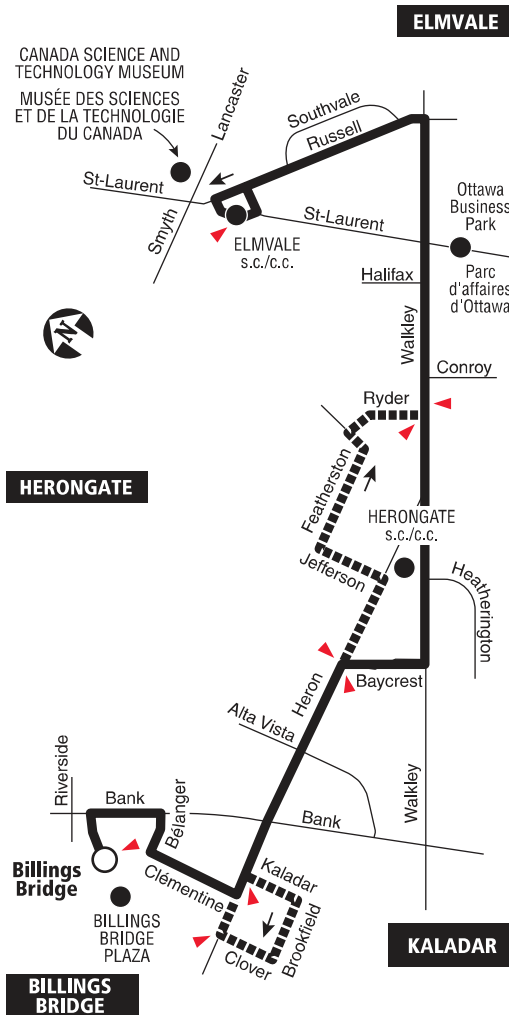
ELMVALE BILLINGS BRIDGE

Local

7 days a week / 7 jours par semaine

All day service

Service toute la journée



Transitway Station / Station du Transitway



Some trips / Certains trajets



Timepoint / Heures de passage

2017.12



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

Text / Texto560560

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

Customer Relations

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

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

Security / Sécurité..... **613-741-2478**

Effective June 23, 2013

En vigueur 23 juin 2013



INFO 613-741-4390
octranspo.com



APPENDIX D

Collision Records



City Operations - Transportation Services

Collision Details Report - Public Version

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

Location: BANTON ST @ WALKLEY RD

Traffic Control: Traffic signal

Total Collisions: 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Jan-31, Fri,14:30	Clear	Rear end	Non-fatal injury	Slush	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-May-07, Wed,16:48	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jun-20, Fri,14:52	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					North	Turning left	Delivery van	Other motor vehicle	
2015-May-03, Sun,14:18	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jan-12, Mon,09:48	Snow	Angle	P.D. only	Loose snow	West	Turning left	Truck and trailer	Skidding/sliding	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jul-31, Fri,08:29	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Passenger van	Other motor vehicle	

					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Sep-15, Thu,11:40	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jun-09, Thu,17:08	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2017-Jul-27, Thu,14:29	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-May-15, Mon,16:27	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Oct-26, Thu,12:56	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-20, Mon,09:54	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-May-22, Wed,17:02	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Skidding/sliding
					West	Slowing or stopping	Pick-up truck	Other motor vehicle

					West	Stopped	Pick-up truck	Other motor vehicle
2013-Apr-02, Tue,15:51	Clear	Angle	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle

Location: HAWTHORNE RD/RUSSELL RD @ WALKLEY RD

Traffic Control: Traffic signal

Total Collisions: 116

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Feb-17, Mon,19:29	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Feb-16, Sun,15:50	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-04, Tue,15:32	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Mar-05, Wed,18:40	Clear	Rear end	P.D. only	Ice	West	Changing lanes	Pick-up truck	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Mar-27, Thu,11:19	Clear	Rear end	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Turning left	Pick-up truck	Other motor vehicle	

2014-Feb-11, Tue,08:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Passenger van	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2014-Mar-30, Sun,15:01	Snow	SMV other	P.D. only	Packed snow	South	Turning right	Automobile, station wagon	Skidding/sliding
2014-Apr-12, Sat,09:29	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Truck - dump	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-May-02, Fri,02:34	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Apr-14, Mon,15:52	Rain	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
2014-Jun-02, Mon,16:48	Clear	Turning movement	Non-fatal injury	Dry	North	Turning right	Truck and trailer	Cyclist
					North	Going ahead	Bicycle	Other motor vehicle
2014-May-29, Thu,18:00	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle

2014-Jun-05, Thu,18:20	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jun-23, Mon,17:39	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Turning left	Truck - dump	Other motor vehicle
2014-Apr-30, Wed,17:33	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Jun-15, Sun,15:00	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2014-May-26, Mon,09:11	Clear	Other	P.D. only	Dry	East	Reversing	Truck - open	Other motor vehicle
					West	Turning left	Passenger van	Other motor vehicle
2014-Aug-12, Tue,17:23	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jul-12, Sat,15:12	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Apr-26, Sat,09:35	Clear	Rear end	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle

					North	Turning right	Automobile, station wagon	Other motor vehicle
2014-Aug-08, Fri,13:00	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Sep-26, Fri,15:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Aug-26, Tue,07:24	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Truck - closed	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Dec-16, Tue,13:17	Rain	Rear end	P.D. only	Wet	South	Going ahead	Construction equipment	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-16, Tue,17:15	Freezing Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2014-Oct-16, Thu,09:45	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Delivery van	Other motor vehicle
2014-Aug-12, Tue,17:05	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle

2014-Oct-01, Wed,18:05	Clear	Rear end	P.D. only	Dry	East	Unknown	Automobile, station wagon	Other motor vehicle
					East	Unknown	Truck - closed	Other motor vehicle
2014-Oct-17, Fri,15:58	Rain	Sideswipe	Non-fatal injury	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Jul-22, Wed,09:29	Clear	Rear end	Non-fatal injury	Dry	East	Unknown	Unknown	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Dec-26, Fri,14:01	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2015-Feb-07, Sat,11:40	Clear	Angle	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Truck - closed	Other motor vehicle
2015-Feb-14, Sat,12:45	Snow	Sideswipe	P.D. only	Loose snow	West	Unknown	Pick-up truck	Other motor vehicle
					West	Unknown	Automobile, station wagon	Other motor vehicle
2015-Jan-12, Mon,16:16	Clear	Rear end	P.D. only	Packed snow	North	Going ahead	Unknown	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2014-Dec-31, Wed,08:00	Clear	Rear end	P.D. only	Dry	North	Turning right	Truck - closed	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2014-Dec-17, Wed,13:15	Rain	Rear end	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-12, Mon,15:37	Snow	Rear end	P.D. only	Loose snow	South	Turning right	Truck - closed	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Mar-25, Wed,10:20	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Apr-04, Sat,22:27	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-May-07, Thu,13:13	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Stopped	Truck and trailer	Other motor vehicle
2015-Jun-04, Thu,09:56	Clear	Angle	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2015-Jun-18, Thu,10:54	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle

					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Sep-08, Tue,07:27	Clear	Rear end	P.D. only	Dry	East	Going ahead	Truck and trailer	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
2015-May-23, Sat,13:27	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Police vehicle	Other motor vehicle
2016-May-13, Fri,08:01	Rain	Rear end	P.D. only	Wet	North	Turning right	Delivery van	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2016-Feb-16, Tue,06:50	Snow	Rear end	P.D. only	Slush	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Nov-03, Tue,15:57	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-Nov-09, Mon,14:10	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2015-Jul-21, Tue,10:29	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Truck and trailer	Other motor vehicle

					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Nov-27, Fri,16:20	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2016-Mar-11, Fri,15:40	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Delivery van	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2016-Apr-12, Tue,06:21	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2016-May-03, Tue,08:02	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2015-Dec-22, Tue,16:13	Rain	Rear end	Non-fatal injury	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Nov-13, Fri,14:04	Rain	Rear end	P.D. only	Wet	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2015-Nov-24, Tue,12:25	Snow	Rear end	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle

					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Mar-01, Tue,18:56	Snow	Turning movement	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Truck - tractor	Other motor vehicle
2016-May-06, Fri,10:22	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2016-Sep-11, Sun,20:10	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2016-Sep-14, Wed,17:30	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2016-Jul-22, Fri,14:43	Clear	Other	P.D. only	Dry	West	Reversing	Truck - tractor	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jun-20, Mon,07:44	Clear	Other	P.D. only	Dry	East	Reversing	Truck - tractor	Other motor vehicle
					West	Stopped	Truck - tractor	Other motor vehicle
2016-Nov-07, Mon,16:24	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2016-Oct-19, Wed,17:46	Clear	Approaching	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2016-Oct-05, Wed,18:45	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-28, Wed,10:57	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck and trailer	Other motor vehicle
					West	Going ahead	Truck - open	Other motor vehicle
2016-Sep-30, Fri,15:53	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-27, Tue,15:45	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Motorcycle	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jan-05, Thu,14:17	Clear	Rear end	P.D. only	Loose snow	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Nov-23, Thu,06:23	Clear	Sideswipe	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Delivery van	Other motor vehicle

2017-Aug-14, Mon,09:16	Clear	Rear end	P.D. only	Dry	South	Going ahead	Other	Other motor vehicle
					South	Stopped	Truck - tractor	Other motor vehicle
2017-Oct-20, Fri,14:42	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2017-Jan-17, Tue,14:00	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck - tractor	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2016-Dec-17, Sat,13:33	Snow	SMV other	P.D. only	Packed snow	North	Going ahead	Automobile, station wagon	Animal - wild
2016-Dec-16, Fri,06:52	Clear	Rear end	P.D. only	Wet	South	Turning right	Truck - closed	Other motor vehicle
					South	Turning right	Truck - closed	Other motor vehicle
					South	Turning right	Truck - closed	Other motor vehicle
2017-Feb-02, Thu,08:49	Clear	Rear end	P.D. only	Dry	North	Going ahead	Delivery van	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2016-Dec-05, Mon,05:55	Snow	Other	P.D. only	Packed snow	North	Turning right	Pick-up truck	Skidding/sliding
					East	Going ahead	Automobile, station wagon	Other motor vehicle

2016-Dec-05, Mon,06:10	Snow	Rear end	P.D. only	Packed snow	North	Turning right	Pick-up truck	Skidding/sliding
					North	Turning right	Truck - closed	Other motor vehicle
2017-Feb-05, Sun,15:29	Drifting Snow	Rear end	P.D. only	Packed snow	West	Slowing or stopping	Police vehicle	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Mar-24, Fri,09:39	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2017-Mar-14, Tue,15:45	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle
					West	Unknown	Pick-up truck	Other motor vehicle
2017-Mar-29, Wed,16:57	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Passenger van	Other motor vehicle
2017-Apr-15, Sat,16:18	Rain	Rear end	Non-fatal injury	Wet	East	Going ahead	Municipal transit bus	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Mar-28, Tue,11:25	Clear	Turning movement	Non-fatal injury	Wet	East	Going ahead	Pick-up truck	Other motor vehicle
					West	Turning left	Ambulance	Other motor vehicle
2017-Jul-11, Tue,09:32	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle

					East	Turning right	Automobile, station wagon	Other motor vehicle
2017-Nov-10, Fri,16:45	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle
					North	Turning left	Truck - tractor	Other motor vehicle
2017-Jun-27, Tue,17:00	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Passenger van	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Nov-30, Thu,20:37	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-28, Thu,12:05	Clear	Rear end	P.D. only	Dry	East	Going ahead	Truck - dump	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jan-31, Thu,06:15	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jan-10, Thu,08:25	Freezing Rain	Rear end	P.D. only	Ice	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Passenger van	Other motor vehicle
2013-Jan-07, Mon,13:59	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Passenger van	Other motor vehicle

					South	Turning left	Tow truck	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2013-Jan-09, Wed,11:19	Clear	Rear end	P.D. only	Dry	North	Turning right	Delivery van	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jan-25, Fri,08:10	Snow	Rear end	P.D. only	Packed snow	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jan-24, Thu,19:25	Clear	Rear end	P.D. only	Ice	North	Turning right	Automobile, station wagon	Skidding/sliding
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jan-14, Mon,14:14	Clear	Rear end	Non-fatal injury	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jan-25, Fri,09:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Feb-05, Tue,09:20	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2013-Feb-25, Mon,13:11	Clear	Rear end	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle

					West	Turning left	Automobile, station wagon	Other motor vehicle
2013-Mar-21, Thu,12:17	Clear	Rear end	Non-fatal injury	Ice	East	Turning right	Delivery van	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2013-Mar-16, Sat,14:08	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2013-May-24, Fri,13:32	Clear	Other	P.D. only	Dry	North	Turning right	Pick-up truck	Curb
					West	Turning left	Pick-up truck	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-May-15, Wed,21:42	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2013-Jun-04, Tue,07:50	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jun-15, Sat,10:59	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle

2013-Jun-13, Thu,11:16	Clear	Other	P.D. only	Dry	East	Reversing	Truck - dump	Other motor vehicle
					West	Turning left	Truck - open	Other motor vehicle
2013-Aug-09, Fri,08:04	Clear	Angle	P.D. only	Dry	West	Going ahead	Truck and trailer	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2013-Jul-30, Tue,12:22	Clear	Rear end	Non-reportable	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle
2013-Jun-13, Thu,14:30	Clear	Rear end	P.D. only	Dry	East	Turning right	Passenger van	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2013-Jun-19, Wed,14:47	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Cyclist
					East	Going ahead	Bicycle	Other motor vehicle
2013-Jul-25, Thu,12:27	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Aug-30, Fri,10:00	Clear	Rear end	P.D. only	Dry	North	Turning left	Truck - dump	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2013-Oct-16, Wed,13:34	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle

					North	Stopped	Automobile, station wagon	Other motor vehicle
2013-Dec-11, Wed,07:08	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Passenger van	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2013-Dec-05, Thu,09:40	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2013-Dec-24, Tue,09:59	Clear	Rear end	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

Location: LANCASTER RD @ WALKLEY RD

Traffic Control: Traffic signal

Total Collisions: 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Mar-25, Tue,11:39	Clear	Rear end	P.D. only	Dry	South	Unknown	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Delivery van	Other motor vehicle	
2015-Feb-06, Fri,09:41	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Passenger van	Other motor vehicle	
2015-Jan-05, Mon,07:40	Clear	Rear end	P.D. only	Ice	East	Turning left	Truck - dump	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	

2015-Jul-14, Tue,09:13	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Passenger van	Other motor vehicle
2015-Mar-31, Tue,07:15	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2016-Sep-11, Sun,11:00	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jun-26, Fri,15:45	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Oct-16, Fri,09:48	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2016-Apr-25, Mon,11:43	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Passenger van	Other motor vehicle
2016-Jan-18, Mon,09:45	Clear	Sideswipe	P.D. only	Slush	East	Making "U" turn	Automobile, station wagon	Other motor vehicle
					East	Turning left	Pick-up truck	Other motor vehicle
2015-Nov-26, Thu,06:50	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle

					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Nov-19, Thu,16:15	Rain	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2016-May-19, Thu,16:15	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jul-28, Thu,08:52	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Nov-09, Thu,11:05	Clear	Angle	P.D. only	Dry	West	Turning left	Truck - closed	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2017-Feb-23, Thu,14:12	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-17, Sat,12:45	Snow	Turning movement	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Automobile, station wagon	Other motor vehicle
2017-Apr-21, Fri,06:12	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Jul-03, Mon,18:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Jul-07, Fri,16:20	Clear	Rear end	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2017-Oct-11, Wed,18:23	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2017-Dec-28, Thu,09:24	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Nov-09, Thu,17:13	Rain	Rear end	Non-fatal injury	Wet	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Feb-07, Thu,16:58	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2013-Apr-26, Fri,07:07	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle

					West	Stopped	Passenger van	Other motor vehicle
2013-May-29, Wed,12:45	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2013-Aug-07, Wed,18:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2013-Oct-11, Fri,12:58	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Truck - dump	Other motor vehicle
2013-Nov-07, Thu,12:03	Clear	Rear end	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Turning left	Truck - dump	Other motor vehicle
2013-Dec-23, Mon,10:29	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Truck and trailer	Other motor vehicle
					East	Stopped	Delivery van	Other motor vehicle

Location: MELFORT ST @ WALKLEY RD

Traffic Control: Traffic signal

Total Collisions: 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Mar-01, Sat,11:54	Snow	Angle	P.D. only	Packed snow	West	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	

2014-Jun-09, Mon,21:53	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Aug-17, Wed,08:03	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Pedestrian	1
2016-Mar-11, Fri,15:58	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Sep-14, Wed,17:10	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-09, Thu,16:26	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Oct-11, Wed,16:14	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2013-Aug-08, Thu,12:23	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: ST. LAURENT BLVD @ WALKLEY RD

Traffic Control: Traffic signal

Total Collisions: 90

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Jan-10, Fri,13:58	Clear	Angle	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Municipal transit bus	Other motor vehicle	
2014-Jan-11, Sat,14:34	Clear	Rear end	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jan-03, Fri,05:30	Clear	Rear end	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Apr-29, Tue,14:33	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Municipal transit bus	Other motor vehicle	
2014-May-13, Tue,16:45	Clear	Rear end	P.D. only	Dry	East	Going ahead	Truck - closed	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jun-20, Fri,07:05	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jun-26, Thu,16:18	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	

					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Aug-11, Mon,12:00	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2014-Oct-17, Fri,11:00	Clear	Angle	P.D. only	Dry	South	Turning right	Passenger van	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-18, Thu,17:00	Clear	Rear end	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2014-Nov-07, Fri,08:49	Rain	SMV other	P.D. only	Wet	East	Turning left	Pick-up truck	Pole (utility, power)
2015-Feb-19, Thu,16:59	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-Oct-29, Wed,06:49	Clear	Turning movement	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2014-Nov-10, Mon,16:16	Clear	Rear end	P.D. only	Dry	East	Turning right	Passenger van	Other motor vehicle

					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Sep-24, Wed,11:27	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2014-Nov-12, Wed,06:38	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Mar-29, Sun,14:11	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-29, Thu,13:46	Drifting Snow	Angle	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Sep-17, Thu,13:18	Clear	Angle	P.D. only	Dry	South	Going ahead	Ambulance	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Sep-17, Thu,14:15	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2015-Oct-07, Wed,11:18	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					West	Going ahead	Truck and trailer	Other motor vehicle

2015-Mar-10, Tue,16:14	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-30, Fri,18:11	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle
					West	Unknown	Automobile, station wagon	Other motor vehicle
2014-Nov-14, Fri,17:41	Clear	Rear end	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2014-Oct-17, Fri,11:02	Clear	Angle	P.D. only	Dry	South	Turning right	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Sep-04, Fri,17:04	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Sep-01, Tue,18:35	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2015-Apr-02, Thu,20:35	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-21, Sat,17:56	Snow	SMV other	P.D. only	Packed snow	East	Turning right	Passenger van	Skidding/sliding
2015-Mar-05, Thu,06:59	Clear	Rear end	P.D. only	Dry	South	Turning right	Passenger van	Other motor vehicle
					South	Turning right	Passenger van	Other motor vehicle
2015-Jul-27, Mon,07:35	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Passenger van	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Aug-20, Thu,09:37	Clear	Rear end	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle
2016-May-12, Thu,14:54	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Nov-08, Sun,17:56	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-17, Fri,20:30	Rain	Approaching	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle

					South	Turning left	Pick-up truck	Other motor vehicle
2015-Nov-09, Mon,03:51	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2015-Sep-20, Sun,13:04	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2015-Aug-11, Tue,12:50	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-Oct-13, Tue,17:43	Clear	Rear end	P.D. only	Dry	East	Stopped	Tow truck	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2016-Jan-13, Wed,17:02	Clear	Rear end	P.D. only	Slush	North	Unknown	Unknown	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-24, Thu,12:40	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Nov-08, Sun,02:37	Clear	SMV other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Pole (sign, parking meter)

2015-Aug-04, Tue,17:26	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Passenger van	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Aug-29, Mon,08:37	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jan-11, Wed,21:17	Rain	Rear end	P.D. only	Ice	South	Turning left	Pick-up truck	Other motor vehicle
					South	Turning left	Pick-up truck	Other motor vehicle
2017-Jan-18, Wed,22:15	Clear	SMV other	P.D. only	Loose snow	East	Going ahead	Unknown	Other
2017-Feb-12, Sun,14:18	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Skidding/sliding
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Feb-03, Fri,19:06	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Jan-27, Fri,12:27	Snow	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Feb-15, Wed,18:06	Snow	Turning movement	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2017-Jan-13, Fri,16:27	Clear	SMV other	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Pedestrian	1
2016-Dec-09, Fri,18:00	Clear	Rear end	P.D. only	Dry	East	Stopped	Unknown	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-21, Wed,17:22	Clear	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Dec-31, Sat,17:20	Snow	Rear end	P.D. only	Loose snow	West	Going ahead	Unknown	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Feb-01, Wed,15:04	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Feb-02, Thu,15:18	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-18, Sat,21:05	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
2017-Apr-01, Sat,22:03	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	

					West	Going ahead	Pick-up truck	Other motor vehicle
2016-Dec-31, Sat,18:41	Snow	Sideswipe	P.D. only	Loose snow	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Mar-29, Wed,17:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jul-13, Thu,08:00	Clear	SMV other	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Curb
2017-Jun-05, Mon,16:08	Clear	Rear end	P.D. only	Dry	East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Jun-26, Mon,11:20	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2017-Oct-20, Fri,15:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Nov-18, Sat,20:21	Rain	Turning movement	P.D. only	Wet	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Jul-17, Mon,21:15	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Nov-13, Mon,17:35	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2017-Dec-21, Thu,19:21	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2017-Dec-23, Sat,22:28	Clear	Angle	Non-fatal injury	Slush	East	Going ahead	Automobile, station wagon	Skidding/sliding
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jul-20, Thu,17:02	Clear	Other	P.D. only	Dry	West	Reversing	Truck and trailer	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Aug-11, Fri,09:00	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-08, Wed,17:21	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2013-Feb-28, Thu,15:33	Rain	Rear end	P.D. only	Slush	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2013-Mar-19, Tue,20:14	Snow	Rear end	Non-fatal injury	Ice	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2013-Feb-27, Wed,17:22	Snow	Rear end	P.D. only	Loose snow	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Delivery van	Other motor vehicle
2013-May-24, Fri,12:08	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2013-May-07, Tue,18:09	Clear	Turning movement	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Jun-28, Fri,09:15	Clear	Other	P.D. only	Dry	East	Reversing	Truck and trailer	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Jun-27, Thu,16:04	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2013-Aug-29, Thu,11:16	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Truck - open	Other motor vehicle	
2013-Sep-03, Tue,19:57	Clear	SMV other	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Pedestrian	1
2013-Sep-08, Sun,13:09	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Sep-30, Mon,15:07	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
2013-Oct-05, Sat,17:01	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2013-Sep-17, Tue,13:49	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2013-Oct-04, Fri,16:39	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2013-Nov-04, Mon,19:02	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Municipal transit bus	Other motor vehicle	

2013-Nov-05, Tue,11:04	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2013-Dec-13, Fri,13:48	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2013-Dec-16, Mon,23:29	Drifting Snow	Sideswipe	P.D. only	Packed snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle

Location: TAWNEY RD @ WALKLEY RD

Traffic Control: Stop sign

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Aug-22, Fri,14:30	Clear	SMV other	P.D. only	Dry	East	Going ahead	Pick-up truck	Curb	
2016-Feb-26, Fri,22:44	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Nov-06, Fri,08:28	Rain	Angle	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jun-18, Sat,06:55	Clear	SMV other	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Curb	

APPENDIX E

Traffic Count Data

Turning Movement Count - Full Study Summary Report

ST. LAURENT BLVD @ WALKLEY RD

Survey Date: Thursday, February 04, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 2
Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

ST. LAURENT BLVD										WALKLEY RD										Grand Total
Northbound					Southbound					Eastbound					Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total	
07:00 08:00	16	214	113	343	57	213	233	503	846	261	470	30	761	315	776	52	1143	1904	2750	
08:00 09:00	23	228	123	374	60	253	252	565	939	304	555	37	896	392	782	33	1207	2103	3042	
09:00 10:00	20	173	128	321	63	181	249	493	814	286	475	23	784	226	506	38	770	1554	2368	
11:30 12:30	51	218	205	474	78	227	296	601	1075	262	513	28	803	124	524	77	725	1528	2603	
12:30 13:30	31	175	157	363	107	260	329	696	1059	279	577	39	895	155	514	59	728	1623	2682	
15:00 16:00	58	235	346	639	95	201	408	704	1343	332	858	26	1216	118	624	65	807	2023	3366	
16:00 17:00	58	265	419	742	122	260	465	847	1589	343	939	27	1309	108	646	64	818	2127	3716	
17:00 18:00	23	184	223	430	78	174	406	658	1088	292	671	15	978	91	620	44	755	1733	2821	
Sub Total	280	1692	1714	3686	660	1769	2638	5067	8753	2359	5058	225	7642	1529	4992	432	6953	14595	23348	
U Turns				0				2	2				0				0	0	2	
Total	280	1692	1714	3686	660	1769	2638	5069	8755	2359	5058	225	7642	1529	4992	432	6953	14595	23350	
EQ 12Hr	389	2352	2382	5124	917	2459	3667	7046	12170	3279	7031	313	10622	2125	6939	600	9665	20287	32457	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39							
AVG 12Hr	350	2117	2144	4611	826	2213	3300	6341	10952	2951	6328	281	9560	1913	6245	540	8698	18258	29210	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90							
AVG 24Hr	459	2773	2809	6041	1082	2899	4323	8307	14348	3866	8289	369	12524	2506	8181	708	11395	23919	38267	
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31							

Comments:

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



Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

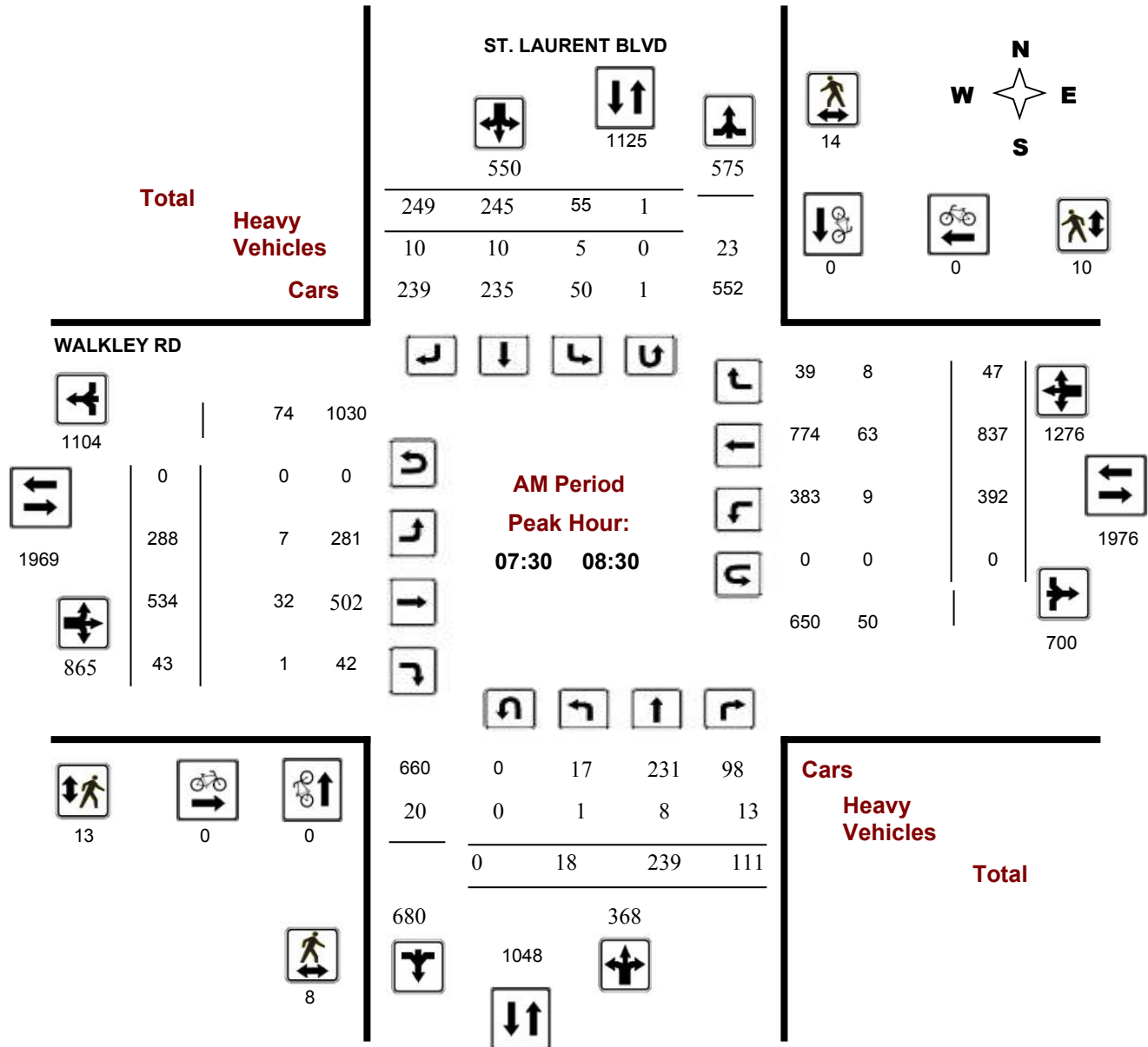
ST. LAURENT BLVD @ WALKLEY RD

Survey Date: Thursday, February 04, 2016

Start Time: 07:00

WO No: 35704

Device: Miovision

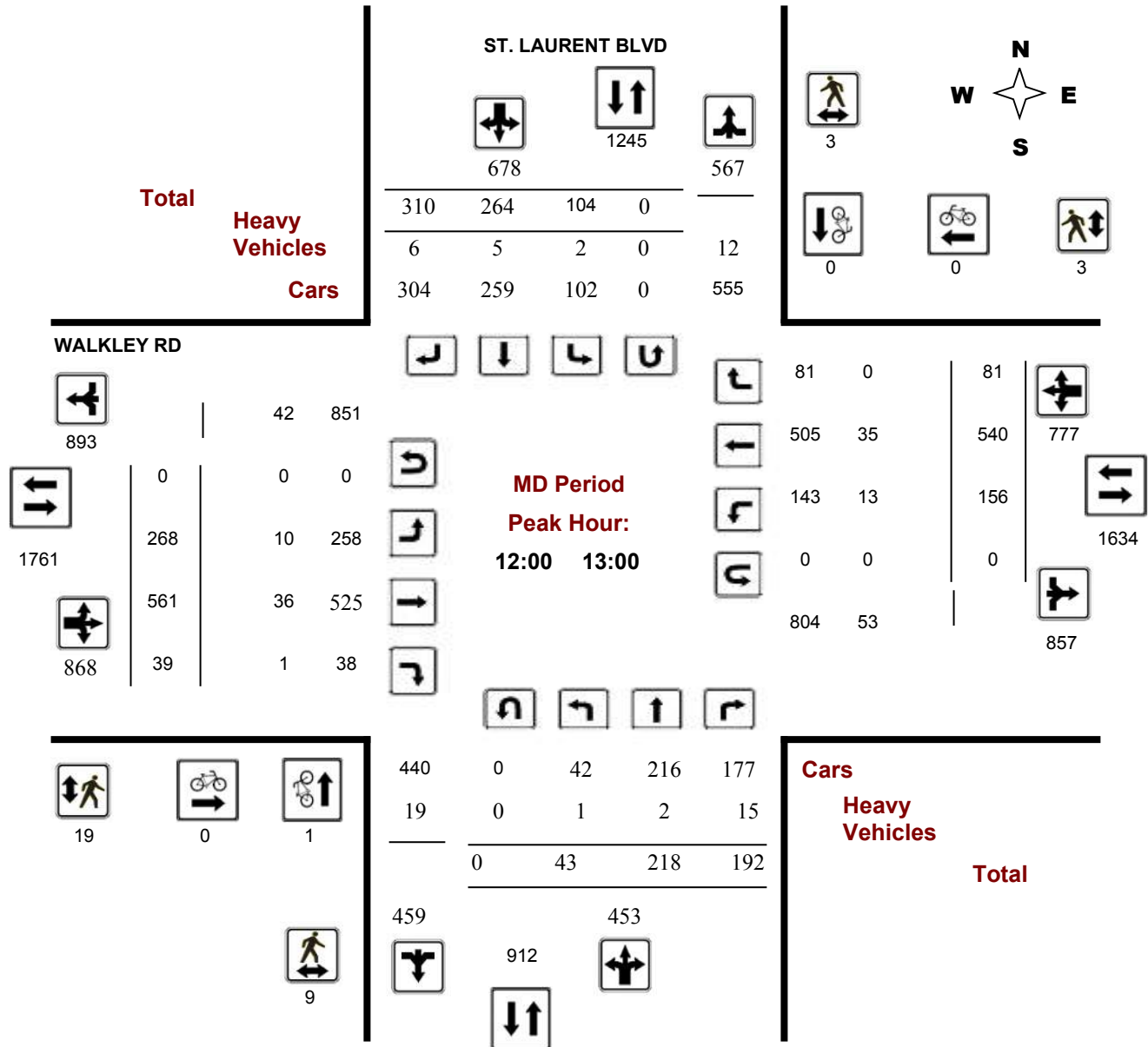


Survey Date: Thursday, February 04, 2016

Start Time: 07:00

WO No: 35704

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

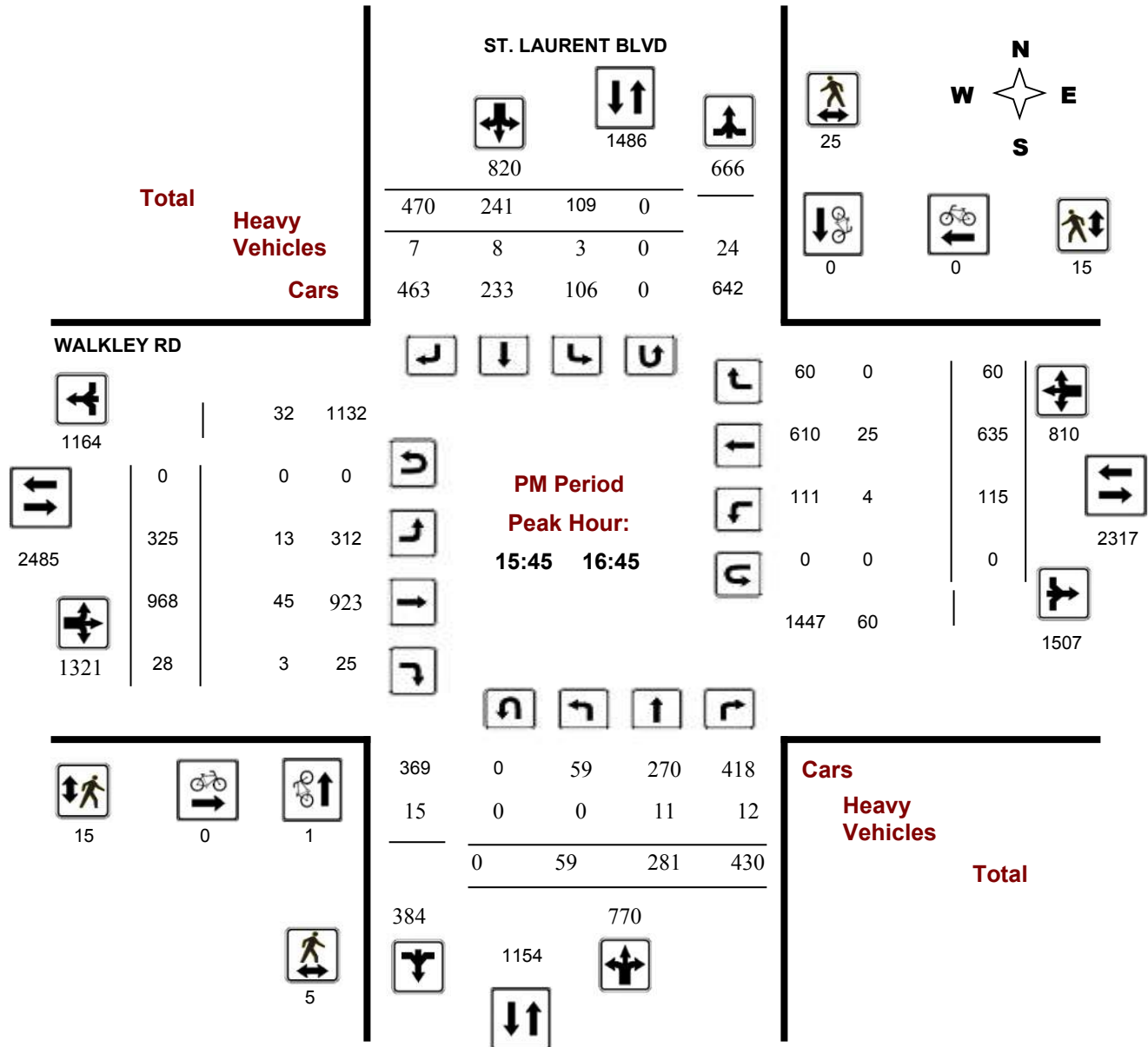
ST. LAURENT BLVD @ WALKLEY RD

Survey Date: Thursday, February 04, 2016

Start Time: 07:00

WO No: 35704

Device: Miovision





Turning Movement Count

Summary Report Including AM/PM Peak Hours, PHF, AADT and Expansion Factors

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

Tawney Road & Walkley Road

Ottawa, ON

Survey Date: Tuesday, 21 August 2018

Start Time: 0700

AADT Factor: 0.9

Weather-AM/PM Overcast 17C/Light Rain 22C

Survey Duration: 8 Hrs.

Survey Hours: 0700-1000, 1130-1330 & 1500-1800

Walkley Rd.						Walkley Rd.						N/A						Tawney Rd.					
Eastbound						Westbound						Northbound						Southbound					
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	11	606	0	0	617	0	1149	6	1	1156	1773	0	0	0	0	0	4	0	17	0	21	21	1794
0800-0900	12	715	0	1	728	0	1106	16	0	1122	1850	0	0	0	0	0	8	0	35	0	43	43	1893
0900-1000	17	712	0	0	729	0	861	6	0	867	1596	0	0	0	0	0	8	0	17	0	25	25	1621
1130-1230	20	796	0	0	816	0	818	10	2	830	1646	0	0	0	0	0	4	0	16	0	20	20	1666
1230-1330	20	865	0	0	885	0	795	12	0	807	1692	0	0	0	0	0	14	0	22	0	36	36	1728
1500-1600	24	1217	0	0	1241	0	829	9	0	838	2079	0	0	0	0	0	7	0	20	0	27	27	2106
1600-1700	36	1473	0	0	1509	0	927	9	0	936	2445	0	0	0	0	0	7	0	17	0	24	24	2469
1700-1800	19	1089	0	0	1108	0	873	10	0	883	1991	0	0	0	0	0	7	0	17	0	24	24	2015
Totals	159	7473	0	1	7633	0	7358	78	3	7439	15072	0	0	0	0	0	59	0	161	0	220	220	15292

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor

Applicable to the Day and Month of the Turning Movement Count

➔ Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts ◀

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 ➔ 12 expansion factor of 1.39																							
Equ. 12 Hr	221	10387	0	1	10610	0	10228	108	4	10340	20950	0	0	0	0	0	82	0	224	0	306	306	21256
Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 0.9																							
AADT 12-hr	199	9349	0	1	9549	0	9205	98	4	9306	18855	0	0	0	0	0	74	0	201	0	275	275	19130
24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 ➔ 24 expansion factor of 1.31																							
AADT 24 Hr	261	12247	0	2	12509	0	12058	128	5	12191	24700	0	0	0	0	0	97	0	264	0	361	361	25061
AM Peak Hour Factor ➔ 0.93											Highest Hourly Vehicle Volume between 0700h & 1000h												
AM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
0730-0830	13	671	0	1	685	0	1238	13	1	1252	1937	0	0	0	0	0	8	0	22	0	30	30	1967
OFF Peak Hour Factor ➔ 0.95											Highest Hourly Vehicle Volume between 1130h & 1330h												
Off Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1200-1300	19	886	0	0	905	0	860	14	0	874	1779	0	0	0	0	0	9	0	11	0	20	20	1799
PM Peak Hour Factor ➔ 0.95											Highest Hourly Vehicle Volume between 1500h & 1800h												
PM Peak Hr	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	LT	ST	RT	UT	TOT	LT	ST	RT	UT	TOT	S.TOT	G.TOT
1600-1700	36	1473	0	0	1509	0	927	9	0	936	2445	0	0	0	0	0	7	0	17	0	24	24	2469

Comments

Eastbound traffic occasionally backs up to or beyond Tawney Road from Banton Street in the morning and more frequently during the PM peak period.
The majority of the cyclists drove on the sidewalks.

Notes:

1. Includes all vehicle types except bicycles and electric scooters.
2. Expansion factors are not applied to turning movement counts if they are less than 8-hours in duration.
3. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Disclaimer:

The information contained in this data summary is for information purposes only, and may not apply to your situation. Every effort is made to ensure the traffic count information is accurate for the survey date provided on the summary and flow diagram forms. The author, publisher, and distributor provide no warranty about the content or accuracy of either the data summary or flow diagrams. Information provided is subjective. The author, publisher, and distributor shall not be liable for any loss of profit or any other commercial damages resulting from use of this data.



Turning Movement Count Summary, OFF and EVENING PEAK Hour Flow Diagrams

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

Tawney Road & Walkley Road

Ottawa, ON

All Vehicles

(Except Bicycles & Electric Scooters)

Tuesday, 21 August 2018

0700-1000, 1130-1330 & 1500-1800

8 Hour Survey

City of Ottawa Ward 18

Walkley Rd.

Walkley Rd.

7520

15153

7633 (B)

Total Volume
15292

Approaching Intersection
(A+B+C+D)

(D) 7439

14974

7535



N/A

0

0

0 (C)

All Pedestrian Crossings

70

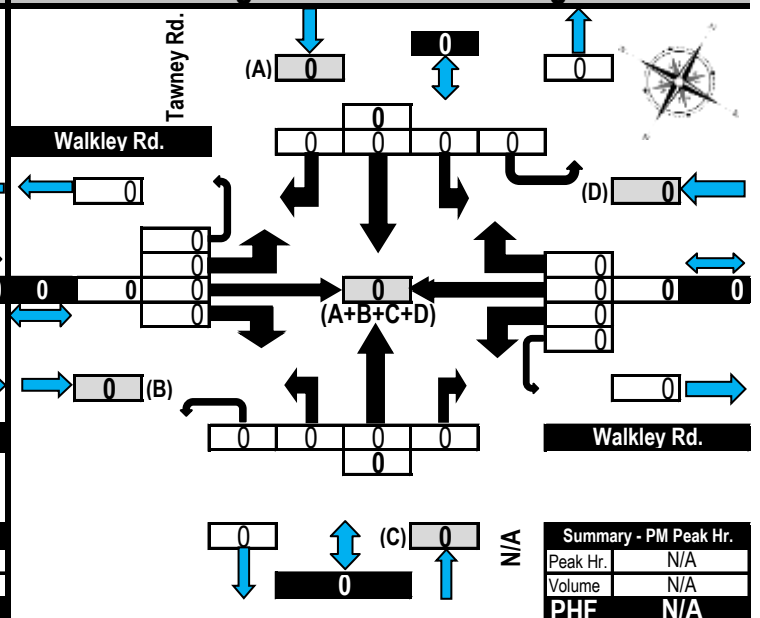
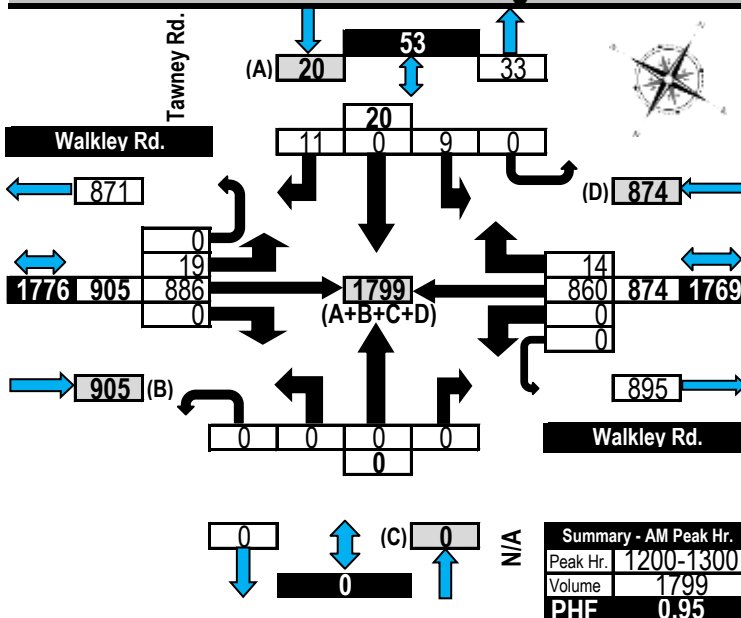
2

30

Total
102

Off Peak Hour Flow Diagram

Evening Peak Hour Flow Diagram



Turning Movement Count - Full Study Summary Report

BANTON ST @ WALKLEY RD

Survey Date: Tuesday, November 08, 2016

Total Observed U-Turns

Northbound:	0	Southbound:	0
Eastbound:	1	Westbound:	7

AADT Factor

1.00

Full Study

BANTON ST											WALKLEY RD										
Northbound					Southbound					Eastbound					Westbound					STR TOT	Grand Total
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT				
07:00 08:00	12	0	22	34	0	0	1	1	35	0	591	84	675	57	1285	0	1342	2017	2052		
08:00 09:00	17	0	25	42	0	0	0	0	42	0	682	40	722	41	1241	0	1282	2004	2046		
09:00 10:00	30	0	20	50	0	0	0	0	50	0	669	42	711	35	675	0	710	1421	1471		
11:30 12:30	85	0	52	137	0	0	2	2	139	1	720	80	801	44	682	1	727	1528	1667		
12:30 13:30	52	0	33	85	0	0	0	0	85	0	704	83	787	44	642	0	686	1473	1558		
15:00 16:00	75	0	75	150	0	0	0	0	150	0	1361	59	1420	35	747	0	782	2202	2352		
16:00 17:00	79	0	86	165	0	0	0	0	165	0	1530	58	1588	52	846	0	898	2486	2651		
17:00 18:00	64	0	59	123	0	0	0	0	123	0	1033	38	1071	35	720	0	755	1826	1949		
Sub Total	414	0	372	786	0	0	3	3	789	1	7290	484	7775	343	6838	1	7182	14957	15746		
U Turns				0				0	0				1				7	8	8		
Total	414	0	372	786	0	0	3	3	789	1	7290	484	7776	343	6838	1	7189	14965	15754		
EQ 12Hr	575	0	517	1093	0	0	4	4	1097	1	10133	673	10809	477	9505	1	9993	20802	21899		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39								
AVG 12Hr	575	0	517	1093	0	0	4	4	1097	1	10133	673	10809	477	9505	1	9993	20802	21899		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													1.00								
AVG 24Hr	754	0	677	1431	0	0	5	5	1436	2	13274	881	14159	625	12451	2	13090	27249	28685		
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31								

Comments:

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

Turning Movement Count - Peak Hour Diagram

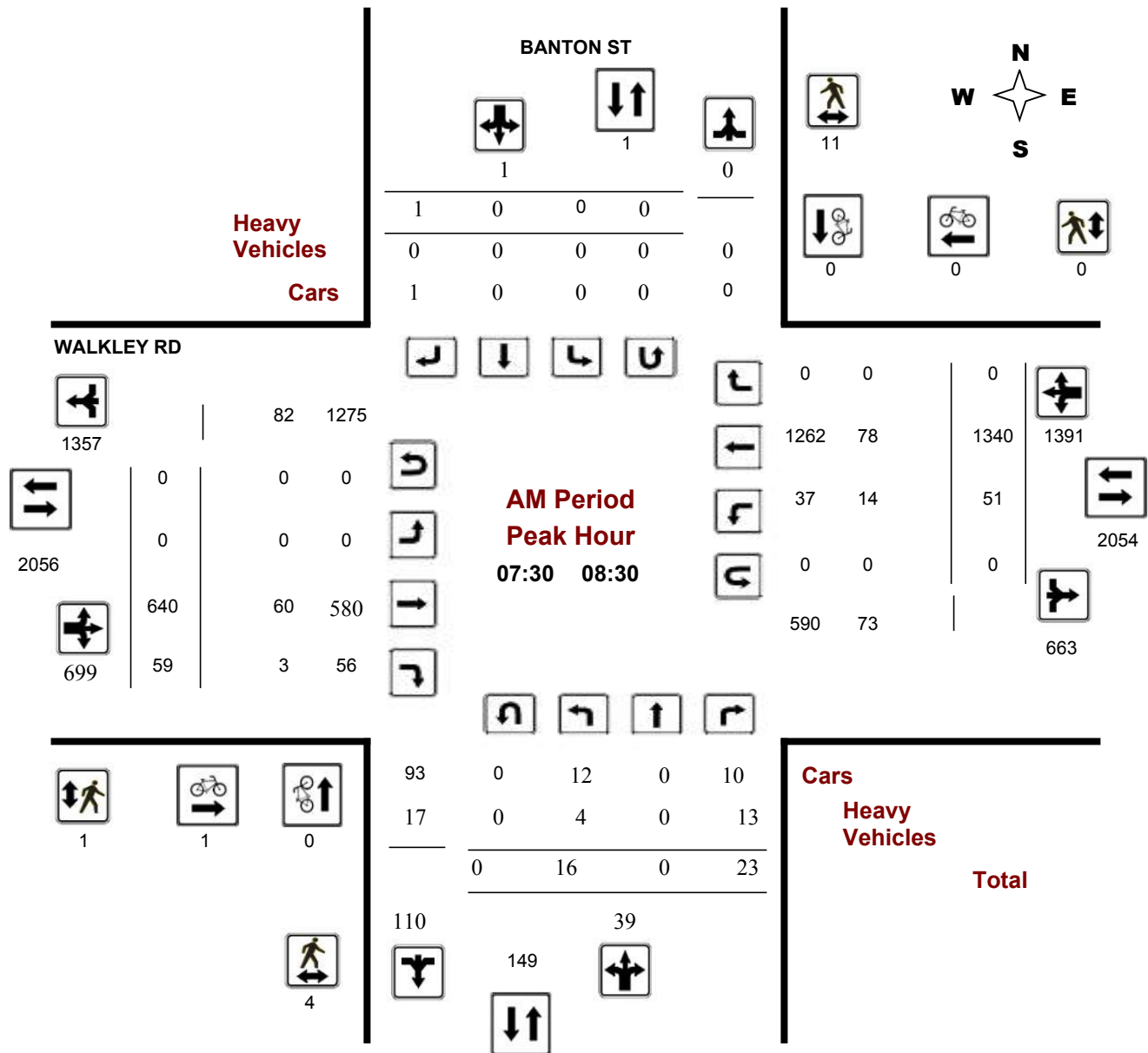
BANTON ST @ WALKLEY RD

Survey Date: Tuesday, November 08, 2016

Start Time: 07:00

WO No: 36468

Device: Miovision



Turning Movement Count - Peak Hour Diagram

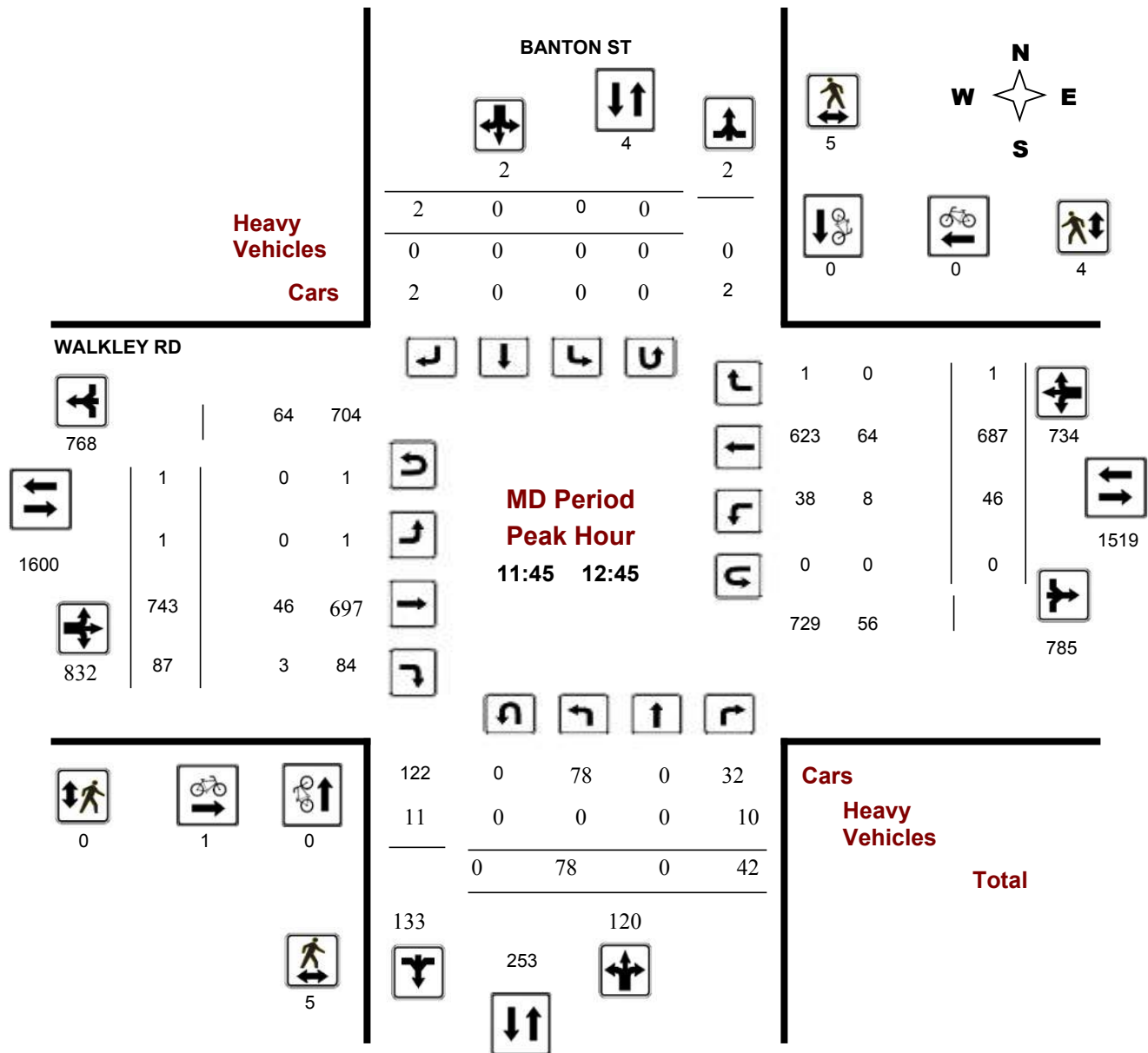
BANTON ST @ WALKLEY RD

Survey Date: Tuesday, November 08, 2016

Start Time: 07:00

WO No: 36468

Device: Miovision



Turning Movement Count - Peak Hour Diagram

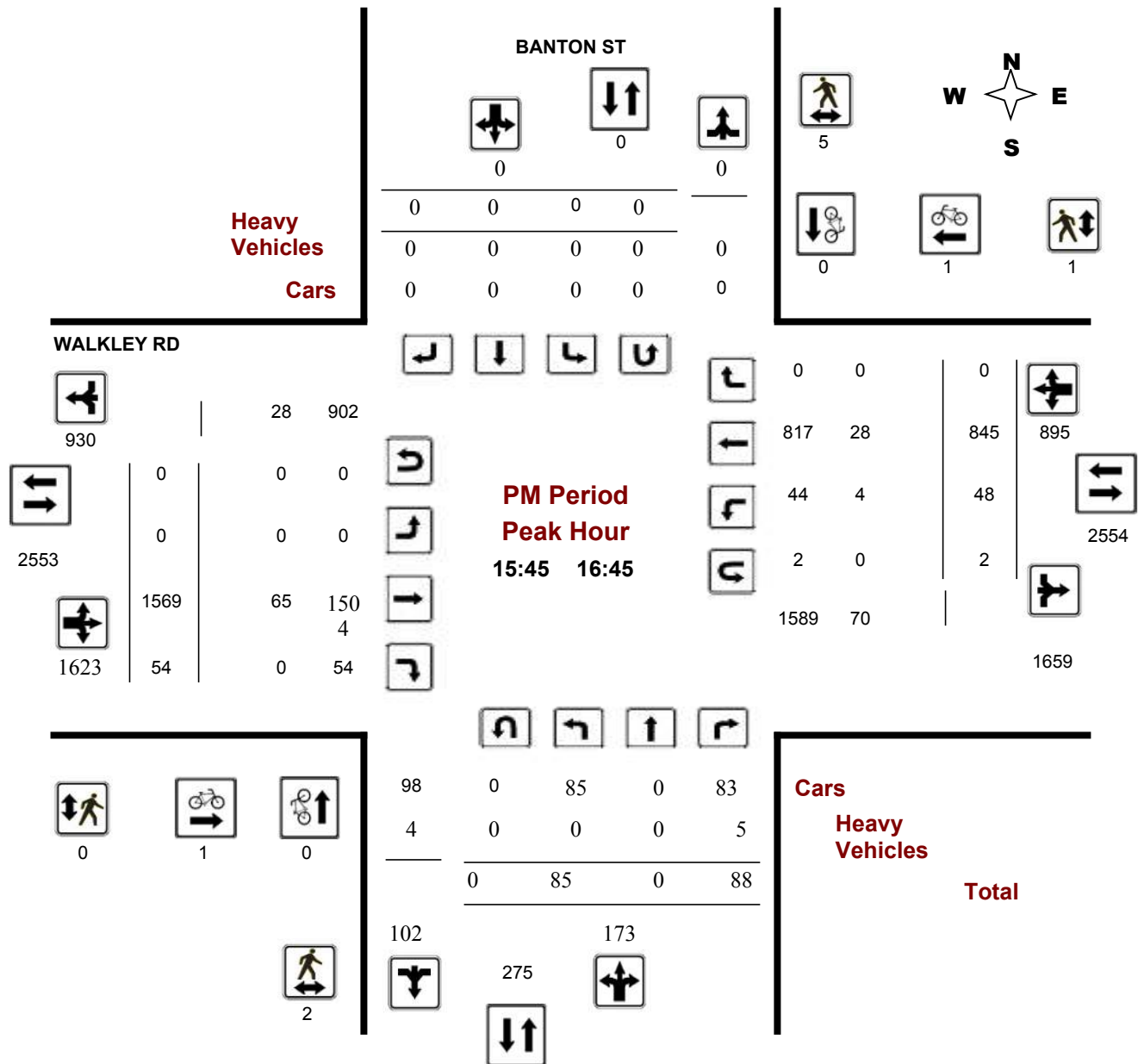
BANTON ST @ WALKLEY RD

Survey Date: Tuesday, November 08, 2016

Start Time: 07:00

WO No: 36468

Device: Miovision



Turning Movement Count - Full Study Summary Report

MELFORT ST @ WALKLEY RD

Survey Date: Tuesday, April 11, 2017

Total Observed U-Turns

Northbound:	0	Southbound:	1
Eastbound:	12	Westbound:	5

AADT Factor

.90

Full Study

MELFORT ST										WALKLEY RD									
Period	Northbound				Southbound				STR TOT	Eastbound				Westbound				STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST	RT	WB TOT		
07:00 08:00	0	0	0	0	9	0	3	12	12	1	580	0	581	0	1228	12	1240	1821	1833
08:00 09:00	0	0	0	0	9	0	3	12	12	1	644	0	645	0	1293	17	1310	1955	1967
09:00 10:00	0	0	0	0	7	0	6	13	13	1	630	0	631	0	802	8	810	1441	1454
11:30 12:30	0	0	0	0	12	0	4	16	16	2	778	0	780	0	762	11	773	1553	1569
12:30 13:30	0	0	0	0	10	0	8	18	18	3	703	0	706	0	712	16	728	1434	1452
15:00 16:00	0	0	0	0	10	0	15	25	25	6	1288	0	1294	0	747	15	762	2056	2081
16:00 17:00	0	0	0	0	7	0	5	12	12	9	1528	0	1537	0	848	13	861	2398	2410
17:00 18:00	0	0	0	0	10	0	9	19	19	7	1081	0	1088	0	742	24	766	1854	1873
Sub Total	0	0	0	0	74	0	53	127	127	30	7232	0	7262	0	7134	116	7250	14512	14639
U Turns				0				1	1				12				5	17	18
Total	0	0	0	0	74	0	53	128	128	30	7232	0	7274	0	7134	116	7255	14529	14657
EQ 12Hr	0	0	0	0	103	0	74	178	178	42	10052	0	10111	0	9916	161	10084	20195	20373
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	0	0	0	0	93	0	66	160	160	38	9047	0	9100	0	8925	145	9076	18176	18336
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	0	0	0	0	121	0	87	210	210	49	11852	0	11921	0	11691	190	11890	23811	24021
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31						

Comments:

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

Turning Movement Count - Peak Hour Diagram

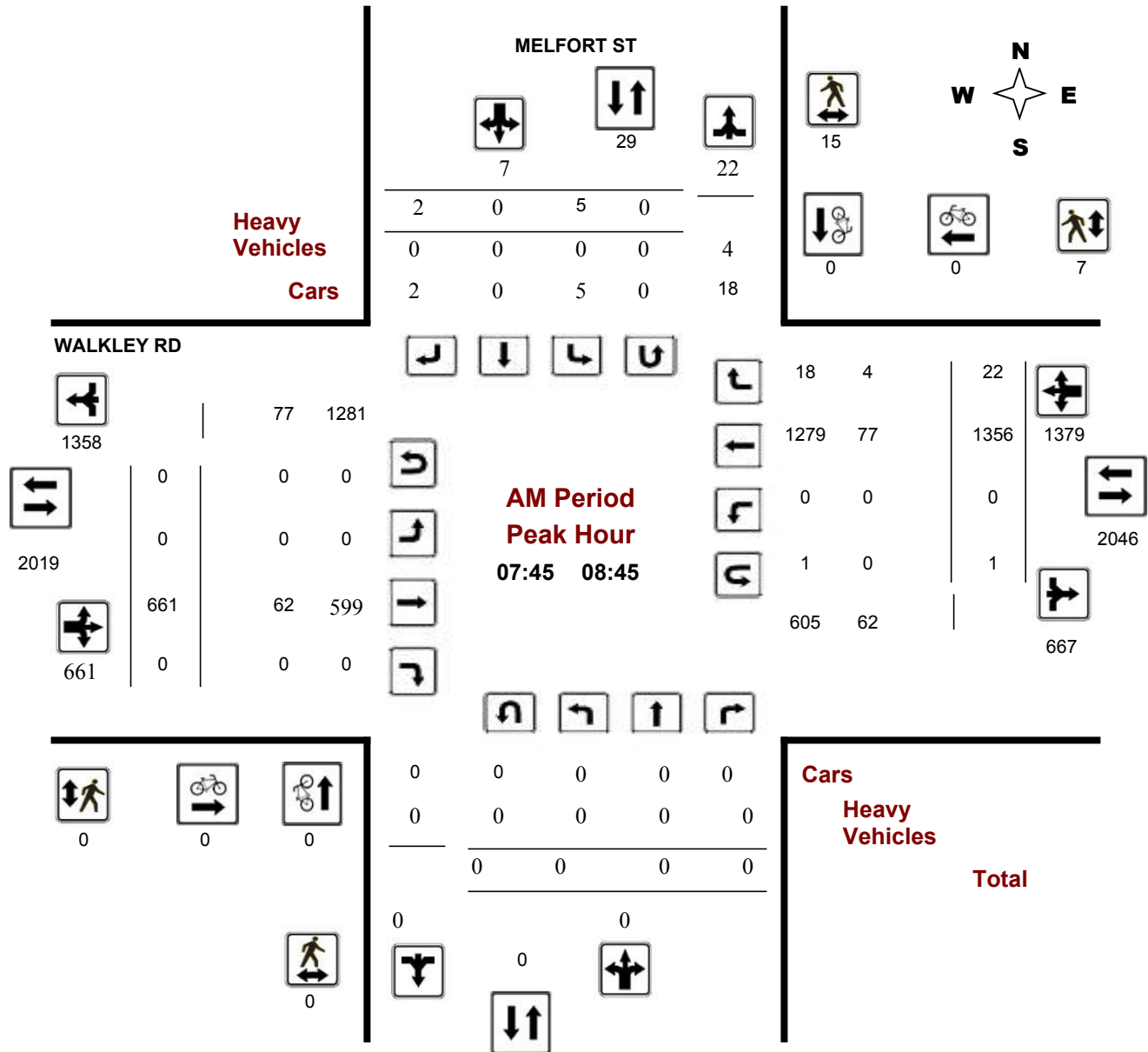
MELFORT ST @ WALKLEY RD

Survey Date: Tuesday, April 11, 2017

Start Time: 07:00

WO No: 36890

Device: Miovision



Turning Movement Count - Peak Hour Diagram

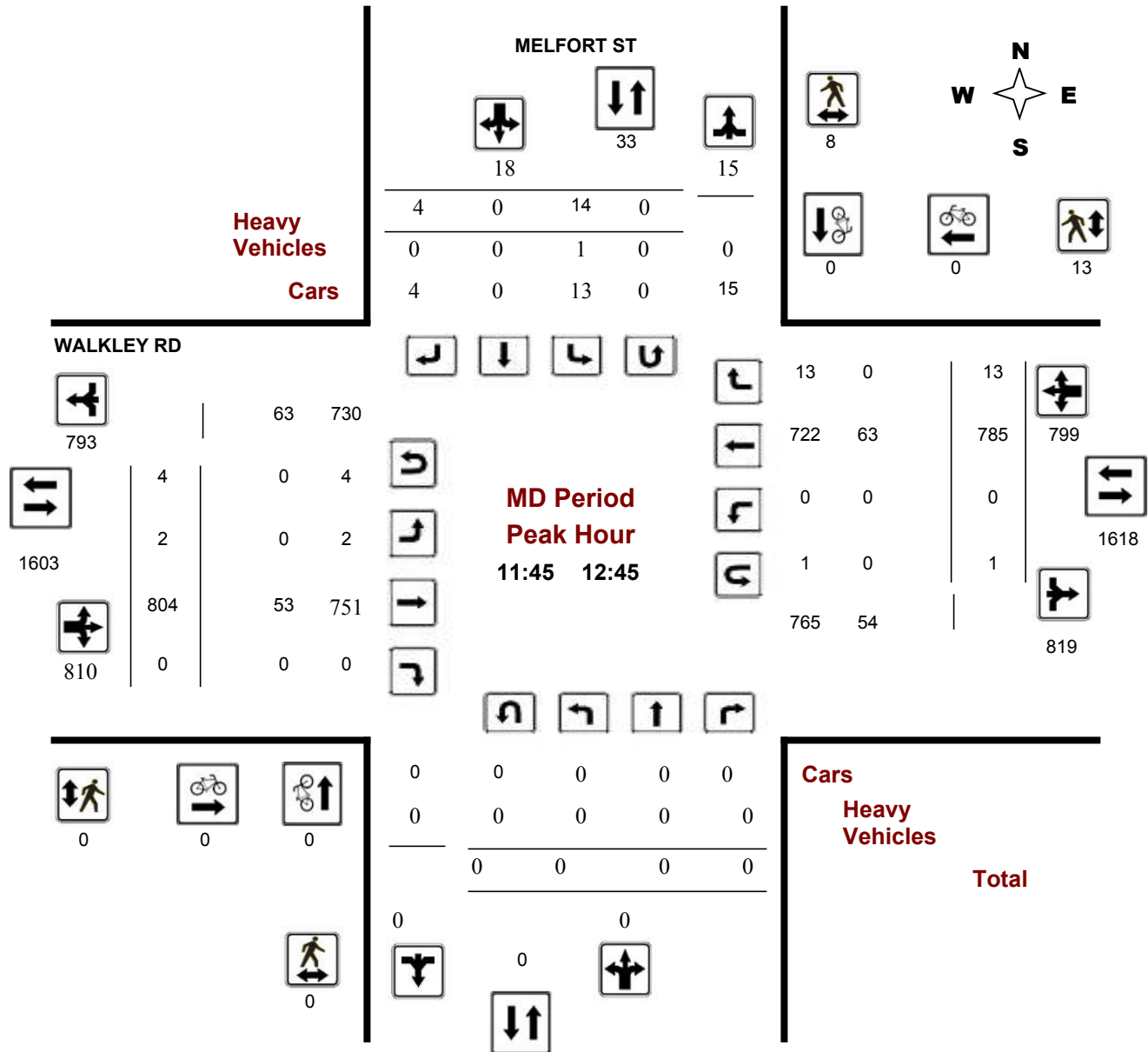
MELFORT ST @ WALKLEY RD

Survey Date: Tuesday, April 11, 2017

Start Time: 07:00

WO No: 36890

Device: Miovision



Turning Movement Count - Peak Hour Diagram

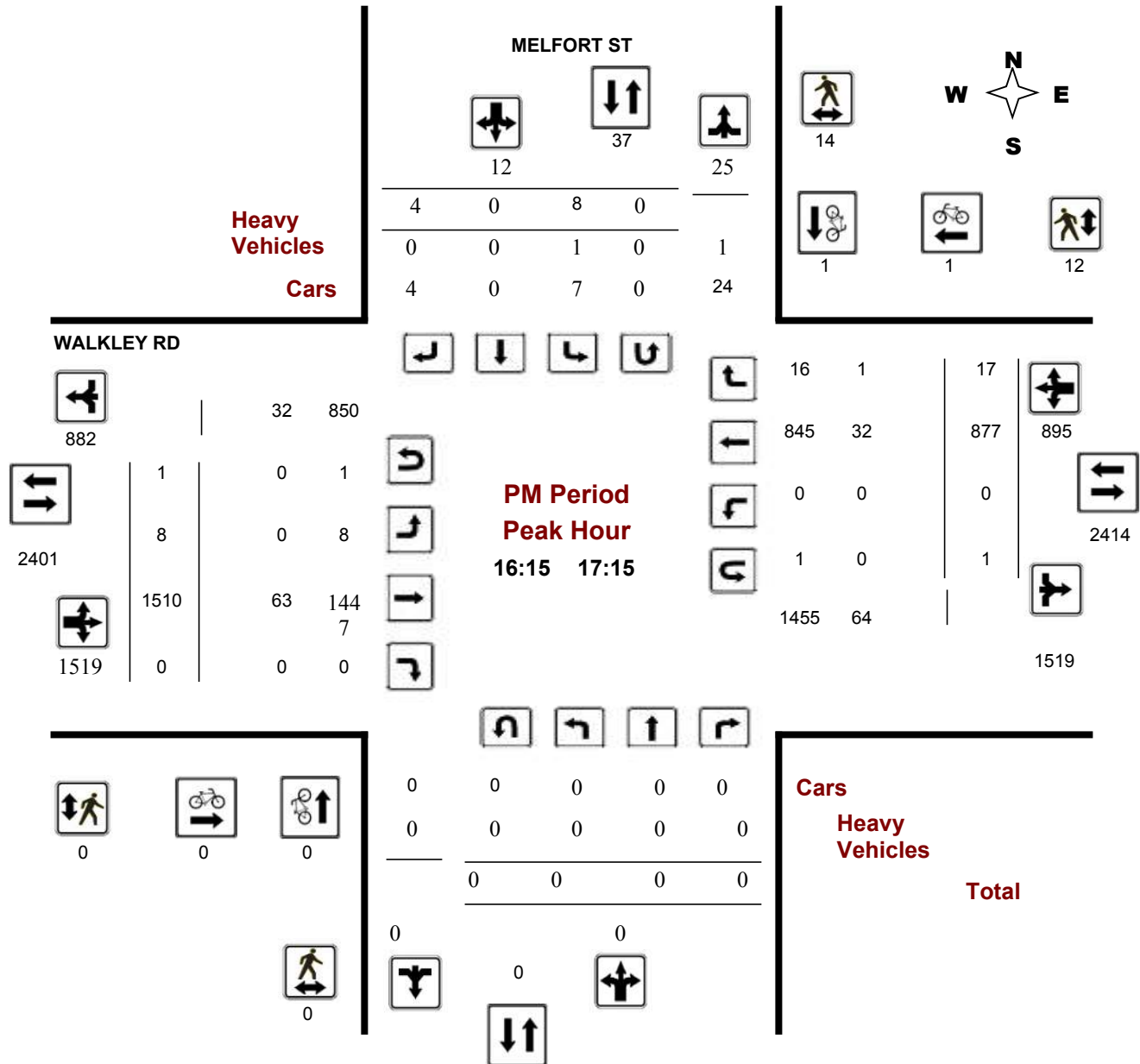
MELFORT ST @ WALKLEY RD

Survey Date: Tuesday, April 11, 2017

Start Time: 07:00

WO No: 36890

Device: Miovision



Turning Movement Count - Full Study Summary Report

HAWTHORNE RD/RUSSELL RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 6 Westbound: 3

AADT Factor

.90

Full Study

HAWTHORNE RD/RUSSELL RD										WALKLEY RD									
Northbound					Southbound					Eastbound					Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	195	405	413	1013	43	169	100	312	1325	53	377	137	567	342	1146	69	1557	2124	3449
08:00 09:00	146	355	479	980	51	202	119	372	1352	73	504	118	695	340	950	61	1351	2046	3398
09:00 10:00	107	259	467	833	48	194	96	338	1171	62	479	107	648	337	635	83	1055	1703	2874
11:30 12:30	77	218	413	708	50	202	81	333	1041	90	585	145	820	398	547	61	1006	1826	2867
12:30 13:30	117	243	420	780	58	247	103	408	1188	70	582	128	780	308	569	80	957	1737	2925
15:00 16:00	130	253	470	853	90	401	109	600	1453	100	1054	196	1350	437	609	73	1119	2469	3922
16:00 17:00	140	244	483	867	93	379	89	561	1428	96	1244	227	1567	390	644	74	1108	2675	4103
17:00 18:00	70	192	356	618	77	363	93	533	1151	83	883	165	1131	301	553	65	919	2050	3201
Sub Total	982	2169	3501	6652	510	2157	790	3457	10109	627	5708	1223	7558	2853	5653	566	9072	16630	26739
U Turns				0				0	0				6				3	9	9
Total	982	2169	3501	6652	510	2157	790	3457	10109	627	5708	1223	7564	2853	5653	566	9075	16639	26748
EQ 12Hr	1365	3015	4866	9246	709	2998	1098	4805	14051	872	7934	1700	10514	3966	7858	787	12614	23128	37179
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	1228	2713	4380	8322	638	2698	988	4325	12647	784	7141	1530	9463	3569	7072	708	11353	20816	33463
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	1609	3555	5737	10901	836	3535	1295	5665	16566	1028	9354	2004	12396	4676	9264	928	14872	27268	43834
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31						

Comments:

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

Turning Movement Count - Peak Hour Diagram

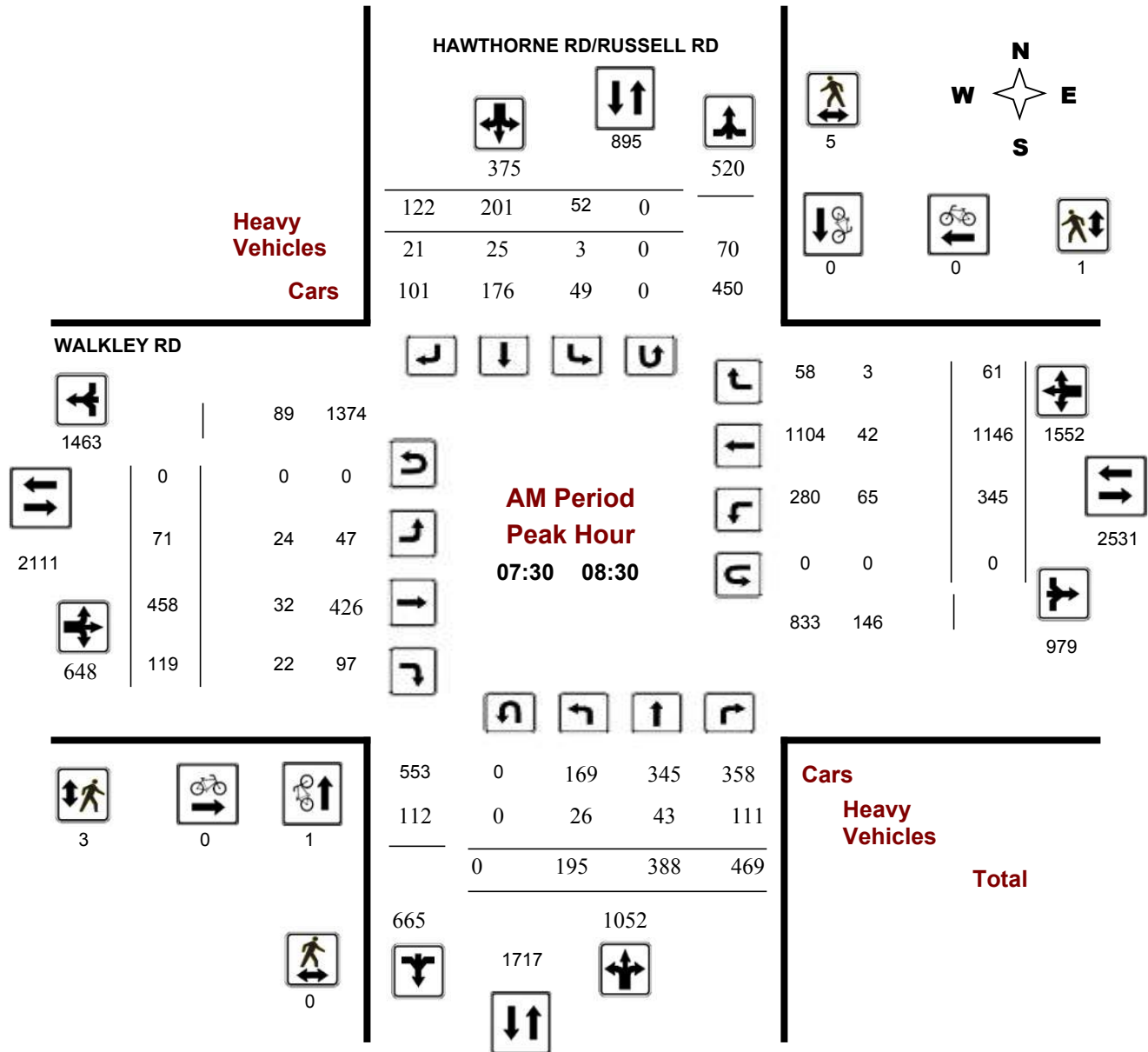
HAWTHORNE RD/RUSSELL RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Start Time: 07:00

WO No: 37561

Device: Miovision



Turning Movement Count - Peak Hour Diagram

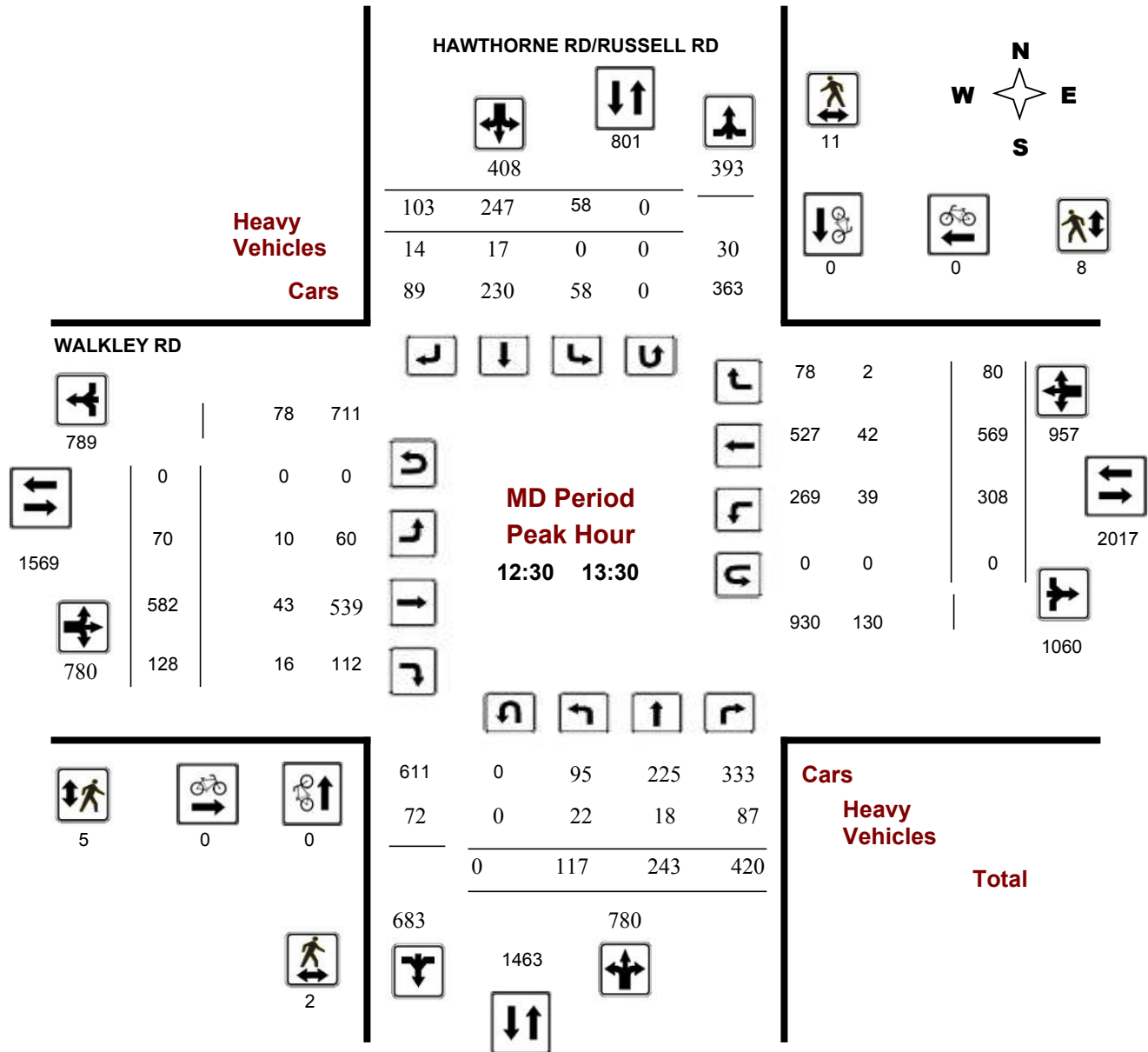
HAWTHORNE RD/RUSSELL RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Start Time: 07:00

WO No: 37561

Device: Miovision



Turning Movement Count - Peak Hour Diagram

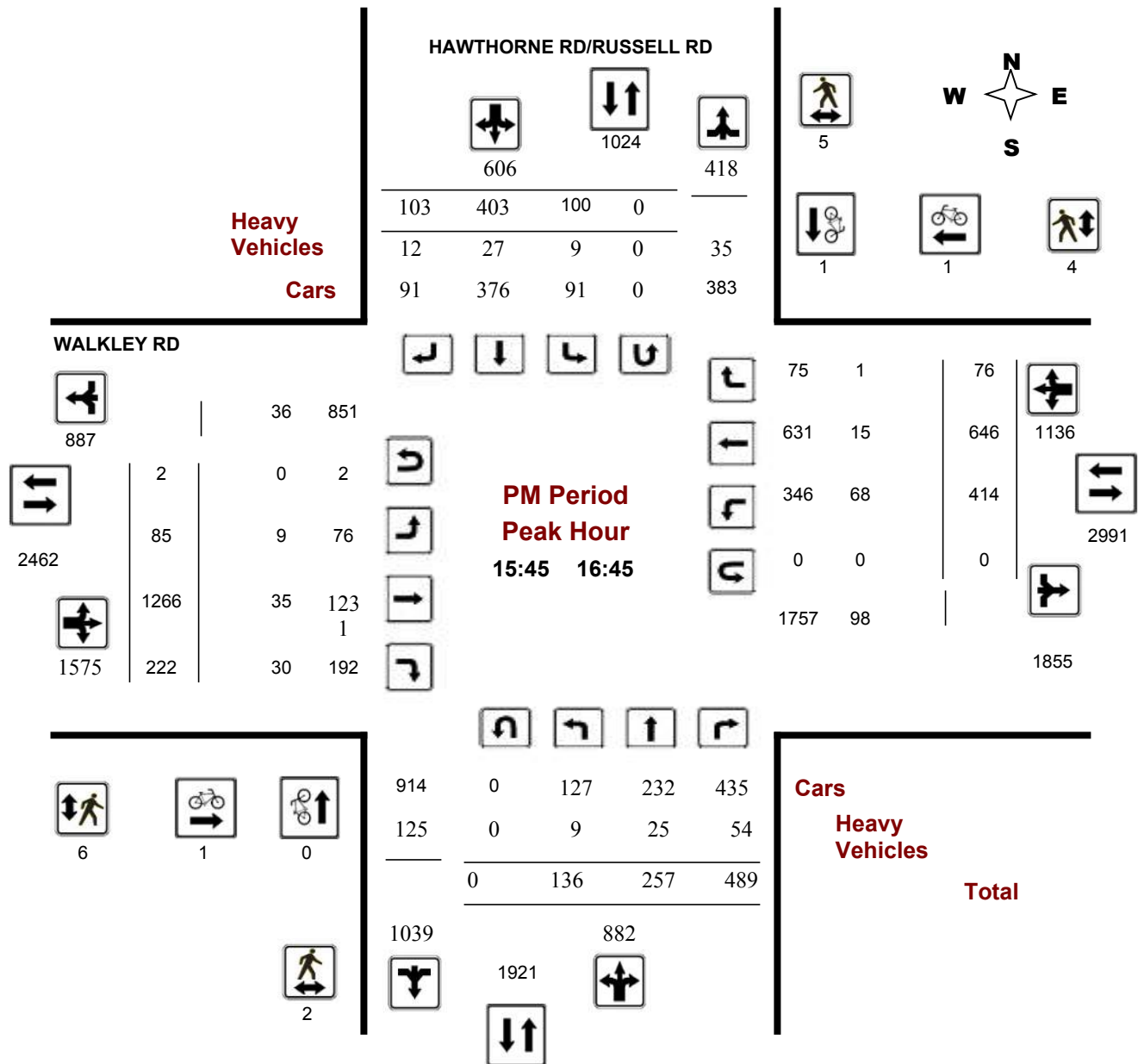
HAWTHORNE RD/RUSSELL RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Start Time: 07:00

WO No: 37561

Device: Miovision



Comments

Turning Movement Count - Full Study Summary Report

LANCASTER RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Total Observed U-Turns

Northbound:	0	Southbound:	2
Eastbound:	3	Westbound:	0

AADT Factor

.90

Full Study

LANCASTER RD										WALKLEY RD											
Northbound					Southbound					Eastbound					Westbound					STR TOT	Grand Total
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT				
07:00 08:00	0	0	0	0	91	0	162	253	253	171	650	0	821	0	1335	597	1932	2753	3006		
08:00 09:00	0	0	0	0	112	0	139	251	251	220	791	0	1011	0	1196	503	1699	2710	2961		
09:00 10:00	0	0	0	0	126	0	122	248	248	168	829	0	997	0	951	384	1335	2332	2580		
11:30 12:30	0	0	0	0	191	0	195	386	386	145	852	0	997	0	820	248	1068	2065	2451		
12:30 13:30	0	0	0	0	214	0	168	382	382	140	905	0	1045	0	784	241	1025	2070	2452		
15:00 16:00	0	0	0	0	388	0	163	551	551	98	1441	0	1539	0	947	168	1115	2654	3205		
16:00 17:00	0	0	0	0	477	0	201	678	678	122	1661	0	1783	0	909	141	1050	2833	3511		
17:00 18:00	0	0	0	0	271	0	177	448	448	98	1206	0	1304	0	774	121	895	2199	2647		
Sub Total	0	0	0	0	1870	0	1327	3197	3197	1162	8335	0	9497	0	7716	2403	10119	19616	22813		
U Turns				0				2	2				3				0	3	5		
Total	0	0	0	0	1870	0	1327	3199	3199	1162	8335	0	9500	0	7716	2403	10119	19619	22818		
EQ 12Hr	0	0	0	0	2599	0	1845	4447	4447	1615	11586	0	13205	0	10725	3340	14065	27270	31717		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr	0	0	0	0	2339	0	1660	4002	4002	1454	10427	0	11884	0	9653	3006	12659	24543	28545		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														.90							
AVG 24Hr	0	0	0	0	3065	0	2175	5243	5243	1904	13659	0	15569	0	12645	3938	16583	32152	37395		
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														1.31							

Comments:

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

Turning Movement Count - Peak Hour Diagram

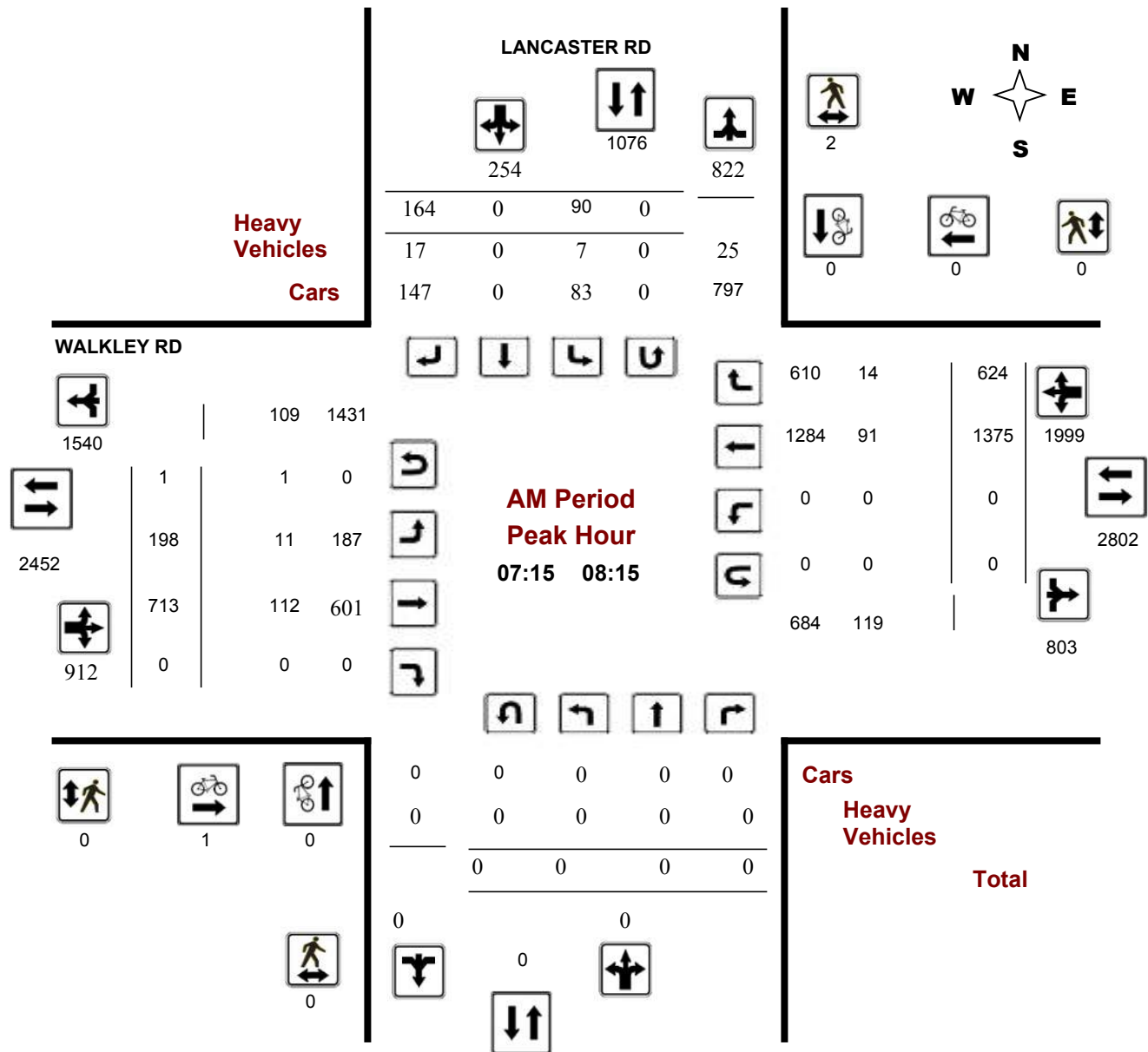
LANCASTER RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Start Time: 07:00

WO No: 37559

Device: Miovision



Turning Movement Count - Peak Hour Diagram

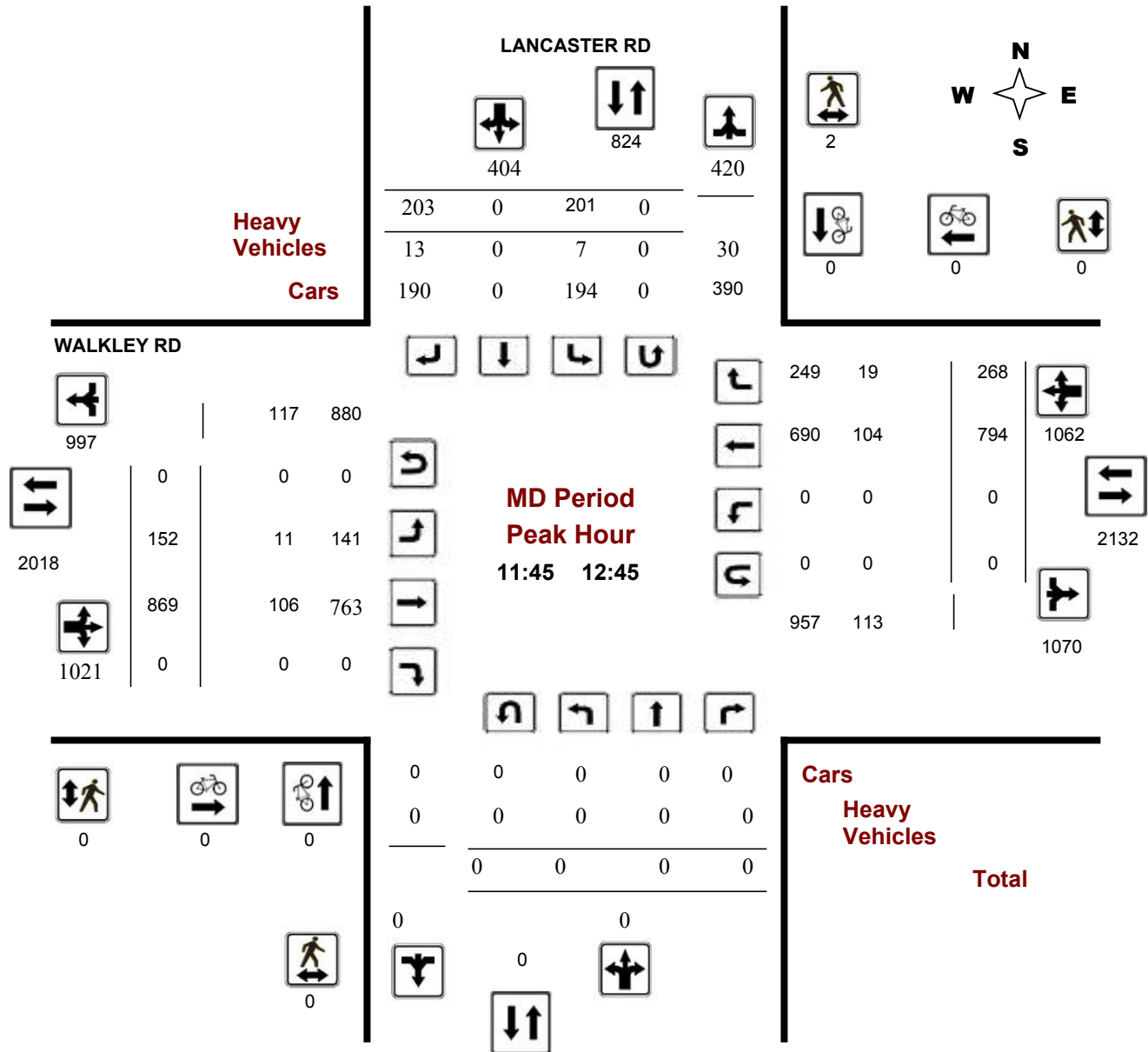
LANCASTER RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

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Device: Miovision



Turning Movement Count - Peak Hour Diagram

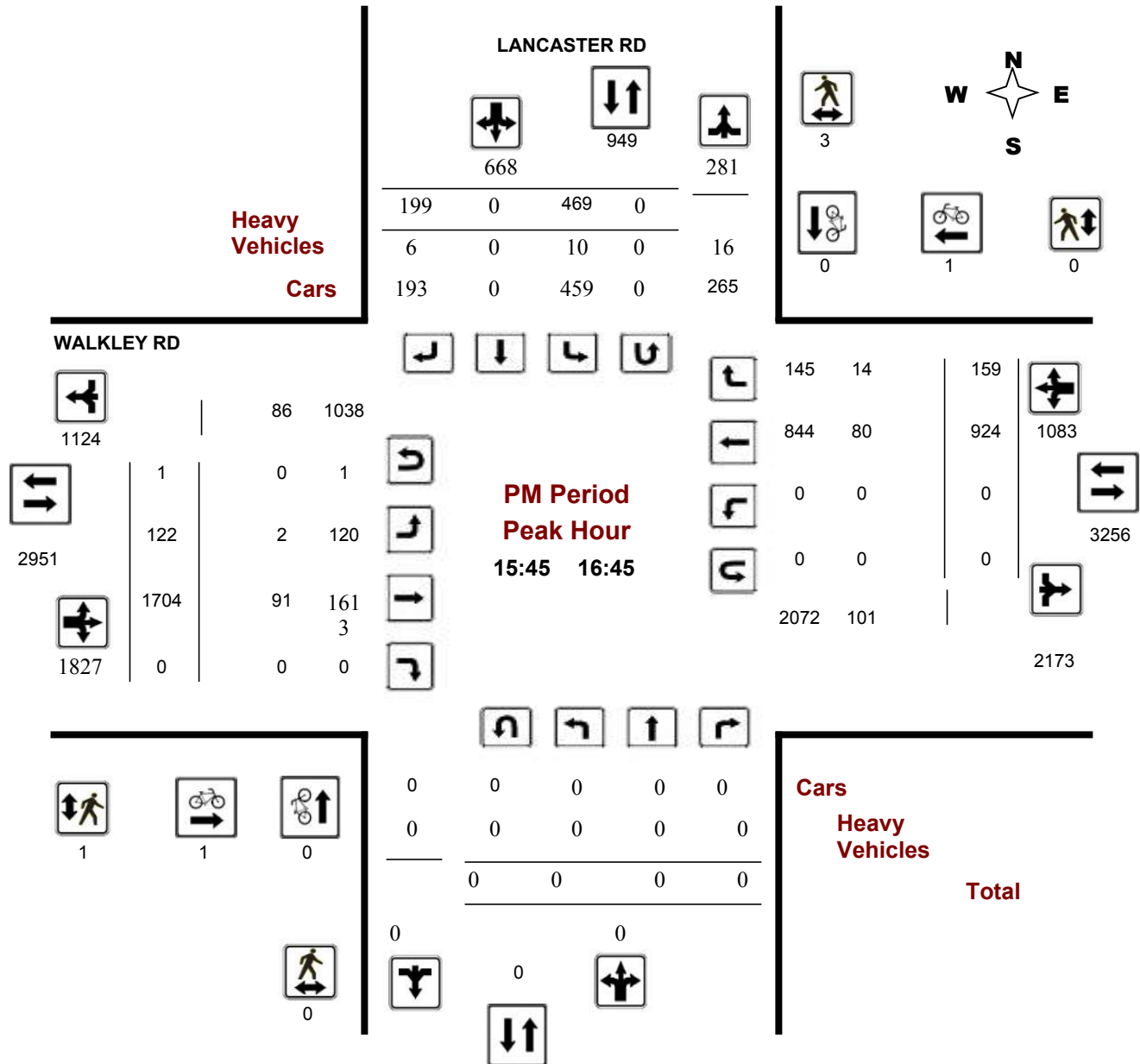
LANCASTER RD @ WALKLEY RD

Survey Date: Thursday, February 22, 2018

Start Time: 07:00

WO No: 37559

Device: Miovision



APPENDIX F

Other Area Developments

OTHER AREA DEVELOPMENTS

2150 Russell Road

1.0 INTRODUCTION

This Transportation Impact Assessment report is a compilation of the previously submitted and reviewed Screening Form (**Appendix A**), Scoping Report, Forecasting Report and Strategy Report and it addresses City comments on these reports. It also includes a detailed description of the design details of the proposed right-turn/right-out site driveway connection (150 m south of Walkley/Russell intersection) based on subsequent discussions with City staff.

2.0 EXISTING AND PLANNED CONDITIONS

2.1 Proposed Development

The proposed industrial/retail development is a tile centre comprised of 2,323 m² of drive-in warehouse, a 929 m² of retail showroom, 23 outdoor parking spaces and 24 indoor parking spaces, to be located on a narrow piece of vacant land at the southwest corner of the Russell/Walkley intersection. The site's context is shown in **Figure 1** and the Site Plan is included as **Figure 2**. As shown on the Site Plan, the proposed site driveway is located toward the south end of the site and the truck docks and truck count for material delivery are also located at the south end of the building for easy access. All visitors/staff parking is located north of the site driveway to Russell Road.

Figure 1: Site Context



As there is insufficient site frontage on Walkley Road, the only proposed site driveway connection is a right-in/right-out only to Russell Road towards the south end of the property. The left-turn restrictions will be controlled by the existing raised median. The property is relatively flat, however, the adjacent Russell Road is on a grade as it rises up to pass over the rail corridor that forms the south boundary of the site. The grade differential from site to Russell Road influences the location of the driveway as it is more challenging to accommodate the further south you go.

There is no phasing associated with this project. It is hoped that Site Plan Approval will be obtained in 2018, followed by construction and store opening in 2019.

PART 1 PLAN 4R-15335
(PUBLIC HIGHWAY By BY-LAW 9-2000, INST. No. LT264139)

RUSSELL ROAD

FORCED ROAD

BUS STOP

EXISTING CB/MH (Culvert/Manhole) structures with elevations (e.g., TOP 77.02, TOP 78.92, TOP 80.93, TOP 81.83, TOP 81.64, TOP 81.25, TOP 81.09, TOP 81.41, TOP 81.43, TOP 81.45, TOP 81.47, TOP 81.49, TOP 81.51, TOP 81.53, TOP 81.55, TOP 81.57, TOP 81.59, TOP 81.61, TOP 81.63, TOP 81.65, TOP 81.67, TOP 81.69, TOP 81.71, TOP 81.73, TOP 81.75, TOP 81.77, TOP 81.79, TOP 81.81, TOP 81.83, TOP 81.85, TOP 81.87, TOP 81.89, TOP 81.91, TOP 81.93, TOP 81.95, TOP 81.97, TOP 81.99, TOP 82.01, TOP 82.03, TOP 82.05, TOP 82.07, TOP 82.09, TOP 82.11, TOP 82.13, TOP 82.15, TOP 82.17, TOP 82.19, TOP 82.21, TOP 82.23, TOP 82.25, TOP 82.27, TOP 82.29, TOP 82.31, TOP 82.33, TOP 82.35, TOP 82.37, TOP 82.39, TOP 82.41, TOP 82.43, TOP 82.45, TOP 82.47, TOP 82.49, TOP 82.51, TOP 82.53, TOP 82.55, TOP 82.57, TOP 82.59, TOP 82.61, TOP 82.63, TOP 82.65, TOP 82.67, TOP 82.69, TOP 82.71, TOP 82.73, TOP 82.75, TOP 82.77, TOP 82.79, TOP 82.81, TOP 82.83, TOP 82.85, TOP 82.87, TOP 82.89, TOP 82.91, TOP 82.93, TOP 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Table 1: Peak Hour Trip Generation Rates

Land Use	Average Rate AM (PM)	Trip Generation Two-Way AM (PM)
General Light Industrial	0.92 (0.97)	33 (35) veh/h
Manufacturing	0.73 (0.73)	26 (26) veh/h
Warehousing	0.30 (0.32)	11 (12) veh/h

Our familiarity with other Ottawa area tile warehouses is that the estimated peak hour vehicle trip generation using the ITE trip rates is in the correct range. For analysis purposes, we are assuming 10 veh/h in and 5 veh/h out during the morning peak hour and 15 veh/h in and 15 veh/h out during the afternoon peak hour.

Weekend peak hour trip generation is determined to be the same as the afternoon peak hour, however, as Saturday traffic is less than weekday traffic on Russell Road adjacent to the site, this time period was not assessed.

5.2 Modal Shares

Given the site's location, somewhat remote from any significant residential development, combined with the type and weight of products being sold, we do not foresee any patron walking/cycling component. For similar reasons, even though there are adjacent bus routes, we foresee very low, if any, transit ridership. We would expect transit ridership would be primarily employees and would be in the 0 to 3 person range during peak hours, as summarized in Table 2.

Table 2: Future Mode Share Targets for the Development

Travel Mode	Mode Share Target	Rationale
Transit	15%	Some employees may use transit but no customers due to products sold.
Walking	0%	Due to somewhat remote location, type of business and products sold.
Cycling	0%	Due to somewhat remote location, type of business and products sold.
Auto Passenger	20%	Often 2 persons/car looking at product.
Auto Driver	65%	Highly car-oriented due to location, and type of product sold.

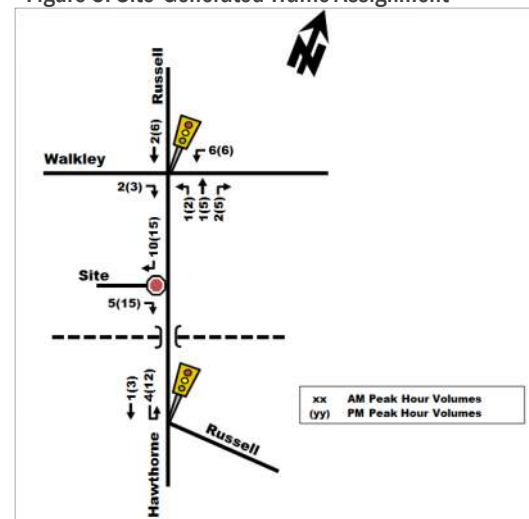
5.3 Trip Distribution and Assignment

As the proposed site driveway is on Russell Road and would be restricted to right-in/right-out only, trip distribution and assignment is quite straight-forward. It has been assumed that site-generated traffic at the Russell I/Walkley and Russell/Hawthorne intersections would distribute similar to the distribution of existing volumes at this intersection as depicted in Figure 5.

5.4 Pass-By Traffic

Due to the site's location and type of products it sells, it is considered a "destination" site and we do not foresee any pass-by traffic.

Figure 5: Site-Generated Traffic Assignment



OTHER AREA DEVELOPMENTS

Elmvale Acres Shopping Centre

1. Introduction

From the information provided, the proponent (owner of the Elmvale Acres Shopping Centre) is intending to submit for a rezoning of the subject site to allow for the increased height and density needed to accommodate a proposed redevelopment plan. The rezoning is to accommodate four (4) apartment building towers ranging from 9 to 26 stories each and totalling approximately 815 units. The site's local context is depicted as Figure 1, and the ultimate Phase 4 Site Plan is depicted as Figure 2: Ultimate Site Plan – Phase 4

As depicted on the proposed Site Plan, there are no new site access points being proposed. However, it is noteworthy that the existing right-in only driveway connection from Smyth Road will be removed, an additional auxiliary northbound right-turn lane at the Smyth/Othello intersection is proposed as part of the first phase of redevelopment and the two site driveways to Othello at the north and south ends of the site will ultimately be realigned to form four-way intersections with Hamlet and Chapman respectively.

Currently, site-generated traffic can access/egress the subject site via four separate full-movement driveway connections (two connections to St. Laurent Boulevard and two connections to Othello Avenue), a right-in/right-out driveway connection to St. Laurent Boulevard and a single right-in only driveway connection to Smyth Road. Additionally, two driveway connections are currently provided along Othello Avenue for use by delivery trucks only.

Figure 1: Local Site Context



PROJECT STATISTICS			
ZONING	COMMERCIAL	REQUIRED	400
SITE AREA	100,000 SQ. FT.	REQUIRED	100
TOTAL UNITS	100	REQUIRED	100
GROUND RESIDENTIAL AREA	100,000 SQ. FT.	REQUIRED	100
COMMERCIAL RETAIL	100,000 SQ. FT.	REQUIRED	100
BELONG GRADE PARKING	100,000 SQ. FT.	REQUIRED	100
SURFACE PARKING	100,000 SQ. FT.	REQUIRED	100
TOTAL			

CAR PARKING			
RESIDENCE	100	REQUIRED	100
COMMERCIAL RETAIL	100	REQUIRED	100
TOTAL	200	REQUIRED	200
TOTAL			

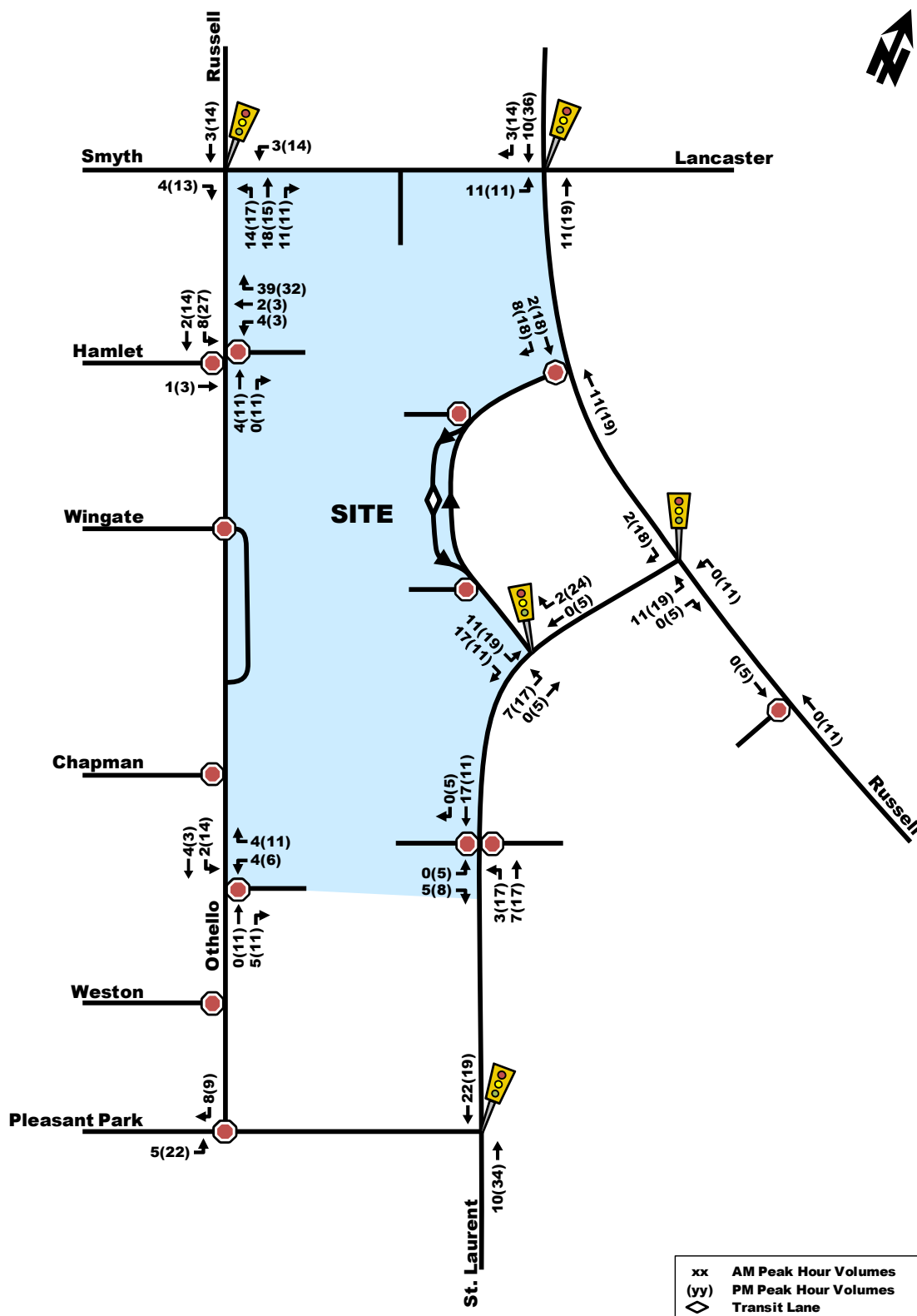
BICYCLE PARKING			
RESIDENCE	100	REQUIRED	100
COMMERCIAL RETAIL	100	REQUIRED	100
TOTAL	200	REQUIRED	200
TOTAL			



rla/architecture
 SITE PLAN
 PHASE 4 - BUILD OUT PLAN
 PLOT DATE: Thursday, December 10, 2015

ELMVALE ACRES
 OTTAWA
 RIOCAN
 REAL ESTATE INVESTMENT TRUST

Figure 5: Projected Net Increase in Site-Generated Traffic



APPENDIX G

TDM Checklists

TRANSPORTATION DEMAND MANAGEMENT

TDM-Supportive Development Design and Infrastructure Checklist

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

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

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

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

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

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

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

TRANSPORTATION DEMAND MANAGEMENT

TDM Measures Checklist

TDM Measures Checklist: *Non-Residential Developments (office, institutional, retail or industrial)*

Legend	
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
1. TDM PROGRAM MANAGEMENT		
1.1 Program coordinator		
BASIC ★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input checked="" type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input checked="" type="checkbox"/>
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances	<input checked="" type="checkbox"/>
2.2 Bicycle skills training <i>Commuter travel</i>		
BETTER ★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	<input checked="" type="checkbox"/>
2.3 Valet bike parking <i>Visitor travel</i>		
BETTER	2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	<input checked="" type="checkbox"/>

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances	<input checked="" type="checkbox"/>
BASIC	3.1.2 Provide online links to OC Transpo and STO information	<input checked="" type="checkbox"/>
BETTER	3.1.3 Provide real-time arrival information display at entrances	<input checked="" type="checkbox"/>
3.2 Transit fare incentives		
<i>Commuter travel</i>		
BETTER	3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	<input checked="" type="checkbox"/>
BETTER ★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	<input checked="" type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	<input checked="" type="checkbox"/>
3.3 Enhanced public transit service		
<i>Commuter travel</i>		
BETTER	3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	<input checked="" type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	<input checked="" type="checkbox"/>
3.4 Private transit service		
<i>Commuter travel</i>		
BETTER	3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	<input checked="" type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	<input checked="" type="checkbox"/>

TDM measures: <i>Non-residential developments</i>			Check if proposed & add descriptions
4. RIDESHARING			
4.1 Ridematching service			
<i>Commuter travel</i>			
BASIC	★	4.1.1 Provide a dedicated ridematching portal at OttawaRideMatch.com	<input checked="" type="checkbox"/>
4.2 Carpool parking price incentives			
<i>Commuter travel</i>			
BETTER		4.2.1 Provide discounts on parking costs for registered carpools	<input checked="" type="checkbox"/>
4.3 Vanpool service			
<i>Commuter travel</i>			
BETTER		4.3.1 Provide a vanpooling service for long-distance commuters	<input checked="" type="checkbox"/>
5. CARSHARING & BIKESHARING			
5.1 Bikeshare stations & memberships			
BETTER		5.1.1 Contract with provider to install on-site bikeshare station for use by commuters and visitors	<input checked="" type="checkbox"/>
<i>Commuter travel</i>			
BETTER		5.1.2 Provide employees with bikeshare memberships for local business travel	<input checked="" type="checkbox"/>
5.2 Carshare vehicles & memberships			
<i>Commuter travel</i>			
BETTER		5.2.1 Contract with provider to install on-site carshare vehicles and promote their use by tenants	<input checked="" type="checkbox"/>
BETTER		5.2.2 Provide employees with carshare memberships for local business travel	<input checked="" type="checkbox"/>
6. PARKING			
6.1 Priced parking			
<i>Commuter travel</i>			
BASIC	★	6.1.1 Charge for long-term parking (daily, weekly, monthly)	<input checked="" type="checkbox"/>
BASIC		6.1.2 Unbundle parking cost from lease rates at multi-tenant sites	<input checked="" type="checkbox"/>
<i>Visitor travel</i>			
BETTER		6.1.3 Charge for short-term parking (hourly)	<input checked="" type="checkbox"/>

TDM measures: <i>Non-residential developments</i>			Check if proposed & add descriptions
7. TDM MARKETING & COMMUNICATIONS			
7.1 Multimodal travel information			
<i>Commuter travel</i>			
BASIC	★	7.1.1 Provide a multimodal travel option information package to new/relocating employees and students	<input checked="" type="checkbox"/>
<i>Visitor travel</i>			
BETTER	★	7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	<input checked="" type="checkbox"/>
7.2 Personalized trip planning			
<i>Commuter travel</i>			
BETTER	★	7.2.1 Offer personalized trip planning to new/relocating employees	<input checked="" type="checkbox"/>
7.3 Promotions			
<i>Commuter travel</i>			
BETTER		7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	<input checked="" type="checkbox"/>
8. OTHER INCENTIVES & AMENITIES			
8.1 Emergency ride home			
<i>Commuter travel</i>			
BETTER	★	8.1.1 Provide emergency ride home service to non-driving commuters	<input checked="" type="checkbox"/>
8.2 Alternative work arrangements			
<i>Commuter travel</i>			
BASIC	★	8.2.1 Encourage flexible work hours	<input checked="" type="checkbox"/>
BETTER		8.2.2 Encourage compressed workweeks	<input checked="" type="checkbox"/>
BETTER	★	8.2.3 Encourage telework	<input checked="" type="checkbox"/>
8.3 Local business travel options			
<i>Commuter travel</i>			
BASIC	★	8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work	<input checked="" type="checkbox"/>
8.4 Commuter incentives			
<i>Commuter travel</i>			
BETTER		8.4.1 Offer employees a taxable, mode-neutral commuting allowance	<input checked="" type="checkbox"/>
8.5 On-site amenities			
<i>Commuter travel</i>			
BETTER		8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands	<input checked="" type="checkbox"/>

APPENDIX H

Traffic Signal Justifications

TRAFFIC SIGNAL JUSTIFICATION USING PROJECTED VOLUMES

LOCATION: Walkley Road at Melfort Street

YEAR: 2025 Total Traffic

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT		COMPLIANCE		
		FREE FLOW	RESTRICTED FLOW	SECTIONAL		ENTIRE % ⁽²⁾
		OPERATING SPEED ≥ 70KM/H	OPERATING SPEED < 70 KM/H	NUMERICAL	PERCENT	
1. MINIMUM VEHICULAR WARRANT	A. Vehicle volume, all approaches (average hour)	480 600 (2 or more lane approach)	720 900 (2 or more lane approach)	1,420	158%	71%
	B. Vehicle volume along minor street (average hour)	120 180 (tee intersection)	170 255 (tee intersection)	120	71%	
2. DELAY TO CROSS TRAFFIC	A. Vehicle volume along major street (average hour)	480 600 (2 or more lane approach)	720 900 (2 or more lane approach)	1,306	145%	67%
	B ⁽¹⁾ . Combined vehicle and pedestrian volume <u>crossing</u> the major street (average hour)	50	75	50	67%	

NOTES




















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

Walkley Road/Melfort Street – Unsignalized vs Signalized Intersection

Walkley Road/ Melfort Street	AM Peak			PM Peak		
	Delay	LOS	Approach	Delay	LOS	Approach
Unsignalized Intersection	22 sec	C	NB	91 sec	F	NB
	341 sec	F	SB	96 sec	F	SB
Signalized Intersection	24 sec	C	NB	48 sec	E	NB
	25 sec	C	SB	30 sec	D	SB




















3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
Walkley & Melfort (unsignalized intersection)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Future Volume (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993			0.998				0.850		0.993	
Flt Protected	0.950			0.950				0.950			0.955	
Satd. Flow (prot)	1768	3266	0	1768	3359	0	0	1701	1522	0	1765	0
Flt Permitted	0.950			0.950				0.950			0.955	
Satd. Flow (perm)	1768	3266	0	1768	3359	0	0	1701	1522	0	1765	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	15					15	7					7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	9%	1%	1%	6%	15%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	734	0	129	1450	0	0	10	25	0	37	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	65.6%						ICU Level of Service C					
Analysis Period (min)	15											

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
Walkley & Melfort (unsignalized intersection)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Future Volume (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.997				0.850		0.987	
Flt Protected	0.950			0.950				0.950			0.957	
Satd. Flow (prot)	1768	3429	0	1701	3456	0	0	1701	1522	0	1758	0
Flt Permitted	0.950			0.950				0.950			0.957	
Satd. Flow (perm)	1768	3429	0	1701	3456	0	0	1701	1522	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	14					14	12					12
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	1%	5%	3%	5%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1618	0	50	895	0	0	62	135	0	42	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	72.8%						ICU Level of Service C					
Analysis Period (min)	15											

APPENDIX I

Road Modification Functional Design

APPENDIX J

Intersection MMLOS

Intersection MMLOS Analysis

MMLOS analysis has been performed at all signalized intersections within the study area. Schedule B of the City's Official Plan designates the lands north of Walkley Road and west of Lancaster Road as being within the General Urban Area, and the lands south of Walkley Road and east/west of Russell Road as being within the Employment Area. Walkley Road, St. Laurent Boulevard, and Russell Road are located within both policy areas. Tawney Road and Melfort Street are located exclusively within the General Urban Area, while Banton Street and Lancaster Road are located exclusively within the Employment Area.

Exhibit 22 of the MMLOS guidelines denotes different targets for certain modes based on the policy area, and therefore the stricter target has been selected for evaluation for roadways within both policy areas (for example, local cycling routes have a higher target BLOS in the General Urban Area, and truck routes have a higher target TkLOS in the Employment Area).

Pedestrian Level of Service (PLOS)

Exhibit 5 of the Addendum to the MMLOS guidelines has been used to evaluate the PLOS at all signalized intersections within the study area. Exhibit 22 of the MMLOS guidelines suggests a target PLOS C for all roadways within the General Urban and Employment Areas.

The results of the intersection PLOS analysis are summarized in **Table 1** through **Table 5**.

Bicycle Level of Service (BLOS)

Exhibit 12 of the MMLOS guidelines has been used to evaluate the BLOS at all signalized intersections within the study area. Exhibit 22 of the MMLOS guidelines suggests a target BLOS B for Local Routes within the General Urban Area (St. Laurent Boulevard), a target BLOS C for Local Routes within the Employment Area (Lancaster Road), a target BLOS C for Spine Routes within the General Urban Area and Employment Areas (Walkley Road, Russell Road), a target BLOS D for local roadways with no bike classification within the General Urban Area (Melfort Street), and no target BLOS for local roadways with no bike classification within the Employment Area (Banton Street).

The results of the intersection BLOS are summarized in **Table 6**.

Transit Level of Service (TLOS)

Exhibit 16 of the MMLOS guidelines has been used to evaluate the existing TLOS at relevant intersections within the study area. Within the General Urban and Employment Areas, Exhibit 22 of the MMLOS guidelines suggests a target TLOS B for all Rapid Transit Corridors (Walkley Road) and a target TLOS D for all Transit Priority Corridors with Isolated Measures (St. Laurent Boulevard). The TLOS has been also been evaluated for approaches of Russell Road which provide transit service, despite having no target.

The results of the intersection TLOS are summarized in **Table 7**.

Truck Level of Service (TkLOS)

Exhibit 21 of the MMLOS guidelines has been used to evaluate the TkLOS at all intersections within the study area. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS B for arterial and collector truck routes within the Employment Area (Walkley Road, Russell Road, Lancaster Road), a target TkLOS D for collectors that are not truck routes within the Employment Area (St. Laurent Boulevard), and a target TkLOS E for local roadways that are not truck routes within the Employment Area (Banton Street). Since there is no target for local roadways that are not truck routes within the General Urban Area (Melfort Street), the TkLOS at Walkley Road/Melfort Street has not been evaluated.

The results of the intersection TkLOS analysis are summarized in **Table 8**.

Vehicular Level of Service (Auto LOS)

Exhibit 22 of the MMLOS guidelines suggests a target Auto LOS D for all roadways within the General Urban and Employment Areas. Synchro analysis was performed to evaluate the performance of all intersections during the AM and PM peak hours. Signal timing plans are included in **Appendix K**. Detailed Synchro reports are included in **Appendix L**.

The results of the intersection Auto LOS analysis are summarized in **Table 9**. Approaches where queueing issues have been identified are listed with the associated 50th- and 95th-percentile queue lengths are summarized in **Table 10**.

Intersection MMLOS Summary

A summary of the results of the intersection MMLOS analysis is provided in **Table 11**.

Table 1: PLOS Intersection Analysis – Walkley Road/St. Laurent Boulevard

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSİ SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	23	No	39	No	-10	No	6
Lanes Crossed (3.5m Lane Width)	8		7		10 +		9	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Perm + Prot	-8	Perm + Prot	-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	N/A	0	N/A	0	RTOR Allowed	-3
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	> 15m to 25m	-8	> 10m to 15m	-6	> 25m	-9	> 15m to 25m	-8
Parallel Right Turn Channel	Conventional without Receiving	0	No Right Turn Channel	-4	Conventional without Receiving	0	Conventional with Receiving	-3
Perpendicular Radius	> 15m to 25m	-8	> 25m	-9	> 15m to 25m	-8	N/A	0
Perpendicular Right Turn Channel	Conventional with Receiving	-3	Conventional without Receiving	0	Conventional without Receiving	0	N/A	0
CROSSING TREATMENT								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
PETSİ SCORE		-18						
LOS		F						
DELAY SCORE								
Cycle Length		110		120		120		120
Pedestrian Walk Time		20.9		15.9		19.8		19.8
DELAY SCORE		36.1						
LOS		D						
OVERALL		F						

Table 2: PLOS Intersection Analysis – Walkley Road/Banton Street

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSİ SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	N/A	0	No	55	No	39	No	39
Lanes Crossed (3.5m Lane Width)	N/A		6		7		7	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	N/A	0	Permissive	-8	No Left Turn/Prohibited	0	Permissive	-8
Right Turn Conflict	N/A	0	Permissive or Yield	-5	Permissive or Yield	-5	No Right Turn/Prohibited	0
Right Turn on Red	N/A	0	RTOR Allowed	-3	N/A	0	RTOR Allowed	-3
Leading Pedestrian Interval	N/A	0	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	N/A	0	> 15m to 25m	-8	> 15m to 25m	-8	N/A	0
Parallel Right Turn Channel	N/A	0	No Right Turn Channel	-4	No Right Turn Channel	-4	N/A	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
CROSSING TREATMENT								
Treatment	N/A	0	Standard	-7	Standard	-7	Standard	-7
PETSİ SCORE		-		18		13		19
LOS		-		F		F		F
DELAY SCORE								
Cycle Length		0		120		130		130
Pedestrian Walk Time		0		70.3		7.4		7.4
DELAY SCORE		-		10.3		57.8		57.8
LOS		-		B		E		E
OVERALL		-		F		F		F

Table 3: PLOS Intersection Analysis – Walkley Road/Melfort Street

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSİ SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	88	N/A	0	No	39	N/A	0
Lanes Crossed (3.5m Lane Width)	4		N/A		7		N/A	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Permissive	-8	N/A	0	Permissive	-8	N/A	0
Right Turn Conflict	Permissive or Yield	-5	N/A	0	No Right Turn/Prohibited	0	N/A	0
Right Turn on Red	RTOR Prohibited	0	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	N/A	0	N/A	0	No	-2	N/A	0
CORNER RADIUS								
Parallel Radius	> 10m to 15m	-6	N/A	0	N/A	0	N/A	0
Parallel Right Turn Channel	No Right Turn Channel	-4	N/A	0	N/A	0	N/A	0
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
CROSSING TREATMENT								
Treatment	Standard	-7	N/A	0	Standard	-7	N/A	0
PETSİ SCORE		58		-		22		-
LOS		D		-		F		-
DELAY SCORE								
Cycle Length		0		0		75		0
Pedestrian Walk Time		0		0		7.0		0
DELAY SCORE		-		-		30.8		-
LOS		-		-		D		-
OVERALL		D		-		F		-

Table 4: PLOS Intersection Analysis – Walkley Road/Russell Road

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSİ SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	-10	No	-10	No	-10	No	-10
Lanes Crossed (3.5m Lane Width)	10 +		10 +		10 +		10 +	
SİGNAL PHASİNG AND TIMİNG								
Left Turn Conflict	Protected	0	Protected	0	Protected	0	Protected	0
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	N/A	0	N/A	0	RTOR Allowed	-3	N/A	0
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
CORNİR RADİUS								
Parallel Radius	> 25m	-9	> 25m	-9	> 15m to 25m	-8	> 15m to 25m	-8
Parallel Right Turn Channel	No Right Turn Channel	-4	Conventional without Receiving	0	Conventional without Receiving	0	Conventional without Receiving	0
Perpendicular Radius	> 15m to 25m	-8	> 15m to 25m	-8	N/A	0	> 25m	-9
Perpendicular Right Turn Channel	Conventional without Receiving	0	Conventional without Receiving	0	N/A	0	Conventional without Receiving	0
CROSSİNG TREATMENT								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
PETSİ SCORE		-45		-41		-35		-41
LOS		F		F		F		F
DELAY SCORE								
Cycle Length		150		150		150		150
Pedestrian Walk Time		40.3		19.7		12.6		12.6
DELAY SCORE		40.1		56.6		62.9		62.9
LOS		E		E		F		F
OVERALL		F		F		F		F

Table 5: PLOS Intersection Analysis – Walkley Road/Lancaster Road

CRITERIA	North Approach		South Approach		East Approach		West Approach	
PETSİ SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	-10	N/A	0	N/A	0	No	6
Lanes Crossed (3.5m Lane Width)	10 +		N/A		N/A		9	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Protected	0	N/A	0	N/A	0	No Left Turn/Prohibited	0
Right Turn Conflict	Permissive or Yield	-5	N/A	0	N/A	0	Permissive or Yield	-5
Right Turn on Red	N/A	0	N/A	0	N/A	0	N/A	0
Leading Pedestrian Interval	No	-2	N/A	0	N/A	0	No	-2
CORNER RADIUS								
Parallel Radius	> 25m	-9	N/A	0	N/A	0	> 15m to 25m	-8
Parallel Right Turn Channel	Conventional without Receiving	0	N/A	0	N/A	0	Conventional without Receiving	0
Perpendicular Radius	> 15m to 25m	-8	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	Conventional without Receiving	0	N/A	0	N/A	0	N/A	0
CROSSING TREATMENT								
Treatment	Standard	-7	N/A	0	N/A	0	Standard	-7
PETSİ SCORE		-41		-		-		-16
LOS		F		-		-		F
DELAY SCORE								
Cycle Length		130		0		0		150
Pedestrian Walk Time		66.8		0		0		7.3
DELAY SCORE		15.4		-		-		67.9
LOS		B		-		-		F
OVERALL		F		-		-		F

Table 6: BLOS Intersection Analysis

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
Walkley Road/St. Laurent Boulevard				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	F
		Left Turn Accommodation	One lane crossed; ≥ 50 km/h	F
South Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	F
		Left Turn Accommodation	One lane crossed; ≥ 50 km/h	F
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F
Walkley Road/Banton Street				
South Approach	Mixed Traffic	Right Turn Lane Characteristics	N/A	-
		Left Turn Accommodation	One lane crossed; ≥ 50 km/h	D
East Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No left turn	-
Walkley Road/Melfort Street				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/left/right turn lane	A
		Left Turn Accommodation	No lanes crossed; ≥ 60 km/h	D
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No left turn	-
West Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
Walkley Road/Russell Road				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	F
		Left Turn Accommodation	Dual left turn lanes	F
South Approach	Pocket Bike Lane	Right Turn Lane Characteristics	Right turn lane > 50m and is introduced to the right	D
		Left Turn Accommodation	Dual left turn lanes	F
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	F
		Left Turn Accommodation	Dual left turn lanes	F
West Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	F
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F
Walkley Road/Lancaster Road				
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane > 50m	F
		Left Turn Accommodation	No lanes crossed; ≥ 60 km/h	D
East Approach	Mixed Traffic	Right Turn Lane Characteristics	Shared through/right turn lane	A
		Left Turn Accommodation	No left turn	-
West Approach	Mixed Traffic	Right Turn Lane Characteristics	No right turn	-
		Left Turn Accommodation	Two lanes crossed; ≥ 50 km/h	F

Table 7: TLOS Intersection Analysis

Approach	Delay ⁽¹⁾	TLOS
Walkley Road/St. Laurent Boulevard		
North Approach	25 sec	D
South Approach	30 sec	D
East Approach	30 sec	D
West Approach	40 sec	E
Walkley Road/Banton Street		
East Approach	5 sec	B
West Approach	10 sec	B
Walkley Road/Melfort Street		
East Approach	10 sec	B
West Approach	10 sec	B
Walkley Road/Russell Road		
North Approach	45 sec	F
South Approach	95 sec	F
East Approach	70 sec	F
West Approach	70 sec	F
Walkley Road/Lancaster Road		
East Approach	20 sec	C
West Approach	15 sec	C

1. Delay based on existing traffic outputs from Synchro analysis

Table 8: TkLOS Intersection Analysis

Approach	Effective Corner Radius	Number of Receiving Lanes on Departure from Intersection	TkLOS
Walkley Road/St. Laurent Boulevard			
North Approach	> 15m	3	A
South Approach	> 15m	3	A
East Approach	> 15m	2	A
West Approach	10m to 15m	1	E
Walkley Road/Banton Street			
South Approach	> 15m	2	A
West Approach	> 15m	1	C
Walkley Road/Russell Road			
North Approach	> 15m	2	A
South Approach	> 15m	3	A
East Approach	> 15m	2	A
West Approach	> 15m	2	A
Walkley Road/Lancaster Road			
North Approach	> 15m	4	A
East Approach	> 15m	1	C

Table 9: Auto LOS Intersection Analysis – Existing

Intersection	AM Peak			PM Peak		
	Max v/c or Delay	LOS	Movement	Max v/c or Delay	LOS	Movement
Walkley Road/ St. Laurent Boulevard	0.85	D	EBL	0.80	C	EBL
Walkley Road/ Tawney Road ⁽¹⁾	15 sec	C	SBL/SBR	13 sec	B	SBL/SBR
Walkley Road/ Banton Street	0.51	A	WBT	0.65	B	EBT
Walkley Road/ Melfort Street	0.51	A	WBT	0.55	A	EBT
Walkley Road/ Russell Road	0.85	D	NBL	1.36	F	EBL
Walkley Road/ Lancaster Road	0.77	C	WBT	0.91	E	SBL
Walkley Road/ East Site Access ⁽¹⁾	13 sec	B	NBL/NBR	14 sec	B	NBL/NBR

1. Unsignalized intersection

Table 10: Existing Queues Over Capacity

Intersection	Mvmt	AM Peak				PM Peak			
		v/c	LOS	50 th % Queue (m)	95 th % Queue (m)	v/c	LOS	50 th % Queue (m)	95 th % Queue (m)
Walkley Road/ Russell Road	NBL	0.85	D	31	#51	0.67	B	18	#29
	NBR	0.75	C	0	35	1.17	F	~113	#176
	EBL	0.64	B	21	31	1.36	F	~30	#61
	EBT	0.40	A	55	75	1.04	F	~189	#221
	WBL	0.78	C	49	59	1.22	F	~59	#89
	WBT	0.80	C	154	#220	0.45	A	27	35
Walkley Road/ Lancaster Road	SBL	0.40	A	14	22	0.91	E	63	#90
	EBL	0.68	B	61	#93	0.73	C	31	m31

m: queueing is metered by an upstream signal

#: volume for the 95th percentile cycle exceeds capacity

~: approach is above capacity

Table 11: Intersection MMLOS Summary

Intersection		Walkley Road/St. Laurent Boulevard				Walkley Road/Banton Street			Walkley Road/Melfort Street			Walkley Road/Russell Road				Walkley Road/Lancaster Road		
		North	South	East	West	South	East	West	North	East	West	North	South	East	West	North	East	West
Pedestrian	Island Refuge	No	No	No	No	No	No	No	No	No	-	No	No	No	No	No	-	No
	Lanes Crossed	8	7	10	9	6	7	7	4	7	-	10	10	10	10	10	-	9
	Conflicting Left Turns	Perm + Prot	Perm + Prot	Permissive	Permissive	Permissive	No Left Turn	Permissive	Permissive	Permissive	-	Protected	Protected	Protected	Protected	Protected	-	No Left Turn
	Conflicting Right Turns	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	No Right Turn	Permissive	No Right Turn	-	Permissive	Permissive	Permissive	Permissive	Permissive	-	Permissive
	Right Turn on Red	-	-	-	Allowed	Allowed	-	Allowed	Prohibited	-	-	-	-	Allowed	-	-	-	-
	Ped Leading Interval	No	No	No	No	No	No	No	-	No	-	No	No	No	No	No	-	No
	Parallel Radius	15m – 25m	10m – 15m	> 25m	15m – 25m	15m – 25m	15m – 25m	-	10m – 15m	-	-	> 25m	> 25m	15m – 25m	15m – 25m	> 25m	-	15m – 25m
	Parallel Channel	Conv w/o Receiving	No Channel	Conv w/o Receiving	Conv w. Receiving	No Channel	No Channel	-	No Channel	-	-	No Channel	Conv w/o Receiving	Conv w/o Receiving	Conv w/o Receiving	Conv w/o Receiving	-	Conv w/o Receiving
	Perpendicular Radius	10m – 15m	> 25m	15m – 25m	-	-	-	-	-	-	-	15m – 25m	15m – 25m	-	> 25m	15m – 25m	-	-
	Perpendicular Channel	Conv w. Receiving	Conv w/o Receiving	Conv w/o Receiving	-	-	-	-	-	-	-	Conv w/o Receiving	Conv w/o Receiving	-	Conv w/o Receiving	Conv w/o Receiving	-	-
	Crosswalk Type	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	-	Standard	Standard	Standard	Standard	Standard	-	Standard
	PETSI Score	-18	-2	-49	-30	18	13	19	58	22	-	-45	-41	-35	-41	-41	-	-16
	Delay Score	36.1	45.2	41.8	41.8	10.3	57.8	57.8	-	30.8	-	40.1	56.6	62.9	62.9	15.4	-	67.9
	Level of Service	F	F	F	F	F	F	F	D	F	-	F	F	F	F	F	-	F
	Target	F				F			F			F				F		
	Target	C				C			C			C				C		
Cyclist	Type of Bikeway	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Pocket Lane	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Turning Speed	Slow	Slow	Slow	Slow	Slow	-	Slow	Slow	Slow	-	Slow	Slow	Slow	Slow	Slow	Slow	-
	Right Turn Storage	> 50m	> 50m	-	-	-	-	-	-	-	-	> 50m	> 50m	> 50m	> 50m	> 50m	-	-
	Dual Right Turn Lanes	No	No	No	No	No	-	No	No	No	-	No	No	No	No	No	No	-
	Shared Through-Right Lane	No	No	Yes	Yes	No	-	Yes	Yes	Yes	-	No	No	No	No	No	Yes	-
	Two-Stage Bike Box	No	No	No	No	No	No	-	No	-	No	No	No	No	No	No	-	No
	Lanes Crossed for Left Turns	1	1	2	2	1	2	-	0	-	2	-	-	-	2	-	-	2
	Dual Left Turn Lanes	No	No	No	No	No	No	-	No	-	No	Yes	Yes	Yes	No	Yes (T-int)	-	No
	Approach Speed	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h	80 km/h	60 km/h	60 km/h	60 km/h	90 km/h	90 km/h
	Level of Service	F	F	F	F	D	F	A	D	A	F	F	F	F	F	D	A	F
Transit	Average Signal Delay	25 sec	30 sec	30 sec	40 sec	-	5 sec	10 sec	-	10 sec	10 sec	45 sec	95 sec	70 sec	70 sec	-	20 sec	15 sec
	Level of Service	D	D	D	E	-	B	B	-	B	B	F	F	F	F	-	C	C
	Target	E				B			B			F				C		
	Target	B				B			B			B				-		
Truck	Turning Radius	> 15m	> 15m	> 15m	10 to 15m	> 15m	-	> 15m	-	-	-	> 15m	> 15m	> 15m	> 15m	> 15m	> 15m	-
	Receiving Lanes	3	3	2	1	2	-	1	-	-	-	2	3	2	2	4	1	-
	Level of Service	A	A	A	E	A	-	C	-	-	-	A	A	A	A	A	C	-
	Target	E				C			-			A				C		
Auto	Level of Service	D				B			A			F				E		
	Target	D				D			D			D				D		

APPENDIX K

Signal Timing Plans

Traffic Signal Timing

City of Ottawa, Transportation Services Department

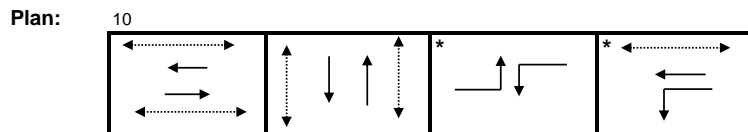
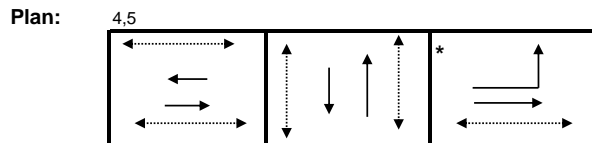
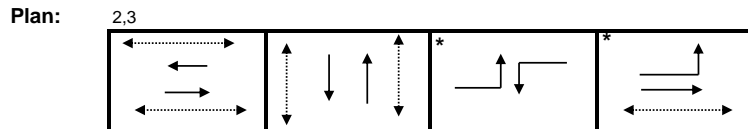
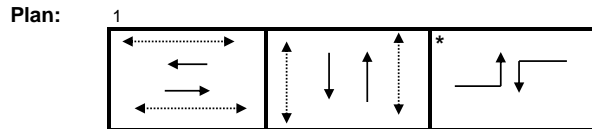
Traffic Signal Operations Unit

Intersection:	Main: Walkley	Side: St-Laurent
Controller:	MS-3200	TSD: 5398
Author:	Sarah Saade	Date: 08-Aug-2018

Existing Timing Plans†

	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 10	Walk	DW	A+R
Cycle	100	100	110	80	100	120			
Offset	89	44	2	43	89	2			
EB Thru	34	48	53	47	68	37	7	15	3.3+2.8
WB Thru	34	33	42	36	49	51	7	15	3.3+2.8
NB Thru	35	35	38	33	32	41	10	15	3.3+2.9
SB Thru	35	35	38	33	32	41	10	15	3.3+2.9
EB Left	31	32	30	11	19	28	-	-	3.3+2.8
WB Left	31	17	19	-	-	42	-	-	3.3+2.8

Phasing Sequence‡



Weekday

Time	Plan
0:15	4
6:30	1
7:00	10
9:30	2
15:00	3
18:30	2
21:30	4

Saturday

Time	Plan
0:15	4
6:30	2
11:00	5
19:30	2
22:00	4

Sunday

Time	Plan
0:15	4
6:30	2
21:00	4

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

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

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

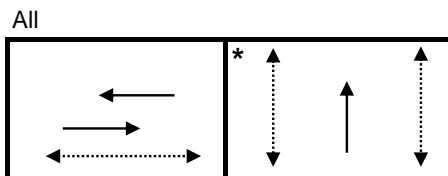
Intersection:	Main: Walkley	Side: Banton
Controller:	MS-3200	TSD: 5923
Author:	Sarah Saade	Date: 07-Aug-2018

Existing Timing Plans[†]

	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 10	Walk	DW	A+R
Cycle	130	120	130	95	100	120			
Offset	113	75	29	32	84	48			
EB Thru	97	87	97	62	67	87	9	11	3.3+2.4
WB Thru	97	87	97	62	67	87	9	11	3.3+2.4
NB Thru	33	33	33	33	33	33	7	20	3.3+2.3

Phasing Sequence[‡]

Plan:



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:00	10
9:30	2
15:00	3
18:30	2
21:30	4

Saturday

Time	Plan
0:15	4
6:30	2
11:00	5
19:30	2
22:00	4

Sunday

Time	Plan
0:15	4
6:30	2
21:00	4

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

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

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

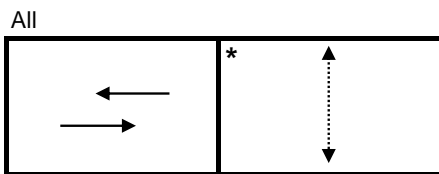
Intersection:	Main: Walkley	Side:	Melfort
Controller:	MS-3200	TSD:	5924
Author:	Sarah Saade	Date:	07-Aug-2018

Existing Timing Plans[†]

	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 10	Walk	DW	A+R
Cycle	65	60	65	95	100	75			
Offset	43	25	41	X	60	36			
EB Thru	34	29	34	64	69	44	-	-	3.3+2.5
WB Thru	34	29	34	64	69	44	-	-	3.3+2.5
SB Thru	31	31	31	31	31	31	7	20	3.0+1.0

Phasing Sequence[‡]

Plan:



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:00	10
9:30	2
15:00	3
18:30	2
21:30	4

Saturday

Time	Plan
0:15	4
6:30	2
11:00	5
19:30	2
22:00	4

Sunday

Time	Plan
0:15	4
6:30	2
21:00	4

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄.....► Pedestrian signal

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

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

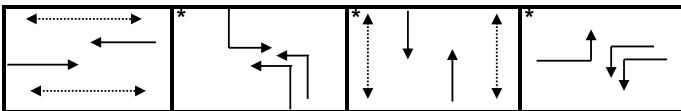
Intersection:	<i>Main:</i> Walkley	<i>Side:</i> Russell/Hawthorne
Controller:	MS-3200	TSD: 5326
Author:	Sarah Saade	Date: 07-Aug-18

Existing Timing Plans†

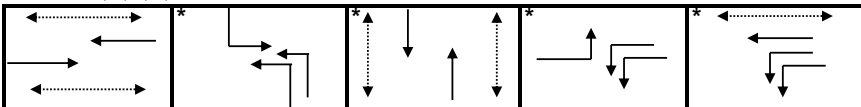
	Plan						Ped Minimum Time		
	AM Peak 1	AM Peak 2 10	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
Cycle	130	150	120	130	120	100			
Offset	19	102	21	35	X	52			
EB Thru	39	45	38	58	33	35	7	18	3.3+4.0
WB Thru	54.6	65.6	45.6	66	33	35	7	18	3.3+4.0
NBLT (fp)	16	20	15	17	14	13	-	-	3.3+4.3
SBLT (fp)	16	20	15	17	14	13	-	-	3.3+4.3
NB Thru	35	40	35	35	35	35	7	20	3.3+4.1
SB Thru	35	40	35	35	35	35	7	20	3.3+4.1
EBLT (fp)	24.4	24.4	24.4	12	24.4	17	-	-	3.3+3.1
WBLT (fp)	40	45	32	20	38	17	-	-	3.3+3.1

Phasing Sequence‡

Plan: 4



Plan: 1, 2, 3, 5, 10



NOTE:

- 1) In plans 1, 4 & 5, if the pedestrian phase is not actuated, the NS movement will be forced off after 15 seconds of green time and the extra time will go to the next phase whereas for plans 2 & 3, it will be 18 seconds.
- 2) For all plans, the EBL phase only receives 18 seconds of green time, regardless of the split time allocated

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:00	10
9:30	2
15:00	3
18:30	2
21:30	4

Saturday

Time	Plan
0:15	4
6:30	2
11:00	5
19:30	2
22:00	4

Sunday

Time	Plan
0:15	4
6:30	2
21:00	4

Notes

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

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

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◀.....▶ Pedestrian signal

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

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

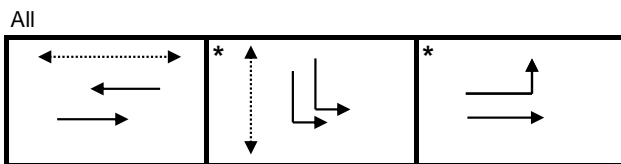
Intersection:	Main: Walkley	Side: Lancaster
Controller:	MS-3200	TSD: 6038
Author:	Sarah Saade	Date: 07-Aug-2018

Existing Timing Plans[†]

	Plan							Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 10	PM Heavy 12	Walk	DW	A+R
Cycle	130	120	130	95	100	150	100			
Offset	81	11	22	X	3	50	11			
EB Thru	102	92	102	52	71	122	72	20	7	4.6+1.6
WB Thru	82	72	80	52	51	98	55	20	7	4.6+1.6
SB Left (fp)	28	28	28	28	29	28	28	7	15	3.3+2.4
EB Left (fp)	20	20	22	15	20	24	17	-	-	4.6+1.6

Phasing Sequence[‡]

Plan:



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:00	10
9:30	2
15:00	3
18:30	2
19:00	12
21:00	4

Saturday

Time	Plan
0:15	4
6:30	2
11:00	5
19:30	2
22:00	4

Sunday

Time	Plan
0:15	4
6:30	2
21:00	4

Notes

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

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

Asterisk (*) Indicates actuated phase























(fp): Fully Protected Left Turn

←.....→ Pedestrian signal

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


APPENDIX L

Synchro Analysis

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	534	43	392	837	47	18	239	111	55	245	249
Future Volume (vph)	288	534	43	392	837	47	18	239	111	55	245	249
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		0.99		0.97	0.99		0.97
Frt		0.989			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3329	0	1734	3260	0	1701	1825	1453	1639	1808	1537
Flt Permitted	0.190			0.246			0.439			0.449		
Satd. Flow (perm)	344	3329	0	447	3260	0	778	1825	1415	768	1808	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5				139			277
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	14		8	8		14	13		10	10		13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	6%	3%	3%	8%	15%	5%	3%	10%	9%	4%	4%
Adj. Flow (vph)	320	593	48	436	930	52	20	266	123	61	272	277
Shared Lane Traffic (%)												
Lane Group Flow (vph)	320	641	0	436	982	0	20	266	123	61	272	277
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4
Switch Phase												

1: St. Laurent & Walkley
AM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	28.0	37.0		42.0	51.0		41.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	23.3%	30.8%		35.0%	42.5%		34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
Maximum Green (s)	21.9	30.9		35.9	44.9		34.8	34.8	34.8	34.8	34.8	34.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		5			10		10	10	10	10	10	10
Act Effct Green (s)	58.2	40.2		72.6	48.8		34.8	34.8	34.8	34.8	34.8	34.8
Actuated g/C Ratio	0.48	0.34		0.60	0.41		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.85	0.57		0.78	0.74		0.09	0.50	0.24	0.27	0.52	0.44
Control Delay	45.6	36.4		20.8	30.6		32.5	39.4	5.1	37.1	39.9	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	36.4		20.8	30.6		32.5	39.4	5.1	37.1	39.9	6.2
LOS	D	D		C	C		C	D	A	D	D	A
Approach Delay		39.5			27.6			28.8			24.3	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	38.7	59.4		47.4	95.4		3.2	48.0	0.0	10.2	49.3	0.0
Queue Length 95th (m)	#83.6	86.1		35.0	123.4		8.9	72.0	10.0	21.5	73.8	17.9
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	431	1119		656	1328		225	529	509	222	524	628
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.57		0.66	0.74		0.09	0.50	0.24	0.27	0.52	0.44

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 30.5

Intersection LOS: C

Intersection Capacity Utilization 92.6%

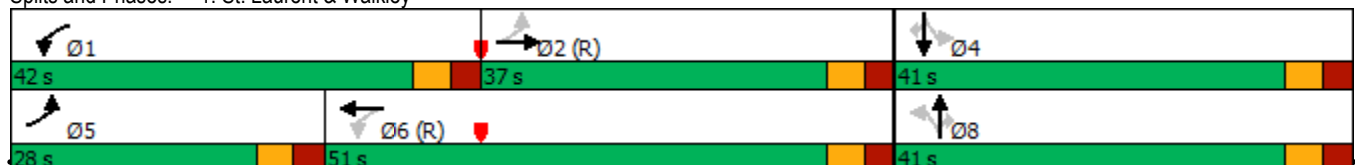
ICU Level of Service F












Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: St. Laurent & Walkley



						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	640	59	51	1340	16	23
Future Volume (vph)	640	59	51	1340	16	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		1.00	
Frt	0.987					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3233	0	1488	3370	1429	1065
Flt Permitted			0.356		0.950	
Satd. Flow (perm)	3233	0	556	3370	1427	1065
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18					26
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		4	4		1	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	6%	20%	6%	25%	50%
Adj. Flow (vph)	711	66	57	1489	18	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	777	0	57	1489	18	26
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	87.0		87.0	87.0	33.0	33.0
Total Split (%)	72.5%		72.5%	72.5%	27.5%	27.5%
Maximum Green (s)	81.3		81.3	81.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	4		0	0	1	1
Act Effct Green (s)	103.8		103.8	103.8	13.4	13.4
Actuated g/C Ratio	0.86		0.86	0.86	0.11	0.11
v/c Ratio	0.28		0.12	0.51	0.11	0.18
Control Delay	5.8		4.5	5.1	46.1	17.9
Queue Delay	0.0		0.0	0.2	0.0	0.0
Total Delay	5.8		4.5	5.3	46.1	17.9
LOS	A		A	A	D	B
Approach Delay	5.8			5.2	29.5	
Approach LOS	A			A	C	
Queue Length 50th (m)	64.0		1.9	41.8	3.7	0.0
Queue Length 95th (m)	93.5		8.9	107.1	8.8	6.9
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2799		481	2915	326	263
Starvation Cap Reductn	0		0	471	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.28		0.12	0.61	0.06	0.10

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 48 (40%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 5.9

Intersection LOS: A

Intersection Capacity Utilization 56.8%

ICU Level of Service B

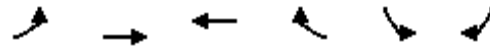
Analysis Period (min) 15

Splits and Phases: 2: Banton & Walkley

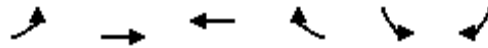


3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
Existing Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	0	661	1356	22	5	2	
Future Volume (vph)	0	661	1356	22	5	2	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)	45.0			0.0	0.0	0.0	
Storage Lanes	1			0	1	0	
Taper Length (m)	20.0				10.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor			1.00		1.00		
Frt			0.998		0.966		
Flt Protected					0.964		
Satd. Flow (prot)	1861	3277	3356	0	1733	0	
Flt Permitted					0.964		
Satd. Flow (perm)	1861	3277	3356	0	1726	0	
Right Turn on Red				No		Yes	
Satd. Flow (RTOR)					2		
Link Speed (k/h)		50	50		50		
Link Distance (m)		230.6	98.4		208.4		
Travel Time (s)		16.6	7.1		15.0		
Confl. Peds. (#/hr)	15			15	7		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	1%	9%	6%	15%	1%	1%	
Adj. Flow (vph)	0	734	1507	24	6	2	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	734	1531	0	8	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		4.7	4.7		4.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		10.0	25.0		2.0		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1		
Detector Template	Left	Thru	Thru		Left		
Leading Detector (m)	18.6	93.0	93.0		18.6		
Trailing Detector (m)	0.0	0.0	0.0		0.0		
Detector 1 Position(m)	0.0	0.0	0.0		0.0		
Detector 1 Size(m)	18.6	5.5	5.5		18.6		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		0.0		
Detector 2 Position(m)		87.5	87.5				
Detector 2 Size(m)		5.5	5.5				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		4		8
Permitted Phases	2						
Detector Phase	2	2	6		4		
Switch Phase							



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Minimum Initial (s)	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	23.8	23.8	23.8		31.0		31.0
Total Split (s)	44.0	44.0	44.0		31.0		31.0
Total Split (%)	58.7%	58.7%	58.7%		41.3%		41%
Maximum Green (s)	38.2	38.2	38.2		27.0		27.0
Yellow Time (s)	3.3	3.3	3.3		3.0		3.0
All-Red Time (s)	2.5	2.5	2.5		1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.8	5.8	5.8		4.0		
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		None		None
Walk Time (s)	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0		20.0		20.0
Pedestrian Calls (#/hr)	0	0	12		0		10
Act Effct Green (s)		67.6	67.6		13.4		
Actuated g/C Ratio		0.90	0.90		0.18		
v/c Ratio		0.25	0.51		0.03		
Control Delay		3.6	7.7		19.0		
Queue Delay		0.0	0.0		0.0		
Total Delay		3.6	7.7		19.0		
LOS		A	A		B		
Approach Delay		3.6	7.7		19.0		
Approach LOS		A	A		B		
Queue Length 50th (m)		0.0	0.2		0.7		
Queue Length 95th (m)		41.4	218.3		2.8		
Internal Link Dist (m)		206.6	74.4		184.4		
Turn Bay Length (m)							
Base Capacity (vph)		2955	3027		625		
Starvation Cap Reductn		0	0		0		
Spillback Cap Reductn		0	0		0		
Storage Cap Reductn		0	0		0		
Reduced v/c Ratio		0.25	0.51		0.01		

Intersection Summary

























Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 36 (48%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 56.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Walkley & Melfort

 Ø2 (R) 44 s	 Ø4 31 s
 Ø6 (R) 44 s	 Ø8 31 s













4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	71	458	119	345	1146	61	52	201	122	195	388	469
Future Volume (vph)	71	458	119	345	1146	61	52	201	122	195	388	469
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98	1.00		0.98	0.99		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1374	3307	1332	3013	3435	1522	3269	3189	1390	3094	3218	1332
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1372	3307	1332	3013	3435	1490	3264	3189	1365	3075	3218	1314
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180			134			180			521
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5					5	1		3	3		1
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	30%	8%	20%	15%	4%	5%	6%	12%	15%	12%	11%	20%
Adj. Flow (vph)	79	509	132	383	1273	68	58	223	136	217	431	521
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	509	132	383	1273	68	58	223	136	217	431	521
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	17.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	24.4	45.0	45.0	45.0	65.6	65.6	20.0	40.0	40.0	20.0	40.0	40.0
Total Split (%)	16.3%	30.0%	30.0%	30.0%	43.7%	43.7%	13.3%	26.7%	26.7%	13.3%	26.7%	26.7%
Maximum Green (s)	18.0	37.7	37.7	38.6	58.3	58.3	12.4	32.6	32.6	12.4	32.6	32.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		5	5		3	3		1	1
Act Effct Green (s)	13.5	58.2	58.2	24.4	69.1	69.1	8.1	26.3	26.3	12.4	33.3	33.3
Actuated g/C Ratio	0.09	0.39	0.39	0.16	0.46	0.46	0.05	0.18	0.18	0.08	0.22	0.22
v/c Ratio	0.64	0.40	0.21	0.78	0.80	0.09	0.33	0.40	0.35	0.85	0.60	0.75
Control Delay	83.3	37.5	4.6	86.9	24.3	0.3	72.9	55.5	4.5	96.3	56.2	11.2
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	83.3	37.5	4.6	86.9	24.3	0.3	72.9	55.5	4.5	96.3	56.2	11.2
LOS	F	D	A	F	C	A	E	E	A	F	E	B
Approach Delay		36.5			37.3			41.3			43.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	21.2	55.3	0.0	48.8	154.2	0.0	8.0	27.8	0.0	30.7	55.7	0.0
Queue Length 95th (m)	31.8	74.7	15.8	59.1	#220.5	m0.3	14.8	39.0	6.0	#50.9	72.2	35.2
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	164	1283	626	775	1582	758	270	693	437	255	732	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.40	0.21	0.49	0.80	0.09	0.21	0.32	0.31	0.85	0.59	0.74

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 102 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 39.4

Intersection LOS: D

Intersection Capacity Utilization 77.4%

ICU Level of Service D

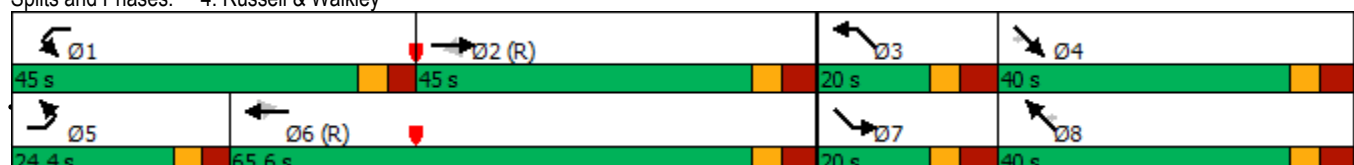
Analysis Period (min) 15

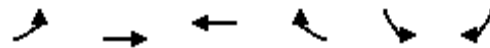
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Russell & Walkley





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	198	713	1375	624	90	164
Future Volume (vph)	198	713	1375	624	90	164
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		0.99			
Frt			0.953			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1701	3189	4588	0	3238	1453
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1701	3189	4588	0	3238	1453
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			141			182
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	12%	7%	3%	7%	10%
Adj. Flow (vph)	220	792	1528	693	100	182
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	792	2221	0	100	182
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
AM Peak Hour

2480 Walkley Road
Existing Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	24.0	122.0	98.0		28.0	28.0
Total Split (%)	16.0%	81.3%	65.3%		18.7%	18.7%
Maximum Green (s)	17.8	115.8	91.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	2		0	0
Act Effct Green (s)	28.5	126.8	92.1		11.3	11.3
Actuated g/C Ratio	0.19	0.85	0.61		0.08	0.08
v/c Ratio	0.68	0.29	0.77		0.41	0.66
Control Delay	63.3	2.6	22.1		70.9	20.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	63.3	2.6	22.1		70.9	20.2
LOS	E	A	C		E	C
Approach Delay		15.8	22.1		38.2	
Approach LOS		B	C		D	
Queue Length 50th (m)	60.7	14.1	146.4		13.8	0.0
Queue Length 95th (m)	m#91.4	32.5	165.8		22.1	21.9
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	323	2695	2871		481	370
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.68	0.29	0.77		0.21	0.49

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 50 (33%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

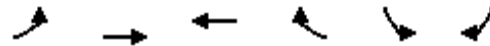
m Volume for 95th percentile queue is metered by upstream signal.





Splits and Phases: 5: Walkley & Lancaster



0.00000, Nov 2008







Dynamic 10 Report



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	671	1238	13	8	22
Future Volume (vph)	13	671	1238	13	8	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.902	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1768	3247	3334	0	1522	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1768	3247	3334	0	1522	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	6			6		
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	10%	7%	1%	10%	10%
Adj. Flow (vph)	14	746	1376	14	9	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	746	1390	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.6%			ICU Level of Service A		
Analysis Period (min)	15					























7: East Access & Walkley
AM Peak Hour

2480 Walkley Road
Existing Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↰	↑↑	↰	
Traffic Volume (vph)	656	12	59	1378	3	13
Future Volume (vph)	656	12	59	1378	3	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.997				0.889	
Flt Protected			0.950		0.991	
Satd. Flow (prot)	4658	0	1768	3402	1640	0
Flt Permitted			0.950		0.991	
Satd. Flow (perm)	4658	0	1768	3402	1640	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	1%	1%	5%	1%	1%
Adj. Flow (vph)	729	13	66	1531	3	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	742	0	66	1531	17	0
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			6.0	4.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 50.2%	ICU Level of Service A					
Analysis Period (min) 15						













1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	968	28	115	635	60	59	281	430	109	241	470
Future Volume (vph)	325	968	28	115	635	60	59	281	430	109	241	470
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.99		0.97	0.99		0.97
Frt		0.996			0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3381	0	1734	3375	0	1768	1808	1551	1734	1808	1567
Flt Permitted	0.207			0.176			0.454			0.388		
Satd. Flow (perm)	374	3381	0	321	3375	0	835	1808	1502	701	1808	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			10				289			394
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	25		5	5		25	15		15	15		15
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	5%	10%	3%	4%	1%	1%	4%	3%	3%	4%	2%
Adj. Flow (vph)	361	1076	31	128	706	67	66	312	478	121	268	522
Shared Lane Traffic (%)												
Lane Group Flow (vph)	361	1107	0	128	773	0	66	312	478	121	268	522
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4

1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	30.0	53.0		19.0	42.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	27.3%	48.2%		17.3%	38.2%		34.5%	34.5%	34.5%	34.5%	34.5%	34.5%
Maximum Green (s)	23.9	46.9		12.9	35.9		31.8	31.8	31.8	31.8	31.8	31.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		5			20		12	12	12	12	12	12
Act Effct Green (s)	65.8	50.6		50.4	41.3		31.8	31.8	31.8	31.8	31.8	31.8
Actuated g/C Ratio	0.60	0.46		0.46	0.38		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.80	0.71		0.48	0.61		0.27	0.60	0.75	0.60	0.51	0.73
Control Delay	28.1	27.3		18.7	30.9		34.0	39.3	21.8	47.8	36.8	15.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	27.3		18.7	30.9		34.0	39.3	21.8	47.8	36.8	15.4
LOS	C	C		B	C		C	D	C	D	D	B
Approach Delay		27.5			29.1			29.1			26.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	33.8	89.3		10.3	63.7		10.1	53.0	34.0	20.6	44.2	20.4
Queue Length 95th (m)	62.8	118.5		17.8	88.7		21.2	79.2	72.2	#40.2	67.6	59.0
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	519	1557		323	1272		241	522	639	202	522	718
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.71		0.40	0.61		0.27	0.60	0.75	0.60	0.51	0.73

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 27.9

Intersection LOS: C

Intersection Capacity Utilization 89.4%

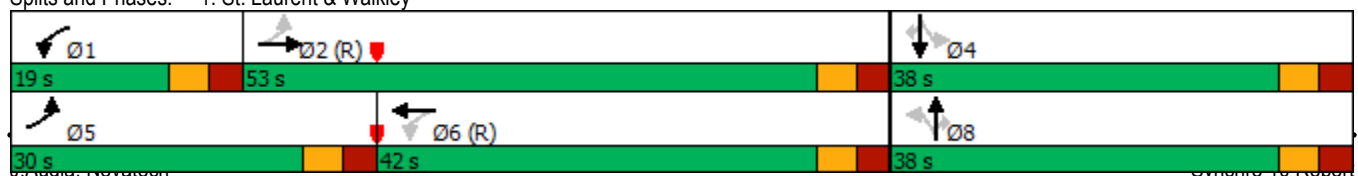
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: St. Laurent & Walkley














04-10-2014, 10:40:00 AM

Dynamic 16 Report

2: Banton & Walkley
PM Peak Hour

2480 Walkley Road
Existing Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1569	54	48	845	85	88
Future Volume (vph)	1569	54	48	845	85	88
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00					0.99
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3450	0	1654	3468	1768	1508
Flt Permitted			0.099		0.950	
Satd. Flow (perm)	3450	0	172	3468	1768	1487
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					38
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		2	2			1
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	1%	8%	3%	1%	6%
Adj. Flow (vph)	1743	60	53	939	94	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1803	0	53	939	94	98
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	97.0		97.0	97.0	33.0	33.0
Total Split (%)	74.6%		74.6%	74.6%	25.4%	25.4%
Maximum Green (s)	91.3		91.3	91.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	2		0	0	1	1
Act Effct Green (s)	103.9		103.9	103.9	14.8	14.8
Actuated g/C Ratio	0.80		0.80	0.80	0.11	0.11
v/c Ratio	0.65		0.39	0.34	0.47	0.49
Control Delay	7.8		22.1	7.1	60.0	40.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	7.8		22.1	7.1	60.0	40.0
LOS	A		C	A	E	D
Approach Delay	7.8			7.9	49.8	
Approach LOS	A			A	D	
Queue Length 50th (m)	67.8		2.5	23.1	21.6	13.6
Queue Length 95th (m)	148.4		26.3	79.6	33.2	26.7
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2759		137	2772	372	343
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.65		0.39	0.34	0.25	0.29

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 29 (22%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 10.5

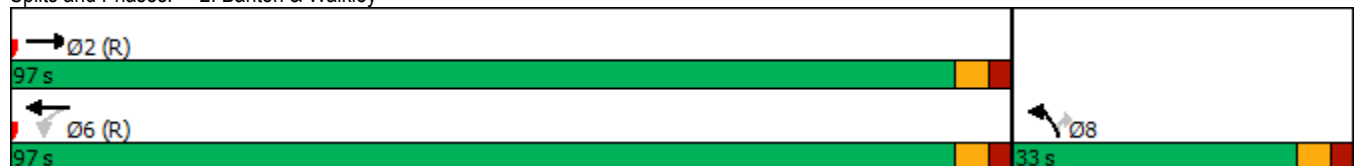
Intersection LOS: B

Intersection Capacity Utilization 65.8%

ICU Level of Service C

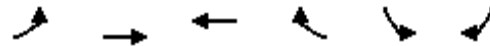
Analysis Period (min) 15

Splits and Phases: 2: Banton & Walkley



3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
Existing Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	8	1510	877	17	8	4	
Future Volume (vph)	8	1510	877	17	8	4	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)	45.0			0.0	0.0	0.0	
Storage Lanes	1			0	1	0	
Taper Length (m)	20.0				10.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00		0.99		
Frt			0.997		0.958		
Flt Protected	0.950				0.967		
Satd. Flow (prot)	1768	3435	3453	0	1718	0	
Flt Permitted	0.286				0.967		
Satd. Flow (perm)	530	3435	3453	0	1707	0	
Right Turn on Red				No		Yes	
Satd. Flow (RTOR)					4		
Link Speed (k/h)		50	50		50		
Link Distance (m)		230.6	98.4		208.4		
Travel Time (s)		16.6	7.1		15.0		
Confl. Peds. (#/hr)	14			14	12		
Confl. Bikes (#/hr)				1		1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	1%	4%	3%	5%	1%	1%	
Adj. Flow (vph)	9	1678	974	19	9	4	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	9	1678	993	0	13	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		4.7	4.7		4.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		10.0	25.0		2.0		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1		
Detector Template	Left	Thru	Thru		Left		
Leading Detector (m)	18.6	93.0	93.0		18.6		
Trailing Detector (m)	0.0	0.0	0.0		0.0		
Detector 1 Position(m)	0.0	0.0	0.0		0.0		
Detector 1 Size(m)	18.6	5.5	5.5		18.6		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		0.0		
Detector 2 Position(m)		87.5	87.5				
Detector 2 Size(m)		5.5	5.5				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		4		8
Permitted Phases	2						
Detector Phase	2	2	6		4		

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
Existing Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	23.8	23.8	23.8		31.0		31.0
Total Split (s)	34.0	34.0	34.0		31.0		31.0
Total Split (%)	52.3%	52.3%	52.3%		47.7%		48%
Maximum Green (s)	28.2	28.2	28.2		27.0		27.0
Yellow Time (s)	3.3	3.3	3.3		3.0		3.0
All-Red Time (s)	2.5	2.5	2.5		1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.8	5.8	5.8		4.0		
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		None		None
Walk Time (s)	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0		20.0		20.0
Pedestrian Calls (#/hr)	0	0	12		0		12
Act Effct Green (s)	57.6	57.6	57.6		13.4		
Actuated g/C Ratio	0.89	0.89	0.89		0.21		
v/c Ratio	0.02	0.55	0.32		0.04		
Control Delay	5.6	8.4	3.8		14.4		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	5.6	8.4	3.8		14.4		
LOS	A	A	A		B		
Approach Delay		8.4	3.8		14.4		
Approach LOS		A	A		B		
Queue Length 50th (m)	0.0	0.0	0.2		0.9		
Queue Length 95th (m)	m1.5	#195.7	81.9		3.0		
Internal Link Dist (m)		206.6	74.4		184.4		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	470	3046	3062		715		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.02	0.55	0.32		0.02		

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 65

Offset: 41 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 6.7

Intersection LOS: A

Intersection Capacity Utilization 60.6%

ICU Level of Service B

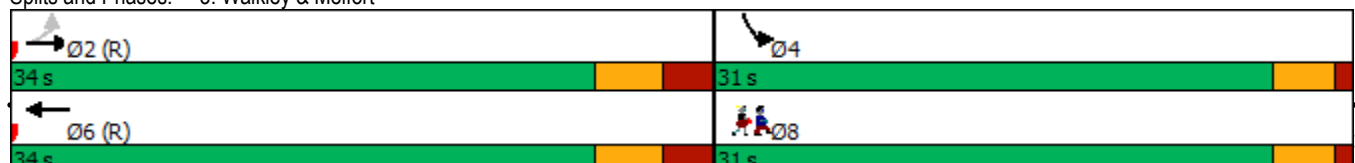
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

























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

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	85	1266	222	346	631	75	100	403	103	136	257	489
Future Volume (vph)	85	1266	222	346	631	75	100	403	103	136	257	489
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	0.99		0.98	0.99		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1609	3468	1390	3013	3468	1567	3179	3338	1427	3238	3247	1427
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1604	3468	1368	3011	3468	1535	3158	3338	1396	3213	3247	1402
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			154			207			207
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5		2	2		5	4		6	6		4
Confl. Bikes (#/hr)			1			1			1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	11%	3%	15%	15%	3%	2%	9%	7%	12%	7%	10%	12%
Adj. Flow (vph)	94	1407	247	384	701	83	111	448	114	151	286	543
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	1407	247	384	701	83	111	448	114	151	286	543
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
Existing Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	12.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	12.0	58.0	58.0	20.0	66.0	66.0	17.0	35.0	35.0	17.0	35.0	35.0
Total Split (%)	9.2%	44.6%	44.6%	15.4%	50.8%	50.8%	13.1%	26.9%	26.9%	13.1%	26.9%	26.9%
Maximum Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	9.4	27.6	27.6	9.4	27.6	27.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		2	2		5	5		6	6		4	4
Act Effct Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	8.8	27.9	27.9	9.1	28.2	28.2
Actuated g/C Ratio	0.04	0.39	0.39	0.10	0.45	0.45	0.07	0.21	0.21	0.07	0.22	0.22
v/c Ratio	1.36	1.04	0.37	1.22	0.45	0.11	0.52	0.63	0.25	0.67	0.41	1.17
Control Delay	267.2	67.4	6.4	184.3	16.3	0.3	67.3	50.9	1.3	73.5	45.9	123.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	267.2	67.4	6.4	184.3	16.3	0.3	67.3	50.9	1.3	73.5	45.9	123.9
LOS	F	E	A	F	B	A	E	D	A	E	D	F
Approach Delay		69.5			70.4			45.2			93.4	
Approach LOS		E			E			D			F	
Queue Length 50th (m)	~29.6	~189.1	4.0	~58.7	27.1	0.0	13.1	51.0	0.0	18.1	30.9	~112.7
Queue Length 95th (m)	#60.8	#220.8	31.2	#88.7	35.2	0.0	22.1	67.5	0.0	28.5	43.6	#176.4
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	69	1352	660	315	1565	777	229	715	461	234	704	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.36	1.04	0.37	1.22	0.45	0.11	0.48	0.63	0.25	0.65	0.41	1.17

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 71.3

Intersection LOS: E

Intersection Capacity Utilization 92.1%

ICU Level of Service F

Analysis Period (min) 15

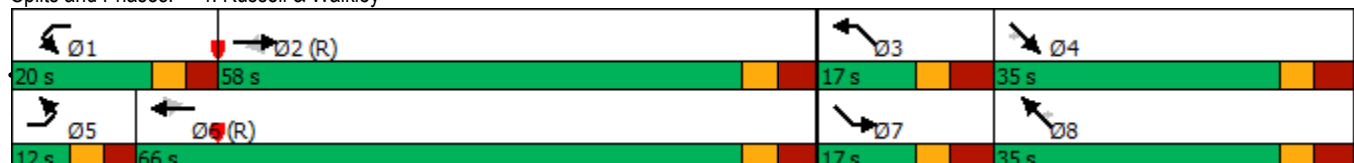
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Russell & Walkley



5: Walkley & Lancaster
PM Peak Hour

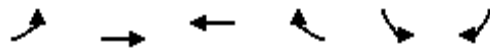
2480 Walkley Road
Existing Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	1704	924	159	469	199
Future Volume (vph)	122	1704	924	159	469	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		1.00			0.99
Frt			0.978			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1751	3402	4623	0	3397	1551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1749	3402	4623	0	3397	1530
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			43			221
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	3			3		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	8%	9%	2%	3%
Adj. Flow (vph)	136	1893	1027	177	521	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	1893	1204	0	521	221
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
Existing Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	22.0	102.0	80.0		28.0	28.0
Total Split (%)	16.9%	78.5%	61.5%		21.5%	21.5%
Maximum Green (s)	15.8	95.8	73.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	3		1	1
Act Effct Green (s)	13.9	96.2	76.0		21.9	21.9
Actuated g/C Ratio	0.11	0.74	0.58		0.17	0.17
v/c Ratio	0.73	0.75	0.44		0.91	0.50
Control Delay	55.8	10.9	15.4		74.2	10.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	55.8	10.9	15.4		74.2	10.1
LOS	E	B	B		E	B
Approach Delay		13.9	15.4		55.1	
Approach LOS		B	B		E	
Queue Length 50th (m)	31.8	87.8	55.4		62.7	0.0
Queue Length 95th (m)	m30.6	m69.1	66.0		#89.8	20.2
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	212	2517	2722		582	445
Starvation Cap Reductn	0	11	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.64	0.76	0.44		0.90	0.50

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 22 (17%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 22.1

Intersection LOS: C

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

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

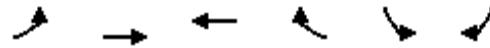
Queue shown is maximum after two cycles.





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

Splits and Phases: 5: Walkley & Lancaster



Dynamic Traffic Report



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	1473	927	9	7	17
Future Volume (vph)	36	1473	927	9	7	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.905	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1768	3435	3462	0	1659	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1768	3435	3462	0	1659	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	4%	3%	10%	1%	1%
Adj. Flow (vph)	40	1637	1030	10	8	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	1637	1040	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	53.0%			ICU Level of Service A		
Analysis Period (min)	15					












7: East Access & Walkley
PM Peak Hour

2480 Walkley Road
Existing Traffic

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↙	↑↑	↘	
Traffic Volume (vph)	1504	11	0	894	15	66
Future Volume (vph)	1504	11	0	894	15	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.999				0.890	
Flt Protected					0.991	
Satd. Flow (prot)	4884	0	1861	3402	1642	0
Flt Permitted					0.991	
Satd. Flow (perm)	4884	0	1861	3402	1642	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	1%	1%	5%	1%	1%
Adj. Flow (vph)	1671	12	0	993	17	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1683	0	0	993	90	0
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			6.0	4.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 42.8%	ICU Level of Service A					
Analysis Period (min) 15						

5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
Existing Traffic (additional SB green)

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	1704	924	159	469	199
Future Volume (vph)	122	1704	924	159	469	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		1.00			0.99
Frt			0.978			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1751	3402	4623	0	3397	1551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1749	3402	4623	0	3397	1530
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			39			221
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	3			3		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	8%	9%	2%	3%
Adj. Flow (vph)	136	1893	1027	177	521	221
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	1893	1204	0	521	221
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
Existing Traffic (additional SB green)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	22.0	97.0	75.0		33.0	33.0
Total Split (%)	16.9%	74.6%	57.7%		25.4%	25.4%
Maximum Green (s)	15.8	90.8	68.8		27.3	27.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	3		1	1
Act Effct Green (s)	13.9	93.5	73.3		24.6	24.6
Actuated g/C Ratio	0.11	0.72	0.56		0.19	0.19
v/c Ratio	0.73	0.77	0.46		0.81	0.47
Control Delay	55.6	14.7	17.4		60.8	8.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	55.6	14.7	17.4		60.8	8.9
LOS	E	B	B		E	A
Approach Delay		17.5	17.4		45.4	
Approach LOS		B	B		D	
Queue Length 50th (m)	31.8	115.0	59.6		60.5	0.0
Queue Length 95th (m)	m30.6	m98.5	72.8		77.4	19.1
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	212	2445	2624		713	495
Starvation Cap Reductn	0	8	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.64	0.78	0.46		0.73	0.45

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 22 (17%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 22.6

Intersection LOS: C

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15























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

Splits and Phases: 5: Walkley & Lancaster




1: St. Laurent & Walkley
AM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	547	44	400	855	48	18	244	113	56	250	254
Future Volume (vph)	264	547	44	400	855	48	18	244	113	56	250	254
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99		0.97	0.99		0.97
Frt		0.989			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3329	0	1734	3260	0	1701	1825	1453	1639	1808	1537
Flt Permitted	0.243			0.292			0.473			0.482		
Satd. Flow (perm)	439	3329	0	530	3260	0	837	1825	1415	824	1808	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5				139			254
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	14		8	8		14	13		10	10		13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	3%	3%	8%	15%	5%	3%	10%	9%	4%	4%
Adj. Flow (vph)	264	547	44	400	855	48	18	244	113	56	250	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	591	0	400	903	0	18	244	113	56	250	254
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4
Switch Phase												

1: St. Laurent & Walkley
AM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	28.0	37.0		42.0	51.0		41.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	23.3%	30.8%		35.0%	42.5%		34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
Maximum Green (s)	21.9	30.9		35.9	44.9		34.8	34.8	34.8	34.8	34.8	34.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		8			12		10	10	10	12	12	12
Act Effct Green (s)	58.5	43.8		72.5	52.0		34.8	34.8	34.8	34.8	34.8	34.8
Actuated g/C Ratio	0.49	0.36		0.60	0.43		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.71	0.49		0.73	0.64		0.07	0.46	0.22	0.24	0.48	0.42
Control Delay	26.9	32.1		16.0	26.0		32.2	38.4	4.0	35.8	38.8	6.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	32.1		16.0	26.0		32.2	38.4	4.0	35.8	38.8	6.1
LOS	C	C		B	C		C	D	A	D	D	A
Approach Delay		30.5			22.9			27.7			23.7	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	24.9	51.0		42.3	78.3		2.8	43.4	0.0	9.3	44.7	0.0
Queue Length 95th (m)	45.4	75.1		7.9	110.7		8.2	66.0	7.8	19.8	67.6	17.2
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	475	1218		682	1416		242	529	509	238	524	612
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.49		0.59	0.64		0.07	0.46	0.22	0.24	0.48	0.42

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 25.7

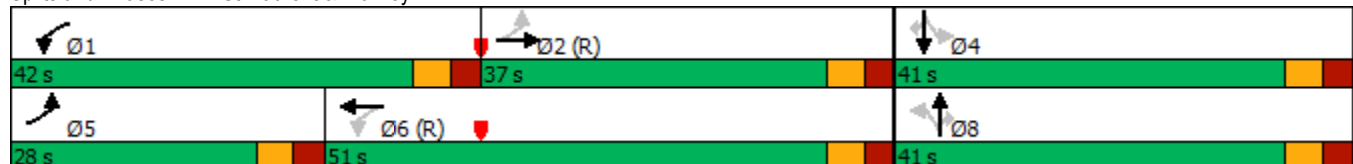
Intersection LOS: C

Intersection Capacity Utilization 91.7%

ICU Level of Service F












Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
AM Peak Hour

2480 Walkley Road
2020 Background Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	655	59	51	1368	16	23
Future Volume (vph)	655	59	51	1368	16	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		1.00	
Frt	0.988					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3236	0	1488	3370	1429	1065
Flt Permitted			0.380		0.950	
Satd. Flow (perm)	3236	0	593	3370	1427	1065
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17					23
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		4	4		1	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	20%	6%	25%	50%
Adj. Flow (vph)	655	59	51	1368	16	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	714	0	51	1368	16	23
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	87.0		87.0	87.0	33.0	33.0
Total Split (%)	72.5%		72.5%	72.5%	27.5%	27.5%
Maximum Green (s)	81.3		81.3	81.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	4		0	0	1	1
Act Effct Green (s)	103.8		103.8	103.8	13.4	13.4
Actuated g/C Ratio	0.86		0.86	0.86	0.11	0.11
v/c Ratio	0.25		0.10	0.47	0.10	0.17
Control Delay	7.3		4.3	4.7	45.8	18.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	7.3		4.3	4.7	45.8	18.3
LOS	A		A	A	D	B
Approach Delay	7.3			4.7	29.6	
Approach LOS	A			A	C	
Queue Length 50th (m)	57.5		1.7	36.2	3.3	0.0
Queue Length 95th (m)	84.3		7.9	92.8	8.2	6.3
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2802		513	2915	326	260
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.25		0.10	0.47	0.05	0.09

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 48 (40%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 6.0

Intersection LOS: A

Intersection Capacity Utilization 57.7%

ICU Level of Service B

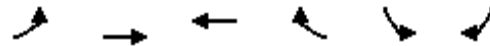
Analysis Period (min) 15

Splits and Phases: 2: Banton & Walkley



3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2020 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	30	676	1384	22	35	2	
Future Volume (vph)	30	676	1384	22	35	2	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)	45.0			0.0	0.0	0.0	
Storage Lanes	1			0	1	0	
Taper Length (m)	20.0				10.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor			1.00		0.99		
Frt			0.998		0.993		
Flt Protected	0.950				0.955		
Satd. Flow (prot)	1768	3277	3356	0	1765	0	
Flt Permitted	0.170				0.955		
Satd. Flow (perm)	316	3277	3356	0	1755	0	
Right Turn on Red				No		No	
Satd. Flow (RTOR)							
Link Speed (k/h)		50	50		50		
Link Distance (m)		230.6	98.4		208.4		
Travel Time (s)		16.6	7.1		15.0		
Confl. Peds. (#/hr)	15			15	7		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	9%	6%	15%	1%	1%	
Adj. Flow (vph)	30	676	1384	22	35	2	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	30	676	1406	0	37	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		4.7	4.7		4.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		10.0	25.0		2.0		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1		
Detector Template	Left	Thru	Thru		Left		
Leading Detector (m)	18.6	93.0	93.0		18.6		
Trailing Detector (m)	0.0	0.0	0.0		0.0		
Detector 1 Position(m)	0.0	0.0	0.0		0.0		
Detector 1 Size(m)	18.6	5.5	5.5		18.6		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		0.0		
Detector 2 Position(m)		87.5	87.5				
Detector 2 Size(m)		5.5	5.5				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		4		8
Permitted Phases	2						
Detector Phase	2	2	6		4		
Switch Phase							



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Minimum Initial (s)	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	23.8	23.8	23.8		31.0		31.0
Total Split (s)	44.0	44.0	44.0		31.0		31.0
Total Split (%)	58.7%	58.7%	58.7%		41.3%		41%
Maximum Green (s)	38.2	38.2	38.2		27.0		27.0
Yellow Time (s)	3.3	3.3	3.3		3.0		3.0
All-Red Time (s)	2.5	2.5	2.5		1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.8	5.8	5.8		4.0		
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		None		None
Walk Time (s)	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0		20.0		20.0
Pedestrian Calls (#/hr)	0	0	12		0		10
Act Effct Green (s)	63.7	63.7	63.7		13.4		
Actuated g/C Ratio	0.85	0.85	0.85		0.18		
v/c Ratio	0.11	0.24	0.49		0.12		
Control Delay	7.4	4.3	7.5		23.9		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	7.4	4.3	7.5		23.9		
LOS	A	A	A		C		
Approach Delay		4.5	7.5		23.9		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.0	0.0	0.0		4.3		
Queue Length 95th (m)	6.8	37.6	195.5		8.2		
Internal Link Dist (m)		206.6	74.4		184.4		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	268	2782	2849		635		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.11	0.24	0.49		0.06		

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 36 (48%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 6.8

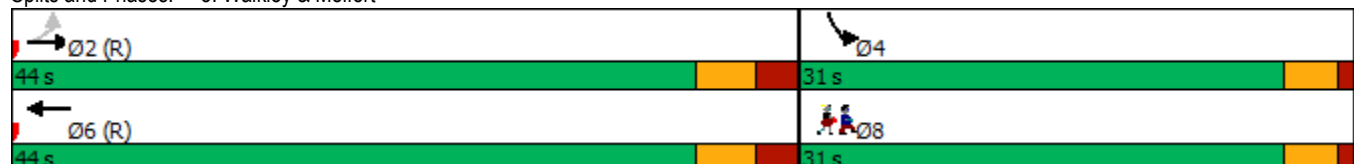
Intersection LOS: A

Intersection Capacity Utilization 57.6%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	72	467	123	358	1169	62	53	207	124	200	397	480
Future Volume (vph)	72	467	123	358	1169	62	53	207	124	200	397	480
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98	1.00		0.98	0.99		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1374	3307	1332	3013	3435	1522	3269	3189	1390	3094	3218	1332
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1371	3307	1332	3013	3435	1490	3263	3189	1366	3074	3218	1312
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180			134			180			480
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5					5	1		3	3		1
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 (%)	30%	8%	20%	15%	4%	5%	6%	12%	15%	12%	11%	20%
Adj. Flow (vph)	72	467	123	358	1169	62	53	207	124	200	397	480
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	467	123	358	1169	62	53	207	124	200	397	480
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	17.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	24.4	45.0	45.0	45.0	65.6	65.6	20.0	40.0	40.0	20.0	40.0	40.0
Total Split (%)	16.3%	30.0%	30.0%	30.0%	43.7%	43.7%	13.3%	26.7%	26.7%	13.3%	26.7%	26.7%
Maximum Green (s)	18.0	37.7	37.7	38.6	58.3	58.3	12.4	32.6	32.6	12.4	32.6	32.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		5	5		3	3		1	1
Act Effct Green (s)	13.0	61.1	61.1	23.2	71.3	71.3	7.8	24.8	24.8	12.1	31.8	31.8
Actuated g/C Ratio	0.09	0.41	0.41	0.15	0.48	0.48	0.05	0.17	0.17	0.08	0.21	0.21
v/c Ratio	0.61	0.35	0.19	0.77	0.72	0.08	0.31	0.39	0.33	0.80	0.58	0.73
Control Delay	81.8	33.9	4.9	87.9	22.6	0.3	72.8	56.4	3.4	90.6	56.5	11.2
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	81.8	33.9	4.9	87.9	22.6	0.3	72.8	56.4	3.4	90.6	56.5	11.2
LOS	F	C	A	F	C	A	E	E	A	F	E	B
Approach Delay		33.7			36.5			41.5			42.6	
Approach LOS		C			D			D			D	
Queue Length 50th (m)	19.3	46.8	0.0	45.9	134.3	0.0	7.3	26.5	0.0	28.1	52.1	0.0
Queue Length 95th (m)	29.5	68.3	13.1	54.7	184.8	m0.6	14.0	36.5	2.9	#45.4	66.3	32.6
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	164	1347	649	775	1633	778	270	693	437	255	725	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.35	0.19	0.46	0.72	0.08	0.20	0.30	0.28	0.78	0.55	0.72

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 102 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 38.3

Intersection LOS: D

Intersection Capacity Utilization 78.3%

ICU Level of Service D

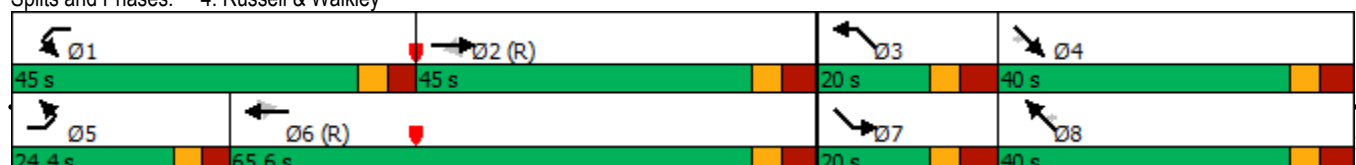
Analysis Period (min) 15

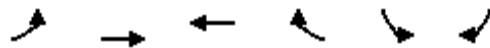
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Russell & Walkley

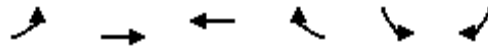




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	198	729	1409	624	90	164
Future Volume (vph)	198	729	1409	624	90	164
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		0.99			
Frt			0.954			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1701	3189	4593	0	3238	1453
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1700	3189	4593	0	3238	1453
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			137			164
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	12%	7%	3%	7%	10%
Adj. Flow (vph)	198	729	1409	624	90	164
Shared Lane Traffic (%)						
Lane Group Flow (vph)	198	729	2033	0	90	164
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
AM Peak Hour

2480 Walkley Road
2020 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	24.0	122.0	98.0		28.0	28.0
Total Split (%)	16.0%	81.3%	65.3%		18.7%	18.7%
Maximum Green (s)	17.8	115.8	91.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	2		0	0
Act Effct Green (s)	25.0	127.1	95.9		11.0	11.0
Actuated g/C Ratio	0.17	0.85	0.64		0.07	0.07
v/c Ratio	0.70	0.27	0.68		0.38	0.64
Control Delay	66.9	2.5	17.7		70.5	20.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	66.9	2.5	17.7		70.5	20.4
LOS	E	A	B		E	C
Approach Delay		16.2	17.7		38.1	
Approach LOS		B	B		D	
Queue Length 50th (m)	54.9	12.5	115.2		12.4	0.0
Queue Length 95th (m)	m76.6	30.1	140.4		20.2	20.6
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	282	2701	2985		481	355
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.70	0.27	0.68		0.19	0.46

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 50 (33%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 78.5%

ICU Level of Service D





Analysis Period (min) 15







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

Splits and Phases: 5: Walkley & Lancaster







































Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	686	1264	13	8	22
Future Volume (vph)	13	686	1264	13	8	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1768	3247	3334	0	1520	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1768	3247	3334	0	1520	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	6			6		
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	10%	7%	1%	10%	10%
Adj. Flow (vph)	13	686	1264	13	8	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	686	1277	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 47.3%				ICU Level of Service A		
Analysis Period (min) 15						

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↑	↑↑	↑↑	
Traffic Volume (vph)	711	0	0	1437	0	0
Future Volume (vph)	711	0	0	1437	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	4666	0	1861	3402	1861	0
Flt Permitted						
Satd. Flow (perm)	4666	0	1861	3402	1861	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	1%	5%	1%	1%
Adj. Flow (vph)	711	0	0	1437	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	711	0	0	1437	0	0
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			6.0	4.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 45.3%				ICU Level of Service A		
Analysis Period (min) 15						

1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	990	29	117	650	61	60	287	439	111	246	479
Future Volume (vph)	302	990	29	117	650	61	60	287	439	111	246	479
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.99		0.97	0.99		0.97
Frt		0.996			0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3381	0	1734	3375	0	1768	1808	1551	1734	1808	1567
Flt Permitted	0.251			0.204			0.488			0.425		
Satd. Flow (perm)	452	3381	0	371	3375	0	897	1808	1502	767	1808	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			9				297			403
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	25		5	5		25	15		15	15		15
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 (%)	3%	5%	10%	3%	4%	1%	1%	4%	3%	3%	4%	2%
Adj. Flow (vph)	302	990	29	117	650	61	60	287	439	111	246	479
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	1019	0	117	711	0	60	287	439	111	246	479
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	30.0	53.0		19.0	42.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	27.3%	48.2%		17.3%	38.2%		34.5%	34.5%	34.5%	34.5%	34.5%	34.5%
Maximum Green (s)	23.9	46.9		12.9	35.9		31.8	31.8	31.8	31.8	31.8	31.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		5			20		12	12	12	12	12	12
Act Effct Green (s)	65.3	51.1		53.1	44.4		31.8	31.8	31.8	31.8	31.8	31.8
Actuated g/C Ratio	0.59	0.46		0.48	0.40		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.68	0.65		0.41	0.52		0.23	0.55	0.68	0.50	0.47	0.66
Control Delay	18.9	25.2		15.5	26.9		32.8	37.8	16.9	41.9	35.8	11.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	25.2		15.5	26.9		32.8	37.8	16.9	41.9	35.8	11.1
LOS	B	C		B	C		C	D	B	D	D	B
Approach Delay		23.7			25.3			25.8			22.5	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	27.2	78.5		9.3	53.6		9.0	47.9	23.3	18.2	40.0	11.2
Queue Length 95th (m)	41.0	103.2		16.5	78.1		19.5	72.3	56.8	35.2	62.1	42.7
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	549	1572		353	1367		259	522	645	221	522	725
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.65		0.33	0.52		0.23	0.55	0.68	0.50	0.47	0.66

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 24.2

Intersection LOS: C

Intersection Capacity Utilization 88.5%

ICU Level of Service E












Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
PM Peak Hour

2480 Walkley Road
2020 Background Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1604	54	48	864	85	88
Future Volume (vph)	1604	54	48	864	85	88
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00					0.99
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3450	0	1654	3468	1768	1508
Flt Permitted			0.121		0.950	
Satd. Flow (perm)	3450	0	211	3468	1768	1487
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					50
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		2	2			1
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	1%	8%	3%	1%	6%
Adj. Flow (vph)	1604	54	48	864	85	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1658	0	48	864	85	88
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	97.0		97.0	97.0	33.0	33.0
Total Split (%)	74.6%		74.6%	74.6%	25.4%	25.4%
Maximum Green (s)	91.3		91.3	91.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	2		0	0	1	1
Act Effct Green (s)	104.3		104.3	104.3	14.4	14.4
Actuated g/C Ratio	0.80		0.80	0.80	0.11	0.11
v/c Ratio	0.60		0.28	0.31	0.43	0.42
Control Delay	6.8		14.8	6.9	59.2	30.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	6.8		14.8	6.9	59.2	30.5
LOS	A		B	A	E	C
Approach Delay	6.8			7.3	44.6	
Approach LOS	A			A	D	
Queue Length 50th (m)	55.1		2.2	21.2	19.5	8.5
Queue Length 95th (m)	125.3		13.4	72.5	30.7	20.8
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2769		169	2782	372	352
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.60		0.28	0.31	0.23	0.25

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 29 (22%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 9.4

Intersection LOS: A

Intersection Capacity Utilization 66.8%

ICU Level of Service C

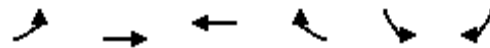
Analysis Period (min) 15

Splits and Phases: 2: Banton & Walkley



3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2020 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	38	1543	897	17	38	4	
Future Volume (vph)	38	1543	897	17	38	4	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)	45.0			0.0	0.0	0.0	
Storage Lanes	1			0	1	0	
Taper Length (m)	20.0				10.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	0.99		1.00		0.99		
Frt			0.997		0.987		
Flt Protected	0.950				0.957		
Satd. Flow (prot)	1768	3435	3453	0	1756	0	
Flt Permitted	0.309				0.957		
Satd. Flow (perm)	572	3435	3453	0	1742	0	
Right Turn on Red				No		No	
Satd. Flow (RTOR)							
Link Speed (k/h)		50	50		50		
Link Distance (m)		230.6	98.4		208.4		
Travel Time (s)		16.6	7.1		15.0		
Confl. Peds. (#/hr)	14			14	12		
Confl. Bikes (#/hr)				1		1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	4%	3%	5%	1%	1%	
Adj. Flow (vph)	38	1543	897	17	38	4	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	38	1543	914	0	42	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		4.7	4.7		4.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		10.0	25.0		2.0		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1		
Detector Template	Left	Thru	Thru		Left		
Leading Detector (m)	18.6	93.0	93.0		18.6		
Trailing Detector (m)	0.0	0.0	0.0		0.0		
Detector 1 Position(m)	0.0	0.0	0.0		0.0		
Detector 1 Size(m)	18.6	5.5	5.5		18.6		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		0.0		
Detector 2 Position(m)		87.5	87.5				
Detector 2 Size(m)		5.5	5.5				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		4		8
Permitted Phases	2						
Detector Phase	2	2	6		4		

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2020 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	23.8	23.8	23.8		31.0		31.0
Total Split (s)	34.0	34.0	34.0		31.0		31.0
Total Split (%)	52.3%	52.3%	52.3%		47.7%		48%
Maximum Green (s)	28.2	28.2	28.2		27.0		27.0
Yellow Time (s)	3.3	3.3	3.3		3.0		3.0
All-Red Time (s)	2.5	2.5	2.5		1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.8	5.8	5.8		4.0		
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		None		None
Walk Time (s)	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0		20.0		20.0
Pedestrian Calls (#/hr)	0	0	12		0		12
Act Effct Green (s)	53.7	53.7	53.7		13.4		
Actuated g/C Ratio	0.83	0.83	0.83		0.21		
v/c Ratio	0.08	0.54	0.32		0.12		
Control Delay	5.9	8.5	4.6		19.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	5.9	8.5	4.6		19.1		
LOS	A	A	A		B		
Approach Delay		8.4	4.6		19.1		
Approach LOS		A	A		B		
Queue Length 50th (m)	0.0	0.0	0.1		4.1		
Queue Length 95th (m)	m6.7	#147.0	73.9		7.2		
Internal Link Dist (m)		206.6	74.4		184.4		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	472	2837	2852		729		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.08	0.54	0.32		0.06		

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 65

Offset: 41 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 7.2

Intersection LOS: A

Intersection Capacity Utilization 61.5%

ICU Level of Service B

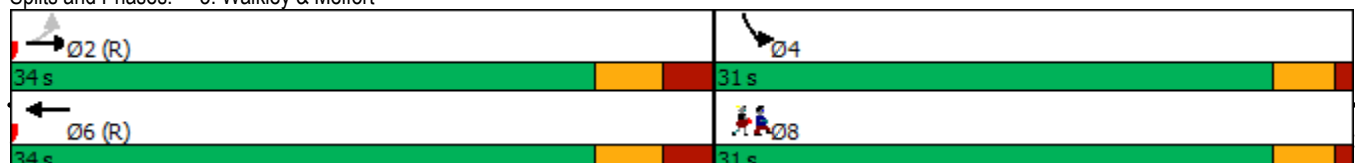
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

























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

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	87	1291	229	359	644	77	102	417	105	141	267	504
Future Volume (vph)	87	1291	229	359	644	77	102	417	105	141	267	504
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	0.99		0.98	0.99		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1609	3468	1390	3013	3468	1567	3179	3338	1427	3238	3247	1427
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1604	3468	1368	3010	3468	1535	3158	3338	1396	3212	3247	1402
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			154			207			207
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5		2	2		5	4		6	6		4
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 (%)	11%	3%	15%	15%	3%	2%	9%	7%	12%	7%	10%	12%
Adj. Flow (vph)	87	1291	229	359	644	77	102	417	105	141	267	504
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	1291	229	359	644	77	102	417	105	141	267	504
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2020 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	12.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	12.0	58.0	58.0	20.0	66.0	66.0	17.0	35.0	35.0	17.0	35.0	35.0
Total Split (%)	9.2%	44.6%	44.6%	15.4%	50.8%	50.8%	13.1%	26.9%	26.9%	13.1%	26.9%	26.9%
Maximum Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	9.4	27.6	27.6	9.4	27.6	27.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		2	2		5	5		6	6		4	4
Act Effct Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	8.7	27.9	27.9	9.1	28.3	28.3
Actuated g/C Ratio	0.04	0.39	0.39	0.10	0.45	0.45	0.07	0.21	0.21	0.07	0.22	0.22
v/c Ratio	1.26	0.95	0.35	1.14	0.41	0.10	0.48	0.58	0.23	0.62	0.38	1.08
Control Delay	231.9	47.0	6.7	160.4	16.2	0.2	66.1	49.7	1.1	71.3	45.4	93.4
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	231.9	47.0	6.7	160.4	16.2	0.2	66.1	49.7	1.1	71.3	45.4	93.4
LOS	F	D	A	F	B	A	E	D	A	E	D	F
Approach Delay		51.3			63.0			44.2			75.9	
Approach LOS		D			E			D			E	
Queue Length 50th (m)	~25.7	155.6	2.1	~52.1	24.7	0.0	12.1	47.0	0.0	16.9	28.6	~93.3
Queue Length 95th (m)	#56.0	#190.8	28.3	#81.3	32.5	0.0	20.6	62.8	0.0	27.1	40.7	#155.0
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	69	1352	660	315	1565	777	229	716	462	234	707	467
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	0.95	0.35	1.14	0.41	0.10	0.45	0.58	0.23	0.60	0.38	1.08

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.26

Intersection Signal Delay: 58.6

Intersection LOS: E

Intersection Capacity Utilization 93.8%

ICU Level of Service F

Analysis Period (min) 15

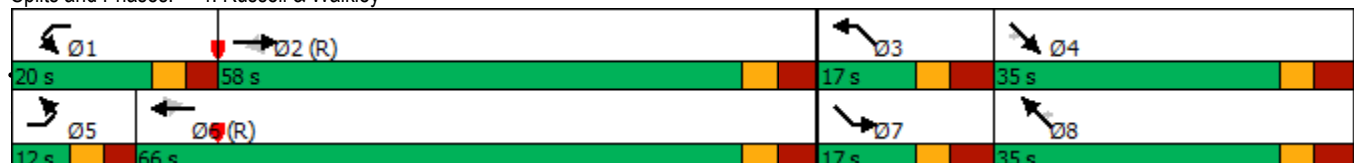
~ Volume exceeds capacity, queue is theoretically infinite.

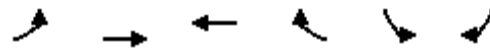
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Russell & Walkley





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	1743	949	159	469	199
Future Volume (vph)	122	1743	949	159	469	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		1.00			0.99
Frt			0.978			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1751	3402	4623	0	3397	1551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1748	3402	4623	0	3397	1530
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			41			199
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	3			3		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	8%	9%	2%	3%
Adj. Flow (vph)	122	1743	949	159	469	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	1743	1108	0	469	199
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
2020 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	33.2		27.7	27.7
Total Split (s)	22.0	102.0	80.0		28.0	28.0
Total Split (%)	16.9%	78.5%	61.5%		21.5%	21.5%
Maximum Green (s)	15.8	95.8	73.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	3		1	1
Act Effct Green (s)	13.4	96.9	77.3		21.2	21.2
Actuated g/C Ratio	0.10	0.75	0.59		0.16	0.16
v/c Ratio	0.68	0.69	0.40		0.85	0.48
Control Delay	59.9	7.8	14.4		67.8	10.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	59.9	7.8	14.4		67.8	10.3
LOS	E	A	B		E	B
Approach Delay		11.2	14.4		50.7	
Approach LOS		B	B		D	
Queue Length 50th (m)	28.7	56.2	48.4		55.4	0.0
Queue Length 95th (m)	m29.6	m69.0	59.4		#73.9	19.1
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	212	2536	2767		582	427
Starvation Cap Reductn	0	11	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.58	0.69	0.40		0.81	0.47

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 22 (17%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 19.4

Intersection LOS: B

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

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











Queue shown is maximum after two cycles.







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

Splits and Phases: 5: Walkley & Lancaster

























Dynamic Traffic Report

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	1506	948	9	7	17
Future Volume (vph)	36	1506	948	9	7	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1768	3435	3462	0	1659	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1768	3435	3462	0	1659	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	3%	10%	1%	1%
Adj. Flow (vph)	36	1506	948	9	7	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1506	957	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	53.9%			ICU Level of Service A		
Analysis Period (min)	15					

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↓		↓	↑↑	↓	
Traffic Volume (vph)	1582	0	0	944	0	0
Future Volume (vph)	1582	0	0	944	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	4888	0	1861	3402	1861	0
Flt Permitted						
Satd. Flow (perm)	4888	0	1861	3402	1861	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	5%	1%	1%
Adj. Flow (vph)	1582	0	0	944	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1582	0	0	944	0	0
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			6.0	4.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 35.6%				ICU Level of Service A		
Analysis Period (min) 15						













1: St. Laurent & Walkley
AM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	575	46	420	898	50	19	256	119	59	263	289
Future Volume (vph)	289	575	46	420	898	50	19	256	119	59	263	289
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99		0.97	0.99		0.97
Frt		0.989			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3330	0	1734	3260	0	1701	1825	1453	1639	1808	1537
Flt Permitted	0.221			0.264			0.453			0.464		
Satd. Flow (perm)	400	3330	0	479	3260	0	802	1825	1415	793	1808	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5				139			289
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	14		8	8		14	13		10	10		13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	3%	3%	8%	15%	5%	3%	10%	9%	4%	4%
Adj. Flow (vph)	289	575	46	420	898	50	19	256	119	59	263	289
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	621	0	420	948	0	19	256	119	59	263	289
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4
Switch Phase												

1: St. Laurent & Walkley
AM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	28.0	37.0		42.0	51.0		41.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	23.3%	30.8%		35.0%	42.5%		34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
Maximum Green (s)	21.9	30.9		35.9	44.9		34.8	34.8	34.8	34.8	34.8	34.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		8			12		10	10	10	12	12	12
Act Effct Green (s)	57.5	41.5		72.6	50.8		34.8	34.8	34.8	34.8	34.8	34.8
Actuated g/C Ratio	0.48	0.35		0.60	0.42		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.78	0.54		0.76	0.69		0.08	0.48	0.23	0.26	0.50	0.45
Control Delay	34.9	34.8		18.0	27.9		32.4	38.9	4.7	36.5	39.4	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	34.8		18.0	27.9		32.4	38.9	4.7	36.5	39.4	6.2
LOS	C	C		B	C		C	D	A	D	D	A
Approach Delay		34.8			24.9			28.3			23.4	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	27.9	56.0		45.0	85.5		3.0	45.9	0.0	9.8	47.4	0.0
Queue Length 95th (m)	58.4	82.5		19.8	117.6		8.6	69.1	9.0	20.7	71.2	18.3
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	454	1156		666	1381		232	529	509	229	524	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.54		0.63	0.69		0.08	0.48	0.23	0.26	0.50	0.45

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 27.8

Intersection LOS: C

Intersection Capacity Utilization 94.5%

ICU Level of Service F












Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
AM Peak Hour

2480 Walkley Road
2025 Background Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	688	59	51	1438	16	23
Future Volume (vph)	688	59	51	1438	16	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		1.00	
Frt	0.988					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3237	0	1488	3370	1429	1065
Flt Permitted			0.368		0.950	
Satd. Flow (perm)	3237	0	574	3370	1427	1065
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	16					23
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		4	4		1	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	20%	6%	25%	50%
Adj. Flow (vph)	688	59	51	1438	16	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	747	0	51	1438	16	23
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	87.0		87.0	87.0	33.0	33.0
Total Split (%)	72.5%		72.5%	72.5%	27.5%	27.5%
Maximum Green (s)	81.3		81.3	81.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	4		0	0	1	1
Act Effct Green (s)	103.8		103.8	103.8	13.4	13.4
Actuated g/C Ratio	0.86		0.86	0.86	0.11	0.11
v/c Ratio	0.27		0.10	0.49	0.10	0.17
Control Delay	6.2		4.4	4.9	45.8	18.3
Queue Delay	0.0		0.0	0.1	0.0	0.0
Total Delay	6.2		4.4	5.1	45.8	18.3
LOS	A		A	A	D	B
Approach Delay	6.2			5.1	29.6	
Approach LOS	A			A	C	
Queue Length 50th (m)	61.1		1.7	39.3	3.3	0.0
Queue Length 95th (m)	88.0		8.0	101.0	8.2	6.3
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2802		496	2915	326	260
Starvation Cap Reductn	0		0	485	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.27		0.10	0.59	0.05	0.09

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 48 (40%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 5.9

Intersection LOS: A

Intersection Capacity Utilization 59.7%

ICU Level of Service B

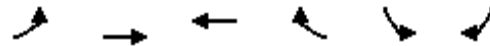
Analysis Period (min) 15

Splits and Phases: 2: Banton & Walkley



3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	30	711	1455	22	35	2	
Future Volume (vph)	30	711	1455	22	35	2	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)	45.0			0.0	0.0	0.0	
Storage Lanes	1			0	1	0	
Taper Length (m)	20.0				10.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor			1.00		0.99		
Frt			0.998		0.993		
Flt Protected	0.950				0.955		
Satd. Flow (prot)	1768	3277	3356	0	1765	0	
Flt Permitted	0.155				0.955		
Satd. Flow (perm)	289	3277	3356	0	1755	0	
Right Turn on Red				No		No	
Satd. Flow (RTOR)							
Link Speed (k/h)		50	50		50		
Link Distance (m)		230.6	98.4		208.4		
Travel Time (s)		16.6	7.1		15.0		
Confl. Peds. (#/hr)	15			15	7		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	9%	6%	15%	1%	1%	
Adj. Flow (vph)	30	711	1455	22	35	2	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	30	711	1477	0	37	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		4.7	4.7		4.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		10.0	25.0		2.0		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1		
Detector Template	Left	Thru	Thru		Left		
Leading Detector (m)	18.6	93.0	93.0		18.6		
Trailing Detector (m)	0.0	0.0	0.0		0.0		
Detector 1 Position(m)	0.0	0.0	0.0		0.0		
Detector 1 Size(m)	18.6	5.5	5.5		18.6		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		0.0		
Detector 2 Position(m)		87.5	87.5				
Detector 2 Size(m)		5.5	5.5				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		4		8
Permitted Phases	2						
Detector Phase	2	2	6		4		
Switch Phase							

3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Minimum Initial (s)	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	23.8	23.8	23.8		31.0		31.0
Total Split (s)	44.0	44.0	44.0		31.0		31.0
Total Split (%)	58.7%	58.7%	58.7%		41.3%		41%
Maximum Green (s)	38.2	38.2	38.2		27.0		27.0
Yellow Time (s)	3.3	3.3	3.3		3.0		3.0
All-Red Time (s)	2.5	2.5	2.5		1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.8	5.8	5.8		4.0		
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		None		None
Walk Time (s)	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0		20.0		20.0
Pedestrian Calls (#/hr)	0	0	12		0		10
Act Effct Green (s)	63.7	63.7	63.7		13.4		
Actuated g/C Ratio	0.85	0.85	0.85		0.18		
v/c Ratio	0.12	0.26	0.52		0.12		
Control Delay	7.8	4.4	8.3		23.9		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	7.8	4.4	8.3		23.9		
LOS	A	A	A		C		
Approach Delay		4.5	8.3		23.9		
Approach LOS		A	A		C		
Queue Length 50th (m)	0.0	0.0	0.0		4.3		
Queue Length 95th (m)	7.0	40.0	204.4		8.2		
Internal Link Dist (m)		206.6	74.4		184.4		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	245	2782	2849		635		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.12	0.26	0.52		0.06		

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 36 (48%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 7.3

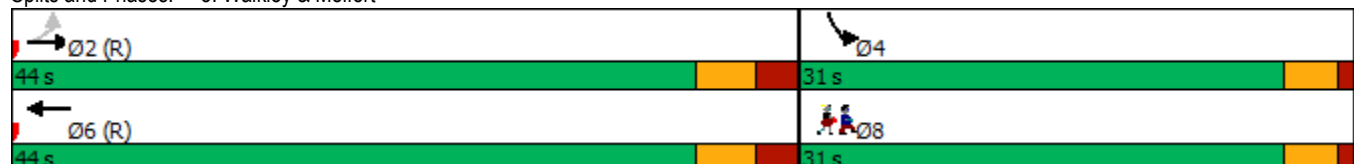
Intersection LOS: A

Intersection Capacity Utilization 59.7%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	76	491	130	376	1229	65	56	217	131	210	417	505
Future Volume (vph)	76	491	130	376	1229	65	56	217	131	210	417	505
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98	1.00		0.98	0.99		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1374	3307	1332	3013	3435	1522	3269	3189	1390	3094	3218	1332
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1372	3307	1332	3013	3435	1490	3264	3189	1366	3075	3218	1312
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180			134			180			505
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5					5	1		3	3		1
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 (%)	30%	8%	20%	15%	4%	5%	6%	12%	15%	12%	11%	20%
Adj. Flow (vph)	76	491	130	376	1229	65	56	217	131	210	417	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	491	130	376	1229	65	56	217	131	210	417	505
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	17.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	24.4	45.0	45.0	45.0	65.6	65.6	20.0	40.0	40.0	20.0	40.0	40.0
Total Split (%)	16.3%	30.0%	30.0%	30.0%	43.7%	43.7%	13.3%	26.7%	26.7%	13.3%	26.7%	26.7%
Maximum Green (s)	18.0	37.7	37.7	38.6	58.3	58.3	12.4	32.6	32.6	12.4	32.6	32.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		5	5		3	3		1	1
Act Effct Green (s)	13.3	59.3	59.3	24.1	70.1	70.1	8.0	25.7	25.7	12.3	32.6	32.6
Actuated g/C Ratio	0.09	0.40	0.40	0.16	0.47	0.47	0.05	0.17	0.17	0.08	0.22	0.22
v/c Ratio	0.63	0.38	0.20	0.78	0.77	0.08	0.32	0.40	0.34	0.83	0.60	0.74
Control Delay	82.6	35.7	5.4	86.5	24.4	0.4	72.9	56.0	4.1	93.8	56.4	11.2
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	82.6	35.7	5.4	86.5	24.4	0.4	72.9	56.0	4.1	93.8	56.4	11.2
LOS	F	D	A	F	C	A	E	E	A	F	E	B
Approach Delay		35.1			37.4			41.5			43.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	20.4	51.2	0.0	46.4	151.9	0.0	7.7	27.4	0.0	29.7	54.3	0.0
Queue Length 95th (m)	30.8	72.4	14.4	57.2	#207.6	m0.5	14.4	38.0	4.6	#48.6	69.8	33.8
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	164	1307	635	775	1605	767	270	693	437	255	727	687
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.38	0.20	0.49	0.77	0.08	0.21	0.31	0.30	0.82	0.57	0.74

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 102 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 39.1

Intersection LOS: D

Intersection Capacity Utilization 80.9%

ICU Level of Service D

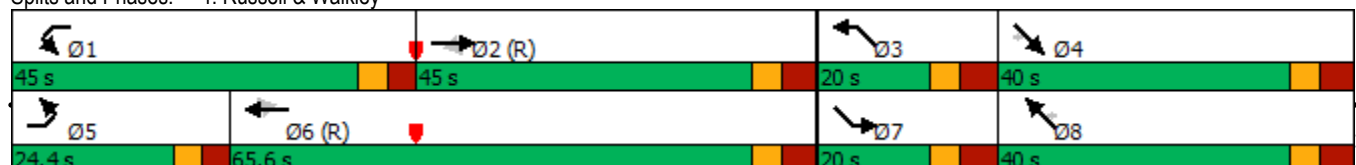
Analysis Period (min) 15

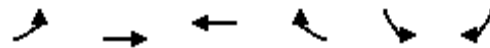
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Russell & Walkley

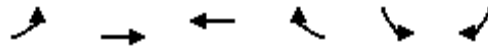




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	198	766	1480	624	90	164
Future Volume (vph)	198	766	1480	624	90	164
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		0.99			
Frt			0.956			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1701	3189	4602	0	3238	1453
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1700	3189	4602	0	3238	1453
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			130			164
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	12%	7%	3%	7%	10%
Adj. Flow (vph)	198	766	1480	624	90	164
Shared Lane Traffic (%)						
Lane Group Flow (vph)	198	766	2104	0	90	164
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
AM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	24.0	122.0	98.0		28.0	28.0
Total Split (%)	16.0%	81.3%	65.3%		18.7%	18.7%
Maximum Green (s)	17.8	115.8	91.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	2		0	0
Act Effct Green (s)	25.0	127.1	95.9		11.0	11.0
Actuated g/C Ratio	0.17	0.85	0.64		0.07	0.07
v/c Ratio	0.70	0.28	0.70		0.38	0.64
Control Delay	66.1	2.5	18.4		70.5	20.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	66.1	2.5	18.4		70.5	20.4
LOS	E	A	B		E	C
Approach Delay		15.6	18.4		38.1	
Approach LOS		B	B		D	
Queue Length 50th (m)	54.9	13.2	123.3		12.4	0.0
Queue Length 95th (m)	m75.8	31.1	149.9		20.2	20.6
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	282	2701	2989		481	355
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.70	0.28	0.70		0.19	0.46

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 50 (33%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 19.1

Intersection LOS: B

Intersection Capacity Utilization 80.0%

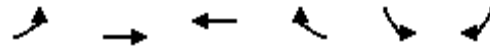
ICU Level of Service D





Analysis Period (min) 15







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

Splits and Phases: 5: Walkley & Lancaster



























Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	721	1328	13	8	22
Future Volume (vph)	13	721	1328	13	8	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1768	3247	3337	0	1520	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1768	3247	3337	0	1520	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	6			6		
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	10%	7%	1%	10%	10%
Adj. Flow (vph)	13	721	1328	13	8	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	721	1341	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.2%			ICU Level of Service A		
Analysis Period (min)	15					

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑		↵	↑↑	↵	
Traffic Volume (vph)	746	0	0	1508	0	0
Future Volume (vph)	746	0	0	1508	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	4666	0	1861	3402	1861	0
Flt Permitted						
Satd. Flow (perm)	4666	0	1861	3402	1861	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	1%	5%	1%	1%
Adj. Flow (vph)	746	0	0	1508	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	746	0	0	1508	0	0
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			6.0	4.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 47.3%	ICU Level of Service A					
Analysis Period (min) 15						













1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	352	1041	30	123	683	64	63	301	461	117	258	523
Future Volume (vph)	352	1041	30	123	683	64	63	301	461	117	258	523
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.99		0.97	0.99		0.97
Frt		0.996			0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3381	0	1734	3375	0	1768	1808	1551	1734	1808	1567
Flt Permitted	0.223			0.191			0.470			0.404		
Satd. Flow (perm)	402	3381	0	348	3375	0	864	1808	1502	730	1808	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			9				292			397
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	25		5	5		25	15		15	15		15
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 (%)	3%	5%	10%	3%	4%	1%	1%	4%	3%	3%	4%	2%
Adj. Flow (vph)	352	1041	30	123	683	64	63	301	461	117	258	523
Shared Lane Traffic (%)												
Lane Group Flow (vph)	352	1071	0	123	747	0	63	301	461	117	258	523
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4

1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	30.0	53.0		19.0	42.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	27.3%	48.2%		17.3%	38.2%		34.5%	34.5%	34.5%	34.5%	34.5%	34.5%
Maximum Green (s)	23.9	46.9		12.9	35.9		31.8	31.8	31.8	31.8	31.8	31.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		0			0		0	0	0	0	0	0
Act Effct Green (s)	65.7	50.9		50.9	42.0		31.8	31.8	31.8	31.8	31.8	31.8
Actuated g/C Ratio	0.60	0.46		0.46	0.38		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.77	0.68		0.45	0.58		0.25	0.58	0.72	0.55	0.49	0.73
Control Delay	25.1	26.2		17.4	29.7		33.4	38.6	19.6	44.8	36.3	15.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	26.2		17.4	29.7		33.4	38.6	19.6	44.8	36.3	15.2
LOS	C	C		B	C		C	D	B	D	D	B
Approach Delay		26.0			28.0			27.6			25.1	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	32.8	84.8		9.8	59.5		9.5	50.7	29.3	19.6	42.3	20.0
Queue Length 95th (m)	57.0	111.1		17.1	85.1		20.3	76.4	65.5	37.9	64.9	58.5
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	530	1567		336	1294		249	522	641	211	522	720
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.68		0.37	0.58		0.25	0.58	0.72	0.55	0.49	0.73

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.5

Intersection LOS: C

Intersection Capacity Utilization 92.5%

ICU Level of Service F












Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
PM Peak Hour

2480 Walkley Road
2025 Background Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1685	54	48	908	85	88
Future Volume (vph)	1685	54	48	908	85	88
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00					0.99
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3450	0	1654	3468	1768	1508
Flt Permitted			0.109		0.950	
Satd. Flow (perm)	3450	0	190	3468	1768	1487
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					43
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		2	2			1
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	1%	8%	3%	1%	6%
Adj. Flow (vph)	1685	54	48	908	85	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1739	0	48	908	85	88
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	97.0		97.0	97.0	33.0	33.0
Total Split (%)	74.6%		74.6%	74.6%	25.4%	25.4%
Maximum Green (s)	91.3		91.3	91.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	2		0	0	1	1
Act Effct Green (s)	104.3		104.3	104.3	14.4	14.4
Actuated g/C Ratio	0.80		0.80	0.80	0.11	0.11
v/c Ratio	0.63		0.32	0.33	0.43	0.44
Control Delay	7.2		17.5	7.0	59.2	34.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	7.2		17.5	7.0	59.2	34.5
LOS	A		B	A	E	C
Approach Delay	7.2			7.5	46.6	
Approach LOS	A			A	D	
Queue Length 50th (m)	60.4		2.3	22.3	19.5	10.2
Queue Length 95th (m)	137.7		24.4	76.9	30.7	22.3
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2769		152	2782	372	347
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.63		0.32	0.33	0.23	0.25

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 29 (22%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 9.7

Intersection LOS: A

Intersection Capacity Utilization 69.2%

ICU Level of Service C

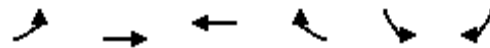
Analysis Period (min) 15

Splits and Phases: 2: Banton & Walkley



3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	38	1622	942	17	38	4	
Future Volume (vph)	38	1622	942	17	38	4	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)	45.0			0.0	0.0	0.0	
Storage Lanes	1			0	1	0	
Taper Length (m)	20.0				10.0		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	0.99		1.00		0.99		
Frt			0.997		0.987		
Flt Protected	0.950				0.957		
Satd. Flow (prot)	1768	3435	3454	0	1756	0	
Flt Permitted	0.293				0.957		
Satd. Flow (perm)	543	3435	3454	0	1742	0	
Right Turn on Red				No		No	
Satd. Flow (RTOR)							
Link Speed (k/h)		50	50		50		
Link Distance (m)		230.6	98.4		208.4		
Travel Time (s)		16.6	7.1		15.0		
Confl. Peds. (#/hr)	14			14	12		
Confl. Bikes (#/hr)				1		1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Heavy Vehicles (%)	1%	4%	3%	5%	1%	1%	
Adj. Flow (vph)	38	1622	942	17	38	4	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	38	1622	959	0	42	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		4.7	4.7		4.0		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		10.0	25.0		2.0		
Two way Left Turn Lane							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1		
Detector Template	Left	Thru	Thru		Left		
Leading Detector (m)	18.6	93.0	93.0		18.6		
Trailing Detector (m)	0.0	0.0	0.0		0.0		
Detector 1 Position(m)	0.0	0.0	0.0		0.0		
Detector 1 Size(m)	18.6	5.5	5.5		18.6		
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		0.0		
Detector 2 Position(m)		87.5	87.5				
Detector 2 Size(m)		5.5	5.5				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Perm	NA	NA		Prot		
Protected Phases		2	6		4		8
Permitted Phases	2						
Detector Phase	2	2	6		4		

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø8
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0		10.0		10.0
Minimum Split (s)	23.8	23.8	23.8		31.0		31.0
Total Split (s)	34.0	34.0	34.0		31.0		31.0
Total Split (%)	52.3%	52.3%	52.3%		47.7%		48%
Maximum Green (s)	28.2	28.2	28.2		27.0		27.0
Yellow Time (s)	3.3	3.3	3.3		3.0		3.0
All-Red Time (s)	2.5	2.5	2.5		1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		
Total Lost Time (s)	5.8	5.8	5.8		4.0		
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		None		None
Walk Time (s)	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0		20.0		20.0
Pedestrian Calls (#/hr)	0	0	12		0		10
Act Effct Green (s)	53.7	53.7	53.7		13.4		
Actuated g/C Ratio	0.83	0.83	0.83		0.21		
v/c Ratio	0.08	0.57	0.34		0.12		
Control Delay	5.9	9.1	4.8		19.1		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	5.9	9.1	4.8		19.1		
LOS	A	A	A		B		
Approach Delay		9.0	4.8		19.1		
Approach LOS		A	A		B		
Queue Length 50th (m)	0.0	0.0	0.1		4.1		
Queue Length 95th (m)	m6.6	#167.9	78.5		7.2		
Internal Link Dist (m)		206.6	74.4		184.4		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	448	2837	2852		729		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.08	0.57	0.34		0.06		

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 65

Offset: 41 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 63.8%

ICU Level of Service B

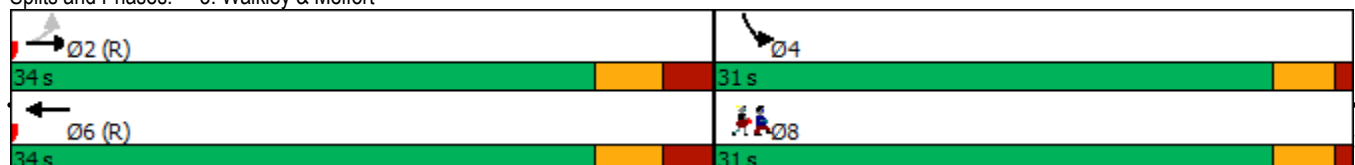
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

























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

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	91	1357	241	377	677	80	107	438	110	148	281	529
Future Volume (vph)	91	1357	241	377	677	80	107	438	110	148	281	529
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	0.99		0.98	0.99		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1609	3468	1390	3013	3468	1567	3179	3338	1427	3238	3247	1427
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1604	3468	1368	3011	3468	1535	3158	3338	1396	3213	3247	1402
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			154			207			207
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5		2	2		5	4		6	6		4
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 (%)	11%	3%	15%	15%	3%	2%	9%	7%	12%	7%	10%	12%
Adj. Flow (vph)	91	1357	241	377	677	80	107	438	110	148	281	529
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	1357	241	377	677	80	107	438	110	148	281	529
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2025 Background Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	12.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	12.0	58.0	58.0	20.0	66.0	66.0	17.0	35.0	35.0	17.0	35.0	35.0
Total Split (%)	9.2%	44.6%	44.6%	15.4%	50.8%	50.8%	13.1%	26.9%	26.9%	13.1%	26.9%	26.9%
Maximum Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	9.4	27.6	27.6	9.4	27.6	27.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		2	2		5	5		6	6		4	4
Act Effct Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	8.7	27.9	27.9	9.1	28.3	28.3
Actuated g/C Ratio	0.04	0.39	0.39	0.10	0.45	0.45	0.07	0.21	0.21	0.07	0.22	0.22
v/c Ratio	1.32	1.00	0.37	1.20	0.43	0.10	0.50	0.61	0.24	0.65	0.40	1.14
Control Delay	250.5	57.0	7.1	178.0	16.2	0.2	66.8	50.5	1.2	72.8	45.8	112.4
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	250.5	57.0	7.1	178.0	16.2	0.2	66.8	50.5	1.2	72.8	45.8	112.4
LOS	F	E	A	F	B	A	E	D	A	E	D	F
Approach Delay		60.3			68.9			44.9			86.7	
Approach LOS		E			E			D			F	
Queue Length 50th (m)	~28.0	~169.5	3.5	~57.0	25.8	0.0	12.7	49.7	0.0	17.8	30.3	~105.7
Queue Length 95th (m)	#59.9	#207.9	30.2	#86.6	33.5	0.0	21.5	66.0	0.0	28.1	42.8	#168.4
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	69	1352	660	315	1565	777	229	715	462	234	705	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	1.00	0.37	1.20	0.43	0.10	0.47	0.61	0.24	0.63	0.40	1.14

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 65.9

Intersection LOS: E

Intersection Capacity Utilization 97.4%

ICU Level of Service F

Analysis Period (min) 15

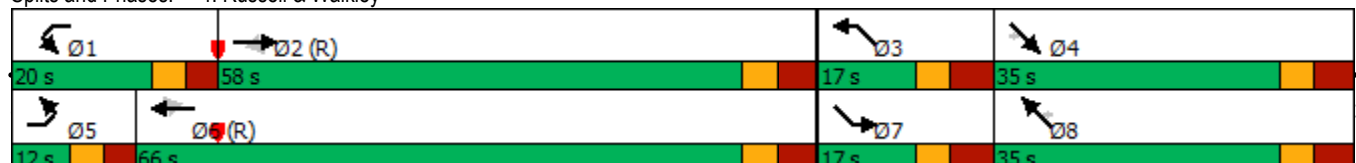
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Russell & Walkley



5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	1832	997	159	469	199
Future Volume (vph)	122	1832	997	159	469	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		1.00			0.99
Frt			0.979			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1751	3402	4629	0	3397	1551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1748	3402	4629	0	3397	1530
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			39			199
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	3			3		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	8%	9%	2%	3%
Adj. Flow (vph)	122	1832	997	159	469	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	1832	1156	0	469	199
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
2025 Background Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	22.0	102.0	80.0		28.0	28.0
Total Split (%)	16.9%	78.5%	61.5%		21.5%	21.5%
Maximum Green (s)	15.8	95.8	73.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		3	0		1	1
Act Effct Green (s)	13.4	96.9	77.3		21.2	21.2
Actuated g/C Ratio	0.10	0.75	0.59		0.16	0.16
v/c Ratio	0.68	0.72	0.42		0.85	0.48
Control Delay	55.3	9.3	14.6		67.8	10.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	55.3	9.3	14.6		67.8	10.3
LOS	E	A	B		E	B
Approach Delay		12.2	14.6		50.7	
Approach LOS		B	B		D	
Queue Length 50th (m)	28.7	74.3	51.3		55.4	0.0
Queue Length 95th (m)	m28.6	m69.3	62.8		#73.9	19.1
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	212	2536	2769		582	427
Starvation Cap Reductn	0	11	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.58	0.73	0.42		0.81	0.47

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 22 (17%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

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











Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Walkley & Lancaster



































Dynamic Traffic Report

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	1582	996	9	7	17
Future Volume (vph)	36	1582	996	9	7	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1768	3435	3462	0	1659	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1768	3435	3462	0	1659	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	3%	10%	1%	1%
Adj. Flow (vph)	36	1582	996	9	7	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1582	1005	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	56.2%			ICU Level of Service B		
Analysis Period (min)	15					

7: East Access & Walkley
PM Peak Hour

2480 Walkley Road
2025 Background Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1661	0	0	990	0	0
Future Volume (vph)	1661	0	0	990	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	4888	0	1861	3402	1861	0
Flt Permitted						
Satd. Flow (perm)	4888	0	1861	3402	1861	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	5%	1%	1%
Adj. Flow (vph)	1661	0	0	990	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1661	0	0	990	0	0
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			6.0	4.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 37.2%	ICU Level of Service A					
Analysis Period (min) 15						

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	558	44	400	858	47	18	244	113	62	250	254
Future Volume (vph)	264	558	44	400	858	47	18	244	113	62	250	254
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		0.99		0.97	0.99		0.97
Frt		0.989			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3330	0	1734	3260	0	1701	1825	1453	1639	1808	1537
Flt Permitted	0.243			0.284			0.473			0.482		
Satd. Flow (perm)	439	3330	0	516	3260	0	837	1825	1415	824	1808	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5				139			254
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	14		8	8		14	13		10	10		13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	3%	3%	8%	15%	5%	3%	10%	9%	4%	4%
Adj. Flow (vph)	264	558	44	400	858	47	18	244	113	62	250	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	602	0	400	905	0	18	244	113	62	250	254
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	28.0	37.0		42.0	51.0		41.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	23.3%	30.8%		35.0%	42.5%		34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
Maximum Green (s)	21.9	30.9		35.9	44.9		34.8	34.8	34.8	34.8	34.8	34.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		8			12		10	10	10	12	12	12
Act Effct Green (s)	58.3	43.5		72.5	52.0		34.8	34.8	34.8	34.8	34.8	34.8
Actuated g/C Ratio	0.49	0.36		0.60	0.43		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.71	0.50		0.73	0.64		0.07	0.46	0.22	0.26	0.48	0.42
Control Delay	27.1	32.6		15.5	24.9		32.2	38.4	4.0	36.4	38.8	6.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	32.6		15.5	24.9		32.2	38.4	4.0	36.4	38.8	6.1
LOS	C	C		B	C		C	D	A	D	D	A
Approach Delay		30.9			22.0			27.7			23.9	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	24.9	52.5		41.6	77.8		2.8	43.4	0.0	10.3	44.7	0.0
Queue Length 95th (m)	45.8	77.2		7.2	110.2		8.2	66.0	7.8	21.6	67.6	17.2
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	473	1210		677	1415		242	529	509	238	524	612
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.50		0.59	0.64		0.07	0.46	0.22	0.26	0.48	0.42

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 25.5

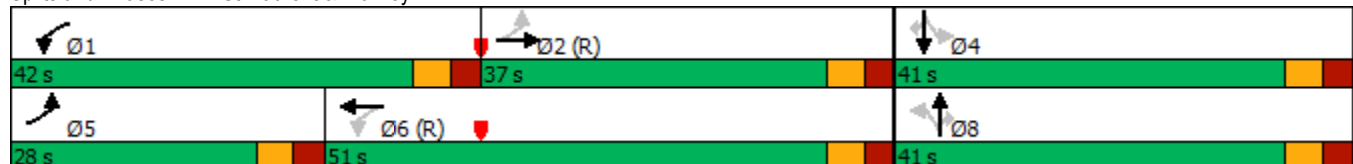
Intersection LOS: C












Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	684	47	27	1375	11	17
Future Volume (vph)	684	47	27	1375	11	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		1.00	
Frt	0.990					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3243	0	1488	3370	1429	1065
Flt Permitted			0.374		0.950	
Satd. Flow (perm)	3243	0	584	3370	1427	1065
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	13					17
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		4	4		1	
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	20%	6%	25%	50%
Adj. Flow (vph)	684	47	27	1375	11	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	731	0	27	1375	11	17
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	87.0		87.0	87.0	33.0	33.0
Total Split (%)	72.5%		72.5%	72.5%	27.5%	27.5%
Maximum Green (s)	81.3		81.3	81.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	4		0	0	1	1
Act Effct Green (s)	103.8		103.8	103.8	13.4	13.4
Actuated g/C Ratio	0.86		0.86	0.86	0.11	0.11
v/c Ratio	0.26		0.05	0.47	0.07	0.13
Control Delay	7.1		0.3	0.7	44.6	19.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	7.1		0.3	0.7	44.6	19.4
LOS	A		A	A	D	B
Approach Delay	7.1			0.7	29.3	
Approach LOS	A			A	C	
Queue Length 50th (m)	58.9		0.1	0.7	2.3	0.0
Queue Length 95th (m)	85.9		m0.1	1.7	6.4	5.6
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2807		505	2915	326	256
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.26		0.05	0.47	0.03	0.07

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 48 (40%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 3.3

Intersection LOS: A

Intersection Capacity Utilization 57.9%

ICU Level of Service B

Analysis Period (min) 15




















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

Splits and Phases: 2: Banton & Walkley















3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	664	35	129	1357	22	10	0	25	35	0	2
Future Volume (vph)	30	664	35	129	1357	22	10	0	25	35	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99	0.99		1.00	
Frt		0.992			0.998				0.850		0.993	
Flt Protected	0.950			0.950				0.950			0.955	
Satd. Flow (prot)	1768	3257	0	1701	3355	0	0	1701	1522	0	1763	0
Flt Permitted	0.177			0.386				0.733			0.731	
Satd. Flow (perm)	329	3257	0	691	3355	0	0	1301	1502	0	1350	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		10			3				25			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	15					15	7					7
Confl. Bikes (#/hr)									1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	9%	5%	5%	6%	15%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	30	664	35	129	1357	22	10	0	25	35	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	699	0	129	1379	0	0	10	25	0	37	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			8	
Permitted Phases	2			6			8		8	8		
Detector Phase	2	2		6	6		8	8	8	8	8	

3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	23.8	23.8		23.8	23.8		32.6	32.6	32.6	32.6	32.6	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	81.2	81.2		81.2	81.2		27.4	27.4	27.4	27.4	27.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.8	5.8		5.8	5.8			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		20.0	20.0	20.0	20.0	20.0	
Pedestrian Calls (#/hr)	0	0		12	12		10	10	10	10	10	
Act Effct Green (s)	99.5	99.5		99.5	99.5			13.4	13.4		13.4	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.11	0.11		0.11	
v/c Ratio	0.11	0.26		0.23	0.50			0.07	0.13		0.25	
Control Delay	1.8	0.9		5.2	5.4			44.7	16.3		50.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	1.8	0.9		5.2	5.4			44.7	16.3		50.1	
LOS	A	A		A	A			D	B		D	
Approach Delay		0.9			5.4			24.4			50.1	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.3	3.1		4.8	37.0			2.1	0.0		7.7	
Queue Length 95th (m)	1.0	5.9		18.8	94.5			5.9	6.6		15.0	
Internal Link Dist (m)		206.6			74.4			112.9			184.4	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	272	2701		572	2782			297	362		308	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.11	0.26		0.23	0.50			0.03	0.07		0.12	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 31 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 5.0

Intersection LOS: A

Intersection Capacity Utilization 74.7%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	73	472	124	358	1197	62	53	207	131	209	397	480
Future Volume (vph)	73	472	124	358	1197	62	53	207	131	209	397	480
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98	1.00		0.98	0.99		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1374	3307	1332	3013	3435	1522	3269	3189	1390	3094	3218	1332
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1372	3307	1332	3013	3435	1490	3263	3189	1366	3074	3218	1312
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180			134			180			480
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5					5	1		3	3		1
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 (%)	30%	8%	20%	15%	4%	5%	6%	12%	15%	12%	11%	20%
Adj. Flow (vph)	73	472	124	358	1197	62	53	207	131	209	397	480
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	472	124	358	1197	62	53	207	131	209	397	480
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	17.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	24.4	45.0	45.0	45.0	65.6	65.6	20.0	40.0	40.0	20.0	40.0	40.0
Total Split (%)	16.3%	30.0%	30.0%	30.0%	43.7%	43.7%	13.3%	26.7%	26.7%	13.3%	26.7%	26.7%
Maximum Green (s)	18.0	37.7	37.7	38.6	58.3	58.3	12.4	32.6	32.6	12.4	32.6	32.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		5	5		3	3		1	1
Act Effct Green (s)	13.1	61.0	61.0	23.2	71.2	71.2	7.8	24.8	24.8	12.2	31.9	31.9
Actuated g/C Ratio	0.09	0.41	0.41	0.15	0.47	0.47	0.05	0.17	0.17	0.08	0.21	0.21
v/c Ratio	0.61	0.35	0.19	0.77	0.73	0.08	0.31	0.39	0.35	0.83	0.58	0.73
Control Delay	86.6	34.2	1.5	88.2	23.0	0.3	72.8	56.4	4.2	93.5	56.4	11.2
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	86.6	34.2	1.5	88.2	23.0	0.3	72.8	56.4	4.2	93.5	56.4	11.2
LOS	F	C	A	F	C	A	E	E	A	F	E	B
Approach Delay		33.8			36.6			41.1			43.6	
Approach LOS		C			D			D			D	
Queue Length 50th (m)	19.6	48.0	0.0	45.9	141.2	0.0	7.3	26.5	0.0	29.5	52.1	0.0
Queue Length 95th (m)	34.6	69.9	2.5	55.0	190.6	m0.5	14.0	36.5	4.6	#48.3	66.3	32.6
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	164	1345	648	775	1629	777	270	693	437	255	725	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.35	0.19	0.46	0.73	0.08	0.20	0.30	0.30	0.82	0.55	0.72

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 102 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 38.6

Intersection LOS: D

Intersection Capacity Utilization 79.2%

ICU Level of Service D

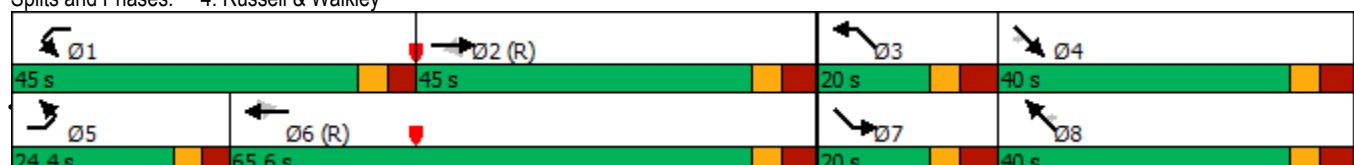
Analysis Period (min) 15

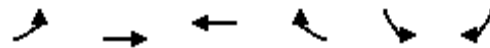
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Russell & Walkley





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	198	734	1437	624	90	164
Future Volume (vph)	198	734	1437	624	90	164
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		0.99			
Frt			0.955			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1701	3189	4598	0	3238	1453
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1700	3189	4598	0	3238	1453
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			134			164
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	12%	7%	3%	7%	10%
Adj. Flow (vph)	198	734	1437	624	90	164
Shared Lane Traffic (%)						
Lane Group Flow (vph)	198	734	2061	0	90	164
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
AM Peak Hour

2480 Walkley Road
2020 Total Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	24.0	122.0	98.0		28.0	28.0
Total Split (%)	16.0%	81.3%	65.3%		18.7%	18.7%
Maximum Green (s)	17.8	115.8	91.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)	25.0	127.1	95.9		11.0	11.0
Actuated g/C Ratio	0.17	0.85	0.64		0.07	0.07
v/c Ratio	0.70	0.27	0.69		0.38	0.64
Control Delay	67.2	2.2	17.9		70.5	20.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	67.2	2.2	17.9		70.5	20.4
LOS	E	A	B		E	C
Approach Delay		16.1	17.9		38.1	
Approach LOS		B	B		D	
Queue Length 50th (m)	55.0	13.0	118.5		12.4	0.0
Queue Length 95th (m)	m77.0	20.2	144.3		20.2	20.6
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	282	2701	2987		481	355
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.70	0.27	0.69		0.19	0.46

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 50 (33%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 19.0

Intersection LOS: B

Intersection Capacity Utilization 79.1%











ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 5: Walkley & Lancaster



						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	703	1266	13	8	22
Future Volume (vph)	13	703	1266	13	8	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1768	3247	3334	0	1520	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1768	3247	3334	0	1520	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	6			6		
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	10%	7%	1%	10%	10%
Adj. Flow (vph)	13	703	1266	13	8	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	703	1279	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.4%			ICU Level of Service A		
Analysis Period (min)	15					























7: East Access & Walkley
AM Peak Hour













2480 Walkley Road
2020 Total Traffic

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↘			↑↑		↗
Traffic Volume (vph)	719	5	0	1539	0	1
Future Volume (vph)	719	5	0	1539	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	4664	0	0	3402	0	1610
Flt Permitted						
Satd. Flow (perm)	4664	0	0	3402	0	1610
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	1%	5%	1%	1%
Adj. Flow (vph)	719	5	0	1539	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	724	0	0	1539	0	1
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			4.0	0.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 48.2%				ICU Level of Service A		
Analysis Period (min) 15						

1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	987	29	116	661	66	60	287	438	110	246	479
Future Volume (vph)	302	987	29	116	661	66	60	287	438	110	246	479
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.99		0.97	0.99		0.97
Frt		0.996			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3381	0	1734	3370	0	1768	1808	1551	1734	1808	1567
Flt Permitted	0.243			0.206			0.488			0.425		
Satd. Flow (perm)	438	3381	0	375	3370	0	897	1808	1502	767	1808	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			10				298			401
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	25		5	5		25	15		15	15		15
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 (%)	3%	5%	10%	3%	4%	1%	1%	4%	3%	3%	4%	2%
Adj. Flow (vph)	302	987	29	116	661	66	60	287	438	110	246	479
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	1016	0	116	727	0	60	287	438	110	246	479
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	30.0	53.0		19.0	42.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	27.3%	48.2%		17.3%	38.2%		34.5%	34.5%	34.5%	34.5%	34.5%	34.5%
Maximum Green (s)	23.9	46.9		12.9	35.9		31.8	31.8	31.8	31.8	31.8	31.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		5			20		12	12	12	12	12	12
Act Effct Green (s)	65.3	51.1		52.9	44.2		31.8	31.8	31.8	31.8	31.8	31.8
Actuated g/C Ratio	0.59	0.46		0.48	0.40		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.68	0.65		0.40	0.53		0.23	0.55	0.68	0.50	0.47	0.66
Control Delay	19.2	25.1		15.5	27.3		32.8	37.8	16.7	41.7	35.8	11.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	25.1		15.5	27.3		32.8	37.8	16.7	41.7	35.8	11.3
LOS	B	C		B	C		C	D	B	D	D	B
Approach Delay		23.8			25.7			25.7			22.5	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	27.2	78.2		9.2	55.1		9.0	47.9	22.9	18.0	40.0	11.6
Queue Length 95th (m)	41.0	102.6		16.3	80.8		19.5	72.3	56.5	35.0	62.1	43.2
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	543	1573		354	1361		259	522	646	221	522	723
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.65		0.33	0.53		0.23	0.55	0.68	0.50	0.47	0.66

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 24.3

Intersection LOS: C

Intersection Capacity Utilization 89.0%

ICU Level of Service E












Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1629	24	1	909	55	59
Future Volume (vph)	1629	24	1	909	55	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00					0.99
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3461	0	1654	3468	1768	1508
Flt Permitted			0.127		0.950	
Satd. Flow (perm)	3461	0	221	3468	1768	1487
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					48
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		2	2			1
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	1%	8%	3%	1%	6%
Adj. Flow (vph)	1629	24	1	909	55	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1653	0	1	909	55	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	97.0		97.0	97.0	33.0	33.0
Total Split (%)	74.6%		74.6%	74.6%	25.4%	25.4%
Maximum Green (s)	91.3		91.3	91.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	2		0	0	1	1
Act Effct Green (s)	109.4		109.4	109.4	13.6	13.6
Actuated g/C Ratio	0.84		0.84	0.84	0.10	0.10
v/c Ratio	0.57		0.01	0.31	0.30	0.30
Control Delay	5.8		3.0	2.8	55.8	21.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	5.8		3.0	2.8	55.8	21.1
LOS	A		A	A	E	C
Approach Delay	5.8			2.8	37.8	
Approach LOS	A			A	D	
Queue Length 50th (m)	49.5		0.0	21.1	12.6	2.5
Queue Length 95th (m)	124.4		m0.1	24.0	21.5	12.8
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2912		185	2917	372	351
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.57		0.01	0.31	0.15	0.17

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 29 (22%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 6.2

Intersection LOS: A

Intersection Capacity Utilization 66.6%

ICU Level of Service C

Analysis Period (min) 15




















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

Splits and Phases: 2: Banton & Walkley















3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	1515	24	50	833	17	62	0	135	38	0	4
Future Volume (vph)	38	1515	24	50	833	17	62	0	135	38	0	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00			0.98			1.00	
Frt		0.998			0.997				0.850		0.987	
Flt Protected	0.950			0.950				0.950			0.957	
Satd. Flow (prot)	1768	3429	0	1701	3451	0	0	1701	1522	0	1753	0
Flt Permitted	0.323			0.141				0.775			0.702	
Satd. Flow (perm)	594	3429	0	252	3451	0	0	1365	1522	0	1286	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		3			4				61			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	14					14	12					12
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	1%	5%	3%	5%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	38	1515	24	50	833	17	62	0	135	38	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1539	0	50	850	0	0	62	135	0	42	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	0	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right		Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	0.0	93.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			8	
Permitted Phases	2			6			8		8	8		
Detector Phase	2	2		6	6		8	8	8	8	8	

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	23.8	23.8		23.8	23.8		32.6	32.6	32.6	32.6	32.6	
Total Split (s)	97.0	97.0		97.0	97.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	74.6%	74.6%		74.6%	74.6%		25.4%	25.4%	25.4%	25.4%	25.4%	
Maximum Green (s)	91.2	91.2		91.2	91.2		27.4	27.4	27.4	27.4	27.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.8	5.8		5.8	5.8			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		20.0	20.0	20.0	20.0	20.0	
Pedestrian Calls (#/hr)	0	0		12	12		10	10	10	10	10	
Act Effct Green (s)	103.7	103.7		103.7	103.7			14.9	14.9		14.9	
Actuated g/C Ratio	0.80	0.80		0.80	0.80			0.11	0.11		0.11	
v/c Ratio	0.08	0.56		0.25	0.31			0.40	0.59		0.29	
Control Delay	3.6	4.2		5.2	1.7			58.6	39.3		54.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	3.6	4.2		5.2	1.7			58.6	39.3		54.8	
LOS	A	A		A	A			E	D		D	
Approach Delay		4.2			1.9			45.4			54.8	
Approach LOS		A			A			D			D	
Queue Length 50th (m)	1.4	32.3		0.4	3.5			14.2	17.0		9.5	
Queue Length 95th (m)	m2.9	38.2		m2.6	13.5			24.1	32.2		17.8	
Internal Link Dist (m)		206.6			74.4			112.9			184.4	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	473	2735		200	2753			287	368		271	
Starvation Cap Reductn	0	90		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.08	0.58		0.25	0.31			0.22	0.37		0.15	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 26 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 7.2

Intersection LOS: A

Intersection Capacity Utilization 81.0%

ICU Level of Service D

Analysis Period (min) 15

























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

Splits and Phases: 3: Walkley & Melfort



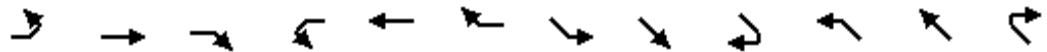
4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	94	1322	236	359	647	77	102	417	106	140	267	504
Future Volume (vph)	94	1322	236	359	647	77	102	417	106	140	267	504
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	0.99		0.98	0.99		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1609	3468	1390	3013	3468	1567	3179	3338	1427	3238	3247	1427
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1604	3468	1368	3010	3468	1535	3158	3338	1396	3212	3247	1402
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			154			207			207
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5		2	2		5	4		6	6		4
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 (%)	11%	3%	15%	15%	3%	2%	9%	7%	12%	7%	10%	12%
Adj. Flow (vph)	94	1322	236	359	647	77	102	417	106	140	267	504
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	1322	236	359	647	77	102	417	106	140	267	504
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2020 Total Traffic



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	12.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	12.0	58.0	58.0	20.0	66.0	66.0	17.0	35.0	35.0	17.0	35.0	35.0
Total Split (%)	9.2%	44.6%	44.6%	15.4%	50.8%	50.8%	13.1%	26.9%	26.9%	13.1%	26.9%	26.9%
Maximum Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	9.4	27.6	27.6	9.4	27.6	27.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		2	2		5	5		6	6		4	4
Act Effct Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	8.7	27.9	27.9	9.1	28.3	28.3
Actuated g/C Ratio	0.04	0.39	0.39	0.10	0.45	0.45	0.07	0.21	0.21	0.07	0.22	0.22
v/c Ratio	1.36	0.98	0.36	1.14	0.41	0.10	0.48	0.58	0.23	0.62	0.38	1.08
Control Delay	270.7	54.2	6.7	159.5	14.1	0.2	66.1	49.7	1.2	71.1	45.4	93.4
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	270.7	54.2	6.7	159.5	14.1	0.2	66.1	49.7	1.2	71.1	45.4	93.4
LOS	F	D	A	F	B	A	E	D	A	E	D	F
Approach Delay		59.7			61.3			44.2			75.9	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	~29.6	162.4	1.0	~51.4	18.8	0.0	12.1	47.0	0.0	16.8	28.6	~93.3
Queue Length 95th (m)	#63.0	#202.7	20.8	#81.4	25.3	0.0	20.6	62.8	0.0	26.8	40.7	#155.0
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	69	1352	660	315	1565	777	229	716	462	234	707	467
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.36	0.98	0.36	1.14	0.41	0.10	0.45	0.58	0.23	0.60	0.38	1.08

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 61.3

Intersection LOS: E

Intersection Capacity Utilization 94.7%

ICU Level of Service F

Analysis Period (min) 15

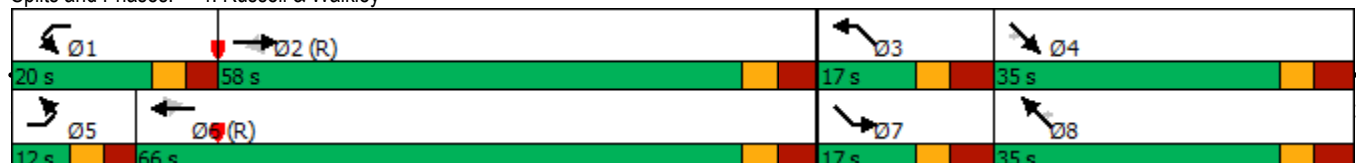
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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












Queue shown is maximum after two cycles.

Splits and Phases: 4: Russell & Walkley



5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	1774	952	159	469	199
Future Volume (vph)	122	1774	952	159	469	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		1.00			0.99
Frt			0.979			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1751	3402	4628	0	3397	1551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1748	3402	4628	0	3397	1530
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			41			199
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	3			3		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	8%	9%	2%	3%
Adj. Flow (vph)	122	1774	952	159	469	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	1774	1111	0	469	199
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
PM Peak Hour

2480 Walkley Road
2020 Total Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	22.0	102.0	80.0		28.0	28.0
Total Split (%)	16.9%	78.5%	61.5%		21.5%	21.5%
Maximum Green (s)	15.8	95.8	73.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		0	3		1	1
Act Effct Green (s)	13.4	96.9	77.3		21.2	21.2
Actuated g/C Ratio	0.10	0.75	0.59		0.16	0.16
v/c Ratio	0.68	0.70	0.40		0.85	0.48
Control Delay	57.0	13.6	14.4		67.8	10.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	57.0	13.6	14.4		67.8	10.3
LOS	E	B	B		E	B
Approach Delay		16.4	14.4		50.7	
Approach LOS		B	B		D	
Queue Length 50th (m)	29.7	101.3	48.6		55.4	0.0
Queue Length 95th (m)	m30.5	m105.4	59.7		#73.9	19.1
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	212	2536	2769		582	427
Starvation Cap Reductn	0	10	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.58	0.70	0.40		0.81	0.47

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 11 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.0

Intersection LOS: C

Intersection Capacity Utilization 75.9%

ICU Level of Service D

Analysis Period (min) 15

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











Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Walkley & Lancaster









Dynamic Report

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	1501	963	9	7	17
Future Volume (vph)	36	1501	963	9	7	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1768	3435	3462	0	1659	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1768	3435	3462	0	1659	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	3%	10%	1%	1%
Adj. Flow (vph)	36	1501	963	9	7	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1501	972	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	53.8%			ICU Level of Service A		
Analysis Period (min)	15					























7: East Access & Walkley
PM Peak Hour

2480 Walkley Road
2020 Total Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↓			↑↑		↗
Traffic Volume (vph)	1675	14	0	930	0	9
Future Volume (vph)	1675	14	0	930	0	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	0		0	1
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	4885	0	0	3402	0	1610
Flt Permitted						
Satd. Flow (perm)	4885	0	0	3402	0	1610
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	5%	1%	1%
Adj. Flow (vph)	1675	14	0	930	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1689	0	0	930	0	9
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			4.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.5%			ICU Level of Service A		
Analysis Period (min)	15					

1: St. Laurent & Walkley
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	586	46	420	901	49	19	256	119	65	263	289
Future Volume (vph)	289	586	46	420	901	49	19	256	119	65	263	289
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		0.99		0.97	0.99		0.97
Frt		0.989			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3330	0	1734	3260	0	1701	1825	1453	1639	1808	1537
Flt Permitted	0.220			0.256			0.453			0.464		
Satd. Flow (perm)	398	3330	0	465	3260	0	802	1825	1415	793	1808	1490
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			5				139			289
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	14		8	8		14	13		10	10		13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	3%	3%	8%	15%	5%	3%	10%	9%	4%	4%
Adj. Flow (vph)	289	586	46	420	901	49	19	256	119	65	263	289
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	632	0	420	950	0	19	256	119	65	263	289
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	28.0	37.0		42.0	51.0		41.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	23.3%	30.8%		35.0%	42.5%		34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
Maximum Green (s)	21.9	30.9		35.9	44.9		34.8	34.8	34.8	34.8	34.8	34.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		8			12		10	10	10	12	12	12
Act Effct Green (s)	57.3	41.2		72.6	50.7		34.8	34.8	34.8	34.8	34.8	34.8
Actuated g/C Ratio	0.48	0.34		0.60	0.42		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.79	0.55		0.76	0.69		0.08	0.48	0.23	0.28	0.50	0.45
Control Delay	35.4	35.4		17.7	26.8		32.4	38.9	4.7	37.2	39.4	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	35.4		17.7	26.8		32.4	38.9	4.7	37.2	39.4	6.2
LOS	D	D		B	C		C	D	A	D	D	A
Approach Delay		35.4			24.0			28.3			23.6	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	28.2	57.6		44.2	85.5		3.0	45.9	0.0	10.9	47.4	0.0
Queue Length 95th (m)	61.3	84.7		20.6	117.5		8.6	69.1	9.0	22.6	71.2	18.3
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	452	1147		662	1380		232	529	509	229	524	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.55		0.63	0.69		0.08	0.48	0.23	0.28	0.50	0.45

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 27.6

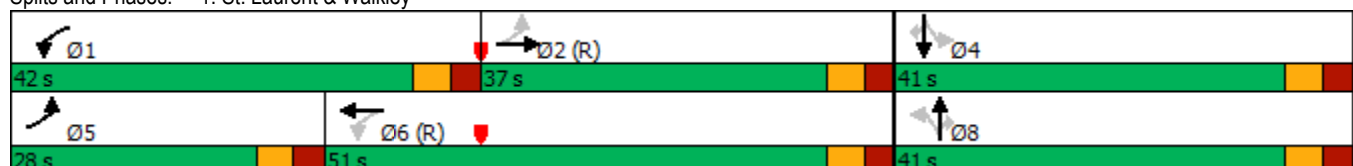
Intersection LOS: C

Intersection Capacity Utilization 94.6%

ICU Level of Service F












Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	717	47	27	1445	11	17
Future Volume (vph)	717	47	27	1445	11	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.991					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3247	0	1488	3370	1429	1065
Flt Permitted			0.361		0.950	
Satd. Flow (perm)	3247	0	565	3370	1429	1065
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	12					17
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		4	1			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	6%	20%	6%	25%	50%
Adj. Flow (vph)	717	47	27	1445	11	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	764	0	27	1445	11	17
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	87.0		87.0	87.0	33.0	33.0
Total Split (%)	72.5%		72.5%	72.5%	27.5%	27.5%
Maximum Green (s)	81.3		81.3	81.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	4		0	0	1	1
Act Effct Green (s)	103.8		103.8	103.8	13.4	13.4
Actuated g/C Ratio	0.86		0.86	0.86	0.11	0.11
v/c Ratio	0.27		0.06	0.50	0.07	0.13
Control Delay	6.1		0.3	0.8	44.6	19.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	6.1		0.3	0.8	44.6	19.4
LOS	A		A	A	D	B
Approach Delay	6.1			0.8	29.3	
Approach LOS	A			A	C	
Queue Length 50th (m)	62.8		0.1	0.7	2.3	0.0
Queue Length 95th (m)	91.0		m0.1	1.7	6.4	5.6
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2810		488	2915	326	256
Starvation Cap Reductn	0		0	34	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.27		0.06	0.50	0.03	0.07

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 48 (40%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 2.9

Intersection LOS: A

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15




















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

Splits and Phases: 2: Banton & Walkley



3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Future Volume (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt		0.993			0.998				0.850		0.993	
Flt Protected	0.950			0.950				0.950			0.955	
Satd. Flow (prot)	1768	3266	0	1768	3355	0	0	1701	1522	0	1763	0
Flt Permitted	0.162			0.371				0.733			0.731	
Satd. Flow (perm)	302	3266	0	691	3355	0	0	1301	1522	0	1350	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		9			3				25			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	15					15	7					7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	9%	1%	1%	6%	15%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	734	0	129	1450	0	0	10	25	0	37	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			8	
Permitted Phases	2			6			8		8	8		
Detector Phase	2	2		6	6		8	8	8	8	8	
Switch Phase												

3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	23.8	23.8		23.8	23.8		32.6	32.6	32.6	32.6	32.6	
Total Split (s)	87.0	87.0		87.0	87.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	72.5%	72.5%		72.5%	72.5%		27.5%	27.5%	27.5%	27.5%	27.5%	
Maximum Green (s)	81.2	81.2		81.2	81.2		27.4	27.4	27.4	27.4	27.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.8	5.8		5.8	5.8			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		20.0	20.0	20.0	20.0	20.0	
Pedestrian Calls (#/hr)	0	0		0	0		10	10	10	10	10	
Act Effct Green (s)	99.5	99.5		99.5	99.5			13.4	13.4		13.4	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.11	0.11		0.11	
v/c Ratio	0.12	0.27		0.23	0.52			0.07	0.13		0.25	
Control Delay	1.9	0.9		5.2	5.7			44.7	16.2		50.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	1.9	0.9		5.2	5.7			44.7	16.2		50.1	
LOS	A	A		A	A			D	B		D	
Approach Delay		0.9			5.6			24.4			50.1	
Approach LOS		A			A			C			D	
Queue Length 50th (m)	0.3	3.2		4.8	40.2			2.1	0.0		7.7	
Queue Length 95th (m)	1.0	6.1		18.8	103.0			5.9	6.6		15.0	
Internal Link Dist (m)		206.6			74.4			112.9			184.4	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	250	2709		572	2782			297	366		308	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.12	0.27		0.23	0.52			0.03	0.07		0.12	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 31 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 5.1

Intersection LOS: A

Intersection Capacity Utilization 76.8%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	77	496	131	376	1257	65	56	217	138	219	417	505
Future Volume (vph)	77	496	131	376	1257	65	56	217	138	219	417	505
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98	1.00		0.98	0.99		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1374	3307	1332	3013	3435	1522	3269	3189	1390	3094	3218	1332
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1372	3307	1332	3013	3435	1490	3264	3189	1366	3075	3218	1312
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180			134			180			505
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5					5	1		3	3		1
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 (%)	30%	8%	20%	15%	4%	5%	6%	12%	15%	12%	11%	20%
Adj. Flow (vph)	77	496	131	376	1257	65	56	217	138	219	417	505
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	496	131	376	1257	65	56	217	138	219	417	505
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	17.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	24.4	45.0	45.0	45.0	65.6	65.6	20.0	40.0	40.0	20.0	40.0	40.0
Total Split (%)	16.3%	30.0%	30.0%	30.0%	43.7%	43.7%	13.3%	26.7%	26.7%	13.3%	26.7%	26.7%
Maximum Green (s)	18.0	37.7	37.7	38.6	58.3	58.3	12.4	32.6	32.6	12.4	32.6	32.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		5	5		3	3		1	1
Act Effct Green (s)	13.4	59.2	59.2	24.1	69.9	69.9	8.0	25.7	25.7	12.4	32.8	32.8
Actuated g/C Ratio	0.09	0.39	0.39	0.16	0.47	0.47	0.05	0.17	0.17	0.08	0.22	0.22
v/c Ratio	0.63	0.38	0.21	0.78	0.79	0.08	0.32	0.40	0.36	0.86	0.59	0.74
Control Delay	87.4	35.8	2.0	86.6	25.0	0.3	72.9	56.0	4.8	96.8	56.2	11.2
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	87.4	35.8	2.0	86.6	25.0	0.3	72.9	56.0	4.8	96.8	56.2	11.2
LOS	F	D	A	F	C	A	E	E	A	F	E	B
Approach Delay		35.2			37.7			41.1			44.1	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	20.7	52.5	0.0	46.4	157.4	0.0	7.7	27.4	0.0	31.0	54.3	0.0
Queue Length 95th (m)	36.1	74.5	4.1	57.3	#216.2	m0.4	14.4	38.0	6.7	#51.5	69.8	33.8
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	164	1304	634	775	1599	765	270	693	437	255	727	687
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.38	0.21	0.49	0.79	0.08	0.21	0.31	0.32	0.86	0.57	0.74

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 102 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 39.4

Intersection LOS: D

Intersection Capacity Utilization 81.8%

ICU Level of Service D

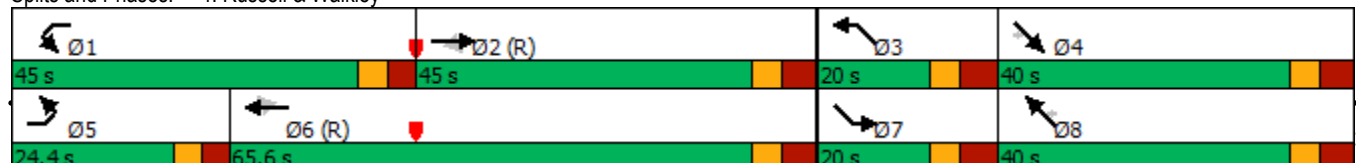
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

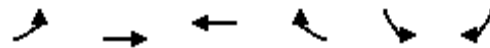
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Russell & Walkley



5: Walkley & Lancaster
AM Peak Hour

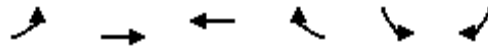
2480 Walkley Road
2025 Total Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	198	771	1508	624	90	164
Future Volume (vph)	198	771	1508	624	90	164
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		0.99			
Frt			0.956			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1701	3189	4602	0	3238	1453
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1700	3189	4602	0	3238	1453
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			128			164
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	2			2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	12%	7%	3%	7%	10%
Adj. Flow (vph)	198	771	1508	624	90	164
Shared Lane Traffic (%)						
Lane Group Flow (vph)	198	771	2132	0	90	164
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						

5: Walkley & Lancaster
AM Peak Hour

2480 Walkley Road
2025 Total Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	33.2		27.7	27.7
Total Split (s)	24.0	122.0	98.0		28.0	28.0
Total Split (%)	16.0%	81.3%	65.3%		18.7%	18.7%
Maximum Green (s)	17.8	115.8	91.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		2	0		0	0
Act Effct Green (s)	25.0	127.1	95.9		11.0	11.0
Actuated g/C Ratio	0.17	0.85	0.64		0.07	0.07
v/c Ratio	0.70	0.29	0.71		0.38	0.64
Control Delay	66.4	2.3	18.7		70.5	20.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	66.4	2.3	18.7		70.5	20.4
LOS	E	A	B		E	C
Approach Delay		15.4	18.7		38.1	
Approach LOS		B	B		D	
Queue Length 50th (m)	55.1	13.6	126.8		12.4	0.0
Queue Length 95th (m)	m75.9	22.1	153.8		20.2	20.6
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	282	2701	2988		481	355
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.70	0.29	0.71		0.19	0.46

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 50 (33%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 80.5%

ICU Level of Service D

Analysis Period (min) 15

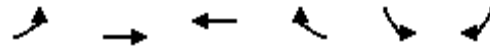
m Volume for 95th percentile queue is metered by upstream signal.





Splits and Phases: 5: Walkley & Lancaster



6: Walkley & Tawney
AM Peak Hour







2480 Walkley Road
2025 Total Traffic



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	738	1330	13	8	22
Future Volume (vph)	13	738	1330	13	8	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.901	
Flt Protected	0.950				0.987	
Satd. Flow (prot)	1768	3247	3337	0	1520	0
Flt Permitted	0.950				0.987	
Satd. Flow (perm)	1768	3247	3337	0	1520	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	6			6		
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	10%	7%	1%	10%	10%
Adj. Flow (vph)	13	738	1330	13	8	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	738	1343	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.2%			ICU Level of Service A		
Analysis Period (min)	15					























7: East Access & Walkley
AM Peak Hour

2480 Walkley Road
2025 Total Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↗
Traffic Volume (vph)	754	5	0	1610	0	1
Future Volume (vph)	754	5	0	1610	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	4664	0	0	3402	0	1610
Flt Permitted						
Satd. Flow (perm)	4664	0	0	3402	0	1610
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	1%	5%	1%	1%
Adj. Flow (vph)	754	5	0	1610	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	759	0	0	1610	0	1
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			4.0	0.0	
Link Offset(m)	0.0			0.0	-2.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 50.3%				ICU Level of Service A		
Analysis Period (min) 15						























3: Walkley & Melfort
AM Peak Hour

2480 Walkley Road
2025 Total Traffic (unsignalized)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Future Volume (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993			0.998				0.850		0.993	
Flt Protected	0.950			0.950				0.950			0.955	
Satd. Flow (prot)	1768	3266	0	1768	3359	0	0	1701	1522	0	1765	0
Flt Permitted	0.950			0.950				0.950			0.955	
Satd. Flow (perm)	1768	3266	0	1768	3359	0	0	1701	1522	0	1765	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	15					15	7					7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	9%	1%	1%	6%	15%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	30	699	35	129	1428	22	10	0	25	35	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	734	0	129	1450	0	0	10	25	0	37	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	65.6%						ICU Level of Service C					
Analysis Period (min)	15											

1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	352	1038	30	122	694	69	63	301	460	116	258	523
Future Volume (vph)	352	1038	30	122	694	69	63	301	460	116	258	523
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	160.0		0.0	35.0		150.0	30.0		65.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	10.0			0.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		0.99		0.97	0.99		0.97
Frt		0.996			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1734	3381	0	1734	3370	0	1768	1808	1551	1734	1808	1567
Flt Permitted	0.214			0.194			0.470			0.404		
Satd. Flow (perm)	386	3381	0	353	3370	0	864	1808	1502	730	1808	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			10				292			396
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.8			258.2			317.0			386.7	
Travel Time (s)		9.0			18.6			22.8			27.8	
Confl. Peds. (#/hr)	25		5	5		25	15		15	15		15
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 (%)	3%	5%	10%	3%	4%	1%	1%	4%	3%	3%	4%	2%
Adj. Flow (vph)	352	1038	30	122	694	69	63	301	460	116	258	523
Shared Lane Traffic (%)												
Lane Group Flow (vph)	352	1068	0	122	763	0	63	301	460	116	258	523
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)		5.2			4.0			4.0			4.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
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
Detector 1 Queue (s)	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
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		8	8	8	4	4	4

1: St. Laurent & Walkley
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.1	28.1		11.1	28.1		31.2	31.2	31.2	31.2	31.2	31.2
Total Split (s)	30.0	53.0		19.0	42.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	27.3%	48.2%		17.3%	38.2%		34.5%	34.5%	34.5%	34.5%	34.5%	34.5%
Maximum Green (s)	23.9	46.9		12.9	35.9		31.8	31.8	31.8	31.8	31.8	31.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.8	2.8		2.8	2.8		2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.2	6.2	6.2	6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0			7.0		10.0	10.0	10.0	10.0	10.0	10.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		5			20		12	12	12	12	12	12
Act Effct Green (s)	65.7	51.0		50.7	41.8		31.8	31.8	31.8	31.8	31.8	31.8
Actuated g/C Ratio	0.60	0.46		0.46	0.38		0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.78	0.68		0.45	0.59		0.25	0.58	0.72	0.55	0.49	0.73
Control Delay	26.3	26.2		17.3	30.2		33.4	38.6	19.5	44.6	36.3	15.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	26.2		17.3	30.2		33.4	38.6	19.5	44.6	36.3	15.3
LOS	C	C		B	C		C	D	B	D	D	B
Approach Delay		26.2			28.4			27.5			25.1	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	32.8	84.4		9.7	61.6		9.5	50.7	29.2	19.4	42.3	20.2
Queue Length 95th (m)	58.8	110.7		17.0	87.3		20.3	76.4	65.2	37.4	64.9	58.8
Internal Link Dist (m)		100.8			234.2			293.0			362.7	
Turn Bay Length (m)				160.0			35.0		150.0	30.0		65.0
Base Capacity (vph)	524	1567		337	1287		249	522	641	211	522	720
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.68		0.36	0.59		0.25	0.58	0.72	0.55	0.49	0.73

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 26.7

Intersection LOS: C

Intersection Capacity Utilization 93.0%

ICU Level of Service F







Analysis Period (min) 15

Splits and Phases: 1: St. Laurent & Walkley



2: Banton & Walkley
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (vph)	1710	24	1	953	55	59
Future Volume (vph)	1710	24	1	953	55	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		25.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			30.0		30.0	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor	1.00					0.99
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3461	0	1654	3468	1768	1508
Flt Permitted			0.114		0.950	
Satd. Flow (perm)	3461	0	198	3468	1768	1486
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					41
Link Speed (k/h)	50			50	50	
Link Distance (m)	142.6			230.6	146.9	
Travel Time (s)	10.3			16.6	10.6	
Confl. Peds. (#/hr)		2	2			1
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	1%	8%	3%	1%	6%
Adj. Flow (vph)	1710	24	1	953	55	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1734	0	1	953	55	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.7			4.7	4.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			2.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	93.0		18.6	93.0	18.6	18.6
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)	5.5		18.6	5.5	18.6	18.6
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)	87.5			87.5		
Detector 2 Size(m)	5.5			5.5		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	25.7		25.7	25.7	32.6	32.6
Total Split (s)	97.0		97.0	97.0	33.0	33.0
Total Split (%)	74.6%		74.6%	74.6%	25.4%	25.4%
Maximum Green (s)	91.3		91.3	91.3	27.4	27.4
Yellow Time (s)	3.3		3.3	3.3	3.3	3.3
All-Red Time (s)	2.4		2.4	2.4	2.3	2.3
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7		5.7	5.7	5.6	5.6
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	None	None
Walk Time (s)	9.0		9.0	9.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	20.0	20.0
Pedestrian Calls (#/hr)	2		0	0	1	1
Act Effct Green (s)	109.4		109.4	109.4	13.6	13.6
Actuated g/C Ratio	0.84		0.84	0.84	0.10	0.10
v/c Ratio	0.60		0.01	0.33	0.30	0.31
Control Delay	6.2		3.0	2.7	55.8	25.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	6.2		3.0	2.7	55.8	25.1
LOS	A		A	A	E	C
Approach Delay	6.2			2.7	39.9	
Approach LOS	A			A	D	
Queue Length 50th (m)	54.5		0.0	21.1	12.6	4.1
Queue Length 95th (m)	136.7		m0.1	24.0	21.5	14.3
Internal Link Dist (m)	118.6			206.6	122.9	
Turn Bay Length (m)			55.0		25.0	
Base Capacity (vph)	2912		166	2917	372	345
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.60		0.01	0.33	0.15	0.17

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 29 (22%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 6.4

Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15




















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

Splits and Phases: 2: Banton & Walkley















3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Future Volume (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00			0.98			1.00	
Frt		0.998			0.997				0.850		0.987	
Flt Protected	0.950			0.950				0.950			0.957	
Satd. Flow (prot)	1768	3429	0	1701	3452	0	0	1701	1522	0	1753	0
Flt Permitted	0.307			0.127				0.775			0.702	
Satd. Flow (perm)	565	3429	0	227	3452	0	0	1365	1522	0	1286	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		3			3				52			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	14					14	12					12
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	1%	5%	3%	5%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1618	0	50	895	0	0	62	135	0	42	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	0	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right		Thru	
Leading Detector (m)	18.6	93.0		18.6	93.0		18.6	93.0	18.6	0.0	93.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	18.6	5.5		18.6	5.5		18.6	5.5	18.6	18.6	5.5	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			8	
Permitted Phases	2			6			8		8	8		
Detector Phase	2	2		6	6		8	8	8	8	8	

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	23.8	23.8		23.8	23.8		32.6	32.6	32.6	32.6	32.6	
Total Split (s)	97.0	97.0		97.0	97.0		33.0	33.0	33.0	33.0	33.0	
Total Split (%)	74.6%	74.6%		74.6%	74.6%		25.4%	25.4%	25.4%	25.4%	25.4%	
Maximum Green (s)	91.2	91.2		91.2	91.2		27.4	27.4	27.4	27.4	27.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.3	2.3	2.3	2.3	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.8	5.8		5.8	5.8			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		20.0	20.0	20.0	20.0	20.0	
Pedestrian Calls (#/hr)	0	0		12	12		10	10	10	10	10	
Act Effct Green (s)	103.4	103.4		103.4	103.4			15.2	15.2		15.2	
Actuated g/C Ratio	0.80	0.80		0.80	0.80			0.12	0.12		0.12	
v/c Ratio	0.08	0.59		0.28	0.33			0.39	0.60		0.28	
Control Delay	3.7	4.3		5.8	1.8			57.9	43.2		54.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	3.7	4.4		5.8	1.8			57.9	43.2		54.3	
LOS	A	A		A	A			E	D		D	
Approach Delay		4.4			2.0			47.8			54.3	
Approach LOS		A			A			D			D	
Queue Length 50th (m)	1.4	34.6		0.5	4.8			14.1	19.1		9.4	
Queue Length 95th (m)	m2.8	40.1		m2.7	14.9			24.1	34.3		17.8	
Internal Link Dist (m)		206.6			74.4			112.9			184.4	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	449	2727		180	2745			287	361		271	
Starvation Cap Reductn	0	86		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.08	0.61		0.28	0.33			0.22	0.37		0.15	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 26 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 7.3

Intersection LOS: A

Intersection Capacity Utilization 83.3%

ICU Level of Service E

Analysis Period (min) 15

























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

Splits and Phases: 3: Walkley & Melfort















4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	98	1388	248	377	680	80	107	438	111	147	281	529
Future Volume (vph)	98	1388	248	377	680	80	107	438	111	147	281	529
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0		0.0	100.0		45.0	80.0		55.0	140.0		110.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	15.0			50.0			70.0			60.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	0.99		0.98	0.99		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1609	3468	1390	3013	3468	1567	3179	3338	1427	3238	3247	1427
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1604	3468	1368	3011	3468	1535	3158	3338	1396	3213	3247	1402
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			154			207			207
Link Speed (k/h)		50			50			50			70	
Link Distance (m)		164.7			257.4			320.2			263.5	
Travel Time (s)		11.9			18.5			23.1			13.6	
Confl. Peds. (#/hr)	5		2	2		5	4		6	6		4
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 (%)	11%	3%	15%	15%	3%	2%	9%	7%	12%	7%	10%	12%
Adj. Flow (vph)	98	1388	248	377	680	80	107	438	111	147	281	529
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1388	248	377	680	80	107	438	111	147	281	529
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)		6.0			10.0			8.0			8.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		2.0			2.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6	18.6	93.0	18.6
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6	18.6	5.5	18.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		87.5			87.5			87.5			87.5	
Detector 2 Size(m)		5.5			5.5			5.5			5.5	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8

4: Russell & Walkley
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	32.3	32.3	11.4	32.3	32.3	12.6	34.4	34.4	12.6	34.4	34.4
Total Split (s)	12.0	58.0	58.0	20.0	66.0	66.0	17.0	35.0	35.0	17.0	35.0	35.0
Total Split (%)	9.2%	44.6%	44.6%	15.4%	50.8%	50.8%	13.1%	26.9%	26.9%	13.1%	26.9%	26.9%
Maximum Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	9.4	27.6	27.6	9.4	27.6	27.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.1	4.0	4.0	3.1	4.0	4.0	4.3	4.1	4.1	4.3	4.1	4.1
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
Total Lost Time (s)	6.4	7.3	7.3	6.4	7.3	7.3	7.6	7.4	7.4	7.6	7.4	7.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		2	2		5	5		6	6		4	4
Act Effct Green (s)	5.6	50.7	50.7	13.6	58.7	58.7	8.7	27.9	27.9	9.1	28.3	28.3
Actuated g/C Ratio	0.04	0.39	0.39	0.10	0.45	0.45	0.07	0.21	0.21	0.07	0.22	0.22
v/c Ratio	1.42	1.03	0.38	1.20	0.43	0.10	0.50	0.61	0.24	0.65	0.40	1.14
Control Delay	290.0	65.6	7.3	178.0	16.2	0.2	66.8	50.5	1.2	72.5	45.8	112.4
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	290.0	65.6	7.3	178.0	16.2	0.2	66.8	50.5	1.2	72.5	45.8	112.4
LOS	F	E	A	F	B	A	E	D	A	E	D	F
Approach Delay		70.0			68.7			44.8			86.7	
Approach LOS		E			E			D			F	
Queue Length 50th (m)	~31.9	~184.6	1.9	~56.9	25.8	0.0	12.7	49.7	0.0	17.6	30.3	~105.7
Queue Length 95th (m)	m#65.4	#220.6	23.6	#86.5	33.6	0.0	21.5	66.0	0.0	28.0	42.8	#168.4
Internal Link Dist (m)		140.7			233.4			296.2			239.5	
Turn Bay Length (m)	85.0			100.0		45.0	80.0		55.0	140.0		110.0
Base Capacity (vph)	69	1352	660	315	1565	777	229	715	462	234	705	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	1.03	0.38	1.20	0.43	0.10	0.47	0.61	0.24	0.63	0.40	1.14

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 69.5

Intersection LOS: E

Intersection Capacity Utilization 98.3%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

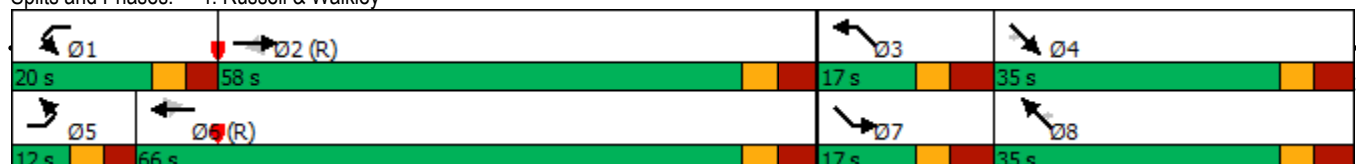
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Russell & Walkley





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	122	1863	1000	159	469	199
Future Volume (vph)	122	1863	1000	159	469	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	75.0			0.0	40.0	100.0
Storage Lanes	1			0	1	1
Taper Length (m)	45.0				30.0	
Lane Util. Factor	1.00	0.95	0.91	0.91	0.97	1.00
Ped Bike Factor	1.00		1.00			0.99
Frt			0.979			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1751	3402	4629	0	3397	1551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1748	3402	4629	0	3397	1530
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			38			199
Link Speed (k/h)		50	80		50	
Link Distance (m)		257.4	228.8		222.5	
Travel Time (s)		18.5	10.3		16.0	
Confl. Peds. (#/hr)	3			3		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	8%	9%	2%	3%
Adj. Flow (vph)	122	1863	1000	159	469	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	1863	1159	0	469	199
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		4.2	4.7		8.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	18.6	93.0	93.0		18.6	18.6
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)	18.6	5.5	5.5		18.6	18.6
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)		87.5	87.5			
Detector 2 Size(m)		5.5	5.5			
Detector 2 Type		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Detector Phase	5	2	6		4	4
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0
Minimum Split (s)	11.2	37.2	37.2		27.7	27.7
Total Split (s)	22.0	102.0	80.0		28.0	28.0
Total Split (%)	16.9%	78.5%	61.5%		21.5%	21.5%
Maximum Green (s)	15.8	95.8	73.8		22.3	22.3
Yellow Time (s)	4.6	4.6	4.6		3.3	3.3
All-Red Time (s)	1.6	1.6	1.6		2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2		5.7	5.7
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None
Walk Time (s)		20.0	20.0		7.0	7.0
Flash Dont Walk (s)		7.0	7.0		15.0	15.0
Pedestrian Calls (#/hr)		3	0		1	1
Act Effct Green (s)	13.4	96.9	77.3		21.2	21.2
Actuated g/C Ratio	0.10	0.75	0.59		0.16	0.16
v/c Ratio	0.68	0.73	0.42		0.85	0.48
Control Delay	55.2	10.2	14.7		67.8	10.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	55.2	10.2	14.7		67.8	10.3
LOS	E	B	B		E	B
Approach Delay		12.9	14.7		50.7	
Approach LOS		B	B		D	
Queue Length 50th (m)	28.6	81.4	51.6		55.4	0.0
Queue Length 95th (m)	m27.8	m68.6	63.2		#73.9	19.1
Internal Link Dist (m)		233.4	204.8		198.5	
Turn Bay Length (m)	75.0				40.0	100.0
Base Capacity (vph)	212	2536	2769		582	427
Starvation Cap Reductn	0	9	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.58	0.74	0.42		0.81	0.47

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 22 (17%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 20.1

Intersection LOS: C

Intersection Capacity Utilization 78.5%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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











Splits and Phases: 5: Walkley & Lancaster



Dynamic Traffic Report







6: Walkley & Tawney
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	1577	1011	9	7	17
Future Volume (vph)	36	1577	1011	9	7	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	85.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	0.0				10.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.904	
Flt Protected	0.950				0.986	
Satd. Flow (prot)	1768	3435	3462	0	1659	0
Flt Permitted	0.950				0.986	
Satd. Flow (perm)	1768	3435	3462	0	1659	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.2	142.6		192.6	
Travel Time (s)		18.6	10.3		13.9	
Confl. Peds. (#/hr)	14			14		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	3%	10%	1%	1%
Adj. Flow (vph)	36	1577	1011	9	7	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1577	1020	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	4.0		4.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		2.0	2.0		2.0	
Two way Left Turn Lane		Yes				
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	56.0%			ICU Level of Service B		
Analysis Period (min)	15					
























7: East Access & Walkley
PM Peak Hour

2480 Walkley Road
2025 Total Traffic

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↓			↑↑		↗
Traffic Volume (vph)	1754	14	0	983	0	9
Future Volume (vph)	1754	14	0	983	0	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	35.0		0.0	0.0
Storage Lanes		0	0		0	1
Taper Length (m)			10.0		10.0	
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	4885	0	0	3402	0	1610
Flt Permitted						
Satd. Flow (perm)	4885	0	0	3402	0	1610
Link Speed (k/h)	50			50	50	
Link Distance (m)	98.4			164.7	137.8	
Travel Time (s)	7.1			11.9	9.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	5%	1%	1%
Adj. Flow (vph)	1754	14	0	983	0	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1768	0	0	983	0	9
Enter Blocked Intersection	Yes	No	No	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	4.0			4.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	2.0			0.0	2.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.1%			ICU Level of Service A		
Analysis Period (min)	15					

3: Walkley & Melfort
PM Peak Hour

2480 Walkley Road
2025 Total Traffic (unsignalized)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 		 	
Traffic Volume (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Future Volume (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	20.0			20.0			10.0			10.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.997				0.850		0.987	
Flt Protected	0.950			0.950				0.950			0.957	
Satd. Flow (prot)	1768	3429	0	1701	3456	0	0	1701	1522	0	1758	0
Flt Permitted	0.950			0.950				0.950			0.957	
Satd. Flow (perm)	1768	3429	0	1701	3456	0	0	1701	1522	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		230.6			98.4			136.9			208.4	
Travel Time (s)		16.6			7.1			9.9			15.0	
Confl. Peds. (#/hr)	14					14	12					12
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	1%	5%	3%	5%	5%	5%	5%	1%	1%	1%
Adj. Flow (vph)	38	1594	24	50	878	17	62	0	135	38	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1618	0	50	895	0	0	62	135	0	42	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)		4.7			5.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		10.0			10.0			2.0			2.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	72.8%						ICU Level of Service C					
Analysis Period (min)	15											

APPENDIX M

Monitoring Program

Monitoring Program

A monitoring program at the proposed signal at Walkley Road/Melfort Street is recommended to determine if signage restricting the southbound left turn movement is required. The purpose of this restriction is to mitigate potential cut-through traffic between St. Laurent Boulevard and Walkley Road, via Melfort Street.

At a community meeting in April 2019, concerns were raised about cut-through traffic performing a southbound left turn at Walkley Road/Melfort Street rather than at Walkley Road/St. Laurent Boulevard, once the Walkley Road/Melfort Street intersection is fully signalized. The monitoring of this movement will confirm whether any formal restrictions are required.

Prior to registration of the RMA agreement, it is recommended that the Owner submit a cheque, payable to the City of Ottawa for costs to produce Miovision data at the proposed signal. The City should monitor this intersection for three years, following the opening of the redevelopment. The funds identified previously will cover the City's costs of collecting and reviewing data for the monitoring period.

For the southbound left turn movement, it is recommended that signage be implemented if an unsatisfactory number of left turns are being observed during the monitoring period. It is recommended that the threshold of what would be considered an unsatisfactory southbound left turn volume be determined in consultation with City staff. The TIA has assumed that the volume for this movement may increase from 5 to 10 vph during the AM and PM peak hours to 35 to 40 vph. Significant increases beyond the projected volumes may be considered unsatisfactory. The Owner will be responsible for funding the prohibitive signage, if required.