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# 2020 Walkley Road & 2935 Conroy Road

## Traffic Impact Assessment

**2020 Walkley Road & 2935 Conroy Road  
Transportation Impact Assessment**

Prepared By:

**NOVATECH**

Suite 200, 240 Michael Cowpland Drive  
Ottawa, Ontario  
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March 2021

Rev: August 2021

Novatech File: 119067

Ref: R-2020-124

August 31, 2021

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

**Attention: Mr. Mike Giampa, P.Eng.**  
**Project Manager, Infrastructure Approvals**

Dear Mr. Giampa:

**Reference: 2020 Walkley Road & 2935 Conroy Road**  
**Revised Transportation Impact Assessment**  
**Novatech File No. 119067**

---

We are pleased to submit the following revised Transportation Impact Assessment in support of ZBL and Site Plan Applications for the above address. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017). This revised TIA has been prepared to address City comments dated July 2, 2021.

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

Yours truly,

**NOVATECH**



Patrick Hatton, P.Eng.  
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 licensed<sup>1</sup> or registered<sup>2</sup> professional in good standing, whose field of expertise [check  appropriate field(s)] is either transportation engineering  or transportation planning .

**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 31<sup>st</sup> day of August, 2021.  
(City)

Name: Patrick Hatton, P.Eng.  
(Please Print)

Professional Title: Project Manager, Transportation / Traffic



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

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## EXECUTIVE SUMMARY

This revised Transportation Impact Assessment (TIA) has been prepared in support of ZBL and Site Plan Applications for 2020 Walkley Road / 2935 Conroy Road.

The subject site is designated as 'Urban Employment Area' on Schedule 'B' of the City of Ottawa's Official Plan. It is currently zoned Light Industrial Zone – IL[1477] S117-h2. A ZBL Amendment is required for the proposed warehouse use.

The existing site includes a 20,577 square foot gym in addition to 38,390 square feet of office at 2020 Walkley Road and a 48,540 square foot commercial building at 2935 Conroy Road. Access for the existing site is via one full movement driveway onto Walkley Road and one right-in, right-out (RIRO) driveway onto Conroy Road.

The proposed development is planned to consist of three single-storey warehouses totalling about 24,407 m<sup>2</sup> (262,715 ft<sup>2</sup>) and the existing uses will be demolished. Access is planned via one access to Walkley Road (modified to RIRO with a closure to the median opening), two accesses to Conroy Road (both RIRO), and one full access to St. Laurent Boulevard. The site will be completed in three phases, beginning in 2021 with full buildout anticipated by 2023.

The study area intersections are:

- Walkley Road at Conroy Road;
- Conroy Road at St. Laurent Boulevard;
- Walkley Road at Harding Road; and,
- The site driveways.

The weekday AM and PM peak hours are considered to represent the “worst case” combination of site-generated traffic and peak traffic conditions of the adjacent roadways. Intersection capacity analysis has been completed for the weekday AM and PM peak hours. Analysis of potential transportation impacts has been completed for the 2023 buildout year and the 2028 horizon year. Weekday AM and PM traffic counts were collected by the City of Ottawa at the study area intersections.

A 1% background growth rate was applied to traffic along the study roadways. Trips generated by the nearby developments at 2500 St. Laurent Boulevard, 2190 Halifax Drive, and Timbercreek Heron Gate have been accounted for separately. Background traffic volumes for the 2023 buildout year were determined by applying the annual traffic growth rate to the peak hour traffic volumes and by adding the traffic generated by 2500 St. Laurent Boulevard and 2190 Halifax Drive. Background traffic volumes for the 2028 buildout year were determined by applying the annual traffic growth rate to the peak hour traffic volumes and by adding the traffic generated by 2500 St. Laurent Boulevard, 2190 Halifax Drive, and Timbercreek Heron Gate (2030 site generation). Traffic generated by both the proposed and existing development were estimated using *Trip Generation Manual, 10<sup>th</sup> Edition* (Institute of Transportation Engineers, Washington 2017). Site traffic was distributed and assigned to the projected background traffic to determine future total traffic volumes.

The main conclusions and recommendations of this TIA are:

### Development Design and Parking

- Pedestrian facilities will be provided between the main buildings and the parking lots. New pedestrian walkways will be constructed to connect to all three frontages.



- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- The proposed vehicular parking spaces at each phase meet the requirements of the ZBL.
- The proposed bicycle parking spaces meet the minimum requirements of the ZBL.
- The number of barrier-free spaces meet the AODA requirements.
- A minimum of one loading space is required for each proposed warehouse, each will have 20 or 22 loading bays.
- Each of the three buildings have exterior access doors within a 240m walking distance from an OC Transpo stop.

#### Boundary Street Multi-Modal Level of Service (MMLOS)

The results of the segment MMLOS analysis for Walkley Road, Conroy Road, and St. Laurent Boulevard can be summarized as follows:

- The PLOS along Walkley Road, Conroy Road, and St. Laurent Boulevard is currently failing. A 2m sidewalk and 2m boulevard are both required to achieve the target C on Walkley Road. Given the speed and traffic volume along St. Laurent Boulevard and Conroy Road, respectively, the target PLOS A is not achievable due to the speed and volume. PLOS D and PLOS C are achievable on Conroy Road and St. Laurent Boulevard, respectively, with a 2m sidewalk and a 2m boulevard;
- The Walkley and St. Laurent corridors miss the BLOS target C, achieving E and D, respectively. The target BLOS can be achieved on both Walkley and St. Laurent with 1.5m onstreet bike lanes;
- Walkley Road misses the TLOS target B, achieving a D. A bus lane is required to achieve LOS B; and,
- Each study road achieves TkLOS A or B, surpassing the targets, where applicable.

#### Transit

- The new development is anticipated to generate 13 transit trips (10 in and 3 out) during the weekday AM peak hour and 13 transit trips (4 in and 9 out) during the weekday PM peak hour. These transit trips are fewer than the transit trips generated by the existing site, estimated to be 33 transit trips (28 in and 5 out) during the weekday AM peak hour and 34 transit trips (9 in and 25 out) during the weekday PM peak hour.

#### Access Design

- Sufficient corner clearance, as applicable is provided at each driveway.
- The south driveway to Conroy Road is about 8.3m wide, measured at the property line, meeting the width requirements under the City's Private Approach by-law.
- The driveways to Conroy Road (north), Walkley Road, and St. Laurent Boulevard are 9.4m wide, 10.1m wide and 11.8m wide (measured at the right-of-way line), respectively, but the width is required to accommodate the heavy trucks.
- Adequate stopping sight distance for heavy vehicles is available at each driveway.
- The available clear throat at the St. Laurent Boulevard (15m) and Conroy Road (30m) accesses are sufficient for the industrial development.
- The available clear throat at the Walkley Road driveway (20m) is sufficient to accommodate an accessory office use of <math><5,000\text{m}^2</math> for the site. Accessory office uses will be less than 5,000m<sup>2</sup>. Since the Walkley driveway will be right-in, right-out only, heavy vehicles coming from the highway will not be able to use this entrance to the site. Queuing of entering and exiting traffic at this driveway is expected to be accommodated within the 20m storage.

Intersection MMLOS Analysis

- The Walkley at Conroy intersection does not meet the target Auto LOS.
  - The eastbound, approach at the **Walkley Road / Conroy Road** intersection does not meet the target Auto LOS D in the PM peak hour. By increasing the cycle length at the Walkley at Conroy intersection to 120 seconds (from 110 seconds) during the PM peak, the AutoLOS at the intersection can be improved to D.

Background Traffic:

- During the 2028 AM and PM peak hours without site development, all movements at the signalized study intersections are expected to operate with LOS D or better. The site driveway at Walkley Road will operate with LOS F with delays and queuing of about 2-3 vehicles.
- The delay at the Walkley site driveway is due to left turning traffic exiting the site. Converting this driveway to right-in, right-out only will improve the operations.

Total Traffic with Site Redevelopment:

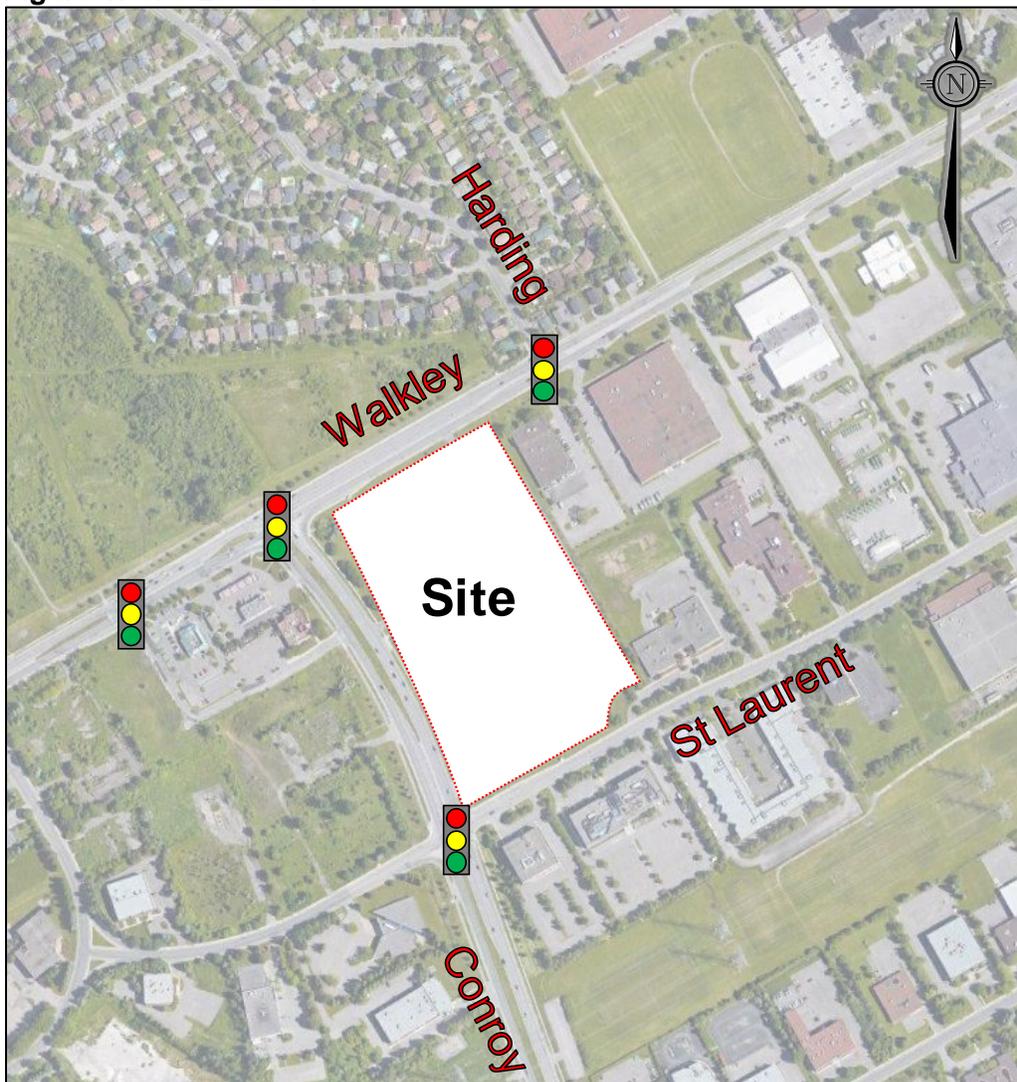
- All study intersections and site accesses are expected to operate with LOS D or better with site redevelopment.

## 1.0 INTRODUCTION

This Transportation Impact Assessment (TIA) report has been prepared in support of ZBL and Site Plan Applications for 2020 Walkley Road / 2935 Conroy Road. The site (See **Figure 1**) is occupied by commercial development and is surrounded by the following:

- Walkley Road, vacant land, and residential development to the north;
- Commercial development to the east;
- St. Laurent Boulevard and commercial development to the south; and,
- Conroy Road and vacant land / commercial development to the west.

**Figure 1: Site Location**



## 2.0 PROPOSED REDEVELOPMENT

The subject site is designated as 'Urban Employment Area' on Schedule 'B' of the City of Ottawa's Official Plan. It is currently zoned Light Industrial Zone – IL[1477] S117-h2. A ZBL Amendment is required for the proposed warehouse use.

The existing site includes a 20,577 square foot gym in addition to 38,390 square feet of office at 2020 Walkley Road and a 48,540 square foot commercial building at 2935 Conroy Road. Access for the existing site is via one full movement driveway onto Walkley Road and one right-in, right-out (RIRO) driveway onto Conroy Road.

The proposed redevelopment is planned to consist of three single-storey warehouses totalling about 24,407 m<sup>2</sup> (262,715 ft<sup>2</sup>) and the existing uses will be demolished. Access is planned via one access to Walkley Road (modified to RIRO with a closure to the median opening, See **Appendix K**), two accesses to Conroy Road (both RIRO), and one full access to St. Laurent Boulevard. Buildout is anticipated by 2023. It is expected that the redevelopment will be constructed in three phases with approval being sought for the full redevelopment. The phasing is planned to be:

- Phase 1 – South warehouse and the St Laurent access, anticipated in 2021.
- Phase 2 – Midblock warehouse and the Conroy accesses, anticipated in 2022.
- Phase 3 – North warehouse and the new Walkley access, anticipated in 2023.

A Context Plan is included in **Figure 2**. The preliminary site plan is included in **Appendix A**.

### 3.0 SCREENING

The City's 2017 TIA Guidelines identifies three triggers for completing a TIA report, including trip generation, location, and safety. The criteria for each trigger are outlined in the City's TIA Screening Form (See **Appendix B**).

The trigger results are as follows:

- **Trip Generation Trigger** – The site is anticipated to generate over 60 person trips/peak hour; however, with consideration of the existing use there is a **net reduction** in traffic. A full TIA is being prepared due to the RMA required to modify the access at Walkley to right-in, right-out.
- **Location Triggers** – The site proposes driveways to Walkley Road and Conroy Road. Both are designated Spine Routes; further assessment **is required** based on this trigger.
- **Safety Triggers** – The driveway onto Walkley Road is within the area of influence of a signalized intersection; further assessment **is required** based on this trigger.

### 4.0 SCOPING

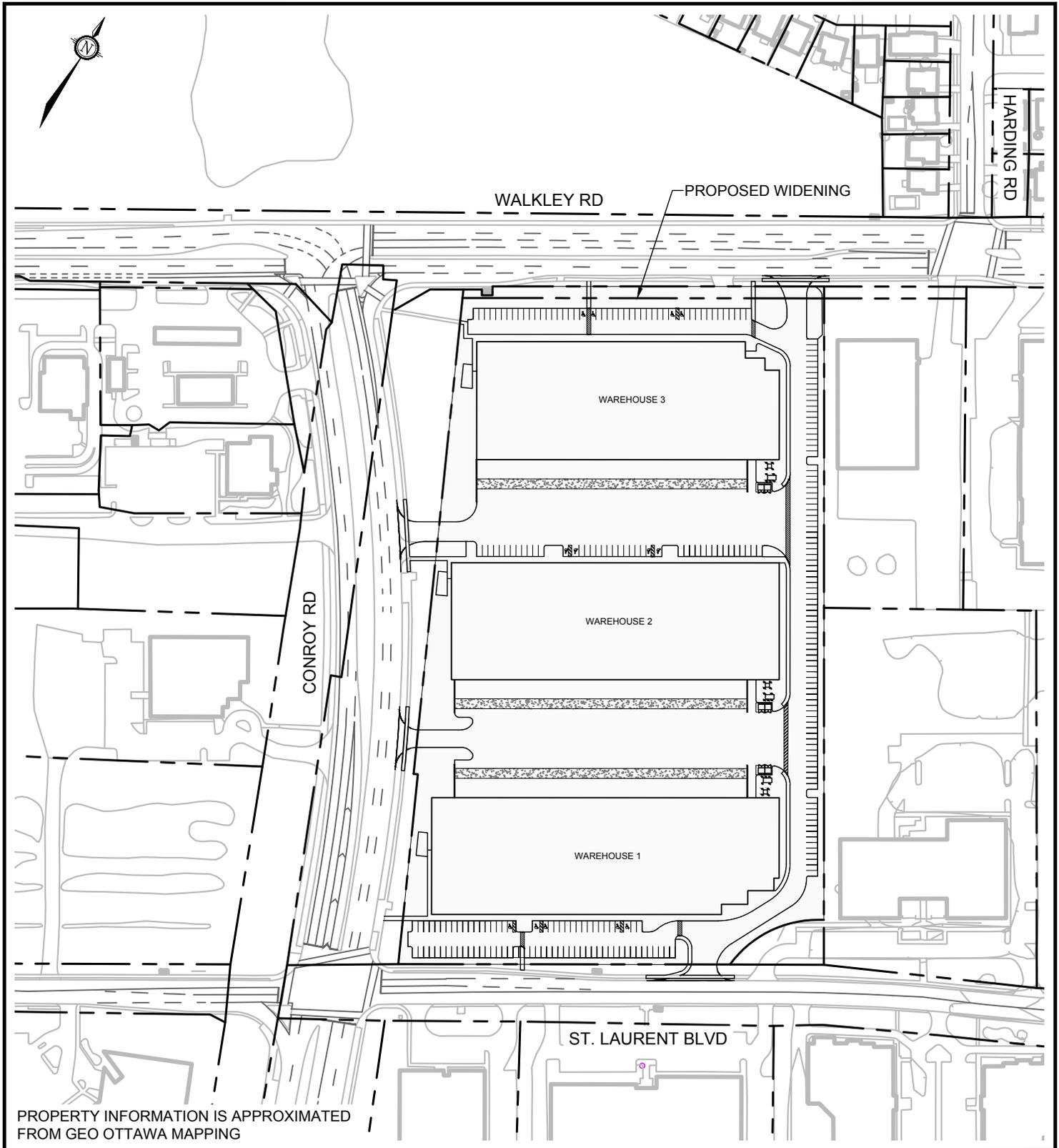
#### 4.1 Existing Conditions

##### 4.1.1 Roadways

**Walkley Road** is a four-lane divided arterial roadway and is classified as a truck route, allowing full loads. It runs east-west and has a posted speed limit of 50km/h. Walkley Road between Heron and the Greenbelt Boundary has a right-of-way protection of 44.5m and a widening is required.

**Conroy Road** is a four-lane divided arterial roadway and is classified as a truck route, allowing full loads. It runs north-south and has a posted speed limit of 60km/h. Conroy Road between Walkley and the Greenbelt Boundary has a right-of-way protection of 44.5m and no widening is required.

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PROPERTY INFORMATION IS APPROXIMATED FROM GEO OTTAWA MAPPING



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2020 WALKLEY ROAD

CONTEXT PLAN



DATE	AUG 2021	JOB	119067	FIGURE	FIGURE 2
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**St. Laurent Boulevard** is a two-lane undivided collector roadway. It runs east-west and has a posted speed limit of 50km/h.

**Harding Road** is a two-lane undivided local roadway. It runs north-south and has a regulatory speed limit of 50km/h. Harding Road has existing traffic calming with “Traffic Calmed Neighbourhood” signage, seasonal in-road centreline speed signs, and “SLOW” pavement markings.

#### 4.1.2 Intersections

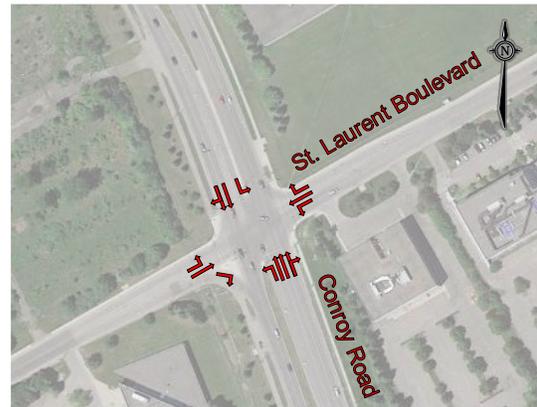
##### Walkley Road at Conroy Road

- Signalized three-legged intersection
- Northbound: two left turn lanes and one channelized right turn lane.
- Westbound: two left turn lanes, two through lanes
- Eastbound: two through lanes, one channelized right turn lane.
- Signalized crosswalks crossing the east and south approaches.



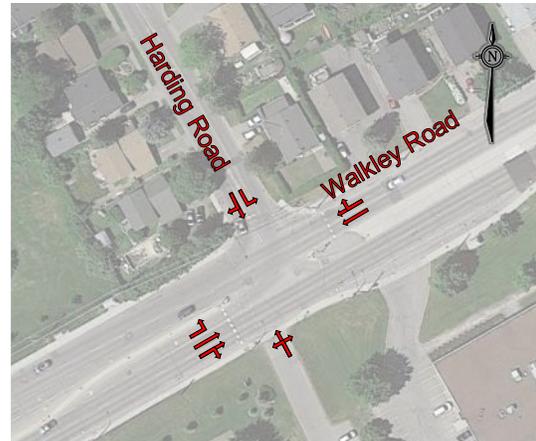
##### Conroy Road at St. Laurent Boulevard

- Signalized four-legged intersection
- Northbound: left turn lane, two through lanes, and one through/right shared lane.
- Southbound: left turn lane, one through lane, and one through / right shared lane.
- Westbound: one left turn lane, one through lane, and one right turn lane.
- Eastbound: one left turn lane, one through lane, and one channelized right turn lane.
- Signalized crosswalks crossing all four approaches.



Walkley Road at Harding Road

- Signalized four-legged intersection
- Northbound: single lane approach. Through movements are restricted during the AM peak period.
- Southbound: one left turn lane, one through / right shared lane.
- Eastbound: one left turn lane, one through lane and one through / right shared lane. Left turns are restricted during the AM peak period.
- Westbound: one through lane and one through / right shared lane. Left turn movements are restricted.



**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:

**Conroy Road, West Side:**

- One RIRO commercial driveway for 1970 Walkley Road.
- One RIRO commercial driveway for 2980 / 2990 Conroy Road.
- One RIRO commercial driveway for 3000 Conroy Road.

**Conroy Road, East Side:**

- One RIRO commercial driveway for 2935 Conroy Road (site).

**Walkley Road, North Side:**

- Five full movement residential driveways for 2077-2099 Walkley Road.

**Walkley Road, South Side:**

- One signalized full commercial driveway for 1950 Walkley Road.
- Two RIRO commercial driveways for 1970 Walkley Road.
- One full commercial driveway for 2020 Walkley Road (site).
- One commercial driveway (2060 Walkley Road) opposite Harding Road signals.
- Two full accesses to 2080 Walkley

**St. Laurent Boulevard, North Side:**

- Two commercial driveways for 2400 St. Laurent Boulevard
- Two commercial driveways for 2380 St. Laurent Boulevard

**St. Laurent Boulevard, South Side:**

- Two commercial driveways for 2465 St. Laurent Boulevard.
- Two one-way commercial driveways for 2445 St. Laurent Boulevard.
- Three commercial driveways for 2405 St. Laurent Boulevard.

#### 4.1.4 Pedestrian and Cycling Facilities

Walkley Road and Conroy Road are identified as spine cycling routes in the City’s Cycling Network with St. Laurent Boulevard identified as a local cycling route. Conroy Road and Walkley Road between Conroy Road and Heron Road are also cross-town bikeways. There are currently on-street bicycle lanes along Conroy Road between Walkley Road and Hunt Club Road.

Concrete sidewalks are provided along both sides of Walkley Road and the north (site) side of St. Laurent Boulevard in this area. There is concrete sidewalk along the east (site) side of Conroy Road and a multi-use pathway along the west side of Conroy Road. The MUP extends north of Walkley through the planned Alta Vista Corridor described in **Section 4.2**, to the Ottawa Health Sciences Centre, and is also a cross-town bikeway.

#### 4.1.5 Transit

The nearest bus stops to the subject site are stops #7281, #7282, #8324, and #1899 along Walkley Road just to the north, stops #4311 and #4307 along St. Laurent Boulevard just to the south, and stops #1321, and #2344 to the south and west (See **Figure 3**). The Walkley stops serve routes #46, #644, and #649, the St. Laurent stops serve route #40, and the Conroy stops serve routes #40, #644, and #649.

OC Transpo Route #40 travels between the St. Laurent Shopping Centre and Hurdman Station on 30-minute headways with all-day service, 7-days per week.

OC Transpo Route #46 travels between Billings Bridge and Hurdman Station on 15-minute headways with all-day service, 7-days per week.

OC Transpo Route #644 is a school route and travels between Canterbury High School and Greenboro Station. OC Transpo Route #649 is a school route and travels between Hillcrest High School and Greenboro Station.

OC Transpo Route information is included in **Appendix C**.

#### 4.1.6 Existing Area Traffic Management Measures

Currently, there are no completed or ongoing Area Traffic Management (ATM) studies within the study area.

**Figure 3: OC Transpo Bus Stop Locations**





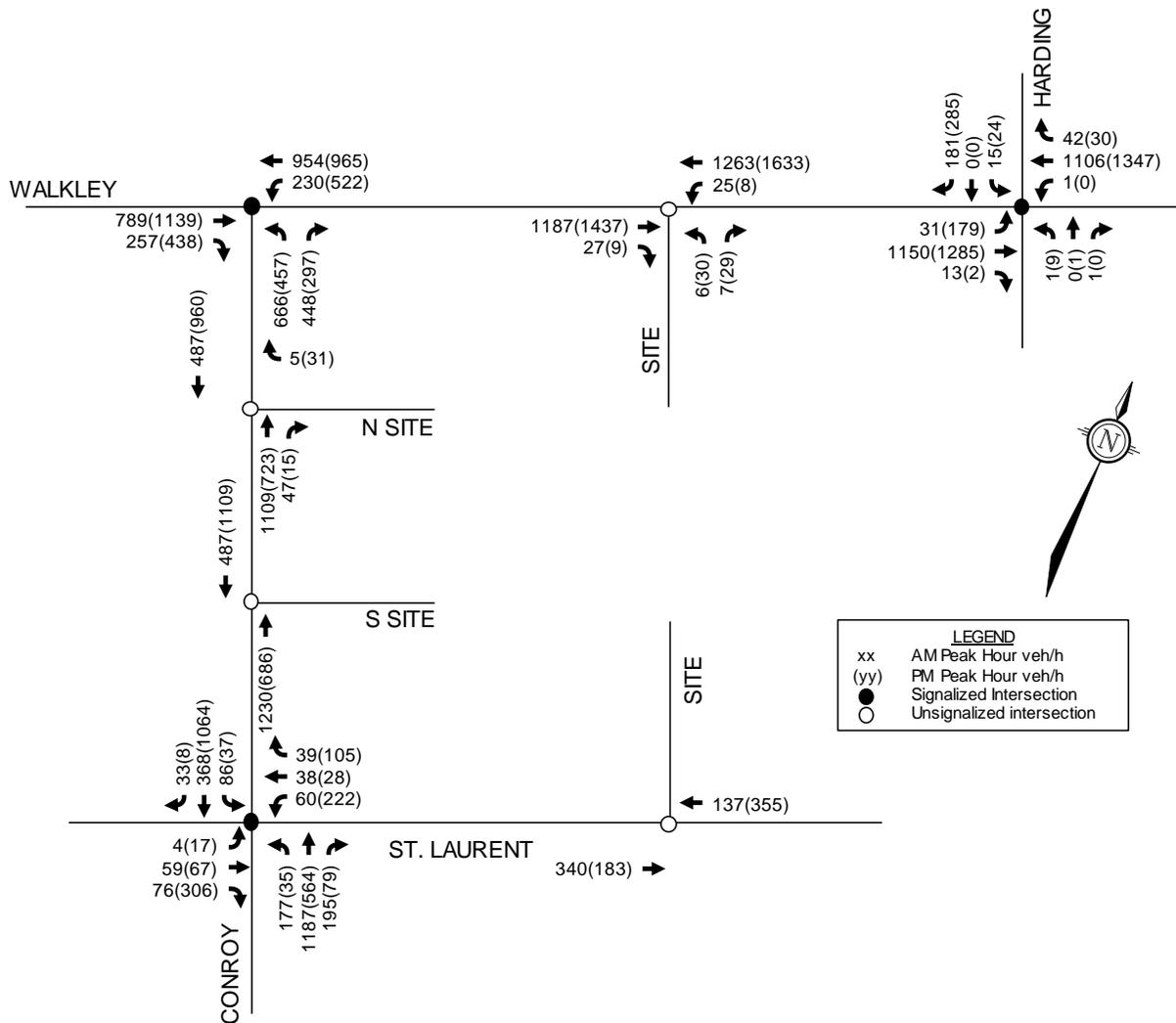
### 4.1.7 Existing Traffic Volumes

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

- Walkley Road / Conroy Road February 22, 2018
- Conroy Road / St. Laurent Boulevard June 1, 2017
- Walkley Road / Harding Road December 11, 2018

Observed weekday AM and PM peak hour traffic volumes at the study area intersections are shown in **Figure 4**. Peak hour summary sheets of the above traffic counts are included in **Appendix D**.

**Figure 4: Existing Traffic Volumes**



### 4.1.8 Collision Records

Historical collision data for the Walkley Road intersections with Conroy Road and Harding Road as well as the Conroy Road at St. Laurent Boulevard intersection from the last five years were obtained from the City’s Public Works and Service Department. Copies of the collision summary reports are included in **Appendix E**.

The collision data have been evaluated to identify collision patterns. **Table 1** summarizes the number of collisions at each intersection from January 1, 2014 to December 31, 2018. During the five-year period there were no reported fatal collisions in the analyzed area.

**Table 1: Reported Collisions**

Intersection	Number of Collisions					Total
	SMV <sup>1</sup> / Other	Rear-End	Angle	Turning Mvmt	Side- swipe	
Walkley Road at Conroy Road	3	49	4	5	11	72
Conroy Road at St. Laurent Boulevard	2	12	7	4	4	29
Walkley Road at Harding Road	2	11	6	12	2	33

1. SMV: Single Motor Vehicle

#### **Walkley Road at Conroy Road**

Twelve of the seventy-two collisions caused an injury. Sixty collisions occurred in clear conditions, three in rain conditions, and nine in snow conditions. None of the collisions involved pedestrians.

Of the **forty-nine rear-end** impacts at this intersection:

- Eight occurred in poor driving conditions;
- Sixteen occurred at the northbound approach;
- Twenty occurred at the eastbound approach; and,
- Thirteen occurred at the westbound approach.

High traffic volumes create the potential for more collisions of this type. There is some horizontal curvature on the northbound approach that may be contributing to these collisions. Eastbound rear ends could be the result of multiple accesses in proximity of the intersection.

Of the **eleven sideswipe** impacts at this intersection:

- Three occurred in poor driving conditions;
- Two occurred at the northbound approach;
- One occurred at the eastbound approach; and,
- Eight occurred at the westbound approach.

High traffic volumes and multiple lanes create the potential for more collisions of this type.

#### **Conroy Road at St. Laurent Boulevard**

Eight of the twenty-nine collisions caused an injury. Twenty-three collisions occurred in clear conditions, two in rain conditions, three in snow conditions, and one in fog conditions. None of the collisions involved pedestrians.

Of the **twelve rear-end** impacts at this intersection:

- Two occurred in poor driving conditions;
- Three occurred at the northbound approach;
- Two occurred at the eastbound approach;
- Three occurred at the southbound approach; and,

- Four occurred at the westbound approach.

Of the **seven angle** impacts at this intersection:

- Two occurred in poor driving conditions;
- Two involved a southbound vehicle and a westbound vehicle; and,
- Five involved a northbound vehicle and a westbound vehicle.

### **Walkley Road at Harding Road**

Eight of the thirty-three collisions caused an injury. Twenty-seven collisions occurred in clear conditions, two in rain conditions, and four in snow conditions. None of the collisions involved pedestrians.

Of the **eleven rear-end** impacts at this intersection:

- Eight occurred in poor driving conditions;
- One occurred at the southbound approach;
- Four occurred at the eastbound approach; and,
- Six occurred at the westbound approach.

High traffic volumes create the potential for more collisions of this type. There are multiple full accesses in proximity of the intersection on the westbound approach.

Of the **twelve turning movement** impacts at this intersection:

- Two occurred in poor driving conditions;
- Eight were between an eastbound left vehicle and a westbound through vehicle; and,
- Four were between a westbound left vehicle and an eastbound through vehicle.

There may be insufficient green time for the EBL protected phase and insufficient gaps during the EBL permissive phase. The westbound left movement does not have a left turn lane and its restriction has been recently implemented.

## **4.2 Planned Conditions**

The 2031 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 the corridor. In the 2031 Affordable Network, at-grade BRT will connect from Baseline Station to Heron Station. In the 2031 Network Concept, at-grade BRT will connect from Bayshore Station to St. Laurent Station. The 2031 Network Concept will not be implemented until after 2031.

The Alta Vista Transportation Corridor (Network Concept) is a new four lane road (including two peak-period bus lanes) between the Ottawa Health Sciences Centre and Walkley Road. The roadway will include transit signal priority and queue jump lanes and will improve transit access to the Ottawa Hospital, CHEO, and the Canadian Forces Health Care Centre. The roadway addresses capacity deficiencies and the Environmental Assessment is complete. The corridor is part of the City's 2031 Network Concept and will not be implemented until after 2031.

Conroy Road is identified in the City's TMP for transit signal priority and queue jump lanes between Walkley Road and Hunt Club Road. The corridor is part of the City's 2031 Network Concept and will not be implemented until after 2031.

### 4.2.1 Other Study Area Developments

Other study area developments that are likely to occur within this study's horizon year include:

- 2500 St. Laurent Boulevard: A 2017 Transportation Brief was prepared (Stantec) for the 6,330m<sup>2</sup> (68,134 square foot) office development and estimated that Phase 1 (3,610m<sup>2</sup>) of the development would generate 72 and 99 vehicle trips during the AM and PM peak hour, respectively.
- 2190 Halifax Drive: A 2019 TIA was prepared (Dillon) for 202 residential apartment units and estimated that the site would generate 48 and 54 vehicle trips during the AM and PM peak hours, respectively.
- Timbercreek Heron Gate: A 2020 TIA was prepared (CGH Transportation) for redevelopment of the Heron Gate site which will redevelop the existing townhouses with seven separate blocks that will include 118 low-rise, 2,047 mid-rise, and 2,874 high-rise units. The TIA estimates that the development will generate 587 and 614 vehicle trips during the AM and PM peak hours, respectively.
- 2375 St. Laurent Boulevard: A 2018 Screening form was prepared (D. J. Halpenny & Associates Ltd.) for the 930m<sup>2</sup> (10,000 square foot) warehouse and concluded that the development would not meet the triggers for a TIA.
- 1011 Thomas Spratt Place: A proposed 460.3m<sup>2</sup> (4,955 square foot) warehouse / office extension onto an existing two-storey building. No TIA was prepared, and the site is expected to generate minimal trips.

### 4.3 Study Area and Time Periods

A boundary street review will be conducted for Walkley Road, Conroy Road, and St. Laurent Boulevard. The study intersections are:

1. Walkley Road at Conroy Road;
2. Walkley Road at Harding Road;
3. Conroy Road at St. Laurent Boulevard; and,
- 4-7. The site driveways.

The weekday AM and PM peak hours are expected to represent the worst-case combination of site traffic and adjacent road traffic. Projection of site volumes will be completed for these peak hours.

#### 4.3.1 Horizon Years

It is expected that the proposed redevelopment will be fully occupied by 2023 and approval is being sought for all three phases of construction. The analysis years for this study are therefore 2023 and 2028. Analysis of the interim phases has not been completed since most of the Phase 1 trips are expected to use the St. Laurent access throughout the development phases with little change to that access. The Conroy accesses are installed in Phase 2 and the impact of the existing City of Ottawa office and gym in Phase 2 is not expected to be significantly different than the impact of full buildout in Phase 3.

#### 4.4 Exemptions Review

This module reviews possible exemptions from the final TIA, 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 Applies
<b>Design Review Component</b>			
4.1 Development Design	4.1.2 Circulation and Access	<ul style="list-style-type: none"> <li>Only required for site plans</li> </ul>	Not Exempt
	4.1.3 New Street Networks	<ul style="list-style-type: none"> <li>Only required for plans of subdivision</li> </ul>	Exempt
4.2 Parking	4.2.1 Parking Supply	<ul style="list-style-type: none"> <li>Only required for site plans</li> </ul>	Not Exempt
	4.2.2 Spillover Parking	<ul style="list-style-type: none"> <li>Only required for site plans where parking supply is 15% below unconstrained demand</li> </ul>	Exempt
<b>Network Impact Component</b>			
4.5 Transportation Demand Management	<i>All elements</i>	<ul style="list-style-type: none"> <li>Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time</li> </ul>	Not Exempt
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	<ul style="list-style-type: none"> <li>Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds</li> </ul>	Not Exempt
4.8 Network Concept	<i>All elements</i>	<ul style="list-style-type: none"> <li>Only required when the proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by the established zoning</li> </ul>	Exempt*

\* While a zoning amendment is required for the use, the development will generate fewer than 200 person trips during the peak hour.

#### 5.0 FORECASTING

##### 5.1 Development Generated Traffic

###### 5.1.1 Trip Generation

The proposed redevelopment is planned to consist of three single-storey warehouses totalling about 24,407 m<sup>2</sup> (262,715 ft<sup>2</sup>). Trips generated by the proposed development were estimated using *Trip Generation, 10<sup>th</sup> Edition* (Institute of Transportation Engineers, Washington, 2017). Person trips were estimated (See **Table 3**) using an ITE Trip to Person Trip conversion factor of 1.28, consistent with the City of Ottawa TIA Guidelines.

Initial plans for the site included 265,800 square feet of GFA and this larger area has been carried into the trip generation for the site.

**Table 3: Person Trip Generation – Proposed Site**

Land Use <sup>1</sup>	Units <sup>2</sup>	Person Trips Generated <sup>3</sup>					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Warehouse (ITE 150)	265.8	56	17	73	21	55	76

Notes: 1. Trip Generation for the associated Land Use from *Trip Generation 10<sup>th</sup> Edition* (Institute of Transportation Engineers, Washington, 2017). Trips have been increased by 28% to account for 10% non-auto mode share and average vehicle occupancy of 1.15.  
 2. Units are 1,000 ft<sup>2</sup> of GFA.  
 3. Person trips per hour for peak hours.

The modal shares for the proposed development are anticipated to be generally consistent with the existing modal shares outlined in the *2011 TRANS O-D Survey Report*, specific to the Alta Vista region which indicates the modal share values for the trips to/from and within the district. The projected person trips by modal share are shown in **Table 4**.

The trip generation estimate for the warehouse site includes peak hour trips by heavy vehicles.

**Table 4: Person Trips by Modal Share – Proposed Site**

Travel Mode	Existing Modal Share	Target Modal Share	AM Peak			PM Peak		
			IN	OUT	TOT	IN	OUT	TOT
Person Trips			56	17	73	21	55	76
Vehicle Driver	60%	<b>60%</b>	<b>33</b>	<b>10</b>	<b>43</b>	<b>12</b>	<b>33</b>	<b>45</b>
Auto Passenger	13%	<b>13%</b>	7	2	9	3	7	10
Transit	17%	<b>17%</b>	10	3	13	4	9	13
Active Trips	10%	<b>10%</b>	6	2	8	2	6	8

The proposed development is projected to generate 43 two-way vehicle trips during the AM peak hour and 45 two-way vehicle trips during the PM peak hour. These estimates include heavy vehicles and of the above trips, ITE estimates that the development will generate 5 two-way truck trips (2 in and 3 out) during the AM peak hour and 8 two-way truck trips (4 in and 4 out) during the PM peak hour.

**5.1.2 Trip Distribution / Assignment**

The overall distribution of trips generated by the development has been estimated (see below) based on the observed volumes along the study area roadways as well as a review of the existing settlement patterns.

- 35% to/from the east;
- 30% to/from the west;
- 30% to/from the south; and,
- 5% to/from the north.

Anticipated Trip Assignment for each proposed driveway is summarized in **Table 5**.

**Table 5: Trip Assignment by Driveway – Proposed Site**

		Driveway			
		Walkley	Conroy North	Conroy South	St. Laurent
Trips In	From East	0% <sup>3</sup>	0%	0%	100% <sup>1</sup>
	From West	90%	0%	0%	10% <sup>2</sup>
	From South	10%	30%	20%	40%
	From North	0%	0%	0%	100%
Trips Out	To East	40%	10%	10%	40% <sup>1</sup>
	To West	0%	70%	10%	20% <sup>2</sup>
	To South	0%	0%	0%	100%
	To North	75%	25%	0%	0%

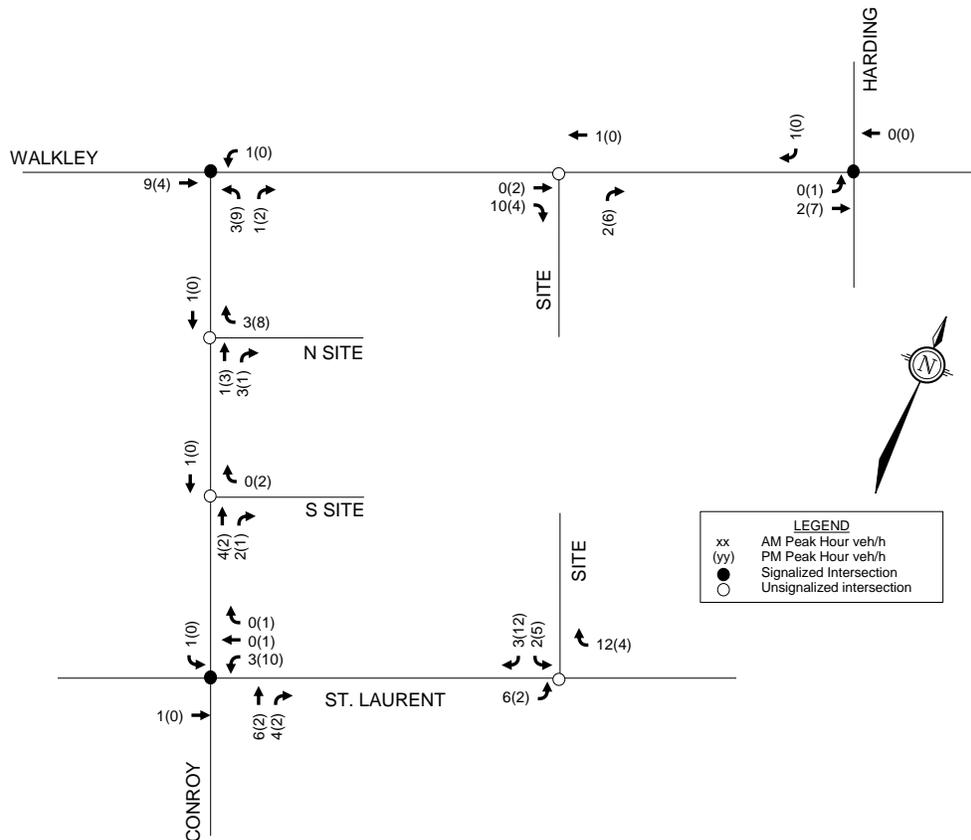
1. 100% of trips from and 40% of trips to the east were assigned to route via St. Laurent Blvd. and the St. Laurent Blvd. driveway.

2. 10% of trips from / to the west were assigned to route via Don Reid Dr. and the St. Laurent Blvd. driveway.

3. No trips from the east have been assigned to the Walkley driveway due to the proposed restriction to the left turns.

Site generated traffic volumes have been assigned to the study area intersections and are shown in **Figure 5**.

**Figure 5: Assignment of Trips for the Proposed Site**



### 5.1.3 Existing Site Traffic

The existing site includes a 20,577 square foot gym in addition to 38,390 square feet of office at 2020 Walkley Road and a 48,540 square foot commercial building at 2935 Conroy Road (107,507 square feet total). Trips generated by the existing development were estimated using *Trip Generation, 10<sup>th</sup> Edition* (Institute of Transportation Engineers, Washington, 2017). Trips were estimated using the Weekday AM and PM peak hours of generator for the business park since there are several more data points than for the peak hour of adjacent street. Person trips were estimated (See **Table 6**) using an ITE Trip to Person Trip conversion factor of 1.28, consistent with the City of Ottawa TIA Guidelines.

**Table 6: Person Trip Generation – Existing Site**

Land Use <sup>1</sup>	Units <sup>2</sup>	Person Trips Generated <sup>3</sup>					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Business Park (ITE 770)	107.5	166	29	195	53	149	202

Notes: 1. Trip Generation for the associated Land Use from *Trip Generation 10<sup>th</sup> Edition* (Institute of Transportation Engineers, Washington, 2017). Trips have been increased by 28% to account for 10% non-auto mode share and average vehicle occupancy of 1.15.  
 2. Units are 1,000 ft<sup>2</sup> of GFA.  
 3. Person trips per hour for peak hours.

The modal shares for the existing development are anticipated to be generally consistent with the existing modal shares outlined in the *2011 TRANS O-D Survey Report*, specific to the Alta Vista region which indicates the modal share values for the trips to/from and within the district. The projected person trips by modal share are shown in **Table 7**.

**Table 7: Person Trips by Modal Share – Existing Site**

Travel Mode	Existing Modal Share	Target Modal Share	AM Peak			PM Peak		
			IN	OUT	TOT	IN	OUT	TOT
Person Trips			166	29	195	53	149	202
Auto Driver	60%	<b>60%</b>	<b>99</b>	<b>17</b>	<b>116</b>	<b>32</b>	<b>90</b>	<b>122</b>
Auto Passenger	13%	<b>13%</b>	22	4	26	7	19	26
Transit	17%	<b>17%</b>	28	5	33	9	25	34
Active Trips	10%	<b>10%</b>	17	3	20	5	15	20

The existing development is estimated to be generating 116 two-way vehicle trips during the AM peak hour and 122 two-way vehicle trips during the PM peak hour.

The overall distribution of trips generated by the existing site is estimated to be the same distribution as for the proposed site (See **Section 5.1.2**).

Anticipated Trip Assignment for each existing driveway is summarized in **Table 8**.



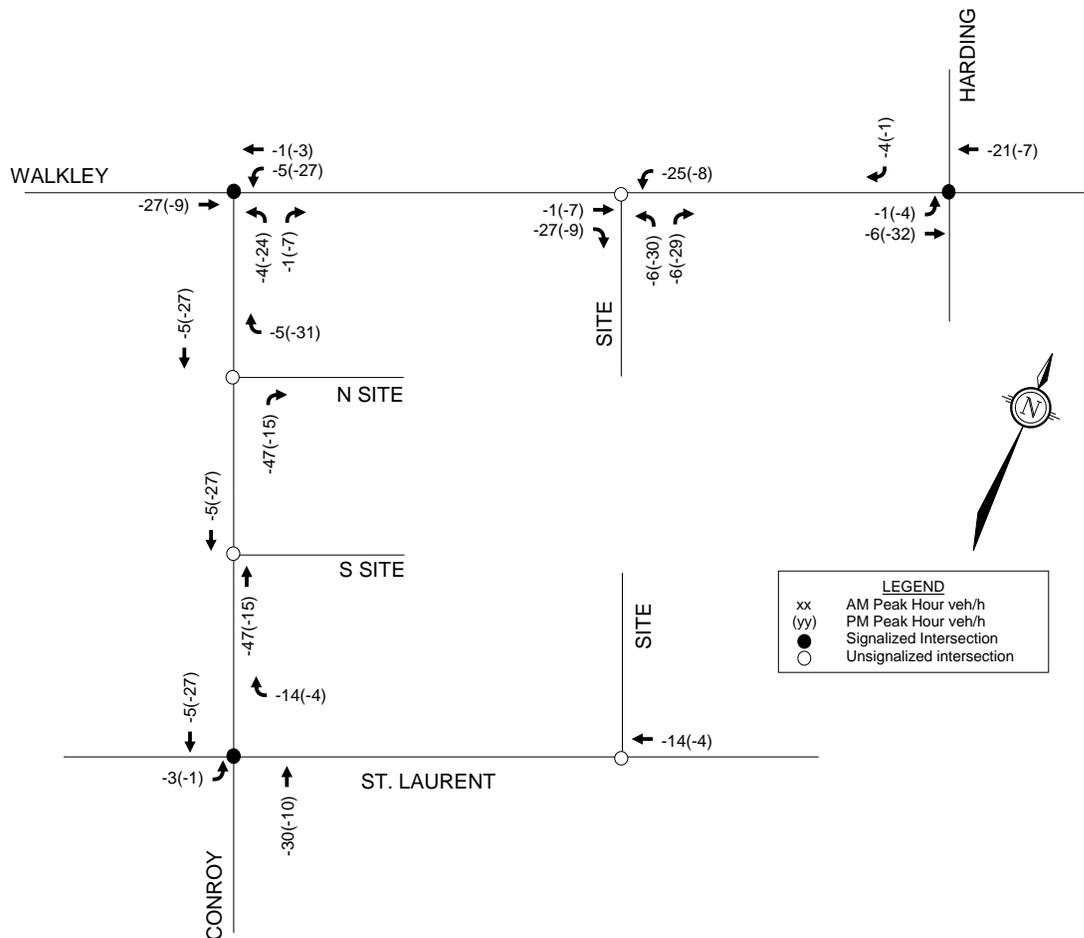
**Table 8: Trip Assignment by Driveway – Existing Site**

		Driveway	
		Walkley	Conroy
Trips In	From East	60%	40% <sup>1</sup>
	From West	90%	10% <sup>2</sup>
	From South	0%	100%
	From North	100%	0%
Trips Out	To East	80%	20%
	To West	10%	90%
	To South	100%	0%
	To North	80%	20%

1. 40% of trips from the east were assigned to route via St. Laurent Blvd. and the Conroy Rd. driveway.
2. 10% of trips from the west were assigned to route via Don Reid Dr. and the Conroy Rd. driveway.

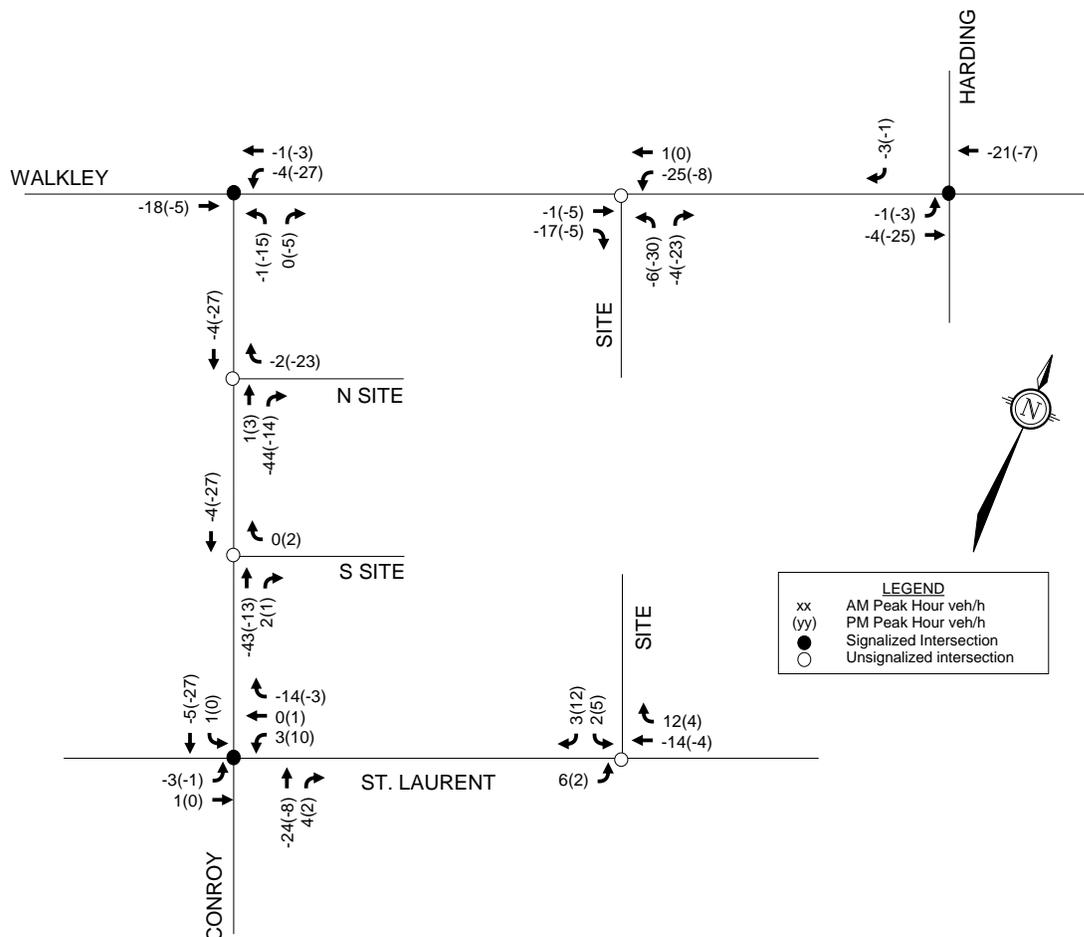
The reduction of assigned trips generated by the existing site (denoted as negative values) is shown in **Figure 6**.

**Figure 6: Reduction for Assignment of Existing Site Trips**



The net assignment of trips with site redevelopment (Proposed Site Generated Trips, **Figure 5** less Existing Site Generated Trips, **Figure 6**) is shown in **Figure 7**.

**Figure 7: Net Trip Assignment for Site Redevelopment**



Truck access is primarily expected to be from / to the east on Walkley and Highway 417. Trucks are expected to travel via Walkley Road, Conroy Road, and St. Laurent Boulevard. Truck departures are expected to primarily be from the Conroy Road driveways due to the connections from the truck courts.

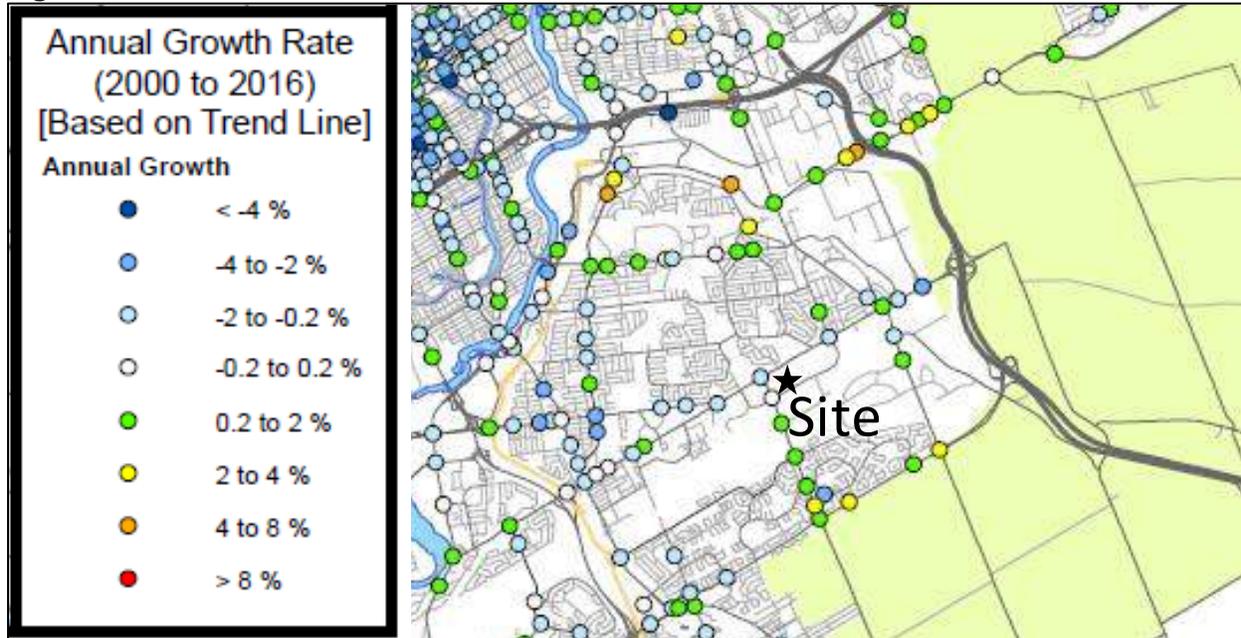
## 5.2 Background Traffic

### 5.2.1 Future Background Growth

For the 'Inner Suburbs' area of Ottawa, Exhibit 2.10 of the 2013 TMP projects population and employment growth rates of approximately 0.3% and 1.2% per annum, respectively. A 1% background growth rate has been applied to non-site traffic in this area.

This 1% background growth rate is in line with the annual historical (2000 to 2016) growth rate for this area (-2% to 2%) identified by the City of Ottawa (See **Figure 8**).

**Figure 8: Area Historical PM Peak Hour Annual Growth Rate - 2000 to 2016**



**5.2.2 Other Area Development**

Other study area developments are likely to occur within this study’s horizon (See **Section 4.2.1**).

Trips generated by the 2500 St. Laurent, 2190 Halifax Drive, and Heron Gate sites have been assigned to the study area intersections based on the assignment outlined in each traffic study (See **Appendix F**). Full site development of 2500 St. Laurent and 2190 Halifax Drive have been applied for the 2023 buildout year. Full site development of 2500 St. Laurent and 2190 Halifax Drive as well as partial development of the Heron Gate site (2030 site generation and auto volume removed by 2030) have been applied for the 2028 horizon year. Remaining background developments are expected to be minimal with trips captured by the 1% background growth rate.

**5.2.3 Projected Background and Total Traffic**

Projected 2023 and 2028 background traffic volumes (with 1% background growth as well as the other study area developments) are shown in **Figure 9** and **Figure 10**, respectively. Total Traffic Volumes (**Figures 11** and **12**) have been projected for the Study Area intersections for the weekday AM and PM peak hours in 2023 and 2028 and include background traffic as well as net trips with site redevelopment (**Figure 7**).

Figure 9: 2023 Future Background Traffic Volumes

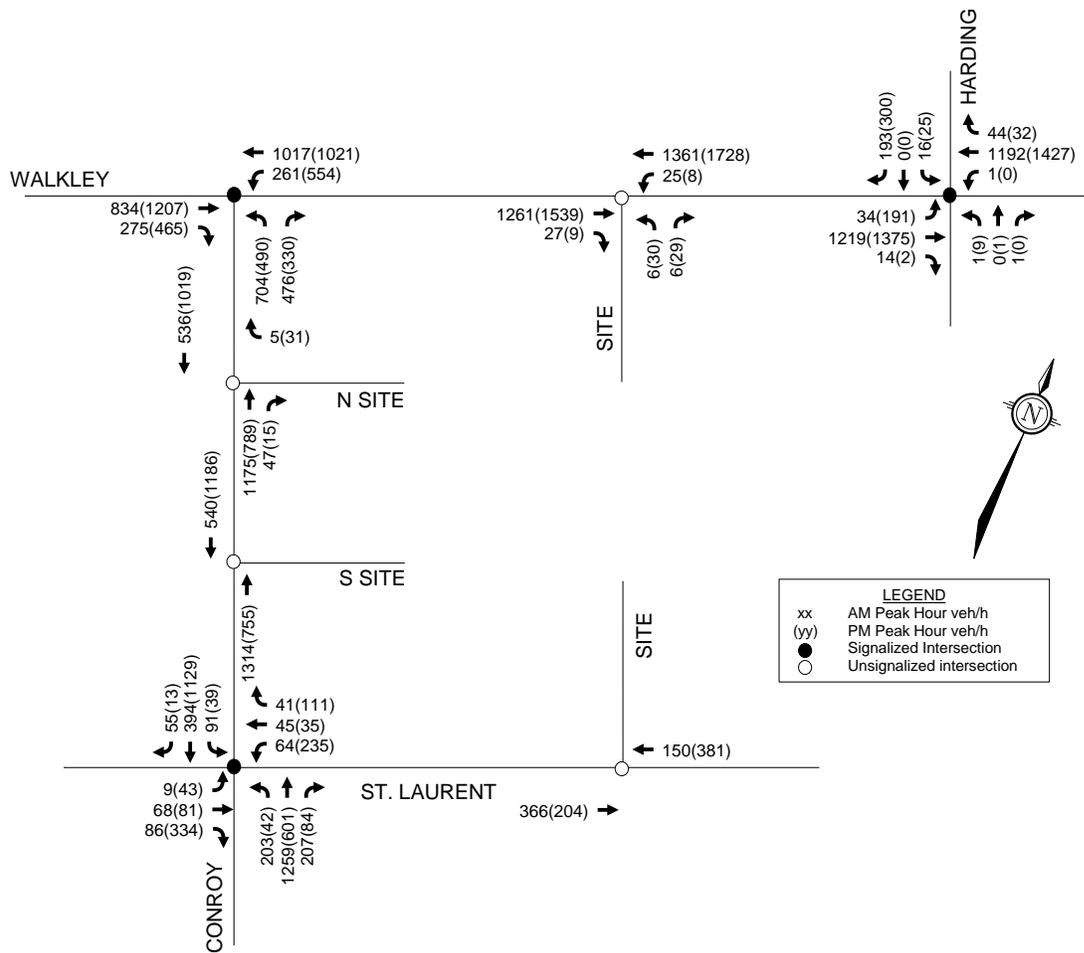


Figure 10: 2028 Future Background Traffic Volumes

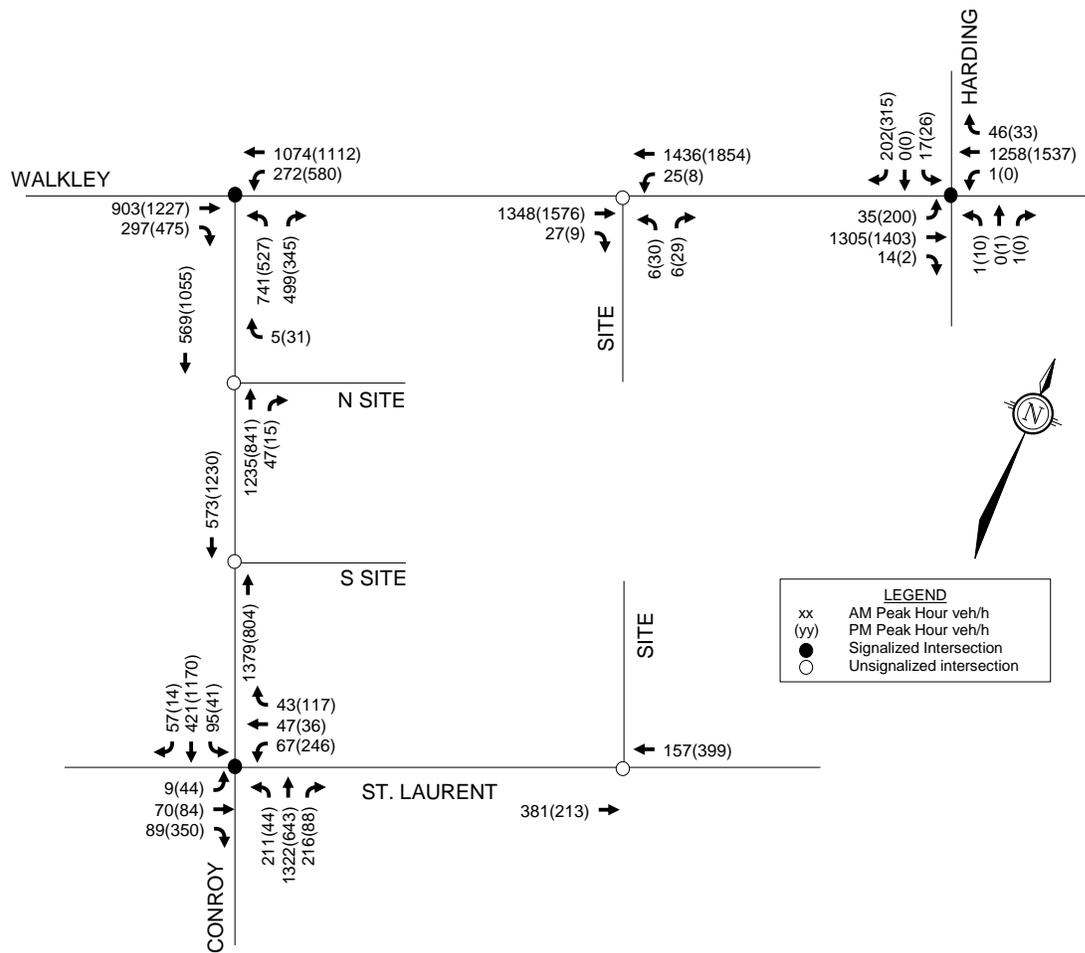


Figure 11: 2023 Total Traffic Volumes with Site Redevelopment

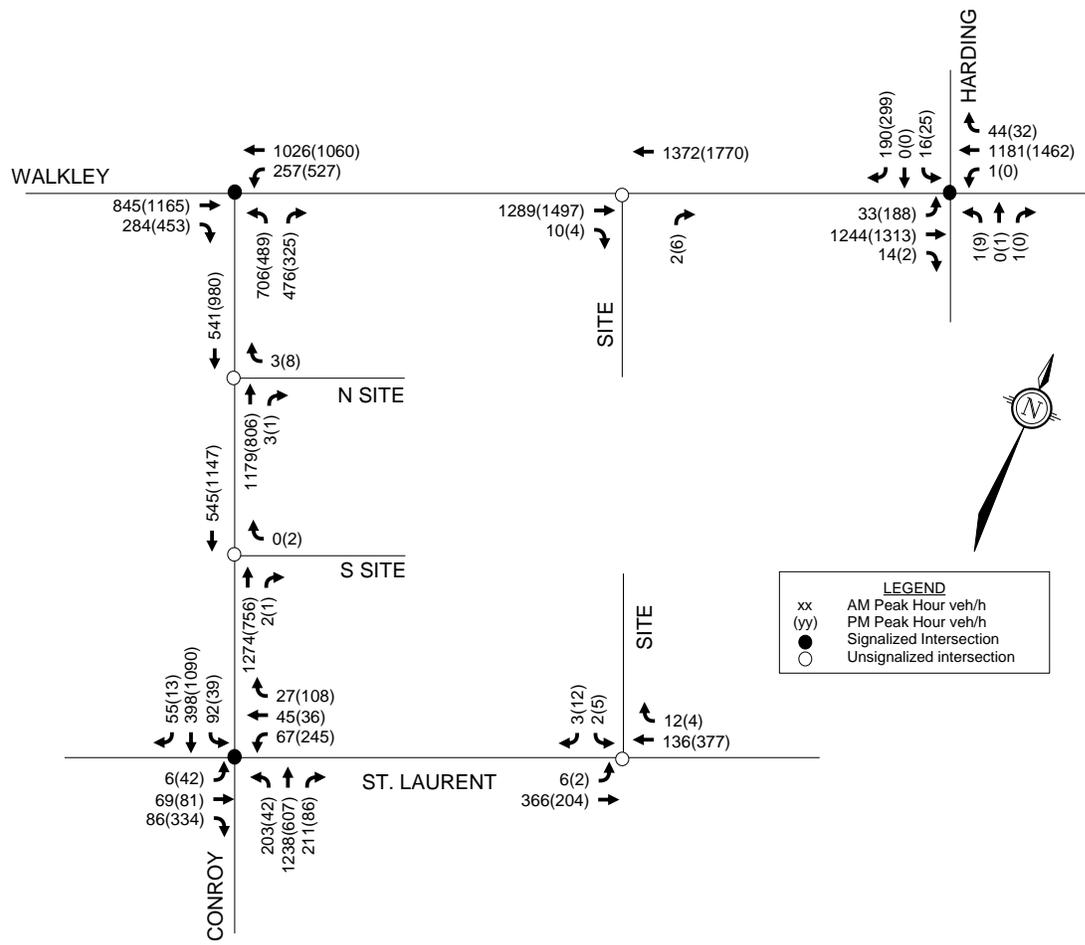
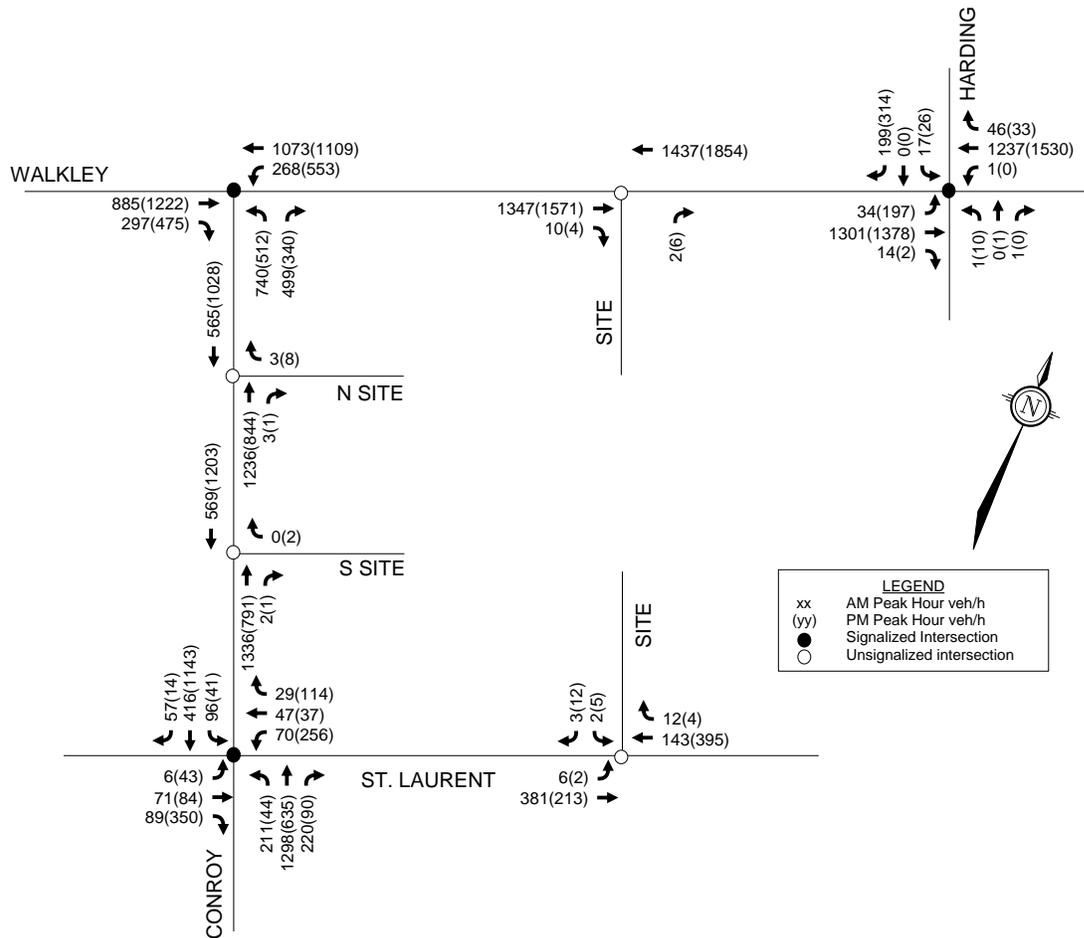


Figure 12: 2028 Total Traffic Volumes with Site Redevelopment



### 5.3 Demand Rationalization

Auto LOS (*Synchro 10*) analysis for the existing as well as the 2023 and 2028 peak periods without the addition of site generated trips are summarized in the following sections. Intersection parameters in the analysis are consistent with the City’s TIA guidelines (saturation flow rate: 1800 vphpl, existing conditions PHF: 0.9, future conditions PHF: 1.0).

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

#### 5.3.1 Existing Traffic – Intersection Operations

Intersection capacity analysis has been completed for the existing traffic volumes (See **Figure 3**) and summarized in **Table 9**. Approaches where long queuing is expected are shown with the associated 50<sup>th</sup> and 95<sup>th</sup> percentile queue lengths in **Table 10**.

**Table 9: Existing Traffic – Intersection Operations**

Intersection	AM Peak			PM Peak		
	Max V/C or Delay (sec)	LOS	Mvmt	Max V/C or Delay (sec)	LOS	Mvmt
Walkley at Conroy	0.87	D	NBL	<b>0.91</b>	<b>E</b>	<b>EBT</b>
Conroy at St. Laurent	0.52	A	SBL	0.80	C	EBR
Walkley at Harding	0.72	C	SB	0.83	D	WBT
Walkley at Site Driveway <sup>1</sup>	27	D	NB	66	F	NB
Conroy at Site Driveway <sup>1</sup>	9	A	WBR	9	A	WBR

1. Unsignalized intersection

**Table 10: Existing Traffic – Queuing**

Intersection	Mvmt	AM Peak			PM Peak		
		v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)	v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)
Walkley at Conroy	EBT	0.60	76	101	0.91	126	#170
	WBL	0.66	29	42	0.89	61	#86
	WBT	0.53	44	52	0.47	90	120
	NBL	0.87	77	99	0.79	49	64
	NBR	0.79	31	72	0.60	0	22
Conroy at St. Laurent	EBL	0.02	1	3	0.06	3	6
	EBT	0.23	11	16	0.18	10	16
	EBR	0.28	0	9	0.80	37	52
	WBL	0.39	12	17	0.54	29	33
	WBT	0.16	7	11	0.05	3	6
	NBL	0.31	10	41	0.38	4	#20
	NBTR	0.44	30	85	0.33	25	45
	SBL	0.52	6	#42	0.16	4	13
Walkley at Harding	SBTR	0.18	10	32	0.77	83	#163
	EBL	0.14	1	m3	0.65	21	m33
	EBTR	0.51	31	52	0.57	7	18
	WB	0.54	42	90	0.76	108	162
Walkley at Site Driveway <sup>1</sup>	SB	0.72	18	38	0.80	19	44
	NB	27		2	66		18

1. Unsignalized intersection

#: volume for the 95<sup>th</sup> percentile cycle exceeds capacity

m: Volume for 95<sup>th</sup> percentile queue is metered by upstream signal

During the Existing AM peak hour, all movements at the study intersections operate with LOS D or better. During the Existing PM peak hour, the EBT movement on Walkley at Conroy operates with LOS E. The site driveway at Walkley Road will operate with LOS F with delays and queuing of about 2-3 vehicles. The remaining movements are expected to operate with LOS D or better.



The eastbound queue at Walkley / Conroy is 170m in the PM peak and queues through the adjacent signal at the commercial development (about 130m to the west). By increasing the cycle length at the Walkley at Conroy intersection to 120 seconds (from 110 seconds) during the PM peak, the intersection can be improved to LOS D (See **Appendix L**).

The high delay at the Walkley site driveway is due to left turning traffic exiting the site. Converting this driveway to right-in, right-out only will improve the operations.

**5.3.2 2023 Background Traffic – Intersection Operations**

Intersection capacity analysis has been completed for the projected 2023 background traffic volumes (See **Figure 8**) and summarized in **Table 11**. Approaches where long queuing is expected are shown with the associated 50<sup>th</sup> and 95<sup>th</sup> percentile queue lengths in **Table 12**.

**Table 11: 2023 Background Traffic – Intersection Operations**

Intersection	AM Peak			PM Peak		
	Max V/C or Delay (sec)	LOS	Mvmt	Max V/C or Delay (sec)	LOS	Mvmt
Walkley at Conroy	0.85	D	NBL	0.87	D	WBL
Conroy at St. Laurent	0.45	A	SBL	0.79	C	EBR
Walkley at Harding	0.71	C	SB	0.80	C	SB
Walkley at Site Driveway <sup>1</sup>	25	D	NB	51	F	NB
Conroy at Site Driveway <sup>1</sup>	9	A	WBR	9	A	WBR

1. Unsignalized intersection

**Table 12: 2023 Background Traffic – Queuing**

Intersection	Mvmt	AM Peak			PM Peak		
		v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)	v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)
Walkley at Conroy	EBT	0.57	70	95	0.86	117	#157
	WBL	0.67	31	42	0.87	57	#83
	WBT	0.50	41	46	0.44	78	114
	NBL	0.85	73	93	0.77	47	62
	NBR	0.76	24	62	0.61	0	22
Conroy at St. Laurent	EBL	0.05	2	4	0.14	6	11
	EBT	0.24	11	16	0.20	11	17
	EBR	0.28	0	9	0.79	35	50
	WBL	0.37	11	16	0.52	28	31
	WBT	0.17	7	12	0.05	4	7
	NBL	0.32	10	42	0.35	4	#20
	NBTR	0.42	27	79	0.31	23	43
	SBL	0.45	5	#37	0.14	4	13
Walkley at Harding	EBL	0.14	1	m3	0.65	21	m33
	EBTR	0.51	29	48	0.57	7	18
	WB	0.54	47	86	0.76	108	162
	SB	0.71	15	35	0.80	19	44
Walkley at Site Driveway <sup>1</sup>	NB	25		2	51	14	

- 1. Unsignalized intersection
- #: volume for the 95<sup>th</sup> percentile cycle exceeds capacity
- m: Volume for 95<sup>th</sup> percentile queue is metered by upstream signal

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).

During the 2023 AM and PM peak hours with no site redevelopment, all movements at the signalized study intersections are expected to operate with LOS D or better. The site driveway at Walkley Road will operate with LOS F with delays and queuing of about 2-3 vehicles. The eastbound queue at Walkley / Conroy is 157m in the PM peak and queues through the adjacent signal at the commercial development.

The high delay at the Walkley site driveway is due to left turning traffic exiting the site. Converting this driveway to right-in, right-out only will improve the operations.

### 5.3.3 2028 Background Traffic – Intersection Operations

Intersection capacity analysis has been completed for the projected 2028 background traffic volumes (See **Figure 9**) and summarized in **Table 13**. Approaches where long queuing is expected are shown with the associated 50<sup>th</sup> and 95<sup>th</sup> percentile queue lengths in **Table 14**.

**Table 13: 2028 Background Traffic – Intersection Operations**

Intersection	AM Peak			PM Peak		
	Max V/C or Delay (sec)	LOS	Mvmt	Max V/C or Delay (sec)	LOS	Mvmt
Walkley at Conroy	0.87	D	NBL	0.90	D	WBL
Conroy at St. Laurent	0.51	A	SBL	0.81	D	EBR
Walkley at Harding	0.73	C	SB	0.84	D	WBT
Walkley at Site Driveway <sup>1</sup>	29	D	NB	61	F	NB
Conroy at Site Driveway <sup>1</sup>	9	A	WBR	9	A	WBR

1. Unsignalized intersection

**Table 14: 2028 Background Traffic – Queuing**

Intersection	Mvmt	AM Peak			PM Peak		
		v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)	v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)
Walkley at Conroy	EBT	0.63	80	105	0.89	120	#161
	WBL	0.69	31	45	0.90	62	#83
	WBT	0.54	45	53	0.48	94	125
	NBL	0.87	78	99	0.80	51	67
	NBR	0.79	32	74	0.61	0	22
Conroy at St. Laurent	EBL	0.05	2	4	0.14	6	11
	EBT	0.25	12	17	0.20	12	18
	EBR	0.29	0	9	0.81	39	54
	WBL	0.39	12	17	0.53	29	33
	WBT	0.18	8	12	0.05	4	7
	NBL	0.35	11	45	0.44	5	#23
	NBTR	0.44	30	85	0.34	26	46
	SBL	0.51	6	#41	0.16	4	13
Walkley at Harding	SBTR	0.20	10	34	0.77	83	#162
	EBL	0.15	1	m3	0.73	27	m#44
	EBTR	0.53	32	52	0.59	8	m19
	WB	0.55	44	94	0.84	133	#200
Walkley at Site Driveway <sup>1</sup>	SB	0.73	20	39	0.83	24	49
	NB	29		2	61		16

1. Unsignalized intersection

#: volume for the 95<sup>th</sup> percentile cycle exceeds capacity

m: Volume for 95<sup>th</sup> percentile queue is metered by upstream signal

During the 2028 AM and PM peak hours, all movements at the signalized study intersections are expected to operate with LOS D or better. The site driveway at Walkley Road will operate with LOS F with delays and queuing of about 2-3 vehicles. The eastbound queue at Walkley / Conroy is 161m in the PM peak and queues through the adjacent signal at the commercial development.

The high delay at the Walkley site driveway is due to left turning traffic exiting the site. Converting this driveway to right-in, right-out only will improve the operations.

## 6.0 ANALYSIS

### 6.1 Development Design

The design overview is summarized below.

- Pedestrian facilities are shown (See **Appendix A**) between the buildings and the parking lots with new pedestrian walkways constructed to connect to all three frontages.
- OC Transpo's service design guideline for peak period service is to provide service within a five minute (400m) walk of the home, school and work location of 95% of urban residents. The existing bus stops near the subject sites are described in **Section 4.1.5**.
  - Each of the three buildings have exterior access doors within a 240m walking distance from an OC Transpo stop.
- The Fire Route (See **Appendix A**) for phase 1 is via the St Laurent Boulevard access. The Fire Route for phase 2 is via the Conroy Road north or St. Laurent Boulevard access with circulation between the two. The Fire Route for phase 3 is via the Walkley Road, Conroy Road north, or St. Laurent Boulevard access with circulation between each access.
- Garbage bins are shown (**Appendix A**). Each garbage bin is located within the truck loading area for each site where there is sufficient space for maneuvering.
- 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 I**. All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- Figures showing heavy vehicle turning paths are shown in **Appendix A**.

### 6.2 Parking

The subject site is within Area C on Schedule 1 and 1A of the City of Ottawa's ZBL. Minimum vehicular and bicycle parking as well as loading rates for the proposed uses are identified in the ZBL and are summarized in **Table 15** (Phase 1), **Table 16** (Phase 2), and **Table 17** (Phase 3). The proposed vehicular parking spaces, bicycle parking spaces, and loading meet or exceed the minimum requirements of the ZBL while the number of barrier-free parking spaces meet or exceed the AODA requirements.

**Table 15: Vehicular, Bicycle, Barrier Free Parking and Loading Requirements - Phase 1**

Land Use		Rate	GFA/Units	Requirement	Provided
<i>Vehicle Parking</i>					
Warehouse 1	Office	2.4 / 100 m <sup>2</sup> of GFA	855 m <sup>2</sup>	21	109
	Warehouse	0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	51	
Existing	Office	2.4 / 100 m <sup>2</sup> of GFA	2,850 m <sup>2</sup>	68	304
	Personal Service	3.4 / 100 m <sup>2</sup> of GFA	1,520m <sup>2</sup>	52	
	Warehouse with office	2.4 / 100 m <sup>2</sup> of GFA (office) 0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	1,070 m <sup>2</sup> (office) 1,760 m <sup>2</sup> (warehouse)	26 (office) 14 (warehouse)	
<b>Total</b>				<b>232</b>	<b>413</b>
<i>Bicycle Parking</i>					
Warehouse 1	Office	1 / 250m <sup>2</sup> of GFA	855 m <sup>2</sup>	3	7
	Warehouse	1 / 2,000m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	4	
<b>Total</b>				<b>7</b>	<b>7</b>
<i>Barrier Free Parking</i>					
Warehouse 1			110 public spaces	5	5
<b>Total</b>				<b>5</b>	<b>5</b>
<i>Vehicle Loading Spaces</i>					
Warehouse 1	Office	0 / 999m <sup>2</sup> of GFA	855 m <sup>2</sup>	0	0
	Warehouse	1 / 5,000-9,999m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	1	22
<b>Total</b>				<b>1</b>	<b>22</b>

**Table 16: Vehicular, Bicycle, Barrier Free Parking and Loading Requirements - Phase 2**

Land Use		Rate	GFA/Units	Requirement	Provided
<i>Vehicle Parking</i>					
Warehouse 1	Office	2.4 / 100 m <sup>2</sup> of GFA	855 m <sup>2</sup>	21	166
	Warehouse	0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	51	
Warehouse 2	Office	2.4 / 100 m <sup>2</sup> of GFA	850 m <sup>2</sup>	20	7
	Warehouse	0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	7,436 m <sup>2</sup>	50	
Existing	Office	2.4 / 100 m <sup>2</sup> of GFA	2,850 m <sup>2</sup>	68	120
	Personal Service	3.4 / 100 m <sup>2</sup> of GFA	1,520m <sup>2</sup>	52	
<b>Total</b>				<b>262</b>	<b>266</b>
<i>Bicycle Parking</i>					
Warehouse 1	Office	1 / 250m <sup>2</sup> of GFA	855 m <sup>2</sup>	3	7
	Warehouse	1 / 2,000m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	4	
Warehouse 2	Office	1 / 250m <sup>2</sup> of GFA	850 m <sup>2</sup>	3	7
	Warehouse	1 / 2,000m <sup>2</sup> of GFA	7,436 m <sup>2</sup>	4	
<b>Total</b>				<b>14</b>	<b>14</b>
<i>Barrier Free Parking</i>					
Warehouses 1 & 2			166 public spaces	7	9
<b>Total</b>				<b>7</b>	<b>9</b>

Land Use	Rate	GFA/Units	Requirement	Provided	
<i>Vehicle Loading Spaces</i>					
Warehouse 1	Office	0 / 999m <sup>2</sup> of GFA	855 m <sup>2</sup>	0	0
	Warehouse	1 / 5,000-9,999m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	1	22
Warehouse 2	Office	0 / 999m <sup>2</sup> of GFA	850 m <sup>2</sup>	0	0
	Warehouse	1 / 5,000-9,999m <sup>2</sup> of GFA	7,436 m <sup>2</sup>	1	22
<b>Total</b>			<b>2</b>	<b>44</b>	

**Table 17: Vehicular, Bicycle, Barrier Free Parking and Loading Requirements - Phase 3**

Land Use	Rate	GFA/Units	Requirement	Provided	
<i>Vehicle Parking</i>					
Warehouse 1	Office	2.4 / 100 m <sup>2</sup> of GFA	855 m <sup>2</sup>	21	265
	Warehouse	0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	51	
Warehouse 2	Office	2.4 / 100 m <sup>2</sup> of GFA	850 m <sup>2</sup>	20	
	Warehouse	0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	7,436 m <sup>2</sup>	50	
Warehouse 3	Office	2.4 / 100 m <sup>2</sup> of GFA	765 m <sup>2</sup>	18	
	Warehouse	0.8 / 100 m <sup>2</sup> of GFA 0.4 / 100 m <sup>2</sup> of GFA above 5,000 m <sup>2</sup> of GFA	6,805 m <sup>2</sup>	47	
<b>Total</b>			<b>209</b>	<b>265</b>	
<i>Bicycle Parking</i>					
Warehouse 1	Office	1 / 250m <sup>2</sup> of GFA	855 m <sup>2</sup>	3	7
	Warehouse	1 / 2,000m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	4	
Warehouse 2	Office	1 / 250m <sup>2</sup> of GFA	850 m <sup>2</sup>	3	7
	Warehouse	1 / 2,000m <sup>2</sup> of GFA	7,436 m <sup>2</sup>	4	
Warehouse 3	Office	1 / 250m <sup>2</sup> of GFA	765 m <sup>2</sup>	3	6
	Warehouse	1 / 2,000m <sup>2</sup> of GFA	6,805 m <sup>2</sup>	3	
<b>Total</b>			<b>20</b>	<b>20</b>	
<i>Barrier Free Parking</i>					
Warehouses 1, 2, & 3		265 public spaces	8	13	
<b>Total</b>			<b>8</b>	<b>13</b>	
<i>Vehicle Loading Spaces</i>					
Warehouse 1	Office	0 / 999m <sup>2</sup> of GFA	855 m <sup>2</sup>	0	0
	Warehouse	1 / 5,000-9,999m <sup>2</sup> of GFA	7,696 m <sup>2</sup>	1	22
Warehouse 2	Office	0 / 999m <sup>2</sup> of GFA	850 m <sup>2</sup>	0	0
	Warehouse	1 / 5,000-9,999m <sup>2</sup> of GFA	7,436 m <sup>2</sup>	1	22
Warehouse 3	Office	0 / 999m <sup>2</sup> of GFA	765 m <sup>2</sup>	0	0
	Warehouse	1 / 5,000-9,999m <sup>2</sup> of GFA	6,805 m <sup>2</sup>	1	20
<b>Total</b>			<b>3</b>	<b>64</b>	

### 6.3 Boundary Streets

Schedule 'B' of the City of Ottawa's Official Plan indicates the site is in an Urban Employment Area. The site is also within 300m of Le Carrefour Adult school and Alternative High School.

Targets for pedestrian level of service (PLOS), bicycle level of service (BLOS), transit level of service (TLOS), and truck level of service (TkLOS) by street classification are outlined in an employment area (Walkley Road) and 300m of a school (Conroy Road and St. Laurent Boulevard) in Exhibit 22 of the MMLOS guidelines. The Segment PLOS, BLOS, TLOS, and TkLOS and associated targets for Walkley Road, Conroy Road, and St. Laurent Boulevard are summarized in **Table 18**. Details on the Segment MMLOS are included in **Appendix H**.

**Table 18: Segment MMLOS Summary**

Intersection	PLOS	BLOS	TLOS	TkLOS
Walkley Road	E	F	D	A
<b>Target</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>B</b>
Conroy Road	E	A	D	A
<b>Target</b>	<b>A</b>	<b>A</b>	<b>D</b>	<b>D</b>
St. Laurent Boulevard	F	D	E	B
<b>Target</b>	<b>A</b>	<b>B</b>	<b>No Target</b>	<b>No Target</b>

The PLOS along Walkley Road, Conroy Road, and St. Laurent Boulevard fronting the site is currently failing. With a posted speed limit of 50 km/h on Walkley Road, a 2m sidewalk and 2m boulevard are both required to achieve the target C. With posted speed limits of 50km/h and 60 km/h on St. Laurent Boulevard and Conroy Road, respectively, and more than 3,000 vehicles per day AADT, the target PLOS A is not achievable due to the speed and volume. PLOS D and PLOS C are achievable on Conroy Road and St. Laurent Boulevard, respectively, with a 2m sidewalk and a 2m boulevard.

With a multi-use path along the west side of Conroy Road, the street achieves BLOS A, meeting the target, while the Walkley and St. Laurent corridors miss the BLOS targets, achieving F and D, respectively. The target BLOS can be achieved on both Walkley and St. Laurent with 1.5m onstreet bike lanes.

Walkley Road (BRT with at-grade crossings) and Conroy Road (Isolated Measures) are designated future transit priority corridors. While Conroy Road achieves the target D, Walkley Road misses its target B, a bus lane is required to achieve TLOS B.

Each study road achieves TkLOS A or B, surpassing the targets, where applicable.

**6.4 Access Intersections**

The development will be served by one right-in, right-out connection to Walkley Road, two right-in, right-out connections to Conroy Road, and one full connection to St. Laurent Boulevard.

The access configurations with respect to design guidelines and requirements of the City’s Private Approach By-law are summarized below.

- Section 25 (m) of the *Private Approach By-Law* identifies spacing between driveways and streets for properties abutting arterial and major collector roads. For sites with 200-299 parking spaces, this spacing is 45m.
  - The site’s connection to Walkley Road is about 185m from the signalized intersection at Conroy Road and about 60m from the signalized intersection at Harding Road, meeting the requirement.

- The site's north connection to Conroy Road is 110m south of Walkley Road, meeting this requirement.
  - The distance between the two site connections to Conroy Road is 87m, meeting this requirement.
  - The site's south connection to Conroy Road is 100m north of St. Laurent Boulevard, meeting this requirement.
  - The site's connection to St. Laurent Boulevard is about 145m from the signalized intersection at Conroy Road, meeting this requirement.
- The Transportation Association of Canada Chapter 8, Figure 8.8.2 (TAC, June 2017) provides suggested corner clearances to accesses at major intersections. The corner clearances for this site are as follows:
  - The site's connection to Walkley Road is in advance of the EB left turn storage for the intersection with Harding Road, meeting the requirement.
  - The site's connection to St. Laurent Boulevard is about 145m from the signalized intersection at Conroy Road, meeting the requirement.
  - The northbound left lanes on Conroy at Walkley are continuous along the frontage and traffic analysis (**Section 6.7**) indicates the 95<sup>th</sup> percentile queue for the NBL is about 99m. The site's connections to Conroy Road are about 110m and 208m from the signalized intersection at Walkley Road, meeting the requirement for driveways to be outside the storage length of left turn lanes.
  - The site's connections to Conroy Road are about 105m and 200m from the signalized intersection at St. Laurent Boulevard, meeting the requirement.
- The south driveway to Conroy Road is about 8.3m wide, measured at the right-of-way line, meeting the width requirements under the City's Private Approach by-law.
- The north driveway to Conroy Road is 9.4m wide measured at the right-of-way line, but the width is required to accommodate the heavy trucks (See **Appendix A**).
- The driveway to Walkley Road is 10.1m wide measured at the right-of-way line, but the width is required to accommodate the heavy trucks (See **Appendix A**).
- The driveway to St. Laurent Boulevard is 11.8m wide measured at the right-of-way line, but the width is required to accommodate the heavy trucks (See **Appendix A**).
- The Transportation Association of Canada (TAC) outlines minimum clear throat lengths for driveways based on the land use, development size, and type of roadway. For a light industrial site, the clear throat requirement for a two-way driveway to an arterial is 30m, while the requirement to a collector is 15m. Approximately 15m of clear throat is provided at the St. Laurent Boulevard driveway and about 30m is provided at the Conroy Road driveways.
- The clear throat length at the Walkley driveway is about 20m, sufficient to accommodate an accessory office use of <math>5,000\text{m}^2</math> for the site. Accessory office uses will be less than  $5,000\text{m}^2$ . Since the Walkley driveway will be right-in, right-out only, heavy vehicles coming from the highway and entering the site will not be able to use this entrance. Queuing of entering and exiting traffic at this driveway is expected to be accommodated within the 20m storage.
- The Stopping Sight Distance (SSD) along roadways with design speeds of 60km/h and 70km/h respectively, are 85m and 105m, respectively. Available SSD at each access is greater than 105m.

Traffic analysis of the driveway intersections is included in **Section 6.7**.



## 6.5 Transportation Demand Management

The buildings are expected to be multi-tenant with separate entrances for each tenant. There will be no central entrances for posting maps of active routes and transit schedules, etc and it will be difficult to implement TDM Measures.

## 6.6 Transit

Based on the modal share presented in **Table 4**, the new development is anticipated to generate 13 transit trips (10 in and 3 out) during the weekday AM peak hour and 13 transit trips (4 in and 9 out) during the weekday PM peak hour. These transit trips are fewer than the transit trips generated by the existing site (See **Table 7**), estimated to be 33 transit trips (28 in and 5 out) during the weekday AM peak hour and 34 transit trips (9 in and 25 out) during the weekday PM peak hour.

## 6.7 Intersection Analysis

### 6.7.1 Existing Intersection MMLOS

Identified and target PLOS, BLOS, TLOS, TkLOS and Auto LOS for the study area signalized intersections are summarized in **Table 19**. Existing traffic signal timings are included in **Appendix G** and detailed MMLOS calculations are included in **Appendix H**.

**Table 19: Intersection MMLOS Summary**

Intersection	PLOS	BLOS	TLOS	TkLOS	Auto LOS
Walkley at Conroy	F	F	F	A	E
<b>Target</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>D</b>
Conroy at St. Laurent	F	F	E	E	C
<b>Target</b>	<b>A</b>	<b>A</b>	<b>D</b>	<b>D</b>	<b>E</b>
Walkley at Harding	F	F	D	E	D
<b>Target</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>D</b>

#### 6.7.1.1 Walkley Road / Conroy Road

Walkley Road/Conroy Road does not meet the target PLOS C, BLOS B, 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 and south 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.

None of the approaches meet the target BLOS B based on 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 better served to perform turns at a different intersection. Therefore, no recommendations have been made in improving the BLOS at this intersection.

None of the transit movements (EBT and WBT) meet the target TLOS B. The City's RTTP Network concept designates Walkley Road in this area as a BRT corridor with transit only lanes. This planned modification will improve the TLOS.

By increasing the cycle length at the Walkley at Conroy intersection to 120 seconds (from 110 seconds) during the PM peak, the AutoLOS at the intersection can be improved to D.

#### *6.7.1.2 Conroy Road / St. Laurent Boulevard*

Conroy Road / St. Laurent Boulevard does not meet the target PLOS A, BLOS A, TLOS D, or TkLOS D.

The north and south approaches both have a divided cross-section with widths equivalent to ten lanes crossed or more. The east and west approaches have auxiliary turn lanes with widths equivalent to 6 lanes crossed or more. The level of comfort for pedestrians can be increased by implementing zebra-striped crosswalks. The north and south 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 limited opportunity in improving the PLOS at each approach without reducing the number of lanes. Improving the delay scores for pedestrians crossing the north and south approaches would require reducing green time for the heavy northbound and southbound movements and is not desirable.

All approaches do not meet the target BLOS A based on left turn or both left and right turn characteristics. Given the travel speeds and traffic volumes along Conroy Road, there is limited opportunity for improving the BLOS along the north and south approaches.

During the AM peak hour, the WBL transit movement misses the target TLOS D achieving E. This transit movement is from St. Laurent Boulevard, which is not a transit priority corridor, and no modifications are required.

The north approach misses the target TkLOS D, achieving E. To achieve TkLOS D, a radius of more than 15m is required on St. Laurent Boulevard. This is identified for the City's consideration.

#### *6.7.1.3 Walkley Road / Harding Road*

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

The east and west approaches both have a divided cross-section with widths equivalent to 6 or 7 lanes crossed. The level of comfort for pedestrians can be increased by implementing zebra-striped crosswalks. The 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 limited opportunity in improving the PLOS at each approach without reducing the number of lanes. Improving the delay scores for pedestrians crossing the east and west approaches would require reducing green time for the heavy eastbound and westbound movements and is not recommended.

The north and west approaches do not meet the target BLOS C based on left turn characteristics. Given the high traffic volumes along the east and west approaches, there is limited opportunity for improving the BLOS along the west approach. The two-lane approach (left and right turn lanes) on the north approach lead to BLOS D for both bicycle turning movements.

The WBT transit movement during the PM peak hour misses the target TLOS B, achieving D. The City’s RTTP Network concept designates Walkley Road in this area as a BRT corridor with transit only lanes. This planned modification will improve the TLOS.

The east approach misses the target TkLOS B, achieving E. To achieve TkLOS B, a second receiving lane is required on Harding Road, this is not recommended.

**6.7.2 2023 Total Traffic – Intersection Operations**

Intersection capacity analysis has been completed for the projected 2023 AM and PM peak hours with the addition of site generated trips (See **Figure 11**). The results of the analysis are summarized in **Table 20** for the weekday AM and PM peak hours. Approaches where long queuing is expected are shown with the associated 50<sup>th</sup> and 95<sup>th</sup> percentile queue lengths in **Table 21**. Detailed *Synchro 10* reports are included in **Appendix L**.

**Table 20: 2023 Total Traffic – Intersection Operations**

Intersection	AM Peak			PM Peak		
	Max V/C or Delay (sec)	LOS	Mvmt	Max V/C or Delay (sec)	LOS	Mvmt
Walkley at Conroy	0.85	D	NBL	0.85	D	WBL
Conroy at St. Laurent	0.50	A	WBL	0.82	D	EBR
Walkley at Harding	0.72	C	SB	0.81	D	SB
Walkley at Site Driveway <sup>1</sup>	10	A	NBR	10	A	NBR
Conroy at North Site Driveway <sup>1</sup>	0	A	WBR	9	A	WBR
Conroy at South Site Driveway <sup>1</sup>	0	A	WBR	9	A	WBR
St. Laurent at Site Driveway <sup>1</sup>	10	B	SB	11	B	SB

1. Unsignalized intersection

**Table 21: 2023 Total Traffic – Queuing**

Intersection	Mvmt	AM Peak			PM Peak		
		v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)	v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)
Walkley at Conroy	EBT	0.57	71	96	0.82	110	#142
	WBL	0.67	29	43	0.85	55	#77
	WBT	0.51	42	50	0.46	82	120
	NBL	0.85	74	93	0.77	47	62
	NBR	0.76	24	63	0.60	0	22
Conroy at St. Laurent	EBL	0.04	1	4	0.15	6	12
	EBT	0.32	12	22	0.21	11	19
	EBR	0.34	0	12	0.82	36	56
	WBL	0.50	12	23	0.56	29	37
	WBT	0.22	7	16	0.06	4	8
	NBL	0.31	10	24	0.31	4	16
	NBTR	0.40	28	44	0.31	24	39
	SBL	0.41	5	20	0.14	4	12
Walkley at Harding	EBL	0.12	1	m2	0.65	22	m35
	EBTR	0.49	27	40	0.54	7	16
	WB	0.51	35	66	0.78	112	#173
	SB	0.72	14	35	0.81	19	45

#: volume for the 95<sup>th</sup> percentile cycle exceeds capacity  
 m: Volume for 95<sup>th</sup> percentile queue is metered by upstream signal

With conversion of the Walkley driveway to right-in, right-out (See **Appendix K**), all study intersections and site accesses are expected to operate with LOS D or better with the addition of site generated trips.

The NB queue on Conroy at Walkley is not expected to impact the northerly Conroy access.

The WB queue at Conroy / St. Laurent is not expected to impact the St. Laurent access and the EB queue at Walkley / Harding is not expected to impact the Walkley access.

Left turn lane warrants have been prepared (See **Appendix J**) for the St. Laurent Boulevard at site driveway intersection and indicate that an eastbound left turn lane is not expected to be warranted along St. Laurent Boulevard.

**6.7.3 2028 Total Traffic – Intersection Operations**

Intersection capacity analysis has been completed for the 2028 AM and PM peak hours with the addition of site generated trips (See **Figure 12**). The results of the analysis are summarized in **Table 22** for the weekday AM and PM peak hours. Approaches where long queuing is expected are shown with the associated 50<sup>th</sup> and 95<sup>th</sup> percentile queue lengths in **Table 23**. Detailed *Synchro 10* reports are included in **Appendix L**.

**Table 22: 2028 Total Traffic - Intersection Operations**

Intersection	AM Peak			PM Peak		
	Max V/C or Delay (sec)	LOS	Mvmt	Max V/C or Delay (sec)	LOS	Mvmt
Walkley at Conroy	0.87	D	NBL	0.88	D	WBL
Conroy at St. Laurent	0.52	A	WBL	0.82	D	EBR
Walkley at Harding	0.75	C	SB	0.83	D	SB
Walkley at Site Driveway <sup>1</sup>	10	A	NBR	10	B	NBR
Conroy at North Site Driveway <sup>1</sup>	9	A	WBR	9	A	WBR
Conroy at South Site Driveway <sup>1</sup>	0	A	WBR	9	A	WBR
St. Laurent at Site Driveway <sup>1</sup>	10	B	SB	11	B	SB

1. Unsignalized intersection

**Table 23: 2028 Total Traffic – Queuing**

Intersection	Mvmt	AM Peak			PM Peak		
		v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)	v/c or Delay (sec)	50 <sup>th</sup> % Queue (m)	95 <sup>th</sup> % Queue (m)
Walkley at Conroy	EBT	0.61	78	102	0.87	119	#160
	WBL	0.68	31	44	0.88	58	m#77
	WBT	0.54	45	53	0.48	93	125
	NBL	0.87	77	99	0.79	49	65
	NBR	0.79	31	73	0.61	0	22
Conroy at St. Laurent	EBL	0.04	1	4	0.14	6	12
	EBT	0.32	12	22	0.20	12	19
	EBR	0.34	0	12	0.83	39	59
	WBL	0.52	12	23	0.56	30	38
	WBT	0.23	8	16	0.06	4	8
	NBL	0.33	11	26	0.40	5	#21
	NBTR	0.42	30	48	0.33	26	42
	SBL	0.47	6	26	0.16	4	12
Walkley at Harding	SBTR	0.19	10	19	0.75	81	#144
	EBL	0.14	1	m2	0.72	26	m#43
	EBTR	0.52	31	44	0.58	8	18
	WB	0.54	42	76	0.83	131	#199
	SB	0.75	18	40	0.83	23	49

#: volume for the 95<sup>th</sup> percentile cycle exceeds capacity  
 m: Volume for 95<sup>th</sup> percentile queue is metered by upstream signal

With conversion of the Walkley driveway to right-in, right-out (See **Appendix K**), all study intersections and site accesses are expected to operate with LOS D or better with site redevelopment.

The NB queue on Conroy at Walkley is not expected to impact the northerly Conroy access.

The WB queue at Conroy / St. Laurent is not expected to impact the St. Laurent access and the EB queue at Walkley / Harding is not expected to impact the Walkley access.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

### Development Design and Parking

- Pedestrian facilities will be provided between the main buildings and the parking lots. New pedestrian walkways will be constructed to connect to all three frontages.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- The proposed vehicular parking spaces at each phase meet the requirements of the ZBL.
- The proposed bicycle parking spaces meet the minimum requirements of the ZBL.
- The number of barrier-free spaces meet the AODA requirements.
- A minimum of one loading space is required for each proposed warehouse, each will have 20 or 22 loading bays.
- Each of the three buildings have exterior access doors within a 240m walking distance from an OC Transpo stop.

### Boundary Street Multi-Modal Level of Service (MMLoS)

The results of the segment MMLoS analysis for Walkley Road, Conroy Road, and St. Laurent Boulevard can be summarized as follows:

- The PLOS along Walkley Road, Conroy Road, and St. Laurent Boulevard is currently failing. A 2m sidewalk and 2m boulevard are both required to achieve the target C on Walkley Road. Given the speed and traffic volume along St. Laurent Boulevard and Conroy Road, respectively, the target PLOS A is not achievable due to the speed and volume. PLOS D and PLOS C are achievable on Conroy Road and St. Laurent Boulevard, respectively, with a 2m sidewalk and a 2m boulevard;
- The Walkley and St. Laurent corridors miss the BLOS target C, achieving E and D, respectively. The target BLOS can be achieved on both Walkley and St. Laurent with 1.5m onstreet bike lanes;
- Walkley Road misses the TLOS target B, achieving a D. A bus lane is required to achieve LOS B; and,
- Each study road achieves TKLOS A or B, surpassing the targets, where applicable.

### Transit

- The new development is anticipated to generate 13 transit trips (10 in and 3 out) during the weekday AM peak hour and 13 transit trips (4 in and 9 out) during the weekday PM peak hour. These transit trips are fewer than the transit trips generated by the existing site, estimated to be 33 transit trips (28 in and 5 out) during the weekday AM peak hour and 34 transit trips (9 in and 25 out) during the weekday PM peak hour.

### Access Design

- Sufficient corner clearance, as applicable is provided at each driveway.
- The south driveway to Conroy Road is about 8.3m wide, measured at the property line, meeting the width requirements under the City's Private Approach by-law.
- The driveways to Conroy Road (north), Walkley Road, and St. Laurent Boulevard are 9.4m wide, 10.1m wide and 11.8m wide (measured at the right-of-way line), respectively, but the width is required to accommodate the heavy trucks.

- Adequate stopping sight distance for heavy vehicles is available at each driveway.
- The available clear throat at the St. Laurent Boulevard (15m) and Conroy Road (30m) accesses are sufficient for the industrial development.
- The available clear throat at the Walkley Road driveway (20m) is sufficient to accommodate an accessory office use of <math><5,000\text{m}^2</math> for the site. Accessory office uses will be less than  $5,000\text{m}^2$ . Since the Walkley driveway will be right-in, right-out only, heavy vehicles coming from the highway will not be able to use this entrance to the site. Queuing of entering and exiting traffic at this driveway is expected to be accommodated within the 20m storage.

#### Intersection MMLOS Analysis

- The Walkley at Conroy intersection does not meet the target Auto LOS.
  - The eastbound, approach at the **Walkley Road / Conroy Road** intersection does not meet the target Auto LOS D in the PM peak hour. By increasing the cycle length at the Walkley at Conroy intersection to 120 seconds (from 110 seconds) during the PM peak, the AutoLOS at the intersection can be improved to D.

#### Background Traffic:

- During the 2028 AM and PM peak hours without site development, all movements at the signalized study intersections are expected to operate with LOS D or better. The site driveway at Walkley Road will operate with LOS F with delays and queuing of about 2-3 vehicles.
- The delay at the Walkley site driveway is due to left turning traffic exiting the site. Converting this driveway to right-in, right-out only will improve the operations.

#### Total Traffic with Site Redevelopment:

- All study intersections and site accesses are expected to operate with LOS D or better with site redevelopment.

### **NOVATECH**

Prepared by:



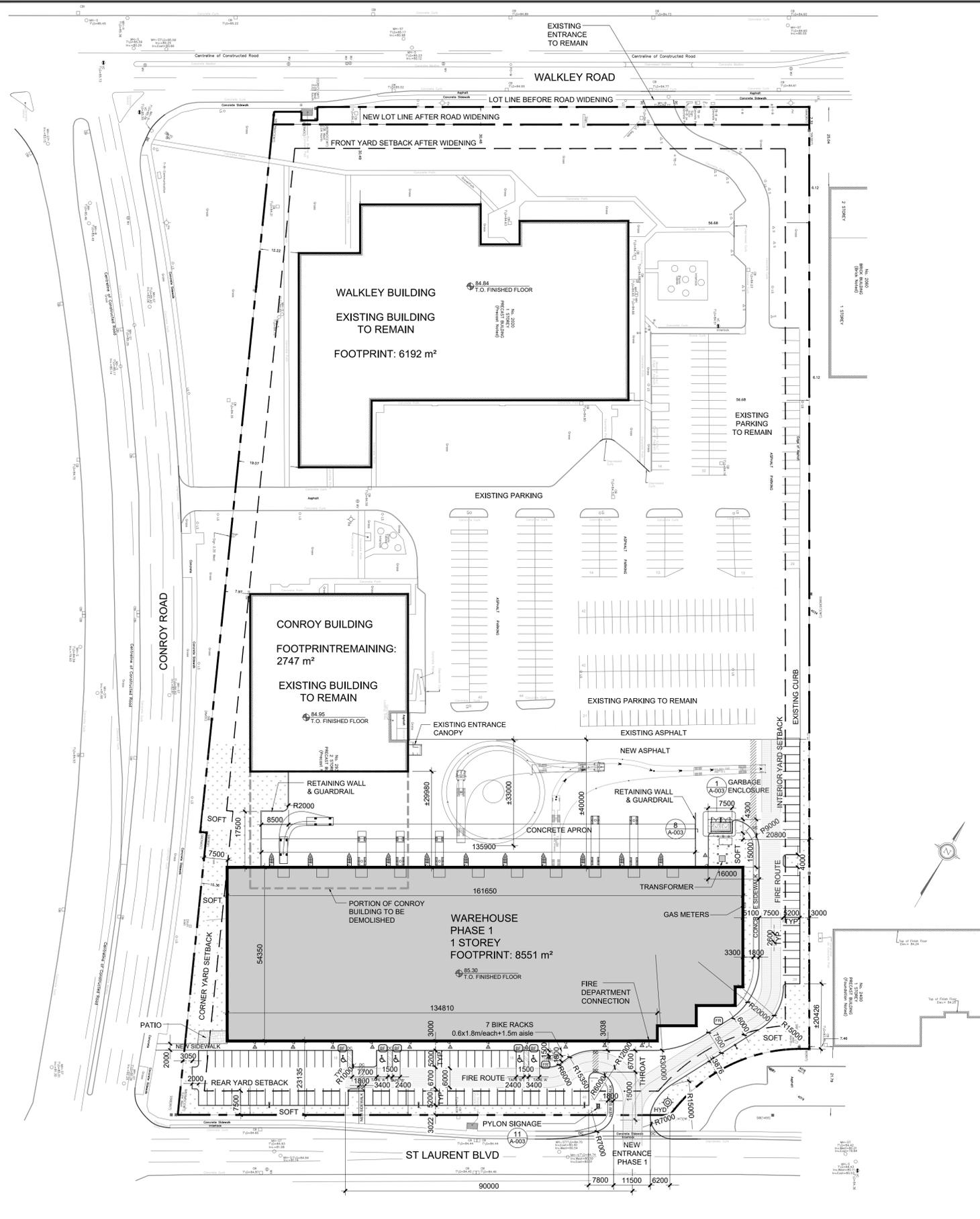
Patrick Hatton, P.Eng.  
Project Manager | Transportation/Traffic

## **APPENDIX A**

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Preliminary Site Plan





**1 SITE PLAN - PHASE 1**  
SCALE 1:700



**2 KEY PLAN**  
SCALE N/A

**TOPOGRAPHICAL PLAN OF SURVEY OF**  
PART OF LOTS A & 1  
CONCESSION 5 (RIDEAU FRONT)  
Geographic Township of Gloucester  
CITY OF OTTAWA  
Surveyed by Annis, O'Sullivan, Vollebakk Ltd.

Surveyor's Certificate  
I CERTIFY THAT:  
1. This survey and plan comprising of sheets 1 and 2 are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.  
2. The survey was completed on the 11th day of November, 2020.

**PROJECT INFORMATION:**  
**BUILDING CLASSIFICATION:**  
THE BUILDING IS CLASSIFIED AND DESIGN TO CONFORM TO THE ONTARIO BUILDING CODE 2012 (CURRENT EDITION) PART 3  
**OCCUPANCY:**  
GROUP F, DIVISION 2, SPRINKLERED,  
ONE STOREY (3.2.2.67)  
**PHASE 1 BUILDING STATISTICS:**  
BUILDING AREA (FOOTPRINT): 8547 m²  
GROSS FLOOR AREA: ±8460 m²  
NUMBER OF STOREYS ABOVE GRADE: 1  
NUMBER OF STOREYS BELOW GRADE: 0  
BUILDING SPRINKLERED: YES  
# OF STREET ACCESS ROUTES: 1  
CONSTRUCTION TYPE: 1 NON-COMB.  
FLOOR ASSEMBLY & F.R.R.: 2 HOUR  
MEZZANINE: 1 HOUR

**ZONING INFORMATION - PHASE 1**

ZONING MECHANISM	REQUIRED	PROVIDED
ZONING CODE	OTTAWA ZONING BY-LAW, 2008-255 IL [1477] S117-h2	WAREHOUSE
MINIMUM LOT AREA	2,000 m²	57,104.1 m² 14.11 acre
MINIMUM FRONT YARD	7.5 m	EXISTING
MINIMUM CORNER SIDE YARD	7.5 m	7.5 m
MINIMUM INTERIOR SIDE YARD	7.5 m	20.8 m
MINIMUM REAR YARD	7.5 m	23.03 m
MAXIMUM BUILDING HEIGHT	12 m - 24 m - 36 m (SCHEDULE 117)	11.1 m 1 STOREY
MAXIMUM LOT COVERAGE	65 %	25.8 %
MINIMUM WIDTH OF LANDSCAPING	3 m	3 m
STANDARD PARKING SPACE	2.6 m x 5.2 m	2.6 m x 5.2 m
ACCESSIBLE PARKING SPACE	3.4 m x 5.2 m TYPE 'A' 2.4 m x 5.2 m TYPE 'B'	
BICYCLE PARKING	7 (WAREHOUSE 1 / 2000 m² of G.F.A.) (OFFICE 1 / 250 m² of G.F.A.)	7
BUILDING FOOTPRINT	EXISTING	8483 m²
	PROPOSED WAREHOUSE PHASE 1	8551 m²
TOTAL	PERMITTED MAX. 83610 m²	17034 m²

**PARKING SPACE SCHEDULE**  
(AREA C, SCHEDULE 1)

PROPOSED WAREHOUSE PHASE 1	BY-LAW REQUIRED		PROVIDED
	OFFICE (2.4 / 100 m², 10%)	WAREHOUSE (0.8 / 100 m², FIRST 5000 m²)	
OFFICE (CITY OF OTTAWA)	±68 G.F.A. ±2850 m² (2.4 / 100 m²)	±160	EXISTING 304
EXISTING PERSONAL SERVICE (GOODLIFE FITNESS)	±52 G.F.A. ±1520 m² (3.4 / 100 m²)		
OFFICE / WAREHOUSE	G.F.A. OFFICE ±1070 m² WAREHOUSE ±1760 m² ±40 (0.8 / 100 m², 50%)		
TOTAL	±232	413	

**LEGEND**

- PROPERTY LINE
- - - YARD SETBACK
- ▭ EXISTING BUILDING TO REMAIN
- ▭ EXISTING BUILDING TO BE DEMOLISHED
- ▭ PROPOSED WAREHOUSE
- ▭ PAINT LINE
- SOFT LANDSCAPED AREA REFER TO LANDSCAPE PLAN
- CONCRETE PAD & SIDEWALK
- 6m WIDE FIRE ROUTE, REFER TO CIVIL
- PAVER PATIO REFER TO LANDSCAPE PLAN
- GARBAGE ENCLOSURE
- BUILDING ENTRANCE
- NEW DEPRESSED CURB - SEE LANDSCAPE
- NEW CURB
- T.W.S.I.
- FIRE HYDRANT
- EXISTING PARKING TO REMAIN
- PROPOSED PARKING
- LIGHT POST
- FIRE DEPARTMENT CONNECTION

**NOTE**  
ALL SIDEWALKS TO BE MIN. 1800 PER CITY REQUIREMENTS



**N45 ARCHITECTURE INC.**  
71 Bank Street, 7th Floor - Ottawa, Ontario, K1P 5N2  
tel. 613.224.0095 fax 613.224.9811

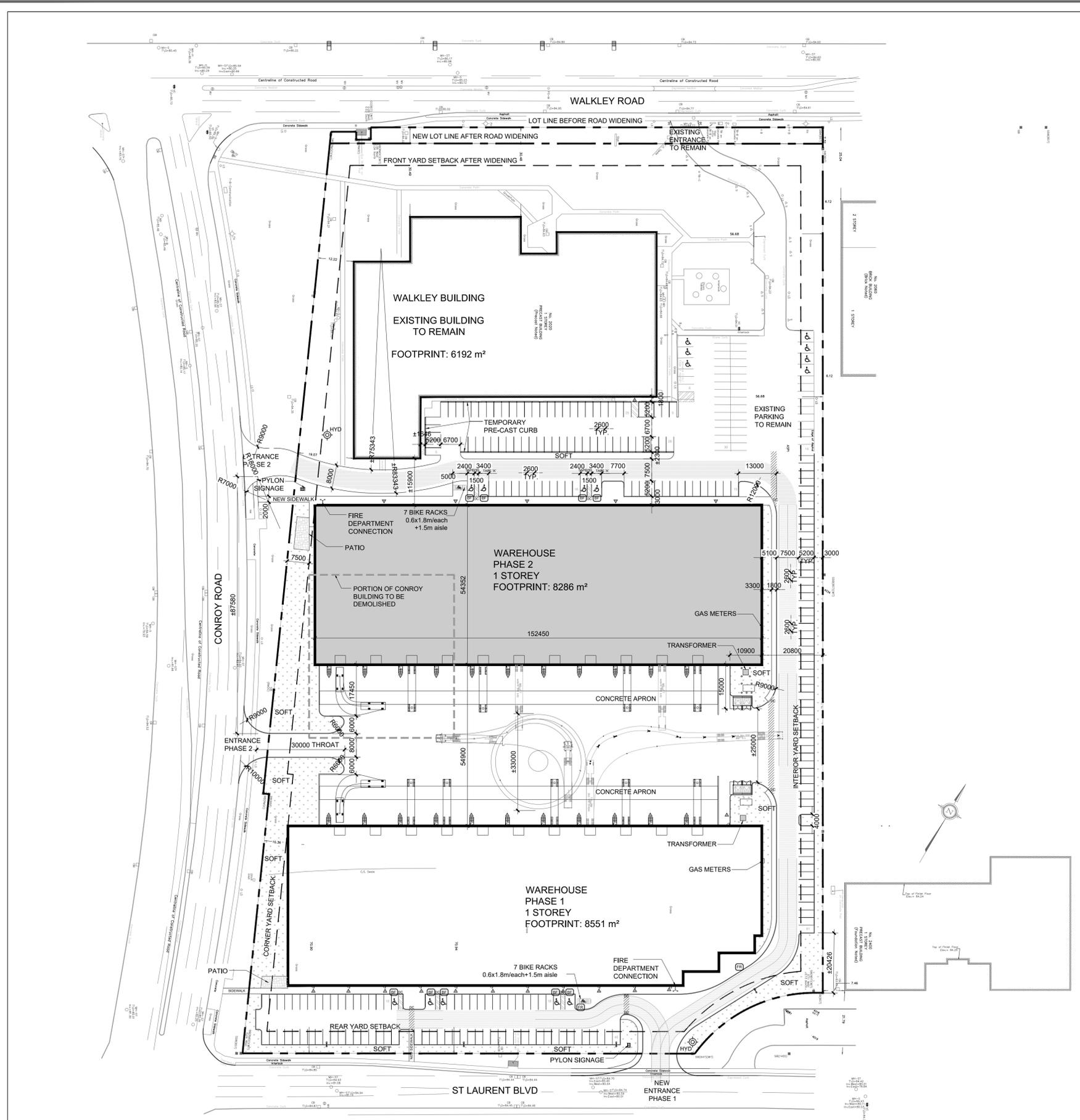
project  
**WALKLEY CONROY WAREHOUSES**  
**MANULIFE**  
2020 Walkley Road & 2935 Conroy Road, Ottawa

construction north seal

drawing title  
**SITE PLAN - PHASE 1**

scale AS SHOWN	drawn by J.J
date Jan. 2021	checked by R.M
project number 20-560	drawing number A001
	revision 2

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.



**ZONING INFORMATION - PHASE 2**

ZONING MECHANISM	REQUIRED	PROVIDED
ZONING CODE	OTTAWA ZONING BY-LAW, 2008-250 IL [1477 ] S117-h2	WAREHOUSE
MINIMUM LOT AREA	2,000 m <sup>2</sup> 0.494 acre	57,104.1 m <sup>2</sup> 14.11 acre
MINIMUM FRONT YARD	7.5 m	30.48 m EXISTING
MINIMUM CORNER SIDE YARD	7.5 m	7.5 m
MINIMUM INTERIOR SIDE YARD	7.5 m	17.8 m
MINIMUM REAR YARD	7.5 m	23.03 m
MAXIMUM BUILDING HEIGHT	12 m - 24 m - 36 m (SCHEDULE 117)	±11.5 m 1 STOREY
MAXIMUM LOT COVERAGE	65 %	40.3 %
MINIMUM WIDTH OF LANDSCAPING	3 m	3 m
STANDARD PARKING SPACE	2.6 m x 5.2 m	2.6 m x 5.2 m
ACCESSIBLE PARKING SPACE	3.4 m x 5.2 m TYPE 'A' 2.4 m x 5.2 m TYPE 'B'	
BICYCLE PARKING	7 ( WAREHOUSE 1 / 2000 m <sup>2</sup> of G.F.A.) (OFFICE 1 / 250 m <sup>2</sup> of G.F.A.)	7
BUILDING FOOTPRINT	EXISTING WAREHOUSE	6191.5 m <sup>2</sup>
	PHASE 1 WAREHOUSE	8551 m <sup>2</sup>
	PHASE 2 WAREHOUSE	8286 m <sup>2</sup>
	TOTAL	PERMITTED MAX. 83610 m <sup>2</sup> 23028.5 m <sup>2</sup>

**PARKING SPACE SCHEDULE (AREA C, SCHEDULE 1)**

		BY-LAW REQUIRED	PROVIDED
WAREHOUSE PHASE 1	OFFICE (2.4 / 100 m <sup>2</sup> , 10%)		
	WAREHOUSE (0.8 / 100 m <sup>2</sup> , FIRST 5000 m <sup>2</sup> )	±72	±143
WAREHOUSE PHASE 2	OFFICE (2.4 / 100 m <sup>2</sup> , 10%)		
	WAREHOUSE (0.8 / 100 m <sup>2</sup> , FIRST 5000 m <sup>2</sup> )	±71	166
EXISTING	OFFICE (CITY OF OTTAWA)	±68 G.F.A. ±2850 m <sup>2</sup> (2.4 / 100 m <sup>2</sup> )	±120
	PERSONAL SERVICE (GOODLIFE FITNESS)	±52 G.F.A. ±1520 m <sup>2</sup> (3.4 / 100 m <sup>2</sup> )	120
TOTAL		±263	286

**LEGEND**

- PROPERTY LINE
- - - YARD SETBACK
- ▭ EXISTING BUILDING TO REMAIN
- - - EXISTING BUILDING TO BE DEMOLISHED
- ▭ PROPOSED WAREHOUSE
- ▭ PAINT LINE
- SOFT LANDSCAPED AREA REFER TO LANDSCAPE PLAN
- CONCRETE PAD & SIDEWALK
- 6m WIDE FIRE ROUTE, REFER TO CIVIL
- PAVER PATIO REFER TO LANDSCAPE PLAN
- GARBAGE ENCLOSURE
- BUILDING ENTRANCE
- NEW DEPRESSED CURB - SEE LANDSCAPE
- NEW CURB
- T.W.S.I.
- FIRE HYDRANT
- EXISTING PARKING TO REMAIN
- PROPOSED PARKING
- LIGHT POST
- FIRE DEPARTMENT CONNECTION
- FR FIRE ROUTE
- BF HANDICAP PARKING

**NOTE**  
ALL SIDEWALKS TO BE MIN. 1800 PER CITY REQUIREMENTS



no.	revision	date
2	2nd SITE PLAN SUBMISSION	26 Aug. 2021
1	SITE PLAN APPLICATION	05 MAR 2021

**N45 ARCHITECTURE INC.**  
71 Bank Street, 7th Floor - Ottawa, Ontario, K1P 5N2  
tel. 613.224.0095 fax 613.224.9811

project  
**WALKLEY CONROY WAREHOUSES**

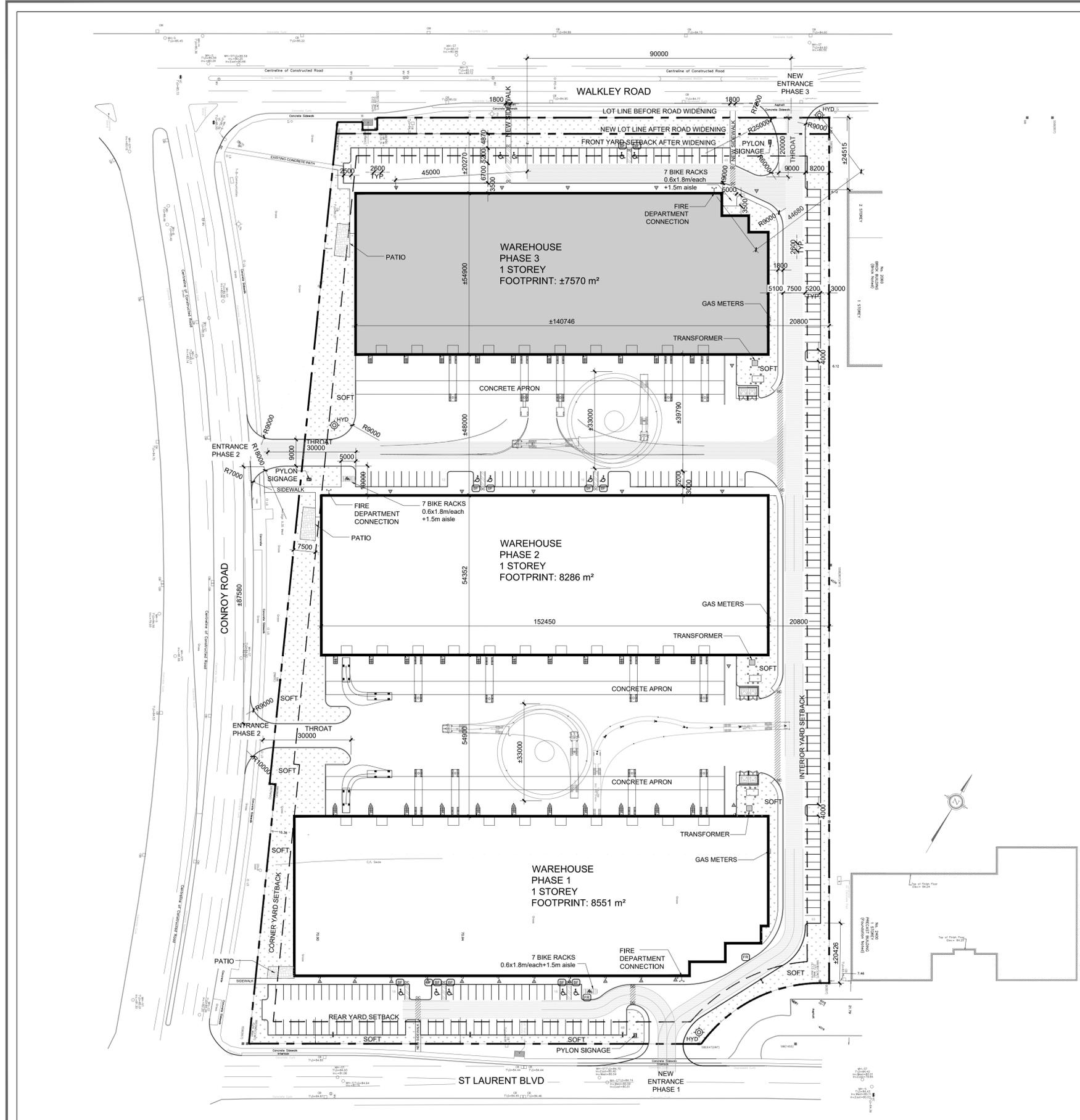
**MANULIFE**  
2020 Walkley Road & 2935 Conroy Road, Ottawa

construction north seal

drawing title	
SITE PLAN - PHASE 2	
scale AS SHOWN	drawn by J.J
date Jan. 2021	checked by R.M
project number 20-560	drawing number A002-A
CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.	
	revision

**1 SITE PLAN - PHASE 2**  
A002-A SCALE 1:1000

CITY'S FILE NO.: D07-12-21-0036



1 SITE PLAN - PHASE 3  
A002-B SCALE 1:700

**ZONING INFORMATION - PHASE 3**

ZONING MECHANISM	REQUIRED	PROVIDED
ZONING CODE	OTTAWA ZONING BY-LAW, 2008-250 IL [1477] S117-h2	WAREHOUSE
MINIMUM LOT AREA	2,000 m <sup>2</sup> 0.494 acre	57,104.1 m <sup>2</sup> 14.11 acre
MINIMUM FRONT YARD	7.5 m	30.48 m EXISTING
MINIMUM CORNER SIDE YARD	7.5 m	7.5 m
MINIMUM INTERIOR SIDE YARD	7.5 m	18.3 m
MINIMUM REAR YARD	7.5 m	23.03 m
MAXIMUM BUILDING HEIGHT	12 m - 24 m - 36 m (SCHEDULE 117)	±11.5 m 1 STOREY
MAXIMUM LOT COVERAGE	65 %	42.7 %
MINIMUM WIDTH OF LANDSCAPING	3 m	3 m
STANDARD PARKING SPACE	2.6 m x 5.2 m	2.6 m x 5.2 m
ACCESSIBLE PARKING SPACE	3.4 m x 5.2 m TYPE 'A' 2.4 m x 5.2 m TYPE 'B'	
BICYCLE PARKING	6 (WAREHOUSE 1 / 2000 m <sup>2</sup> of G.F.A.) (OFFICE 1 / 250 m <sup>2</sup> of G.F.A.)	6
BUILDING FOOTPRINT	WAREHOUSE PHASE 1	8551 m <sup>2</sup>
	WAREHOUSE PHASE 2	8286 m <sup>2</sup>
	WAREHOUSE PHASE 3	7570 m <sup>2</sup>
	TOTAL	PERMITTED MAX. 83610 m <sup>2</sup> 24407 m <sup>2</sup>

**PARKING SPACE SCHEDULE**  
(AREA C, SCHEDULE 1)

	BY-LAW REQUIRED	PROVIDED
WAREHOUSE PHASE 1	OFFICE (2.4 / 100 m <sup>2</sup> , 10%)	±72
	WAREHOUSE (0.8 / 100 m <sup>2</sup> , FIRST 5000 m <sup>2</sup> ) (0.4 / 100 m <sup>2</sup> , ABOVE 5000 m <sup>2</sup> )	
WAREHOUSE PHASE 2	OFFICE (2.4 / 100 m <sup>2</sup> , 10%)	±71
	WAREHOUSE (0.8 / 100 m <sup>2</sup> , FIRST 5000 m <sup>2</sup> ) (0.4 / 100 m <sup>2</sup> , ABOVE 5000 m <sup>2</sup> )	
WAREHOUSE PHASE 2	OFFICE (2.4 / 100 m <sup>2</sup> , 10%)	±66
	WAREHOUSE (0.8 / 100 m <sup>2</sup> , FIRST 5000 m <sup>2</sup> ) (0.4 / 100 m <sup>2</sup> , ABOVE 5000 m <sup>2</sup> )	
TOTAL	±209	265

- LEGEND**
- PROPERTY LINE
  - - - YARD SETBACK
  - ▭ EXISTING BUILDING TO REMAIN
  - ▭ EXISTING BUILDING TO BE DEMOLISHED
  - ▭ PROPOSED WAREHOUSE
  - ▭ PAINT LINE
  - SOFT LANDSCAPED AREA REFER TO LANDSCAPE PLAN
  - ▭ CONCRETE PAD & SIDEWALK
  - ▭ 6m WIDE FIRE ROUTE. REFER TO CIVIL
  - ▭ PAVER PATIO REFER TO LANDSCAPE PLAN
  - ▭ GARBAGE ENCLOSURE
  - ▭ BUILDING ENTRANCE
  - ▭ NEW DEPRESSED CURB - SEE LANDSCAPE
  - ▭ NEW CURB
  - ▭ T.W.S.I.
  - ⊕ FIRE HYDRANT
  - ⊕ EXISTING PARKING TO REMAIN
  - ⊕ PROPOSED PARKING
  - ⊕ LIGHT POST
  - ⊕ FIRE DEPARTMENT CONNECTION
- SIGNAGE LEGEND:**
- FR FIRE ROUTE
  - BF HANDICAP PARKING
- NOTE**  
ALL SIDEWALKS TO BE MIN. 1800 PER CITY REQUIREMENTS



no.	revision	date
2	2nd SITE PLAN SUBMISSION	30 Aug. 2021
1	SITE PLAN APPLICATION	05 MAR 2021

**N45 ARCHITECTURE INC.**  
71 Bank Street, 7th Floor - Ottawa, Ontario, K1P 5N2  
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project  
**WALKLEY CONROY WAREHOUSES**

**MANULIFE**  
2020 Walkley Road & 2935 Conroy Road, Ottawa

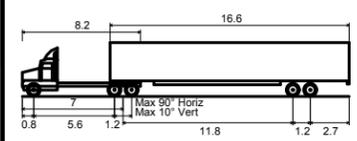
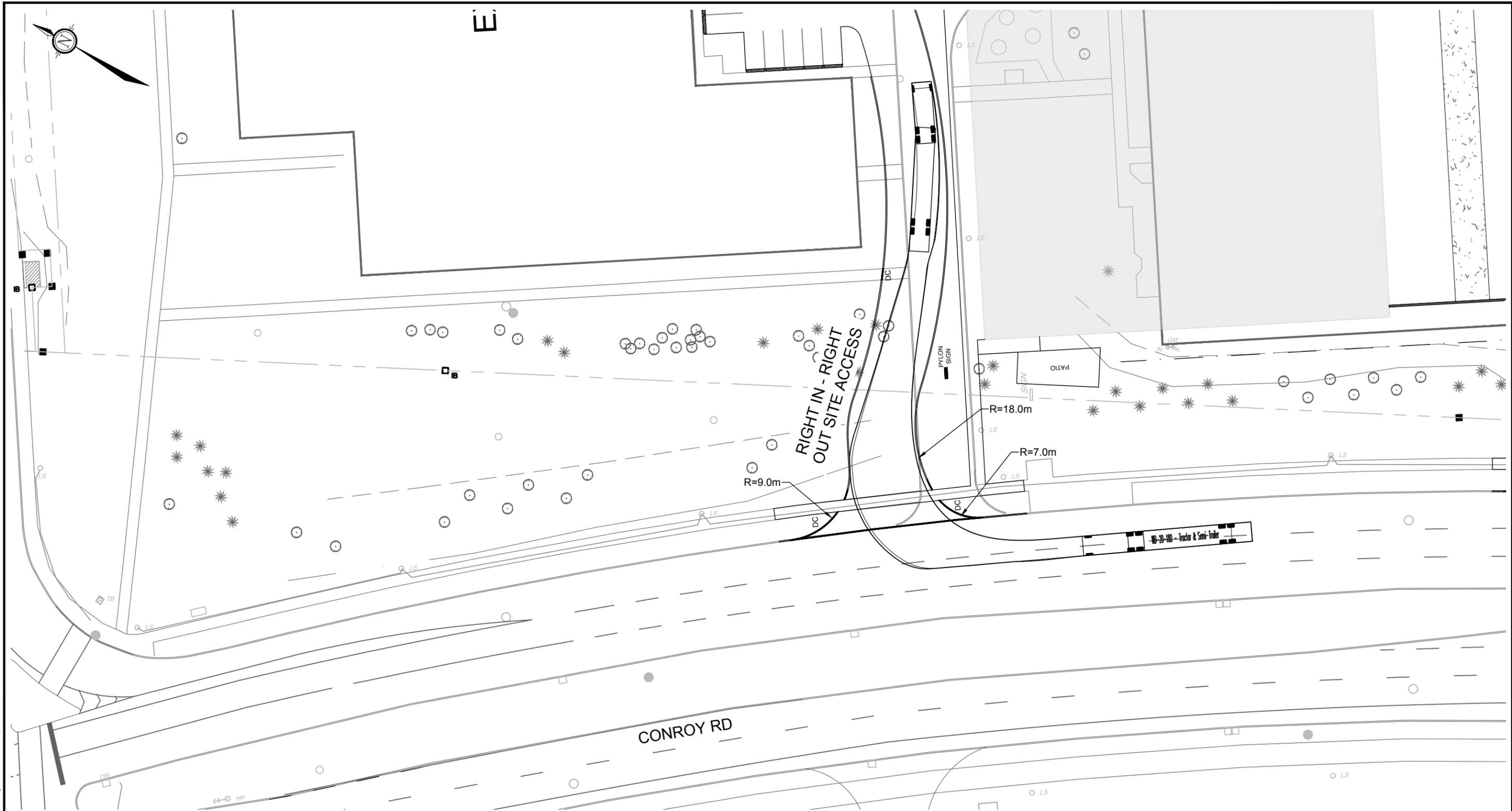
construction north seal

drawing title  
**SITE PLAN - PHASE 3**

scale AS SHOWN	drawn by J.J
date Jan. 2021	checked by R.M
project number <b>20-560</b>	drawing number <b>A002-B</b>
CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.	
	revision

CITY'S FILE NO.: D07-12-21-0036

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**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

**NOVATECH**

Engineers, Planners & Landscape Architects  
 Suite 200, 240 Michael Cowpland Drive  
 Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643  
 Facsimile (613) 254-5867  
 Website www.novatech-eng.com

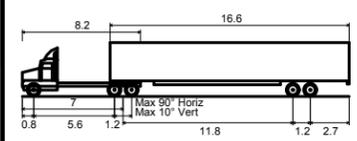
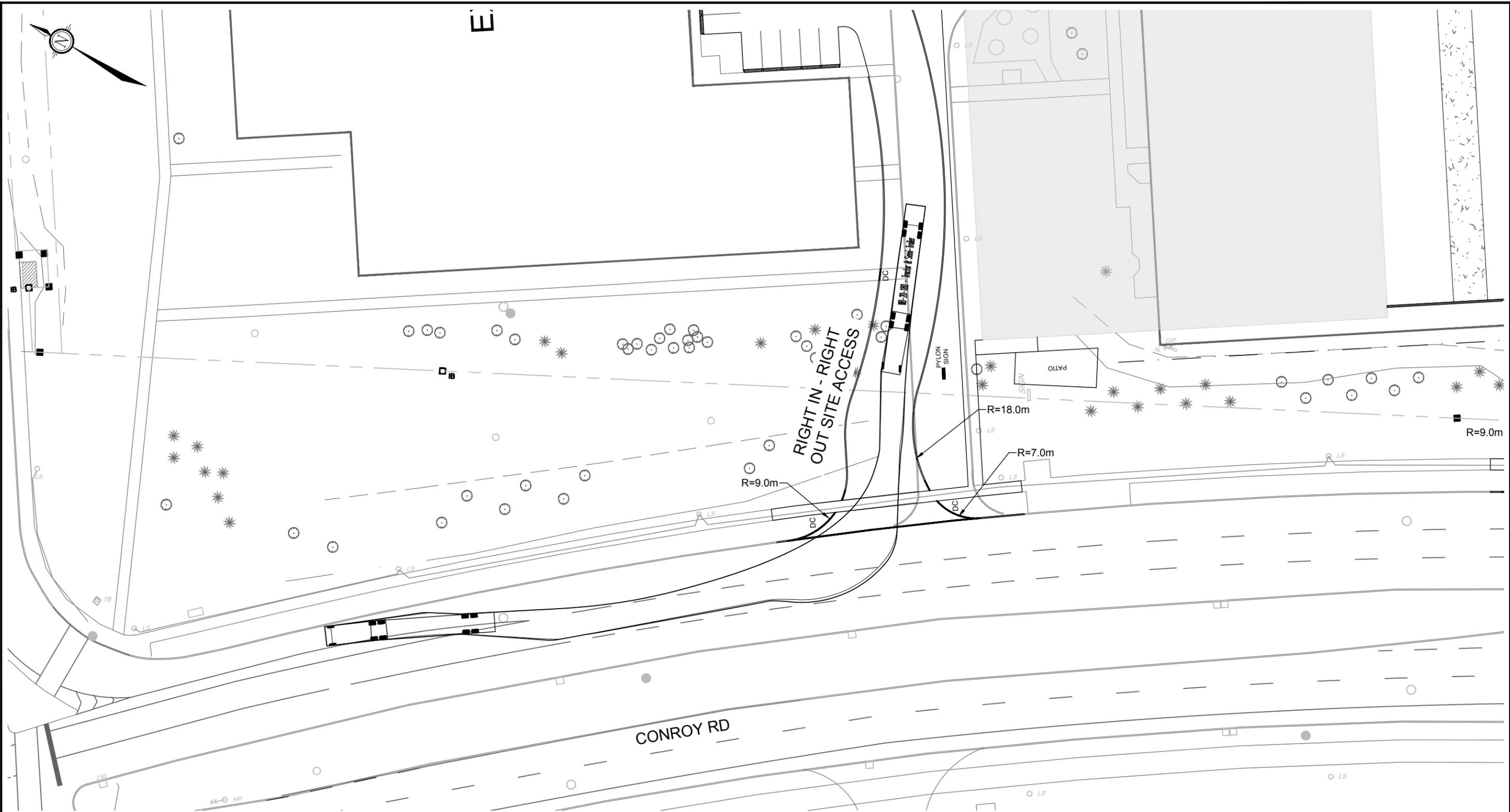
2020 WALKLEY ROAD  
 & 2935 CONROY ROAD

TURNING MOVEMENTS  
 (WB20) - PHASE 2

SCALE 1 : 500

DATE	AUG 2021	JOB	119067	FIGURE	TM-1
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**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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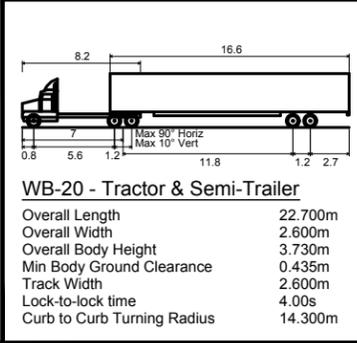
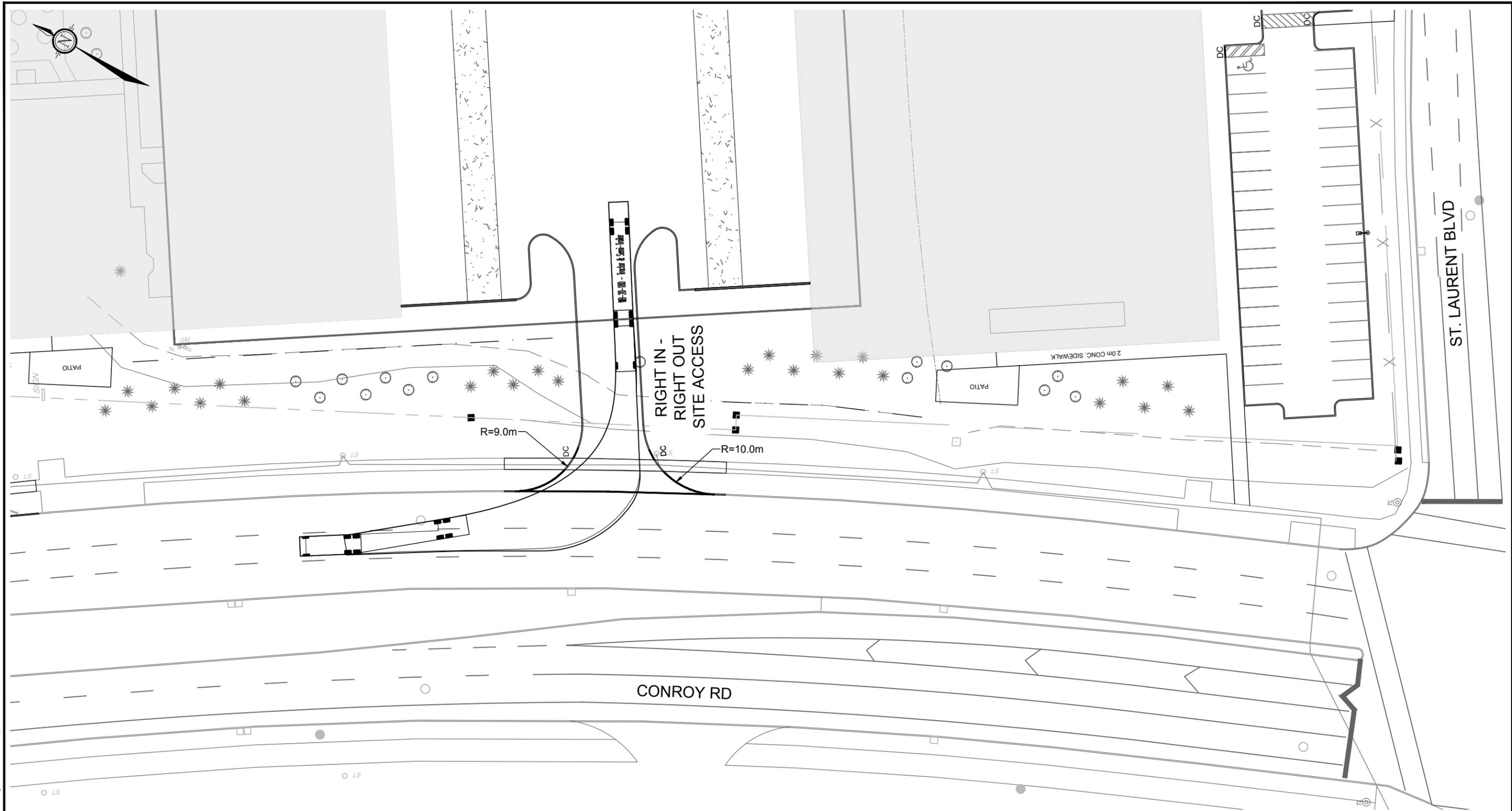
2020 WALKLEY ROAD  
 & 2935 CONROY ROAD

TURNING MOVEMENTS  
 (WB20) - PHASE 2

SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-2

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**WB20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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2020 WALKLEY ROAD  
& 2935 CONROY ROAD

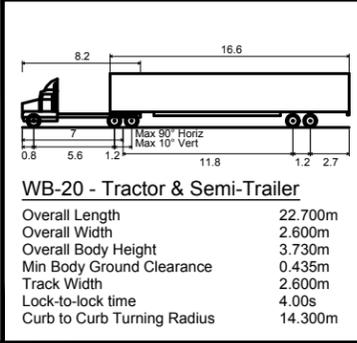
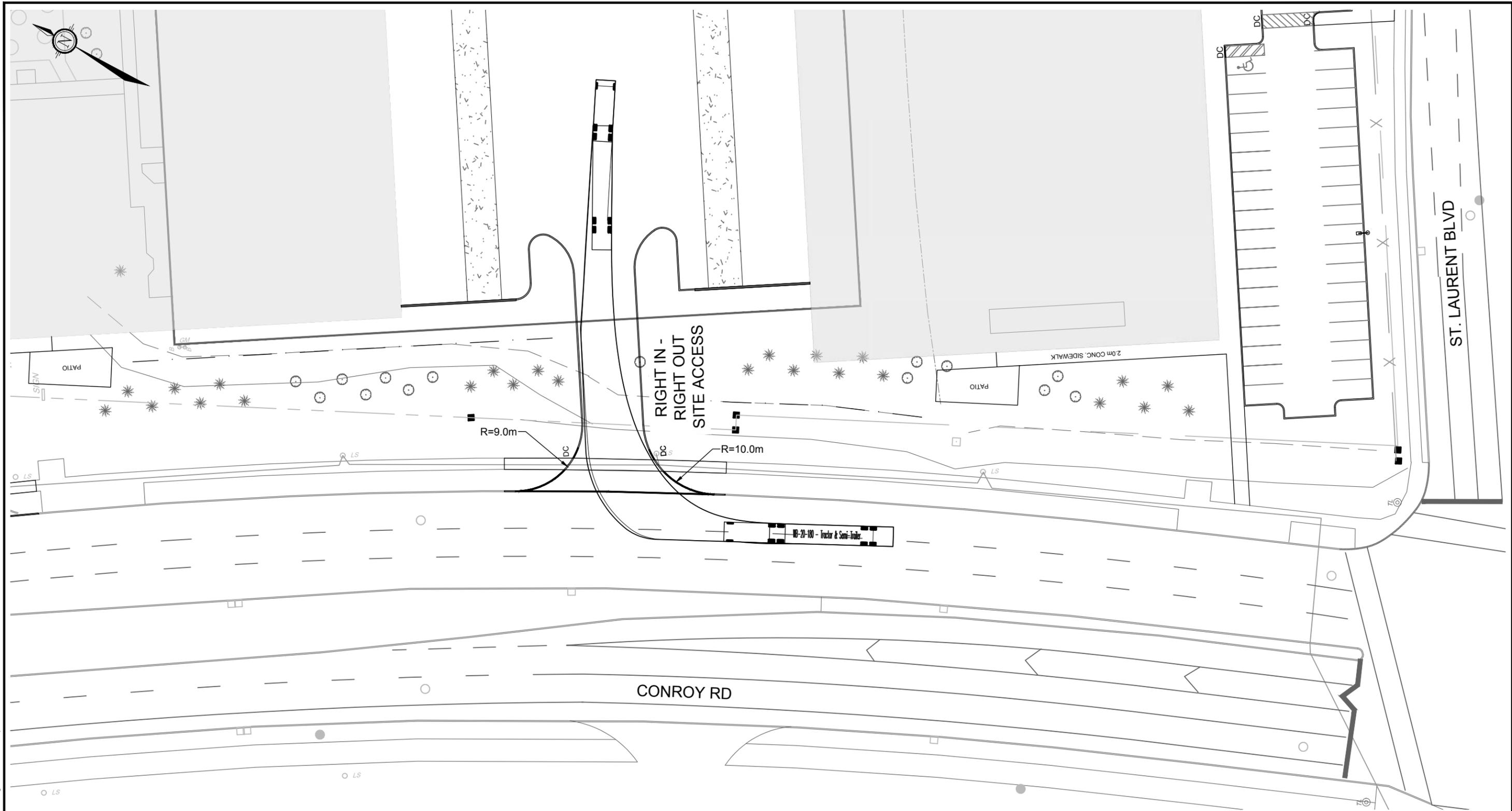
TURNING MOVEMENTS  
(WB20) - PHASE 2



DATE	AUG 2021	JOB	119067	FIGURE	TM-3
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CUT11V17 DWG 270mm X 420mm

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**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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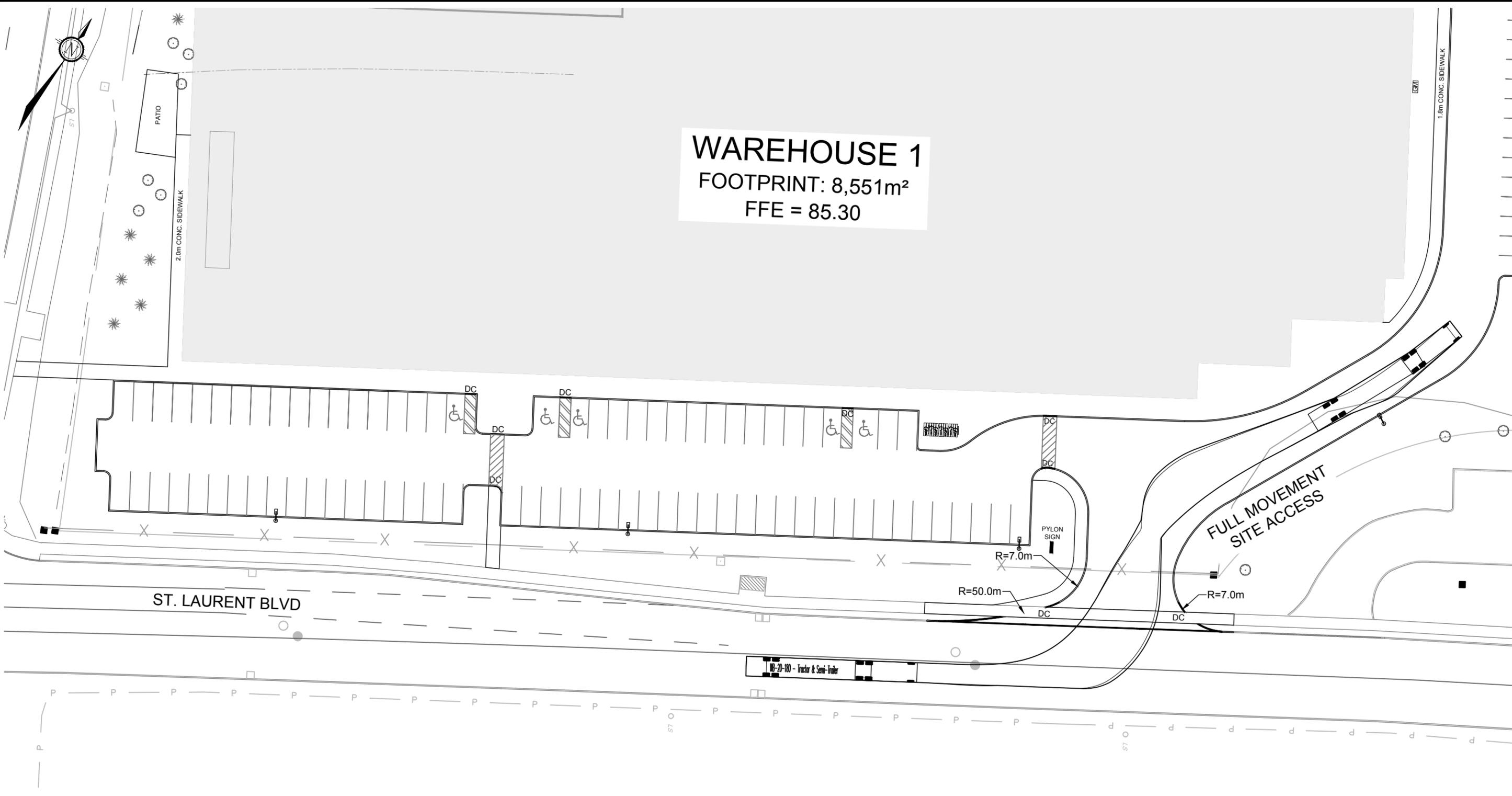
2020 WALKLEY ROAD  
& 2935 CONROY ROAD

TURNING MOVEMENTS  
(WB20) - PHASE 2

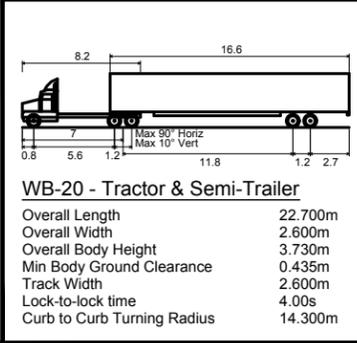


DATE	AUG 2021	JOB	119067	FIGURE	TM-4
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**WAREHOUSE 1**  
 FOOTPRINT: 8,551m<sup>2</sup>  
 FFE = 85.30



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**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

**NOVATECH**

Engineers, Planners & Landscape Architects  
 Suite 200, 240 Michael Cowpland Drive  
 Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643  
 Facsimile (613) 254-5867  
 Website www.novatech-eng.com

2020 WALKLEY ROAD  
 & 2935 CONROY ROAD

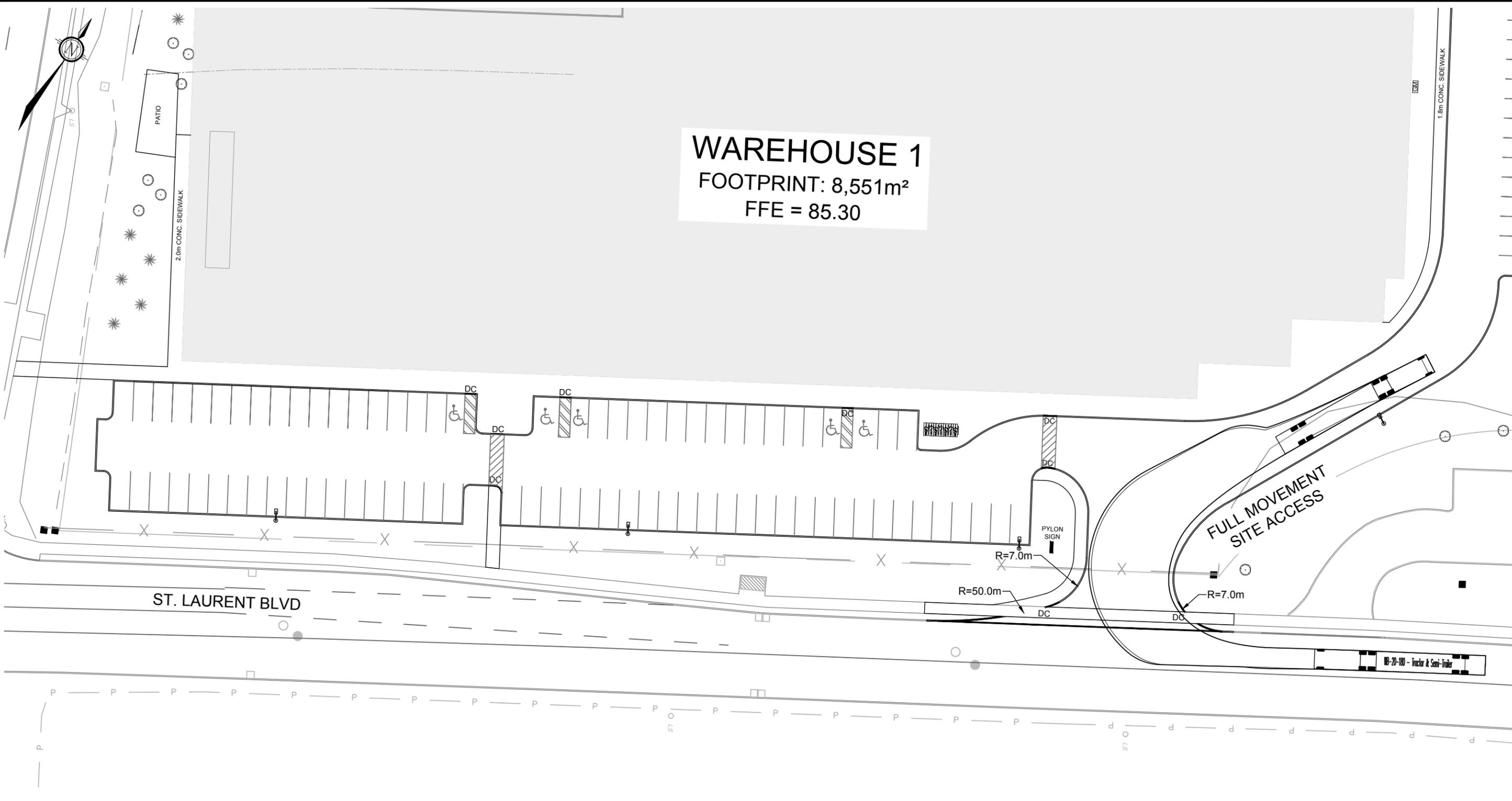
**TURNING MOVEMENTS  
 (WB20) - PHASE 2**

SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-5



**WAREHOUSE 1**  
 FOOTPRINT: 8,551m<sup>2</sup>  
 FFE = 85.30



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**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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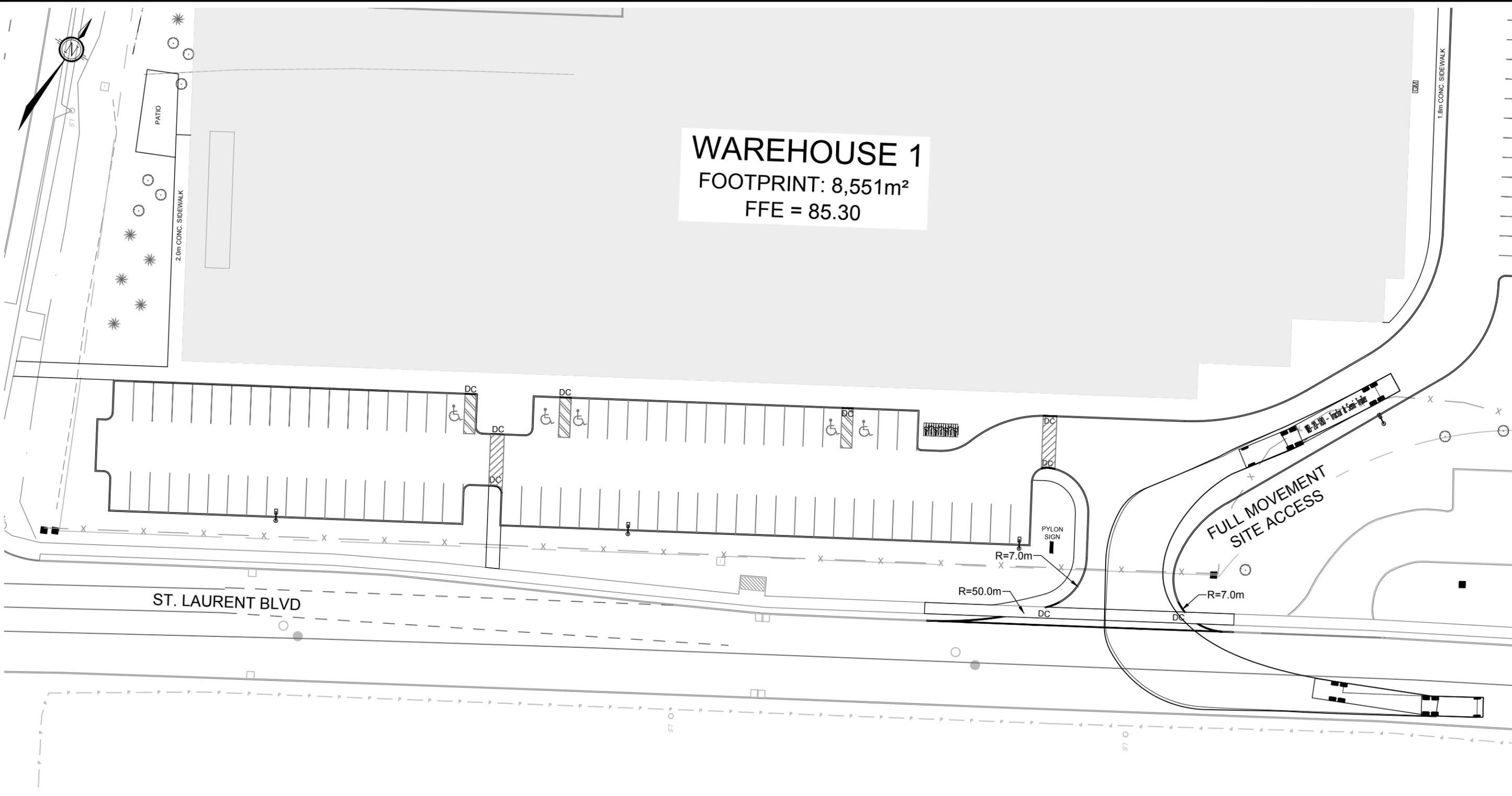
**2020 WALKLEY ROAD & 2935 CONROY ROAD**

**TURNING MOVEMENTS (WB20) - PHASE 2**

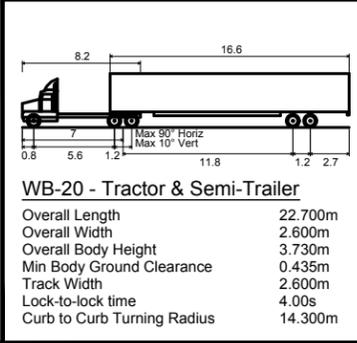
SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-6

**WAREHOUSE 1**  
 FOOTPRINT: 8,551m<sup>2</sup>  
 FFE = 85.30



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 Facsimile (613) 254-5867  
 Website www.novatech-eng.com

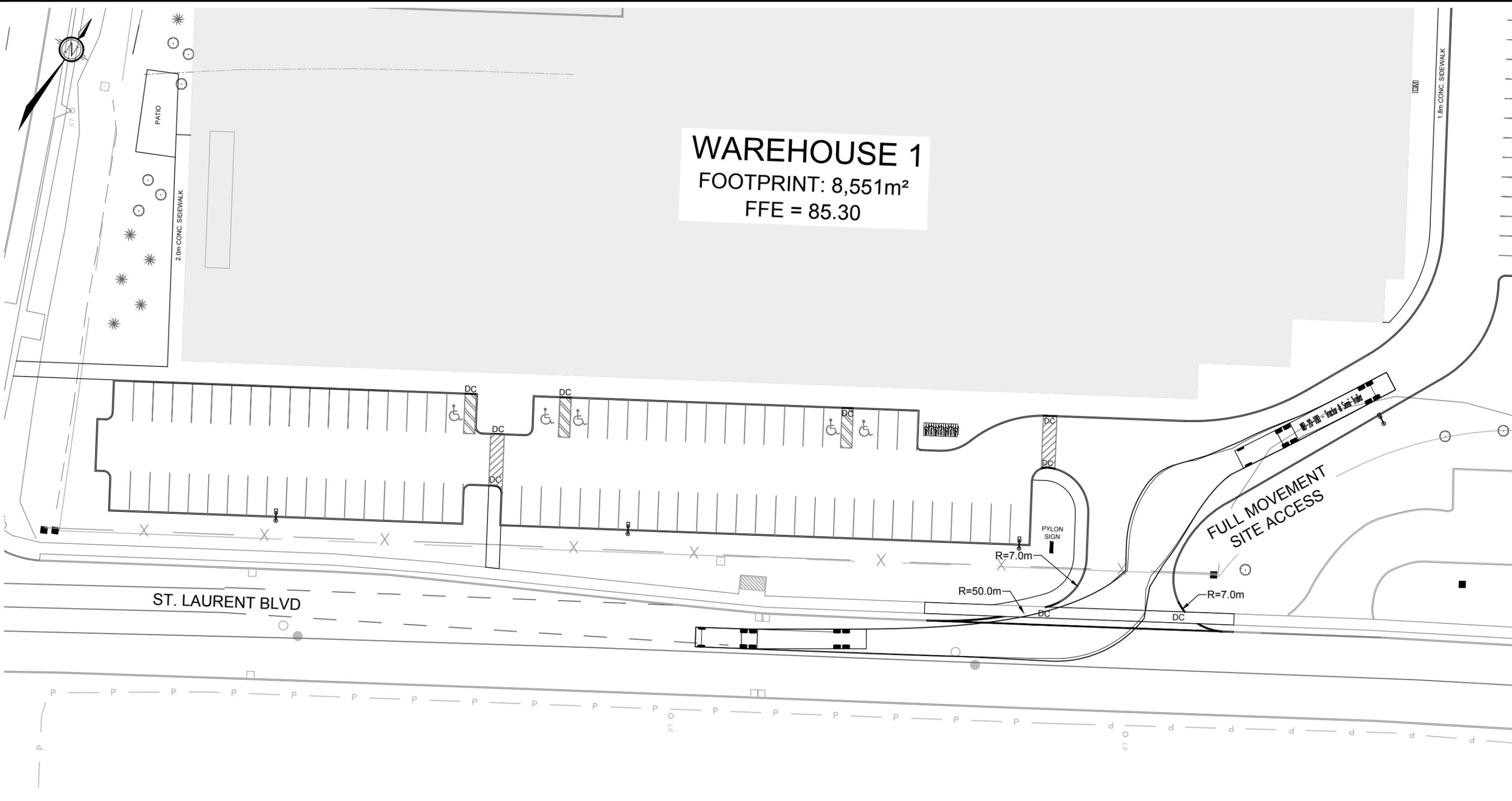
2020 WALKLEY ROAD  
 & 2935 CONROY ROAD

**TURNING MOVEMENTS  
 (WB20) - PHASE 2**

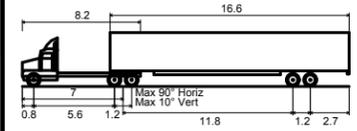
SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-7

**WAREHOUSE 1**  
 FOOTPRINT: 8,551m<sup>2</sup>  
 FFE = 85.30



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**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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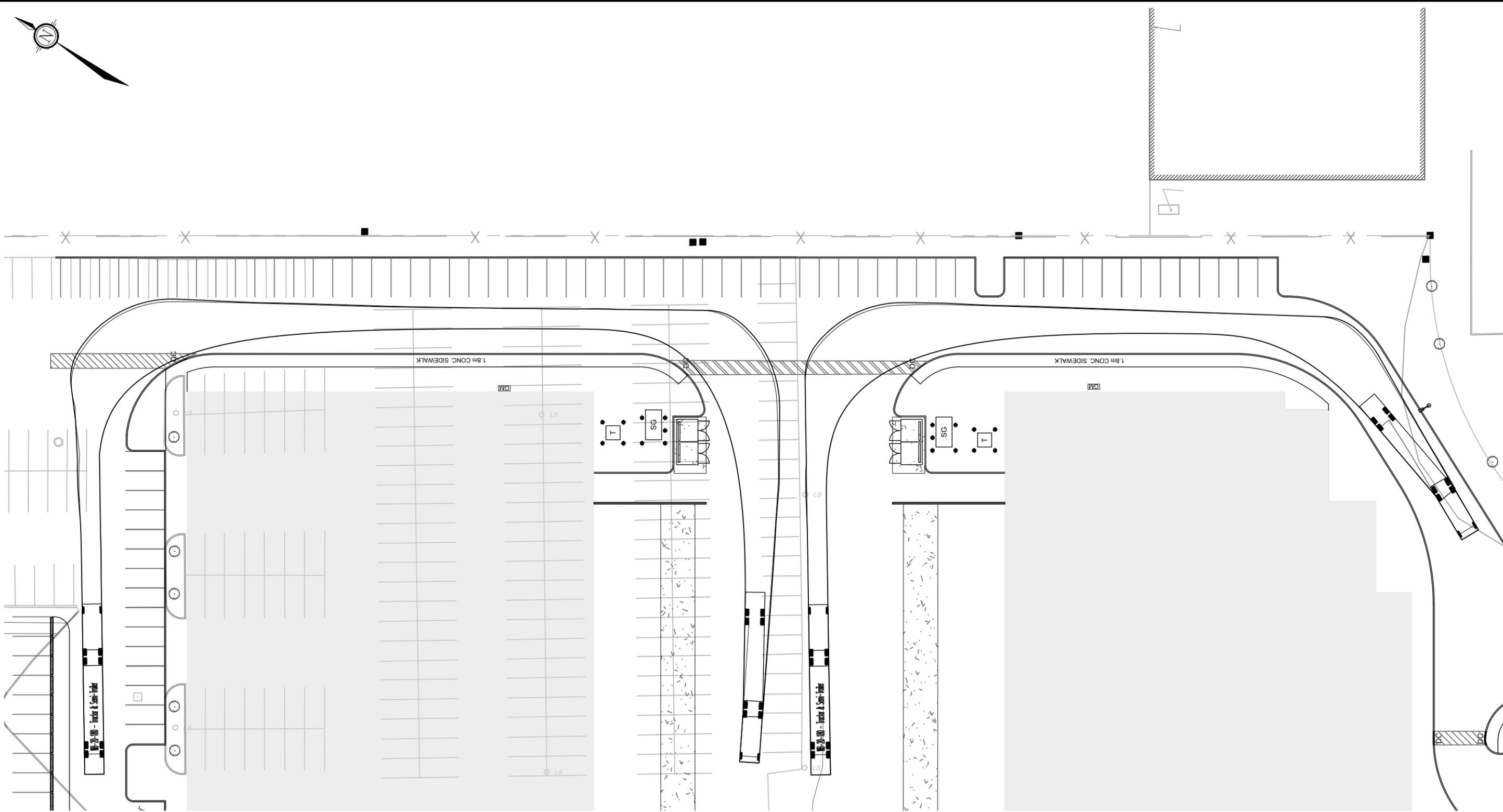
Telephone (613) 254-9643  
 Facsimile (613) 254-5867  
 Website www.novatech-eng.com

2020 WALKLEY ROAD  
 & 2935 CONROY ROAD

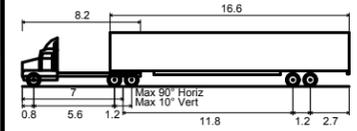
**TURNING MOVEMENTS  
 (WB20) - PHASE 2**

SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-8



C:\temp\AcPublish\_15748119067-TM-PH2.dwg, TM9, Aug 12, 2021 - 1:22pm, rhiller



**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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Website [www.novatech-eng.com](http://www.novatech-eng.com)

## 2020 WALKLEY ROAD & 2935 CONROY ROAD

### TURNING MOVEMENTS (WB20) - PHASE 2

SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-9



WALKEY RD

RIGHT IN - RIGHT OUT  
ACCESS

R=9.0m

R=25.0m

R=7.0m

1.8m CONC. SIDEWALK

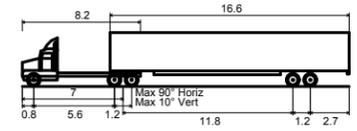
WB-20 - Tractor & Semi-Trailer

SIGN

SIGN

EX UMH  
T/G=84.64

EX UMH  
T/G=84.66



**WB-20 - Tractor & Semi-Trailer**

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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Facsimile (613) 254-5867  
Website [www.novatech-eng.com](http://www.novatech-eng.com)

2020 WALKEY ROAD  
& 2935 CONROY ROAD

TURNING MOVEMENTS  
(WB20) - PHASE 3

SCALE 1 : 500

DATE MAR 2021 JOB 119067 FIGURE TM-10



WALKEY RD

RIGHT IN - RIGHT OUT  
ACCESS

R=9.0m

R=25.0m

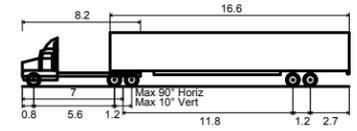
R=7.0m

WB-20 - Tractor & Semi-trailer

1.8m CONC. SIDEWALK

EX UMH  
1/G=84.64

EX UMH  
1/G=84.66



**WB-20 - Tractor & Semi-Trailer**  
Overall Length 22.700m  
Overall Width 2.600m  
Overall Body Height 3.730m  
Min Body Ground Clearance 0.435m  
Track Width 2.600m  
Lock-to-lock time 4.00s  
Curb to Curb Turning Radius 14.300m

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Website www.novatech-eng.com

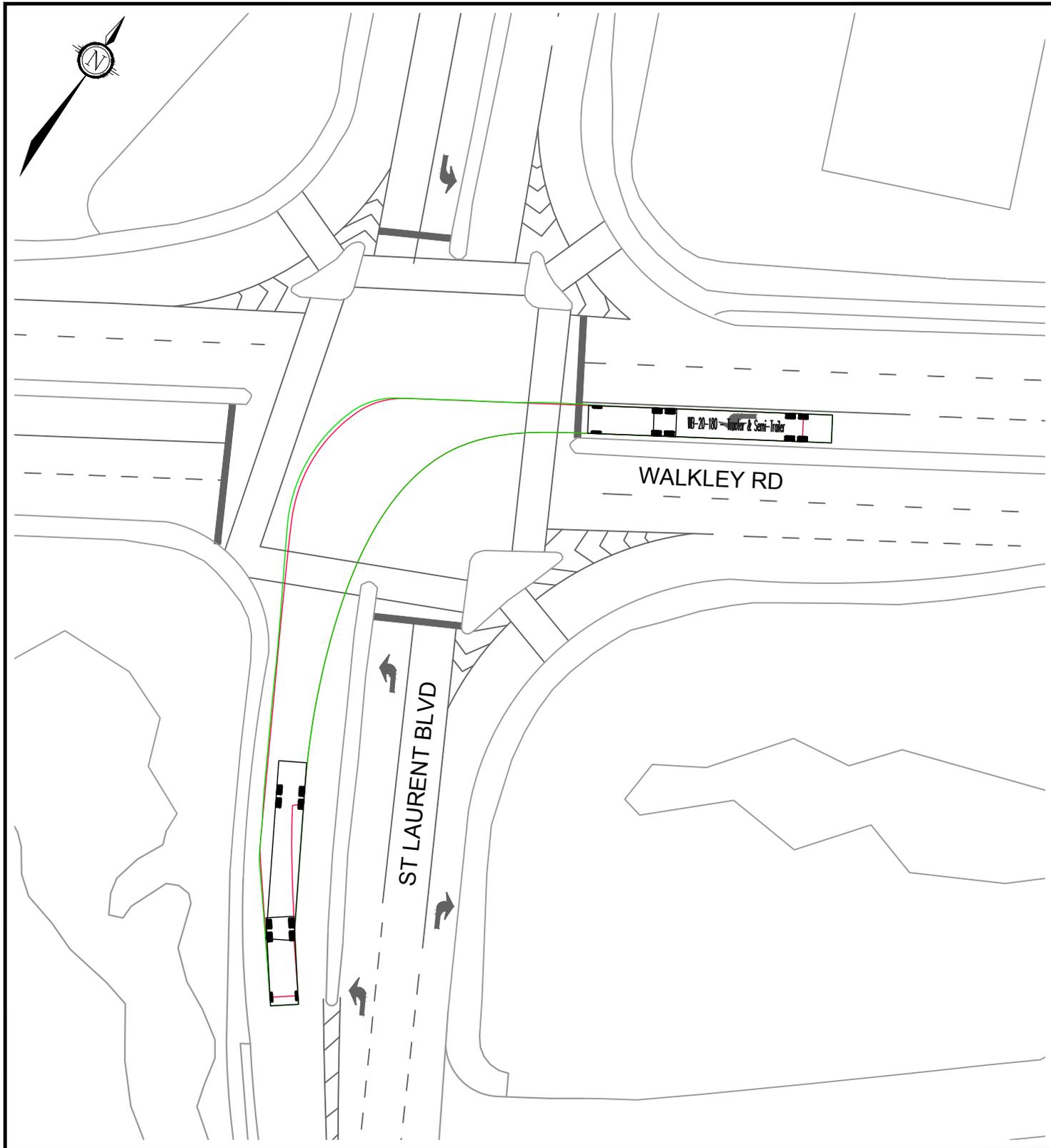
2020 WALKEY ROAD  
& 2935 CONROY ROAD

TURNING MOVEMENTS  
(WB20) - PHASE 3

SCALE 1 : 500

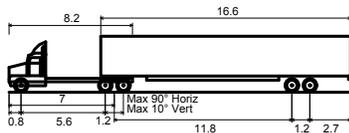
DATE MAR 2021 JOB 119067 FIGURE TM-11

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 Facsimile (613) 254-5867  
 Website www.novatech-eng.com



WB20 - Tractor & Semi-Trailer

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

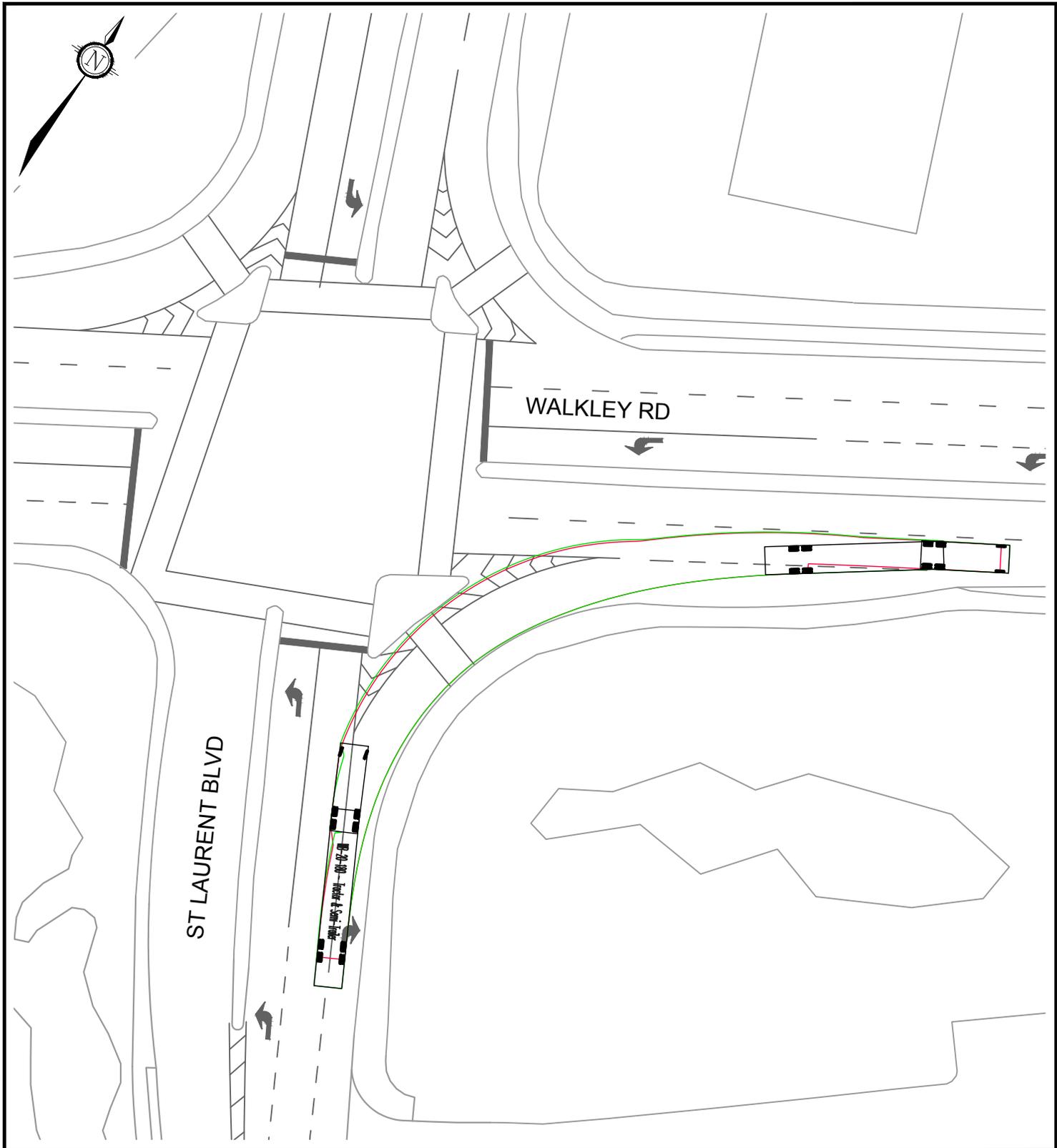
## 2020 WALKLEY ROAD & 2935 CONROY ROAD

### TURNING MOVEMENTS (WB20)

SCALE 1 : 500

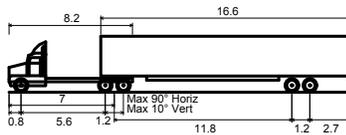
DATE	AUG 2021	JOB	119067	FIGURE	TM-12
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WB-20 - Tractor & Semi-Trailer

Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

## 2020 WALKLEY ROAD & 2935 CONROY ROAD

### TURNING MOVEMENTS (WB20)

SCALE 1 : 500

DATE AUG 2021 JOB 119067 FIGURE TM-13



## **APPENDIX B**

---

TIA Screening Form

## City of Ottawa 2017 TIA Guidelines Screening Form

### 1. Description of Proposed Development

Municipal Address	<b>2020 Walkley Road / 2935 Conroy Road</b>
Description of Location	<b>SE of Walkley/Conroy</b>
Land Use Classification	<b>Warehouse</b>
Development Size (units)	
Development Size (m <sup>2</sup> )	<b>262,715 sq.ft. (24,407 sq.m.)</b>
Number of Accesses and Locations	<b>2 accesses to Conroy Road, 1 access to Walkley Road, 1 access to St. Laurent Boulevard</b>
Phase of Development	<b>Three</b>
Buildout Year	<b>2023</b>

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

### 2. Trip Generation Trigger

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

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

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

**If the proposed development size is greater than the sizes identified above, 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?	x	
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*		x

\*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?		x
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		x
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)?	x	
Is the proposed driveway within auxiliary lanes of an intersection?	x	
Does the proposed driveway make use of an existing median break that serves an existing site?	x	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		x
Does the development include a drive-thru facility?		x

**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?		x
Does the development satisfy the Location Trigger?	x	
Does the development satisfy the Safety Trigger?	x	

**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 System Information





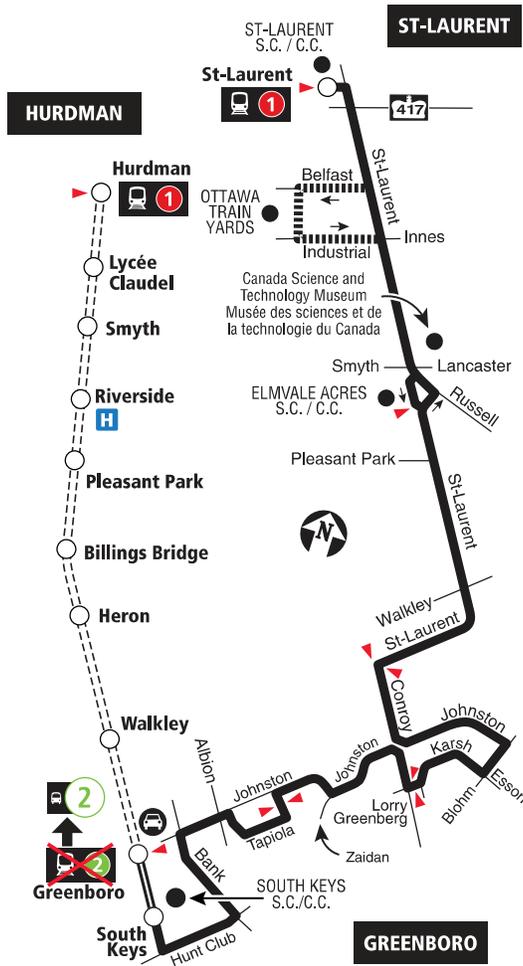
# 40

## ST-LAURENT GREENBORO HURDMAN

### Fréquent

7 days a week / 7 jours par semaine

All day service  
Service toute la journée



- Transitway & Station
- Peak periods / Périodes de pointe
- Some trips early morning only / Quelques trajets tôt le matin seulement
- Park & Ride / Parc-o-Bus
- Timepoint / Heures de passage

2020.04

**Schedule / Horaire..... 613-560-1000**  
**Text / Texto ..... 560560**  
*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service  
 Service à la clientèle ..... **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**  
 Security / Sécurité ..... **613-741-2478**

**Effective May 3, 2020**  
**En vigueur 3 mai 2020**

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

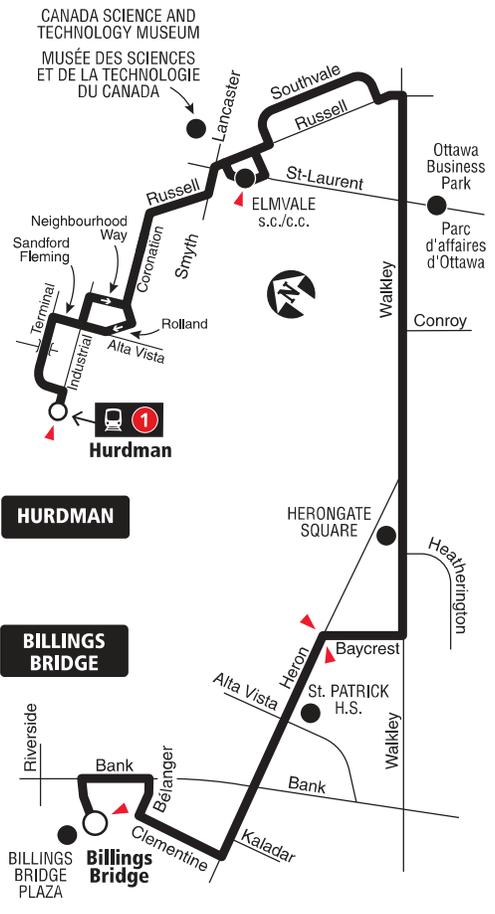


# 46

## BILLINGS BRIDGE HURDMAN

Local

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



**HURDMAN**

**BILLINGS BRIDGE**

○ Station  
▲ Timepointe / Heures de passage

2019.07

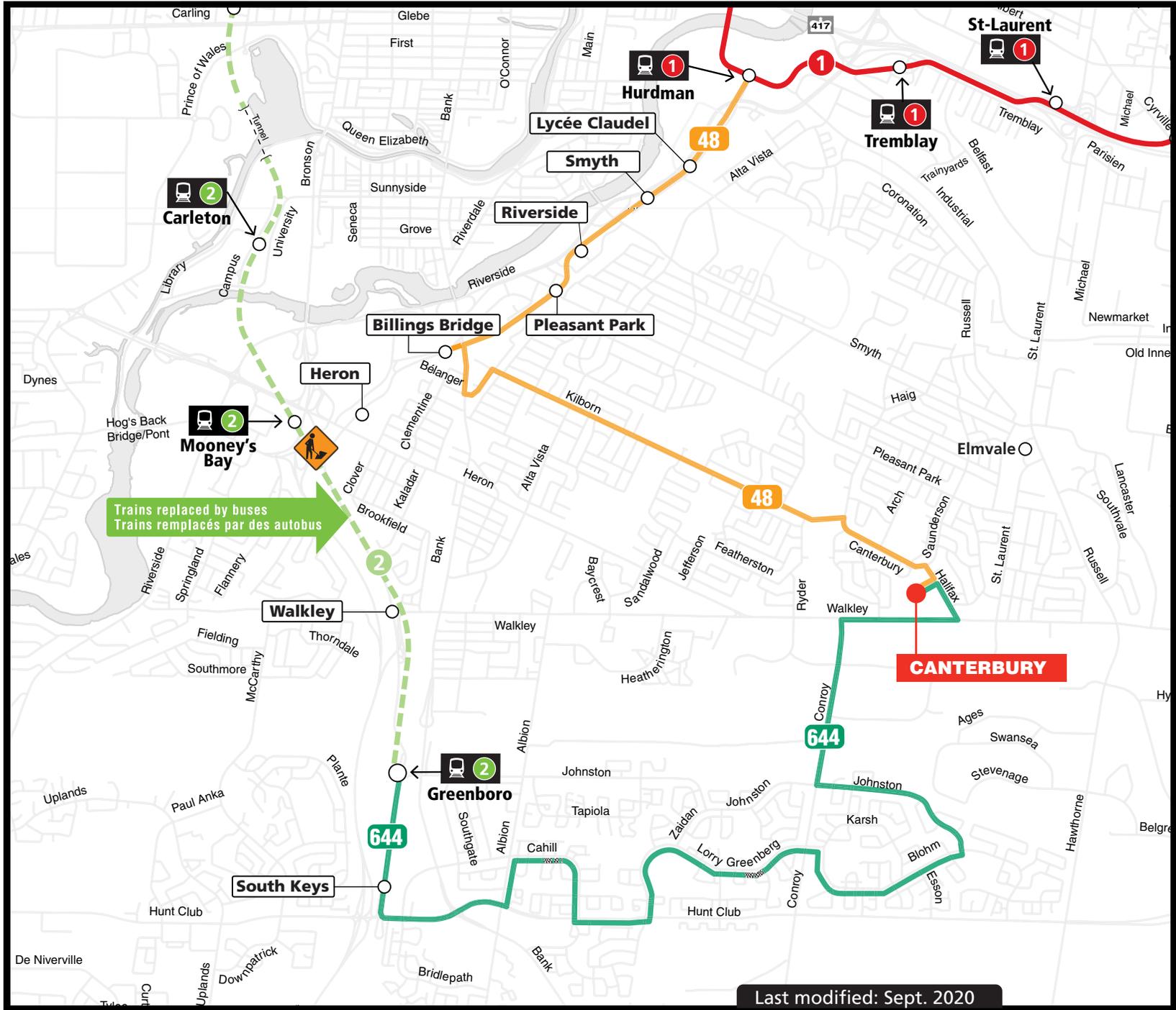




**Future route after O-Train Line 1 is open**  
**Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train**

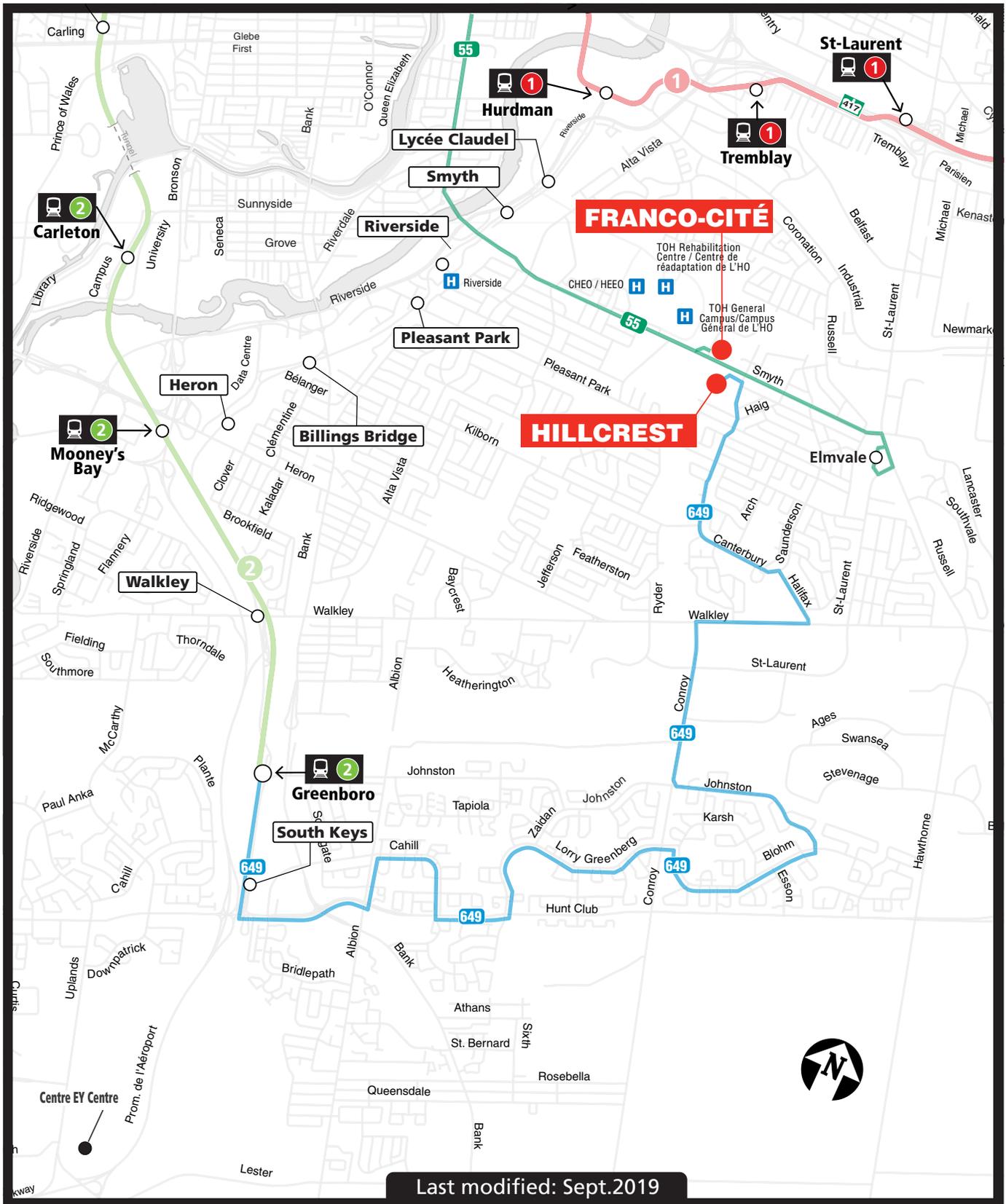
Lost and Found / Objets perdus..... 613-563-4011  
Security / Sécurité ..... 613-741-2478

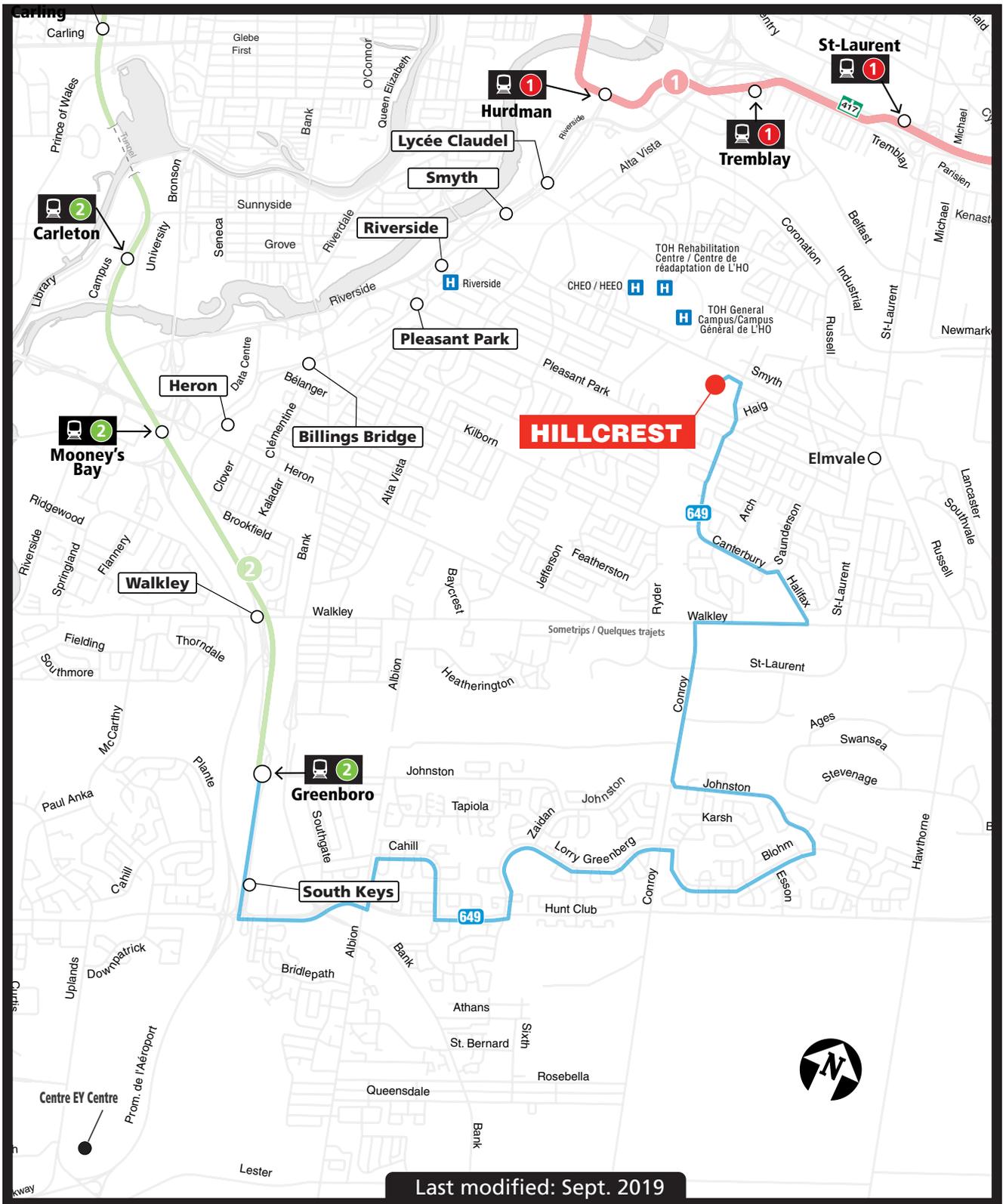
**OC Transpo** INFO 613-741-4390  
octranspo.com



Last modified: Sept. 2020







Last modified: Sept. 2019

## **APPENDIX D**

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Traffic Count Data



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

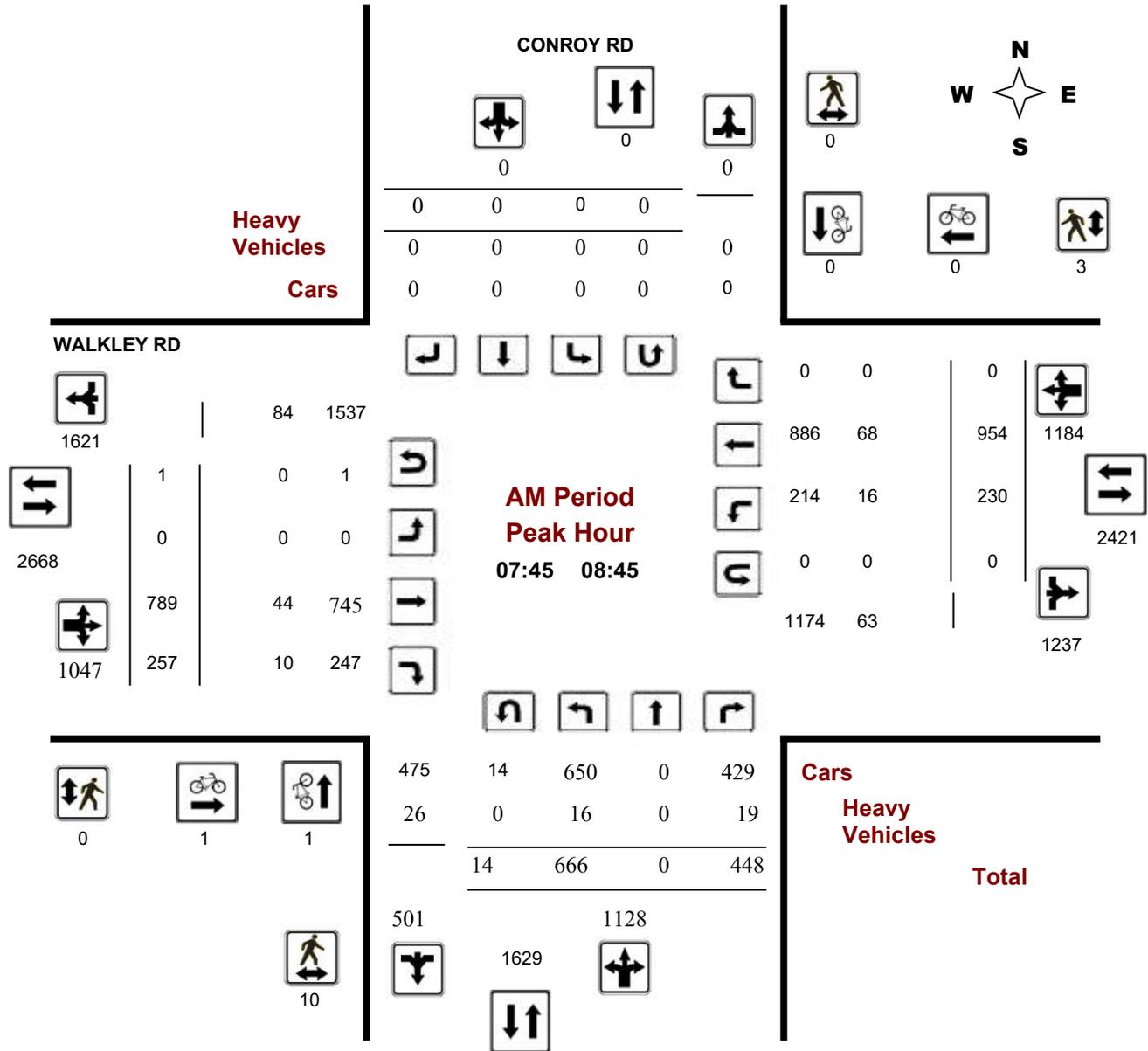
### CONROY RD @ WALKLEY RD

**Survey Date:** Thursday, February 22, 2018

**Start Time:** 07:00

**WO No:** 37565

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

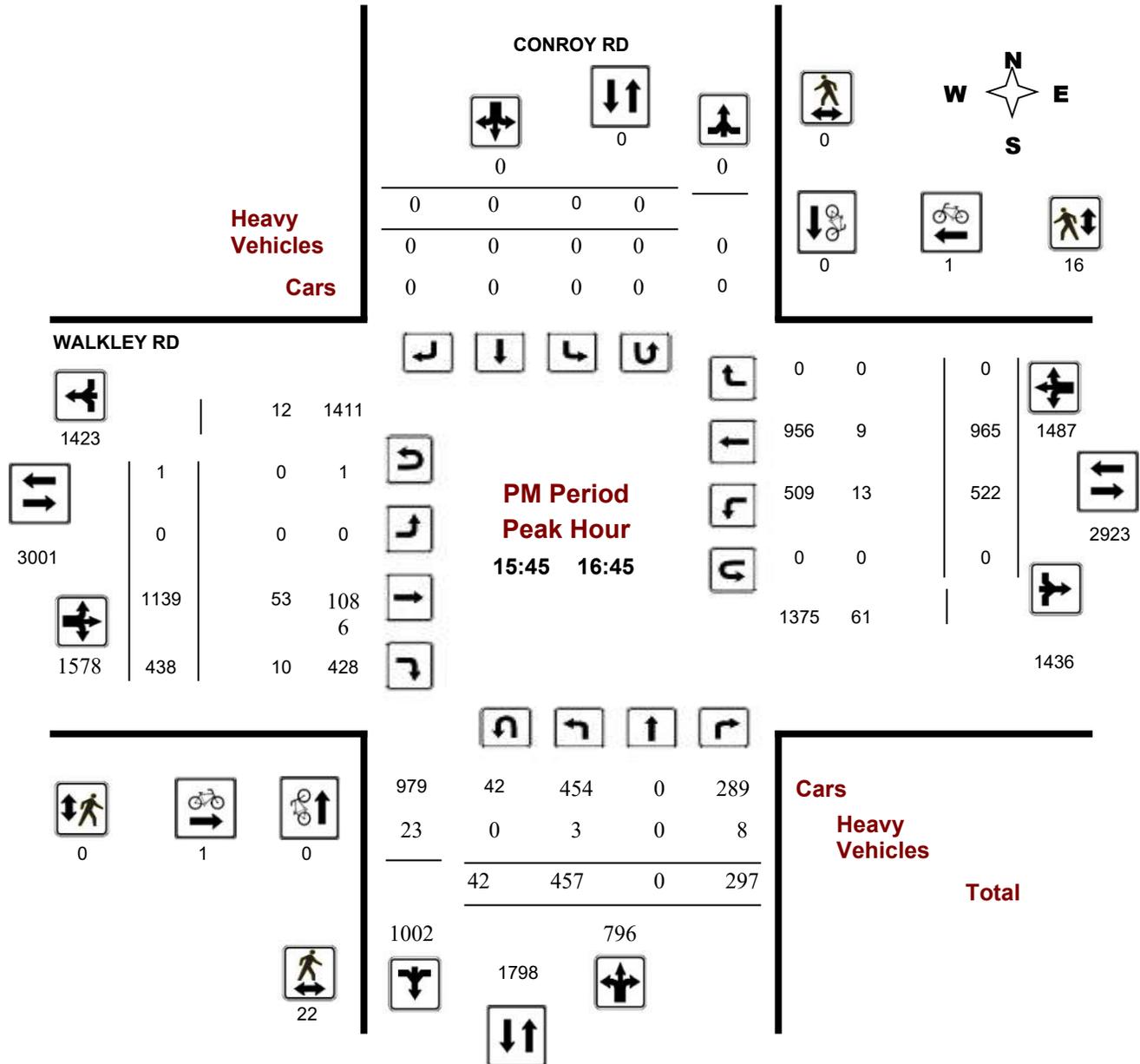
### CONROY RD @ WALKLEY RD

**Survey Date:** Thursday, February 22, 2018

**Start Time:** 07:00

**WO No:** 37565

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

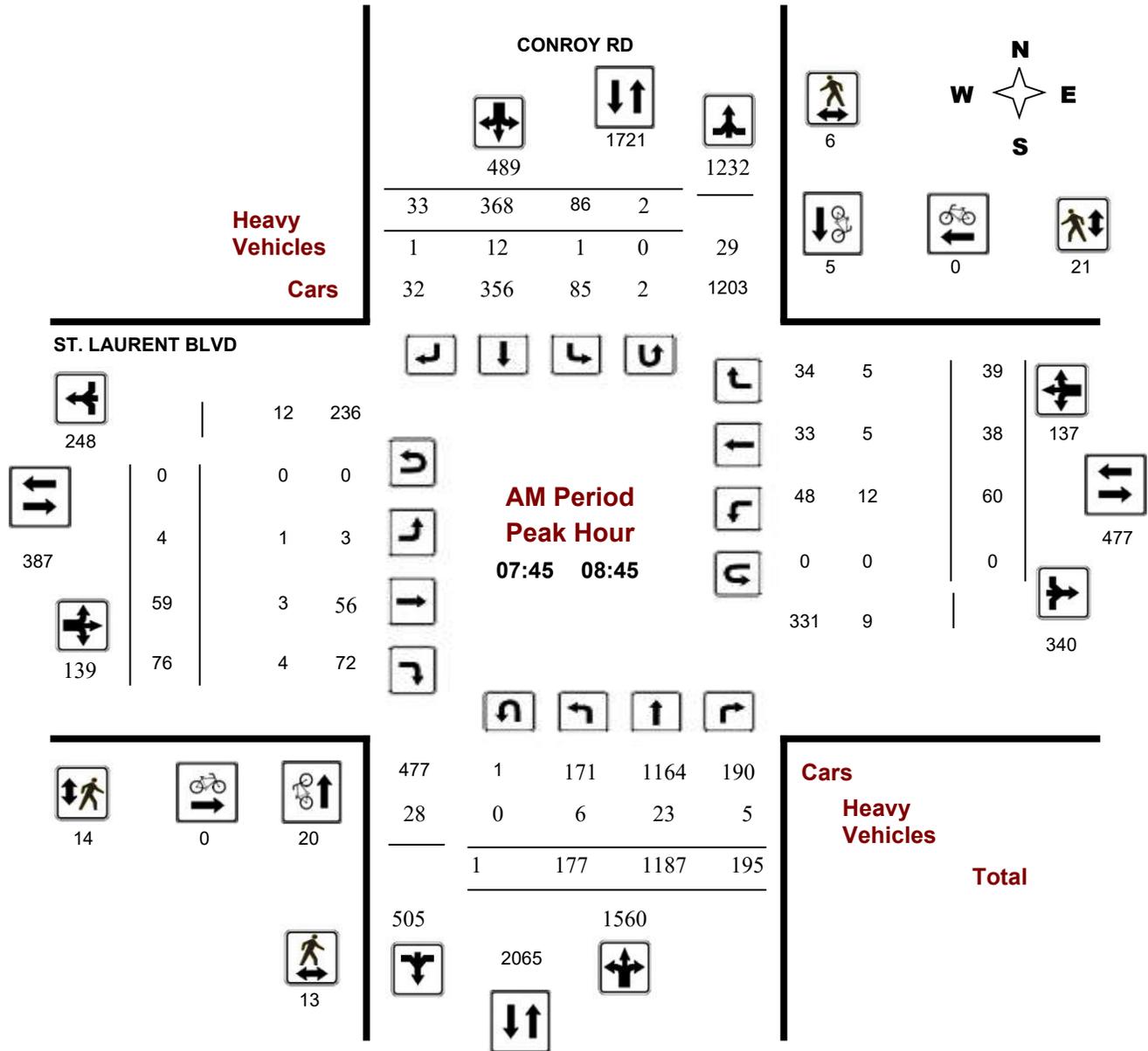
### CONROY RD @ ST. LAURENT BLVD

**Survey Date:** Thursday, June 01, 2017

**Start Time:** 07:00

**WO No:** 37032

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

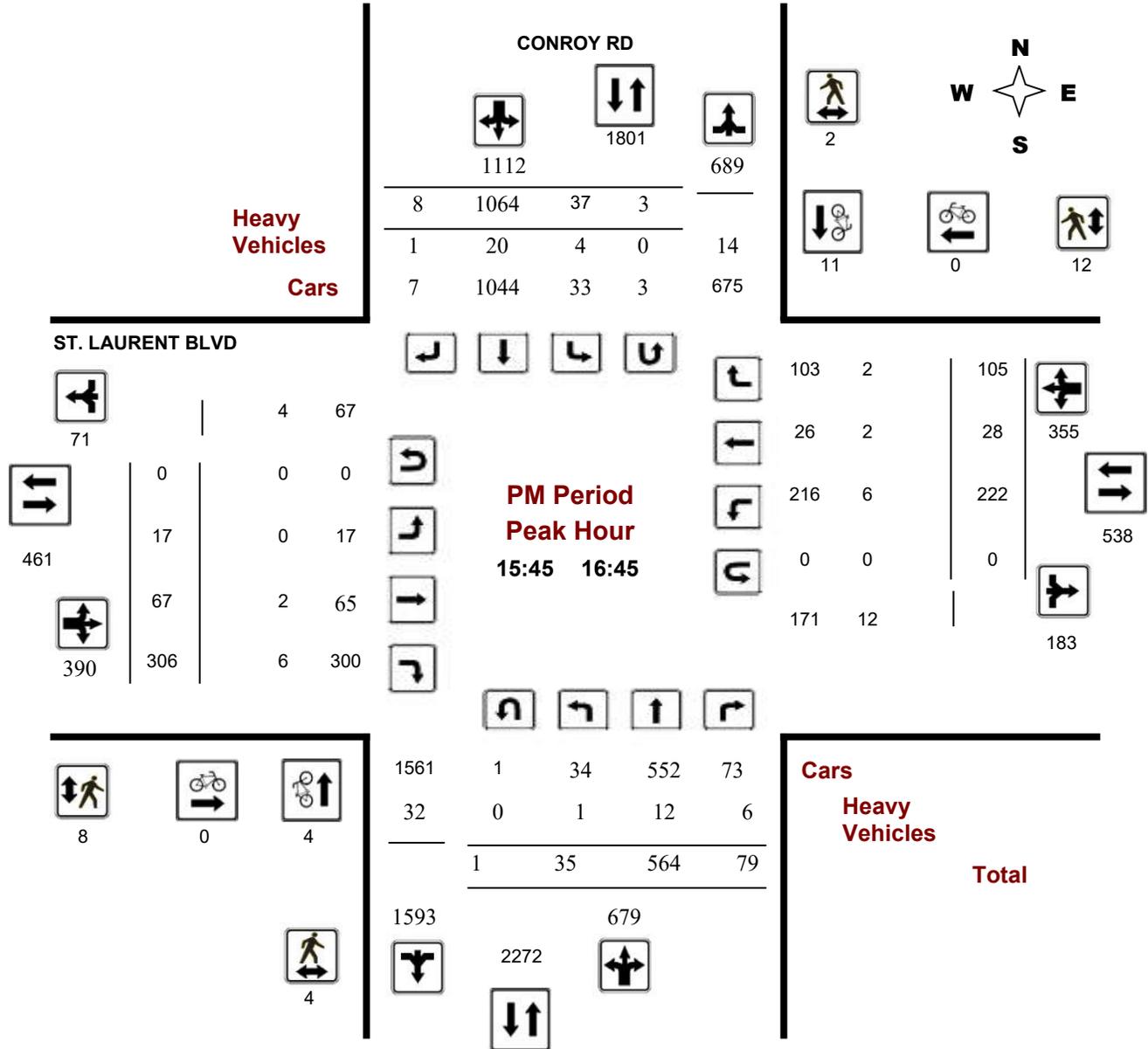
### CONROY RD @ ST. LAURENT BLVD

**Survey Date:** Thursday, June 01, 2017

**Start Time:** 07:00

**WO No:** 37032

**Device:** Miovision



**Comments**



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

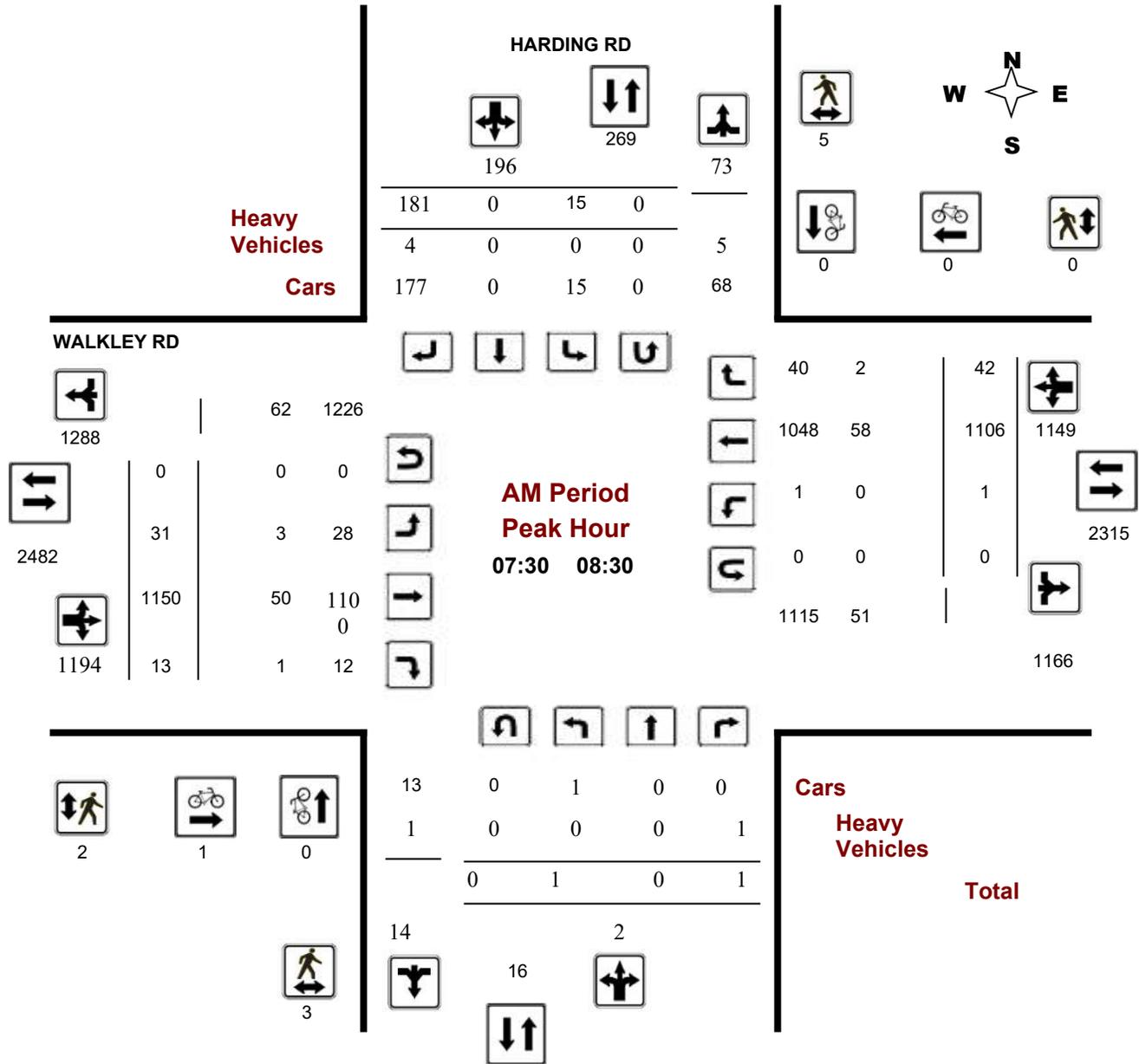
### HARDING RD @ WALKLEY RD

**Survey Date:** Tuesday, December 11, 2018

**Start Time:** 07:00

**WO No:** 38063

**Device:** Miovision







# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

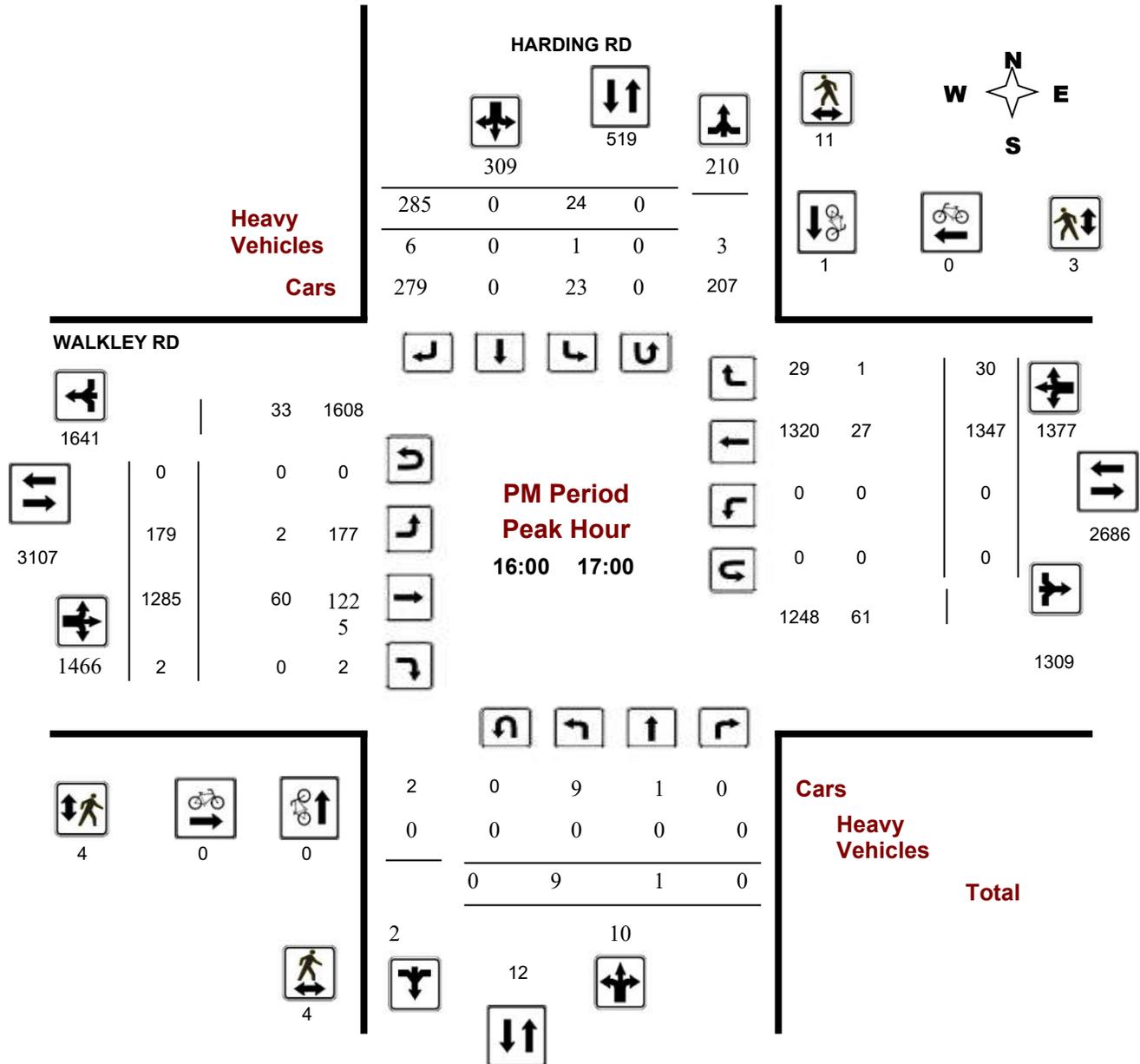
### HARDING RD @ WALKLEY RD

**Survey Date:** Tuesday, December 11, 2018

**Start Time:** 07:00

**WO No:** 38063

**Device:** Miovision



## **APPENDIX E**

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Collision Records



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2014    **To:** December 31, 2018

**Location:** CONROY RD @ ST. LAURENT BLVD

**Traffic Control:** Traffic signal

**Total Collisions:** 29

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Jan-16, Thu,20:17	Clear	Other	P.D. only	Dry	West	Reversing	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jan-27, Mon,17:10	Clear	Rear end	Non-fatal injury	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2014-Feb-04, Tue,08:58	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Passenger van	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Mar-06, Thu,23:58	Clear	SMV unattended vehicle	Non-reportable	Dry	North	Going ahead	Passenger van	Unattended vehicle	0
2014-Sep-18, Thu,17:13	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Nov-18, Tue,08:29	Clear	Rear end	P.D. only	Ice	North	Slowing or stopping	Passenger van	Other motor vehicle	0
					North	Slowing or stopping	Delivery van	Other motor vehicle	
2015-Feb-02, Mon,17:51	Snow	Rear end	P.D. only	Loose snow	West	Turning right	Passenger van	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2015-May-04, Mon,06:51	Clear	Turning movement	Non-fatal injury	Dry	North	Going ahead	Bicycle	Other motor vehicle	0
					North	Turning right	Pick-up truck	Cyclist	
2015-May-11, Mon,16:47	Clear	Rear end	P.D. only	Dry	East	Turning right	Passenger van	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Jul-09, Thu,00:23	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Overtaking	Automobile, station wagon	Other motor vehicle	
2015-Dec-16, Wed,16:50	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ ST. LAURENT BLVD

**Traffic Control:** Traffic signal

**Total Collisions:** 29

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jun-20, Mon,09:52	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jul-18, Mon,18:21	Clear	Rear end	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Aug-12, Fri,21:35	Rain	Rear end	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Oct-21, Fri,13:22	Rain	Angle	Non-fatal injury	Wet	West	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-11, Fri,18:04	Clear	Turning movement	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2016-Nov-11, Fri,18:45	Clear	Angle	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-18, Fri,14:35	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-17, Tue,15:30	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2017-Feb-05, Sun,21:15	Snow	Sideswipe	P.D. only	Loose snow	South	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					South	Stopped	Passenger van	Other motor vehicle	
2017-May-03, Wed,19:07	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-18, Sun,11:10	Clear	Sideswipe	Non-fatal injury	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-26, Wed,13:14	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ ST. LAURENT BLVD

**Traffic Control:** Traffic signal

**Total Collisions:** 29

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jul-26, Wed,14:49	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-11, Fri,13:18	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Nov-21, Tue,13:45	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	School van	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-08, Mon,10:34	Snow	Angle	P.D. only	Loose snow	South	Going ahead	Police vehicle	Skidding/sliding	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-May-03, Thu,07:24	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-09, Tue,07:06	Fog, mist, smoke, Turning movement dust	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-01, Sat,13:45	Snow	Sideswipe	Non-fatal injury	Wet	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Feb-11, Tue,13:47	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Feb-22, Sat,10:58	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Tow truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Mar-30, Sun,12:30	Clear	Angle	P.D. only	Wet	East	Changing lanes	Municipal transit bus	Other motor vehicle	0
					North	Turning right	Snow plow	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Aug-19, Tue,13:48	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Dec-05, Fri,16:14	Clear	Rear end	P.D. only	Ice	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Dec-06, Sat,14:59	Clear	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2014-Dec-15, Mon,12:20	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2014-Dec-15, Mon,16:50	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2014-Dec-29, Mon,12:34	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-31, Sat,16:16	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-20, Fri,14:55	Clear	Rear end	P.D. only	Dry	East	Going ahead	Delivery van	Other motor vehicle	0
					East	Stopped	Passenger van	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-Feb-21, Sat,14:38	Snow	Sideswipe	P.D. only	Slush	West	Going ahead	Tow truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-05, Sun,15:10	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Apr-14, Tue,17:00	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Apr-24, Fri,08:45	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Delivery van	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2015-Apr-30, Thu,17:52	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2015-May-27, Wed,16:23	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-May-29, Fri,06:34	Clear	SMV other	Non-fatal injury	Dry	East	Overtaking	Motorcycle	Ran off road	0
2015-Jun-18, Thu,21:04	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-07, Mon,15:39	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Sep-15, Tue,09:07	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Municipal transit bus	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Sep-25, Fri,15:03	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Oct-13, Tue,12:55	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2015-Oct-23, Fri,17:13	Clear	Rear end	Non-fatal injury	Dry	North	Turning left	Passenger van	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2015-Oct-25, Sun,15:10	Clear	Other	P.D. only	Dry	East	Reversing	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2014    **To:** December 31, 2018

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Nov-05, Thu,17:36	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Dec-17, Thu,11:22	Rain	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Passenger van	Other motor vehicle	
2016-Jan-17, Sun,16:20	Snow	Rear end	P.D. only	Loose snow	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2016-Feb-09, Tue,10:45	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Feb-16, Tue,13:00	Snow	Rear end	P.D. only	Packed snow	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2016-Feb-19, Fri,08:40	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-23, Tue,12:31	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Mar-10, Thu,15:54	Clear	Rear end	Non-fatal injury	Wet	West	Going ahead	Truck - tank	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Mar-29, Tue,18:15	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2016-Apr-02, Sat,13:38	Clear	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2016-Apr-19, Tue,16:43	Clear	Rear end	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	





# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Jun-02, Thu,18:38	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jul-18, Mon,15:58	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Police vehicle	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jul-22, Fri,08:50	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Sep-26, Mon,15:48	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Oct-11, Tue,01:58	Clear	Sideswipe	P.D. only	Dry	North	Overtaking	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2016-Oct-27, Thu,17:45	Snow	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Nov-04, Fri,17:07	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-06, Tue,10:30	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Turning left	Tow truck	Other motor vehicle	
2016-Dec-07, Wed,07:35	Snow	Rear end	P.D. only	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-19, Mon,06:27	Clear	Angle	P.D. only	Packed snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Jan-26, Thu,10:41	Snow	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Apr-25, Tue,08:16	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2017-May-11, Thu,16:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2017-Jun-04, Sun,19:14	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jun-12, Mon,19:30	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jun-15, Thu,18:43	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jun-22, Thu,17:14	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Passenger van	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jul-06, Thu,16:25	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Sep-05, Tue,08:21	Clear	Rear end	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-26, Tue,13:25	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Oct-11, Wed,16:09	Clear	Rear end	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Nov-08, Wed,15:15	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2017-Dec-23, Sat,14:25	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** CONROY RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 72

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jan-09, Tue,17:40	Clear	Rear end	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Jan-26, Fri,12:20	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-11, Sun,14:18	Rain	Turning movement	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Feb-14, Wed,09:31	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Skidding/sliding	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Apr-23, Mon,16:31	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-15, Tue,08:56	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-17, Thu,15:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-29, Tue,08:48	Clear	Other	P.D. only	Dry	West	Reversing	School bus	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jun-25, Mon,15:50	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Oct-03, Wed,07:44	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-11, Sun,07:45	Clear	Angle	P.D. only	Dry	North	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-22, Thu,11:15	Clear	Rear end	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2014    **To:** December 31, 2018

**Location:** HARDING RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2014-Mar-03, Mon,17:18	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Jun-13, Fri,08:10	Rain	SMV other	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Curb	0
2014-Sep-12, Fri,14:50	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2014-Oct-24, Fri,13:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Nov-01, Sat,23:21	Clear	Angle	P.D. only	Dry	East	Going ahead	Bicycle	Other motor vehicle	0
					South	Turning right	School bus	Cyclist	
2014-Nov-20, Thu,09:59	Clear	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2014-Dec-03, Wed,20:05	Rain	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-05, Mon,15:30	Clear	Rear end	P.D. only	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-18, Sun,18:08	Clear	Angle	Non-fatal injury	Wet	West	Going ahead	Passenger van	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2015-Jan-30, Fri,10:59	Clear	Rear end	P.D. only	Loose snow	West	Going ahead	Bus (other)	Other motor vehicle	0
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2015-Feb-03, Tue,13:44	Clear	SMV other	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Ran off road	0
2015-Jul-29, Wed,10:30	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Truck and trailer	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** HARDING RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Aug-25, Tue,08:55	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-19, Sat,18:21	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Mar-17, Thu,12:09	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Apr-04, Mon,08:51	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Apr-08, Fri,16:23	Clear	Turning movement	P.D. only	Wet	East	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-May-18, Wed,15:14	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-17, Fri,18:53	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Aug-23, Tue,15:17	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Sep-20, Tue,08:48	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Bicycle	Other motor vehicle	0
					South	Turning right	Passenger van	Cyclist	
2017-Apr-12, Wed,13:17	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2017-Jun-30, Fri,17:05	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

From: January 1, 2014 To: December 31, 2018

**Location:** HARDING RD @ WALKLEY RD

**Traffic Control:** Traffic signal

**Total Collisions:** 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jul-25, Tue,14:45	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					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-Jul-31, Mon,08:34	Clear	Angle	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2017-Sep-12, Tue,15:56	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-24, Wed,19:49	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-07, Wed,15:56	Snow	Rear end	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-14, Wed,09:13	Snow	Turning movement	P.D. only	Loose snow	West	Turning left	Passenger van	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-14, Wed,22:36	Snow	Rear end	P.D. only	Wet	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-16, Mon,14:23	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-09, Thu,13:16	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Dec-05, Wed,14:33	Snow	Turning movement	Non-fatal injury	Loose snow	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

## **APPENDIX F**

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Excerpts from Relevant Traffic Studies



September 7, 2017  
Corroy Business Park Inc.  
Page 2 of 24

**Reference: 2500 St Laurent Blvd Transportation Brief**

Through discussions with City of Ottawa staff, the following intersections were identified as part of the study area:

1. Walkley Road at Don Reid Drive / Ryder Street;
2. Walkley Road at Conroy Road;
3. Conroy Road at St Laurent Blvd; and
4. St Laurent Blvd at the proposed site access (north) and existing site access (south).

## **2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT**

The subject site is located in the Alta Vista District of the City of Ottawa at the northwest quadrant of the St Laurent Blvd. / Conroy Road intersection.

The proposed development consists of 6,329.86 m<sup>2</sup> of office space within two, two-story buildings. It is proposed to include a total of 18 office units, 169 parking spaces, 2 loading areas, and 20 bicycle parking spaces.

Figure 1 illustrates the location of the site at 2500 St Laurent Blvd.

Attachment 1 illustrates the site plan.





Reference: 2500 St Laurent Blvd Transportation Brief

Figure 1 - Site Location





Reference: 2500 St Laurent Blvd Transportation Brief

As outlined in Table 1, all study area intersections currently operate acceptably under 2017 existing conditions during both the AM and PM peak hours.

## 4.0 FUTURE TRANSPORTATION ENVIRONMENT

### 4.1 CYCLING AND WALKING FACILITIES

The City of Ottawa's Cycling Plan Ultimate Cycling Network identifies Walkley Road as a spine route as part of the crosstown bikeway network. The City's Ultimate Cycling Network also designates St Laurent Blvd. to be a "local route". No other cycling or walking facilities are planned in the vicinity of the site.

### 4.2 SITE TRAFFIC GENERATION

#### 4.2.1 Land Use and Trip Generation Rates

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 9<sup>th</sup> Edition, was used to estimate the volume of traffic expected to be generated by the proposed development during the AM and PM peak hours. Land use code 710 – General Office Building was thought to be the most representative of the proposed land use.

Table 2 summarizes the trip rates obtained from the ITE Trip Generation Manual and the ensuing sections describe the methodology used to convert these trips to person trips across all modes.

Table 2 - ITE Trip Generation Rates

ITE TRIP GENERATION RATES							
Land Use Code	1000 Sq. Ft Gross Floor Area	AM Peak Hour			PM Peak Hour		
		Inbound	Outbound	Rate	Inbound	Outbound	Total
710 - General Office Building	39	88%	12%	2.31	17%	83%	3.13

#### 4.2.2 Conversion of ITE Rates to Person Trips

The notion of quantifying the volume of "person" trips expected to be generated by a given development is becoming a commonly accepted practice. It is aimed at quantifying the expected demands across the primary modes of transportation.

In order to convert ITE rates to person trips, the rates obtained from the ITE Trip Generation Manual were adjusted to account for the transit modal share and auto occupancy thought to be inherent within the ITE rates. An assumed transit share of 10% was thought to be inherent within the ITE rates and an auto occupancy rate of 1.15 persons per vehicle was also assumed to be inherent within the ITE rates.



Reference: 2500 St Laurent Blvd Transportation Brief

The proposed development is anticipated to generate 113 and 152 person trips during the AM and PM peak hours, respectively.

Table 3 outlines the conversion from auto trips to person trips.

**Table 3 - Conversion from Auto Trips to Person Trips**

ITE LAND USE	MORNING PEAK HOUR			AFTERNOON PEAK HOUR				
		IN	OUT	TOTAL	IN	OUT	TOTAL	
710 - General Office Building	Trip Gen	79	11	90	21	101	122	
	Transit Share	10%	8	1	9	2	10	12
	Auto Occupancy	1.15	12	2	14	3	15	18
	Total Person Trips		99	14	113	26	126	152

#### 4.2.3 Modal Shares

To reflect local travel characteristics, the person trips were assigned to the four primary modal shares (i.e. auto, passenger, transit, and active moves) according to the TRANS Committee's 2011 Origin-Destination (O-D) Survey for the Alta Vista District.

Table 4 summarizes the expected person trips by modal share.

**Table 4 - Site Trips by Modal Share**

ITE LAND USE	MORNING PEAK HOUR			AFTERNOON PEAK HOUR				
		IN	OUT	TOTAL	IN	OUT	TOTAL	
710 - General Office Building	Auto	65%	65	9	72	17	82	99
	Passenger	15%	15	2	17	3	19	22
	Transit	17%	17	2	19	4	21	25
	Active Modes	3%	3	0	3	1	4	5

The proposed development is anticipated to generate an additional 72 and 99 auto trips (two-way) during the AM and PM peak hours, respectively.



**Reference: 2500 St Laurent Blvd Transportation Brief**

#### 4.2.4 Trip Distribution and Assignment

Based on the location of the study area and the results of the TRANS Committee 2011 O-D Survey, the following cardinal trip distribution assumptions were adopted:

- 20% of site generated trips were assumed to come from or go to the south;
- 15% were assumed to come from or go to the west;
- 15% were assumed to come from or go to the east;
- 20% were assumed to come from or go to the north; and
- 30% were assumed to remain within the Alta Vista district.

The following trip assignments were assumed:

- 40% of inbound/outbound trips would utilize the Walkley/Don Reid intersection; and
- 60% of inbound/outbound trips would utilize the St Laurent Blvd at Conroy Road intersection.

Figure 7 and Figure 8 illustrate the auto trips the proposed development is anticipated to generate during the AM and PM peak hours, respectively.



Reference: 2500 St Laurent Blvd Transportation Brief

Figure 7 - Auto Trips Generated at the Site during AM Peak Period

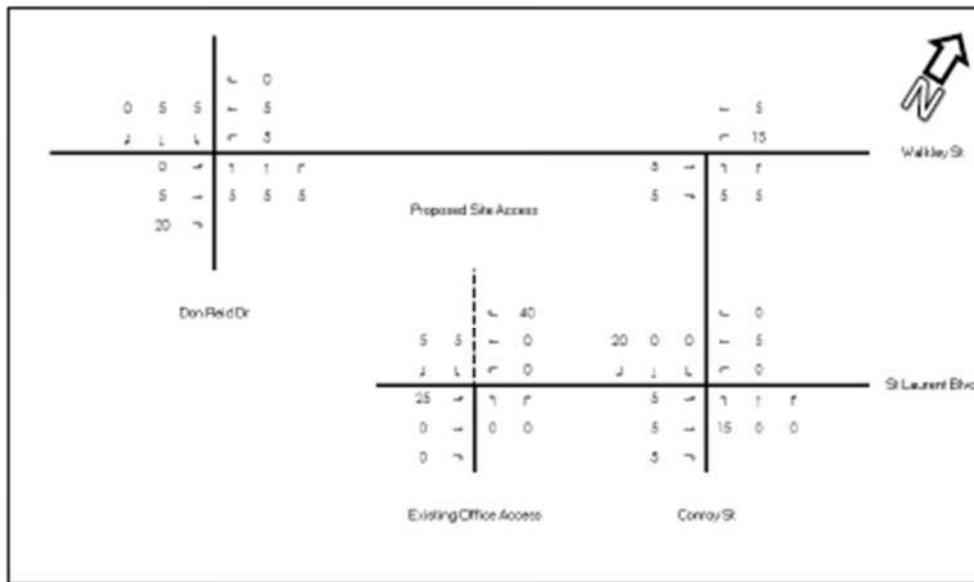
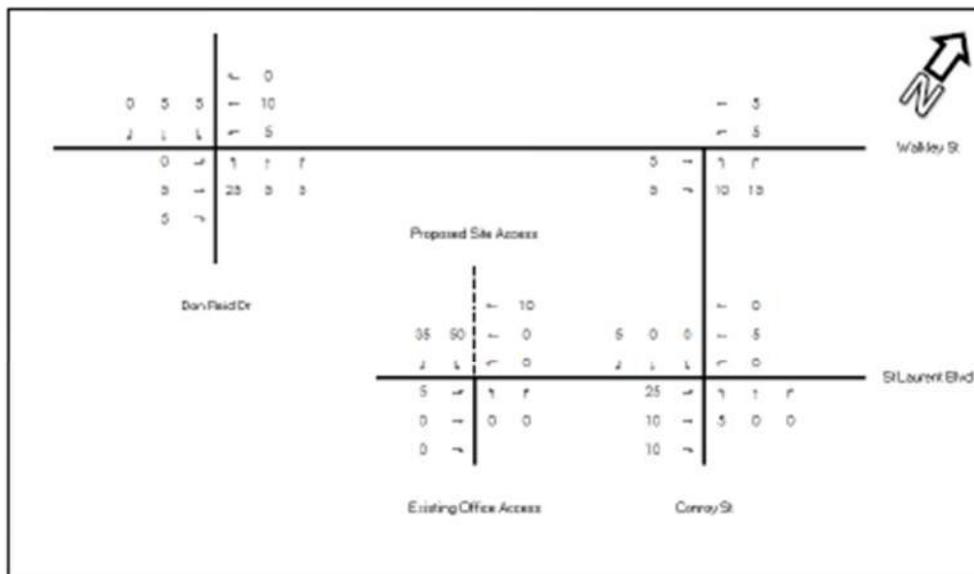


Figure 8 - Auto Trips generated at the Site during PM Peak Period



## 3.0

# Forecasting

## 3.1 Development-Generated Travel Demand

### 3.1.1 Trip Generation and Mode Shares

The proposed new development is comprised entirely of high-rise apartment units within a single tower. Since the proposed development will be similar to the existing adjacent development, Dillon used the existing development as a proxy to estimate trip generation for the proposed development. Dillon compared the observed trip generation rate against the City's recommended method for trip generation calculations, the TRANS *Trip Generation Study Report (2009)*.

**Table 4** compares the TRANS vehicle trip rates to the observed trip generation rates. The TRANS vehicle trip rates are slightly higher than those observed at the site. The TRANS Trip Rates have been carried forward as the basis for the proposed site trip generation.

**Table 4: Existing Site Trip Generation Rates**

Source	Existing No. of Units	Peak Hour	In		Out		Total	
			Trips	Rate	Trips	Rate	Trips	Rate
Observed Trip Generation Rate	410	AM	19	0.05	63	0.16	82	0.21
		PM	64	0.17	23	0.06	87	0.22
TRANS Trip Rate	410	AM	-	-	-	-	98	0.24
		PM	-	-	-	-	111	0.27

**Table 5** summarizes the trip generation rates and directional trip distribution as indicated within TRANS Tables 3.18 and 6.2, respectively. **Table 6** summarizes the number of trip generation for the proposed development.

**Table 5: Proposed Development Vehicle Trip Generation Rates**

Land Use	Units	AM Peak Hour			PM Peak Hour		
		Rate	In	Out	Rate	In	Out
222: High-rise apartment 10+ floors	202	0.24	23%	77%	0.27	61%	39%

**Table 6: Proposed Development Vehicle Trip Generation Traffic Volumes**

Land Use	Units	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
222: High-rise apartment 10+ floors	202	48	11	37	54	33	21

Walkley Road is designated as a future Bus Rapid Transit (BRT) corridor, but this corridor will not be completed within the time horizon of this study. Within this studies horizon, it is anticipated the mode shares will remain relatively constant. Therefore we have assumed a mode share consistent with the mode shares outlined in TRANS Table 3.13.

**Table 7** summarizes the trip generation by mode for the proposed development; person trips are calculated using the vehicle trip generation values and the mode share rates, i.e. total person trips = 48 auto driver trips / (divide by) 37% auto driver mode share = 129 person trips.

**Table 7: Trip Generation by Mode**

Travel Mode	Mode Share for Apartment in Urban Area (TRANS Table 3.13)		AM Peak Hour			PM Peak Hour		
	AM	PM	Total	In	Out	Total	In	Out
Auto Driver	37%	40%	48	11	37	54	33	21
Auto Passenger	8%	9%	10	2	8	12	7	5
Transit	41%	37%	53	12	41	50	30	20
Non-Motorized	14%	14%	18	4	14	19	12	7
<b>Total Person Trips</b>	<b>100%</b>	<b>100%</b>	<b>129</b>	<b>29</b>	<b>100</b>	<b>135</b>	<b>82</b>	<b>53</b>

As a residential development, this site will not be generating any pass-by trips. **Appendix B** contains the TRANS Tables used for these calculations.

### 3.1.2 Trip Distribution

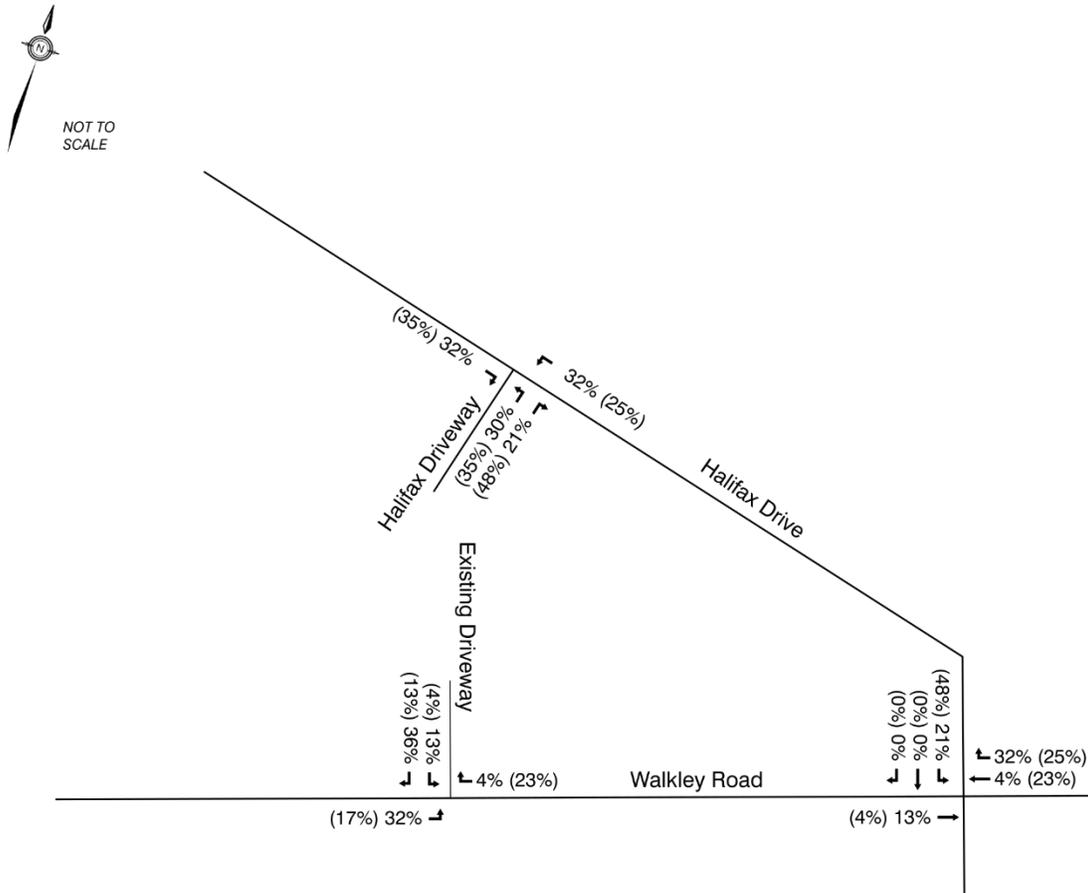
Trip distribution was identified based on the existing distribution of traffic to/from the existing site, which was determined through a review of the existing traffic counts.

### 3.1.3 Trip Assignment

**Figure 11** illustrates the site generated traffic assignment to the road network based on the trip distribution and logical routing through the transportation network.

**Figure 12** illustrates the site generated traffic volumes.

Figure 11: Site Generated Traffic Assignment Percentages

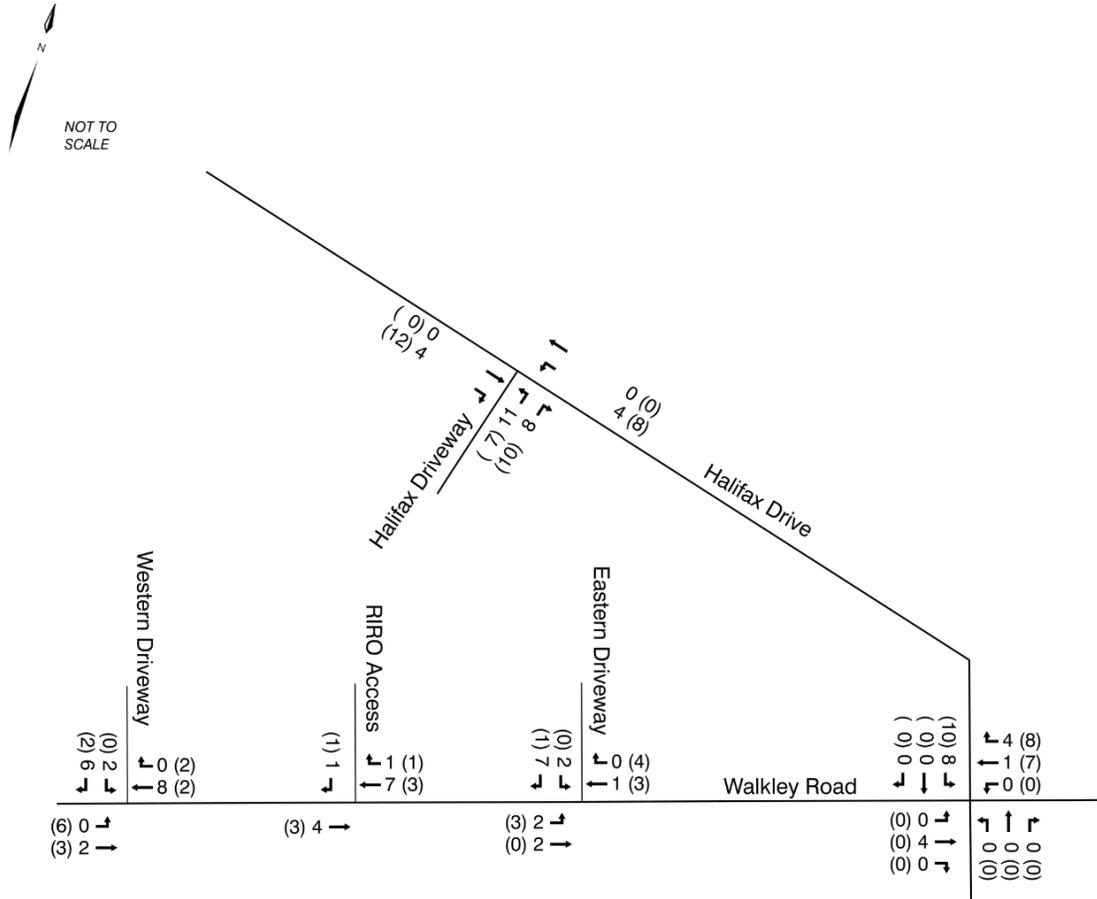


**Legend:**

- ↔ AM (PM)
- ← peak hour turning movement
- ↕ trip generation distribution



Figure 12: Site Generated Traffic Volumes



**Legend:**

- ↖ AM (PM)
- ↔ peak hour turning
- ↕ movement volumes

Table 12: Trip Generation Person Trip Rates

Dwelling Type	Land Use Code	Peak Hour	Vehicle Trip Rate	Person Trip Rates
Townhomes	221	AM	0.31	0.84
		PM	0.34	0.85
Mid-rise Apartment	223	AM	0.24	0.65
		PM	0.28	0.70
High-rise Apartment	222	AM	0.24	0.65
		PM	0.27	0.68

Using the above Person Trip rates, the total person trip generation has been estimates. Table 13 below illustrates the total person trip generation for the redeveloping townhome (low rise), mid-rise apartment and high-rise apartment dwelling type. All mid-rise and high-rise units are considered single bedroom units for the Official Plan Amendment assessment. Of note, the entire Heron Gate area will total 6,402 units in the Official Plan Amendment, with the background 348 units at 2816 Sandalwood Drive, and existing 957 units at 2840, 2851, and 2861 Baycrest Drive and 2820 Cedarwood Drive. The trips from these sites are existing conditions and assessed within the background conditions.

Table 13: Total Person Trip Generation

Land Use	Units / GFA	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Townhomes	118	86	148	234	105	93	198
Mid-rise Apartment	2,047	319	1011	1330	888	545	1433
High-rise Apartment	2,874	449	1418	1867	1211	742	1953
<b>Total Person Trips</b>		<b>854</b>	<b>2577</b>	<b>3431</b>	<b>2204</b>	<b>1380</b>	<b>3584</b>

Using the most recent National Capital Region Origin-Destination survey (OD Survey), the existing mode shares for Alta Vista have been determined and compared to various modes share breakdowns identified by City Staff as potential interpretations of the data. Table 14 summarizes these modal shares.

Table 14: Mode Shares

Travel Mode	Alta Vista (average)	Alta Vista (AM from/within)	Alta Vista (PM to/within)	BRT Area
Auto Driver	60%	50%	55%	35%
Auto Passenger	15%	15%	15%	15%
Transit	20%	20%	15%	35%
Cycling	0%	5%	5%	5%
Walking	5%	10%	10%	10%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

As Heron Road is planned to include dedicated bus lanes, the above mode share targets for a BRT area and person trip rates, the person trips by mode have been projected. Table 15 summarizes the trip generation by mode for each phase of the Heron Gate redevelopment.

Table 15: Trip Generation by Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
<b>Phase 2</b>							
Auto Driver	35%	43	136	179	118	72	191
Auto Passenger	15%	19	58	77	51	31	81
Transit	35%	43	136	179	118	72	191
Cycling	5%	7	19	26	17	10	27

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Walking	10%	12	39	51	34	20	54
<b>Total</b>	<b>100%</b>	<b>123</b>	<b>389</b>	<b>512</b>	<b>338</b>	<b>207</b>	<b>545</b>
<b>Phase 3</b>							
Auto Driver	35%	66	183	250	154	101	255
Auto Passenger	15%	28	79	107	67	43	109
Transit	35%	66	183	250	154	101	255
Cycling	5%	9	26	36	22	14	37
Walking	10%	19	52	72	44	29	72
<b>Total</b>	<b>100%</b>	<b>189</b>	<b>524</b>	<b>713</b>	<b>441</b>	<b>286</b>	<b>727</b>
<b>Phase 4</b>							
Auto Driver	35%	38	120	158	104	64	168
Auto Passenger	15%	16	52	68	45	28	71
Transit	35%	38	120	158	104	64	168
Cycling	5%	5	17	22	15	9	24
Walking	10%	11	34	45	30	19	48
<b>Total</b>	<b>100%</b>	<b>108</b>	<b>345</b>	<b>453</b>	<b>297</b>	<b>182</b>	<b>479</b>
<b>Phase 5</b>							
Auto Driver	35%	69	217	285	187	115	302
Auto Passenger	15%	29	93	123	80	49	129
Transit	35%	69	217	285	187	115	302
Cycling	5%	10	31	41	27	16	43
Walking	10%	19	62	81	53	33	86
<b>Total</b>	<b>100%</b>	<b>196</b>	<b>619</b>	<b>815</b>	<b>534</b>	<b>328</b>	<b>862</b>
<b>Phase 6</b>							
Auto Driver	35%	83	245	328	208	132	340
Auto Passenger	15%	37	106	140	89	57	146
Transit	35%	83	245	328	208	132	340
Cycling	5%	12	35	47	30	19	48
Walking	10%	24	70	94	60	38	98
<b>Total</b>	<b>100%</b>	<b>238</b>	<b>700</b>	<b>938</b>	<b>594</b>	<b>377</b>	<b>971</b>

Based on the assumed build-out phasing, Phases 2, 3 and 4 are anticipated to be completed by 2030 and the full build-out by 2040. Table 16 summarizes the net new trip generation by mode for both horizons. The conceptual build-out phasing is provided in Appendix E.

Table 16: Summary of Trip Generation by Mode for Build-Out Horizons

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
<b>Interim 2030 Build-Out</b>							
Auto Driver	35%	147	439	587	376	237	614
Auto Passenger	15%	63	189	252	163	102	261
Transit	35%	147	439	587	376	237	614
Cycling	5%	21	62	84	54	33	88
Walking	10%	42	125	168	108	68	174
<b>Total</b>	<b>100%</b>	<b>420</b>	<b>1258</b>	<b>1678</b>	<b>1076</b>	<b>675</b>	<b>1751</b>

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
<b>Full 2040 Build-Out</b>							
<b>Auto Driver</b>	35%	299	901	1200	771	484	1256
<b>Auto Passenger</b>	15%	129	388	515	332	208	536
<b>Transit</b>	35%	299	901	1200	771	484	1256
<b>Cycling</b>	5%	43	128	172	111	68	179
<b>Walking</b>	10%	85	257	343	221	139	358
<b>Total</b>	<b>100%</b>	<b>854</b>	<b>2577</b>	<b>3431</b>	<b>2204</b>	<b>1380</b>	<b>3584</b>

### 5.2 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component patterns were applied based on the build-out within the Alta Vista area. Table 17 below summarizes the distributions.

*Table 17: OD Survey Distribution – Alta Vista*

To/From	Residential % of Trips	
<b>North</b>	35%	30% via Heron Road east, 5% via Walkley Road west
<b>South</b>	25%	15% via Walkley Road east, 10% via Walkley Road west
<b>East</b>	20%	10% via Walkley Road, 10% via Heron Road
<b>West</b>	20%	10% via Walkley Road, 10% via Heron Road
<b>Total</b>	100%	

### 5.3 Trip Assignment

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

The pedestrian and cycling distribution have not been provided at this stage of study given the difficulty of predicting how and where these modes interact with the surrounding road network. In general, the pedestrian travel is considered to be east-west as there is little crossing desire of Heron Road or Walkley Road, and any transit users can access transit within the Heron Gate community and do not need to walk further than Baycrest Drive. For cyclists, the lack of facilities likely encourages the use of the pathway network in the area and avoidance of the existing road network. While not considered within the study, the future improvements to Heron Road and Walkley Road should provide these facilities and encourage cyclists back to these roadways. This can be assessed at the time of the environmental assessment/functional design and implementation of the improved corridors.

Given the above, and the fact that the redevelopment is replacing the existing residential area and not a direct increase to the existing, the existing pedestrian and cycling volumes illustrated in Figure 5 and Figure 6 have been carried forward within the modeling exercise to provide a potential impact of the pedestrian crossing and bike volumes on the study area intersections. These volumes will need to be further assessed at individual site plan application or draft plan of subdivision submissions.





## 6 Background Network Travel Demands

### 6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Heron Road BRT is now understood to be beyond the existing 2031 horizon with no confirmed date. Therefore, it is not considered in the future horizons.

The Bank Street Renewal is currently in the design process by the City. The geometric changes, as provided by the City project team, have been incorporated into the analysis. The timing of Alta Vista Drive renewal is unknown and not assessed in the background or future total conditions.

### 6.2 Background Growth

A review of the background projections from the City’s TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the forecasted background growth context for each of the study area roadways. As growth within the City is not a linear process, a comparison of the existing volumes to the forecasted 2031 volumes has been included to determine how regional development has occurred and the impact on the study area. Table 18 summarizes the results of the model, and the projections are provided in Appendix F.

Table 18: TRANS Regional Model Projections – Study Area Growth Rates (AM Peak)

Street	Direction Growth % from 2011 to 2031		Direction Growth % from Existing to 2031	
	Eastbound	Westbound	Eastbound	Westbound
Heron	0.42%	-0.16%	0.58%	-1.05%
Heron @ Bank	0.31%	-0.32%	-0.44%	-1.32%
Walkley	1.43%	0.52%	-2.09%	-3.35%
Walkley @ Bank	1.12%	0.82%	-1.19%	-3.23%
	Northbound	Southbound	Northbound	Southbound
Jefferson	1.05%	-4.95%	-4.07%	-7.01%
Briar Hill	-0.27%	-1.04%	5.65%	7.42%
Sandalwood	2.44%	-0.30%	5.73%	6.55%
Baycrest @ Heron	-0.41%	-0.89%	-2.44%	-6.72%
Baycrest @ Walkley	0.57%	-0.51%	2.97%	0.14%
Alta Vista	1.06%	-1.23%	1.86%	-4.29%
Heatherington	0.40%	-0.28%	2.28%	9.73%
Albion	0.93%	-3.27%	-2.70%	-8.90%
Bank @ Heron	0.20%	0.18%	-0.12%	-0.60%
Bank @ Walkley	0.18%	-0.29%	0.03%	-1.96%

In general, the TRANS forecasted volumes illustrate minimal or negative growth rates from 2011 to 2031. When compared to the existing volumes, the background growth in the area has not proceeded in a linear rate. Heron Road and Walkley Road have grown higher than the forecasted volumes and the various intersection roadways have similarly grown higher than the forecasted volumes. Given that roadways have a finite capacity and cannot grow unconstrained, the growth rates from the existing volumes to 2031 will be used to generate the study area growth rates. Table 19 summarized the applied growth rates.

Table 19: Study Area Growth Rates

Street	Direction Growth %	
	Eastbound	Westbound
Heron	0.5%(0%)	0%(0.5%)
Heron @ Bank	0%(0%)	0%(0%)
Walkley		
	Northbound	Southbound
Jefferson	0%(0%)	0%(0%)
Sandalwood		
Baycrest		
Albion		
Bank		
Briar Hill	5%(5%)	5%(5%)
Heatherington	0.5%(0%)	0%(0.5%)
Alta Vista	1.5%(0%)	0%(1.5%)

Format: AM (PM) growth percentage

### 6.3 Background Developments

#### 6.3.1 Other Area Developments

The HG7 redevelopment located at 2816 Sandalwood Drive was completed in the summer of 2020 and the development related trips from this development have been considered explicitly within the future background horizons.

#### 6.3.2 Heron Gate Trip Reduction

As the Heron Gate area is redeveloped, the various phases will be demolished in advance of construction. This is illustrated in the phasing plan (Appendix E). The existing traffic for each of these areas will be removed for the interim 2030 and full build-out 2040 horizons, and have been illustrated in Figure 13 and Figure 14.

Of note, the traffic counts used in this study are predominantly 2018, HG 5 was still in place on the south side of Heron Road between Baycrest Drive and Sandalwood Drive. These trips have been removed from the background horizons and future total horizons. Additional traffic surveys were also conducted at the residential towers that will remain in place and have not been removed from the network in any horizon or scenario.





## **APPENDIX G**

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### Signal Timing Plans

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

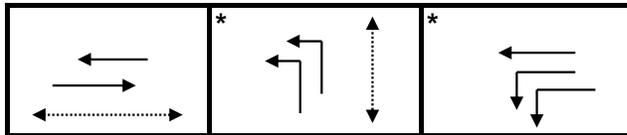
<b>Intersection:</b>	<i>Main:</i> Walkley	<i>Side:</i> Conroy
<b>Controller:</b>	<b>MS3200</b>	<b>TSD: 5399</b>
<b>Author:</b>	B. Amaral-Stewart	<b>Date:</b> 21-Oct-2020

## Existing Timing Plans<sup>†</sup>

	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 10	Walk	DW	A+R
<b>Cycle</b>	100	100	110	85	100	120			
<b>Offset</b>	90	47	20	X	18	43			
EB Thru	44	45	51	36	45	55	10	20	3.3 + 2.7
WB Thru	65	69	79	54	69	67	10	20	3.3 + 2.7
NB Left (fp)	35	31	31	31	31	40	7	17	3.7 + 2.7
WB Left (fp)	21	24	28	18	24	25	-	-	3.3 + 2.9

## Phasing Sequence<sup>‡</sup>

Plan: All



## Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	6:30	2	6:30	2
7:00	10	11:00	5	21:00	4
9:30	2	19:30	2		
15:00	3	22:00	4		
18:30	2				
21:30	4				

## NOTES

- †: Time for each direction includes amber and all red intervals
- ‡: Start of first phase should be used as reference point for offset
- Asterisk (\*) Indicates actuated phase
- (fp): Fully Protected Left Turn
- ◄.....► Pedestrian signal

Cost is \$58.78 (\$52.02 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

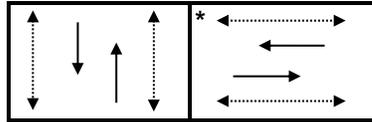
<b>Intersection:</b>	<i>Main:</i> Conroy	<i>Side:</i> St. Laurent
<b>Controller:</b>	<b>ATC 3</b>	<b>TSD: 5612</b>
<b>Author:</b>	B. Amaral-Stewart	<b>Date:</b> 21-Oct-2020

### Existing Timing Plans†

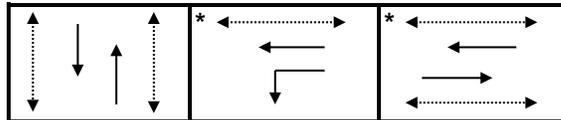
	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	100	90	95	90	90			
<b>Offset</b>	23	50	2	X	50			
<b>NB Thru</b>	56	46	36	46	46	7	17	3.7 + 2.6
<b>SB Thru</b>	56	46	36	46	46	7	17	3.7 + 2.6
<b>WB Left</b>	-	-	15	-	-	-	-	3.3 + 2.4
<b>EB Thru</b>	44	44	44	44	44	7	30	3.3 + 3.6
<b>WB Thru</b>	44	44	59	44	44	7	30	3.3 + 3.6

### Phasing Sequence‡

Plan: 1, 2, 4, 5



Plan: 3



### Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	6:30	2	6:30	2
9:30	2	11:00	5	21:00	4
15:00	3	19:30	2		
18:30	2	22:00	4		
21:30	4				

### NOTES

- †: Time for each direction includes amber and all red intervals
- ‡: Start of first phase should be used as reference point for offset
- Asterisk (\*) Indicates actuated phase
- (fp): Fully Protected Left Turn
- ◄.....► Pedestrian signal

Cost is \$58.78 (\$52.02 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

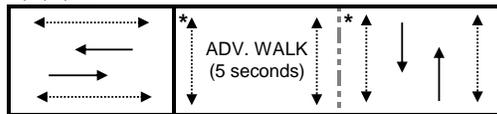
<b>Intersection:</b>	Main: Walkley	Side: Harding
<b>Controller:</b>	MS 3200	TSD: 5633
<b>Author:</b>	B. Amaral-Stewart	Date: 21-Oct-2020

### Existing Timing Plans<sup>†</sup>

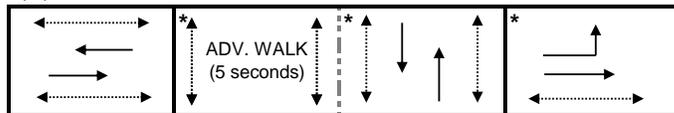
	Plan							Ped Minimum Time		
	Morning 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Peak 10	Late AM 11	Walk	DW	A+R
<b>Cycle</b>	100	100	110	80	100	120	120			
<b>Offset</b>	34	42	41	X	62	24	24			
<b>EB Thru</b>	67	67	77	47	67	87	87	32	8	3.3 + 2.6
<b>WB Thru</b>	67	55	61	47	67	87	72	32	8	3.3 + 2.6
<b>NB Thru</b>	33	33	33	33	33	33	33	10	17	3.3 + 2.4
<b>SB Thru</b>	33	33	33	33	33	33	33	10	17	3.3 + 2.4
<b>EB Left</b>	-	12	16	-	-	-	15	-	-	3.3 + 2.7

### Phasing Sequence<sup>‡</sup>

Plan: 1, 4, 5, 10



Plan: 2, 3, 11



- Notes:**
- 1) The EB Left Turn is prohibited weekdays 7:00-9:00
  - 2) The NB Thru is prohibited weekdays 7:00-9:00
  - 3) The EB Left Turn has a maximum green time of 10 seconds

### Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	6:30	2	6:30	2
7:00	10	11:00	5	21:00	4
9:00	11	19:30	2		
9:30	2	22:00	4		
15:00	3				
18:30	2				
21:30	4				

### NOTES

- †: Time for each direction includes amber and all red intervals  
 ‡: Start of first phase should be used as reference point for offset  
 Asterisk (\*) Indicates actuated phase  
 (fp): Fully Protected Left Turn  
 ◀.....▶ Pedestrian signal

Cost is \$58.78 (\$52.02 + HST)

## **APPENDIX H**

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### Multi-Modal Level of Service

**Segment Level of Service****Pedestrian Level of Service (PLOS)**

Side	Sidewalk Width	Boulevard Width	Motor Vehicle Traffic Volume (AADT)	Presence of On-Street Parking	Operating Speed	Segment PLOS
<b>Walkley Road</b>						
North	2	0	> 3,000 vpd	No	60 km/h	E
South	1.5	0.5-2	> 3,000 vpd	No	60 km/h	E
<b>Conroy Road</b>						
East	1.5	>2	> 3,000 vpd	No	>60 km/h	E
West	>2	>2	> 3,000 vpd	No	>60 km/h	D
<b>St. Laurent Boulevard</b>						
North	1.5	0.5-2	> 3,000 vpd	No	60 km/h	E
South	none	0	> 3,000 vpd	Yes	60 km/h	F

**Bicycle Level of Service (BLOS)**

Bike Route	Type of Bikeway	Travel Lanes	Centreline Markings	Operating Speed	Segment BLOS
<b>Walkley Road</b>					
Spine	Mixed Traffic	4	Median	60 km/h	F
<b>Conroy Road</b>					
Spine	Physically Separated	5	Median	>60 km/h	A
<b>St. Laurent Boulevard</b>					
Local	Mixed Traffic	2	Yes	60 km/h	D

**Transit Level of Service (TLOS)**

Facility Type	Congestion, Friction, and Potential Incidents	Segment TLOS
<b>Walkley Road</b>		
Mixed Traffic Limited parking/driveway friction	Congestion, Low Friction, Medium Incident Type	D
<b>Conroy Road</b>		
Mixed Traffic Limited parking/driveway friction	Congestion, Low Friction, Medium Incident Type	D
<b>St. Laurent Boulevard</b>		
Mixed Traffic Moderate parking/driveway friction	Congestion, Medium Friction, Medium Incident Type	E

**Truck Level of Service (TkLOS)**

Curb Lane Width	Travel Lanes	Segment TkLOS
<b>Walkley Road</b>		
>3.7m	More than 2 travel lanes	A
<b>Conroy Road</b>		
3.5m	More than 2 travel lanes	A
<b>St. Laurent Boulevard</b>		
>3.7m	2 travel lanes	B

**Intersection MMLOS Pedestrian Level of Service**

Criteria	South Approach		East Approach		West Approach	
<b>Walkley at Conroy</b>						
<b>PETSI SCORE</b>						
<i>CROSSING DISTANCE CONDITIONS</i>						
Median > 2.4m in Width	No	-10	No	-10	N/A	N/A
Lanes Crossed (3.5m Lane Width)	10 +		10 +		N/A	
<i>SIGNAL PHASING AND TIMING</i>						
Left Turn Conflict	Protected	0	No Left Turn/Prohibited	0	N/A	N/A
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	N/A	N/A
Right Turn on Red	N/A	0	N/A	0	N/A	N/A
Leading Pedestrian Interval	No	-2	No	-2	N/A	N/A
<i>CORNER RADIUS</i>						
Parallel Radius	> 25m	-9	> 15m to 25m	-8	N/A	N/A
Parallel Right Turn Channel	Conventional without Receiving	0	Conventional without Receiving	0	N/A	N/A
Perpendicular Radius	> 15m to 25m	-8	No Right Turn	0	N/A	N/A
Perpendicular Right Turn Channel	Conventional without Receiving	0	No Right Turn	0	N/A	N/A
<i>CROSSING TREATMENT</i>						
Treatment	Standard	-7	Standard	-7	N/A	N/A
<b>PETSI SCORE</b>		<b>-41</b>		<b>-32</b>		<b>N/A</b>
<b>LOS</b>		<b>F</b>		<b>F</b>		<b>N/A</b>
<b>DELAY SCORE</b>						
Cycle Length		120		110		120
Pedestrian Walk Time		29		7.6		N/A
<b>DELAY SCORE</b>		<b>34.5</b>		<b>47.7</b>		<b>N/A</b>
<b>LOS</b>		<b>D</b>		<b>E</b>		<b>N/A</b>
<b>OVERALL</b>		<b>F</b>		<b>F</b>		<b>N/A</b>



2020 Walkley Road –MMLOS Analysis – Existing

Criteria	North Approach	South Approach	East Approach	West Approach
<b>Conroy at St. Laurent</b>				
<b>PETSI SCORE</b>				
<i>CROSSING DISTANCE CONDITIONS</i>				
Median > 2.4m in Width	No	No	No	No
Lanes Crossed (3.5m Lane Width)	10 +	10 +	6	8
	-10	-10	55	23
<i>SIGNAL PHASING AND TIMING</i>				
Left Turn Conflict	Permissive	Perm + Prot	Permissive	Permissive
Right Turn Conflict	Permissive or Yield	Permissive or Yield	Permissive or Yield	Permissive or Yield
Right Turn on Red	RTOR Allowed	RTOR Allowed	RTOR Allowed	N/A
Leading Pedestrian Interval	No	No	No	No
	-8	-8	-8	-8
	-5	-5	-5	-5
	-3	-3	-3	0
	-2	-2	-2	-2
<i>CORNER RADIUS</i>				
Parallel Radius	> 10m to 15m	> 15m to 25m	> 15m to 25m	> 10m to 15m
Parallel Right Turn Channel	No Right Turn Channel	Conventional without Receiving	No Right Turn Channel	No Right Turn Channel
Perpendicular Radius	N/A	N/A	N/A	> 15m to 25m
Perpendicular Right Turn Channel	N/A	N/A	N/A	Conventional without Receiving
	-6	-8	-8	-6
	-4	0	-4	-4
	0	0	0	-8
	0	0	0	0
<i>CROSSING TREATMENT</i>				
Treatment	Standard	Standard	Standard	Standard
	-7	-7	-7	-7
	<b>PETSI SCORE</b>	<b>-45</b>	<b>-43</b>	<b>18</b>
	<b>LOS</b>	<b>F</b>	<b>F</b>	<b>F</b>
<b>DELAY SCORE</b>				
Cycle Length	100	100	95	95
Pedestrian Walk Time	7.1	7.1	12.7	12.7
	<b>DELAY SCORE</b>	<b>43.2</b>	<b>43.2</b>	<b>35.6</b>
	<b>LOS</b>	<b>E</b>	<b>E</b>	<b>D</b>
	<b>OVERALL</b>	<b>F</b>	<b>F</b>	<b>F</b>

2020 Walkley Road –MMLOS Analysis – Existing

Criteria	North Approach		South Approach		East Approach		West Approach	
<b>Walkley at Harding</b>								
<b>PETSI SCORE</b>								
<i>CROSSING DISTANCE CONDITIONS</i>								
Median > 2.4m in Width	No	88	No	120	Yes	60	No	39
Lanes Crossed (3.5m Lane Width)	4		2		6		7	
<i>SIGNAL PHASING AND TIMING</i>								
Left Turn Conflict	Perm + Prot	-8	No Left Turn/Prohibited	0	Permissive	-8	Permissive	-8
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3
Leading Pedestrian Interval	No	-2	No	-2	Yes	0	Yes	0
<i>CORNER RADIUS</i>								
Parallel Radius	> 10m to 15m	-6	<3m	-3	<3m	-3	> 5m to 10m	-5
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
<i>CROSSING TREATMENT</i>								
Treatment	Standard	-7	Standard	-7	Standard	-7	Standard	-7
	<b>PETSI SCORE</b>	<b>53</b>		<b>96</b>		<b>30</b>		<b>7</b>
	<b>LOS</b>	<b>D</b>		<b>A</b>		<b>E</b>		<b>F</b>
<b>DELAY SCORE</b>								
Cycle Length		110		110		120		120
Pedestrian Walk Time		47.1		63.1		10.3		10.3
	<b>DELAY SCORE</b>	<b>18</b>		<b>10</b>		<b>50.1</b>		<b>50.1</b>
	<b>LOS</b>	<b>B</b>		<b>B</b>		<b>E</b>		<b>E</b>
	<b>OVERALL</b>	<b>D</b>		<b>B</b>		<b>E</b>		<b>F</b>

**Bicycle Level of Service**

Approach	Bikeway Facility Type	Criteria	Travel Lanes and/or Speed <sup>1</sup>	BLOS
<b><i>Walkley at Conroy – F Overall</i></b>				
South Approach	Pocket Bike Lane	Right turn lane characteristics	Bike lane shifts to the left turning speed ≤25km/h	<b>D</b>
		Left turn accommodation	Dual left turn lanes	<b>F</b>
East Approach	Mixed Traffic Approach	Left turn accommodation	Dual left turn lanes	<b>F</b>
West Approach	Pocket Bike Lake	Right turn lane characteristics	Right turn lane >50m; turning speed ≤30km/h	<b>D</b>
<b><i>Conroy at St. Laurent – F Overall</i></b>				
North Approach	Bike Lane or higher order facility	Right turn lane characteristics	No impact to LTS	-
		Left turn accommodation	2 or more lanes crossed; ≥ 50km/hr	<b>F</b>
South Approach	Bike Lane or higher order facility	Right turn lane characteristics	No impact to LTS	-
		Left turn accommodation	2 or more lanes crossed; ≥ 50km/hr	<b>F</b>
East Approach	Mixed Traffic Approach	Right turn lane characteristics	Right turn lane < 50m, turning speed ≤ 25km/h	<b>D</b>
		Left turn accommodation	1 lane crossed; ≥ 60km/hr	<b>F</b>
West Approach	Mixed Traffic Approach	Right turn lane characteristics	Right turn lane < 50m, turning speed ≤ 25km/h	<b>D</b>
		Left turn accommodation	1 lane crossed; 60km/hr	<b>F</b>
<b><i>Walkley at Harding – F Overall</i></b>				
North Approach	Mixed Traffic Approach	Right turn lane characteristics	No impact to LTS	-
		Left turn accommodation	1 lane crossed; 60km/hr	<b>F</b>
East Approach	Mixed Traffic Approach	Right turn lane characteristics	No right turn lane	-
West Approach	Mixed Traffic Approach	Left turn accommodation	2 or more lanes crossed; ≥ 50km/hr	<b>F</b>

**Transit Level of Service**

Transit Movement	AM (PM) Delay	LOS
<b>Walkley at Conroy – F Overall</b>		
EB Through	28 (42)	F
WB Through	11 (18)	C
<b>Conroy at St. Laurent – E Overall</b>		
NB Right	8 (18)	C
WB Left	40 (23)	E
<b>Walkley at Harding – D Overall</b>		
EB Through	4 (2)	B
WB Through	7 (26)	D

**Truck Level of Service**

Approach	Effective Corner Radius (m)	Number of Receiving Lanes on Departure from Intersection	LOS
<b>Walkley at Conroy – A Overall</b>			
South Approach	> 15m	2+	A
East Approach	Not Applicable	Not Applicable	-
West Approach	> 15m	2+	A
<b>Conroy at St. Laurent – E Overall</b>			
North Approach	10-15m	1	E
South Approach	> 15m	1	C
East Approach	10-15m	2+	B
West Approach	> 15m	2+	A
<b>Walkley at Harding – E Overall</b>			
North Approach	<10m	2+	D
East Approach	10-15m	1	E
West Approach	Not Applicable	Not Applicable	-

## **APPENDIX I**

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Transportation Demand Management

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

<b>Legend</b>	
<b>REQUIRED</b>	The Official Plan or Zoning By-law provides related guidance that must be followed
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	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
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	✓
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	✓
<b>1.2 Facilities for walking &amp; cycling</b>		
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>	N/A
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>	✓

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

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	✓
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	✓
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	✓
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	
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	
<b>2.2 Secure bicycle parking</b>		
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 (see <i>Zoning By-law Section 111</i> )	N/A
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)	
<b>2.3 Shower &amp; change facilities</b>		
BASIC	2.3.1 Provide shower and change facilities for the use of active commuters	
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	
<b>2.4 Bicycle repair station</b>		
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)	



TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	
<b>4. RIDESHARING</b>		
<b>4.1 Pick-up &amp; drop-off facilities</b>		
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	
<b>4.2 Carpool parking</b>		
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	
BETTER	4.2.2 At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Carshare parking spaces</b>		
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> )	
<b>5.2 Bikeshare station location</b>		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	

<b>TDM-supportive design &amp; infrastructure measures: <i>Non-residential developments</i></b>		<b>Check if completed &amp; add descriptions, explanations or plan/drawing references</b>
<b>6. PARKING</b>		
<b>6.1 Number of parking spaces</b>		
<b>REQUIRED</b>	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	✓
<b>BASIC</b>	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	
<b>BASIC</b>	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> )	
<b>BETTER</b>	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> )	
<b>6.2 Separate long-term &amp; short-term parking areas</b>		
<b>BETTER</b>	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)	
<b>7. OTHER</b>		
<b>7.1 On-site amenities to minimize off-site trips</b>		
<b>BETTER</b>	7.1.1 Provide on-site amenities to minimize mid-day or mid-commute errands	

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

<b>Legend</b>	
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	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
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC</b>	★	1.1.1 Designate an internal coordinator, or contract with an external coordinator
<b>1.2 Travel surveys</b>		
<b>BETTER</b>		1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>		2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances
<b>2.2 Bicycle skills training</b>		
<i>Commuter travel</i>		
<b>BETTER</b>	★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses
<b>2.3 Valet bike parking</b>		
<i>Visitor travel</i>		
<b>BETTER</b>		2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances	
BASIC	3.1.2 Provide online links to OC Transpo and STO information	
BETTER	3.1.3 Provide real-time arrival information display at entrances	
<b>3.2 Transit fare incentives</b>		
<i>Commuter travel</i>		
BETTER	3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	
BETTER ★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	
<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)	
<b>3.3 Enhanced public transit service</b>		
<i>Commuter travel</i>		
BETTER	3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	
<i>Visitor travel</i>		
BETTER	3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	
<b>3.4 Private transit service</b>		
<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)	
<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)	

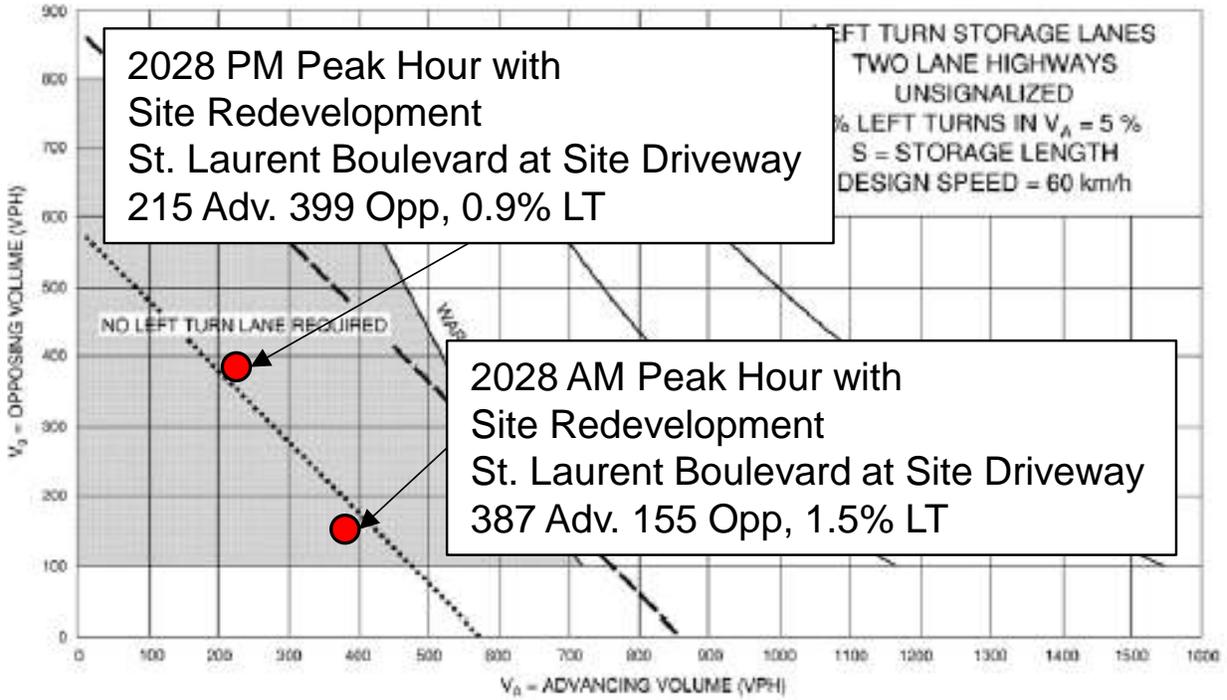
TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>4. RIDESHARING</b>		
<b>4.1 Ridematching service</b>		
<i>Commuter travel</i>		
BASIC	★ 4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com
<b>4.2 Carpool parking price incentives</b>		
<i>Commuter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

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>7. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>7.1 Multimodal travel information</b>		
<i>Commuter travel</i>		
BASIC ★	7.1.1	Provide a multimodal travel option information package to new/relocating employees and students
<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)
<b>7.2 Personalized trip planning</b>		
<i>Commuter travel</i>		
BETTER ★	7.2.1	Offer personalized trip planning to new/relocating employees
<b>7.3 Promotions</b>		
<i>Commuter travel</i>		
BETTER	7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes
<b>8. OTHER INCENTIVES &amp; AMENITIES</b>		
<b>8.1 Emergency ride home</b>		
<i>Commuter travel</i>		
BETTER ★	8.1.1	Provide emergency ride home service to non-driving commuters
<b>8.2 Alternative work arrangements</b>		
<i>Commuter travel</i>		
BASIC ★	8.2.1	Encourage flexible work hours
BETTER	8.2.2	Encourage compressed workweeks
BETTER ★	8.2.3	Encourage telework
<b>8.3 Local business travel options</b>		
<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
<b>8.4 Commuter incentives</b>		
<i>Commuter travel</i>		
BETTER	8.4.1	Offer employees a taxable, mode-neutral commuting allowance
<b>8.5 On-site amenities</b>		
<i>Commuter travel</i>		
BETTER	8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands

## **APPENDIX J**

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Left Turn Warrant

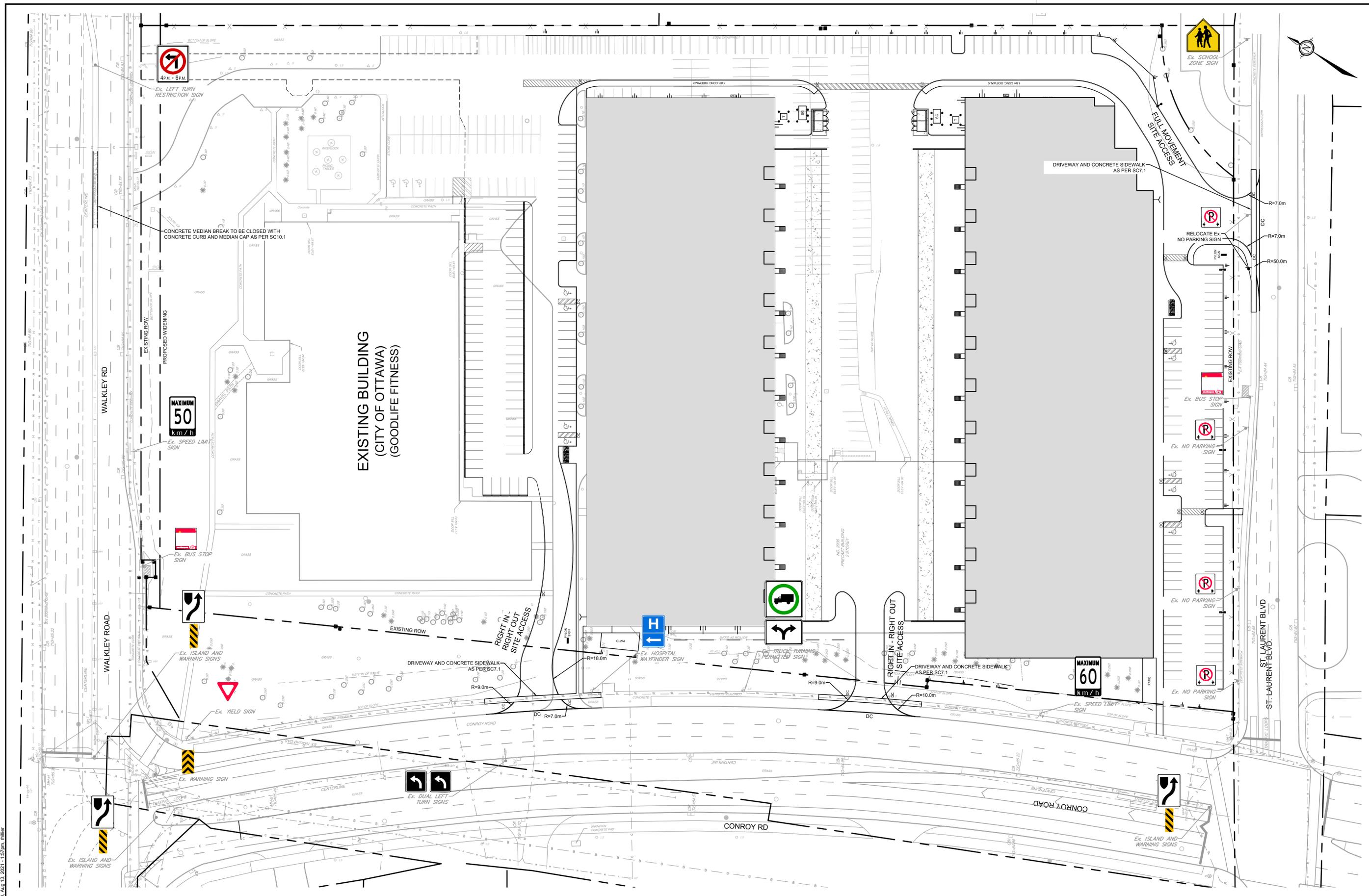




## **APPENDIX K**

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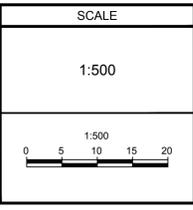
### Functional Design of Roadway Modifications



**NOTE:**  
 THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND	
	PROPOSED ASPHALT
	PROPOSED CONCRETE
	PROPOSED DEPRESSED CURB
	EXISTING LIGHT STANDARD
	EXISTING SANITARY MANHOLE
	EXISTING STORM MANHOLE
	EXISTING CATCHBASIN
	EXISTING HYDRO DUCT
	EXISTING BELL DUCT
	EXISTING CABLE DUCT
	EXISTING TRAFFIC DUCT
	EXISTING GAS MAIN

No.	REVISION	DATE	BY
2.	ISSUED FOR CITY REVIEW	AUG 18/21	PH
1.	ISSUED FOR CITY REVIEW	MAR 10/21	PH



DESIGN	RCH
CHECKED	PH
DRAWN	RCH
CHECKED	PH
APPROVED	JLL

**FOR REVIEW ONLY**

**NOVATECH**  
 Engineers, Planners & Landscape Architects  
 Suite 200, 240 Michael Cowpland Drive  
 Ottawa, Ontario, Canada K2M 1P6

Telephone: (613) 254-9643  
 Facsimile: (613) 254-5867  
 Website: www.novatech-eng.com

LOCATION	
CITY OF OTTAWA 2020 WALKLEY ROAD	
DRAWING NAME	
ROADWAY MODIFICATION FUNCTIONAL DESIGN	
PROJECT No.	119067
REV	REV # 2
DRAWING No.	119067-FD

## **APPENDIX L**

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Synchro Reports

# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

Existing AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖↗	↑↑	↖↗	↗
Traffic Volume (vph)	789	257	230	954	666	448
Future Volume (vph)	789	257	230	954	666	448
Satd. Flow (prot)	3191	1455	3066	3161	3216	1455
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3191	1419	3066	3161	3216	1436
Satd. Flow (RTOR)		286				344
Lane Group Flow (vph)	877	286	256	1060	740	498
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	55.0	55.0	25.0	80.0	40.0	40.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	54.6	54.6	15.1	75.9	31.7	31.7
Actuated g/C Ratio	0.46	0.46	0.13	0.63	0.26	0.26
v/c Ratio	0.60	0.36	0.66	0.53	0.87	0.79
Control Delay	27.8	3.9	69.9	10.6	54.2	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	3.9	69.9	10.6	54.2	22.0
LOS	C	A	E	B	D	C
Approach Delay	21.9			22.1	41.3	
Approach LOS	C			C	D	
Queue Length 50th (m)	76.0	0.0	29.0	44.1	77.4	30.7
Queue Length 95th (m)	101.2	14.8	42.4	52.0	98.7	72.3
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1451	801	480	2000	900	649
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.36	0.53	0.53	0.82	0.77

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 43 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.4

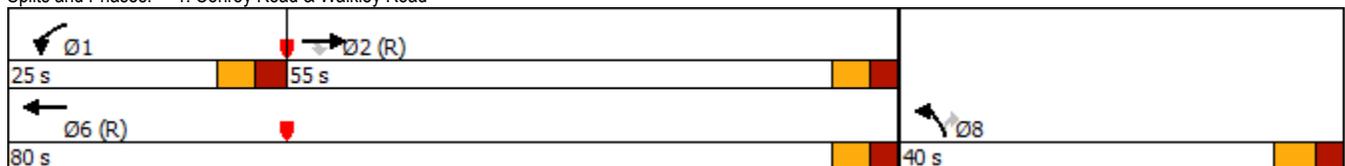
Intersection LOS: C

Intersection Capacity Utilization 67.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Conroy Road & Walkley Road



# 2020 Walkley Road 2: Conroy Road & St. Laurent Boulevard

Existing AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	59	76	60	38	39	177	1187	195	86	368	33
Future Volume (vph)	4	59	76	60	38	39	177	1187	195	86	368	33
Satd. Flow (prot)	1537	1695	1441	1409	1575	1339	1642	4607	0	1674	3230	0
Fit Permitted	0.730			0.714			0.494			0.142		
Satd. Flow (perm)	1176	1695	1409	1049	1575	1316	841	4607	0	249	3230	0
Satd. Flow (RTOR)			84			36		45			13	
Lane Group Flow (vph)	4	66	84	67	42	43	197	1536	0	96	446	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	56.0	56.0		56.0	56.0	
Total Lost Time (s)	6.9	6.9	6.9	6.9	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	16.6	74.8	74.8		74.8	74.8	
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.17	0.75	0.75		0.75	0.75	
v/c Ratio	0.02	0.23	0.28	0.39	0.16	0.17	0.31	0.44		0.52	0.18	
Control Delay	27.8	34.7	8.3	40.3	32.9	12.8	10.0	8.1		25.8	6.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	27.8	34.7	8.3	40.3	32.9	12.8	10.0	8.1		25.8	6.5	
LOS	C	C	A	D	C	B	B	A		C	A	
Approach Delay		20.1			30.5			8.3			9.9	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	0.6	11.0	0.0	11.5	6.9	1.1	9.5	30.1		5.8	9.7	
Queue Length 95th (m)	2.5	15.7	8.5	16.9	11.2	7.1	40.6	84.7		#41.8	31.7	
Internal Link Dist (m)		170.0			224.1			245.6			179.5	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	436	628	575	389	584	510	629	3458		186	2420	
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	0.01	0.11	0.15	0.17	0.07	0.08	0.31	0.44		0.52	0.18	

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 23 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 10.6

Intersection LOS: B

Intersection Capacity Utilization 69.9%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

### Splits and Phases: 2: Conroy Road & St. Laurent Boulevard

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

# 2020 Walkley Road

## 3: Walkley Road & Harding Road

Existing AM Peak Hour

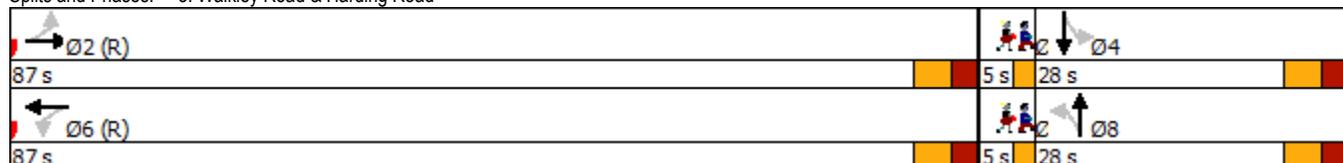


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1150	13	1	1106	42	1	0	1	15	0	181
Future Volume (vph)	31	1150	13	1	1106	42	1	0	1	15	0	181
Satd. Flow (prot)	1537	3243	0	0	3199	0	0	1079	0	0	1504	0
Fit Permitted	0.194				0.955			0.811			0.976	
Satd. Flow (perm)	314	3243	0	0	3055	0	0	896	0	0	1474	0
Satd. Flow (RTOR)		2			7			45			131	
Lane Group Flow (vph)	34	1292	0	0	1277	0	0	2	0	0	218	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	87.0	87.0		87.0	87.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	5.9	5.9			5.9			5.7			5.7	
Act Effct Green (s)	93.1	93.1			93.1			15.3			15.3	
Actuated g/C Ratio	0.78	0.78			0.78			0.13			0.13	
v/c Ratio	0.14	0.51			0.54			0.01			0.72	
Control Delay	4.4	4.2			7.0			0.0			33.3	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	4.4	4.2			7.0			0.0			33.3	
LOS	A	A			A			A			C	
Approach Delay		4.2			7.0						33.3	
Approach LOS		A			A						C	
Queue Length 50th (m)	1.0	30.6			41.5			0.0			18.3	
Queue Length 95th (m)	m2.6	51.6			90.3			0.0			37.9	
Internal Link Dist (m)		85.4			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	243	2515			2370			210			391	
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	0.14	0.51			0.54			0.01			0.56	

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 24 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 7.7  
 Intersection Capacity Utilization 57.7%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

### Splits and Phases: 3: Walkley Road & Harding Road



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

Existing AM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

# 2020 Walkley Road

## 4: Site Driveway & Walkley Road

Existing AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1187	27	25	1263	6	7	
Future Volume (Veh/h)	1187	27	25	1263	6	7	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	1319	30	28	1403	7	8	
<b>Pedestrians</b>							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	180			109			
pX, platoon unblocked			0.80		0.80	0.80	
vC, conflicting volume			1349		1741	674	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			947		1434	108	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			95		93	99	
cM capacity (veh/h)			579		95	744	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>
Volume Total	879	470	228	401	401	401	15
Volume Left	0	0	28	0	0	0	7
Volume Right	0	30	0	0	0	0	8
cSH	1700	1700	579	1700	1700	1700	178
Volume to Capacity	0.52	0.28	0.05	0.24	0.24	0.24	0.08
Queue Length 95th (m)	0.0	0.0	1.1	0.0	0.0	0.0	1.9
Control Delay (s)	0.0	0.0	2.0	0.0	0.0	0.0	27.0
Lane LOS			A				D
Approach Delay (s)	0.0		0.3				27.0
Approach LOS							D
<b>Intersection Summary</b>							
Average Delay			0.3				
Intersection Capacity Utilization			47.7%		ICU Level of Service		A
Analysis Period (min)			15				



# 2020 Walkley Road 5: Conroy Road & Site Driveway

Existing AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	1109	47	0	487
Future Volume (Veh/h)	0	5	1109	47	0	487
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	6	1232	52	0	541
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1528	437			1284	
vC1, stage 1 conf vol	1258					
vC2, stage 2 conf vol	270					
vCu, unblocked vol	1233	33			964	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	254	940			646	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	6	493	493	298	270	270
Volume Left	0	0	0	0	0	0
Volume Right	6	0	0	52	0	0
cSH	940	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.29	0.29	0.18	0.16	0.16
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.9	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.7%		ICU Level of Service	A
Analysis Period (min)			15			

# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

Existing PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↓	↑↑	↑↓	↑
Traffic Volume (vph)	1139	438	522	965	457	297
Future Volume (vph)	1139	438	522	965	457	297
Satd. Flow (prot)	3221	1483	3216	3349	3248	1469
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3221	1430	3216	3349	3248	1420
Satd. Flow (RTOR)		474				330
Lane Group Flow (vph)	1266	487	580	1072	508	330
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	51.0	51.0	28.0	79.0	31.0	31.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	47.3	47.3	22.2	75.7	21.9	21.9
Actuated g/C Ratio	0.43	0.43	0.20	0.69	0.20	0.20
v/c Ratio	0.91	0.55	0.89	0.47	0.79	0.60
Control Delay	41.5	4.9	44.8	18.2	51.1	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	4.9	44.8	18.2	51.1	9.1
LOS	D	A	D	B	D	A
Approach Delay	31.4			27.6	34.5	
Approach LOS	C			C	C	
Queue Length 50th (m)	126.0	1.5	61.2	89.5	48.8	0.0
Queue Length 95th (m)	#169.7	21.2	m#86.0	119.3	64.3	21.8
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1385	885	657	2305	726	573
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.55	0.88	0.47	0.70	0.58

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 20 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 30.5

Intersection LOS: C

Intersection Capacity Utilization 80.8%

ICU Level of Service D

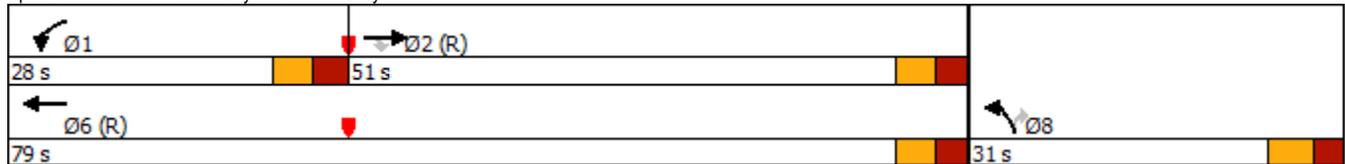
Analysis Period (min) 15

# 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: 1: Conroy Road & Walkley Road



# 2020 Walkley Road 2: Conroy Road & St. Laurent Boulevard

Existing PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	67	306	222	28	105	35	564	79	37	1064	8
Future Volume (vph)	17	67	306	222	28	105	35	564	79	37	1064	8
Satd. Flow (prot)	1691	1780	1469	1642	1664	1483	1642	4617	0	1523	3308	0
Fit Permitted	0.737			0.565			0.127			0.349		
Satd. Flow (perm)	1310	1780	1447	974	1664	1463	219	4617	0	555	3308	0
Satd. Flow (RTOR)			115			68		28			1	
Lane Group Flow (vph)	19	74	340	247	31	117	39	715	0	41	1191	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Total Split (s)	44.0	44.0	44.0	15.0	59.0	59.0	36.0	36.0		36.0	36.0	
Total Lost Time (s)	6.9	6.9	6.9	5.7	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	22.3	22.3	22.3	38.5	37.3	37.3	44.5	44.5		44.5	44.5	
Actuated g/C Ratio	0.23	0.23	0.23	0.41	0.39	0.39	0.47	0.47		0.47	0.47	
v/c Ratio	0.06	0.18	0.80	0.54	0.05	0.19	0.38	0.33		0.16	0.77	
Control Delay	23.5	26.4	35.0	22.9	14.4	7.6	37.2	17.5		21.4	27.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	23.5	26.4	35.0	22.9	14.4	7.6	37.2	17.5		21.4	27.8	
LOS	C	C	C	C	B	A	D	B		C	C	
Approach Delay		33.0			17.7			18.5			27.6	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	2.5	10.2	37.0	29.1	3.3	5.2	4.0	25.0		3.7	82.8	
Queue Length 95th (m)	6.0	16.0	52.0	32.7	5.9	10.8	#20.4	44.7		13.2	#162.8	
Internal Link Dist (m)		170.0			224.1			245.6			179.5	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	511	695	635	459	912	833	102	2178		260	1550	
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	0.04	0.11	0.54	0.54	0.03	0.14	0.38	0.33		0.16	0.77	

## Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 81.8%

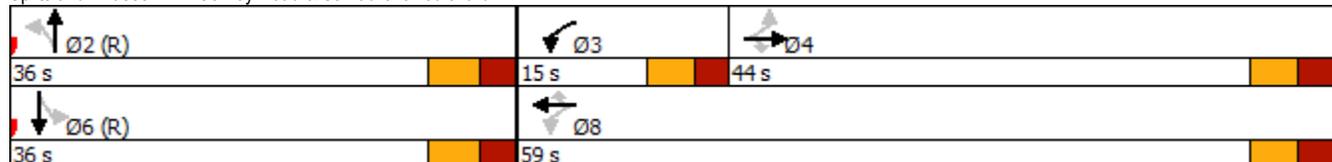
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

## Splits and Phases: 2: Conroy Road & St. Laurent Boulevard



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

Existing PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	1285	2	0	1347	30	9	1	0	24	0	285
Future Volume (vph)	179	1285	2	0	1347	30	9	1	0	24	0	285
Satd. Flow (prot)	1674	3221	0	0	3303	0	0	1703	0	0	1495	0
Fit Permitted	0.072							0.484			0.974	
Satd. Flow (perm)	127	3221	0	0	3303	0	0	860	0	0	1462	0
Satd. Flow (RTOR)					3						222	
Lane Group Flow (vph)	199	1430	0	0	1530	0	0	11	0	0	344	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2						8			4		
Total Split (s)	16.0	77.0			61.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	6.0	5.9			5.9			5.7			5.7	
Act Effect Green (s)	81.1	81.2			62.1			17.2			17.2	
Actuated g/C Ratio	0.74	0.74			0.56			0.16			0.16	
v/c Ratio	0.72	0.60			0.82			0.08			0.83	
Control Delay	50.0	2.4			25.7			36.5			32.4	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	50.0	2.4			25.7			36.5			32.4	
LOS	D	A			C			D			C	
Approach Delay		8.2			25.7			36.5			32.4	
Approach LOS		A			C			D			C	
Queue Length 50th (m)	25.9	8.1			127.3			1.9			23.9	
Queue Length 95th (m)	m#38.0	m17.4			#191.0			5.9			49.9	
Internal Link Dist (m)		85.4			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	278	2378			1865			182			484	
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	0.72	0.60			0.82			0.06			0.71	

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 85.6%

ICU Level of Service E

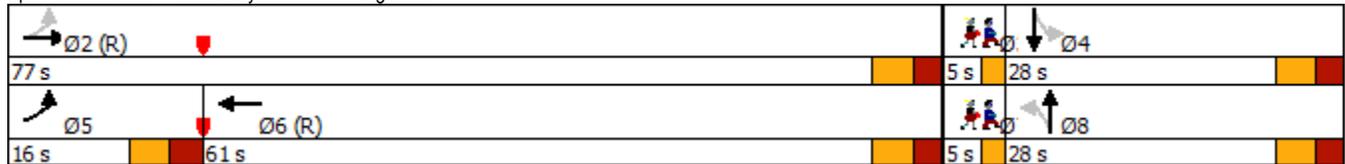
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

### Splits and Phases: 3: Walkley Road & Harding Road



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

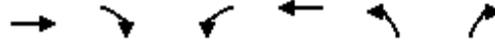
Existing PM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

# 2020 Walkley Road

## 4: Site Driveway & Walkley Road

Existing PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1437	9	8	1633	30	29	
Future Volume (Veh/h)	1437	9	8	1633	30	29	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	1597	10	9	1814	33	32	
<b>Pedestrians</b>							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	180			109			
pX, platoon unblocked			0.63		0.63	0.63	
vC, conflicting volume			1607		2074	804	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			791		1531	0	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			98		51	95	
cM capacity (veh/h)			520		67	684	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>
Volume Total	1065	542	268	518	518	518	65
Volume Left	0	0	9	0	0	0	33
Volume Right	0	10	0	0	0	0	32
cSH	1700	1700	520	1700	1700	1700	120
Volume to Capacity	0.63	0.32	0.02	0.30	0.30	0.30	0.54
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.0	0.0	18.0
Control Delay (s)	0.0	0.0	0.6	0.0	0.0	0.0	65.8
Lane LOS			A				F
Approach Delay (s)	0.0		0.1				65.8
Approach LOS							F
<b>Intersection Summary</b>							
Average Delay			1.3				
Intersection Capacity Utilization			52.5%		ICU Level of Service		A
Analysis Period (min)			15				

# 2020 Walkley Road 5: Conroy Road & Site Driveway

Existing PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	31	723	15	0	960
Future Volume (Veh/h)	0	31	723	15	0	960
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	34	803	17	0	1067
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1345	276			820	
vC1, stage 1 conf vol	812					
vC2, stage 2 conf vol	534					
vCu, unblocked vol	1158	26			602	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	317	985			917	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	34	321	321	178	534	534
Volume Left	0	0	0	0	0	0
Volume Right	34	0	0	17	0	0
cSH	985	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.19	0.19	0.10	0.31	0.31
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.8	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			31.3%		ICU Level of Service	A
Analysis Period (min)			15			

# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

Existing PM Peak Hour - modified timings



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↓	↑↑	↑↓	↑
Traffic Volume (vph)	1139	438	522	965	457	297
Future Volume (vph)	1139	438	522	965	457	297
Satd. Flow (prot)	3221	1483	3216	3349	3248	1469
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3221	1426	3216	3349	3248	1417
Satd. Flow (RTOR)		447				330
Lane Group Flow (vph)	1266	487	580	1072	508	330
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	57.0	57.0	32.0	89.0	31.0	31.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	54.1	54.1	24.6	84.9	22.7	22.7
Actuated g/C Ratio	0.45	0.45	0.20	0.71	0.19	0.19
v/c Ratio	0.87	0.55	0.88	0.45	0.83	0.62
Control Delay	38.6	5.7	63.0	10.2	58.9	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	5.7	63.0	10.2	58.9	9.8
LOS	D	A	E	B	E	A
Approach Delay	29.5			28.8	39.6	
Approach LOS	C			C	D	
Queue Length 50th (m)	134.5	5.1	69.0	37.6	53.9	0.0
Queue Length 95th (m)	#176.6	27.6	#88.9	79.0	71.4	23.6
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1451	888	691	2369	665	552
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.55	0.84	0.45	0.76	0.60

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 31.2

Intersection LOS: C

Intersection Capacity Utilization 80.8%

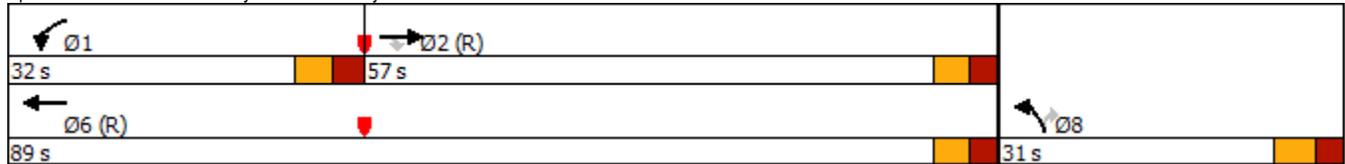
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Conroy Road & Walkley Road

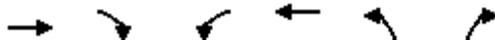




# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

2023 FB AM Peak Hour



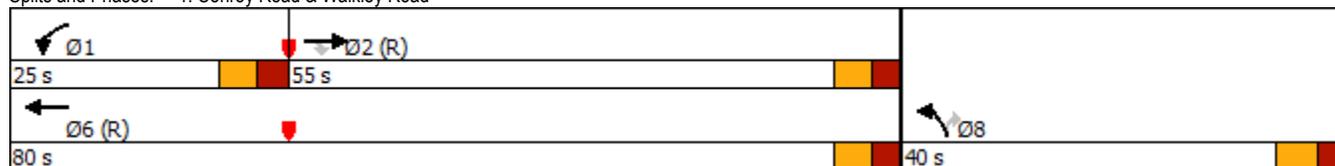
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Traffic Volume (vph)	834	275	261	1017	704	476
Future Volume (vph)	834	275	261	1017	704	476
Satd. Flow (prot)	3191	1455	3066	3161	3216	1455
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3191	1419	3066	3161	3216	1436
Satd. Flow (RTOR)		275				351
Lane Group Flow (vph)	834	275	261	1017	704	476
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	55.0	55.0	25.0	80.0	40.0	40.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	55.2	55.2	15.2	76.6	31.0	31.0
Actuated g/C Ratio	0.46	0.46	0.13	0.64	0.26	0.26
v/c Ratio	0.57	0.34	0.67	0.50	0.85	0.76
Control Delay	26.7	3.9	70.8	10.0	52.8	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	3.9	70.8	10.0	52.8	18.9
LOS	C	A	E	A	D	B
Approach Delay	21.0			22.4	39.1	
Approach LOS	C			C	D	
Queue Length 50th (m)	70.2	0.0	30.5	41.2	73.4	23.5
Queue Length 95th (m)	94.8	14.7	42.4	46.2	92.9	62.0
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1467	801	480	2018	900	654
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.34	0.54	0.50	0.78	0.73

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 43 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 27.5  
 Intersection Capacity Utilization 69.6%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service C

### Splits and Phases: 1: Conroy Road & Walkley Road



# 2020 Walkley Road 2: Conroy Road & St. Laurent Boulevard

2023 FB AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	68	86	64	45	41	203	1259	207	91	394	55
Future Volume (vph)	9	68	86	64	45	41	203	1259	207	91	394	55
Satd. Flow (prot)	1537	1695	1441	1409	1575	1339	1642	4607	0	1674	3204	0
Fit Permitted	0.728			0.713			0.492			0.155		
Satd. Flow (perm)	1173	1695	1409	1047	1575	1316	837	4607	0	272	3204	0
Satd. Flow (RTOR)			86			36		45			22	
Lane Group Flow (vph)	9	68	86	64	45	41	203	1466	0	91	449	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6				2
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	56.0	56.0		56.0	56.0	
Total Lost Time (s)	6.9	6.9	6.9	6.9	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	16.5	16.5	16.5	16.5	16.5	16.5	75.0	75.0		75.0	75.0	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.75	0.75		0.75	0.75	
v/c Ratio	0.05	0.24	0.28	0.37	0.17	0.17	0.32	0.42		0.45	0.19	
Control Delay	29.0	35.1	8.3	39.9	33.4	12.0	10.2	7.8		21.4	6.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	29.0	35.1	8.3	39.9	33.4	12.0	10.2	7.8		21.4	6.3	
LOS	C	D	A	D	C	B	B	A		C	A	
Approach Delay		20.6			30.3			8.1			8.9	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	1.5	11.4	0.0	10.9	7.4	0.8	9.8	27.4		5.0	9.4	
Queue Length 95th (m)	4.0	16.1	8.7	16.3	11.8	6.7	42.4	79.3		#37.1	31.4	
Internal Link Dist (m)		170.0			224.1			245.6			179.5	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	435	628	576	388	584	510	627	3464		203	2407	
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	0.02	0.11	0.15	0.16	0.08	0.08	0.32	0.42		0.45	0.19	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 23 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 10.4

Intersection LOS: B

Intersection Capacity Utilization 71.7%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

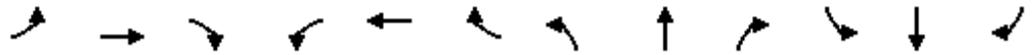
## Splits and Phases: 2: Conroy Road & St. Laurent Boulevard

		$\phi 2 (R)$			$\phi 4$
56 s				44 s	
		$\phi 6 (R)$			$\phi 8$
56 s				44 s	

# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2023 FB AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1219	14	1	1192	44	1	0	1	16	0	193
Future Volume (vph)	34	1219	14	1	1192	44	1	0	1	16	0	193
Satd. Flow (prot)	1537	3243	0	0	3202	0	0	1079	0	0	1503	0
Fit Permitted	0.195				0.955			0.849			0.977	
Satd. Flow (perm)	315	3243	0	0	3058	0	0	938	0	0	1474	0
Satd. Flow (RTOR)		2			7			45			139	
Lane Group Flow (vph)	34	1233	0	0	1237	0	0	2	0	0	209	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	87.0	87.0		87.0	87.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	5.9	5.9			5.9			5.7			5.7	
Act Effct Green (s)	89.6	89.6			89.6			17.8			13.8	
Actuated g/C Ratio	0.75	0.75			0.75			0.15			0.12	
v/c Ratio	0.14	0.51			0.54			0.01			0.71	
Control Delay	5.2	4.9			8.1			0.0			31.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	5.2	4.9			8.1			0.0			31.5	
LOS	A	A			A			A			C	
Approach Delay		4.9			8.1						31.5	
Approach LOS		A			A						C	
Queue Length 50th (m)	1.3	29.3			46.9			0.0			14.6	
Queue Length 95th (m)	m2.9	48.3			86.4			0.0			35.2	
Internal Link Dist (m)		85.4			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	235	2420			2283			210			387	
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	0.14	0.51			0.54			0.01			0.54	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 24 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 8.4

Intersection LOS: A

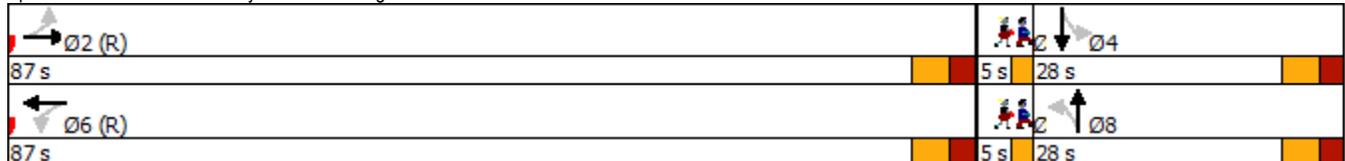
Intersection Capacity Utilization 61.0%

ICU Level of Service B

Analysis Period (min) 15

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

### Splits and Phases: 3: Walkley Road & Harding Road



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

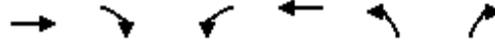
2023 FB AM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

# 2020 Walkley Road

## 4: Site Driveway & Walkley Road

2023 FB AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1261	27	25	1361	6	6	
Future Volume (Veh/h)	1261	27	25	1361	6	6	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1261	27	25	1361	6	6	
<b>Pedestrians</b>							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	180			109			
pX, platoon unblocked			0.82		0.82	0.82	
vC, conflicting volume			1288		1665	644	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			912		1372	127	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			96		94	99	
cM capacity (veh/h)			609		108	738	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>
Volume Total	841	447	219	389	389	389	12
Volume Left	0	0	25	0	0	0	6
Volume Right	0	27	0	0	0	0	6
cSH	1700	1700	609	1700	1700	1700	188
Volume to Capacity	0.49	0.26	0.04	0.23	0.23	0.23	0.06
Queue Length 95th (m)	0.0	0.0	0.9	0.0	0.0	0.0	1.4
Control Delay (s)	0.0	0.0	1.7	0.0	0.0	0.0	25.4
Lane LOS			A				D
Approach Delay (s)	0.0		0.3				25.4
Approach LOS							D
<b>Intersection Summary</b>							
Average Delay			0.3				
Intersection Capacity Utilization			49.1%		ICU Level of Service		A
Analysis Period (min)			15				

2020 Walkley Road  
5: Conroy Road & Site Driveway

2023 FB AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	1175	47	0	536
Future Volume (Veh/h)	0	5	1175	47	0	536
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	1175	47	0	536
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage veh			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	1466	415			1222	
vC1, stage 1 conf vol	1198					
vC2, stage 2 conf vol	268					
vCu, unblocked vol	1208	67			943	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	263	906			667	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	5	470	470	282	268	268
Volume Left	0	0	0	0	0	0
Volume Right	5	0	0	47	0	0
cSH	906	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.28	0.28	0.17	0.16	0.16
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	9.0	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			35.1%		ICU Level of Service	A
Analysis Period (min)			15			

# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

2023 FB PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖↗	↑↑	↖↗	↗
Traffic Volume (vph)	1207	465	554	1021	490	330
Future Volume (vph)	1207	465	554	1021	490	330
Satd. Flow (prot)	3221	1483	3216	3349	3248	1469
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3221	1430	3216	3349	3248	1420
Satd. Flow (RTOR)		465				330
Lane Group Flow (vph)	1207	465	554	1021	490	330
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	51.0	51.0	28.0	79.0	31.0	31.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	48.1	48.1	21.8	76.1	21.5	21.5
Actuated g/C Ratio	0.44	0.44	0.20	0.69	0.20	0.20
v/c Ratio	0.86	0.52	0.87	0.44	0.77	0.61
Control Delay	36.3	4.4	44.7	16.9	50.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	4.4	44.7	16.9	50.5	9.2
LOS	D	A	D	B	D	A
Approach Delay	27.4			26.7	33.9	
Approach LOS	C			C	C	
Queue Length 50th (m)	116.5	0.0	57.4	78.1	47.1	0.0
Queue Length 95th (m)	#156.7	17.6	#83.0	113.8	61.9	21.8
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1407	886	653	2316	726	573
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.52	0.85	0.44	0.67	0.58

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 20 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.4

Intersection LOS: C

Intersection Capacity Utilization 84.3%

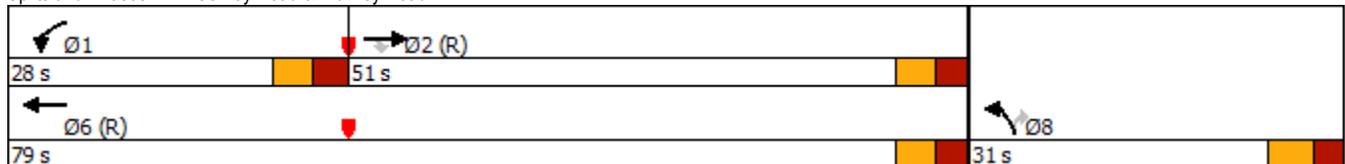
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Conroy Road & Walkley Road



# 2020 Walkley Road 2: Conroy Road & St. Laurent Boulevard

2023 FB PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	81	334	235	35	111	42	601	84	39	1129	13
Future Volume (vph)	43	81	334	235	35	111	42	601	84	39	1129	13
Satd. Flow (prot)	1691	1780	1469	1642	1664	1483	1642	4618	0	1523	3303	0
Fit Permitted	0.734			0.558			0.146			0.365		
Satd. Flow (perm)	1305	1780	1447	962	1664	1463	252	4618	0	580	3303	0
Satd. Flow (RTOR)			120			76		28				1
Lane Group Flow (vph)	43	81	334	235	35	111	42	685	0	39	1142	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			2				6
Permitted Phases	4		4	8		8	2			6		
Total Split (s)	44.0	44.0	44.0	15.0	59.0	59.0	36.0	36.0		36.0	36.0	
Total Lost Time (s)	6.9	6.9	6.9	5.7	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effect Green (s)	21.7	21.7	21.7	37.9	36.7	36.7	45.1	45.1		45.1	45.1	
Actuated g/C Ratio	0.23	0.23	0.23	0.40	0.39	0.39	0.47	0.47		0.47	0.47	
v/c Ratio	0.14	0.20	0.79	0.52	0.05	0.18	0.35	0.31		0.14	0.73	
Control Delay	25.9	27.2	34.0	22.8	14.8	6.2	33.2	17.1		20.7	26.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	25.9	27.2	34.0	22.8	14.8	6.2	33.2	17.1		20.7	26.2	
LOS	C	C	C	C	B	A	C	B		C	C	
Approach Delay		32.0			17.2			18.0			26.0	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	5.9	11.3	35.2	27.9	3.7	3.7	4.2	23.4		3.5	76.4	
Queue Length 95th (m)	10.7	17.2	49.8	31.1	6.5	9.4	#20.4	42.7		12.6	#153.5	
Internal Link Dist (m)		170.0			224.1			245.6			179.5	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	509	695	638	450	912	836	119	2205		274	1567	
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	0.08	0.12	0.52	0.52	0.04	0.13	0.35	0.31		0.14	0.73	

## Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 23.7

Intersection LOS: C

Intersection Capacity Utilization 86.2%

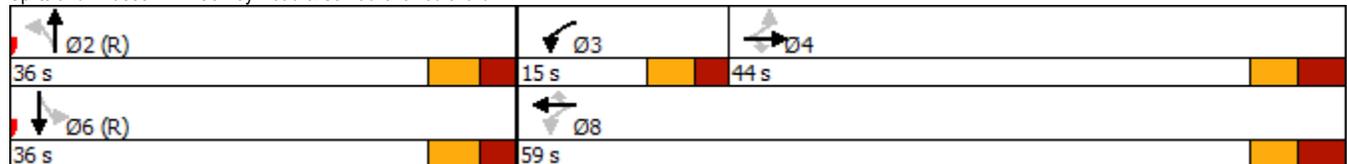
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

## Splits and Phases: 2: Conroy Road & St. Laurent Boulevard





# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2023 FB PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	1375	2	0	1427	32	9	1	0	25	0	300
Future Volume (vph)	191	1375	2	0	1427	32	9	1	0	25	0	300
Satd. Flow (prot)	1674	3221	0	0	3303	0	0	1703	0	0	1494	0
Fit Permitted	0.091							0.487			0.975	
Satd. Flow (perm)	160	3221	0	0	3303	0	0	865	0	0	1462	0
Satd. Flow (RTOR)					3						225	
Lane Group Flow (vph)	191	1377	0	0	1459	0	0	10	0	0	325	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2						8			4		
Total Split (s)	16.0	77.0			61.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	6.0	5.9			5.9			5.7			5.7	
Act Effct Green (s)	82.3	82.4			63.8			16.0			16.0	
Actuated g/C Ratio	0.75	0.75			0.58			0.15			0.15	
v/c Ratio	0.65	0.57			0.76			0.08			0.80	
Control Delay	41.9	2.1			22.4			37.4			29.3	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	41.9	2.1			22.4			37.4			29.3	
LOS	D	A			C			D			C	
Approach Delay		6.9			22.4			37.4			29.3	
Approach LOS		A			C			D			C	
Queue Length 50th (m)	21.3	7.2			108.2			1.8			19.1	
Queue Length 95th (m)	m32.8	17.7			162.0			5.6			43.9	
Internal Link Dist (m)		85.4			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	296	2413			1916			182			486	
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	0.57			0.76			0.05			0.67	

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 15.9

Intersection LOS: B

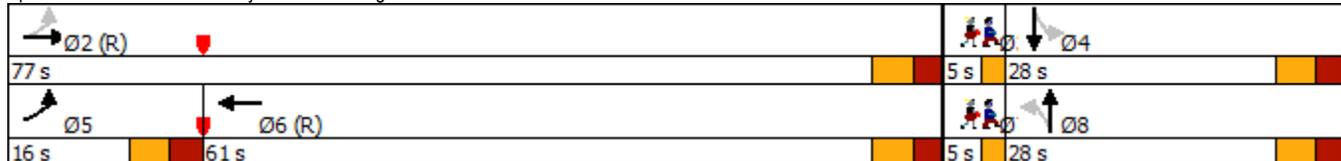
Intersection Capacity Utilization 89.6%

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 Road & Harding Road



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2023 FB PM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

# 2020 Walkley Road

## 4: Site Driveway & Walkley Road

2023 FB PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1539	9	8	1728	30	29	
Future Volume (Veh/h)	1539	9	8	1728	30	29	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1539	9	8	1728	30	29	
<b>Pedestrians</b>							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	180			109			
pX, platoon unblocked			0.66		0.66	0.66	
vC, conflicting volume			1548		1992	774	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			814		1481	0	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			99		60	96	
cM capacity (veh/h)			537		76	720	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>
Volume Total	1026	522	255	494	494	494	59
Volume Left	0	0	8	0	0	0	30
Volume Right	0	9	0	0	0	0	29
cSH	1700	1700	537	1700	1700	1700	135
Volume to Capacity	0.60	0.31	0.01	0.29	0.29	0.29	0.44
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	0.0	13.5
Control Delay (s)	0.0	0.0	0.6	0.0	0.0	0.0	50.6
Lane LOS			A				F
Approach Delay (s)	0.0		0.1				50.6
Approach LOS							F
<b>Intersection Summary</b>							
Average Delay			0.9				
Intersection Capacity Utilization			55.5%		ICU Level of Service		B
Analysis Period (min)			15				

# 2020 Walkley Road 5: Conroy Road & Site Driveway

2023 FB PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	31	789	15	0	1019
Future Volume (Veh/h)	0	31	789	15	0	1019
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	31	789	15	0	1019
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1306	270			804	
vC1, stage 1 conf vol	796					
vC2, stage 2 conf vol	510					
vCu, unblocked vol	1140	51			612	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	322	957			915	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	31	316	316	173	510	510
Volume Left	0	0	0	0	0	0
Volume Right	31	0	0	15	0	0
cSH	957	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.19	0.19	0.10	0.30	0.30
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.9	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			33.1%		ICU Level of Service	A
Analysis Period (min)			15			

# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

2028 FB AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Traffic Volume (vph)	903	297	272	1074	741	499
Future Volume (vph)	903	297	272	1074	741	499
Satd. Flow (prot)	3191	1455	3066	3161	3216	1455
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3191	1419	3066	3161	3216	1436
Satd. Flow (RTOR)		297				341
Lane Group Flow (vph)	903	297	272	1074	741	499
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	55.0	55.0	25.0	80.0	40.0	40.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	54.1	54.1	15.6	75.9	31.7	31.7
Actuated g/C Ratio	0.45	0.45	0.13	0.63	0.26	0.26
v/c Ratio	0.63	0.37	0.69	0.54	0.87	0.79
Control Delay	28.6	3.9	70.2	10.6	54.2	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	3.9	70.2	10.6	54.2	22.5
LOS	C	A	E	B	D	C
Approach Delay	22.5			22.7	41.4	
Approach LOS	C			C	D	
Queue Length 50th (m)	80.1	0.0	30.8	44.8	77.5	31.7
Queue Length 95th (m)	105.2	15.1	44.7	52.6	98.7	73.5
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1438	803	480	1998	900	647
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.37	0.57	0.54	0.82	0.77

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 43 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.8

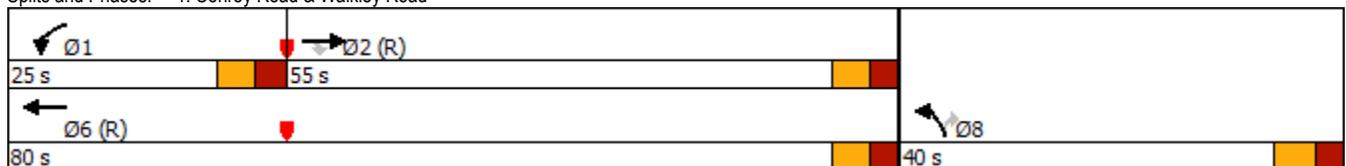
Intersection LOS: C

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Conroy Road & Walkley Road



# 2020 Walkley Road

## 2: Conroy Road & St. Laurent Boulevard

2028 FB AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	70	89	67	47	43	211	1322	216	95	421	57
Future Volume (vph)	9	70	89	67	47	43	211	1322	216	95	421	57
Satd. Flow (prot)	1537	1695	1441	1409	1575	1339	1642	4607	0	1674	3204	0
Fit Permitted	0.726			0.711			0.479			0.142		
Satd. Flow (perm)	1169	1695	1409	1045	1575	1316	816	4607	0	249	3204	0
Satd. Flow (RTOR)			89			36		45			21	
Lane Group Flow (vph)	9	70	89	67	47	43	211	1538	0	95	478	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6				2
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	56.0	56.0		56.0	56.0	
Total Lost Time (s)	6.9	6.9	6.9	6.9	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effect Green (s)	16.6	16.6	16.6	16.6	16.6	16.6	74.8	74.8		74.8	74.8	
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.17	0.75	0.75		0.75	0.75	
v/c Ratio	0.05	0.25	0.29	0.39	0.18	0.17	0.35	0.44		0.51	0.20	
Control Delay	28.9	35.1	8.3	40.3	33.4	12.8	10.6	8.1		25.6	6.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	28.9	35.1	8.3	40.3	33.4	12.8	10.6	8.1		25.6	6.5	
LOS	C	D	A	D	C	B	B	A		C	A	
Approach Delay		20.6			30.7			8.4			9.6	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	1.5	11.7	0.0	11.5	7.8	1.1	10.5	30.0		5.7	10.3	
Queue Length 95th (m)	4.0	16.7	8.8	16.9	12.3	7.1	45.1	84.8		#41.1	33.7	
Internal Link Dist (m)		170.0			224.1			245.6			179.5	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	433	628	578	387	584	510	610	3458		186	2402	
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	0.02	0.11	0.15	0.17	0.08	0.08	0.35	0.44		0.51	0.20	

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 23 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.51  
 Intersection Signal Delay: 10.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 73.2%  
 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.

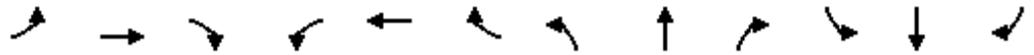
### Splits and Phases: 2: Conroy Road & St. Laurent Boulevard

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

# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2028 FB AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1305	14	1	1258	46	1	0	1	17	0	202
Future Volume (vph)	35	1305	14	1	1258	46	1	0	1	17	0	202
Satd. Flow (prot)	1537	3243	0	0	3202	0	0	1079	0	0	1503	0
Fit Permitted	0.186				0.955			0.823			0.977	
Satd. Flow (perm)	301	3243	0	0	3058	0	0	910	0	0	1474	0
Satd. Flow (RTOR)		2			7			45			126	
Lane Group Flow (vph)	35	1319	0	0	1305	0	0	2	0	0	219	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	87.0	87.0		87.0	87.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	5.9	5.9			5.9			5.7			5.7	
Act Effct Green (s)	92.8	92.8			92.8			15.6			15.6	
Actuated g/C Ratio	0.77	0.77			0.77			0.13			0.13	
v/c Ratio	0.15	0.53			0.55			0.01			0.73	
Control Delay	4.6	4.3			7.3			0.0			34.8	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	4.6	4.3			7.3			0.0			34.8	
LOS	A	A			A			A			C	
Approach Delay		4.3			7.3						34.8	
Approach LOS		A			A						C	
Queue Length 50th (m)	1.0	31.5			44.2			0.0			19.6	
Queue Length 95th (m)	m2.6	52.1			93.6			0.0			39.3	
Internal Link Dist (m)		85.4			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	232	2509			2367			212			387	
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	0.15	0.53			0.55			0.01			0.57	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 24 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 8.0

Intersection LOS: A

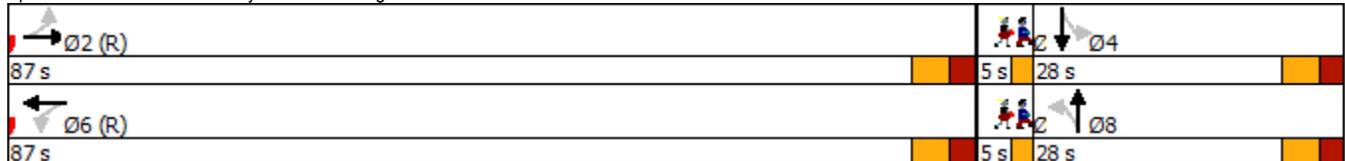
Intersection Capacity Utilization 63.6%

ICU Level of Service B

Analysis Period (min) 15

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

### Splits and Phases: 3: Walkley Road & Harding Road



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2028 FB AM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		



# 2020 Walkley Road

## 4: Site Driveway & Walkley Road

2028 FB AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1348	27	25	1436	6	6	
Future Volume (Veh/h)	1348	27	25	1436	6	6	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1348	27	25	1436	6	6	
<b>Pedestrians</b>							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	180			109			
pX, platoon unblocked			0.79		0.79	0.79	
vC, conflicting volume			1375		1770	688	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			952		1451	86	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			96		93	99	
cM capacity (veh/h)			569		92	758	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>
Volume Total	899	476	230	410	410	410	12
Volume Left	0	0	25	0	0	0	6
Volume Right	0	27	0	0	0	0	6
cSH	1700	1700	569	1700	1700	1700	165
Volume to Capacity	0.53	0.28	0.04	0.24	0.24	0.24	0.07
Queue Length 95th (m)	0.0	0.0	1.0	0.0	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	1.8	0.0	0.0	0.0	28.6
Lane LOS			A				D
Approach Delay (s)	0.0		0.3				28.6
Approach LOS							D
<b>Intersection Summary</b>							
Average Delay			0.3				
Intersection Capacity Utilization			50.2%		ICU Level of Service		A
Analysis Period (min)			15				

2020 Walkley Road  
5: Conroy Road & Site Driveway

2028 FB AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	1235	47	0	569
Future Volume (Veh/h)	0	5	1235	47	0	569
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	1235	47	0	569
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1543	435			1282	
vC1, stage 1 conf vol	1258					
vC2, stage 2 conf vol	284					
vCu, unblocked vol	1253	36			966	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	251	936			645	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	5	494	494	294	284	284
Volume Left	0	0	0	0	0	0
Volume Right	5	0	0	47	0	0
cSH	936	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.29	0.29	0.17	0.17	0.17
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.9	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			36.3%		ICU Level of Service	A
Analysis Period (min)			15			

# 2020 Walkley Road

## 1: Conroy Road & Walkley Road

2028 FB PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Traffic Volume (vph)	1227	475	580	1112	527	345
Future Volume (vph)	1227	475	580	1112	527	345
Satd. Flow (prot)	3221	1483	3216	3349	3248	1469
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3221	1430	3216	3349	3248	1420
Satd. Flow (RTOR)		475				345
Lane Group Flow (vph)	1227	475	580	1112	527	345
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	51.0	51.0	28.0	79.0	31.0	31.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	47.1	47.1	22.1	75.4	22.2	22.2
Actuated g/C Ratio	0.43	0.43	0.20	0.69	0.20	0.20
v/c Ratio	0.89	0.54	0.90	0.48	0.80	0.61
Control Delay	39.2	4.5	44.7	19.0	51.8	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	4.5	44.7	19.0	51.8	9.1
LOS	D	A	D	B	D	A
Approach Delay	29.5			27.8	34.9	
Approach LOS	C			C	C	
Queue Length 50th (m)	119.6	0.0	61.5	93.5	50.6	0.0
Queue Length 95th (m)	#161.1	17.9	m#82.7	124.8	67.1	22.4
Internal Link Dist (m)	308.5			156.3	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1379	883	654	2295	726	585
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.54	0.89	0.48	0.73	0.59

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 20 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 30.0

Intersection LOS: C

Intersection Capacity Utilization 86.3%

ICU Level of Service E

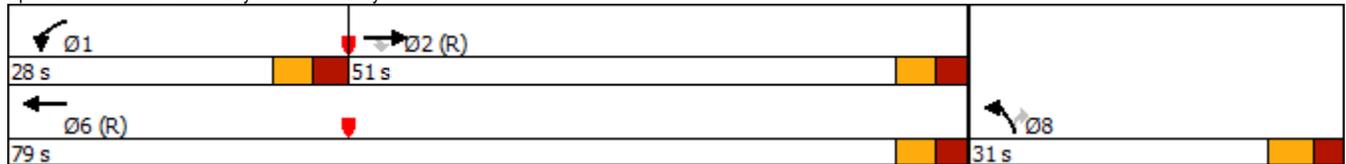
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Conroy Road & Walkley Road



# 2020 Walkley Road 2: Conroy Road & St. Laurent Boulevard

2028 FB PM Peak Hour

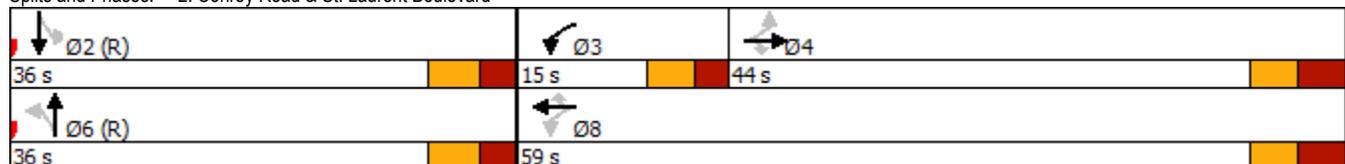


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	84	350	246	36	117	44	643	88	41	1170	14
Future Volume (vph)	44	84	350	246	36	117	44	643	88	41	1170	14
Satd. Flow (prot)	1691	1780	1469	1642	1664	1483	1642	4619	0	1523	3303	0
Fit Permitted	0.734			0.562			0.126			0.341		
Satd. Flow (perm)	1305	1780	1447	969	1664	1463	218	4619	0	543	3303	0
Satd. Flow (RTOR)			115			63		27			1	
Lane Group Flow (vph)	44	84	350	246	36	117	44	731	0	41	1184	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			6			2	
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	15.0	59.0	59.0	36.0	36.0		36.0	36.0	
Total Lost Time (s)	6.9	6.9	6.9	5.7	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	22.8	22.8	22.8	39.0	37.8	37.8	44.0	44.0		44.0	44.0	
Actuated g/C Ratio	0.24	0.24	0.24	0.41	0.40	0.40	0.46	0.46		0.46	0.46	
v/c Ratio	0.14	0.20	0.81	0.53	0.05	0.19	0.44	0.34		0.16	0.77	
Control Delay	25.2	26.5	35.7	22.3	14.4	8.1	41.2	17.9		21.8	28.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	25.2	26.5	35.7	22.3	14.4	8.1	41.2	17.9		21.8	28.3	
LOS	C	C	D	C	B	A	D	B		C	C	
Approach Delay		33.1			17.4			19.2			28.1	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	5.9	11.5	38.6	28.6	3.7	5.7	4.7	26.1		3.8	83.4	
Queue Length 95th (m)	11.0	17.6	54.3	32.7	6.6	11.2	#23.3	45.9		13.3	#161.6	
Internal Link Dist (m)		170.0			224.1			245.6			179.5	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	509	695	635	463	912	830	100	2152		251	1529	
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	0.09	0.12	0.55	0.53	0.04	0.14	0.44	0.34		0.16	0.77	

### Intersection Summary

Cycle Length: 95  
 Actuated Cycle Length: 95  
 Offset: 2 (2%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 25.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 89.0%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

### Splits and Phases: 2: Conroy Road & St. Laurent Boulevard



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2028 FB PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	1403	2	0	1537	33	10	1	0	26	0	315
Future Volume (vph)	200	1403	2	0	1537	33	10	1	0	26	0	315
Satd. Flow (prot)	1674	3221	0	0	3303	0	0	1703	0	0	1494	0
Fit Permitted	0.065							0.481			0.975	
Satd. Flow (perm)	115	3221	0	0	3303	0	0	855	0	0	1462	0
Satd. Flow (RTOR)					3						221	
Lane Group Flow (vph)	200	1405	0	0	1570	0	0	11	0	0	341	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2						8			4		
Total Split (s)	16.0	77.0			61.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	6.0	5.9			5.9			5.7			5.7	
Act Effct Green (s)	81.3	81.4			62.1			17.0			17.0	
Actuated g/C Ratio	0.74	0.74			0.56			0.15			0.15	
v/c Ratio	0.73	0.59			0.84			0.08			0.83	
Control Delay	52.9	2.3			26.8			36.6			32.3	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	52.9	2.3			26.8			36.6			32.3	
LOS	D	A			C			D			C	
Approach Delay		8.6			26.8			36.6			32.3	
Approach LOS		A			C			D			C	
Queue Length 50th (m)	26.9	8.3			133.0			1.9			23.5	
Queue Length 95th (m)	m#43.7	m18.6			#200.1			5.9			49.3	
Internal Link Dist (m)		85.4			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	273	2384			1866			181			483	
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	0.73	0.59			0.84			0.06			0.71	

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.1

Intersection LOS: B

Intersection Capacity Utilization 94.2%

ICU Level of Service F

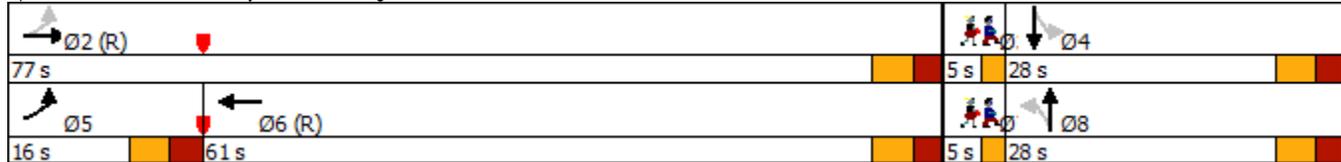
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Walkley Road & Harding Road



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2028 FB PM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

# 2020 Walkley Road

## 4: Site Driveway & Walkley Road

2028 FB PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1576	9	8	1854	30	29	
Future Volume (Veh/h)	1576	9	8	1854	30	29	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1576	9	8	1854	30	29	
<b>Pedestrians</b>							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	180			109			
pX, platoon unblocked			0.65		0.65	0.65	
vC, conflicting volume			1585		2060	792	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			819		1551	0	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			98		55	96	
cM capacity (veh/h)			522		67	704	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>
Volume Total	1051	534	273	530	530	530	59
Volume Left	0	0	8	0	0	0	30
Volume Right	0	9	0	0	0	0	29
cSH	1700	1700	522	1700	1700	1700	120
Volume to Capacity	0.62	0.31	0.02	0.31	0.31	0.31	0.49
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	0.0	15.7
Control Delay (s)	0.0	0.0	0.6	0.0	0.0	0.0	61.0
Lane LOS			A				F
Approach Delay (s)	0.0		0.1				61.0
Approach LOS							F
<b>Intersection Summary</b>							
Average Delay			1.1				
Intersection Capacity Utilization			56.6%		ICU Level of Service		B
Analysis Period (min)			15				

# 2020 Walkley Road 5: Conroy Road & Site Driveway

2028 FB PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	31	841	15	0	1055
Future Volume (Veh/h)	0	31	841	15	0	1055
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	31	841	15	0	1055
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1376	288			856	
vC1, stage 1 conf vol	848					
vC2, stage 2 conf vol	528					
vCu, unblocked vol	1175	17			622	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	311	994			897	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	31	336	336	183	528	528
Volume Left	0	0	0	0	0	0
Volume Right	31	0	0	15	0	0
cSH	994	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.20	0.20	0.11	0.31	0.31
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.7	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			34.1%		ICU Level of Service	A
Analysis Period (min)			15			



2020 Walkley Road  
1: Conroy Road & Walkley Road

2023 TT AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖↗	↑↑	↖↗	↗
Traffic Volume (vph)	845	284	257	1026	706	476
Future Volume (vph)	845	284	257	1026	706	476
Satd. Flow (prot)	3191	1455	3066	3161	3216	1455
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3191	1419	3066	3161	3216	1436
Satd. Flow (RTOR)		284				349
Lane Group Flow (vph)	845	284	257	1026	706	476
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	55.0	55.0	25.0	80.0	40.0	40.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	55.3	55.3	15.1	76.6	31.0	31.0
Actuated g/C Ratio	0.46	0.46	0.13	0.64	0.26	0.26
v/c Ratio	0.57	0.35	0.67	0.51	0.85	0.76
Control Delay	26.8	3.9	70.8	10.3	52.9	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	3.9	70.8	10.3	52.9	19.1
LOS	C	A	E	B	D	B
Approach Delay	21.0			22.4	39.3	
Approach LOS	C			C	D	
Queue Length 50th (m)	71.4	0.0	28.5	41.6	73.6	23.9
Queue Length 95th (m)	96.3	14.8	42.9	50.4	93.2	62.6
Internal Link Dist (m)	308.5			181.6	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1470	807	480	2018	900	653
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.35	0.54	0.51	0.78	0.73

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 43 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 27.5

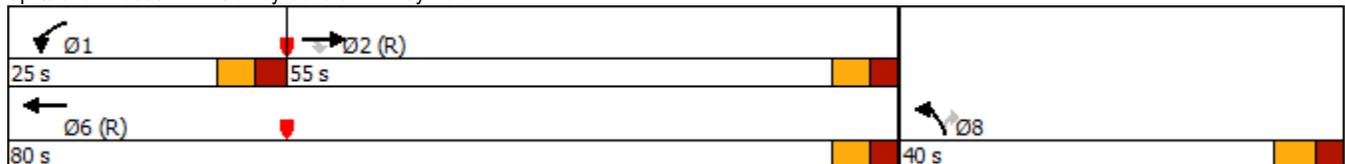
Intersection LOS: C

Intersection Capacity Utilization 69.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Conroy Road & Walkley Road



2020 Walkley Road  
2: Conroy Road & St. Laurent Boulevard

2023 TT AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	69	86	67	45	27	203	1238	211	92	398	55
Future Volume (vph)	6	69	86	67	45	27	203	1238	211	92	398	55
Satd. Flow (prot)	1537	1695	1441	1409	1575	1339	1642	4600	0	1674	3204	0
Flt Permitted	0.728			0.712			0.491			0.163		
Satd. Flow (perm)	1173	1695	1409	1046	1575	1316	836	4600	0	286	3204	0
Satd. Flow (RTOR)			86			36		47			22	
Lane Group Flow (vph)	6	69	86	67	45	27	203	1449	0	92	453	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	56.0	56.0		56.0	56.0	
Total Lost Time (s)	6.9	6.9	6.9	6.9	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	12.8	12.8	12.8	12.8	12.8	12.8	78.6	78.6		78.6	78.6	
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.79	0.79		0.79	0.79	
v/c Ratio	0.04	0.32	0.34	0.50	0.22	0.14	0.31	0.40		0.41	0.18	
Control Delay	36.3	42.5	12.0	52.9	40.5	10.4	6.3	4.9		12.7	3.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	36.3	42.5	12.0	52.9	40.5	10.4	6.3	4.9		12.7	3.9	
LOS	D	D	B	D	D	B	A	A		B	A	
Approach Delay		26.0			40.6			5.0			5.4	
Approach LOS		C			D			A			A	
Queue Length 50th (m)	1.0	11.5	0.0	11.5	7.4	0.0	9.9	27.5		5.0	9.7	
Queue Length 95th (m)	4.1	21.9	11.6	22.5	15.8	5.2	24.1	44.0		19.9	18.0	
Internal Link Dist (m)		170.0			103.1			245.6			68.3	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	435	628	576	388	584	510	657	3627		225	2524	
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	0.01	0.11	0.15	0.17	0.08	0.05	0.31	0.40		0.41	0.18	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 23 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 8.4

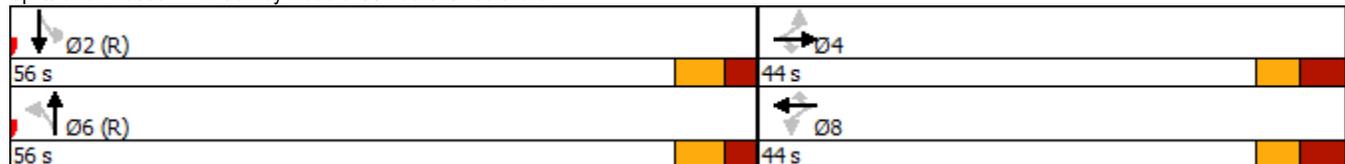
Intersection LOS: A

Intersection Capacity Utilization 71.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Conroy Road & St. Laurent Boulevard



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2023 TT AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1244	14	1	1181	44	1	0	1	16	0	190
Future Volume (vph)	33	1244	14	1	1181	44	1	0	1	16	0	190
Satd. Flow (prot)	1537	3243	0	0	3202	0	0	1079	0	0	1503	0
Flt Permitted	0.210				0.955			0.726			0.975	
Satd. Flow (perm)	339	3243	0	0	3058	0	0	802	0	0	1471	0
Satd. Flow (RTOR)		2			7			45			141	
Lane Group Flow (vph)	33	1258	0	0	1226	0	0	2	0	0	206	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	87.0	87.0		87.0	87.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	5.9	5.9			5.9			5.7			5.7	
Act Effct Green (s)	95.2	95.2			95.2			13.2			13.2	
Actuated g/C Ratio	0.79	0.79			0.79			0.11			0.11	
v/c Ratio	0.12	0.49			0.51			0.02			0.72	
Control Delay	3.4	3.6			5.5			0.0			31.7	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	3.4	3.6			5.5			0.0			31.7	
LOS	A	A			A			A			C	
Approach Delay		3.6			5.5						31.7	
Approach LOS		A			A						C	
Queue Length 50th (m)	0.9	26.5			35.0			0.0			13.6	
Queue Length 95th (m)	m2.1	39.6			66.1			0.0			35.0	
Internal Link Dist (m)		60.1			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	268	2573			2427			185			388	
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	0.12	0.49			0.51			0.01			0.53	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 24 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 6.5

Intersection LOS: A

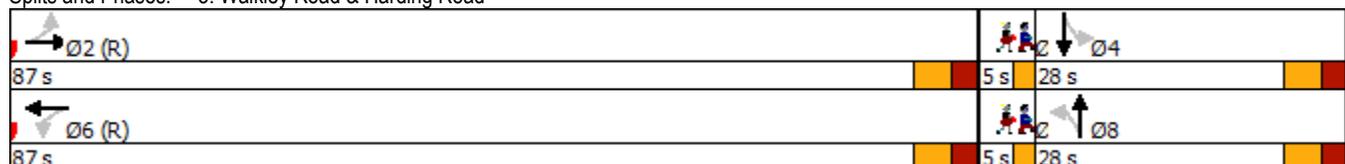
Intersection Capacity Utilization 60.6%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: Walkley Road & Harding Road



Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

2020 Walkley Road  
4: Site Driveway & Walkley Road

2023 TT AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↓			↑↑↑↑		↗	
Traffic Volume (veh/h)	1289	10	0	1372	0	2	
Future Volume (Veh/h)	1289	10	0	1372	0	2	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1289	10	0	1372	0	2	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	206			84			
pX, platoon unblocked				0.82	0.82	0.82	
vC, conflicting volume				1299	1637	650	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol				921	1334	127	
tC, single (s)				4.1	6.8	6.9	
tC, 2 stage (s)							
tF (s)				2.2	3.5	3.3	
p0 queue free %				100	100	100	
cM capacity (veh/h)				603	119	736	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	859	440	343	343	343	343	2
Volume Left	0	0	0	0	0	0	0
Volume Right	0	10	0	0	0	0	2
cSH	1700	1700	1700	1700	1700	1700	736
Volume to Capacity	0.51	0.26	0.20	0.20	0.20	0.20	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.9
Lane LOS							A
Approach Delay (s)	0.0		0.0				9.9
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			47.9%		ICU Level of Service		A
Analysis Period (min)			15				

2020 Walkley Road  
5: Conroy Road & North Site Driveway

2023 TT AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑			↑↑
Traffic Volume (veh/h)	0	3	1179	3	0	541
Future Volume (Veh/h)	0	3	1179	3	0	541
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	1179	3	0	541
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1451	394			1182	
vC1, stage 1 conf vol	1180					
vC2, stage 2 conf vol	270					
vCu, unblocked vol	1273	154			988	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	249	816			657	
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	3	472	472	239	270	270
Volume Left	0	0	0	0	0	0
Volume Right	3	0	0	3	0	0
cSH	816	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.28	0.28	0.14	0.16	0.16
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	9.4	0.0			0.0	
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			34.1%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
6: Conroy Road & South Site Driveway

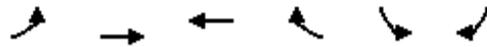
2023 TT AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1274	2	0	545
Future Volume (Veh/h)	0	0	1274	2	0	545
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	1274	2	0	545
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			92			247
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1548	426			1276	
vC1, stage 1 conf vol	1275					
vC2, stage 2 conf vol	272					
vCu, unblocked vol	1251	17			953	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	249	961			652	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	0	510	510	257	272	272
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	2	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.30	0.30	0.15	0.16	0.16
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			29.4%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
7: St. Laurent Boulevard & Site Driveway

2023 TT AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	366	136	5	2	3
Future Volume (Veh/h)	6	366	136	5	2	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	366	136	5	2	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		127				
pX, platoon unblocked					0.98	
vC, conflicting volume	141				516	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	141				500	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1442				519	910
<b>Direction, Lane #</b>						
	EB 1	WB 1	SB 1			
Volume Total	372	141	5			
Volume Left	6	0	2			
Volume Right	0	5	3			
cSH	1442	1700	699			
Volume to Capacity	0.00	0.08	0.01			
Queue Length 95th (m)	0.1	0.0	0.2			
Control Delay (s)	0.2	0.0	10.2			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.2			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			35.4%		ICU Level of Service	A
Analysis Period (min)			15			



2020 Walkley Road  
1: Conroy Road & Walkley Road

2023 TT PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Traffic Volume (vph)	1165	453	527	1060	489	325
Future Volume (vph)	1165	453	527	1060	489	325
Satd. Flow (prot)	3221	1483	3216	3349	3248	1469
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3221	1430	3216	3349	3248	1420
Satd. Flow (RTOR)		453				325
Lane Group Flow (vph)	1165	453	527	1060	489	325
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	51.0	51.0	28.0	79.0	31.0	31.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	48.7	48.7	21.2	76.1	21.5	21.5
Actuated g/C Ratio	0.44	0.44	0.19	0.69	0.20	0.20
v/c Ratio	0.82	0.51	0.85	0.46	0.77	0.60
Control Delay	33.6	4.3	42.5	17.3	50.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	4.3	42.5	17.3	50.4	9.2
LOS	C	A	D	B	D	A
Approach Delay	25.4			25.7	34.0	
Approach LOS	C			C	C	
Queue Length 50th (m)	109.2	0.0	54.5	81.8	47.0	0.0
Queue Length 95th (m)	#141.6	17.4	#76.7	119.7	61.8	21.8
Internal Link Dist (m)	308.5			177.0	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1424	885	646	2316	726	569
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.51	0.82	0.46	0.67	0.57

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 20 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 27.3

Intersection LOS: C

Intersection Capacity Utilization 82.3%

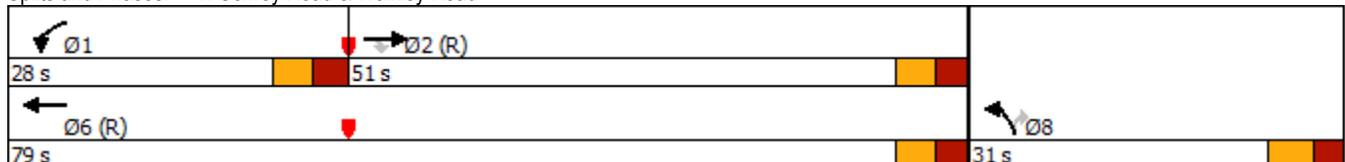
ICU Level of Service E

Analysis Period (min) 15

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

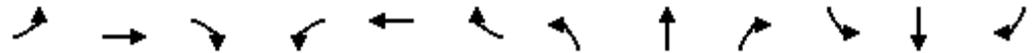
Queue shown is maximum after two cycles.

Splits and Phases: 1: Conroy Road & Walkley Road



2020 Walkley Road  
2: Conroy Road & St. Laurent Boulevard

2023 TT PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	81	334	245	36	108	42	607	86	39	1090	13
Future Volume (vph)	42	81	334	245	36	108	42	607	86	39	1090	13
Satd. Flow (prot)	1691	1780	1469	1642	1664	1483	1642	4612	0	1523	3303	0
Flt Permitted	0.734			0.553			0.163			0.362		
Satd. Flow (perm)	1305	1780	1447	953	1664	1463	282	4612	0	576	3303	0
Satd. Flow (RTOR)			116			74		28			1	
Lane Group Flow (vph)	42	81	334	245	36	108	42	693	0	39	1103	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			6			2	
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	15.0	59.0	59.0	36.0	36.0		36.0	36.0	
Total Lost Time (s)	6.9	6.9	6.9	5.7	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	20.8	20.8	20.8	37.0	35.8	35.8	46.0	46.0		46.0	46.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.39	0.38	0.38	0.48	0.48		0.48	0.48	
v/c Ratio	0.15	0.21	0.82	0.56	0.06	0.18	0.31	0.31		0.14	0.69	
Control Delay	27.4	28.6	38.2	24.8	16.0	6.8	27.2	16.0		19.0	23.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	27.4	28.6	38.2	24.8	16.0	6.8	27.2	16.0		19.0	23.9	
LOS	C	C	D	C	B	A	C	B		B	C	
Approach Delay		35.5			19.0			16.7			23.7	
Approach LOS		D			B			B			C	
Queue Length 50th (m)	5.8	11.3	35.9	29.2	3.8	3.6	4.1	23.7		3.5	72.5	
Queue Length 95th (m)	11.7	18.9	55.8	37.4	7.6	10.6	15.5	39.3		11.5	#127.7	
Internal Link Dist (m)		170.0			104.4			245.6			79.6	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	509	695	635	438	912	835	136	2247		278	1599	
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	0.08	0.12	0.53	0.56	0.04	0.13	0.31	0.31		0.14	0.69	

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 2 (2%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 23.1

Intersection LOS: C

Intersection Capacity Utilization 85.7%

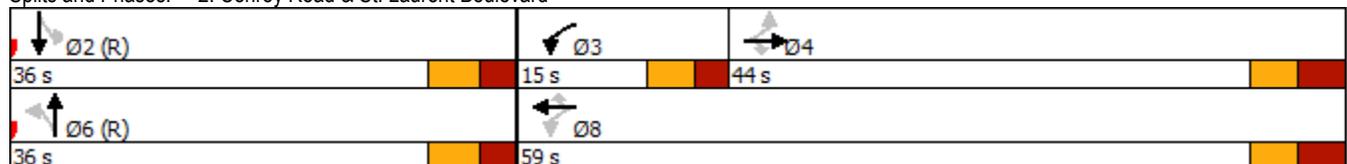
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Conroy Road & St. Laurent Boulevard



2020 Walkley Road  
3: Walkley Road & Harding Road

2023 TT PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	1313	2	0	1462	32	9	1	0	25	0	299
Future Volume (vph)	188	1313	2	0	1462	32	9	1	0	25	0	299
Satd. Flow (prot)	1674	3221	0	0	3303	0	0	1703	0	0	1494	0
Flt Permitted	0.086							0.481			0.974	
Satd. Flow (perm)	152	3221	0	0	3303	0	0	855	0	0	1460	0
Satd. Flow (RTOR)					3						224	
Lane Group Flow (vph)	188	1315	0	0	1494	0	0	10	0	0	324	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2						8			4		
Total Split (s)	16.0	77.0			61.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	6.0	5.9			5.9			5.7			5.7	
Act Effct Green (s)	82.7	82.8			64.1			15.6			15.6	
Actuated g/C Ratio	0.75	0.75			0.58			0.14			0.14	
v/c Ratio	0.65	0.54			0.78			0.08			0.81	
Control Delay	43.7	1.8			22.8			38.2			30.2	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	43.7	1.8			22.8			38.2			30.2	
LOS	D	A			C			D			C	
Approach Delay		7.0			22.8			38.2			30.3	
Approach LOS		A			C			D			C	
Queue Length 50th (m)	21.5	6.6			111.6			1.8			19.1	
Queue Length 95th (m)	m34.6	16.2			#172.8			5.8			44.7	
Internal Link Dist (m)		64.7			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	292	2423			1925			178			481	
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	0.64	0.54			0.78			0.06			0.67	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 90.4%

ICU Level of Service E

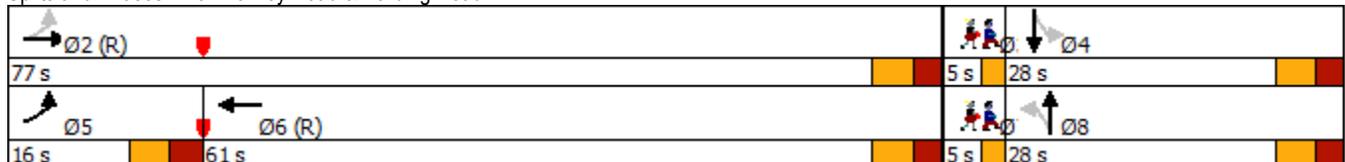
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

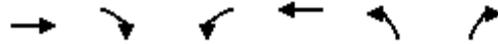
Splits and Phases: 3: Walkley Road & Harding Road



Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

2020 Walkley Road  
4: Site Driveway & Walkley Road

2023 TT PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑			↑↑↑↑		↗		
Traffic Volume (veh/h)	1497	4	0	1770	0	6		
Future Volume (Veh/h)	1497	4	0	1770	0	6		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	1497	4	0	1770	0	6		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None			None				
Median storage (veh)								
Upstream signal (m)	201			89				
pX, platoon unblocked					0.69	0.69		
vC, conflicting volume				1501	1942	750		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol				818	1459	0		
tC, single (s)				4.1	6.8	6.9		
tC, 2 stage (s)								
tF (s)				2.2	3.5	3.3		
p0 queue free %				100	100	99		
cM capacity (veh/h)				554	82	745		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1	
Volume Total	998	503	442	442	442	442	6	
Volume Left	0	0	0	0	0	0	0	
Volume Right	0	4	0	0	0	0	6	
cSH	1700	1700	1700	1700	1700	1700	745	
Volume to Capacity	0.59	0.30	0.26	0.26	0.26	0.26	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.9	
Lane LOS							A	
Approach Delay (s)	0.0						9.9	
Approach LOS							A	
Intersection Summary								
Average Delay				0.0				
Intersection Capacity Utilization				53.8%			ICU Level of Service	A
Analysis Period (min)	15							

2020 Walkley Road  
5: Conroy Road & North Site Driveway

2023 TT PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	8	806	1	0	980
Future Volume (Veh/h)	0	8	806	1	0	980
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	8	806	1	0	980
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			203			135
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1296	269			807	
vC1, stage 1 conf vol	806					
vC2, stage 2 conf vol	490					
vCu, unblocked vol	1134	54			619	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	323	953			911	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	8	322	322	162	490	490
Volume Left	0	0	0	0	0	0
Volume Right	8	0	0	1	0	0
cSH	953	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.19	0.19	0.10	0.29	0.29
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.8	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			31.9%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
6: Conroy Road & South Site Driveway

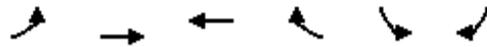
2023 TT PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	756	1	0	1147
Future Volume (Veh/h)	0	2	756	1	0	1147
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	756	1	0	1147
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			104			235
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	1330	252			757	
vC1, stage 1 conf vol	756					
vC2, stage 2 conf vol	574					
vCu, unblocked vol	1095	0			479	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	334	1009			1005	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	2	302	302	152	574	574
Volume Left	0	0	0	0	0	0
Volume Right	2	0	0	1	0	0
cSH	1009	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.18	0.18	0.09	0.34	0.34
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.6	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			36.8%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
7: St. Laurent Boulevard & Site Driveway

2023 TT PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	2	204	377	4	5	12
Future Volume (Veh/h)	2	204	377	4	5	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	204	377	4	5	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		128				
pX, platoon unblocked					0.98	
vC, conflicting volume	381				587	379
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381				571	379
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1177				473	668
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	206	381	17			
Volume Left	2	0	5			
Volume Right	0	4	12			
cSH	1177	1700	596			
Volume to Capacity	0.00	0.22	0.03			
Queue Length 95th (m)	0.0	0.0	0.6			
Control Delay (s)	0.1	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			31.2%		ICU Level of Service	A
Analysis Period (min)			15			



2020 Walkley Road  
1: Conroy Road & Walkley Road

2028 TT AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖↗	↑↑	↖↗	↗
Traffic Volume (vph)	885	297	268	1073	740	499
Future Volume (vph)	885	297	268	1073	740	499
Satd. Flow (prot)	3191	1455	3066	3161	3216	1455
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3191	1419	3066	3161	3216	1436
Satd. Flow (RTOR)		297				343
Lane Group Flow (vph)	885	297	268	1073	740	499
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	55.0	55.0	25.0	80.0	40.0	40.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	54.3	54.3	15.4	75.9	31.7	31.7
Actuated g/C Ratio	0.45	0.45	0.13	0.63	0.26	0.26
v/c Ratio	0.61	0.37	0.68	0.54	0.87	0.79
Control Delay	28.2	3.9	70.8	10.6	54.2	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	3.9	70.8	10.6	54.2	22.2
LOS	C	A	E	B	D	C
Approach Delay	22.1			22.7	41.3	
Approach LOS	C			C	D	
Queue Length 50th (m)	77.5	0.0	30.1	44.5	77.4	31.2
Queue Length 95th (m)	102.3	15.1	44.1	52.9	98.7	72.9
Internal Link Dist (m)	308.5			181.6	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1443	804	480	2000	900	649
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.37	0.56	0.54	0.82	0.77

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 43 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.6

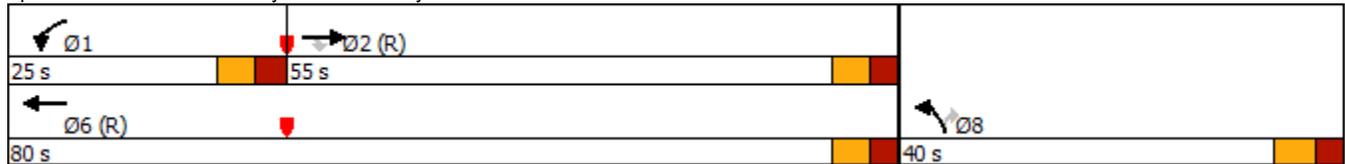
Intersection LOS: C

Intersection Capacity Utilization 71.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Conroy Road & Walkley Road



2020 Walkley Road  
2: Conroy Road & St. Laurent Boulevard

2028 TT AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	71	89	70	47	29	211	1298	220	96	416	57
Future Volume (vph)	6	71	89	70	47	29	211	1298	220	96	416	57
Satd. Flow (prot)	1537	1695	1441	1409	1575	1339	1642	4601	0	1674	3204	0
Flt Permitted	0.726			0.711			0.481			0.150		
Satd. Flow (perm)	1169	1695	1409	1045	1575	1316	819	4601	0	263	3204	0
Satd. Flow (RTOR)			89			36		47			21	
Lane Group Flow (vph)	6	71	89	70	47	29	211	1518	0	96	473	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6				2
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	56.0	56.0		56.0	56.0	
Total Lost Time (s)	6.9	6.9	6.9	6.9	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	13.0	13.0	13.0	13.0	13.0	13.0	78.4	78.4		78.4	78.4	
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.78	0.78		0.78	0.78	
v/c Ratio	0.04	0.32	0.34	0.52	0.23	0.14	0.33	0.42		0.47	0.19	
Control Delay	36.0	42.3	11.9	53.4	40.3	11.2	6.6	5.1		15.9	4.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	36.0	42.3	11.9	53.4	40.3	11.2	6.6	5.1		15.9	4.0	
LOS	D	D	B	D	D	B	A	A		B	A	
Approach Delay		25.8			40.8			5.3			6.0	
Approach LOS		C			D			A			A	
Queue Length 50th (m)	1.0	11.8	0.0	12.0	7.7	0.0	10.7	29.9		5.7	10.3	
Queue Length 95th (m)	4.1	22.3	11.7	23.4	16.4	5.8	25.9	47.9		25.5	19.2	
Internal Link Dist (m)		170.0			103.1			245.6			68.3	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	433	628	578	387	584	510	642	3619		206	2517	
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	0.01	0.11	0.15	0.18	0.08	0.06	0.33	0.42		0.47	0.19	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 23 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 8.7

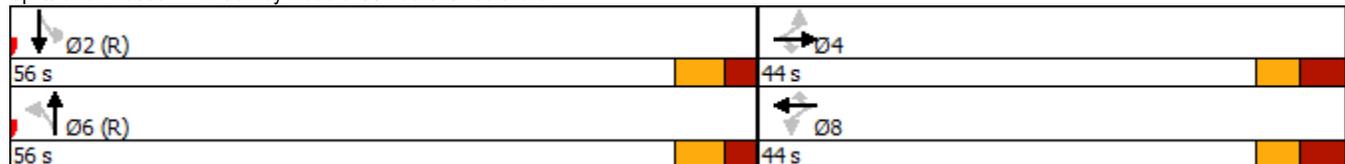
Intersection LOS: A

Intersection Capacity Utilization 72.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Conroy Road & St. Laurent Boulevard



# 2020 Walkley Road

## 3: Walkley Road & Harding Road

2028 TT AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1301	14	1	1237	46	1	0	1	17	0	199
Future Volume (vph)	34	1301	14	1	1237	46	1	0	1	17	0	199
Satd. Flow (prot)	1537	3243	0	0	3202	0	0	1079	0	0	1504	0
Flt Permitted	0.194				0.955			0.763			0.975	
Satd. Flow (perm)	314	3243	0	0	3058	0	0	843	0	0	1473	0
Satd. Flow (RTOR)		2			7			45			130	
Lane Group Flow (vph)	34	1315	0	0	1284	0	0	2	0	0	216	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	87.0	87.0		87.0	87.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	5.9	5.9			5.9			5.7			5.7	
Act Effct Green (s)	94.1	94.1			94.1			14.3			14.3	
Actuated g/C Ratio	0.78	0.78			0.78			0.12			0.12	
v/c Ratio	0.14	0.52			0.54			0.01			0.75	
Control Delay	3.8	3.9			6.3			0.0			36.4	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	3.8	3.9			6.3			0.0			36.4	
LOS	A	A			A			A			D	
Approach Delay		3.9			6.3						36.4	
Approach LOS		A			A						D	
Queue Length 50th (m)	1.0	30.9			41.6			0.0			18.1	
Queue Length 95th (m)	m2.1	43.9			76.4			0.0			39.7	
Internal Link Dist (m)		60.1			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	246	2544			2400			193			379	
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	0.14	0.52			0.54			0.01			0.57	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 24 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 7.4

Intersection LOS: A

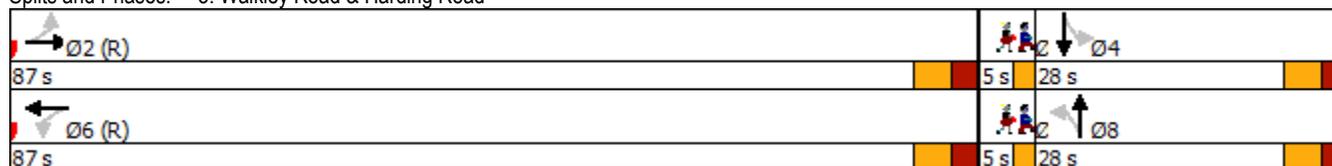
Intersection Capacity Utilization 62.9%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: Walkley Road & Harding Road



2020 Walkley Road  
 3: Walkley Road & Harding Road

2028 TT AM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

2020 Walkley Road  
4: Site Driveway & Walkley Road

2028 TT AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑			↑↑↑↑		↗	
Traffic Volume (veh/h)	1347	10	0	1437	0	2	
Future Volume (Veh/h)	1347	10	0	1437	0	2	
Sign Control	Free		Free		Stop		
Grade	0%		0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1347	10	0	1437	0	2	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)	206		84				
pX, platoon unblocked					0.80	0.80	
vC, conflicting volume			1357			1711	678
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			951			1393	105
tC, single (s)			4.1			6.8	6.9
tC, 2 stage (s)							
tF (s)			2.2			3.5	3.3
p0 queue free %			100			100	100
cM capacity (veh/h)			576			106	745
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	898	459	359	359	359	359	2
Volume Left	0	0	0	0	0	0	0
Volume Right	0	10	0	0	0	0	2
cSH	1700	1700	1700	1700	1700	1700	745
Volume to Capacity	0.53	0.27	0.21	0.21	0.21	0.21	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.8
Lane LOS							A
Approach Delay (s)	0.0		0.0				9.8
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			49.6%		ICU Level of Service		A
Analysis Period (min)			15				

2020 Walkley Road  
5: Conroy Road & North Site Driveway

2028 TT AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↕↕			↕↕
Traffic Volume (veh/h)	0	3	1236	3	0	565
Future Volume (Veh/h)	0	3	1236	3	0	565
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	1236	3	0	565
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			204			135
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	1520	414			1239	
vC1, stage 1 conf vol	1238					
vC2, stage 2 conf vol	282					
vCu, unblocked vol	1313	129			1012	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	239	838			636	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	3	494	494	250	282	282
Volume Left	0	0	0	0	0	0
Volume Right	3	0	0	3	0	0
cSH	838	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.29	0.29	0.15	0.17	0.17
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	9.3	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			35.3%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
6: Conroy Road & South Site Driveway

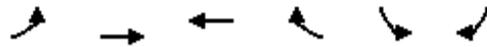
2028 TT AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑			↑↑
Traffic Volume (veh/h)	0	0	1336	2	0	569
Future Volume (Veh/h)	0	0	1336	2	0	569
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	1336	2	0	569
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			92			247
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1622	446			1338	
vC1, stage 1 conf vol	1337					
vC2, stage 2 conf vol	284					
vCu, unblocked vol	1301	0			986	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	237	976			627	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	0	534	534	269	284	284
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	2	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.31	0.31	0.16	0.17	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			30.6%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
7: St. Laurent Boulevard & Site Driveway

2028 TT AM Peak Hour

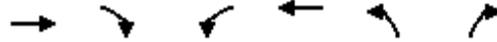


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	6	381	143	12	2	3
Future Volume (Veh/h)	6	381	143	12	2	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	381	143	12	2	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		127				
pX, platoon unblocked					0.98	
vC, conflicting volume	155				542	149
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	155				525	149
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1425				502	898
<b>Direction, Lane #</b>						
	EB 1	WB 1	SB 1			
Volume Total	387	155	5			
Volume Left	6	0	2			
Volume Right	0	12	3			
cSH	1425	1700	682			
Volume to Capacity	0.00	0.09	0.01			
Queue Length 95th (m)	0.1	0.0	0.2			
Control Delay (s)	0.2	0.0	10.3			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.3			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			36.2%		ICU Level of Service	A
Analysis Period (min)			15			



2020 Walkley Road  
1: Conroy Road & Walkley Road

2028 TT PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Traffic Volume (vph)	1222	475	553	1109	512	340
Future Volume (vph)	1222	475	553	1109	512	340
Satd. Flow (prot)	3221	1483	3216	3349	3248	1469
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3221	1430	3216	3349	3248	1420
Satd. Flow (RTOR)		475				340
Lane Group Flow (vph)	1222	475	553	1109	512	340
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Total Split (s)	51.0	51.0	28.0	79.0	31.0	31.0
Total Lost Time (s)	6.0	6.0	6.2	6.0	6.4	6.4
Act Effct Green (s)	47.9	47.9	21.6	75.7	21.9	21.9
Actuated g/C Ratio	0.44	0.44	0.20	0.69	0.20	0.20
v/c Ratio	0.87	0.53	0.88	0.48	0.79	0.61
Control Delay	37.4	4.4	42.4	18.8	51.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	4.4	42.4	18.8	51.3	9.1
LOS	D	A	D	B	D	A
Approach Delay	28.2			26.7	34.4	
Approach LOS	C			C	C	
Queue Length 50th (m)	119.0	0.0	57.9	92.5	49.2	0.0
Queue Length 95th (m)	#160.0	17.9	m#76.9	125.2	65.0	22.4
Internal Link Dist (m)	308.5			177.0	111.4	
Turn Bay Length (m)		75.0				
Base Capacity (vph)	1401	890	648	2304	726	581
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.53	0.85	0.48	0.71	0.59

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 20 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 28.9

Intersection LOS: C

Intersection Capacity Utilization 85.1%

ICU Level of Service E

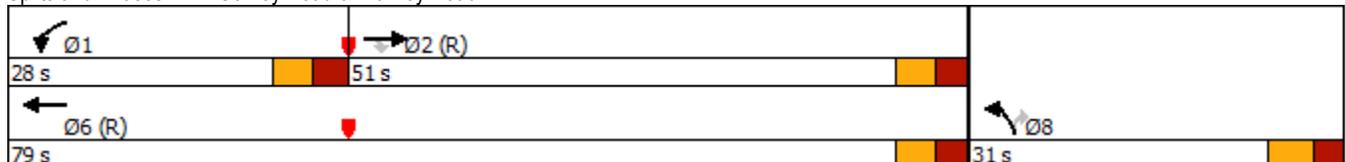
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Conroy Road & Walkley Road



2020 Walkley Road  
2: Conroy Road & St. Laurent Boulevard

2028 TT PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	84	350	256	37	114	44	635	90	41	1143	14
Future Volume (vph)	43	84	350	256	37	114	44	635	90	41	1143	14
Satd. Flow (prot)	1691	1780	1469	1642	1664	1483	1642	4612	0	1523	3303	0
Flt Permitted	0.733			0.559			0.138			0.345		
Satd. Flow (perm)	1303	1780	1447	964	1664	1463	238	4612	0	549	3303	0
Satd. Flow (RTOR)			111			65		28			1	
Lane Group Flow (vph)	43	84	350	256	37	114	44	725	0	41	1157	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			6			2	
Permitted Phases	4		4	8		8	6			2		
Total Split (s)	44.0	44.0	44.0	15.0	59.0	59.0	36.0	36.0		36.0	36.0	
Total Lost Time (s)	6.9	6.9	6.9	5.7	6.9	6.9	6.3	6.3		6.3	6.3	
Act Effct Green (s)	22.2	22.2	22.2	38.4	37.2	37.2	44.6	44.6		44.6	44.6	
Actuated g/C Ratio	0.23	0.23	0.23	0.40	0.39	0.39	0.47	0.47		0.47	0.47	
v/c Ratio	0.14	0.20	0.83	0.56	0.06	0.19	0.40	0.33		0.16	0.75	
Control Delay	26.2	27.5	38.8	23.8	15.1	8.1	35.3	17.2		20.5	26.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.2	27.5	38.8	23.8	15.1	8.1	35.3	17.2		20.5	26.6	
LOS	C	C	D	C	B	A	D	B		C	C	
Approach Delay		35.6			18.6			18.2			26.4	
Approach LOS		D			B			B			C	
Queue Length 50th (m)	5.8	11.5	39.3	29.8	3.8	5.1	4.7	26.0		3.8	80.8	
Queue Length 95th (m)	11.5	18.9	59.1	37.5	7.5	11.8	#20.5	42.4		12.4	#143.5	
Internal Link Dist (m)		170.0			104.4			245.6			79.6	
Turn Bay Length (m)	30.0		35.0	35.0		35.0	70.0			75.0		
Base Capacity (vph)	508	695	632	456	912	831	111	2178		257	1549	
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	0.08	0.12	0.55	0.56	0.04	0.14	0.40	0.33		0.16	0.75	

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 2 (2%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 88.8%

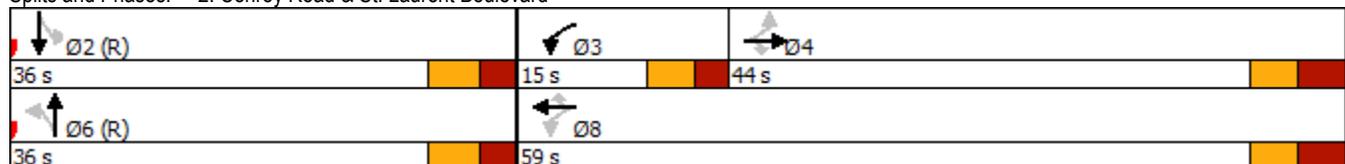
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Conroy Road & St. Laurent Boulevard



2020 Walkley Road  
3: Walkley Road & Harding Road

2028 TT PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	1378	2	0	1530	33	10	1	0	26	0	314
Future Volume (vph)	197	1378	2	0	1530	33	10	1	0	26	0	314
Satd. Flow (prot)	1674	3221	0	0	3303	0	0	1703	0	0	1494	0
Flt Permitted	0.067							0.480			0.975	
Satd. Flow (perm)	118	3221	0	0	3303	0	0	853	0	0	1462	0
Satd. Flow (RTOR)					3						221	
Lane Group Flow (vph)	197	1380	0	0	1563	0	0	11	0	0	340	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2						8			4		
Total Split (s)	16.0	77.0			61.0		28.0	28.0		28.0	28.0	
Total Lost Time (s)	6.0	5.9			5.9			5.7			5.7	
Act Effct Green (s)	81.4	81.5			62.4			16.9			16.9	
Actuated g/C Ratio	0.74	0.74			0.57			0.15			0.15	
v/c Ratio	0.72	0.58			0.83			0.08			0.83	
Control Delay	52.4	2.2			26.3			36.7			32.1	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	52.4	2.2			26.3			36.7			32.1	
LOS	D	A			C			D			C	
Approach Delay		8.4			26.3			36.7			32.1	
Approach LOS		A			C			D			C	
Queue Length 50th (m)	26.3	7.6			130.4			1.9			23.2	
Queue Length 95th (m)	m#43.0	17.5			#198.5			5.9			49.0	
Internal Link Dist (m)		64.7			213.8			35.2			112.2	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	272	2385			1875			180			483	
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	0.72	0.58			0.83			0.06			0.70	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 41 (37%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 93.8%

ICU Level of Service F

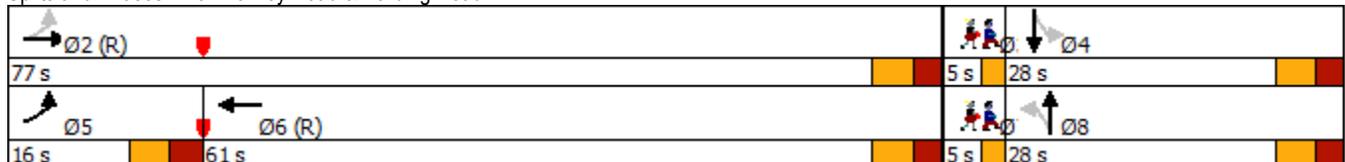
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Walkley Road & Harding Road



2020 Walkley Road  
 3: Walkley Road & Harding Road

2028 TT PM Peak Hour

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Total Split (s)	5.0	5.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

2020 Walkley Road  
4: Site Driveway & Walkley Road

2028 TT PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑			↑↑↑↑		↗	
Traffic Volume (veh/h)	1571	4	0	1854	0	6	
Future Volume (Veh/h)	1571	4	0	1854	0	6	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1571	4	0	1854	0	6	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	201			89			
pX, platoon unblocked					0.66	0.66	
vC, conflicting volume				1575	2036	788	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol				828	1531	0	
tC, single (s)				4.1	6.8	6.9	
tC, 2 stage (s)							
tF (s)				2.2	3.5	3.3	
p0 queue free %				100	100	99	
cM capacity (veh/h)				524	71	711	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	1047	528	464	464	464	464	6
Volume Left	0	0	0	0	0	0	0
Volume Right	0	4	0	0	0	0	6
cSH	1700	1700	1700	1700	1700	1700	711
Volume to Capacity	0.62	0.31	0.27	0.27	0.27	0.27	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.1
Lane LOS							B
Approach Delay (s)	0.0		0.0				10.1
Approach LOS							B
Intersection Summary							
Average Delay				0.0			
Intersection Capacity Utilization				56.0%	ICU Level of Service	B	
Analysis Period (min)				15			

2020 Walkley Road  
5: Conroy Road & North Site Driveway

2028 TT PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	8	844	1	0	1028
Future Volume (Veh/h)	0	8	844	1	0	1028
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	8	844	1	0	1028
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			203			135
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1358	282			845	
vC1, stage 1 conf vol	844					
vC2, stage 2 conf vol	514					
vCu, unblocked vol	1168	26			624	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	313	984			899	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	8	338	338	170	514	514
Volume Left	0	0	0	0	0	0
Volume Right	8	0	0	1	0	0
cSH	984	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.20	0.20	0.10	0.30	0.30
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.7	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.3%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
6: Conroy Road & South Site Driveway

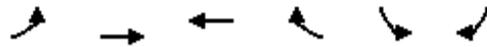
2028 TT PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	791	1	0	1203
Future Volume (Veh/h)	0	2	791	1	0	1203
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	791	1	0	1203
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			Raised			Raised
Median storage (veh)			1			1
Upstream signal (m)			104			235
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	1393	264			792	
vC1, stage 1 conf vol	792					
vC2, stage 2 conf vol	602					
vCu, unblocked vol	1134	0			482	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	322	1001			994	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>
Volume Total	2	316	316	159	602	602
Volume Left	0	0	0	0	0	0
Volume Right	2	0	0	1	0	0
cSH	1001	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.19	0.19	0.09	0.35	0.35
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	8.6	0.0			0.0	
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			38.4%		ICU Level of Service	A
Analysis Period (min)			15			

2020 Walkley Road  
7: St. Laurent Boulevard & Site Driveway

2028 TT PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	2	213	395	4	5	12
Future Volume (Veh/h)	2	213	395	4	5	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	213	395	4	5	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		128				
pX, platoon unblocked					0.98	
vC, conflicting volume	399				614	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	399				598	397
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1160				456	652
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	215	399	17			
Volume Left	2	0	5			
Volume Right	0	4	12			
cSH	1160	1700	579			
Volume to Capacity	0.00	0.23	0.03			
Queue Length 95th (m)	0.0	0.0	0.6			
Control Delay (s)	0.1	0.0	11.4			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			32.2%		ICU Level of Service	A
Analysis Period (min)			15			