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39 Years

405 Huntmar Drive

Transportation Impact Assesment

Proposed Warehouse Development
405 Huntmar Drive

Transportation Impact Assessment

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

December 2022

Novatech File: 122151
Ref: R-2022-178

NOVATECH
Engineers, Planners & Landscape Architects

December 16, 2022

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

Attention: **Mr. Patrick McMahon**
Project Manager, Transportation Review

Dear Mr. McMahon:

Reference: **405 Huntmar Drive**
Transportation Impact Assessment
Novatech File No. 122151

We are pleased to submit the following Transportation Impact Assessment, in support of a Site Plan Control application at 405 Huntmar Drive, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

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

Yours truly,

NOVATECH

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

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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[1] or registered[2] 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 (City) this 16 day of December, 2022 .

Name: Brad Byvelds
(Please Print)

Professional Title: P. Eng. - Project Manager

B. Byvelds

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

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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared in support of a Site Plan Control application for the property located at 405 Huntmar Drive, in the Kanata West Business Park. The subject site is currently vacant and is located north of Campeau Drive between Huntmar Drive and Journeyman Street. The subject site is surrounded by the following:

- Agricultural land to the north,
- Campeau Drive followed by commercial land uses to the south,
- Huntmar Drive followed by residential land uses to the east, and
- Journeyman Street followed by commercial land uses to the west.

The City of Ottawa's Official Plan locates the subject site within the Suburban West Transect and has a 'Mixed Industrial' designation on Schedule B5.

The proposed development will consist of two warehouse buildings that total 44,493m^2 of Gross Floor Area (GFA) and will be built in one phase. A total of 307 parking spaces will be provided as well as 56 loading docks. Access to the eastern parking lot will be provided via two proposed accesses to Huntmar Drive, the northern access will be a full movement access through a median cut out and the southern access will be a right-in right-out access. Access to the western parking lot will be provided via a proposed full movement access to Journeyman Street, and access to the loading docks will be provided via a proposed full movement access at the Journeyman Street/Upper Canada Street intersection. For the purposes of this report, the development is assumed to be built out by 2024.

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

Forecasting

- The proposed development is anticipated to generate an additional 104 person trips during the AM peak hour (including 89 vehicle trips), and an additional 108 person trips during the PM peak hour (including 92 vehicle trips).

- Of the 89 and 92 vehicle trips during the AM and PM peak hours, 10 and 14 are anticipated to be trucks.

Development Design

- Construction of the previously approved sidewalks and cycle tracks along Campeau Drive between Journeyman Street and Huntmar Drive will be completed by others.

- On-site pedestrian pathways will be provided connecting the main building entrances to the existing sidewalk along Journeyman Street and the future sidewalk along Campeau Drive.

- A total of 44 bicycle parking spaces will be provided near the main entrances to the warehouses.

- OC Transpo stops #1381, #1382, #1384, and #1386 are within 400m walking distance of all entrances to the proposed development.

- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

Parking

- The proposed development includes 307 vehicle parking spaces, meeting the minimum number of required parking spaces as outlined in the City's *Zoning By-Law* (ZBL).

- The proposed development includes 44 bicycle parking spaces, meeting the minimum number of required spaces as outlined in the City's ZBL.

- The proposed development includes eight Type A accessible parking spaces for each parking lot exceeding the minimums set by the City.

Boundary Streets

- Campeau Drive meets the target pedestrian level of service (PLOS) C, the target bicycle level of service (BLOS) C, and the target truck level of service (TkLOS) D.

- Journeyman Street meets the target PLOS C and the TkLOS E. No target BLOS or TLOS is identified in the MMLOS guidelines for this location.

- Huntmar Drive meets the target TkLOS D. Huntmar Drive does not meet the target PLOS C and BLOS C.

- The target PLOS C for Huntmar Drive can be achieved by implementing sidewalks with a minimum width of 2.0m and a minimum boulevard width of 2.0m. This is identified for the City's consideration.

- The target BLOS C for Huntmar Drive can be achieved by implementing a bike lane with a minimum width of 1.2m. This is identified for the City's consideration.

Access Design

- A width of 10.5m, measured at the property line, is proposed for the access to the truck loading area. As this width is required to accommodate the northbound right turn movement of tractor trailer trucks into the loading area, a waiver to the Section 25(c) of the Private Approach By-law is requested.

- The proposed accesses adhere to all other provisions of the City's Private Approach By-law.

- The proposed accesses meet the intersection sight distance (ISD) and stopping sight distance (SSD) requirements set by the Transportation Association of Canada (TAC).

- The proposed accesses meet the clear throat requirements set by the TAC.

- Based on 2029 total volumes a northbound left turn lane with a storage length of 15m is required at the northern Huntmar Drive access.

- The proposed accesses to Huntmar Drive and Journeyman Street are anticipated to operate with acceptable delays under side street stop control for the build-out year 2024 and horizon year 2029.

Transportation Demand Management (TDM)

- A review of the City's TDM Measures Checklist has been conducted by the proponent, who is committed to providing the following TDM measures within this development:

    - Provide relevant transit schedules and route maps at main building entrances; and
    - Provide a multimodal travel option information package to new employees.

Neighbourhood Traffic Management

- The proposed development relies on the local roadway Journeyman Street for direct vehicular access. No neighbourhood traffic management measures are required, as Journeyman Street is a roadway that only provides access to future industrial uses.

Transit

- The proposed development is anticipated to generate an additional 10 transit trips during the AM peak hour and an additional 11 transit trips during the PM peak hour. The additional transit trips generated by the proposed development are anticipated to have a marginal impact on the current transit operations surrounding the site.

Intersection MMLOS

- All approaches to the Campeau Drive/Journeyman Street intersection do not meet the target PLOS C, and have cross-sections equivalent to five to nine lanes crossed. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes.

- The mixed traffic lanes on the north and south approaches to the Campeau Drive/Journeyman Street intersection achieve a BLOS F and D, respectively. As these legs do not form part of the City's cycling network, there is no target BLOS and therefore no modifications are recommended.

- Consideration should be given by the City to providing a designated queuing space on the north and south approaches to facilitate two-stage eastbound and westbound left turn movements for cyclists.

Background Traffic Analysis

- Under 2024 background traffic conditions, all movements at traffic signal and roundabout controlled intersections are anticipated to operate with a LOS A during AM and PM peak hour conditions.

- The Huntmar Drive/Paine Avenue intersection operates with a LOS C in the AM and PM peak hours.

Total Traffic Analysis

- Site generated traffic is anticipated to have marginal impacts on traffic operations within the study area.

1.0 SCREENING

1.1 Introduction

This Transportation Impact Assessment (TIA) has been prepared in support of a Site Plan Control application for the property located at 405 Huntmar Drive, in the Kanata West Business Park. The subject site is currently vacant and is located north of Campeau Drive between Huntmar Drive and Journeyman Street. The subject site is surrounded by the following:

- Agricultural land to the north,
- Campeau Drive followed by commercial land uses to the south,
- Huntmar Drive followed by residential land uses to the east, and
- Journeyman Street followed by commercial land uses to the west.

An aerial photo of the subject site is provided in **Figure 1** below.

Figure 1: Site Location

1.2 Proposed Development

The City of Ottawa's Official Plan locates the subject site within the Suburban West Transect and has a 'Mixed Industrial' designation on Schedule B5.

The proposed development will consist of two warehouse buildings that total 44,493m^2 of Gross Floor Area (GFA) and will be built in one phase. A total of 307 parking spaces will be provided as well as 56 loading docks. Access to the eastern parking lot will be provided via two proposed accesses to Huntmar Drive, the northern access will be a full movement access through a median cut out and the southern access will be a right-in right-out access. Access to the western parking lot will be provided via a proposed full movement access to Journeyman Street, and access to the loading docks will be provided via a proposed full movement access at the Journeyman Street/Upper Canada Street intersection. For the purposes of this report, the development is assumed to be built out by 2024.

The proposed site plan is included in **Appendix A**.

1.3 Screening Form

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

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

- Location Triggers – The development is located next to a spine cycling route; further assessment **is required** based on this trigger.

- Safety Triggers – The development proposes accesses that are located near adjacent traffic signals and roundabouts; further assessment **is required** based on this trigger.

2.0 SCOPING

2.1 Existing Conditions

2.1.1 Roadways

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

Huntmar Drive is an arterial roadway that runs in a north-south direction between March Road and Hazeldean Road. Within the study area, it transitions from a two-lane undivided rural cross-section with a posted speed limit of 70km/h in the north to a four-lane divided urban cross-section with a posted speed limit of 50km/h as it intersects with Campeau Drive at a roundabout. It has a sidewalk and cycle track on the east side of the road which terminate north of Campeau Drive.

Campeau Drive is an arterial roadway that runs in an east-west direction between Upper Canada Street and March Road/Eagleson Road. Within the study area, it has a four-lane divided urban cross-section with a posted speed limit of 60 km/h, a sidewalk and cycle track is provided on the south side of the road.

Journeyman Street is a local roadway that runs in a north-south direction between Upper Canada Street and Campeau Drive. Within the study area, Journeyman Street has a two-lane undivided urban cross-section, concrete sidewalks on the east and west sides, and an unposted regulatory speed limit of 50km/hr.

Palladium Drive is an arterial roadway that runs in a north-south direction between Upper Canada Street and Terry Fox Drive. Palladium Drive has an undivided two-lane urban cross-section north of the Palladium Drive/Campeau Drive roundabout and a divided four-lane urban cross-section south of the Palladium Drive/Campeau Drive roundabout. Within the study area, Palladium Drive has sidewalks and cycle tracks on both sides of the road and a posted speed limit of 60km/h.

Upper Canada Street is a local roadway that runs in an east-west direction between Journeyman Street and Campeau Drive. Upper Canada Street has an undivided two-lane urban cross-section, concrete sidewalks on the south side, and an unposted regulatory speed limit of 50km/hr.

Paine Avenue is a local road that runs in an east-west direction between Huntmar Drive and Winterset Road. Paine Avenue has a two-lane undivided urban cross-section, concrete sidewalks on the north and south sides, and an unposted regulatory speed limit of 50km/hr.

Country Glen Way is a local road that runs in a north-south direction between south of Campeau Drive and Calvington Avenue. Country Glen Way has a two-lane undivided urban cross-section, concrete sidewalks on the east and west sides, and a posted speed limit of 40km/hr.

2.1.2 Intersections

Huntmar Drive/Campeau Drive

- Four-legged roundabout intersection
- Northbound Approach (Huntmar Drive): one left turn lane, one shared through/left turn lane, and one right turn lane
- Southbound Approach (Huntmar Drive): one left turn lane, one through lane, and one right turn lane
- Westbound Approach (Campeau Drive): one shared through/left turn lane, one through lane, and one right turn lane
- Eastbound Approach (Campeau Drive): one shared through/left turn lane, one through lane, and one right turn by-pass lane
- Pedestrian crossover (PXO) Type B provided on all approaches

Campeau Drive/Journeyman Street

- Signalized four-legged intersection
- Northbound Approach (Tanger Outlets Access): one left turn lane, one through lane, and one right turn lane
- Southbound Approach (Journeyman Street): one left turn lane, one through lane, and one right turn lane
- Eastbound/Westbound Approach (Campeau Drive): one left turn lane, one through lane, and one through/right turn lane
- Standard crosswalks are provided on the southbound and westbound approaches. Painted zebra crosswalks are provided on northbound and eastbound approaches

Campeau Drive/Palladium Drive

- Four-legged roundabout intersection
- Northbound Approach (Palladium Drive): one shared through/left turn lane and one right turn by-pass lane
- Southbound Approach (Palladium Drive): one shared through/right turn lane and one shared through/left turn lane
- Westbound Approach (Campeau Drive): one left turn lane and one shared all-movement lane
- Eastbound Approach (Campeau Drive): one shared all-movement lane and one right turn by-pass lane
- PXO Type C provided on all approaches

Huntmar Drive/Paine Avenue

- Three-legged side street stop control intersection with free flow conditions along Huntmar Drive
- Northbound Approach (Huntmar Drive): one shared through lane and one right turn lane
- Southbound Approach (Huntmar Drive): one shared through/left turn lane
- Westbound Approach (Paine Avenue): one shared all-movement lane
- Standard crosswalk provided on the westbound approach

Campeau Drive/Country Glen Way

- Four-legged roundabout intersection
- Northbound Approach (Country Glen Way): one left turn lane and one shared through/right turn lane
- Southbound Approach (Country Glen Way): one shared all-movement lane
- Eastbound and Westbound Approaches (Campeau Drive): one shared through/left turn lane and one shared through/right turn lane
- PXO Type B provided on all approaches

2.1.3 Driveways

A review of adjacent driveways along the boundary roads are provided as follows:

Journeyman Street, West Side:
- Two driveways to an institution at 8560 Campeau Drive

Upper Canada Street, North Side:
- Two driveways to a warehouse at 1300 Upper Canada

Huntmar Drive, West Side:
- Two shared driveways to residences for 453 and 467 Huntmar Drive

2.1.4 Pedestrian and Cycling Facilities

Sidewalks within the study area are summarized as follows:

- Both sides of Palladium Drive, Campeau Drive between Palladium Drive and Journeyman Street, and Huntmar Drive south of Campeau Drive;
- The south side of Campeau Drive between Journeyman Street and Huntmar Drive;
- The east side of Huntmar Drive; and
- The east and west sides of Journeyman Street

In the City of Ottawa's primary cycling network, Huntmar Drive south of Campeau Drive and Campeau Drive east of Huntmar Drive are classified as Spine Routes. Huntmar Drive north of Campeau Drive is designated as a Local Route. Cycle Tracks are provided on both sides of Palladium Drive, Campeau Drive, and Huntmar Drive except the subject site frontage on Huntmar Drive and Campeau Drive.

2.1.5 Transit

The closest OC Transpo bus stops in the vicinity of the subject site are described in **Table 1** and are shown in **Figure 2**. A summary of various routes which serve the study area is included in **Table 2**. Detailed route information and an excerpt from the OC Transpo System Map are included in **Appendix C**.

Table 1: OC Transpo Transit Stops

Stop	Location	Routes Serviced
#1381	Northwest corner of Campeau Drive/Journeyman Street	62, 162
#1382	Southeast corner of Campeau Drive/Journeyman Street	62, 162
#1384	South Side of Campeau Drive, west of Huntmar Drive	62, 162
#1386	East side of Huntmar Drive, south of Campeau Drive	62, 162

Table 2: OC Transpo Route Information

Route	From ↔ To	Frequency
62	Tunney's Pasture ↔ Stittsville & Terry Fox	30-minute headways, 7-days per week
162	Stittsville ↔ Terry Fox	60-minute headways, afternoon and evening service, no service on Sundays

Figure 2: OC Transpo Bus Stop Locations

2.1.6 Area Traffic Management

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

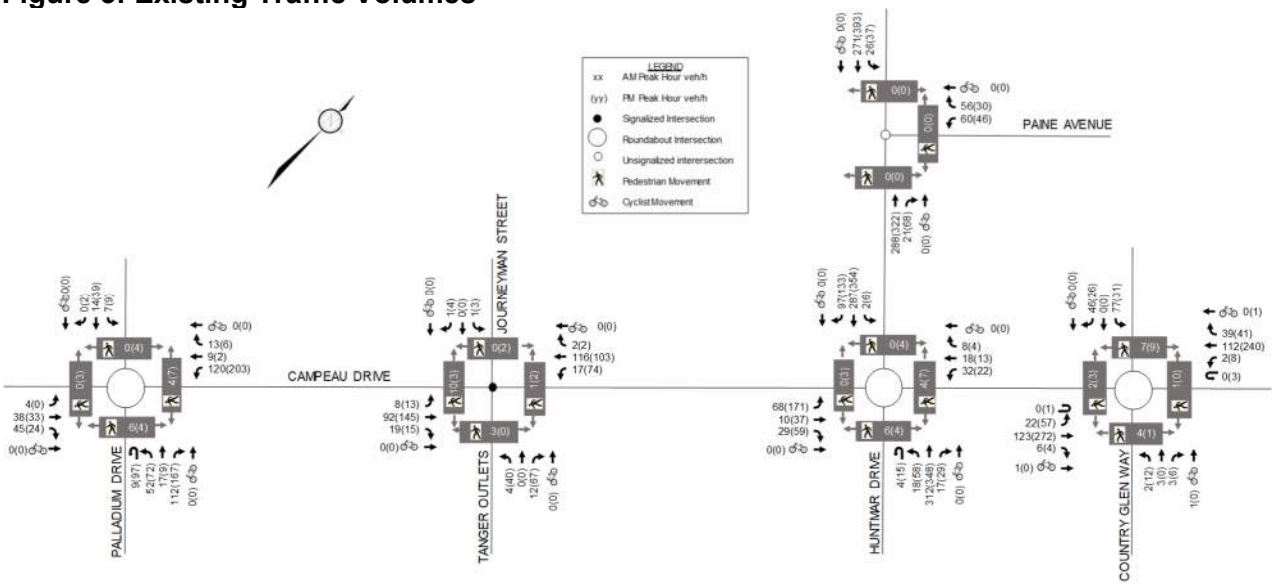
2.1.7 Existing Traffic Volumes

Weekday traffic counts were used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. These counts were completed on the dates listed below:

- Campeau Drive/Country Glen Way — November 17, 2022
- Campeau Drive/Palladium Drive — November 18, 2019
- Campeau Drive/Huntmar Drive — May 28, 2019
- Campeau Drive/Journeyman Street — May 23, 2019
- Huntmar Drive/Paine Avenue — November 17, 2022

Observed weekday AM and PM peak hour traffic volumes at the study area intersections are shown in **Figure 3**. Peak hour summary sheets of the above traffic counts are included in **Appendix D**.

Figure 3: Existing Traffic Volumes



2.1.8 Collision Records

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

The collision data have been evaluated to identify collision patterns, which are defined in the 2017 TIA Guidelines as more than six collisions in five years for any one movement. **Table 3** summarizes the number of collisions at each intersection from January 1, 2016 to December 31, 2020. During the five-year period there were no reported fatal collisions in the analyzed area.

Table 3: Reported Collisions

Intersection/ Street Segment	Impact Types						Total
	Approaching	Angle	Rear End	Sideswipe	Turning Movement	SMV[1]/ Other	
Campeau Drive/Country Glen Way	-	-	-	-	-	1	**1**
Campeau Drive/Huntmar Drive	-	5	1	8	-	2	**16**
Campeau Drive/Journeyman Street	-	1	-	-	2	-	**3**
Campeau Drive/Palladium Drive	-	1	1	-	-	-	**2**
Huntmar Drive/Paine Avenue	-	-	1	1	1	1	**4**

1. SMV = Single Motor Vehicle

Campeau Drive/Country Glen Way

One single motor vehicle collision was reported at this intersection over the last five years. The collision occurred during clear nighttime conditions and did not involve a pedestrian or cyclist. No injuries or fatalities resulted from the collision.

As there are less than six collisions of any specific impact type, there are no identifiable collision patterns at the intersection of Campeau Drive and Country Glen Way.

Campeau Drive/Huntmar Drive
A total of 16 collisions were reported at this intersection over the last five years, of which there were five angle impacts, one rear end impact, eight sideswipe impact, and two single-vehicle/other impacts. One of the collisions involved an injury and none involved a fatality. None of the collisions involved cyclists or pedestrians.

Of the 16 collisions at this location, one of them occurred during rain conditions, for all other collisions weather was not a factor. Additionally, of the 16 collisions, 14 of them occurred during daylight hours.

Of the eight sideswipe collisions, five involved northbound vehicles, two involved westbound vehicles, and one involved eastbound vehicles.

Campeau Drive/Journeyman Street
A total of three collisions were reported at this intersection over the last five years, of which there were one angle collision and two turning movement collisions. One of the collisions at this location caused injuries, but none caused fatalities. None of the collisions involved cyclists or pedestrians.

As there are less than six collisions of any specific impact type, there are no identifiable collision patterns at the intersection of Campeau Drive and Journeyman Street.

Campeau Drive/Palladium Drive
A total of two collisions were reported at this location over the last five years, of which there were one angle impact and one rear end impact. None of the collisions at this location caused injuries or fatalities. None of the collisions involved cyclists or pedestrians.

As there are less than six collisions of any specific impact type, there are no identifiable collision patterns at the intersection of Campeau Drive and Palladium Drive.

Huntmar Drive/Paine Avenue
A total of four collisions were reported at this location over the last five years, of which there were one rear end impact, one sideswipe collision, one turning movement collisions, and one single motor vehicle collision. Two of the collisions at this location caused injuries, but none caused fatalities. None of the collisions involved cyclists or pedestrians.

As there are less than six collisions of any specific impact type, there are no identifiable collision patterns at the intersection of Huntmar Drive and Paine Avenue.

2.2 Planned Conditions

2.2.1 Planned Transit and Roadway Projects

The City of Ottawa's 2013 Transportation Master Plan (TMP) identifies the following projects within the Kanata area:

- Robert Grant Avenue (former Stittsville North-South Arterial) - Phase 2 (2020-2025) project in the 2031 Affordable Road Network
- Huntmar Drive - Phase 3 (2026-2031) project in the 2031 Affordable Road Network
- West Transitway Extension - Network Concept

Robert Grant Avenue will be a new two-lane arterial roadway traveling between Palladium Drive and Fernbank Road. Phase 1 has been constructed between Fernbank Road and Abbott Street. The design of Phase 2 between Abbott Street and Hazeldean Road is being completed and is anticipated to be completed in 2024. The timing for the extension of Robert Grant Avenue from Hazeldean Road to Palladium Drive is subject to the City's ongoing update to the TMP.

Huntmar Drive will be widened from two to four lanes between Campeau Drive and Cyclone Taylor Boulevard and from Palladium Drive to Maple Grove Road. The Environmental Assessment for this project has been initiated. Based on the 2013 City TMP, this project is scheduled for implementation between 2026 and 2031. However, the project timing will be updated as part of the City's ongoing update to the TMP.

The West Transitway Extension identified in the City's TMP will provide exclusive Bus Rapid Transit (BRT) between Fernbank Road and Eagleson Station. In January 2019, Parsons prepared the Kanata Light Rail Transit (LRT) Planning and Environmental Assessment Study for the City of Ottawa. This report recommends LRT be implemented alternative to BRT between the Eagleson Station and Hazeldean Road. The Kanata LRT EA identifies new stations south of Campeau Drive east of Huntmar Drive (Campeau Station) and Huntmar Drive at Cyclone Taylor Boulevard (Palladium Station). This project is not in the TMP's 2031 affordable Rapid Transit and Transit Priority Network. Updated timing for implementation will be reviewed as part of the City's ongoing update to the TMP.

The City's 2013 Ottawa Cycling Plan (OCP) does not identify any planned cycling projects in the area.

The subject site is located within the Kanata West Business Park Subdivision. The original Draft Plan of subdivision contemplated an east-west ROW that bisected the subject site. The proposed ROW (Upper Canada Street) split the site from the intersection of Upper Canada Street and Journeyman Street easterly to Huntmar Drive. There is no obligation or requirement for a plan of subdivision to be registered against 405 Huntmar Drive creating the municipal street as shown on the draft plan of subdivision. Having carefully considered options, the proponent does not propose a public road through the middle of the subject property as it would not allow for their required building size and configuration. It is understood that construction of the previously approved sidewalks and cycle tracks along Campeau Drive between Journeyman Street and Huntmar Drive will be completed by others.

2.2.2 Other Area Developments

In proximity of the proposed development, there are multiple developments that are approved, or in the approval process. Other developments in the area include:

- Kanata West Retail/Business Park – A CTS/TIS was prepared by Delcan in 2011 in support of a Zoning By-Law Amendment for a mixed-use development including office, retail, and industrial land uses. The lands were anticipated to be developed in three phases with Phase 1 being completed in 2015, Phase 2 in 2019, and Phase 3 in 2024. A CTS/TIS Addendum was prepared by Parsons in 2017 based on updated land uses. The addendum estimated that the development would generate 577 and 1,234 vehicle trips during the AM and PM peak hours, respectively.

- 8370 Campeau (570 Winterset Road) – A TIA was prepared by CGH Transportation in 2021 in support of a residential development located on north of Campeau Drive, east of Huntmar

Drive, as shown on **Figure 4**. Full buildout is planned in 2025. The TIA estimated that the development would generate 86 and 104 vehicle trips during the AM and PM peak hours, respectively.

- 8600 Campeau – A TIA was prepared by IBI Group in 2018 in support of a hotel development located in the northeast corner of the Campeau Drive/Palladium Drive intersection, as shown in **Figure 4**. This site is currently built-out but was under construction at the time of the 2019 traffic counts. The TIA estimated that the development would generate 49 and 56 vehicle trips during the AM and PM peak hours, respectively.

- 8605 Campeau Drive – A TIA was prepared by NexTrans in 2020 in support of a gas station with ten fueling stations and convenience store, 1,240ft^2 of eating establishment with a drive through, and 770ft^2 of oil change building. The proposed commercial development is located in the southeast corner of the Campeau Drive/Palladium Drive intersection, as shown in **Figure 4**. Full buildout is planned in 2023. The TIA estimated that the site would generate 110 and 119 net new two-way vehicle trips during the AM and PM peak hours, respectively.

- 8800 Campeau Drive – A TIA was prepared by Parsons in 2021 in support of a package sorting facility located in the northwest corner of the Campeau Drive/Upper Canada Street intersection, as shown in **Figure 4**. Phase 1 of the proposed development includes a two-storey office building with a 6,000ft^2 GFA and 60,000ft^2 of warehouse. Phase 2 of the proposed development includes an 11,800ft^2 expansion of the warehouse. Phase 1 of the development was anticipated to be complete by 2021 with Phase 2 having a buildout year of 2026. The TIA estimated that the development would generate 70 and 71 vehicle trips during the AM and PM peak hours, respectively.

- 130 Huntmar Drive – A TIA was prepared by Dillon Consulting in 2021 in support of a mixed-use concept that includes commercial lands, low and medium density residential, and a school. The proposed development is located east of Huntmar Drive, south of Palladium Drive, as shown in **Figure 4**. The development is anticipated to be complete by 2024 in a single phase. The TIA estimated that the development would generate 682 and 600 vehicle trips during the AM and PM peak hours, respectively.

- 195 Huntmar – A CTS Addendum was prepared by Parsons in 2018 in support of a mixed-use concept that includes commercial, residential, office, car dealerships, and a school. The proposed development is located west of Huntmar Drive, south of Palladium Drive, as shown in **Figure 4**. The development is anticipated to be complete by 2024 in a single phase. The Addendum estimated that the development would generate 882 and 902 vehicle trips during the AM and PM peak hours, respectively.

- 319 Huntmar Drive – A TIA was prepared by IBI Group in 2021 in support of a mid-rise residential development located west of Huntmar Drive, north of Highway 417 and south of the Tanger Outlet Mall, as shown in **Figure 4**. The proposed development includes four nine-storey high-rise apartment buildings with 106 units each for a total of 424 units. A total of 580 vehicle parking spaces and 212 bicycle parking spaces were proposed as part of the development with the parking being provided through surface parking and one level of underground parking provided under each building. The TIA estimated that the development would generate 153 and 195 vehicle trips during the AM and PM peak hours, respectively.

- 340 Huntmar Drive (Residential) – A TIA was prepared by CGH Transportation in 2022 in support of a residential development located south of Campeau Drive, east of Huntmar Drive, as shown in **Figure 4**. The proposed development includes 409 townhomes, 240 underground vehicle parking spaces, 160 surface parking spaces, and 21 bicycle parking spaces. The TIA estimated that the development would generate 111 and 136 vehicle trips during the AM and PM peak hours, respectively.

- 340 Huntmar Drive (Hotel) – A TIA was prepared by Parsons in support of a hotel development located east of Huntmar Drive, south of Campeau Drive, as shown in **Figure 4**. Full buildout of the site was anticipated to be completed in 2020. The TIA estimated that the development would generate 44 and 54 vehicle trips during the AM and PM peak hours, respectively.

- 3199 Paladium Drive (8700 Campeau) – A TIA was prepared by Parsons in 2021 in support of an office building located in the northwest corner of the Campeau Drive/Palladium Drive intersection, as shown in **Figure 4**. The proposed development includes a five-storey office building with a 150,000ft^2. The full buildout out year of the building was anticipated to be 2021 and it is currently in operation. The TIA estimated that the development would generate 129 vehicle trips during each of the AM and PM peak hours.

- 1300-1360 Upper Canada Street – A TIA was prepared by Parsons in 2021 in support of a warehouse facility located north of Upper Canada Street, west of Journeyman Street, as shown in **Figure 4**. The proposed development includes 120,500ft^2 of warehouse and 166 parking spaces. The development is anticipated to be complete by 2023 in a single phase. The TIA estimated that the development would generate 34 and 36 vehicle trips during the AM and PM peak hours, respectively.

- 1400 Upper Canada Street – A TIA Strategy Report was prepared by Parsons in 2020 in support of a package sorting facility located north of Upper Canada Street, west of Palladium Drive, as shown in **Figure 4**. The full buildout of the site would include a 76,400ft^2 building that would include office/sorting/warehouse/ancillary uses as well as a 2,600ft^2 maintenance building. A total of 191 parking spaces would be provided. Phase 1 was anticipated to be complete in 2021 and Phase 2 to be completed in 2026. The TIA Strategy Report estimated that the development would generate 213 and 150 two-way vehicle trips during the AM and PM peak hours, respectively.

- Arcadia Phase 3/4 – A Transportation Brief Addendum was prepared by J.L. Richards & Associates in 2019 in support of a residential development located on north of Campeau Drive, east of Huntmar Drive, as shown on **Figure 4**. Full buildout of the site was anticipated to be completed in 2022. The addendum estimated that the development would generate 199 and 252 two-way vehicle trips during the AM and PM peak hours, respectively.

Excerpts from relevant transportation studies have been attached in **Appendix F**. The following figure summarizes the location of the nearby developments.

Figure 4: Surrounding Developments

2.3 Study Area and Time Periods

The study area for this report includes the boundary roadways Journeyman Street, Campeau Drive, and Huntmar Drive as well as the following intersections:

- Campeau Drive/Country Glen Way
- Campeau Drive/Huntmar Drive
- Campeau Drive/Journeyman Street

- Campeau Drive/Palladium Drive
- Huntmar Drive/Paine Avenue

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. Analysis will be completed for the 2024 build-out year and 2029 horizon year.

2.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the *2017 TIA Guidelines*. The applicable exemptions for this site are shown in **Table 4**.

Table 4: TIA Exemptions

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

As the proposed development will conform to the existing zoning, Module 4.2.2 - Spillover Parking, and Module 4.8 - Network Concept are exempt from the analysis.

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

Design Review Component
- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design

Network Impact Component
- Module 4.5: Transportation Demand Management
- Module 4.6: Neighbourhood Traffic Management
- Module 4.7: Transit
- Module 4.9: Network Intersections

3.0 FORECASTING

3.1 Development-Generated Travel Demand

3.1.1 Trip Generation

The proposed development will include two warehouse buildings that total approximately 480,000ft^2 GFA. As the *TRANS Trip Generation Manual Summary Report*, prepared in October 2020 by WSP does not include trip rates for warehouse developments the *ITE Trip Generation Manual 11th Edition* was used. To convert ITE vehicle trip rates to person trip rates a 1.28 factor was applied to all trips generated by the development. Person trips generated by the development using ITE trip rates can be found in the following table.

Table 5: Person Trips Generated by Proposed Development

Land Use	ITE Code	GFA	AM Peak Hour (pph[1])			PM Peak Hour (pph)		
			IN	OUT	TOT	IN	OUT	TOT
Warehousing	150	479,721 ft^2	80	24	104	30	78	108

1. PPH=Person Trips per Hour

The modal shares are assumed to be consistent with the modal shares outlined in the *2020 TRANS Trip Generation Manual*, specific to the Kanata-Stittsville region. The modal shares for the warehouse use have been assumed to follow Table 12 within the 2020 TRANS Trip Generation Manual as an employment generator and the AM peak hour modal share is assumed to be representative of the PM peak hour. For the purposes of this report, the modal shares have been rounded to the nearest 5%. A full breakdown of the proposed trips by modal share is shown in **Table 6**.

Table 6: Peak Hour Person Trips by Mode Share

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Warehouse Person Trips		**80**	**24**	**104**	**30**	**78**	**108**
Auto Driver	85%	68	21	89	26	66	92
Auto Passenger	5%	4	1	5	1	4	5
Transit	10%	8	2	10	3	8	11
Cyclist	0%	0	0	0	0	0	0
Pedestrian	0%	0	0	0	0	0	0

As described in Section 1.2 all truck traffic wishing to access the loading docks will arrive and depart through the access located at the intersection of Upper Canada Street and Journeyman Street. A breakdown of the projected truck traffic is shown in the following table. *ITE Trip Generation Manual 11th Edition* was used to estimate truck traffic and no person trip factor was applied as one person trip is assumed to equate to one truck trip.

Table 7: Truck Trips Generated by Proposed Development

Land Use	ITE Code	GFA	AM Peak Hour (vph)			PM Peak Hour (vph)		
			IN	OUT	TOT	IN	OUT	TOT
Warehousing	150	479,721 ft^2	5	5	10	7	7	14

As truck traffic is included within the total trips generated from the *ITE Trip Generation Manual* the 10 AM and the 14 PM trucks trips are included within the 89 AM and 92 PM auto driver trips shown in **Table 6**.

3.1.2 Trip Distribution

The assumed distribution of trips generated by the proposed development have been derived using data from the TRANS *2011 NCR Household Origin-Destination Survey*. Site-generated trips are anticipated to follow the traffic patterns associated with the typical commute (i.e. arriving in the study area during the AM peak).

The distribution of traffic generated by the proposed development is summarized as follows:

- 35% to/from the south via Palladium Drive
- 35% to/from the south via Huntmar Drive
- 20% to/from the east via Campeau Drive
- 10% to/from the north via Huntmar Drive

3.1.3 Trip Assignment

The property has three proposed parking accesses, one all-movement access and one right-in right-out access to Huntmar Drive serving 193 parking spaces and one all movement access to Journeyman Street serving 114 parking spaces. The northern access to Journeyman Street will access the truck loading area only. For the purposes of this report, traffic generated by the subject site during peak hours has been conservatively assigned exclusively to the two surface parking lots, as summarized below.

The assignment of traffic to the Huntmar Drive and Journeyman Street parking lots is based on the lot size. For the purposes of this analysis, 60% of traffic is anticipated to arrive/depart the Huntmar Drive parking lot while the remaining 40% is anticipated to arrive/depart the Jouneyman Street parking lot.

All traffic arriving/departing the Journeyman Street parking lot has been assigned to the Journeyman Street all movement access. The assignment of traffic arriving/departing the Huntmar Drive parking lot is summarized in the following table.

Table 8:Trip Assignment to Huntmar Drive

Origin/Destination	In/Out	Assignment	
		North Access (All Movement)	South Access (Right-in Right-out)
South via Palladium Drive	In	100%	-
	Out	40%	60%
South via Huntmar Drive	In	100%	-
	Out	40%	60%
East via Campeau Drive	In	100%	-
	Out	40%	60%

Origin/Destination	In/Out	Assignment	
		North Access (All Movement)	South Access (Right-in Right-out)
North via Huntmar Drive	In	60%	40%
	Out	100%	-

For the purposes of this analysis, it is assumed that all heavy trucks using the truck access on Journeyman Street will arrive/depart outside peak hours.

3.2 Background Traffic

3.2.1 Other Area Development

A review of other area development traffic has been conducted, per the developments listed in Section 2.2.2. Traffic generated by these developments have been considered in this analysis and added to the future background traffic volumes, as they are currently under construction, approved, or in the approval process. Relevant excerpts of the traffic studies associated with the developments below are included in **Appendix F**.

8370 Campeau Drive (570 Winterset Road)
The proposed residential development is expected to generate 86 and 104 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2025 and the site generated traffic have been added to the 2029 background traffic.

8600 Campeau Drive
The proposed hotel development is expected to generate 49 and 56 vehicle trips during the AM and PM peak hours, respectively. This site is currently built-out but was under construction at the time of the 2019 traffic counts and the site generated traffic have been added to the 2024 and 2029 background traffic.

8605 Campeau Drive
The proposed development includes a gas station development is expected to generate 110 and 119 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2023 and the site generated traffic have been added to the 2024 and 2029 background traffic.

8800 Campeau Drive
The proposed warehoused development is expected to generate 70 and 71 vehicle trips at full buildout during the AM and PM peak hours, respectively. Phase 1 of the development was anticipated to be complete by 2021 and full buildout is planned in 2026. The site generated traffic for Phase 1 have been added to the 2024 background traffic and site generated traffic at full buildout have been added to the 2029 background traffic.

130 Huntmar Drive
The proposed mixed-use development is expected to generate 682 and 600 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2024 and the site generated traffic have been added to the 2024 and 2029 background traffic.

195 Huntmar Drive
The proposed mixed-use development is expected to generate 882 and 905 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2024 and the site generated traffic have been added to the 2024 and 2029 background traffic.

319 Huntmar Drive
The proposed residential development is expected to generate 153 and 195 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2025 and the site generated traffic have been added to the 2029 background traffic.

340 Huntmar Drive (Residential)
The proposed residential development is expected to generate 111 and 136 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2025 and the site generated traffic have been added to the 2029 background traffic.

340 Huntmar Drive (Hotel)
The proposed hotel development is expected to generate 44 and 54 vehicle trips during the AM and PM peak hours, respectively. Full buildout was anticipated to be completed in 2020 and the site generated traffic have been added to the 2024 and 2029 background traffic.

3199 Paladium Drive (8700 Campeau)
The proposed office development is expected to generate 129 vehicle trips during each of the AM and PM peak hours. Full buildout was anticipated to be completed in 2021 and the site generated traffic have been added to the 2024 and 2029 background traffic.

1300-1360 Upper Canada Street
The proposed warehouse development is expected to generate 34 and 36 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2023 and the site generated traffic have been added to the 2024 and 2029 background traffic.

1400 Upper Canada Street
The proposed warehouse development is expected to generate 213 and 150 vehicle trips at full buildout during the AM and PM peak hours, respectively. Phase 1 of the development was anticipated to be complete by 2021 and full buildout is planned in 2026. The site generated traffic for Phase 1 have been added to the 2024 background traffic and site generated traffic at full buildout have been added to the 2029 background traffic.

Arcadia Phase 3/4
The proposed residential development is expected to generate 199 and 252 vehicle trips during the AM and PM peak hours, respectively. Full buildout is planned in 2022 and the site generated traffic have been added to the 2024 and 2029 background traffic.

3.2.2 General Background Growth Rate

A review of snapshots of the City's *Strategic Long-Range Model* has been conducted which is included in **Appendix G**. Comparing snapshots of the 2011 and 2031 AM peak hour traffic volumes, the *Strategic Long-Range Model* provided inconclusive results as the area has new connections and developments planned in proximity to the study area. A background growth rate of 1% was selected to be conservative and to be consistent with other approved transportation studies in the study area that were completed in recent years.

As the extension of Campeau Drive between Winterset Road and Terry Fox Drive was completed in 2021, traffic volumes shown in 2019 count data are anticipated to have changed. To account for changes in background traffic, traffic volumes at the Huntmar Drive/Campeau Drive intersection were balanced and redistributed based on recent counts at the Huntmar Drive/Paine Avenue and Campeau Drive/Country Glen Way intersections.

3.3 Future Traffic Conditions

The figures listed below present the following future traffic conditions:

- Proposed site-generated traffic volumes in 2024 are shown in **Figure 5**;
- Background traffic volumes in 2024 are shown in **Figure 6**;
- Background traffic volumes in 2029 are shown in **Figure 7**;
- Total traffic volumes in 2024 are shown in **Figure 8**;
- Total traffic volumes in 2029 are shown in **Figure 9**.

Figure 5: Site-Generated Volumes

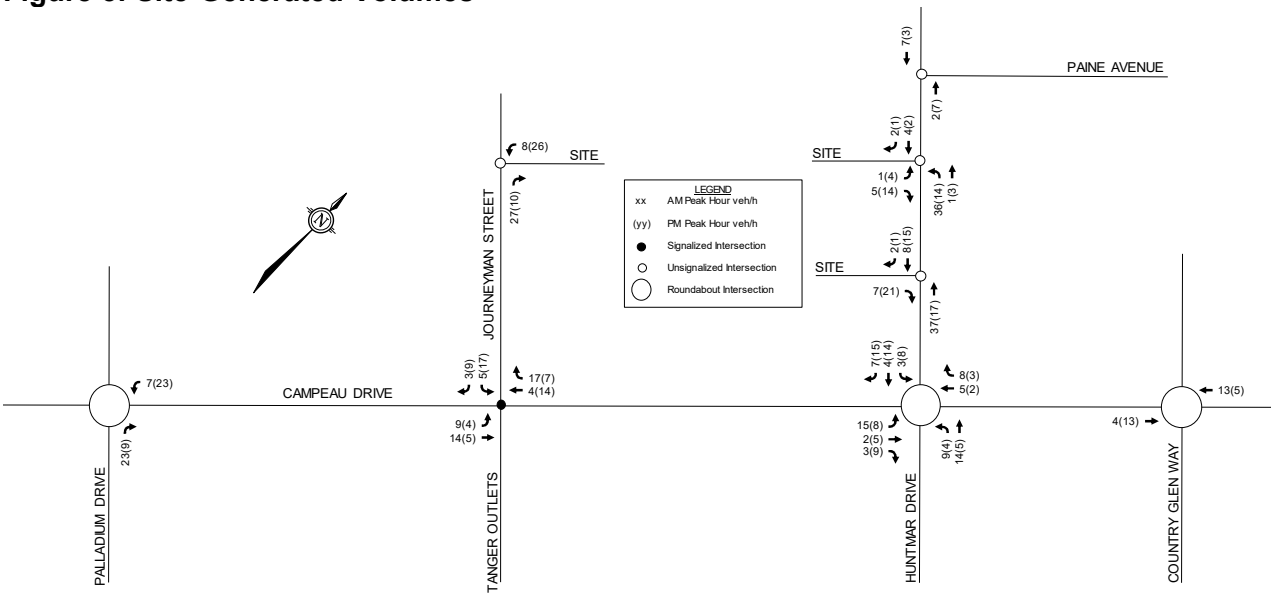


Figure 6: 2024 Background Traffic

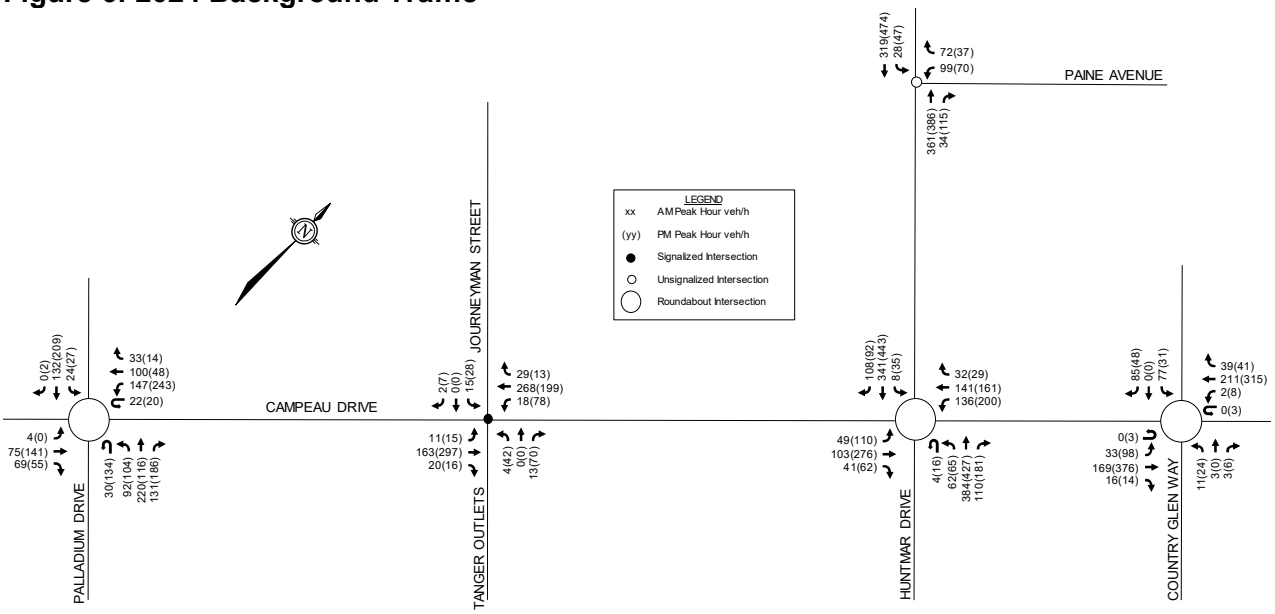


Figure 7: 2029 Background Traffic

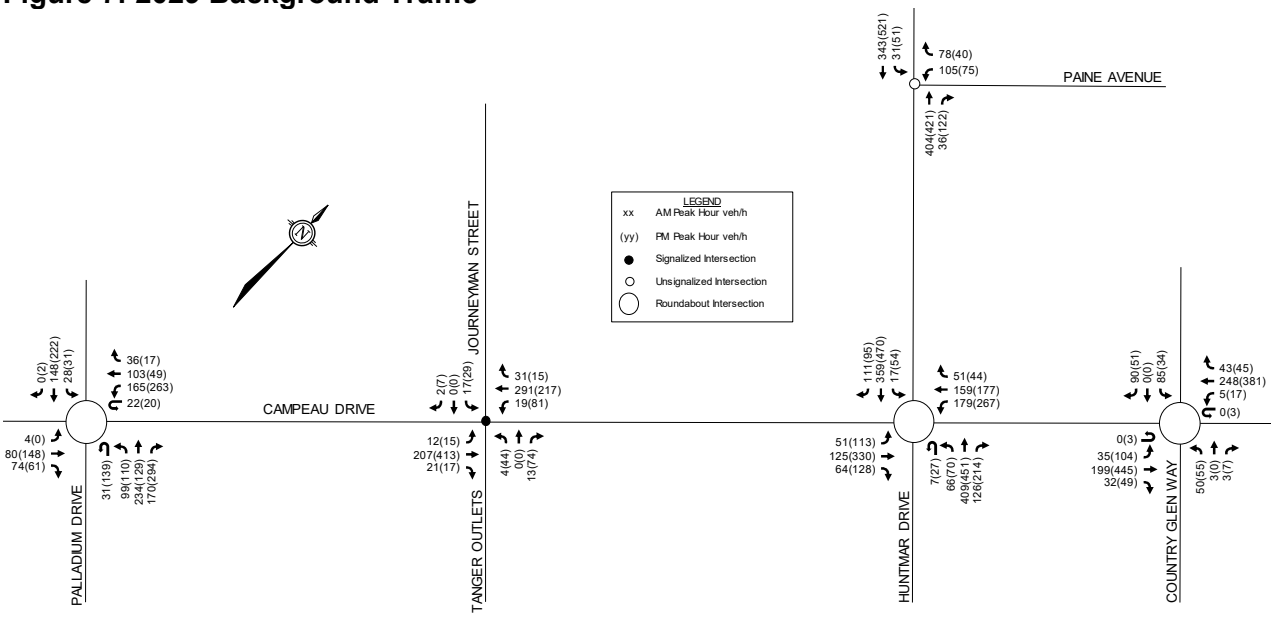


Figure 8: 2024 Total Traffic

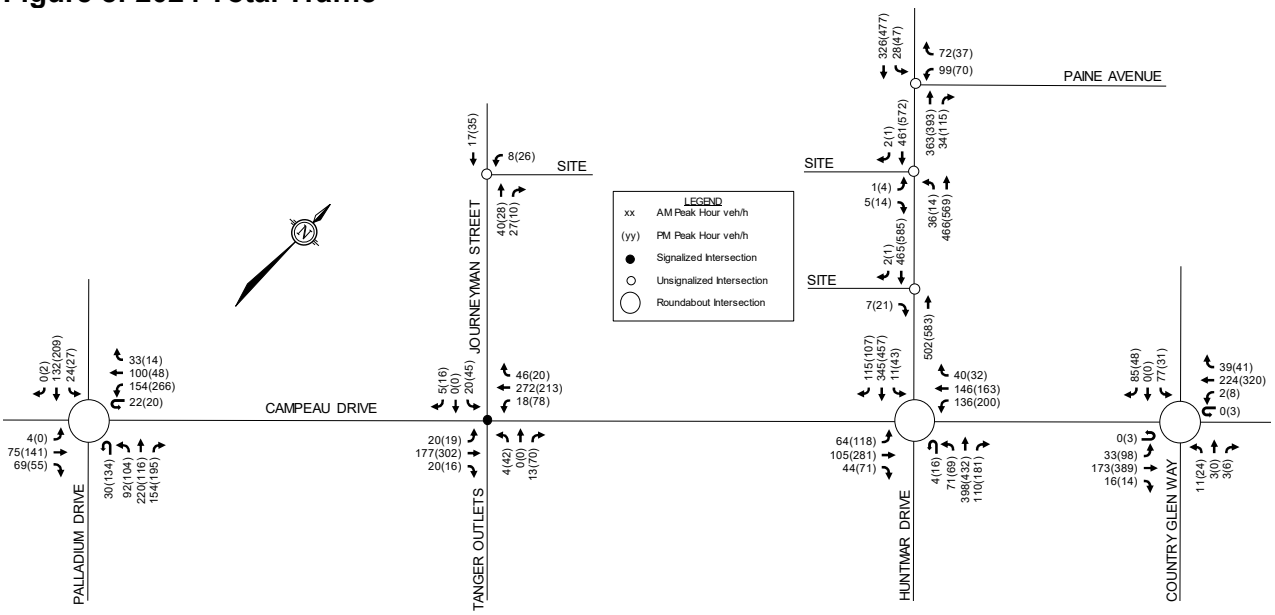
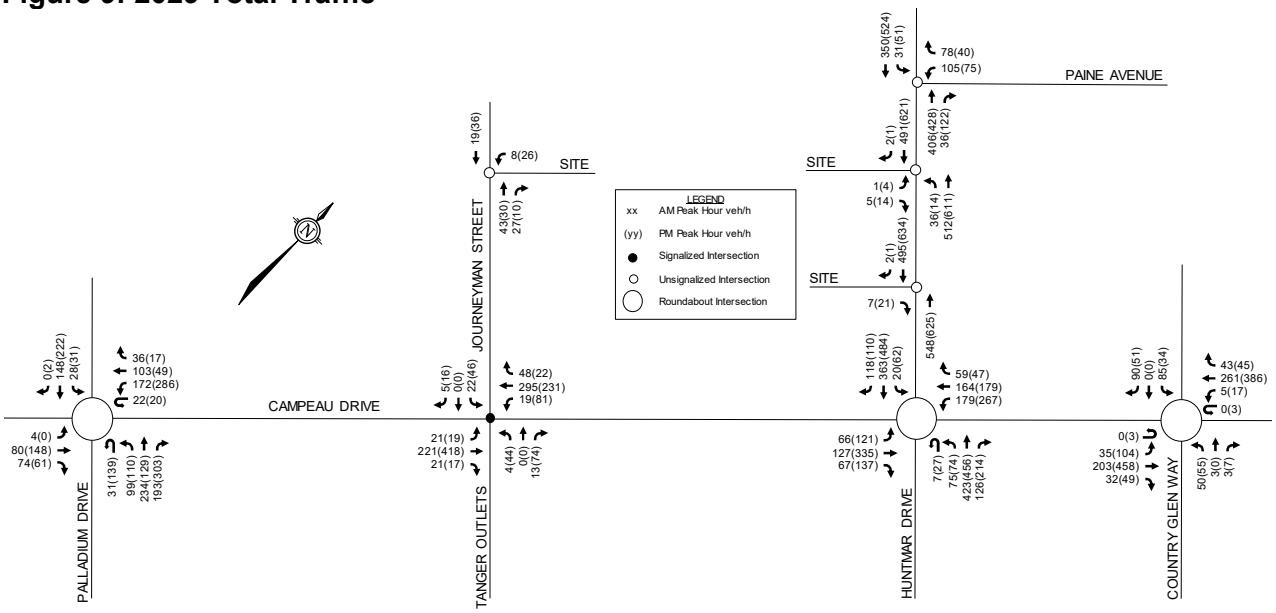


Figure 9: 2029 Total Traffic



3.4 Demand Rationalization

A review of the existing and background intersection operations has been conducted to determine if and when traffic volumes exceed capacity within the study area. The intersection parameters used in the analysis are consistent with the *2017 TIA Guidelines* (Saturated Flow Rate: 1,800 vphpl, Peak Hour Factor: 0.9 in existing conditions and 1.0 in future conditions).

Per Exhibit 22 of the *Multi-Modal Level of Service (MMLOS) Guidelines* (produced by IBI Group in October 2015), the target vehicular level of service (Auto LOS) for an arterial or local road in a Mixed Use Centre is an Auto LOS D, which equates to a vehicle-to-capacity (v/c) ratio of 0.90 or better at signalized intersections, and a maximum delay of 35 seconds at unsignalized intersections. This target applies to all study area intersections in existing conditions.

Signal timing plans were obtained from the City, and are included in **Appendix H**.

3.4.1 Existing Intersection Operations

Intersection Capacity analysis has been conducted for the existing traffic conditions. The results of the analysis are summarized in **Table 9** for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

Table 9: Existing Traffic Operations

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
Campeau Drive/Country Glen Way	4 sec.	A	SB	4 sec.	A	SB
Campeau Drive/Huntmar Drive	3 sec.	A	WB	3 sec.	A	WB
Campeau Drive/Journeyman Street	0.04	A	WBT/R	0.19	A	NBL
Campeau Drive/Palladium Drive	6 sec.	A	SB	6 sec.	A	SB
Huntmar Drive/Paine Avenue	15 sec.	B	WB	17 sec.	C	WB

Under existing traffic conditions, all movements at traffic signal and roundabout controlled intersections are currently operating with a LOS of A during AM and PM peak hour conditions. The Huntmar Drive/Paine Avenue intersection operates with a LOS B in the AM peak hour and a LOS C in the PM peak hour.

3.4.2 2024 Background Traffic Conditions

Operating conditions at study area intersections are summarized in **Table 10** for the 2024 weekday AM and PM peak periods. Detailed reports are included in **Appendix I**.

Table 10: 2024 Background Traffic Operations

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
Campeau Drive/Country Glen Way	4 sec.	A	SB	4 sec.	A	SB
Campeau Drive/Huntmar Drive	5 sec.	A	WB	5 sec.	A	WB
Campeau Drive/Journeyman Street	0.10	A	WBT/R	0.18	A	NBL
Campeau Drive/Palladium Drive	7 sec.	A	SB	9 sec.	A	SB
Huntmar Drive/Paine Avenue	17 sec.	C	WB	22 sec.	C	WB

Under 2024 background traffic conditions, all movements at traffic signal and roundabout controlled intersections are anticipated to operate with a LOS A during AM and PM peak hour conditions. The Huntmar Drive/Paine Avenue intersection operates with a LOS C in the AM and PM peak hours.

3.4.3 2029 Background Traffic Conditions

Operating conditions at study area intersections are summarized in **Table 11** for the 2029 weekday AM and PM peak periods. Detailed reports are included in **Appendix I**.

Table 11: 2029 Background Traffic Operations

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
Campeau Drive/Country Glen Way	5 sec.	A	SB	4 sec.	A	SB
Campeau Drive/Huntmar Drive	5 sec.	A	WB	5 sec.	A	WB
Campeau Drive/Journeyman Street	0.10	A	WBT/R	0.19	A	NBL
Campeau Drive/Palladium Drive	7 sec.	A	SB	9 sec.	A	SB
Huntmar Drive/Paine Avenue	21 sec.	C	WB	24 sec.	C	WB

Under 2029 background traffic conditions, all movements at traffic signal and roundabout controlled intersections are anticipated to operate with a LOS A during AM and PM peak hour conditions. The Huntmar Drive/Paine Avenue intersection operates with a LOS C in the AM and PM peak hours.

4.0 ANALYSIS

4.1 Development Design

4.1.1 Design For Sustainable Modes

As described in Section 2.2.1, construction of the previously approved sidewalks and cycle tracks along Campeau Drive between Journeyman Street and Huntmar Drive will be completed by others. On-site pathways will be provided connecting the main building entrances to the existing sidewalk along Journeyman Street and the future sidewalk along Campeau Drive.

Bicycle parking will be provided at each of the building entrances. The number of bicycle parking spaces, including the bicycle parking requirements per the City's *Zoning By-Law* (ZBL) is reviewed further in Section 4.2.

The nearest bus stops to the subject site are shown in Section 2.1.5 and **Figure 2**. OC Transpo's service design guideline for peak period service is to provide service within a five-minute (400m) walk of home, work, or school for 95% of urban residents. All entrances to the building are located within 400m of a transit stop.

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

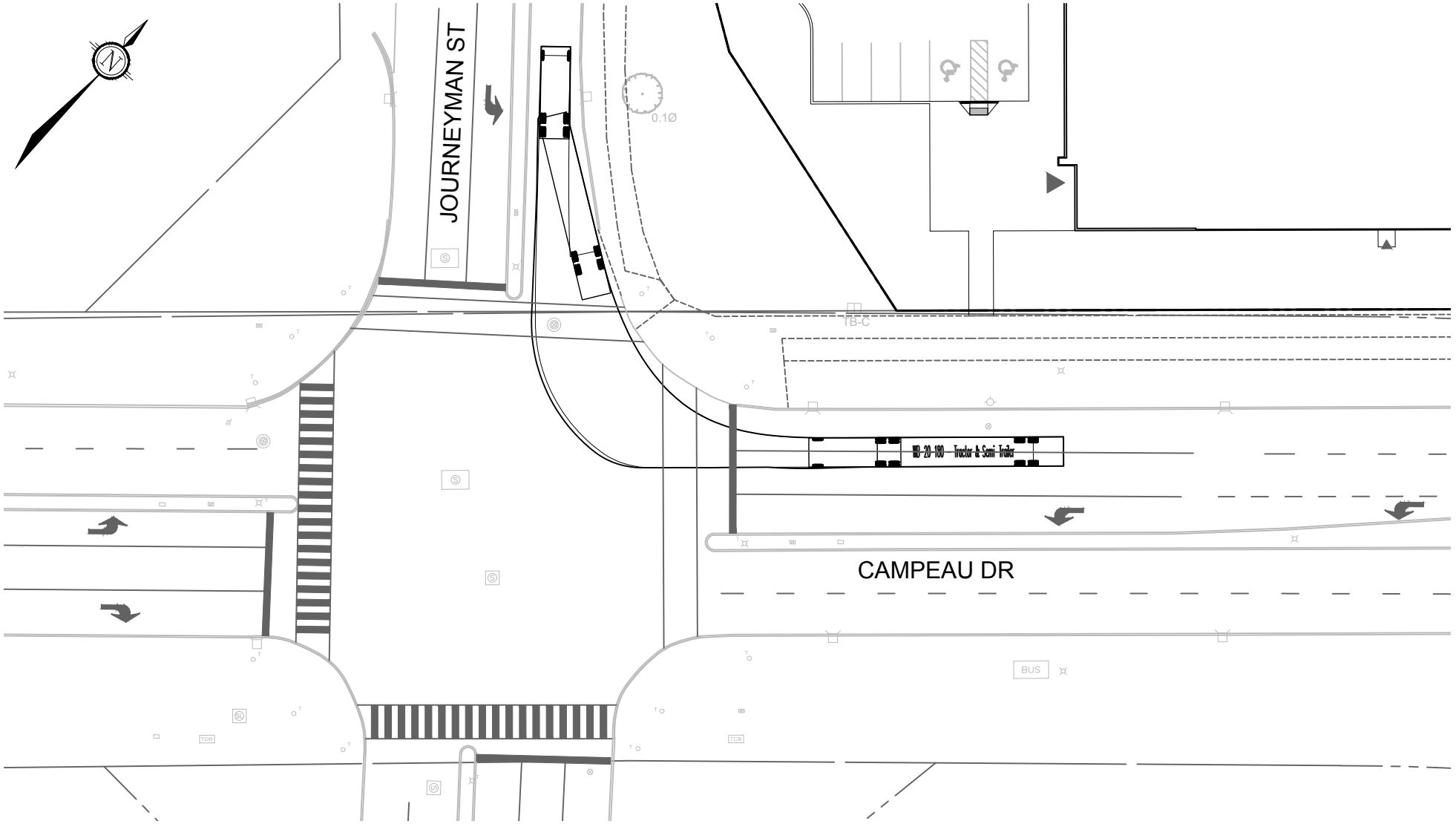
In order to encourage the use of sustainable modes, the following 'basic' or 'better' measures will be implemented for the proposed development:

- Building doors and windows will ensure visibility of pedestrians from the building
- Walking routes from the development to nearby transit stops will be safe, direct, and attractive
- Walking routes from the development to nearby transit stops will be secure, visible, lighted, shaded, and wind protected whenever possible

4.1.2 Circulation and Access

Garbage collection will take place between Buildings A and B and will be accessible through the truck access at the Upper Canada Street/Journeyman Street intersection. Fire route access is provided at both of the vehicle parking lots for Buildings A and B.

A review of turning movements for a WB-20 tractor trailer truck has been completed at the Campeau Drive/Journeyman Street intersection and is shown in **Figures 10** and **11**. Truck turning movements within the site are shown on the site plan provided in **Appendix A**.



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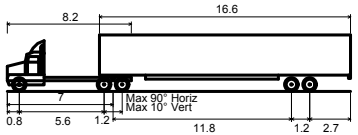

WB-20 - Tractor & Semi-Trailer

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

405 HUNTMAR DRIVE

TURNING MOVEMENT (WB-20)

SCALE 1 : 500 (0 5 10 15 20)

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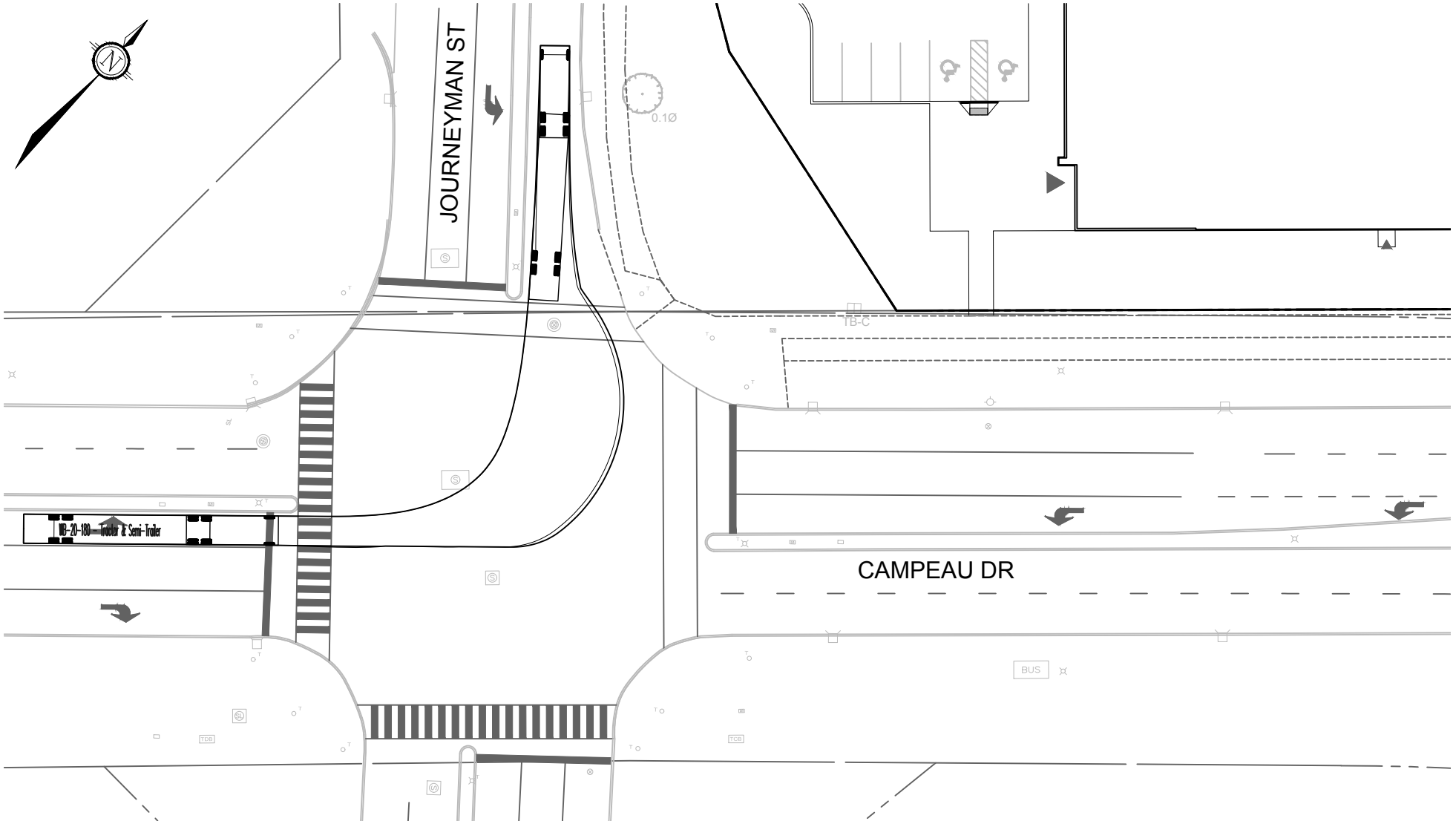

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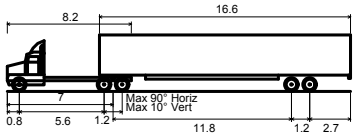

WB-20 - Tractor & Semi-Trailer

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

405 HUNTMAR DRIVE

TURNING MOVEMENT (WB-20)

SCALE 1 : 500 (0 5 10 15 20)

DATE DEC 2022 | JOB 122151 | FIGURE FIGURE 11

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4.2 Parking

The subject site is located in Area C of Schedule 1 and Schedule 1A of the City's Zoning By-law (ZBL). Minimum vehicle parking rates for the proposed warehouses are identified in Sections 101 and 102 of the ZBL, and are summarized in **Table 12**.

Table 12: Required and Proposed Parking

Land Use	Rate	GFA	Required	Provided
Minimum Vehicle Parking				
Warehouse A	0.8 per 100m^2 for first 5,000m^2 of GFA	21,400m^2	40	193
	0.4 per 100m^2 above 5,000m^2 of GFA		66	
Warehouse B	0.8 per 100m^2 for first 5,000m^2 of GFA	23,100m^2	40	114
	0.4 per 100m^2 above 5,000m^2 of GFA		73	
		Total	**219**	**307**
Minimum Bicycle Parking				
Warehouse A	1.0 per 1,000m^2 of GFA	21,400m^2	21	21
Warehouse B	1.0 per 1,000m^2 of GFA	23,100m^2	23	23
		Total	**44**	**44**

Based on the previous table, the minimum parking requirements will be met. Both buildings meet their individual requirements for vehicle and bicycle parking.

For parking lots with 101-133 parking spaces the City's Accessibility Design Standards require two Type A and three Type B accessible parking spaces and for parking lots with 167-250 parking spaces the City requires three Type A and four Type B accessible parking spaces. As each parking lot provides eight accessible parking spaces (total of 16 for the entire site) these requirements are met.

4.3 Boundary Streets

This section provides a review of the boundary streets Huntmar Drive, Campeau Drive, and Journeyman Street using complete streets principles. The Multi-Modal Level of Service (MMLOS) Guidelines, produced by IBI Group in October 2015, were used to evaluate the levels of service for each alternative mode of transportation on the boundary streets. For the purposes of this analysis, it is assumed that the future cycle track and sidewalk on the north side of Campeau Drive has been constructed by others. Each boundary street is located within Urban Employment Area (per Schedule B of the City's previous Official Plan, which is referenced by the MMLOS Guidelines).

A detailed segment MMLOS review of the boundary streets is included in **Appendix K**. A summary of the segment MMLOS analysis is provided below in **Table 13**.

Table 13: Segment MMLOS Summary

Segment	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Campeau Drive	B	C	A	E	D	-	A	D
Huntmar Drive	**F**	C	**F**	C	D	-	A	D
Journeyman Street	A	C	F	-	-	-	B	E

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

- Campeau Drive and Journeyman Street meet the target pedestrian level of service (PLOS), while Huntmar Drive does not;
- Campeau Drive meets the target bicycle level of service (BLOS), while Huntmar Drive does not; and
- All boundary streets meet the target truck level of service (TkLOS).

Pedestrian Level of Service
The east side of Huntmar Drive does not meet the target PLOS C. Per Exhibit 4 of the *MMLOS Guidelines*, Huntmar Drive can achieve a PLOS C by implementing sidewalks with a minimum width of 2.0m and a minimum boulevard width of 2.0m. This is identified for the City's consideration. As Huntmar Drive transitions to an undivided rural cross section with gravel shoulders north of the site, a sidewalk on the west side of Huntmar Drive is not proposed as part of this development. On-site pathways will be provided to connect to the pedestrian facilities in the northwest corner of the Huntmar Drive/Campeau Drive roundabout.

The existing sidewalks on Campeau Drive and Journeyman Street meet the target PLOS C, and therefore no recommendations for these sidewalks are identified.

Bicycle Level of Service
Within the study area the east side of Huntmar Drive transitions from having a cycle track to mixed traffic on a road with an assumed operating speed of over 50km/h. Per Exhibit 11 of the *MMLOS Guidelines*, Huntmar Drive can achieve a BLOS C by implementing a bike lane with a minimum width of 1.2m. This is identified for the City's consideration.

The cycle track on both sides of Campeau Drive meet the target BLOS E, and therefore no recommendations are identified.

Per Exhibit 22 of the *MMLOS Guidelines*, there is no target BLOS for Journeyman Street as it is local road in an Employment Area with no bike route designation.

4.4 Access Intersections

4.4.1 Access Design

The proposed development includes two accesses to Huntmar Drive (one full movement and one right-in right-out) and two full movement accesses to Journeyman Street. Depressed curbs and continuous sidewalks are proposed along Journeyman Street, in accordance with City standards. The design of each access has been evaluated using the relevant provisions of the City's *Private Approach By-Law* (PABL).

Section 25(a) of the PABL identifies that, for sites with 150m or more of frontage to a given roadway, two two-way private approaches to that roadway are permitted. Therefore, the two pairs of two-way private approaches to Huntmar Drive and Journeyman Street meet this requirement.

Section 25(c) of the PABL identifies a maximum width requirement of 9.0m for any two-way private approach, as measured at the street line. The three private approaches leading to the employee parking lots adhere to this requirement. A width of 10.5m, measured at the property line, is proposed for the access to the truck loading area. As this width is required to accommodate the northbound

right turn movement of tractor trailer trucks into the loading area, a waiver to the Section 25(c) of the PABL is requested.

Section 25(m)(ii) of the PABL identifies that, for a property that abuts or is within 46m of an arterial roadway, there are minimum distance requirements between a private approach and the nearest intersecting street line, and between any two private approaches to the same property. The minimum distance is determined by the land use and number of parking spaces provided. For the purposes of this review, the proposed development will be treated as an industrial use. Per Section 25(m)(ii) of the PABL, the minimum separation between any access and the nearest intersecting street line and between two accesses to the same property is 30m, when 100 to 199 parking spaces are accessed. Although the proposed development will include more than 200 parking spaces overall, this range of parking spaces was selected as the parking will be split into two separate lots containing less than 200 parking spaces each. This requirement is met by all proposed accesses.

Section 25(p) of the PABL identifies a minimum separation requirement of 3.0m between the edge of any private approach and the nearest property line, as measured at the street line. This requirement is met by all proposed accesses.

Section 25(u) of the PABL identifies a requirement that any private approach serving a parking area with more than 50 parking spaces shall not have a grade exceeding 2% for the first 9m inside the property line. The grading of all proposed accesses conform to this requirement.

The Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads* identifies minimum intersection sight distance (ISD) and stopping sight distance (SSD) requirements, based on the roadway grade and design speed (taken as the speed limit plus 10 km/h). Assuming level grade and a design speed of 60 km/h for Huntmar Drive and Journeyman Street, the ISD requirements are 130m for left-turning vehicles and 110m for right-turning vehicles, and the SSD requirement is 85m.

The proposed accesses to Huntmar Drive will have clear sightlines to Paine Avenue to the north and Campeau Drive to the south. The proposed accesses to Journeyman Street will have clear sightlines to Upper Canada Street to the north and Campeau Drive to the south. Therefore, no sightline concerns are anticipated.

The TAC *Geometric Design Guide for Canadian Roads* identifies minimum clear throat lengths based on road classification and land use. For a Light Industrial use a minimum clear throat length of 30m is required for arterial roads. The requirement is met as roughly 30m is provided at each of the Huntmar Drive accesses.

A left turn lane warrant analysis was conducted to confirm if a northbound left turn lane will be required at the all-movement access to Huntmar Drive. The analysis was conducted under 2029 total traffic volumes. The left turn lane warrant analysis indicated that a storage of 15m is required for the northbound left turn lane at the northern access along Huntmar Drive during the AM and PM peak hours. Left turn lane warrants are included in **Appendix L**.

A functional design of the proposed northbound left turn lane along Huntmar Drive is included in **Appendix M**. A Roadway Modification Approval (RMA) application will be filed with the City under a separate cover.

4.4.2 Access Operations

Analysis of the access intersection operations has been conducted in Synchro, with the results summarized in **Table 14**. The intersection parameters used in the analysis are consistent with the *2017 TIA Guidelines* (Saturated Flow Rate: 1,800 vphpl, Peak Hour Factor: 1.0 in future conditions).

Table 14: 2024/2029 Access Intersection Operations

Access	AM Peak Hour			PM Peak Hour		
	Delay	LOS	Mvmt	Delay	LOS	Mvmt
2024 Traffic						
Huntmar Drive North	12 sec	B	EBL/R	15 sec	B	EBL/R
Huntmar Drive South	11 sec	B	EBR	12 sec	B	EBR
Journeyman Street	9 sec	A	WBL/R	9 sec	A	WBL/R
2029 Traffic						
Huntmar Drive North	13 sec	B	EBL/R	16 sec	C	EBL/R
Huntmar Drive South	11 sec	B	EBR	13 sec	B	EBR
Journeyman Street	9 sec	A	WBL/R	9 sec	A	WBL/R

The proposed accesses to Huntmar Drive and Journeyman Street are anticipated to operate with acceptable delays under side street stop control for the buildout year 2024 and horizon year 2029.

4.5 Transportation Demand Management

4.5.1 Context for TDM

The proposed development will consist of two warehouse buildings that total 44,567m^2 of GFA. A total of 307 parking spaces will be provided as well as 56 loading docks.

4.5.2 Need and Opportunity

As first discussed in Section 3.1.1, the mode share targets for the proposed development are assumed to be generally consistent with the observed mode shares for the Kanata-Stittsville region, as outlined in the *TRANS Trip Generation Manual*. These target shares include an 85% driver share.

Failure to meet the already observed driver shares for the Kanata-Stittsville region are not anticipated, due to the proximity of the subject site to residential developments to the north, south, and east, as well as commercial areas immediately west of the site and south of Campeau Drive. Regardless, failure to meet the proposed mode share targets are anticipated to marginally increase congestion within the study area.

4.5.3 TDM Program

A review of the City's *TDM Measures Checklist* has been conducted by the proponent, who has committed to providing the following TDM measures within this development:

- Provide relevant transit schedules and route maps at main entrances; and
- Provide a multimodal travel option information package to new employees.

A copy of the checklist is included in **Appendix L**.

4.6 Neighbourhood Traffic Management

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

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

The proposed development will rely on the local road Journeyman Street for direct access. Based on the 2029 total traffic projections presented in **Figure 9**, traffic along Journeyman Street is not anticipated to exceed the above NTM thresholds.

Since Journeyman Street primarily serves industrial uses, no neighbourhood traffic management measures have been recommended as part of this proposed development.

4.7 Transit

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

- AM Peak Hour: 10 transit trips, including 2 boarding and 8 alighting;
- PM Peak Hour: 11 transit trips, including 8 boarding and 3 alighting.

Transit trips generated by the proposed development are anticipated to board and alight via route 62 and 162 at bus stops #1381, #1382, #1384, and #1386. As both routes operate on 30-minute headways during peak hours, the additional transit trips generated by the proposed development are anticipated to have a marginal impact on the current transit operations.

4.8 Intersection Design

4.8.1 Intersection MMLOS Review

This section provides a review of the signalized study area intersection (Campeau Drive/Journeyman Street) using complete streets principles. Huntmar Drive/Campeau Drive, Huntmar Drive/Paine Avenue, Campeau Drive/Country Glen Way, and Palladium Drive/Campeau Drive have not been studied as current MMLOS guidelines are not applicable to roundabout intersections or stop controlled intersections. The signalized intersection within the study area has been evaluated for PLOS, BLOS, TLOS, TkLOS, and AutoLOS based on existing conditions. The cycle track that is to be completed by others along the northern edge of Campeau Drive is assumed to be existing for the purposes of this study. The MMLOS targets considered in this review are associated with those outlined in Exhibit 22 of the *MMLOS Guidelines* for the Urban Employment Area.

The full intersection MMLOS analysis is included in **Appendix J**. A summary of the results is shown in **Table 15**.

Table 15: Intersection MMLOS Summary

Intersection	PLOS		BLOS		TLOS		TkLOS		AutoLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Campeau Drive/Journeyman Street	**F**	C	**F**	C	B	-	D	D	A	D

The Campeau Drive/Journeyman Street intersection does not meet the target PLOS C and BLOS C, but meets the target TkLOS E and AutoLOS D.

All approaches do not meet the target PLOS C, and have cross-sections equivalent to six to seven lanes crossed. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes. Of the approaches that currently have standard crosswalk treatments none meet the City's vehicle/pedestrian conflict threshold for zebra-striped crosswalks (greater than 400,000 vehicle/pedestrian conflicts over an eight-hour period).

The mixed traffic lanes on the north and south approaches to this intersection achieve a BLOS F and D, respectively. As these legs do not form part of the City's cycling network, there is no target BLOS and therefore no modifications are recommended. The cycle tracks on the east and west approaches achieve a BLOS A. It is noted that there is currently no bike box provided to facilitate eastbound or westbound cyclist left turn movements. Consideration should be given by the City to providing a designated queuing space on the north and south approaches to facilitate two-stage eastbound and westbound left turn movements for cyclists.

4.8.2 2024 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2024 total traffic conditions. The results of the analysis are summarized in **Table 16** for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

Table 16: 2024 Total Traffic Operations

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
Campeau Drive/Country Glen Way	4 sec.	A	SB	4 sec.	A	SB
Campeau Drive/Huntmar Drive	5 sec.	A	WB	5 sec.	A	WB
Campeau Drive/Journeyman Street	0.10	A	WBT/R	0.19	A	SBL
Campeau Drive/Palladium Drive	7 sec.	A	SB	9 sec.	A	SB
Huntmar Drive/Paine Avenue	18 sec.	C	WB	22 sec.	C	WB

Compared to the 2024 background traffic conditions, site-generated traffic is anticipated to have marginal impacts on traffic operations within the study area.

4.8.3 2029 Total Intersection Operations

Intersection capacity analysis has been conducted for the 2029 total traffic conditions. The results of the analysis are summarized in **Table 17** for the weekday AM and PM peak hours. Detailed reports are included in **Appendix I**.

Table 17: 2029 Total Traffic Operations

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
Campeau Drive/Country Glen Way	5 sec.	A	SB	4 sec.	A	SB
Campeau Drive/Huntmar Drive	5 sec.	A	WB	5 sec.	A	WB
Campeau Drive/Journeyman Street	0.11	A	WBT/R	0.20	A	SBL
Campeau Drive/Palladium Drive	7 sec.	A	SB	9 sec.	A	SB
Huntmar Drive/Paine Avenue	21 sec.	C	WB	24 sec.	C	WB

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

5.0 CONCLUSIONS AND RECOMMENDATIONS

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

Forecasting

- The proposed development is anticipated to generate an additional 104 person trips during the AM peak hour (including 89 vehicle trips), and an additional 108 person trips during the PM peak hour (including 92 vehicle trips).

- Of the 89 and 92 vehicle trips during the AM and PM peak hours, 10 and 14 are anticipated to be trucks.

Development Design

- Construction of the previously approved sidewalks and cycle tracks along Campeau Drive between Journeyman Street and Huntmar Drive will be completed by others.

- On-site pedestrian pathways will be provided connecting the main building entrances to the existing sidewalk along Journeyman Street and the future sidewalk along Campeau Drive.

- A total of 44 bicycle parking spaces will be provided near the main entrances to the warehouses.

- OC Transpo stops #1381, #1382, #1384, and #1386 are within 400m walking distance of all entrances to the proposed development.

- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

Parking

- The proposed development includes 307 vehicle parking spaces, meeting the minimum number of required parking spaces as outlined in the City's *Zoning By-Law* (ZBL).

- The proposed development includes 44 bicycle parking spaces, meeting the minimum number of required spaces as outlined in the City's ZBL.

- The proposed development includes eight Type A accessible parking spaces for each parking lot exceeding the minimums set by the City.

Boundary Streets

- Campeau Drive meets the target pedestrian level of service (PLOS) C, the target bicycle level of service (BLOS) C, and the target truck level of service (TkLOS) D.

- Journeyman Street meets the target PLOS C and the TkLOS E. No target BLOS or TLOS is identified in the MMLOS guidelines for this location.

- Huntmar Drive meets the target TkLOS D. Huntmar Drive does not meet the target PLOS C and BLOS C.

- The target PLOS C for Huntmar Drive can be achieved by implementing sidewalks with a minimum width of 2.0m and a minimum boulevard width of 2.0m. This is identified for the City's consideration.

- The target BLOS C for Huntmar Drive can be achieved by implementing a bike lane with a minimum width of 1.2m. This is identified for the City's consideration.

Access Design

- A width of 10.5m, measured at the property line, is proposed for the access to the truck loading area. As this width is required to accommodate the northbound right turn movement of tractor trailer trucks into the loading area, a waiver to the Section 25(c) of the Private Approach By-law is requested.

- The proposed accesses adhere to all other provisions of the City's Private Approach By-law.

- The proposed accesses meet the intersection sight distance (ISD) and stopping sight distance (SSD) requirements set by the Transportation Association of Canada (TAC).

- The proposed accesses meet the clear throat requirements set by the TAC.

- Based on 2029 total volumes a northbound left turn lane with a storage length of 15m is required at the northern Huntmar Drive access.

- The proposed accesses to Huntmar Drive and Journeyman Street are anticipated to operate with acceptable delays under side street stop control for the build-out year 2024 and horizon year 2029.

Transportation Demand Management (TDM)

- A review of the City's TDM Measures Checklist has been conducted by the proponent, who is committed to providing the following TDM measures within this development:

    - Provide relevant transit schedules and route maps at main building entrances; and
    - Provide a multimodal travel option information package to new employees.

Neighbourhood Traffic Management

- The proposed development relies on the local roadway Journeyman Street for direct vehicular access. No neighbourhood traffic management measures are required, as Journeyman Street is a roadway that only provides access to future industrial uses.

Transit

- The proposed development is anticipated to generate an additional 10 transit trips during the AM peak hour and an additional 11 transit trips during the PM peak hour. The additional transit trips generated by the proposed development are anticipated to have a marginal impact on the current transit operations surrounding the site.

Intersection MMLOS

- All approaches to the Campeau Drive/Journeyman Street intersection do not meet the target PLOS C, and have cross-sections equivalent to five to nine lanes crossed. There is limited opportunity in improving the PLOS at each approach without reducing the number of travel lanes.

- The mixed traffic lanes on the north and south approaches to the Campeau Drive/Journeyman Street intersection achieve a BLOS F and D, respectively. As these legs do not form part of the City's cycling network, there is no target BLOS and therefore no modifications are recommended.

- Consideration should be given by the City to providing a designated queuing space on the north and south approaches to facilitate two-stage eastbound and westbound left turn movements for cyclists.

Background Traffic Analysis

- Under 2024 background traffic conditions, all movements at traffic signal and roundabout controlled intersections are anticipated to operate with a LOS A during AM and PM peak hour conditions.

- The Huntmar Drive/Paine Avenue intersection operates with a LOS C in the AM and PM peak hours.

Total Traffic Analysis

- Site generated traffic is anticipated to have marginal impacts on traffic operations within the study area.

Based on the foregoing, the proposed development can be recommended from a transportation perspective.

NOVATECH

Prepared by:

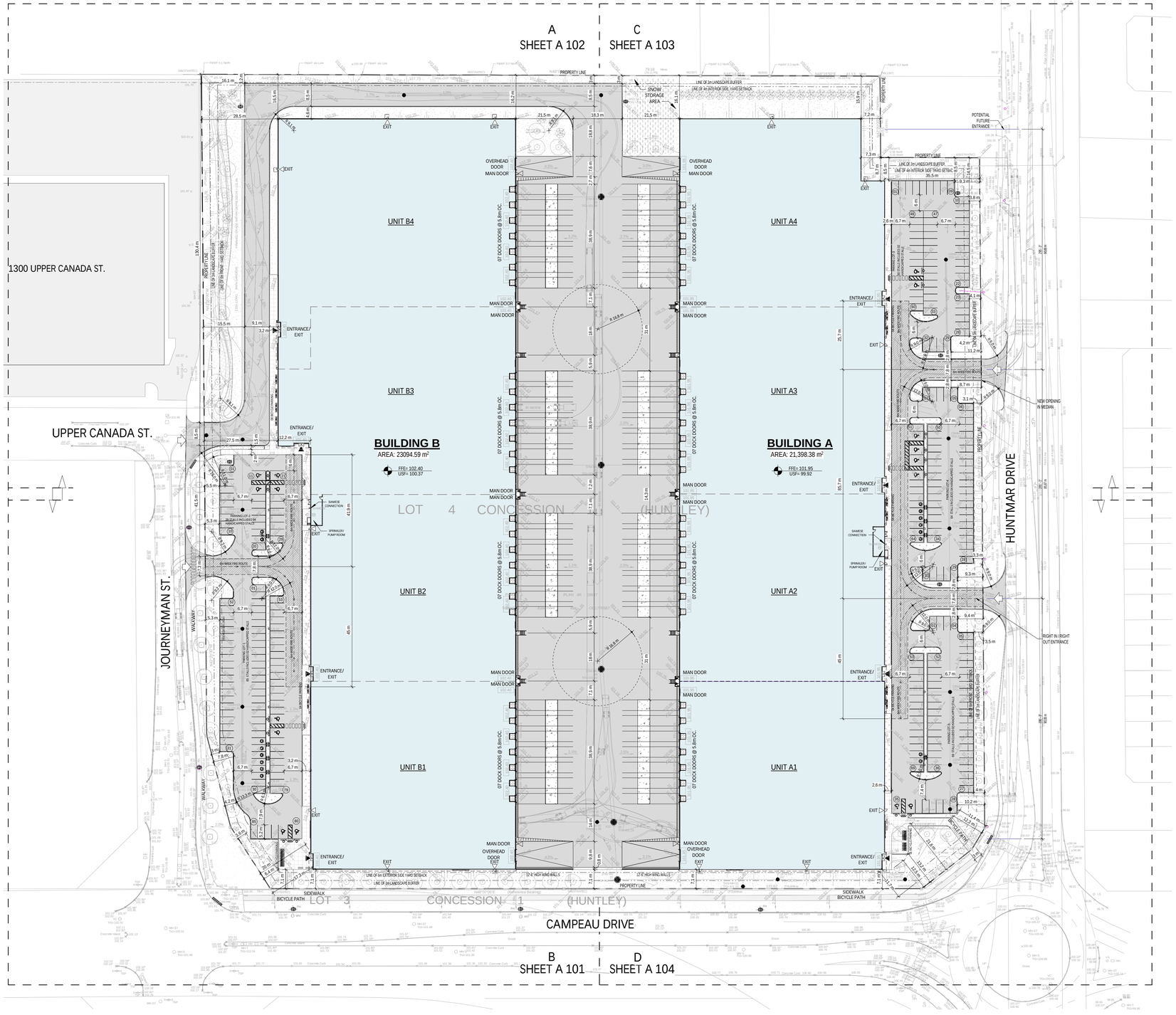
Trevor Van Wiechen, M.Eng.
E.I.T. | Transportation

Reviewed by:

Brad Byvelds, P.Eng.
Project Manager | Transportation

APPENDIX A

Proposed Site Plan



PROJECT STATISTICS

• PROPERTY

PART OF LOT 4
CONCESSION 1
GEOGRAPHIC TOWNSHIP OF HUNTLEY
CITY OF OTTAWA, ON.

ADDRESS: 405 HUNTMAR DR
LOT AREA ±21.4 ac ±932,756 ft² ±86,687.4 m²

• ZONING (IP13) LIGHT INDUSTRIAL

SETBACKS	ALLOWED/ REQUIRED	PROPOSED
- FRONT YARD	6m	27m
- SIDE YARD	6m	7.1m
- INTERIOR SIDE YARD	4m	7.2m
- REAR YARD	6m	15.9m
- MAX. FSI	2	0.5
- MAX G.F.A	173,374.8 m2	±44,493 m²
- COVERAGE	55%	51%
- BUILDING HEIGHT	22m	11.2m
- LANDSCPE REQUIREMENT	15%	15%

• CITY PARKING REQUIREMENTS

- LIGHT INDUSTRIAL	0.8 /100 m² FOR THE FIRST 5,000 m² AND 0.4/100 m² ABOVE 5,000 m²
- HC RESERVED	100-199 CARS MIN. 2 HC RESERVED
- MIN. AISLE WIDTH 6.7m	6.7m (2 WAY)
- LANDSCAPED BUFFER TO STREET	MIN, 3m
- STANDARD STALL DIMENSIONS	MIN. 2.6m X 5.2m
- HC STALL DIMENSIONS	MAX. 3.66m X 5.2m
- BICYCLE PARKING	1/1,000m²

• PROPOSED BUILDING AREAS

- BUILDING A	±230,247 ft²	±21,398 m²
- BUILDING B	±248,498 ft²	±23,095 m²
- TOTAL GROSS FLOOR AREA (G.F.A.)	**±478,744 ft²**	**±44,493 m²**
- TOTAL COVERAGE		51.3%
- TOTAL LANDSCAPING	±138,512 ft²	15%
INCLUDES CURBS AND SIDEWALKS		

• PROPOSED PARKING

BUILDING A	
- PARKING REQUIRED BY THE CITY	106 STALLS
- PARKING PROVIDED	193 STALLS
- BICYCLE PARKING REQUIRED	21 STALLS
BUILDING B	
- PARKING REQUIRED BY THE CITY	114 STALLS
- PARKING PROVIDED	114 STALLS
- BICYCLE PARKING REQUIRED	23 STALLS

• BUILDING A AREA SUMMARY

TENANT BUILDING A1		
- WAREHOUSE	±55,410 ft²	±5,150 m²
- OFFICE (5%)	±2,916 ft²	±271 m²
- A1 TENANT AREA	**±58,326 ft²**	**±5,421 m²**
TENANT BUILDING A2		
- WAREHOUSE	±55,074 ft²	±5,118 m²
- OFFICE (5%)	±2,899 ft²	±269 m²
- A2 TENANT AREA	**±57,972 ft²**	**±5,388 m²**
TENANT BUILDING A3		
- WAREHOUSE	±54,980 ft²	±5,110 m²
- OFFICE (5%)	±2,894 ft²	±269 m²
- A3 TENANT AREA	**±57,874 ft²**	**±5,379 m²**
TENANT BUILDING A4		
- WAREHOUSE	±53,271 ft²	±4,951 m²
- OFFICE (5%)	±2,804 ft²	±261 m²
- A4 TENANT AREA	**±56,074 ft²**	**±5,211 m²**
TOTAL AREA BUILDING A	**±230,247 ft²**	**21398.38**

• BUILDING B AREA SUMMARY

TENANT BUILDING B1		
- WAREHOUSE	±55,352 ft²	±5,142 m²
- OFFICE (5%)	±2,913 ft²	±271 m²
- B1 TENANT AREA	**±58,265 ft²**	**±5,415 m²**
TENANT BUILDING B2		
- WAREHOUSE	±55,028 ft²	±5,112 m²
- OFFICE (5%)	±2,896 ft²	±269 m²
- B2 TENANT AREA	**±57,924 ft²**	**±5,383 m²**
TENANT BUILDING B3		
- WAREHOUSE	±58,870 ft²	±5,469 m²
- OFFICE (5%)	±3,098 ft²	±288 m²
- B3 TENANT AREA	**±61,968 ft²**	**±5,759 m²**
TENANT BUILDING B4		
- WAREHOUSE	±66,823 ft²	±6,208 m²
- OFFICE (5%)	±3,517 ft²	±327 m²
- B4 TENANT AREA	**±70,340 ft²**	**±6,537 m²**
TOTAL AREA BUILDING B	**±248,498 ft²**	**23094.58**

LEGEND (OVERALL PLAN)

- PROPERTY LINE
- SETBACK LINE (YARD & BUFFER)
- FIRE ROUTE
- PROPOSED NEW BUILDING
- PROPOSED LANDSCAPE AREA
- SITE ENTRANCE/ EXIT
- BUILDING ENTRANCE/ EXIT
- EXIT DOOR

GKC
ARCHITECTURE & DESIGN
MONTREAL - TORONTO
100 - 7275 ST-URBAIN MONTRÉAL QC H2R 2Y5 T:514.737.6255 WWW.GKC.CA

A | C
B | D

NORTH / PROJECT NORTH

SURVEY:
ALL THE INFORMATION RELATED TO THE SITE ARE ON THE PLAN PREPARED BY:
COMPANY NAME HERE
DRAWING : NO-X
FOLIO : XX
MINUTE : XX
DATE : YYY-MM-DD

LOCATION:
THIS BUILDING IS PARALLEL TO THE SOUTHERN PROPERTY LINE, GOVERNING DIMENSIONS ARE FROM PROPERTY LINE TO STRUCTURAL GRIDLINE.

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

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

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

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

SOIL REPORT:
SOIL TESTING, CORE SAMPLING AND CARRYING CAPACITY. CONSULT THE SOIL REPORT PREPARED BY: _____
REPORT NO: XX
DATE: XX

No.	Date	Revision	By
1	2022-12-16	ISSUED FOR SPA	

ROSEFELLOW KANATA
405 HUNTMAR DR.
CITY OF OTTAWA ONTARIO

ARCHITECTURE

SITE PLAN

DRAWN BY: AH CHECKED BY: EB

SCALE: As indicated

DRAFT

FOLIO: 22081 A100 R1

C:\Users\Alamgir\Documents\Revit\22081_A_ROSEFELLOW KANATA_V22_Alamgir\HS702.rvt 2022-12-14 12:09:08 PM

APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	**405 Huntmar Drive**
Description of Location	**North side of Campeau Drive Between Huntmar Drive and Journeyman Street**
Land Use Classification	**Warehousing (ITE LU Code 150)**
Development Size (units)	
Development Size (m^2)	**43,610**
Number of Accesses and Locations	**Five Total (two on Jouneyman Street, two on Huntmar Drive, and one on Campeau Drive)**
Phase of Development	**One**
Buildout Year	**2024**

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

2. Trip Generation Trigger

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

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

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

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

3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	✓	
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*		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)?	✓	
Is the proposed driveway within auxiliary lanes of an intersection?	✓	
Does the proposed driveway make use of an existing median break that serves an existing site?		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.

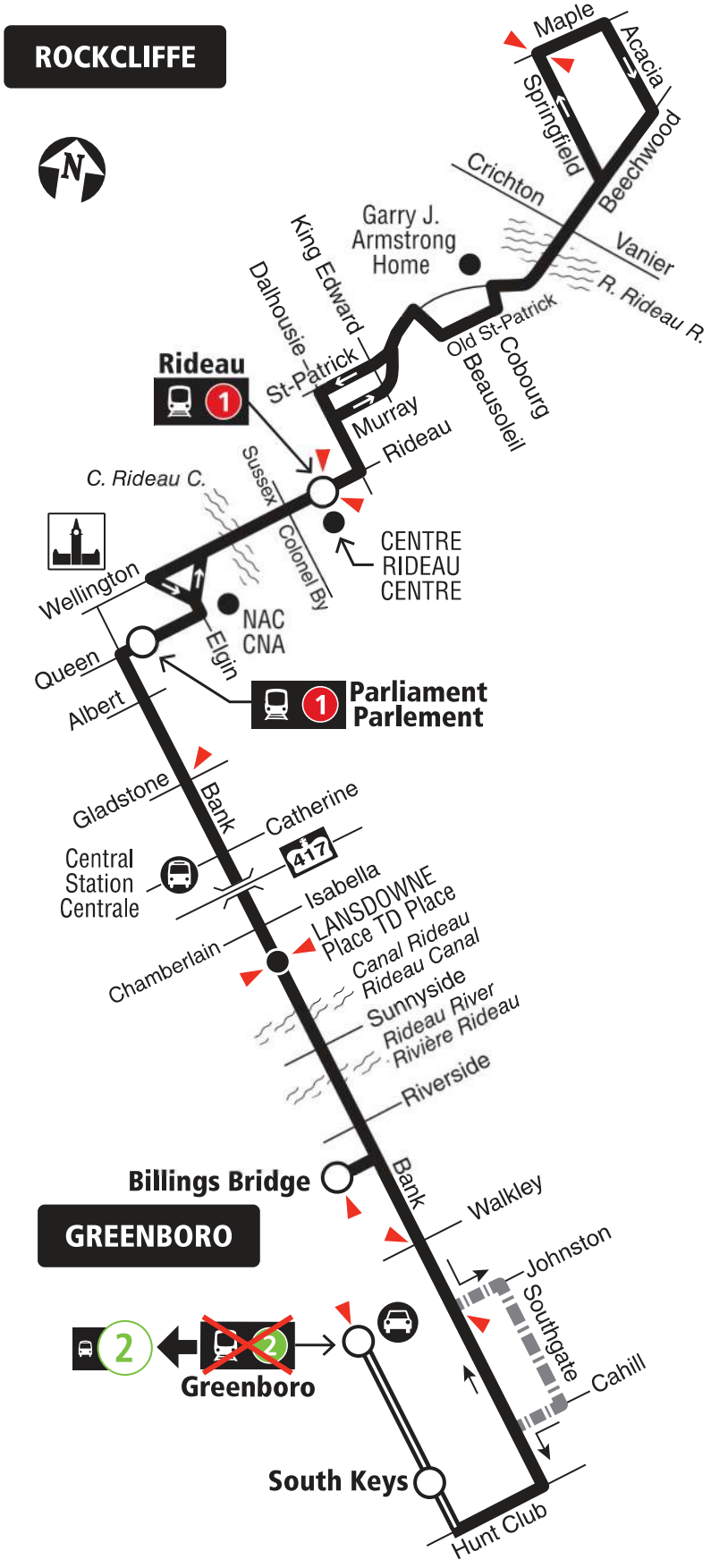
5. Summary

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

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

APPENDIX C

OC Transpo Route Maps


ROCKCLIFFE
N
Maple
Acacia
Springfield
Beechwood
Crichton
Garry J. Armstrong Home
Vanier
R. Rideau R.
King Edward
Dalhousie
St-Patrick
Old St-Patrick
Cobourg
Beausoleil
Rideau
1
Murray
Rideau
Sussex
C. Rideau C.
Colonel By
CENTRE RIDEAU CENTRE
Wellington
NAC CNA
Elgin
Queen
Albert
1
Parliament Parlement
Gladstone
Bank
Catherine
417
Central Station Centrale
Isabella
LANSDOWNE Place TD Place
Chamberlain
Canal Rideau
Rideau Canal
Sunnyside
Rideau River
Rivière Rideau
Riverside
Billings Bridge
Bank
Walkley
GREENBORO
Johnston
Southgate
Cahill
2
2
Greenboro
South Keys
Hunt Club
Transitway & Station
No early morning service / Aucun service matinal
Park & Ride / Parc-o-Bus
Timepoint / Heures de passage

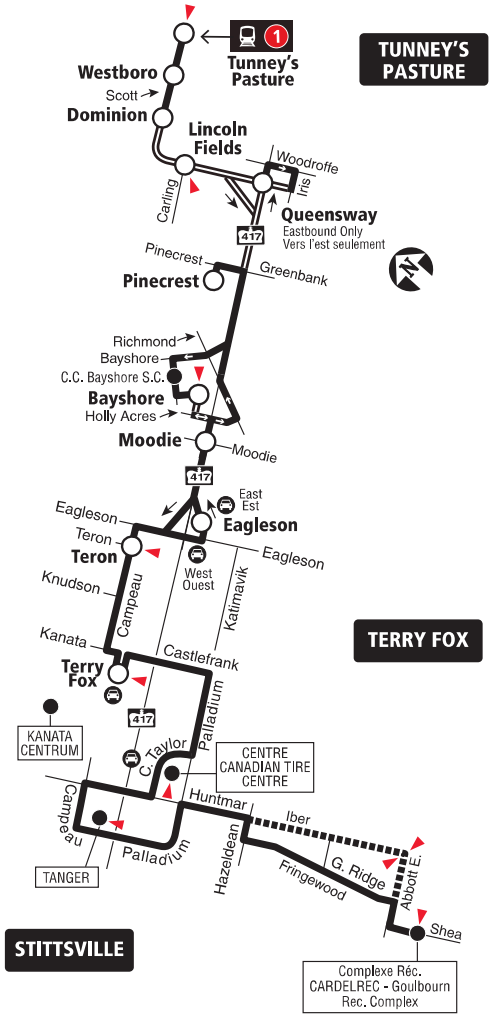
2020.08

62 Rapide

TERRY FOX STITTSVILLE
TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Transitway & Station

Weekday southbound trips before noon and weekday northbound trips between noon and 8 p.m. travel via Iber and Abbott E.

Trajets en semaine vers le sud en avant midi et trajets en semaine vers le nord entre midi et 20 h via Iber et Abbott E.

Park & Ride / Parc-o-bus

Timepoint / Heures de passage

2022.06

2022.06

Schedule / Horaire 613-560-1000
Text / Texto* 560560
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres
*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

Customer Service
Service à la clientèle 613-560-5000

Lost and Found / Objets perdus 613-563-4011

Security / Sécurité 613-741-2478

Effective June 26, 2022
En vigueur 26 juin 2022

OC Transpo
INFO 613-560-5000
octranspo.com

APPENDIX D

Traffic Count Data

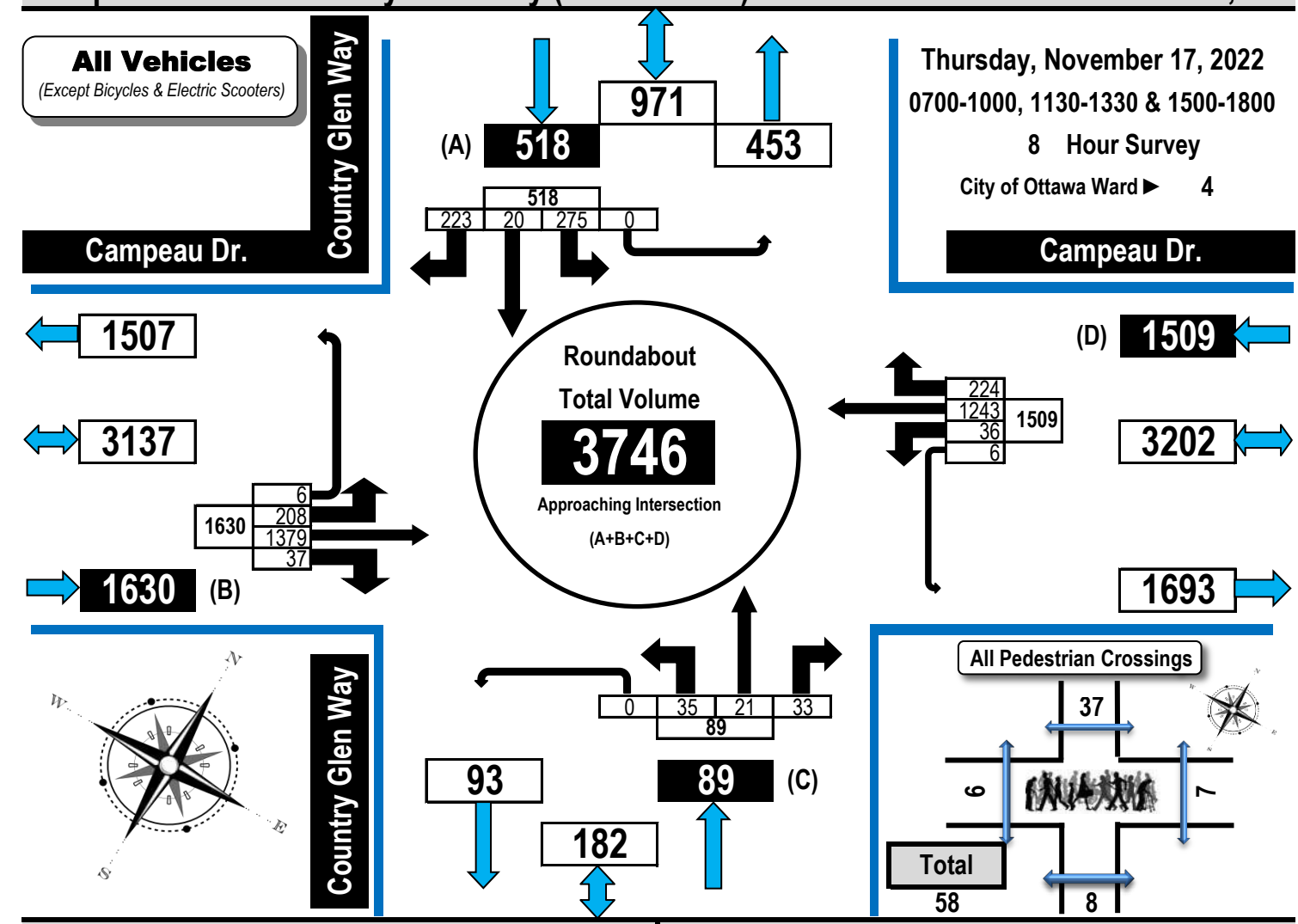
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

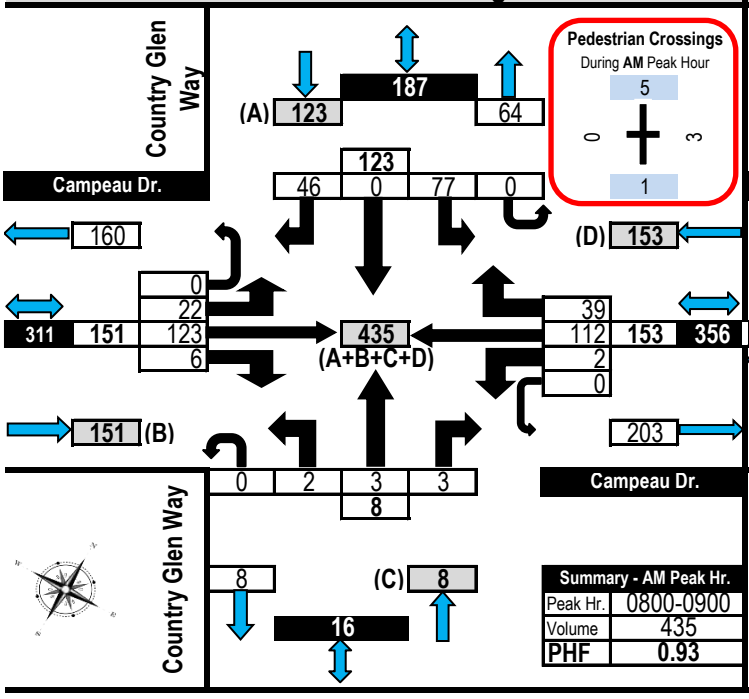
Campeau Drive & Country Glen Way (Roundabout) — Kanata, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Thursday, November 17, 2022
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 4

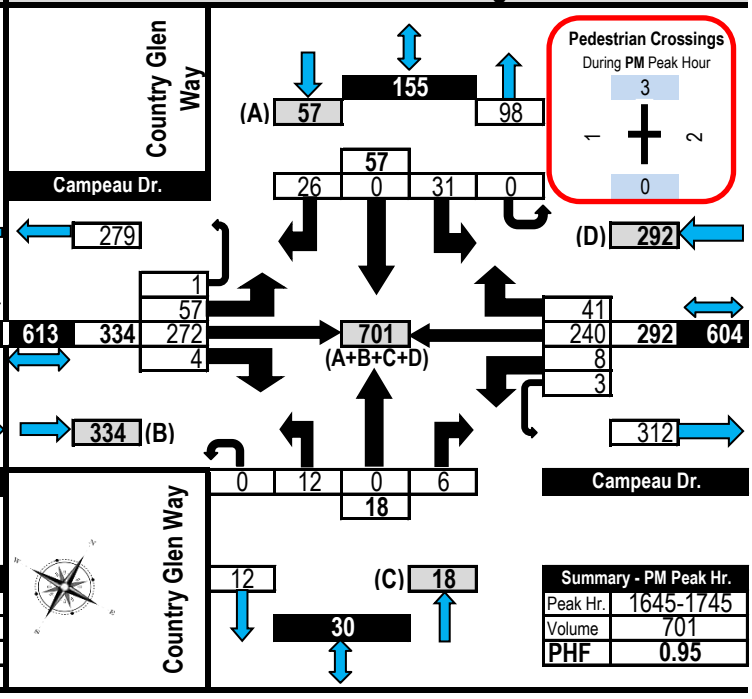


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	435
PHF	0.93

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1645-1745
Volume	701
PHF	0.95

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Huntmar Drive & Paine Avenue — Kanata, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Thursday, November 17, 2022
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 4

Total vehicle volume, all approaches. (A + C + D)

5214

Huntmar Dr.

(A) 2413 | 4598 | 2185

2413
2217 | 196 | 0

Paine Ave.

212 | 314 | 0 → 526 (D) 526

1024

498

0 | 1973 | 302 → 2275

2531 | 2275 (C) | 4806

All Pedestrian Crossings

0

No Pedestrian Crossings Observed

0

Total 0 | 0

AM Peak Hour Flow Diagram

Huntmar Dr.

(A) 297 | 641 | 344

297
271 | 26 | 0

Pedestrian Crossings During AM Peak Hr.
0
N/A + 0
0

(D) 116

Total vehicle volume, all approaches. (A + C + D)

722 (A+C+D)

56
60 | 116 | 163
0

47

0 | 288 | 21 → 309

331 | (C) 309 | 640

Paine Ave.

Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	722
PHF	0.84

PM Peak Hour Flow Diagram

Huntmar Dr.

(A) 430 | 782 | 352

430
393 | 37 | 0

Pedestrian Crossings During PM Peak Hr.
0
N/A + 0
0

(D) 76

Total vehicle volume, all approaches. (A + C + D)

896 (A+C+D)

30
46 | 76 | 181
0

105

0 | 322 | 68 → 390

439 | (C) 390 | 829

Paine Ave.

Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	896
PHF	0.92

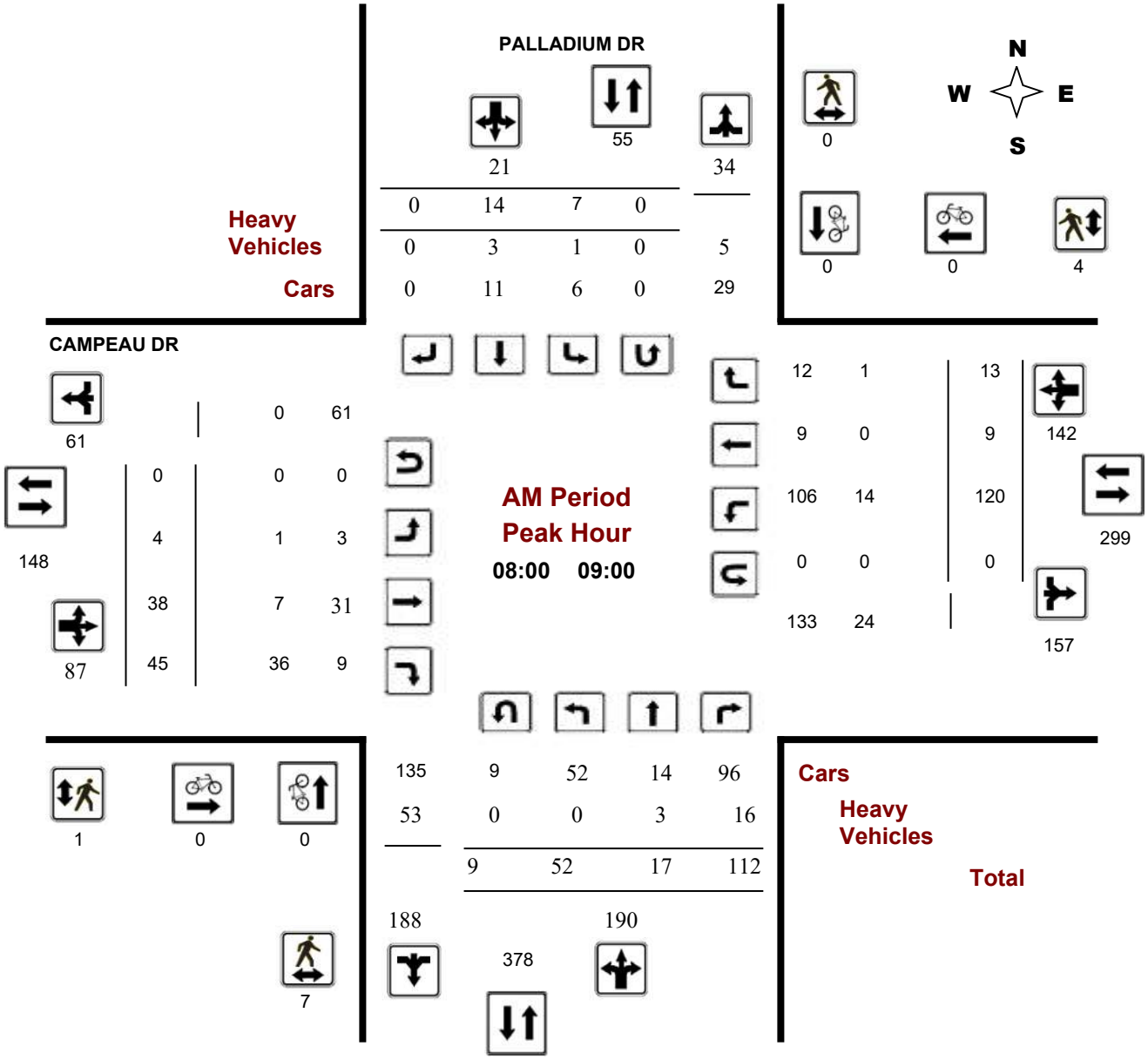
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMPEAU DR @ PALLADIUM DR

Survey Date: Monday, November 18, 2019 **WO No:** 39002

Start Time: 07:00 **Device:** Miovision



Comments

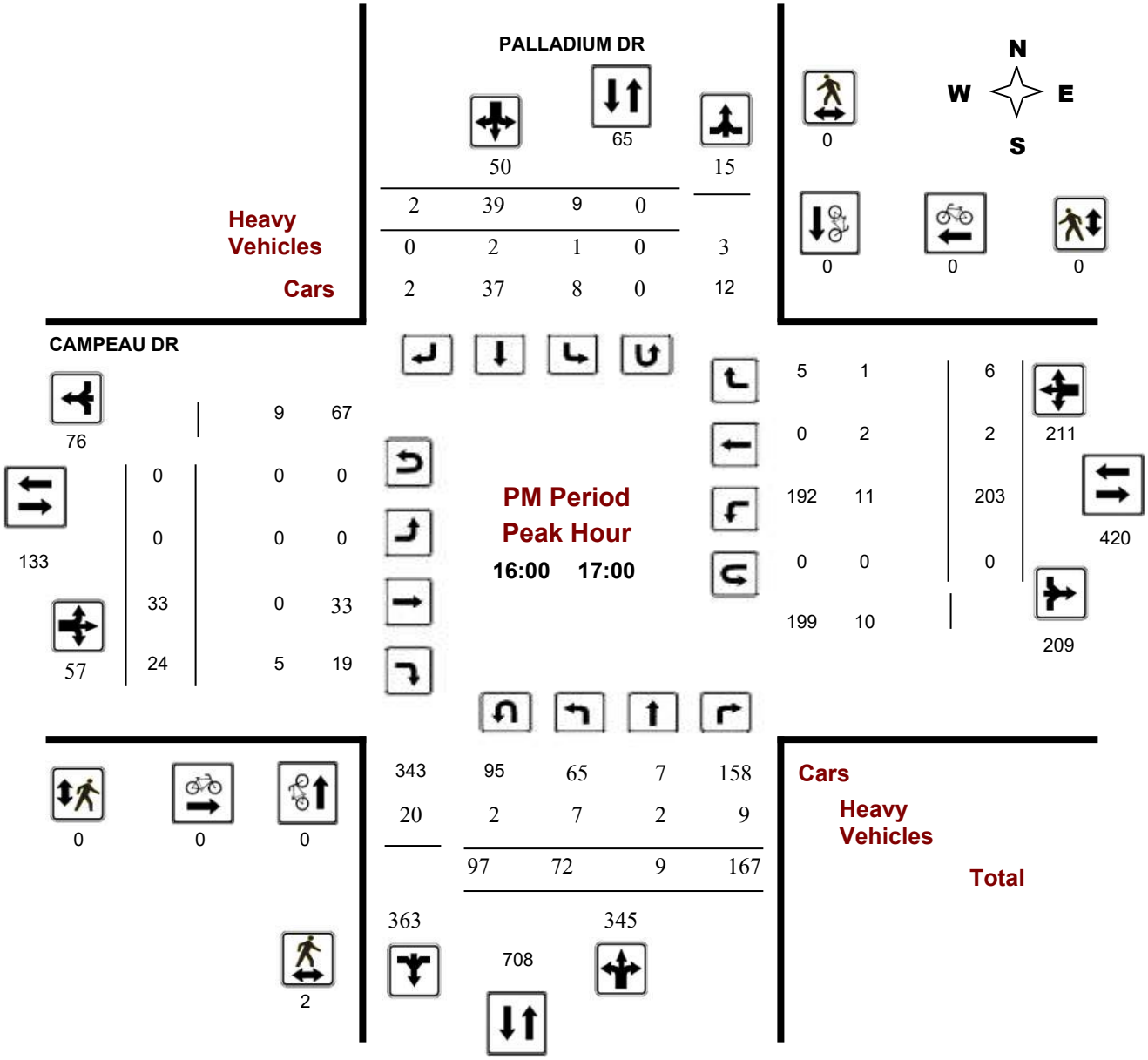
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMPEAU DR @ PALLADIUM DR

Survey Date: Monday, November 18, 2019 **WO No:** 39002

Start Time: 07:00 **Device:** Miovision



Comments

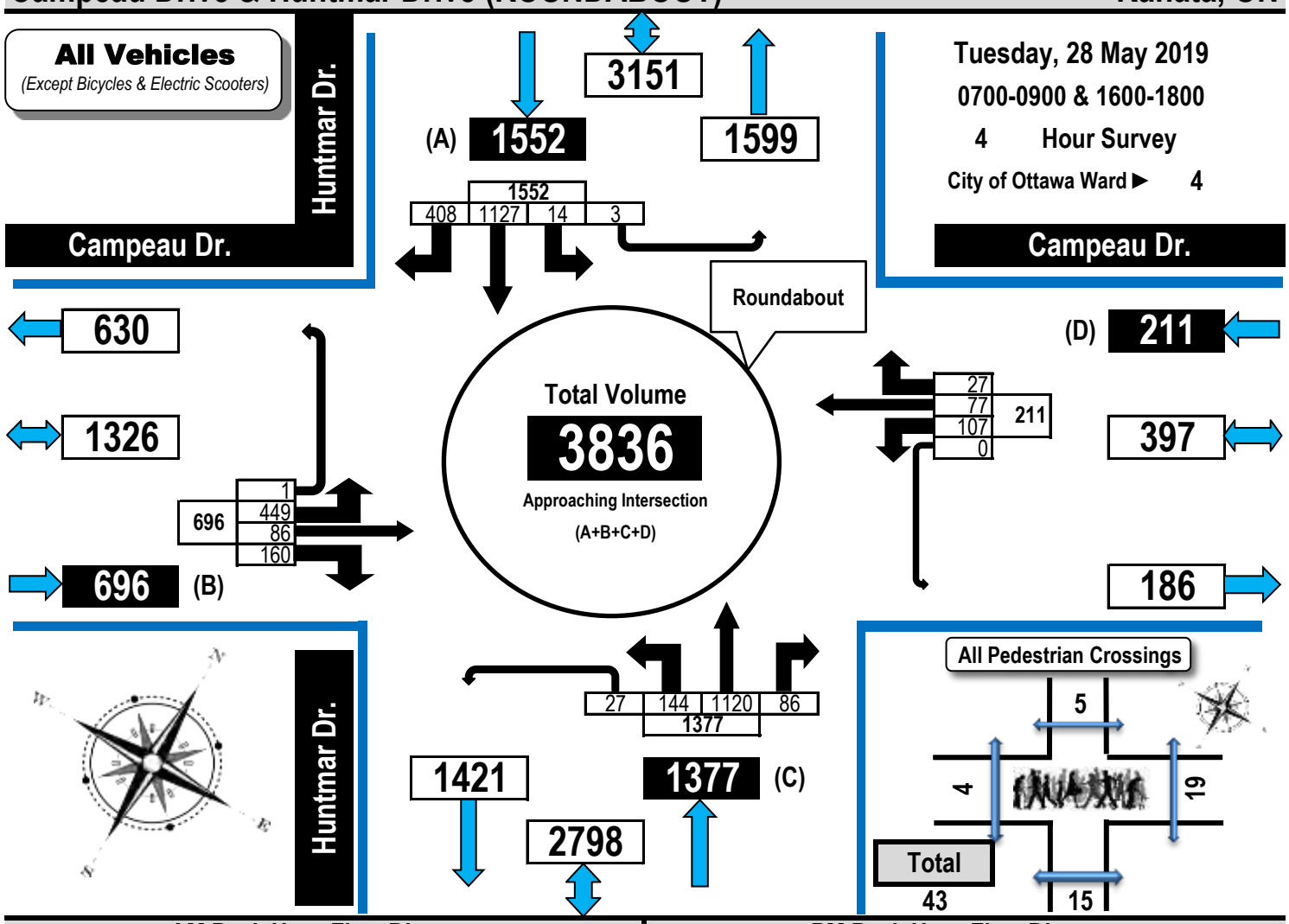
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

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

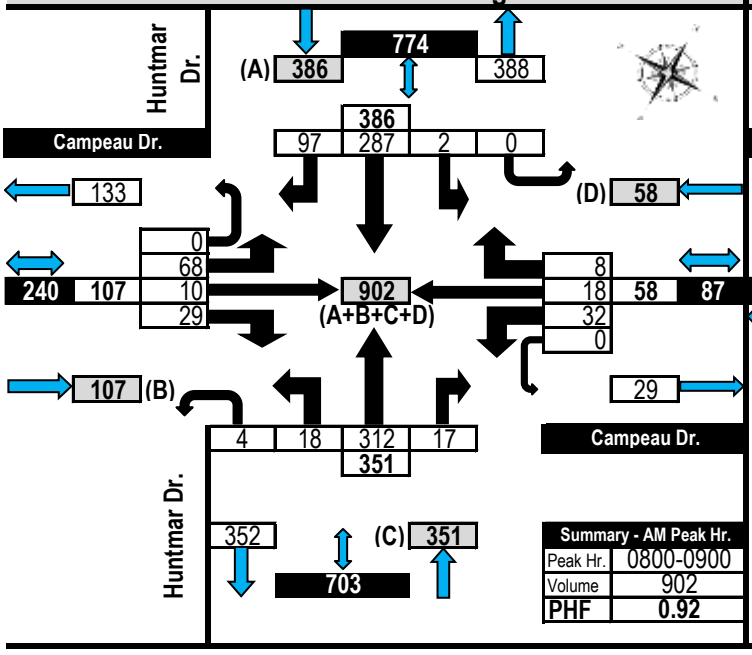
Campeau Drive & Huntmar Drive (ROUNDABOUT) — Kanata, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, 28 May 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 4

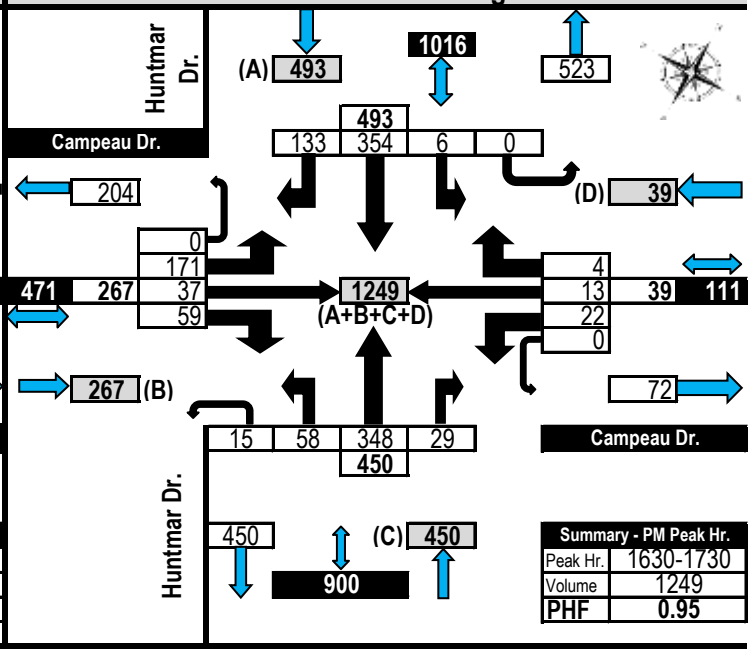


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	902
PHF	0.92

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	1249
PHF	0.95

ACCURATE TRUSTED TRAFFIC DATA

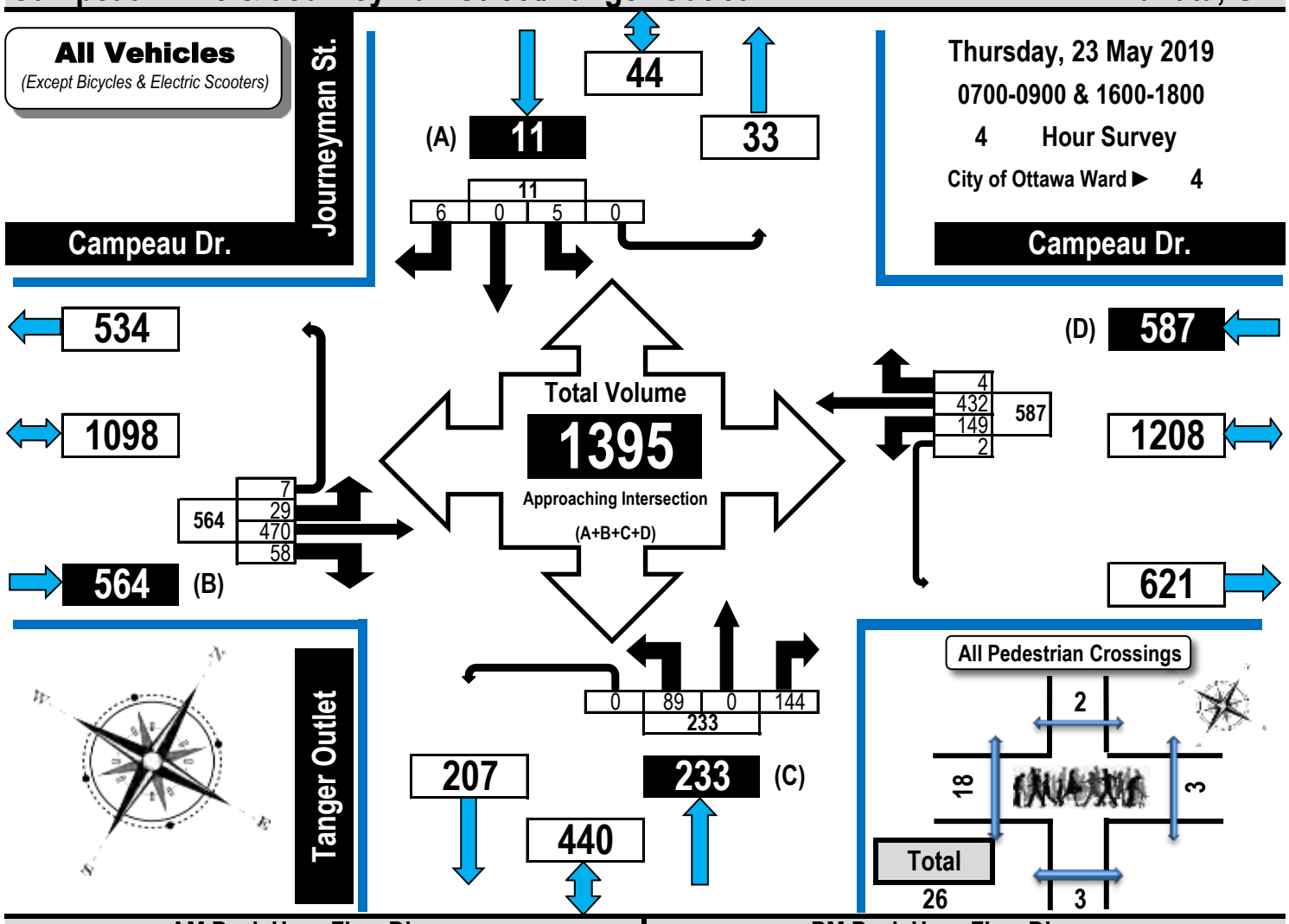
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

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

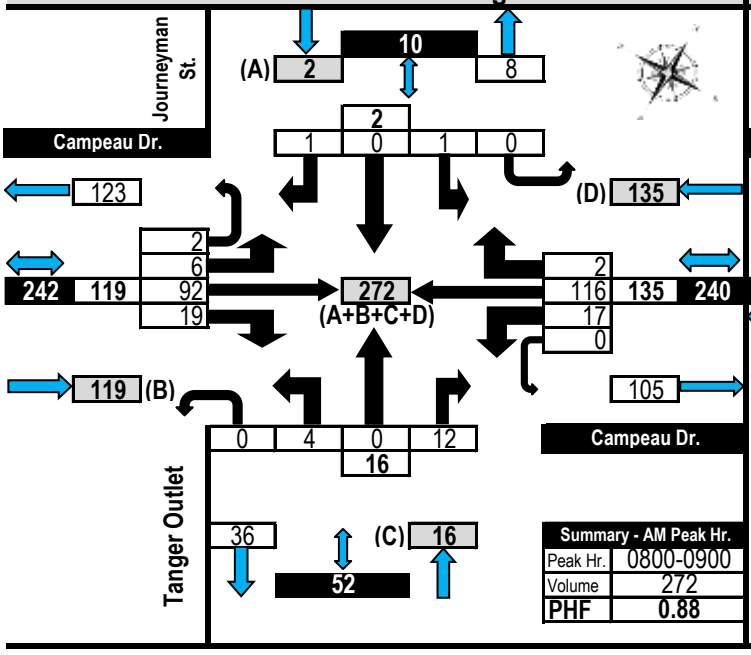
Campeau Drive & Journeyman Street/Tanger Outlet — Kanata, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Thursday, 23 May 2019
0700-0900 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 4

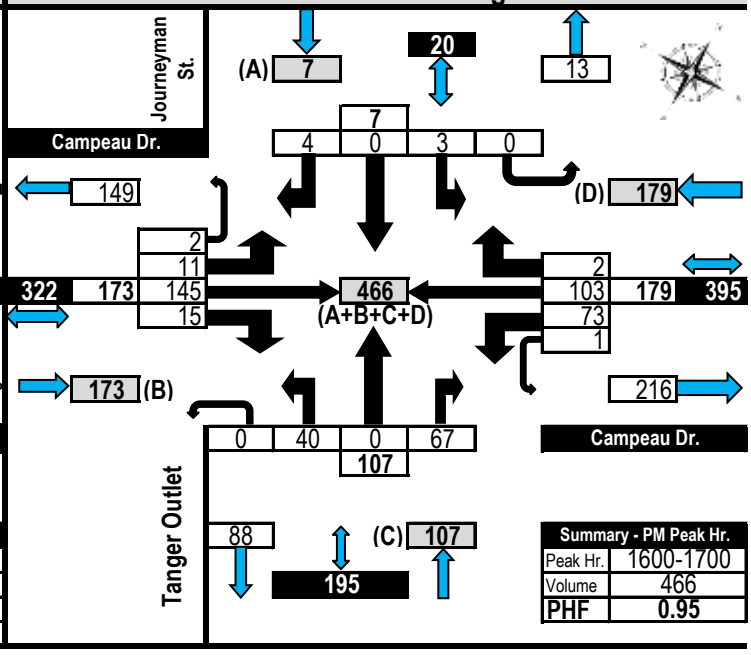


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	272
PHF	0.88

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1600-1700
Volume	466
PHF	0.95

APPENDIX E

Collision Records

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CAMPEAU DR @ HUNTMAR DR

Traffic Control: Roundabout **Total Collisions:** 16

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-24, Tue,17:27	Clear	Sideswipe	P.D. only	Dry	North	Overtaking	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Farm tractor	Other motor vehicle	
2016-Sep-12, Mon,18:14	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-14, Wed,09:50	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-10, Mon,17:47	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2017-Oct-02, Mon,07:36	Clear	Angle	P.D. only	Dry	South	Merging	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-08, Thu,22:45	Clear	Angle	P.D. only	Loose snow	West	Going ahead	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-19, Mon,14:44	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-01, Tue,18:30	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-Jun-25, Mon,23:23	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-02, Thu,15:50	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-27, Sat,15:30	Rain	SMV other	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Curb	0
2019-Jul-03, Wed,08:44	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Municipal transit bus	Other motor vehicle	
2019-Jul-22, Mon,18:30	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Motorcycle	Curb	0

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CAMPEAU DR @ HUNTMAR DR

Traffic Control: Roundabout **Total Collisions:** 16

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Sep-30, Mon,14:57	Clear	Angle	P.D. only	Dry	South	Merging	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-18, Wed,15:56	Clear	Angle	P.D. only	Ice	South	Merging	Passenger van	Other motor vehicle	0
					West	Going ahead	Truck - closed	Other motor vehicle	
2020-Aug-31, Mon,15:55	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	

Location: CAMPEAU DR @ JOURNEYMAN ST

Traffic Control: Traffic signal **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Dec-27, Thu,19:36	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-05, Sat,14:47	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-11, Mon,18:31	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	

Location: CAMPEAU DR @ PALLADIUM DR

Traffic Control: Roundabout **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Dec-26, Thu,15:17	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	
2020-Feb-20, Thu,19:50	Clear	Angle	P.D. only	Dry	North	Merging	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, 2016 **To:** December 31, 2020

Location: CAMPEAU DR @ COUNTRY GLEN WAY

Traffic Control: Roundabout **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Sep-04, Fri,21:51	Clear	SMV other	P.D. only	Dry	East	Going ahead	Pick-up truck	Pole (sign, parking meter)	0

Location: HUNTMAR DR @ PAINE AVE

Traffic Control: Stop sign **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Oct-30, Mon,08:01	Rain	SMV other	P.D. only	Wet	North	Making "U" turn	Automobile, station wagon	Ditch	0
2018-Jul-28, Sat,17:33	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jan-22, Tue,08:29	Drifting Snow	Sideswipe	Non-fatal injury	Packed snow	South	Going ahead	Passenger van	Skidding/sliding	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jun-23, Sun,14:56	Clear	Turning movement	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	

APPENDIX F

Other Area Developments

Figure 15: Total Projected 2015 Peak Hour Traffic Volumes

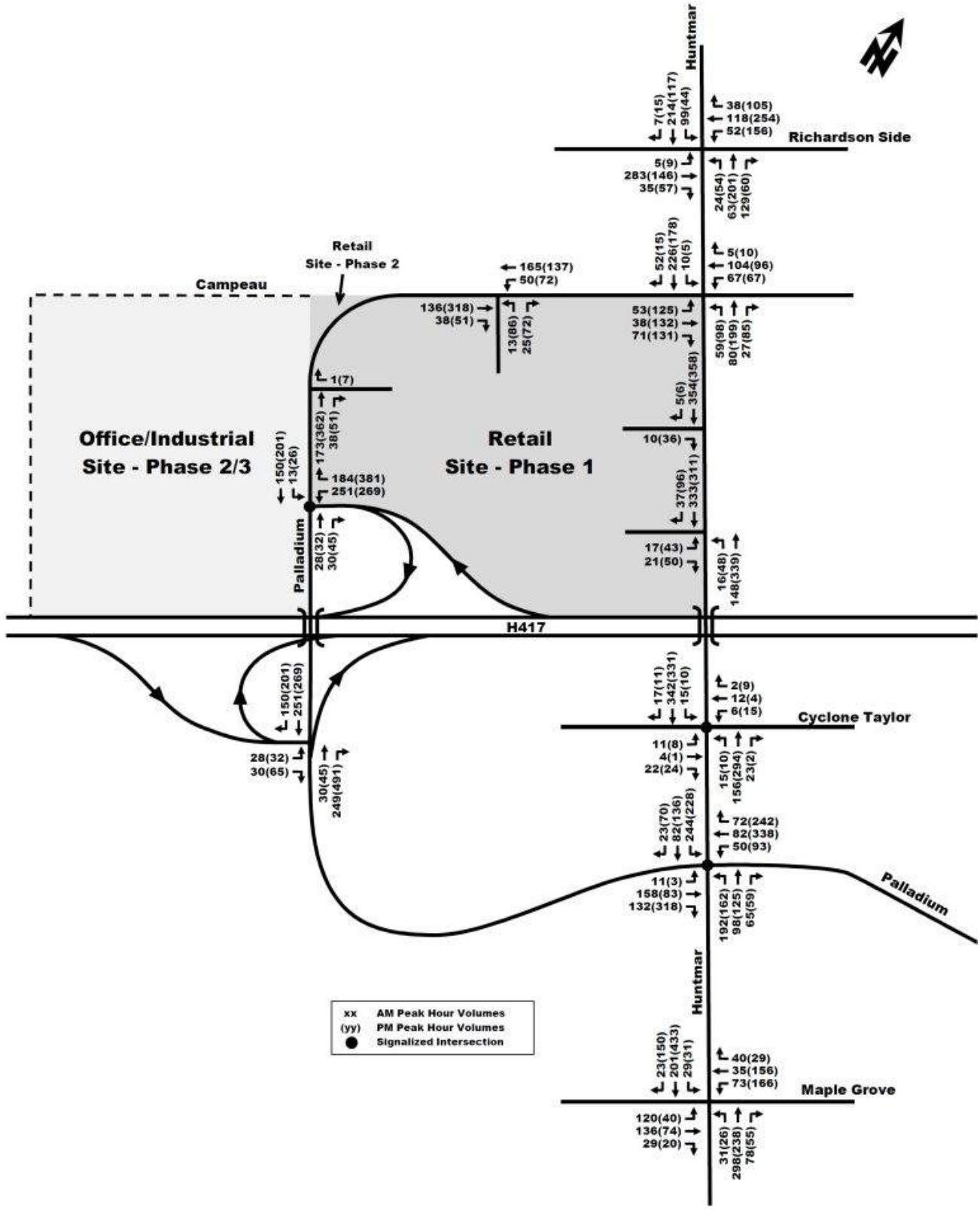
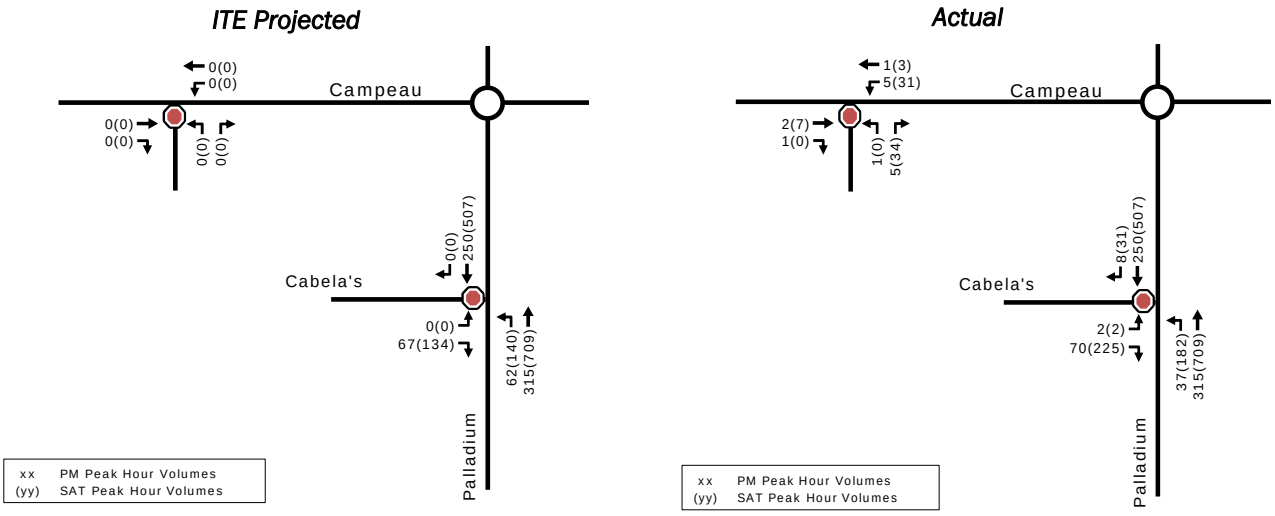


Figure 4: Projected and Actual Trip Generation (Cabela's store only)



These updated traffic generation numbers for Cabela's will be included in the ensuing assessment for the overall site.

3.4. UPS SITE

As part of Addendum #11 (dated June 27, 2016), the impact was assessed of a proposed UPS Distribution Facility located on approximately 10.3 acres of land located at the west limit of the Business Park, just west of the Campeau/Nipissing intersection. The Site Plan for UPS Distribution Centre consisted of 51,254 ft^2 of warehouse space (including a future expansion of 14,230 ft^2) and 1,930 ft^2 office space, with 127 parking spaces.

Based on the anticipated employment and operations during the peak hours, the UPS Site was forecasted to generate approximately 128 total trips during the AM peak hour (60 inbound, 68 outbound) and 128 total trips during the PM peak hour (69 inbound and 59 outbound). Of these trips, 54 outbound trips during the AM peak would be courier truck trips leaving in the morning and 54 inbound trips during the PM peak would be courier truck trips returning in the afternoon.

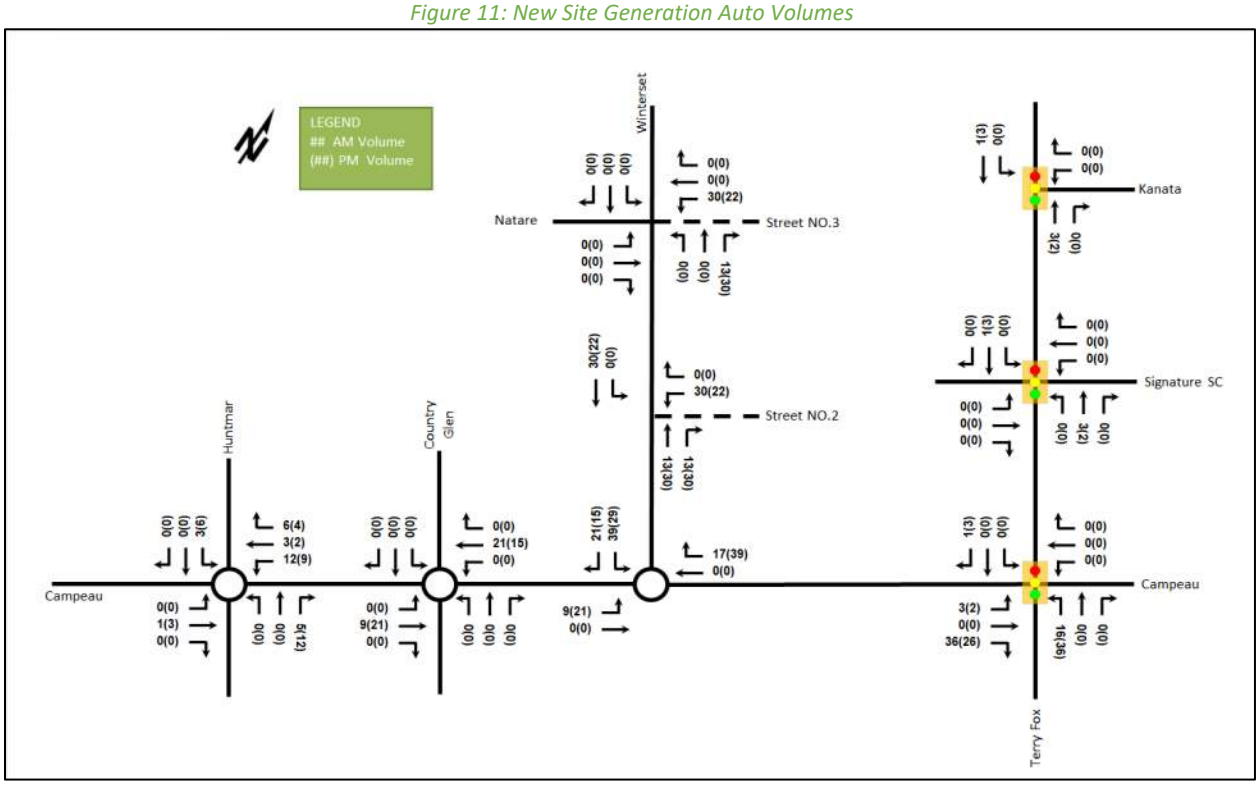
These updated traffic generation numbers for UPS Distribution Centre will be included in the ensuing assessment for the overall site. Note that the original CTS/TIS was based on 350,000 ft^2 industrial park and 75,000 ft^2 office park. The updated traffic generation will also be updated to reflect an appropriate scale of industrial/office development on the residual lands, which is now estimated to be 165,000 ft^2 using the same coverage ratio as the original Site Plan.

3.5. REVISED FORECAST

Based on the aforementioned changes/update to the land use, the overall site trip-generation was calculated based on existing traffic count volumes, proxy count volumes and ITE trip generation rates. A proxy count was conducted in April 2017 for the large format retail store which provided a trip generation rate appropriate of approximately 3.5 to 5.25 trips per 1,000ft^2 during the afternoon and Saturday peak hours (this rate is comparable to the ITE rate). The land use sizes based on the most recent Concept Plan are as follows:

- Cabela's 68,890 ft^2
- Shopping Centre 68,262 ft^2
- Industrial Park 165,000 ft^2
- Fast Food Restaurant 5,220 ft^2
- Furniture Store 53,300 ft^2
- Auto Parts Store 29,815 ft^2
- Large format retail store 120,000 ft^2
- UPS site 53,184 ft^2

Figure 11: New Site Generation Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The Campeau Drive extension was completed and opened in the fall of 2021. Therefore, volumes on Campeau Drive were re-distributed in future horizons based on the existing volumes and other area developments. These are summarized in Section 6.3.

6.2 Background Growth

A review of the background projections from the City's TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways.

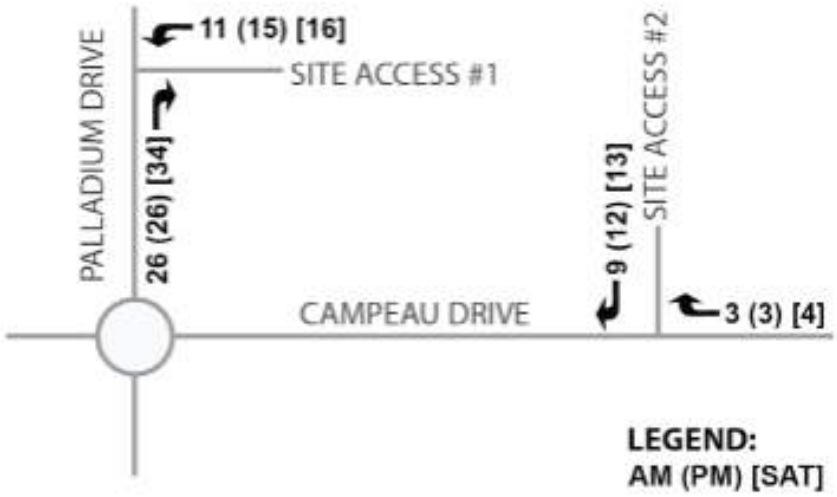
In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be positive in both east-west and north-south directions. When reviewing the existing volumes compared to the 2031 model horizon, it is noted that forecasted volumes on eastbound, westbound, and northbound movement in the study area have been exceeded.

Resultantly, growth rates derived from the two TRANS model horizons rounded to the nearest 0.25% will be peak-directionally applied to the appropriate roadway's mainline volumes and to the appropriate major turning movements at the intersections. Table 10 summarizes the growth rates applied within the study area.

3.1.7 Trip Assignment

Utilizing the estimated number of new auto trips and applying the above distribution, future site-generated traffic volumes at each of the proposed site access driveways have been illustrated in **Figure 3** as follows:

Figure 3 - Site-Generated Traffic



- **Based on the anticipated turning movement volumes illustrated in Figure 3 above, it is not expected that there will be any operational impacts at either of the site access driveways and therefore no further analysis is required.**

As shown in **Table 4.1**, the proposed development is anticipated to generate 110 two-way trips (61 inbound and 49 outbound) during the AM peak hours and 119 two-way trips (60 inbound and 59 outbound) during the PM peak hours.

The assumptions for the trip distribution rates are based on the existing traffic patterns at the Campeau Drive and Palladium Drive intersection, and routes that drivers would likely take to access the subject site and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hours in **Table 4.2**.

Table 4.2 – Site Traffic Trip Distribution

Direction	Via	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
North	Palladium Drive	8%	8%	2%	2%
South	Palladium Drive	42%	42%	55%	55%
East	Campeau Drive	36%	36%	32%	32%
West	Campeau Drive	14%	14%	11%	11%
Total		**100%**	**100%**	**100%**	**100%**

Figure 4-1 - Site Generated Traffic Volumes

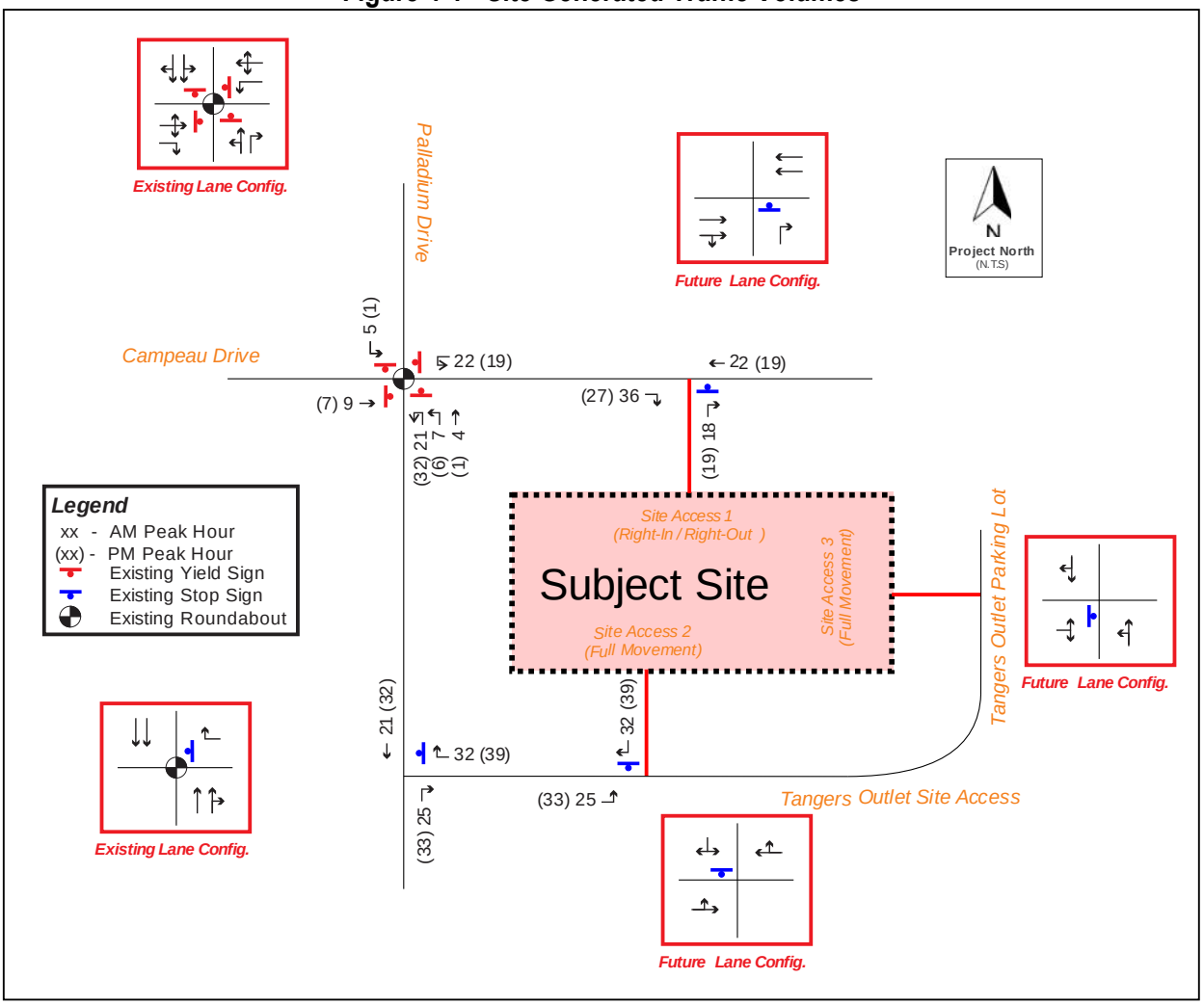


Figure 12: Maritime Ontario Facility Site-Generated Traffic (Phase 1)

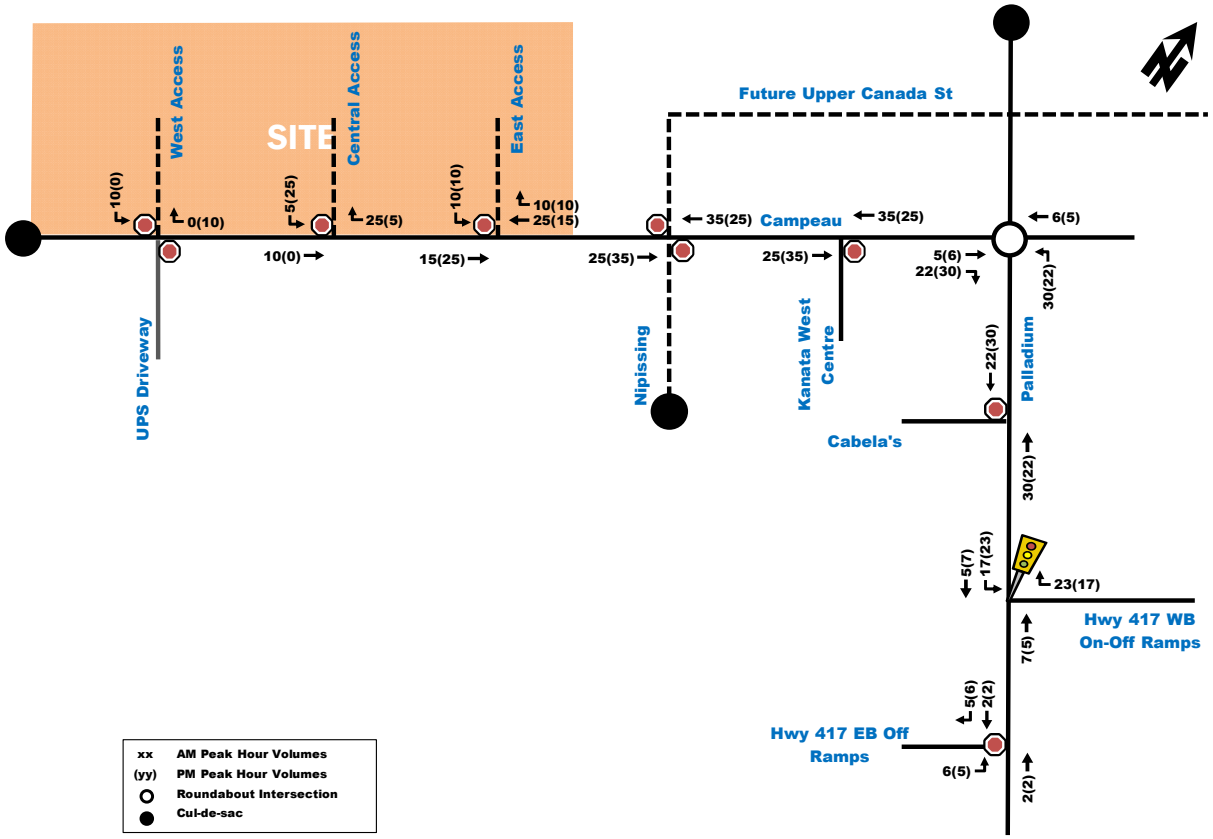


Figure 13: Maritime Ontario Facility Site-Generated Traffic (Phase 2)

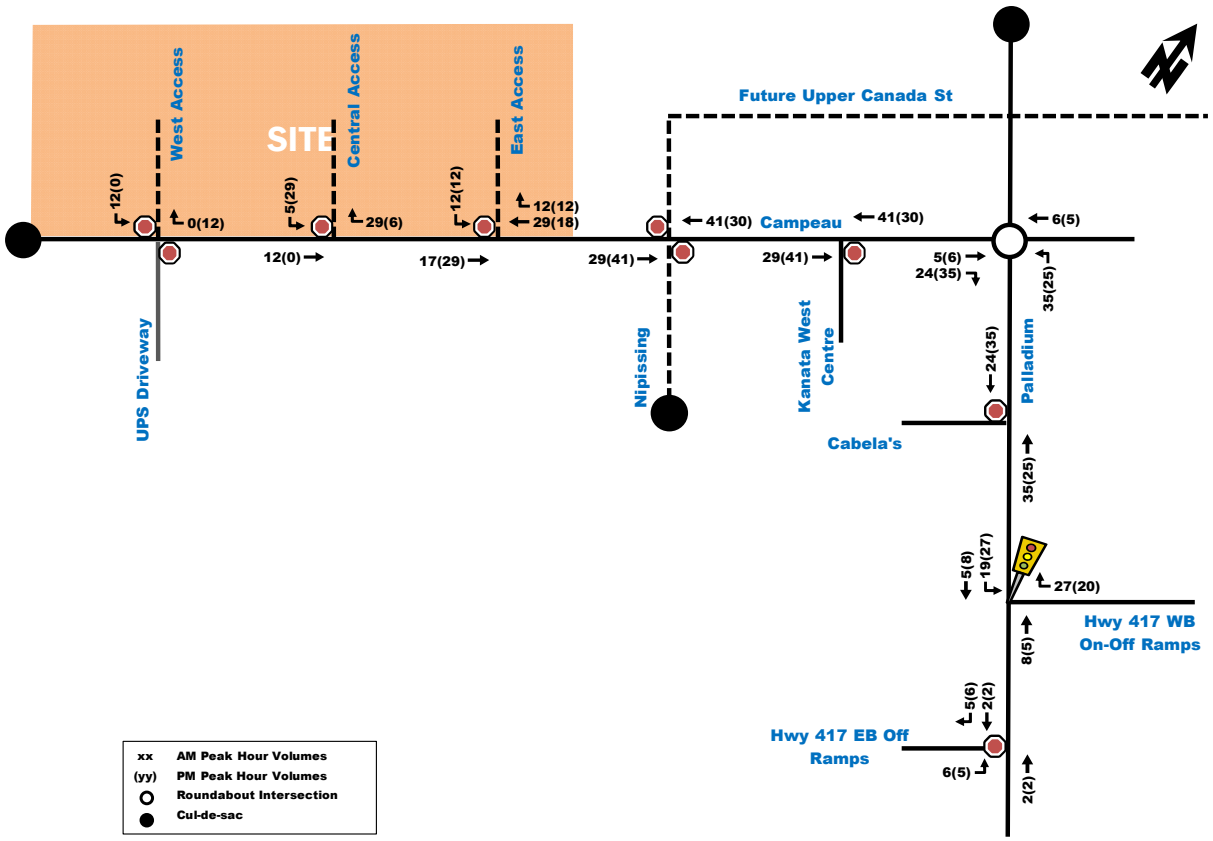


Figure 18: Trip Assignment

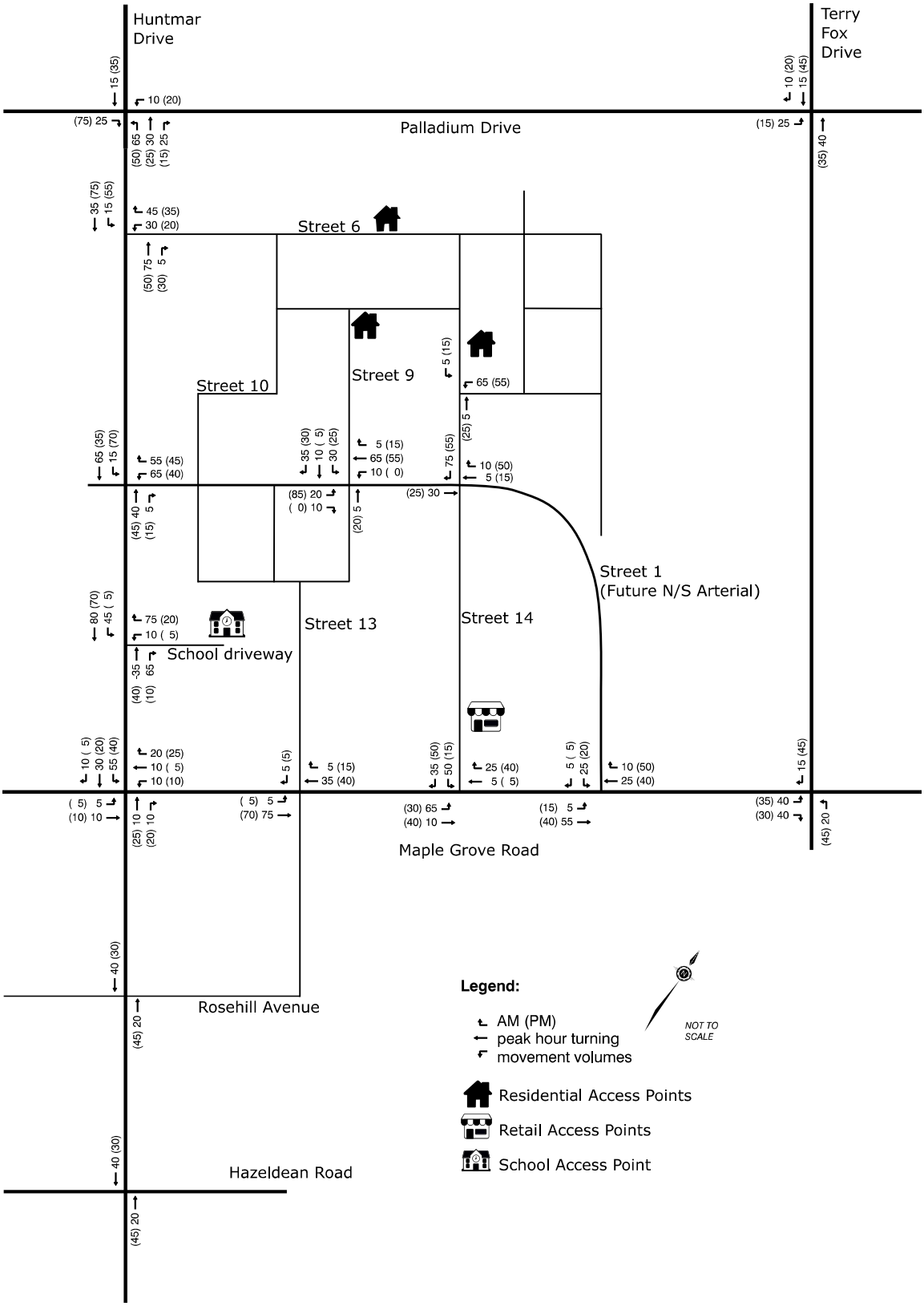
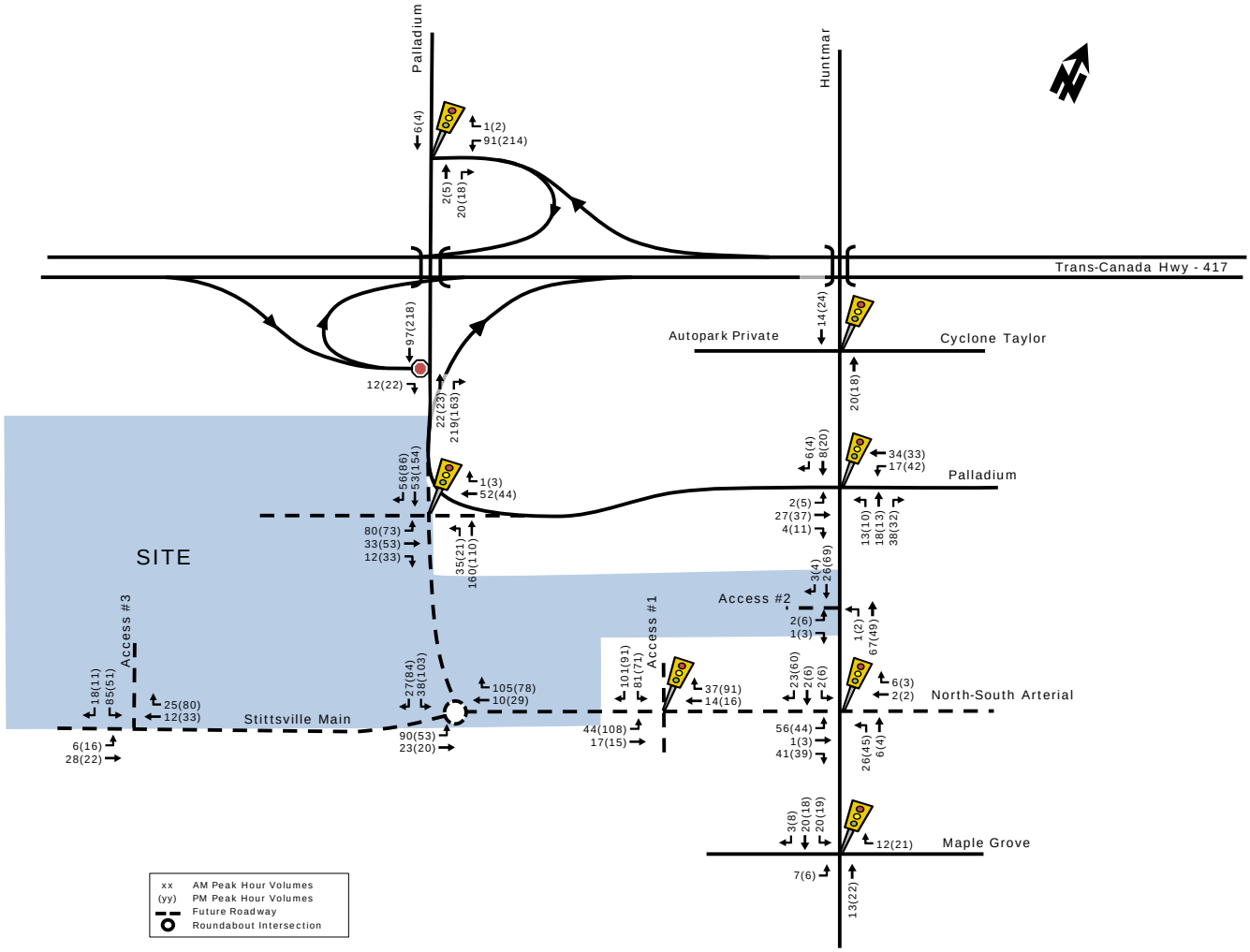


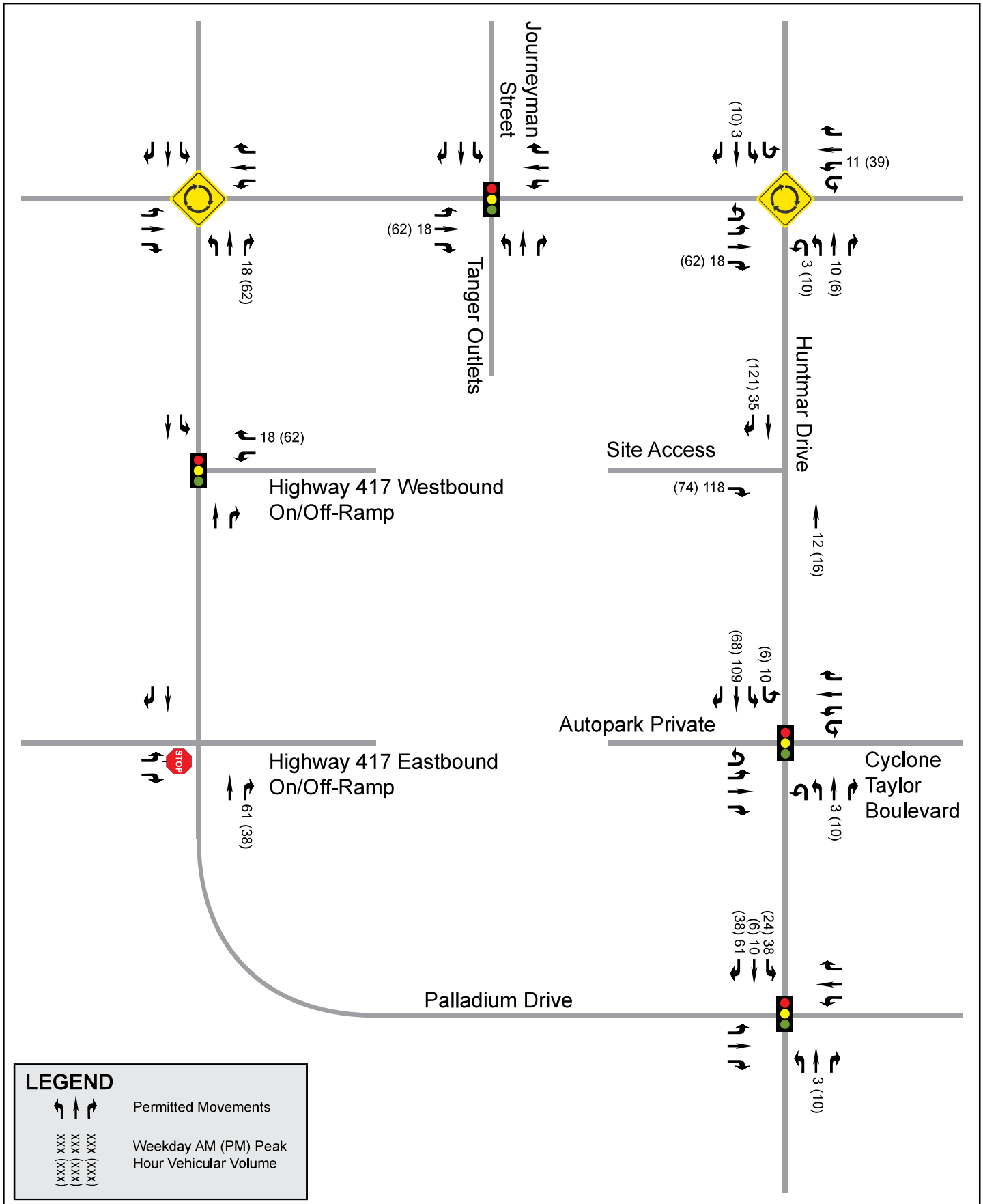
Figure 12: 'New' and 'Pass-by' Site Generated Traffic Volumes



FUTURE TRAFFIC OPERATIONS

As mentioned previously, an extensive amount of transportation work has been done within the vicinity of the site and the future road network has been developed based on this transportation planning work. As shown on the Concept Plan, the North-South Arterial and Stittsville Main Street Extension are the two future roadways that will provide access/egress to the site. Signalized or roundabout intersections will be constructed at the major intersections with these future roads, those being Huntmar/North-South Arterial, Palladium/North-South Arterial, Stittsville Main/North-South Arterial and a potential signalized site access to North-South Arterial between Huntmar Drive and Stittsville Main Street (all shown on Figure 12).

For the purposes of this analysis, the future traffic operations will be evaluated based the proposed future road network and the currently proposed land uses. Given the extensive transportation planning already completed for Kanata West, the following section will evaluate the difference in traffic impact between the proposed site's land uses and the land uses originally planned. In addition, as shown on the Concept Plan (Figure 2), a roundabout intersection is being considered at the Stittsville Main/North-South Arterial intersection. An analysis of future traffic operations at this intersection is provided herein to determine the suitability of a roundabout intersection, compared to a signalized intersection, at this location.



The Burroughs Kanata
Transportation Impact Assessment

Exhibit 6:
Site-Generated
Traffic Volumes

PROJECT No. 127255
DATE: May 2021
SCALE: N.T.S.

Table 12: OD Survey Distribution – Kanata/ Stittsville

To/From	Residential % of Trips
North	15%
South	30%
East	50%
West	5%
Total	**100%**

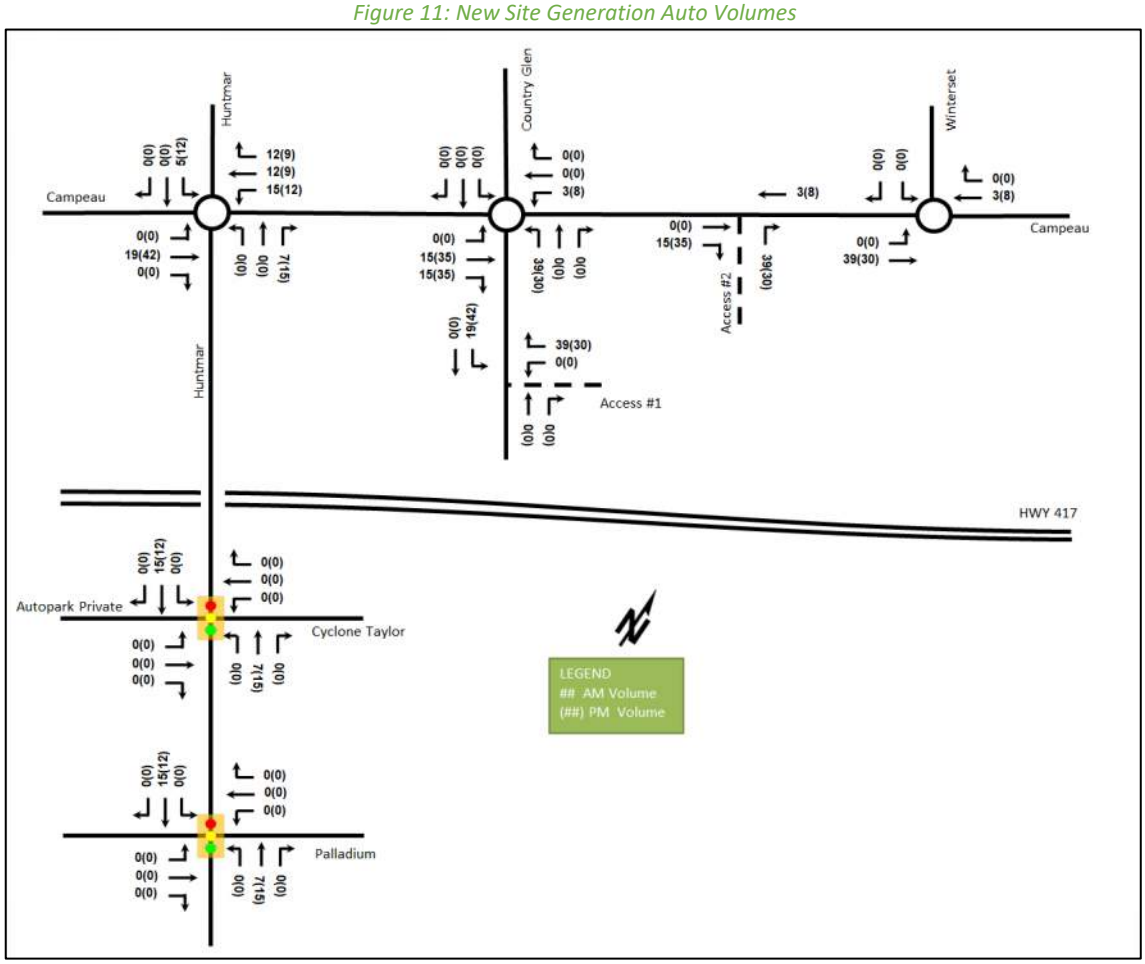
5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 13 summarizes the proportional assignment to the study area roadways, and Figure 11 illustrates the new site generated volumes.

Table 13: Trip Assignment

To/From	Inbound Via	Outbound Via
North	15% Huntmar Drive(N)	15% Huntmar Drive (N)
South	10% Campeau Drive(W) 20% Huntmar Drive (S)	10% Campeau Drive(W) 20% Huntmar Drive (S)
East	40% Campeau Drive(W) 10% Campeau Drive(E)	50% Campeau Drive(E)
West	5% Campeau Drive (W)	5% Campeau Drive (W)
Total	**100%**	**100%**

Figure 11: New Site Generation Auto Volumes



3.1.3. TRIP DISTRIBUTION AND ASSIGNMENT

Given the low projected number of vehicle trips projected to be generated by the proposed development, the future roadway network impact is considered negligible. However, a review of the number of vehicles projected to enter/exit the site at the proposed site driveways is provided as Figure 7.

Figure 7: Site-Generated Vehicle Trips

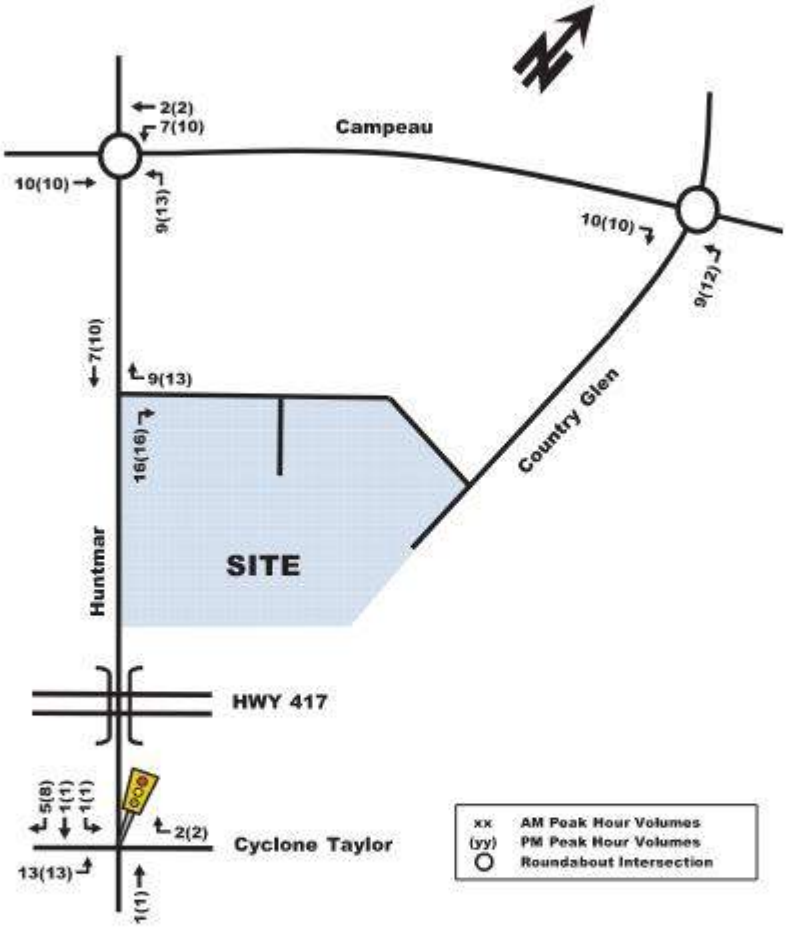


Table 4: Mode Shares for the Office Building Development

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	111	18	129	21	108	129
Auto Passenger	15%	28	5	33	5	27	32
Transit	10%	18	3	21	3	18	21
Non-motorized	15%	27	4	31	5	27	32
Total Person Trips	100%	184	30	214	34	180	214
Total 'New' Auto Trips		**111**	**18**	**129**	**21**	**108**	**129**

As shown in **Table 4**, the number of Total Person Trips and number of 'New' Auto Trips expected to be generated by the proposed development are approximately 214 person trips/h and 129 vehicle trips/h, respectively, during both the morning and afternoon weekday peak hour periods.

3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

Based on the 2011 NCR Household Origin-Destination Survey (Kanata – Stittsville district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 25% to/from the north;
- 10% to/from the south;
- 60% to/from the east; and,
- 5% to/from the west.

The expected site-generated auto trips in **Table 4** were then assigned to the road networks as shown in **Figure 9** below, based on existing traffic volumes, estimated travel times and engineering judgement.

Figure 9: Kinaxis Office Development Site-Generated Traffic

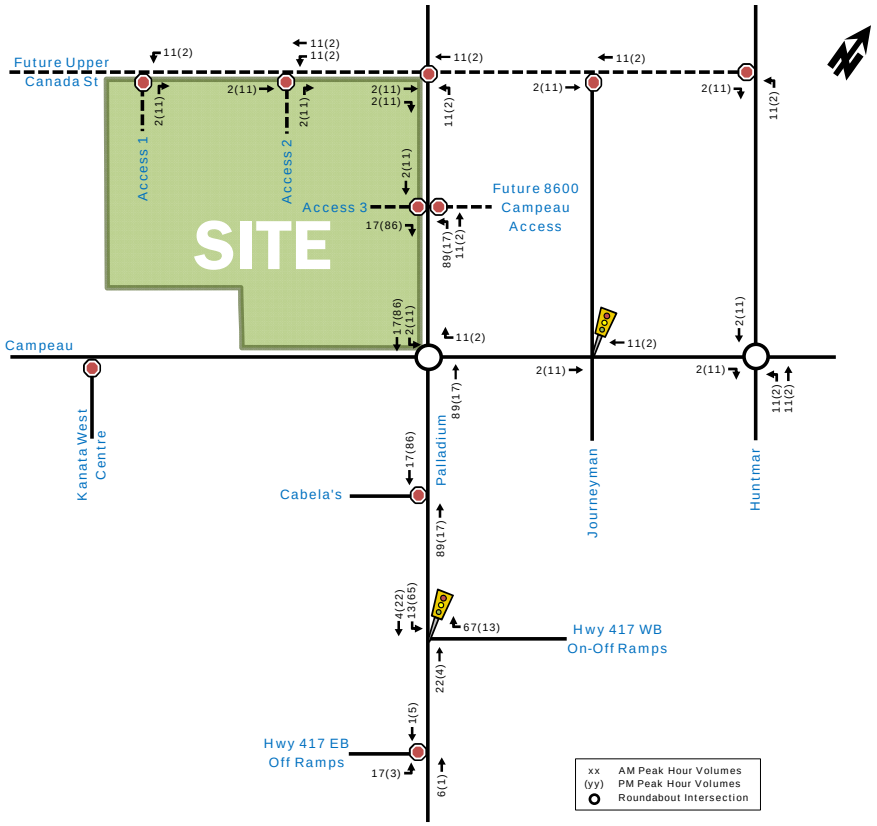


Table 6: Site-Generated Trips by Travel Mode, Horizon Year 2023

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	65%	26	8	34	10	26	36
Auto Passenger	15%	6	2	8	2	6	8
Transit	15%	6	2	8	2	6	8
Walk	2%	0	0	0	0	1	1
Bike	3%	1	0	1	0	1	1
Total Person Trips	100%	39	12	51	14	40	54
	Total Auto Trips	**26**	**8**	**34**	**10**	**26**	**36**

As shown in Table 6, the anticipated number of total auto trips generated by proposed development is approximately 34 to 36 veh/h at horizon year 2023, during the morning and afternoon peak hours.

3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (Kanata – Stittsville district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 25% to/from the north;
- 5% to/from the south;
- 60% to/from the east; and,
- 10% to/from the west.

The anticipated site-generated auto trips for the proposed development from Table 6 were then assigned to the road network as shown in Figure 10.

Figure 10: Site-Generated Traffic

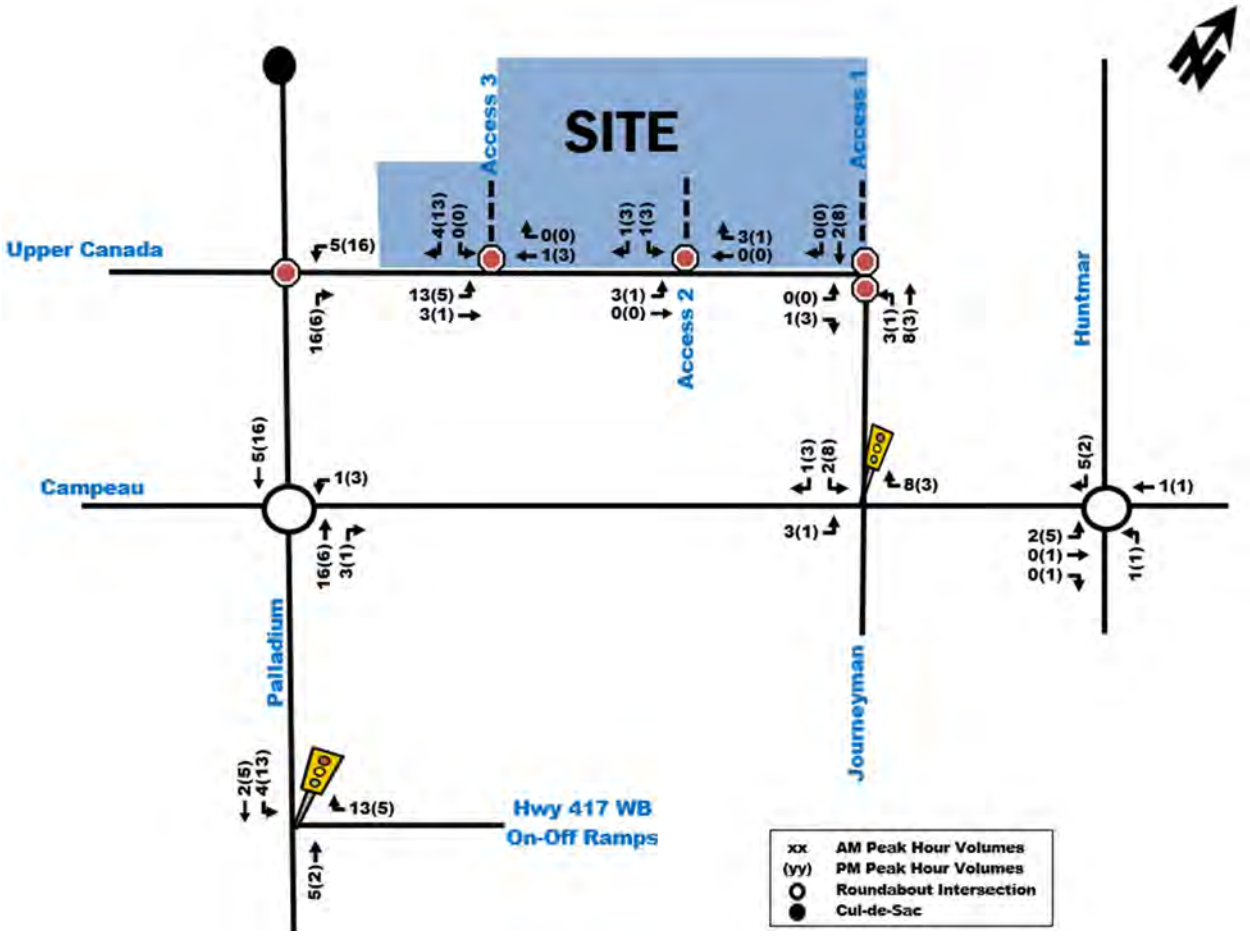
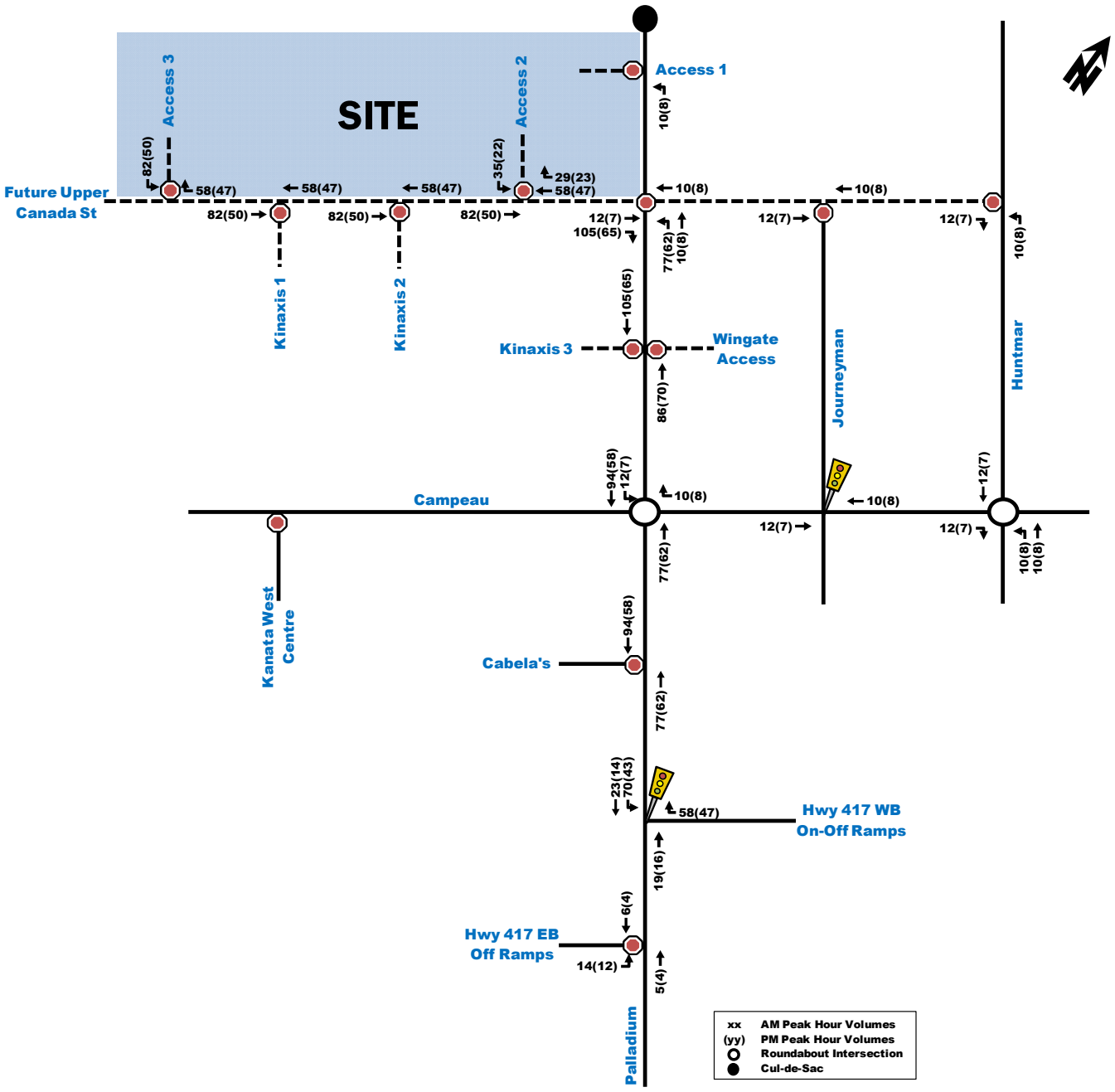


Figure 13: Purolator Facility Site-Generated Traffic (Phase 2)



It was assumed that 25% of site traffic would travel to/from Huntmar Rd, while 75% would use Hwy 417. The majority of employees and customers were anticipated to use Site Access 3, along the future Upper Canada Street, to enter and exit the development site. The remainder would use accesses 1 and 2, with access 1 being used mainly by inbound delivery and transport trucks.

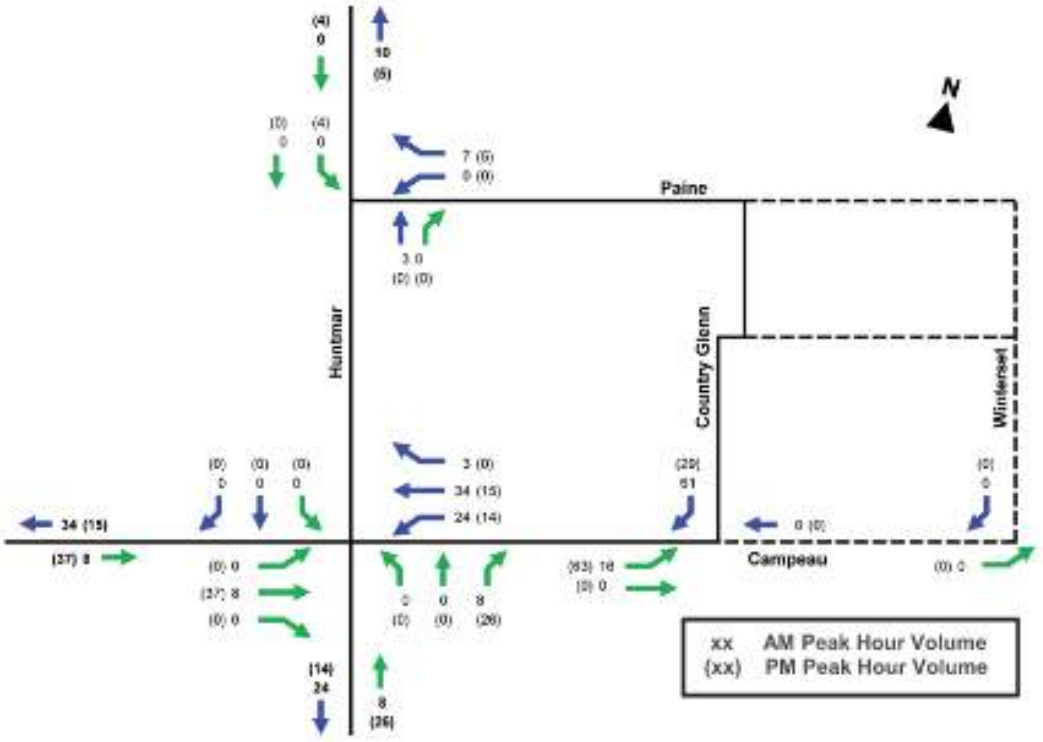


Figure 5: Site-Generated Traffic – Stage 3 Build-Out

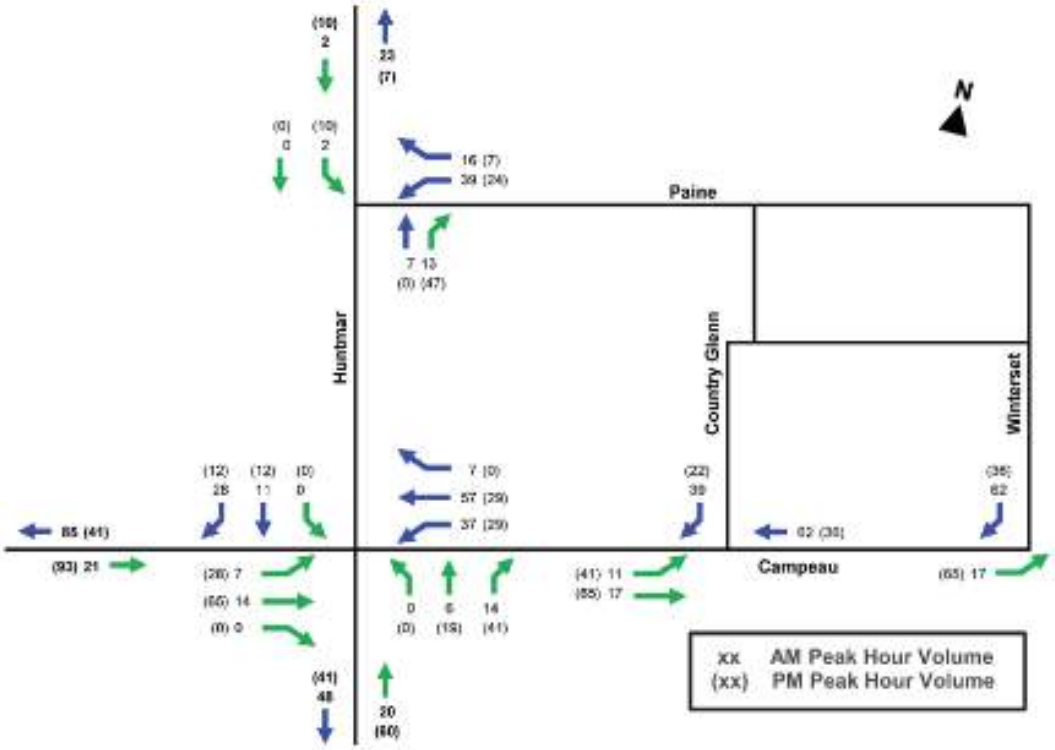


Figure 6: Site-Generated Traffic – Stage 3 and 4 Build-Out

APPENDIX G

Strategic Long-Range Model Snapshots

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Huntmar Drive Area

2011 Model - Basecase

N/A

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

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

200 400 600 800 1000

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Huntmar Drive Area

2031 Model - Basecase

User Initials: TIMW
Plot Prepared: Oct, 2022
EMME Scenario: 21715

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

200 400 600 800 1000

APPENDIX H

Signal Timing Plans

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

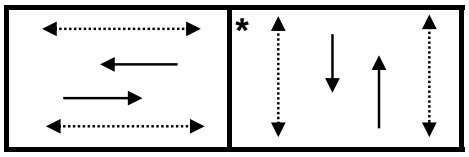
Intersection:	***Main:*** Campeau	***Side:***	Journeyman / Tanger Access
Controller:	**ATC3**	**TSD:**	**6830**
Author:	Devin Colman	**Date:**	24-Oct-2022

Existing Timing Plans†

	Plan	**Ped Minimum Time**		
	All	***Walk***	***DW***	***A+R***
	4			
Cycle	90			
Offset	X			
EB Thru	39	12	21	4.2+2.3
WB Thru	39	12	21	4.2+2.3
NB Thru	51	7	26	3.3+3.5
SB Thru	51	7	26	3.3+3.5

Phasing Sequence‡

Plan: 4



Schedule

Weekday

Time	Plan
All	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 $61.16 ($54.12 + HST)

APPENDIX I

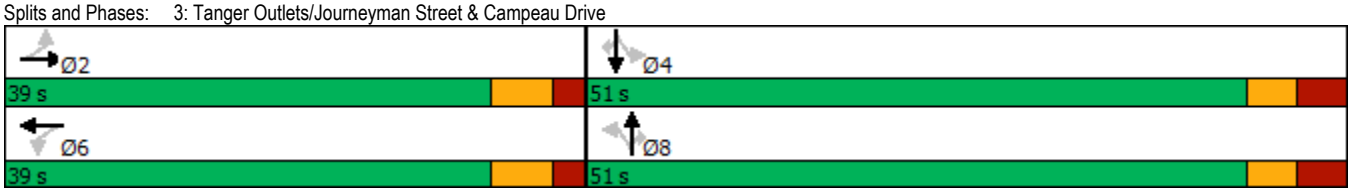
Detailed Analysis Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	92	19	17	116	2	4	0	12	1	0	1
Future Volume (vph)	8	92	19	17	116	2	4	0	12	1	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3302	0	1695	3383	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.669			0.674								
Satd. Flow (perm)	1194	3302	0	1203	3383	0	1784	1784	1517	1784	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			2				761			692
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	102	21	19	129	2	4	0	13	1	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	123	0	19	131	0	4	0	13	1	0	1
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	53.4	53.4		53.4	53.4		10.1		10.1	10.1		10.1
Actuated g/C Ratio	0.93	0.93		0.93	0.93		0.18		0.18	0.18		0.18
v/c Ratio	0.01	0.04		0.02	0.04		0.01		0.01	0.00		0.00
Control Delay	2.2	1.5		2.2	1.6		22.2		0.0	22.0		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	2.2	1.5		2.2	1.6		22.2		0.0	22.0		0.0
LOS	A	A		A	A		C		A	C		A
Approach Delay		1.5			1.7			5.2			11.0	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.04			
Intersection Signal Delay: 1.9		Intersection LOS: A	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive

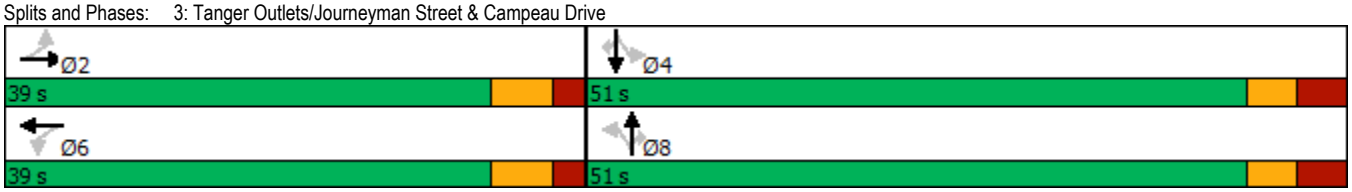


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	145	15	74	103	2	40	0	67	3	0	4
Future Volume (vph)	13	145	15	74	103	2	40	0	67	3	0	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3343	0	1695	3380	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.679			0.640			0.757			0.757		
Satd. Flow (perm)	1212	3343	0	1142	3380	0	1351	1784	1517	1351	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			2				617			729
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	161	17	82	114	2	44	0	74	3	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	178	0	82	116	0	44	0	74	3	0	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	40.6	40.6		40.6	40.6		10.1		10.1	10.1		10.1
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.17		0.17	0.17		0.17
v/c Ratio	0.02	0.08		0.10	0.05		0.19		0.10	0.01		0.00
Control Delay	5.0	4.5		5.6	4.9		22.7		0.3	19.3		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	5.0	4.5		5.6	4.9		22.7		0.3	19.3		0.0
LOS	A	A		A	A		C		A	B		A
Approach Delay		4.6			5.2			8.6			8.3	
Approach LOS		A			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 59.1			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.19			
Intersection Signal Delay: 5.8		Intersection LOS: A	
Intersection Capacity Utilization 42.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	56	288	21	26	271
Future Volume (Veh/h)	60	56	288	21	26	271
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)	67	62	320	23	29	301
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	690	332			343	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690	332			343	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	91			98	
cM capacity (veh/h)	399	708			1216	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	343	330
Volume Left	67	0	29
Volume Right	62	23	0
cSH	505	1700	1216
Volume to Capacity	0.26	0.20	0.02
Queue Length 95th (m)	7.7	0.0	0.6
Control Delay (s)	14.6	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	14.6	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	30	322	68	37	393
Future Volume (Veh/h)	46	30	322	68	37	393
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)	51	33	358	76	41	437
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	915	396			434	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	915	396			434	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	95			96	
cM capacity (veh/h)	291	651			1126	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	84	434	478
Volume Left	51	0	41
Volume Right	33	76	0
cSH	371	1700	1126
Volume to Capacity	0.23	0.26	0.04
Queue Length 95th (m)	6.5	0.0	0.9
Control Delay (s)	17.5	0.0	1.1
Lane LOS	C		A
Approach Delay (s)	17.5	0.0	1.1
Approach LOS	C		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Operational Results

2022 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	8		222		8	2067		0.0039	
2	Campeau (WB)	None	153		27		203	2361		0.0648	
3	Country Glen (SB)	None	123		116		64	999		0.1232	
4	Campeau (EB)	None	151		79		160	1709		0.0883	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	0.00		0.00	0.00		A		A
2	Campeau (WB)	None	2.11		2.11	0.27		A		A
3	Country Glen (SB)	None	3.98		3.98	0.41		A		A
4	Campeau (EB)	None	2.42		2.42	0.30		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Operational Results

2022 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	18		366		12	1953		0.0092	
2	Campeau (WB)	None	292		72		312	2325		0.1256	
3	Country Glen (SB)	None	57		266		98	943		0.0605	
4	Campeau (EB)	None	336		42		281	1741		0.1930	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.61		2.61	0.04		A		A
2	Campeau (WB)	None	2.00		2.00	0.49		A		A
3	Country Glen (SB)	None	3.94		3.94	0.19		A		A
4	Campeau (EB)	None	2.75		2.75	0.77		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Huntmar Drive (SB)	Yield	97	7.5	2	4.2	1	11.7	3
2	Campeau Drive (EB)	Free	29	7.5	2	3.5	1	11	3
3	Huntmar Drive (NB)	Yield	17	7.5	2	3.7	1	11.2	3
4	Campeau Drive (WB)	Yield	8	7.5	2	3.7	1	11.2	3

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Huntmar Drive (SB)	5.4	1	23.5	25	42	19.5	2	Campeau Drive (EB)	2	2
2	Campeau Drive (EB)	4.25	1	0	42	56	30	3	Huntmar Drive (NB)	1	2
3	Huntmar Drive (NB)	5.6	1	22	20	38.5	28	4	Campeau Drive (WB)	2	2
4	Campeau Drive (WB)	5.2	1	24.5	27	27.5	32.5	1	Huntmar Drive (SB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Huntmar Drive (SB)	0	1.000	0	1.000
2	Campeau Drive (EB)	0	1.000	0	1.000
3	Huntmar Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (WB)	0	1.000	0	1.000

Operational Results

2022 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	289	97	72	72	388	2168	1415	0.1333	0.0686
2	Campeau Drive (EB)	Free	78	29	325	0	133	2145	1089	0.0364	0.0266
3	Huntmar Drive (NB)	Yield	334	17	80	80	352	2154	1350	0.1551	0.0126
4	Campeau Drive (WB)	Yield	50	8	402	402	29	1821	1088	0.0275	0.0074

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	1.87	2.71	2.08	0.45	0.22	A	A	A
2	Campeau Drive (EB)	Free	1.92	0.00	1.40	0.13	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.05	2.68	2.08	0.57	0.04	A	A	A
4	Campeau Drive (WB)	Yield	3.02	0.00	2.60	0.13	0.00	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Huntmar Drive (SB)	Yield	133	7.5	2	4.2	1	11.7	3
2	Campeau Drive (EB)	Free	59	7.5	2	3.5	1	11	3
3	Huntmar Drive (NB)	Yield	29	7.5	2	3.7	1	11.2	3
4	Campeau Drive (WB)	Yield	4	7.5	2	3.7	1	11.2	3

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Huntmar Drive (SB)	5.4	1	23.5	25	42	19.5	2	Campeau Drive (EB)	2	2
2	Campeau Drive (EB)	4.25	1	0	42	56	30	3	Huntmar Drive (NB)	1	2
3	Huntmar Drive (NB)	5.6	1	22	20	38.5	28	4	Campeau Drive (WB)	2	2
4	Campeau Drive (WB)	5.2	1	24.5	27	27.5	32.5	1	Huntmar Drive (SB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Huntmar Drive (SB)	0	1.000	0	1.000
2	Campeau Drive (EB)	0	1.000	0	1.000
3	Huntmar Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (WB)	0	1.000	0	1.000

Operational Results

2022 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	360	133	108	108	523	2142	1398	0.1681	0.0951
2	Campeau Drive (EB)	Free	208	59	397	0	204	2090	1089	0.0995	0.0542
3	Huntmar Drive (NB)	Yield	421	29	214	214	450	2055	1291	0.2048	0.0225
4	Campeau Drive (WB)	Yield	35	4	592	592	72	1689	1011	0.0207	0.0040

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	1.99	2.82	2.21	0.60	0.31	A	A	A
2	Campeau Drive (EB)	Free	2.23	0.00	1.74	0.39	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.58	2.82	2.59	0.92	0.07	A	A	A
4	Campeau Drive (WB)	Yield	3.22	0.00	2.89	0.10	0.00	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Palladium Drive (NB)	Free	112	3.5	1	3.5	1	7	2
4	Campeau Drive (EB)	Merge	45	3.5	1	4	1	6.3	2

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Palladium Drive (NB)	4.25	1	0	35	36	30	2	Campeau Drive (WB)	1	2
4	Campeau Drive (EB)	4.25	1	0	25	24	30	1	Palladium Drive (NB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Palladium Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (EB)	0	1.000	0	1.000

Operational Results

2022 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	78	112	49	0	188	871	1012	0.0895	0.1107
2	Campeau Drive (WB)	None	142		82		157	1808		0.0785	
3	Palladium Drive (SB)	None	21		190		34	1134		0.0185	
4	Campeau Drive (EB)	Merge	42	45	150	143	61	757	1046	0.0555	0.0430

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	4.09	0.00	1.68	0.26	0.00	A	A	A
2	Campeau Drive (WB)	None	2.31		2.31	0.27		A		A
3	Palladium Drive (SB)	None	5.63		5.63	0.10		A		A
4	Campeau Drive (EB)	Merge	4.30	3.56	3.92	0.15	0.13	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Palladium Drive (NB)	Free	167	3.5	1	3.5	1	7	2
4	Campeau Drive (EB)	Merge	24	3.5	1	4	1	6.3	2

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Palladium Drive (NB)	4.25	1	0	35	36	30	2	Campeau Drive (WB)	1	2
4	Campeau Drive (EB)	4.25	1	0	25	24	30	1	Palladium Drive (NB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Palladium Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (EB)	0	1.000	0	1.000

Operational Results

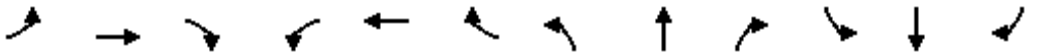
2022 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	178	167	43	0	363	874	1012	0.2036	0.1651
2	Campeau Drive (WB)	None	212		178		210	1711		0.1239	
3	Palladium Drive (SB)	None	50		375		15	1030		0.0485	
4	Campeau Drive (EB)	Merge	33	24	349	339	76	691	978	0.0478	0.0245

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	4.59	0.00	2.37	0.69	0.00	A	A	A
2	Campeau Drive (WB)	None	2.24		2.24	0.40		A		A
3	Palladium Drive (SB)	None	6.37		6.37	0.27		A		A
4	Campeau Drive (EB)	Merge	4.68	3.73	4.28	0.13	0.07	A	A	A

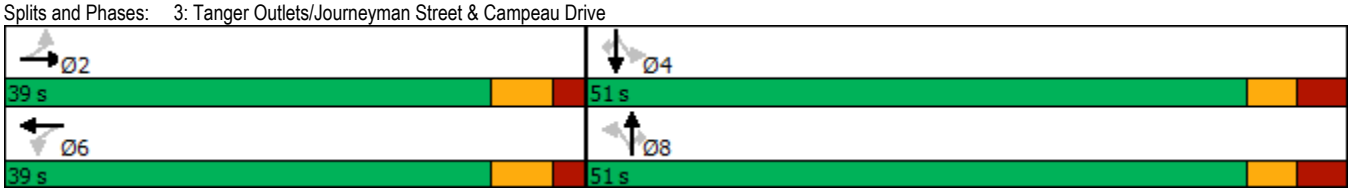


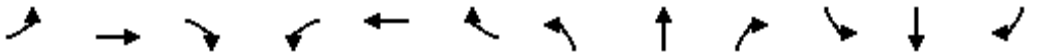
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	163	20	18	268	29	4	0	13	15	0	2
Future Volume (vph)	11	163	20	18	268	29	4	0	13	15	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3336	0	1695	3339	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.570			0.636								
Satd. Flow (perm)	1017	3336	0	1135	3339	0	1784	1784	1517	1784	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			14				612			418
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	163	20	18	268	29	4	0	13	15	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	183	0	18	297	0	4	0	13	15	0	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.0	39.0		39.0	39.0		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	50.7	50.7		50.7	50.7		10.0		10.0	10.0		10.0
Actuated g/C Ratio	0.92	0.92		0.92	0.92		0.18		0.18	0.18		0.18
v/c Ratio	0.01	0.06		0.02	0.10		0.01		0.02	0.05		0.00
Control Delay	2.7	1.8		2.7	1.7		19.2		0.1	19.7		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	2.7	1.8		2.7	1.7		19.2		0.1	19.7		0.0
LOS	A	A		A	A		B		A	B		A
Approach Delay		1.8			1.8			4.6			17.4	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 55.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.10			
Intersection Signal Delay: 2.4		Intersection LOS: A	
Intersection Capacity Utilization 42.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



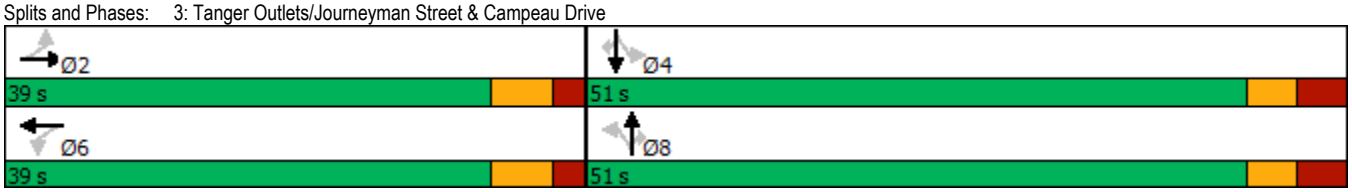


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	297	16	78	199	13	42	0	70	28	0	7
Future Volume (vph)	15	297	16	78	199	13	42	0	70	28	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3363	0	1695	3360	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.619			0.562			0.757			0.757		
Satd. Flow (perm)	1104	3363	0	1003	3360	0	1351	1784	1517	1351	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			8				377			538
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	297	16	78	199	13	42	0	70	28	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	313	0	78	212	0	42	0	70	28	0	7
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	40.4	40.4		40.4	40.4		10.1		10.1	10.1		10.1
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.17		0.17	0.17		0.17
v/c Ratio	0.02	0.14		0.11	0.09		0.18		0.12	0.12		0.01
Control Delay	5.1	4.8		5.7	4.7		22.5		0.4	21.3		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	5.1	4.8		5.7	4.7		22.5		0.4	21.3		0.0
LOS	A	A		A	A		C		A	C		A
Approach Delay		4.8			5.0			8.7			17.1	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 58.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.18			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 43.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	99	72	361	34	28	319
Future Volume (Veh/h)	99	72	361	34	28	319
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)	99	72	361	34	28	319
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	753	378			395	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	753	378			395	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	89			98	
cM capacity (veh/h)	367	667			1164	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	171	395	347
Volume Left	99	0	28
Volume Right	72	34	0
cSH	453	1700	1164
Volume to Capacity	0.38	0.23	0.02
Queue Length 95th (m)	13.2	0.0	0.6
Control Delay (s)	17.7	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	17.7	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	37	386	115	47	474
Future Volume (Veh/h)	70	37	386	115	47	474
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.90
Hourly flow rate (vph)	70	37	386	115	47	527
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1064	444			501	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1064	444			501	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	94			96	
cM capacity (veh/h)	236	614			1063	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	107	501	574
Volume Left	70	0	47
Volume Right	37	115	0
cSH	300	1700	1063
Volume to Capacity	0.36	0.29	0.04
Queue Length 95th (m)	11.9	0.0	1.1
Control Delay (s)	23.5	0.0	1.2
Lane LOS	C		A
Approach Delay (s)	23.5	0.0	1.2
Approach LOS	C		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		74.4%	ICU Level of Service D
Analysis Period (min)		15	

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Operational Results

2024 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	17		279		18	2197		0.0077	
2	Campeau (WB)	None	252		47		249	2348		0.1073	
3	Country Glen (SB)	None	162		224		75	959		0.1690	
4	Campeau (EB)	None	218		79		307	1988		0.1097	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.39		2.39	0.03		A		A
2	Campeau (WB)	None	1.99		1.99	0.37		A		A
3	Country Glen (SB)	None	4.40		4.40	0.52		A		A
4	Campeau (EB)	None	2.34		2.34	0.37		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Operational Results

2024 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	30		511		106	2018		0.0149	
2	Campeau (WB)	None	367		125		416	2288		0.1604	
3	Country Glen (SB)	None	79		353		139	911		0.0867	
4	Campeau (EB)	None	575		42		390	2025		0.2840	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.22		2.22	0.05		A		A
2	Campeau (WB)	None	2.06		2.06	0.55		A		A
3	Country Glen (SB)	None	4.23		4.23	0.25		A		A
4	Campeau (EB)	None	2.93		2.93	1.22		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Huntmar Drive (SB)	Yield	108	7.5	2	4.2	1	11.7	3
2	Campeau Drive (EB)	Free	41	7.5	2	3.5	1	11	3
3	Huntmar Drive (NB)	Yield	110	7.5	2	3.7	1	11.2	3
4	Campeau Drive (WB)	Yield	32	7.5	2	3.7	1	11.2	3

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Huntmar Drive (SB)	5.4	1	23.5	25	42	19.5	2	Campeau Drive (EB)	2	2
2	Campeau Drive (EB)	4.25	1	0	42	56	30	3	Huntmar Drive (NB)	1	2
3	Huntmar Drive (NB)	5.6	1	22	20	38.5	28	4	Campeau Drive (WB)	2	2
4	Campeau Drive (WB)	5.2	1	24.5	27	27.5	32.5	1	Huntmar Drive (SB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Huntmar Drive (SB)	0	1.000	0	1.000
2	Campeau Drive (EB)	0	1.000	0	1.000
3	Huntmar Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (WB)	0	1.000	0	1.000

Operational Results

2024 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	349	108	343	343	465	1967	1290	0.1775	0.0837
2	Campeau Drive (EB)	Free	152	41	489	0	311	2018	1089	0.0753	0.0376
3	Huntmar Drive (NB)	Yield	450	110	160	160	522	2095	1315	0.2148	0.0837
4	Campeau Drive (WB)	Yield	277	32	499	499	221	1754	1049	0.1579	0.0305

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	2.22	3.04	2.42	0.57	0.24	A	A	A
2	Campeau Drive (EB)	Free	2.75	0.00	2.17	0.31	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.50	2.98	2.59	0.82	0.24	A	A	A
4	Campeau Drive (WB)	Yield	4.58	3.53	4.47	0.92	0.08	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Huntmar Drive (SB)	Yield	92	7.5	2	4.2	1	11.7	3
2	Campeau Drive (EB)	Free	62	7.5	2	3.5	1	11	3
3	Huntmar Drive (NB)	Yield	181	7.5	2	3.7	1	11.2	3
4	Campeau Drive (WB)	Yield	29	7.5	2	3.7	1	11.2	3

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Huntmar Drive (SB)	5.4	1	23.5	25	42	19.5	2	Campeau Drive (EB)	2	2
2	Campeau Drive (EB)	4.25	1	0	42	56	30	3	Huntmar Drive (NB)	1	2
3	Huntmar Drive (NB)	5.6	1	22	20	38.5	28	4	Campeau Drive (WB)	2	2
4	Campeau Drive (WB)	5.2	1	24.5	27	27.5	32.5	1	Huntmar Drive (SB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Huntmar Drive (SB)	0	1.000	0	1.000
2	Campeau Drive (EB)	0	1.000	0	1.000
3	Huntmar Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (WB)	0	1.000	0	1.000

Operational Results

2024 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	478	92	442	442	566	1893	1244	0.2525	0.0739
2	Campeau Drive (EB)	Free	386	62	694	0	318	1860	1089	0.2076	0.0569
3	Huntmar Drive (NB)	Yield	508	181	421	421	721	1904	1200	0.2669	0.1508
4	Campeau Drive (WB)	Yield	361	29	618	618	492	1672	1001	0.2160	0.0290

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	2.67	3.12	2.74	0.93	0.21	A	A	A
2	Campeau Drive (EB)	Free	3.29	0.00	2.83	0.92	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.98	3.53	3.12	1.10	0.47	A	A	A
4	Campeau Drive (WB)	Yield	4.69	3.70	4.62	1.23	0.08	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Palladium Drive (NB)	Free	131	3.5	1	3.5	1	7	2
4	Campeau Drive (EB)	Merge	69	3.5	1	4	1	6.3	2

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Palladium Drive (NB)	4.25	1	0	35	36	30	2	Campeau Drive (WB)	1	2
4	Campeau Drive (EB)	4.25	1	0	25	24	30	1	Palladium Drive (NB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Palladium Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (EB)	0	1.000	0	1.000

Operational Results

2024 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	342	131	125	0	378	831	1012	0.4114	0.1295
2	Campeau Drive (WB)	None	302		346		252	1540		0.1961	
3	Palladium Drive (SB)	None	156		391		257	1021		0.1528	
4	Campeau Drive (EB)	Merge	79	69	355	309	192	687	987	0.1149	0.0699

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	6.35	0.00	4.59	1.57	0.00	A	A	A
2	Campeau Drive (WB)	None	4.66		4.66	1.02		A		A
3	Palladium Drive (SB)	None	7.17		7.17	0.82		A		A
4	Campeau Drive (EB)	Merge	5.05	3.91	4.52	0.29	0.20	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Palladium Drive (NB)	Free	186	3.5	1	3.5	1	7	2
4	Campeau Drive (EB)	Merge	55	3.5	1	4	1	6.3	2

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Palladium Drive (NB)	4.25	1	0	35	36	30	2	Campeau Drive (WB)	1	2
4	Campeau Drive (EB)	4.25	1	0	25	24	30	1	Palladium Drive (NB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Palladium Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (EB)	0	1.000	0	1.000

Operational Results

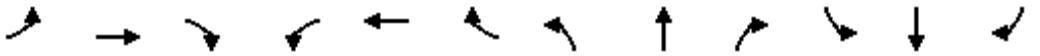
2024 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	354	186	188	0	641	798	1012	0.4437	0.1839
2	Campeau Drive (WB)	None	325		354		374	1532		0.2122	
3	Palladium Drive (SB)	None	238		549		130	932		0.2552	
4	Campeau Drive (EB)	Merge	141	55	633	586	154	595	891	0.2370	0.0617

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	6.94	0.00	4.55	1.78	0.00	A	A	A
2	Campeau Drive (WB)	None	3.30		3.30	0.78		A		A
3	Palladium Drive (SB)	None	8.76		8.76	1.51		A		A
4	Campeau Drive (EB)	Merge	6.60	4.30	5.95	0.68	0.17	A	A	A

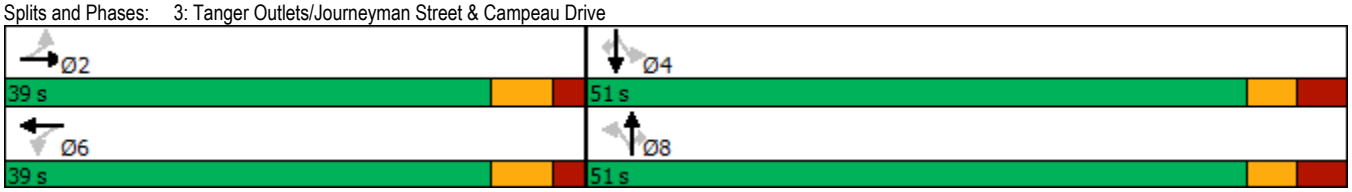


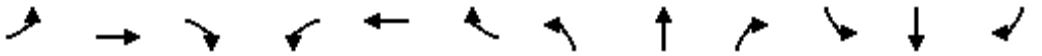
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	207	21	19	291	31	4	0	13	17	0	2
Future Volume (vph)	12	207	21	19	291	31	4	0	13	17	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3343	0	1695	3343	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.557			0.610								
Satd. Flow (perm)	994	3343	0	1088	3343	0	1784	1784	1517	1784	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			14				523			385
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	207	21	19	291	31	4	0	13	17	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	228	0	19	322	0	4	0	13	17	0	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	50.5	50.5		50.5	50.5		10.0		10.0	10.0		10.0
Actuated g/C Ratio	0.92	0.92		0.92	0.92		0.18		0.18	0.18		0.18
v/c Ratio	0.01	0.07		0.02	0.10		0.01		0.02	0.05		0.00
Control Delay	2.8	1.8		2.7	1.8		19.2		0.1	19.6		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	2.8	1.8		2.7	1.8		19.2		0.1	19.6		0.0
LOS	A	A		A	A		B		A	B		A
Approach Delay		1.8			1.8			4.6			17.6	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 55			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.10			
Intersection Signal Delay: 2.4		Intersection LOS: A	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



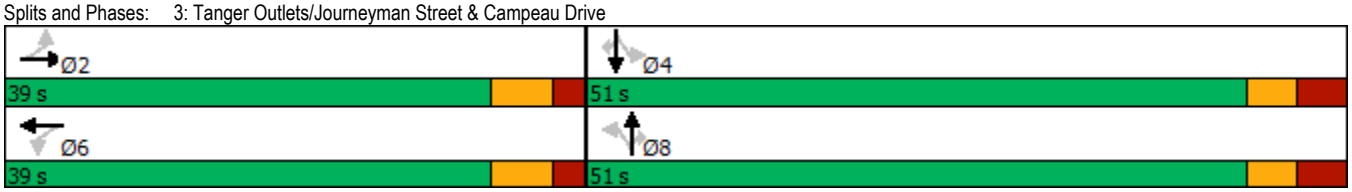


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	413	17	81	217	15	44	0	74	29	0	7
Future Volume (vph)	15	413	17	81	217	15	44	0	74	29	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3370	0	1695	3356	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.607			0.502			0.757			0.757		
Satd. Flow (perm)	1083	3370	0	896	3356	0	1351	1784	1517	1351	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			9				245			504
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	413	17	81	217	15	44	0	74	29	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	430	0	81	232	0	44	0	74	29	0	7
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	40.0	40.0		40.0	40.0		10.1		10.1	10.1		10.1
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.17		0.17	0.17		0.17
v/c Ratio	0.02	0.19		0.13	0.10		0.19		0.16	0.12		0.01
Control Delay	5.1	5.1		6.0	4.7		22.5		0.7	21.3		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	5.1	5.1		6.0	4.7		22.5		0.7	21.3		0.0
LOS	A	A		A	A		C		A	C		A
Approach Delay		5.1			5.0			8.9			17.2	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 58.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.19			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	78	404	36	31	343
Future Volume (Veh/h)	105	78	404	36	31	343
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.90
Hourly flow rate (vph)	105	78	404	36	31	381
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	865	422			440	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	865	422			440	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	88			97	
cM capacity (veh/h)	315	632			1120	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	183	440	412
Volume Left	105	0	31
Volume Right	78	36	0
cSH	401	1700	1120
Volume to Capacity	0.46	0.26	0.03
Queue Length 95th (m)	17.7	0.0	0.6
Control Delay (s)	21.3	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.3	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	40	421	122	51	521
Future Volume (Veh/h)	75	40	421	122	51	521
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)	75	40	421	122	51	521
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1105	482			543	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1105	482			543	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	66	93			95	
cM capacity (veh/h)	222	584			1026	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	115	543	572
Volume Left	75	0	51
Volume Right	40	122	0
cSH	283	1700	1026
Volume to Capacity	0.41	0.32	0.05
Queue Length 95th (m)	14.3	0.0	1.2
Control Delay (s)	26.2	0.0	1.3
Lane LOS	D		A
Approach Delay (s)	26.2	0.0	1.3
Approach LOS	D		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Operational Results

2029 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	56		319		37	1992		0.0281	
2	Campeau (WB)	None	296		88		287	2313		0.1280	
3	Country Glen (SB)	None	175		303		81	929		0.1885	
4	Campeau (EB)	None	266		90		388	1700		0.1565	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	1.96		1.96	0.08		A		A
2	Campeau (WB)	None	2.04		2.04	0.44		A		A
3	Country Glen (SB)	None	4.65		4.65	0.60		A		A
4	Campeau (EB)	None	2.58		2.58	0.50		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Operational Results

2029 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	62		589		66	1782		0.0348	
2	Campeau (WB)	None	446		162		489	2252		0.1981	
3	Country Glen (SB)	None	85		459		149	871		0.0976	
4	Campeau (EB)	None	601		54		490	1731		0.3473	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.22		2.22	0.10		A		A
2	Campeau (WB)	None	2.16		2.16	0.70		A		A
3	Country Glen (SB)	None	4.47		4.47	0.28		A		A
4	Campeau (EB)	None	3.36		3.36	1.46		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Huntmar Drive (SB)	Yield	111	7.5	2	4.2	1	11.7	3
2	Campeau Drive (EB)	Free	64	7.5	2	3.5	1	11	3
3	Huntmar Drive (NB)	Yield	126	7.5	2	3.7	1	11.2	3
4	Campeau Drive (WB)	Yield	51	7.5	2	3.7	1	11.2	3

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Huntmar Drive (SB)	5.4	1	23.5	25	42	19.5	2	Campeau Drive (EB)	2	2
2	Campeau Drive (EB)	4.25	1	0	42	56	30	3	Huntmar Drive (NB)	1	2
3	Huntmar Drive (NB)	5.6	1	22	20	38.5	28	4	Campeau Drive (WB)	2	2
4	Campeau Drive (WB)	5.2	1	24.5	27	27.5	32.5	1	Huntmar Drive (SB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Huntmar Drive (SB)	0	1.000	0	1.000
2	Campeau Drive (EB)	0	1.000	0	1.000
3	Huntmar Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (WB)	0	1.000	0	1.000

Operational Results

2029 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	376	111	411	411	511	1916	1259	0.1962	0.0882
2	Campeau Drive (EB)	Free	176	64	562	0	336	1961	1089	0.0897	0.0588
3	Huntmar Drive (NB)	Yield	482	126	193	193	609	2071	1300	0.2327	0.0969
4	Campeau Drive (WB)	Yield	338	51	533	533	268	1731	1035	0.1953	0.0493

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	2.39	3.13	2.56	0.66	0.26	A	A	A
2	Campeau Drive (EB)	Free	2.74	0.00	2.01	0.35	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.60	3.06	2.69	0.91	0.28	A	A	A
4	Campeau Drive (WB)	Yield	4.64	3.65	4.51	1.14	0.14	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Huntmar Drive (SB)	Yield	95	7.5	2	4.2	1	11.7	3
2	Campeau Drive (EB)	Free	128	7.5	2	3.5	1	11	3
3	Huntmar Drive (NB)	Yield	214	7.5	2	3.7	1	11.2	3
4	Campeau Drive (WB)	Yield	44	7.5	2	3.7	1	11.2	3

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Huntmar Drive (SB)	5.4	1	23.5	25	42	19.5	2	Campeau Drive (EB)	2	2
2	Campeau Drive (EB)	4.25	1	0	42	56	30	3	Huntmar Drive (NB)	1	2
3	Huntmar Drive (NB)	5.6	1	22	20	38.5	28	4	Campeau Drive (WB)	2	2
4	Campeau Drive (WB)	5.2	1	24.5	27	27.5	32.5	1	Huntmar Drive (SB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Huntmar Drive (SB)	0	1.000	0	1.000
2	Campeau Drive (EB)	0	1.000	0	1.000
3	Huntmar Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (WB)	0	1.000	0	1.000

Operational Results

2029 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	524	95	541	541	608	1820	1199	0.2880	0.0792
2	Campeau Drive (EB)	Free	443	128	818	0	342	1764	1089	0.2512	0.1175
3	Huntmar Drive (NB)	Yield	548	214	497	497	892	1848	1167	0.2966	0.1834
4	Campeau Drive (WB)	Yield	444	44	661	661	598	1642	983	0.2704	0.0447

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	3.01	3.26	3.05	1.14	0.23	A	A	A
2	Campeau Drive (EB)	Free	3.52	0.00	2.73	1.13	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	3.27	3.77	3.41	1.30	0.59	A	A	A
4	Campeau Drive (WB)	Yield	4.72	3.83	4.64	1.52	0.12	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Palladium Drive (NB)	Free	170	3.5	1	3.5	1	7	2
4	Campeau Drive (EB)	Merge	74	3.5	1	4	1	6.3	2

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Palladium Drive (NB)	4.25	1	0	35	36	30	2	Campeau Drive (WB)	1	2
4	Campeau Drive (EB)	4.25	1	0	25	24	30	1	Palladium Drive (NB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Palladium Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (EB)	0	1.000	0	1.000

Operational Results

2029 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	364	170	134	0	418	827	1012	0.4403	0.1681
2	Campeau Drive (WB)	None	326		368		300	1517		0.2148	
3	Palladium Drive (SB)	None	176		420		274	1005		0.1752	
4	Campeau Drive (EB)	Merge	84	74	394	344	202	674	975	0.1246	0.0759

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	6.67	0.00	4.55	1.75	0.00	A	A	A
2	Campeau Drive (WB)	None	4.71		4.71	1.12		A		A
3	Palladium Drive (SB)	None	7.45		7.45	0.96		A		A
4	Campeau Drive (EB)	Merge	5.19	3.99	4.63	0.32	0.22	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Bypass Geometry

Bypass Approach Geometry (m)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	Palladium Drive (NB)	Free	294	3.5	1	3.5	1	7	2
4	Campeau Drive (EB)	Merge	61	3.5	1	4	1	6.3	2

Bypass Entry and Exit Geometry (m)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	Palladium Drive (NB)	4.25	1	0	35	36	30	2	Campeau Drive (WB)	1	2
4	Campeau Drive (EB)	4.25	1	0	25	24	30	1	Palladium Drive (NB)	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	Palladium Drive (NB)	0	1.000	0	1.000
4	Campeau Drive (EB)	0	1.000	0	1.000

Operational Results

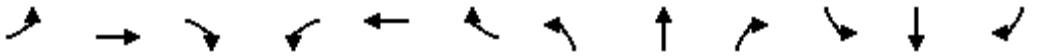
2029 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	378	294	199	0	685	792	1012	0.4773	0.2907
2	Campeau Drive (WB)	None	349		378		493	1507		0.2315	
3	Palladium Drive (SB)	None	255		581		146	915		0.2788	
4	Campeau Drive (EB)	Merge	148	61	675	624	161	581	878	0.2548	0.0695

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	7.37	0.00	4.15	2.01	0.00	A	A	A
2	Campeau Drive (WB)	None	3.42		3.42	0.87		A		A
3	Palladium Drive (SB)	None	9.17		9.17	1.69		A		A
4	Campeau Drive (EB)	Merge	6.89	4.40	6.17	0.75	0.20	A	A	A

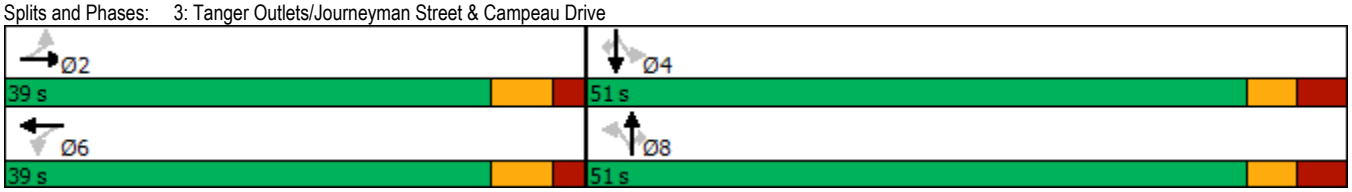


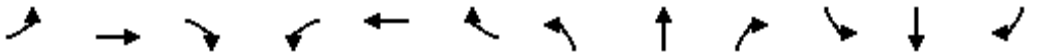
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	177	20	18	272	46	4	0	13	20	0	5
Future Volume (vph)	20	177	20	18	272	46	4	0	13	20	0	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3339	0	1695	3316	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.559			0.628								
Satd. Flow (perm)	997	3339	0	1121	3316	0	1784	1784	1517	1784	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			24				582			412
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	177	20	18	272	46	4	0	13	20	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	197	0	18	318	0	4	0	13	20	0	5
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	50.4	50.4		50.4	50.4		10.0		10.0	10.0		10.0
Actuated g/C Ratio	0.92	0.92		0.92	0.92		0.18		0.18	0.18		0.18
v/c Ratio	0.02	0.06		0.02	0.10		0.01		0.02	0.06		0.01
Control Delay	2.8	1.8		2.7	1.8		19.0		0.1	19.5		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	2.8	1.8		2.7	1.8		19.0		0.1	19.5		0.0
LOS	A	A		A	A		B		A	B		A
Approach Delay		1.9			1.8			4.5			15.6	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 54.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.10			
Intersection Signal Delay: 2.5		Intersection LOS: A	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



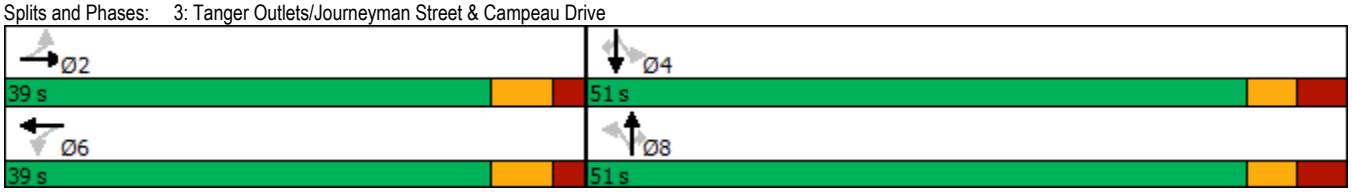


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	302	16	78	213	20	42	0	70	45	0	16
Future Volume (vph)	19	302	16	78	213	20	42	0	70	45	0	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3363	0	1695	3346	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.607			0.559			0.757			0.757		
Satd. Flow (perm)	1083	3363	0	997	3346	0	1351	1784	1517	1351	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			12				370			511
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	302	16	78	213	20	42	0	70	45	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	318	0	78	233	0	42	0	70	45	0	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	39.3	39.3		39.3	39.3		10.0		10.0	10.0		10.0
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.17		0.17	0.17		0.17
v/c Ratio	0.03	0.14		0.12	0.10		0.18		0.12	0.19		0.02
Control Delay	5.1	4.9		5.8	4.7		22.2		0.4	22.4		0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	5.1	4.9		5.8	4.7		22.2		0.4	22.4		0.1
LOS	A	A		A	A		C		A	C		A
Approach Delay		4.9			5.0			8.6			16.6	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.19			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 43.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	99	72	363	34	28	326
Future Volume (Veh/h)	99	72	363	34	28	326
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.90
Hourly flow rate (vph)	99	72	363	34	28	362
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	781	363			397	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	781	363			397	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	89			98	
cM capacity (veh/h)	355	682			1162	

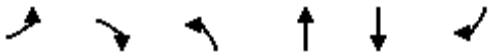
Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	171	363	34	390
Volume Left	99	0	0	28
Volume Right	72	0	34	0
cSH	444	1700	1700	1162
Volume to Capacity	0.38	0.21	0.02	0.02
Queue Length 95th (m)	13.6	0.0	0.0	0.6
Control Delay (s)	18.1	0.0	0.0	0.8
Lane LOS	C			A
Approach Delay (s)	18.1	0.0		0.8
Approach LOS	C			

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	37	393	115	47	477
Future Volume (Veh/h)	70	37	393	115	47	477
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.90
Hourly flow rate (vph)	70	37	393	115	47	530
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1017	393			508	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1017	393			508	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	94			96	
cM capacity (veh/h)	252	656			1057	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	107	393	115	577
Volume Left	70	0	0	47
Volume Right	37	0	115	0
cSH	320	1700	1700	1057
Volume to Capacity	0.33	0.23	0.07	0.04
Queue Length 95th (m)	10.9	0.0	0.0	1.1
Control Delay (s)	21.8	0.0	0.0	1.2
Lane LOS	C			A
Approach Delay (s)	21.8	0.0		1.2
Approach LOS	C			

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	5	36	466	461	2
Future Volume (Veh/h)	1	5	36	466	461	2
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)	1	5	36	466	461	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)						
pX, platoon unblocked						
vC, conflicting volume	1000	462	463			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1000	462	463			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	261	600	1098			

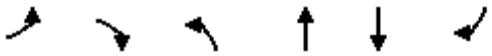
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	6	36	466	463
Volume Left	1	36	0	0
Volume Right	5	0	0	2
cSH	493	1098	1700	1700
Volume to Capacity	0.01	0.03	0.27	0.27
Queue Length 95th (m)	0.3	0.8	0.0	0.0
Control Delay (s)	12.4	8.4	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	12.4	0.6		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	0	40	27	0	17
Future Volume (Veh/h)	8	0	40	27	0	17
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)	8	0	40	27	0	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			180			
pX, platoon unblocked						
vC, conflicting volume	70	54			67	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	54			67	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	934	1014			1535	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	67	17
Volume Left	8	0	0
Volume Right	0	27	0
cSH	934	1700	1535
Volume to Capacity	0.01	0.04	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.9	0.0	0.0
Approach LOS	A		

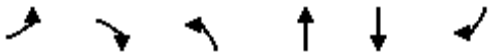
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	7	0	502	465	2
Future Volume (Veh/h)	0	7	0	502	465	2
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	7	0	502	465	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)						
pX, platoon unblocked						
vC, conflicting volume	968	466	467			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	968	466	467			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	282	597	1094			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	7	502	467
Volume Left	0	0	0
Volume Right	7	0	2
cSH	597	1700	1700
Volume to Capacity	0.01	0.30	0.27
Queue Length 95th (m)	0.3	0.0	0.0
Control Delay (s)	11.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	14	14	569	572	1
Future Volume (Veh/h)	4	14	14	569	572	1
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)	4	14	14	569	572	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1170	572	573			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1170	572	573			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	99			
cM capacity (veh/h)	210	519	1000			

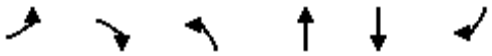
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	18	14	569	573
Volume Left	4	14	0	0
Volume Right	14	0	0	1
cSH	391	1000	1700	1700
Volume to Capacity	0.05	0.01	0.33	0.34
Queue Length 95th (m)	1.1	0.3	0.0	0.0
Control Delay (s)	14.6	8.7	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	14.6	0.2		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	0	28	10	0	35
Future Volume (Veh/h)	26	0	28	10	0	35
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)	26	0	28	10	0	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			180			
pX, platoon unblocked						
vC, conflicting volume	68	33			38	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	33			38	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	937	1041			1572	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	38	35
Volume Left	26	0	0
Volume Right	0	10	0
cSH	937	1700	1572
Volume to Capacity	0.03	0.02	0.00
Queue Length 95th (m)	0.7	0.0	0.0
Control Delay (s)	9.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	21	0	583	585	1
Future Volume (Veh/h)	0	21	0	583	585	1
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	21	0	583	585	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1168	586	586			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1168	586	586			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	214	511	989			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	21	583	586
Volume Left	0	0	0
Volume Right	21	0	1
cSH	511	1700	1700
Volume to Capacity	0.04	0.34	0.34
Queue Length 95th (m)	1.0	0.0	0.0
Control Delay (s)	12.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2024 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Country Glen (NB)	0	11	3	3	0	6.0	1.00	1.000
2	Campeau (WB)	0	2	224	39	0	2.0	1.00	1.000
3	Country Glen (SB)	0	77	0	85	0	2.0	1.00	1.000
4	Campeau (EB)	0	33	173	16	0	10.0	1.00	1.000

Operational Results

2024 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	17		283		18	2020		0.0084	
2	Campeau (WB)	None	265		47		253	2345		0.1130	
3	Country Glen (SB)	None	162		237		75	954		0.1699	
4	Campeau (EB)	None	222		79		320	1709		0.1299	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.50		2.50	0.03		A		A
2	Campeau (WB)	None	1.98		1.98	0.38		A		A
3	Country Glen (SB)	None	4.43		4.43	0.53		A		A
4	Campeau (EB)	None	2.55		2.55	0.41		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2024 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Country Glen (NB)	0	24	0	6	0	6.0	1.00	1.000
2	Campeau (WB)	3	8	320	41	0	2.0	1.00	1.000
3	Country Glen (SB)	0	31	0	48	0	2.0	1.00	1.000
4	Campeau (EB)	3	98	389	14	0	10.0	1.00	1.000

Operational Results

2024 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	30		524		22	1831		0.0164	
2	Campeau (WB)	None	372		125		429	2281		0.1631	
3	Country Glen (SB)	None	79		358		139	908		0.0870	
4	Campeau (EB)	None	504		42		395	1741		0.2895	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.35		2.35	0.05		A		A
2	Campeau (WB)	None	2.07		2.07	0.56		A		A
3	Country Glen (SB)	None	4.24		4.24	0.25		A		A
4	Campeau (EB)	None	3.18		3.18	1.17		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2024 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Huntmar Drive (SB)	0	11	345	0	115	2.0	1.00	1.000
2	Campeau Drive (EB)	0	64	105	0	44	3.0	1.00	1.000
3	Huntmar Drive (NB)	4	71	398	0	110	2.0	1.00	1.000
4	Campeau Drive (WB)	0	136	146	0	40	4.0	1.00	1.000

Operational Results

2024 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	356	115	357	357	502	1956	1284	0.1820	0.0896
2	Campeau Drive (EB)	Free	169	44	496	0	332	2012	1089	0.0840	0.0404
3	Huntmar Drive (NB)	Yield	473	110	180	180	529	2080	1306	0.2274	0.0842
4	Campeau Drive (WB)	Yield	282	40	537	537	226	1728	1034	0.1632	0.0387

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	2.26	3.08	2.46	0.59	0.26	A	A	A
2	Campeau Drive (EB)	Free	3.05	0.00	2.42	0.38	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.59	3.01	2.67	0.89	0.24	A	A	A
4	Campeau Drive (WB)	Yield	4.58	3.62	4.46	0.94	0.11	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2024 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Huntmar Drive (SB)	0	43	457	0	107	2.0	1.00	1.000
2	Campeau Drive (EB)	0	118	281	0	71	3.0	1.00	1.000
3	Huntmar Drive (NB)	16	69	432	0	181	2.0	1.00	1.000
4	Campeau Drive (WB)	0	200	163	0	32	4.0	1.00	1.000

Operational Results

2024 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	500	107	448	448	582	1889	1242	0.2647	0.0862
2	Campeau Drive (EB)	Free	399	71	716	0	339	1843	1089	0.2165	0.0652
3	Huntmar Drive (NB)	Yield	517	181	442	442	744	1888	1191	0.2738	0.1520
4	Campeau Drive (WB)	Yield	363	32	635	635	505	1660	994	0.2187	0.0322

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	2.76	3.17	2.83	1.00	0.25	A	A	A
2	Campeau Drive (EB)	Free	3.41	0.00	2.89	0.99	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	3.06	3.56	3.19	1.15	0.47	A	A	A
4	Campeau Drive (WB)	Yield	4.77	3.74	4.68	1.26	0.09	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Traffic Flow Data (veh/hr)

2024 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Palladium Drive (NB)	30	92	220	0	154	9.0	1.00	1.000
2	Campeau Drive (WB)	22	154	100	33	0	9.0	1.00	1.000
3	Palladium Drive (SB)	0	24	132	0	0	13.0	1.00	1.000
4	Campeau Drive (EB)	0	4	75	0	69	15.0	1.00	1.000

Operational Results

2024 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	342	154	125	0	385	831	1012	0.4114	0.1522
2	Campeau Drive (WB)	None	309		346		275	1540		0.2007	
3	Palladium Drive (SB)	None	156		398		257	1017		0.1534	
4	Campeau Drive (EB)	Merge	79	69	362	316	192	685	985	0.1153	0.0701

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	6.35	0.00	4.38	1.57	0.00	A	A	A
2	Campeau Drive (WB)	None	4.59		4.59	1.03		A		A
3	Palladium Drive (SB)	None	7.20		7.20	0.82		A		A
4	Campeau Drive (EB)	Merge	5.06	3.92	4.53	0.29	0.20	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Traffic Flow Data (veh/hr)

2024 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Palladium Drive (NB)	134	104	116	0	195	9.0	1.00	1.000
2	Campeau Drive (WB)	20	266	48	14	0	9.0	1.00	1.000
3	Palladium Drive (SB)	0	27	209	2	0	13.0	1.00	1.000
4	Campeau Drive (EB)	0	0	141	0	55	15.0	1.00	1.000

Operational Results

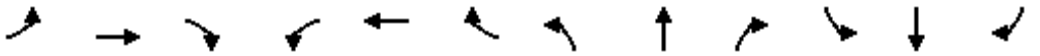
2024 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	354	195	188	0	664	798	1012	0.4437	0.1928
2	Campeau Drive (WB)	None	348		354		383	1532		0.2272	
3	Palladium Drive (SB)	None	238		572		130	920		0.2588	
4	Campeau Drive (EB)	Merge	141	55	656	609	154	587	883	0.2401	0.0623

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	6.94	0.00	4.48	1.78	0.00	A	A	A
2	Campeau Drive (WB)	None	3.31		3.31	0.84		A		A
3	Palladium Drive (SB)	None	8.91		8.91	1.54		A		A
4	Campeau Drive (EB)	Merge	6.71	4.34	6.04	0.69	0.18	A	A	A

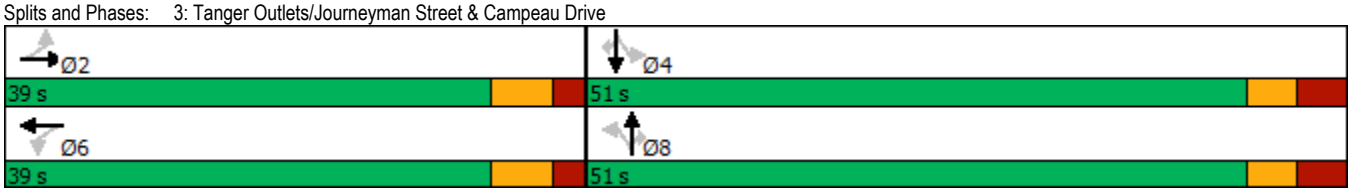


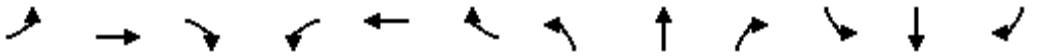
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	221	21	19	295	48	4	0	13	22	0	5
Future Volume (vph)	21	221	21	19	295	48	4	0	13	22	0	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.979				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3346	0	1695	3319	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.546			0.601								
Satd. Flow (perm)	974	3346	0	1072	3319	0	1784	1784	1517	1784	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			23				497			380
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	221	21	19	295	48	4	0	13	22	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	242	0	19	343	0	4	0	13	22	0	5
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	24.5	24.5		24.5	24.5		24.8	24.8	24.8	24.8	24.8	24.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	50.6	50.6		50.6	50.6		10.0		10.0	10.0		10.0
Actuated g/C Ratio	0.92	0.92		0.92	0.92		0.18		0.18	0.18		0.18
v/c Ratio	0.02	0.08		0.02	0.11		0.01		0.02	0.07		0.01
Control Delay	2.6	1.7		2.6	1.7		19.5		0.1	20.1		0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	2.6	1.7		2.6	1.7		19.5		0.1	20.1		0.0
LOS	A	A		A	A		B		A	C		A
Approach Delay		1.8			1.7			4.6			16.4	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 55			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.11			
Intersection Signal Delay: 2.4		Intersection LOS: A	
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



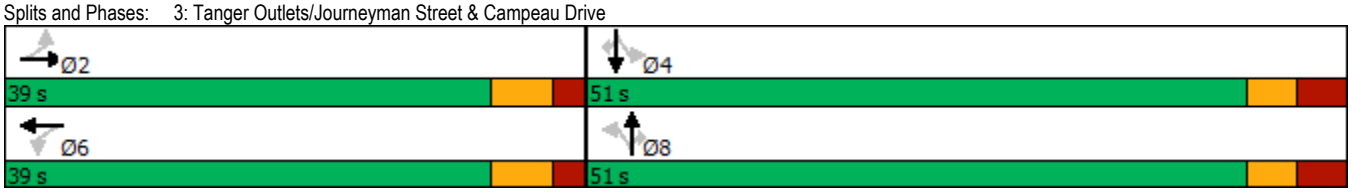


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	418	17	81	231	22	44	0	74	46	0	16
Future Volume (vph)	19	418	17	81	231	22	44	0	74	46	0	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	60.0		0.0	20.0		0.0	30.0		30.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3370	0	1695	3346	0	1695	1784	1517	1695	1784	1517
Flt Permitted	0.595			0.499			0.757			0.757		
Satd. Flow (perm)	1062	3370	0	890	3346	0	1351	1784	1517	1351	1784	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			12				241			479
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		144.7			180.6			115.2			180.1	
Travel Time (s)		8.7			10.8			8.3			13.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	418	17	81	231	22	44	0	74	46	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	435	0	81	253	0	44	0	74	46	0	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		6.1	10.0		6.1	10.0	2.0	2.0	10.0	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		6.1	0.6		6.1	0.6	2.0	2.0	0.6	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	2	2		6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	39.5	39.5		39.5	39.5		39.8	39.8	39.8	39.8	39.8	39.8
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	56.7%
Maximum Green (s)	32.5	32.5		32.5	32.5		44.2	44.2	44.2	44.2	44.2	44.2
Yellow Time (s)	4.2	4.2		4.2	4.2		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3		3.5	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max		Max	Max		None	None	None	None	None	None
Walk Time (s)	12.0	12.0		12.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		26.0	26.0	26.0	26.0	26.0	26.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	39.0	39.0		39.0	39.0		10.0		10.0	10.0		10.0
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.17		0.17	0.17		0.17
v/c Ratio	0.03	0.19		0.13	0.11		0.19		0.16	0.20		0.02
Control Delay	5.1	5.1		6.0	4.8		22.3		0.7	22.4		0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	5.1	5.1		6.0	4.8		22.3		0.7	22.4		0.1
LOS	A	A		A	A		C		A	C		A
Approach Delay		5.1			5.1			8.8			16.7	
Approach LOS		A			A			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 57.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.20			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 47.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Tanger Outlets/Journeyman Street & Campeau Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	78	406	36	31	350
Future Volume (Veh/h)	105	78	406	36	31	350
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.90
Hourly flow rate (vph)	105	78	406	36	31	389
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	857	406			442	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	857	406			442	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	88			97	
cM capacity (veh/h)	319	645			1118	

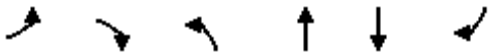
Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	183	406	36	420
Volume Left	105	0	0	31
Volume Right	78	0	36	0
cSH	406	1700	1700	1118
Volume to Capacity	0.45	0.24	0.02	0.03
Queue Length 95th (m)	17.3	0.0	0.0	0.6
Control Delay (s)	20.9	0.0	0.0	0.9
Lane LOS	C			A
Approach Delay (s)	20.9	0.0		0.9
Approach LOS	C			

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	40	428	122	51	524
Future Volume (Veh/h)	75	40	428	122	51	524
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)	75	40	428	122	51	524
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1054	428			550	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1054	428			550	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	94			95	
cM capacity (veh/h)	238	627			1020	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	115	428	122	575
Volume Left	75	0	0	51
Volume Right	40	0	122	0
cSH	303	1700	1700	1020
Volume to Capacity	0.38	0.25	0.07	0.05
Queue Length 95th (m)	13.0	0.0	0.0	1.2
Control Delay (s)	24.0	0.0	0.0	1.3
Lane LOS	C			A
Approach Delay (s)	24.0	0.0		1.3
Approach LOS	C			

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	5	36	512	491	2
Future Volume (Veh/h)	1	5	36	512	491	2
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)	1	5	36	512	491	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)						
pX, platoon unblocked						
vC, conflicting volume	1076	492	493			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1076	492	493			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	235	577	1071			

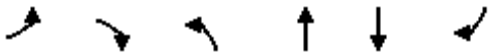
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	6	36	512	493
Volume Left	1	36	0	0
Volume Right	5	0	0	2
cSH	464	1071	1700	1700
Volume to Capacity	0.01	0.03	0.30	0.29
Queue Length 95th (m)	0.3	0.8	0.0	0.0
Control Delay (s)	12.9	8.5	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	12.9	0.6		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	0	43	27	0	19
Future Volume (Veh/h)	8	0	43	27	0	19
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)	8	0	43	27	0	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			180			
pX, platoon unblocked						
vC, conflicting volume	76	56			70	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76	56			70	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	928	1010			1531	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	70	19
Volume Left	8	0	0
Volume Right	0	27	0
cSH	928	1700	1531
Volume to Capacity	0.01	0.04	0.00
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.9	0.0	0.0
Approach LOS	A		

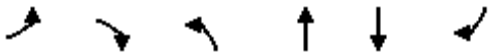
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	14.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	7	0	548	495	2
Future Volume (Veh/h)	0	7	0	548	495	2
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	7	0	548	495	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)						
pX, platoon unblocked						
vC, conflicting volume	1044	496	497			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1044	496	497			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	254	574	1067			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	7	548	497
Volume Left	0	0	0
Volume Right	7	0	2
cSH	574	1700	1700
Volume to Capacity	0.01	0.32	0.29
Queue Length 95th (m)	0.3	0.0	0.0
Control Delay (s)	11.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	14	14	611	621	1
Future Volume (Veh/h)	4	14	14	611	621	1
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)	4	14	14	611	621	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1260	622	622			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1260	622	622			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	99			
cM capacity (veh/h)	185	487	959			

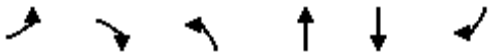
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	18	14	611	622
Volume Left	4	14	0	0
Volume Right	14	0	0	1
cSH	358	959	1700	1700
Volume to Capacity	0.05	0.01	0.36	0.37
Queue Length 95th (m)	1.2	0.3	0.0	0.0
Control Delay (s)	15.6	8.8	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	15.6	0.2		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	0	30	10	0	36
Future Volume (Veh/h)	26	0	30	10	0	36
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)	26	0	30	10	0	36
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			180			
pX, platoon unblocked						
vC, conflicting volume	71	35			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	71	35			40	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	933	1038			1570	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	40	36
Volume Left	26	0	0
Volume Right	0	10	0
cSH	933	1700	1570
Volume to Capacity	0.03	0.02	0.00
Queue Length 95th (m)	0.7	0.0	0.0
Control Delay (s)	9.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	21	0	625	634	1
Future Volume (Veh/h)	0	21	0	625	634	1
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	21	0	625	634	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1260	634	635			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1260	634	635			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	188	479	948			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	21	625	635
Volume Left	0	0	0
Volume Right	21	0	1
cSH	479	1700	1700
Volume to Capacity	0.04	0.37	0.37
Queue Length 95th (m)	1.0	0.0	0.0
Control Delay (s)	12.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2029 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Country Glen (NB)	0	50	3	3	0	6.0	1.00	1.000
2	Campeau (WB)	0	5	261	43	0	2.0	1.00	1.000
3	Country Glen (SB)	0	85	0	90	0	2.0	1.00	1.000
4	Campeau (EB)	0	35	203	32	0	10.0	1.00	1.000

Operational Results

2029 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	56		323		37	1989		0.0282	
2	Campeau (WB)	None	309		88		291	2313		0.1336	
3	Country Glen (SB)	None	175		316		81	924		0.1894	
4	Campeau (EB)	None	270		90		401	1700		0.1589	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	1.96		1.96	0.08		A		A
2	Campeau (WB)	None	2.03		2.03	0.46		A		A
3	Country Glen (SB)	None	4.68		4.68	0.60		A		A
4	Campeau (EB)	None	2.58		2.58	0.51		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Country Glen (NB)	0	0	7.50	2	8.50	2	32.00	56.00	20.00
2	Campeau (WB)	90	0	7.50	2	8.50	2	21.00	41.00	20.00
3	Country Glen (SB)	180	0	4.25	1	5.90	1	17.00	41.00	24.50
4	Campeau (EB)	270	0	7.50	2	7.30	2	21.00	42.00	18.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Country Glen (NB)	55.00	10.00	2	9.50	2	4.00	1
2	Campeau (WB)	55.00	10.00	2	10.00	2	7.50	1
3	Country Glen (SB)	55.00	10.00	2	6.00	1	4.25	1
4	Campeau (EB)	55.00	5.00	1	10.00	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Country Glen (NB)	0	1.000	0	1.000	6.00	3675	0	4.00	1960	0
2	Campeau (WB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0
3	Country Glen (SB)	0	1.000	0	1.000	6.00	2083	0	4.25	2083	0
4	Campeau (EB)	0	1.000	0	1.000	6.00	3675	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2029 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Country Glen (NB)	0	55	0	7	0	6.0	1.00	1.000
2	Campeau (WB)	3	17	386	45	0	2.0	1.00	1.000
3	Country Glen (SB)	0	34	0	51	0	2.0	1.00	1.000
4	Campeau (EB)	3	104	458	49	0	10.0	1.00	1.000

Operational Results

2029 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Country Glen (NB)	None	62		602		66	1771		0.0350	
2	Campeau (WB)	None	451		162		502	2252		0.2003	
3	Country Glen (SB)	None	85		464		149	869		0.0978	
4	Campeau (EB)	None	614		54		495	1731		0.3548	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Country Glen (NB)	None	2.23		2.23	0.10		A		A
2	Campeau (WB)	None	2.16		2.16	0.71		A		A
3	Country Glen (SB)	None	4.48		4.48	0.28		A		A
4	Campeau (EB)	None	3.37		3.37	1.50		A		A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2029 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Huntmar Drive (SB)	0	20	363	0	118	2.0	1.00	1.000
2	Campeau Drive (EB)	0	66	127	0	67	3.0	1.00	1.000
3	Huntmar Drive (NB)	7	75	423	0	126	2.0	1.00	1.000
4	Campeau Drive (WB)	0	179	164	0	59	4.0	1.00	1.000

Operational Results

2029 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	383	118	425	425	548	1906	1252	0.2010	0.0942
2	Campeau Drive (EB)	Free	193	67	569	0	357	1956	1089	0.0987	0.0615
3	Huntmar Drive (NB)	Yield	505	126	213	213	616	2056	1292	0.2456	0.0976
4	Campeau Drive (WB)	Yield	343	59	571	571	273	1704	1020	0.2013	0.0579

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	2.43	3.17	2.61	0.68	0.27	A	A	A
2	Campeau Drive (EB)	Free	3.01	0.00	2.23	0.43	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	2.70	3.08	2.77	0.99	0.29	A	A	A
4	Campeau Drive (WB)	Yield	4.80	3.74	4.64	1.20	0.16	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Huntmar Drive (SB)	0	0	7.50	2	8.00	2	31.00	40.00	25.00
2	Campeau Drive (EB)	90	0	7.50	2	8.50	2	24.00	56.00	15.50
3	Huntmar Drive (NB)	180	0	7.50	2	8.00	2	24.00	38.50	25.50
4	Campeau Drive (WB)	270	0	7.50	2	8.00	2	29.00	27.50	26.50

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Huntmar Drive (SB)	55.00	10.00	2	9.10	2	7.70	2
2	Campeau Drive (EB)	55.00	10.00	2	10.70	2	7.50	2
3	Huntmar Drive (NB)	55.00	10.00	2	4.70	1	4.00	1
4	Campeau Drive (WB)	55.00	10.00	2	11.80	2	7.50	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Huntmar Drive (SB)	0	1.000	0	1.000	11.70	5733	0	7.70	3773	0
2	Campeau Drive (EB)	0	1.000	0	1.000	11.00	5390	0	7.50	3675	0
3	Huntmar Drive (NB)	0	1.000	0	1.000	11.20	5488	0	4.00	1960	0
4	Campeau Drive (WB)	0	1.000	0	1.000	11.20	5488	0	7.50	3675	0

Traffic Flow Data (veh/hr)

2029 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Huntmar Drive (SB)	0	62	484	0	110	2.0	1.00	1.000
2	Campeau Drive (EB)	0	121	335	0	137	3.0	1.00	1.000
3	Huntmar Drive (NB)	27	74	456	0	214	2.0	1.00	1.000
4	Campeau Drive (WB)	0	267	179	0	47	4.0	1.00	1.000

Operational Results

2029 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Huntmar Drive (SB)	Yield	546	110	547	547	624	1815	1196	0.3008	0.0920
2	Campeau Drive (EB)	Free	456	137	840	0	363	1747	1089	0.2611	0.1258
3	Huntmar Drive (NB)	Yield	557	214	518	518	915	1832	1157	0.3040	0.1849
4	Campeau Drive (WB)	Yield	446	47	678	678	611	1630	976	0.2736	0.0481

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Huntmar Drive (SB)	Yield	3.10	3.31	3.14	1.23	0.27	A	A	A
2	Campeau Drive (EB)	Free	3.64	0.00	2.80	1.21	0.00	A	A	A
3	Huntmar Drive (NB)	Yield	3.35	3.81	3.48	1.35	0.60	A	A	A
4	Campeau Drive (WB)	Yield	4.80	3.87	4.71	1.55	0.13	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Traffic Flow Data (veh/hr)

2029 AM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Palladium Drive (NB)	31	99	234	0	193	9.0	1.00	1.000
2	Campeau Drive (WB)	22	172	103	36	0	9.0	1.00	1.000
3	Palladium Drive (SB)	0	28	148	0	0	13.0	1.00	1.000
4	Campeau Drive (EB)	0	4	80	0	74	15.0	1.00	1.000

Operational Results

2029 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	364	193	134	0	425	827	1012	0.4403	0.1908
2	Campeau Drive (WB)	None	333		368		323	1517		0.2195	
3	Palladium Drive (SB)	None	176		427		274	1001		0.1759	
4	Campeau Drive (EB)	Merge	84	74	401	351	202	672	973	0.1250	0.0761

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	6.67	0.00	4.36	1.75	0.00	A	A	A
2	Campeau Drive (WB)	None	4.65		4.65	1.13		A		A
3	Palladium Drive (SB)	None	7.49		7.49	0.96		A		A
4	Campeau Drive (EB)	Merge	5.21	4.00	4.64	0.32	0.22	A	A	A

Operational Data

Main Geometry (m)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle Phi
1	Palladium Drive (NB)	0	0	3.50	1	4.70	1	34.00	18.00	26.00
2	Campeau Drive (WB)	90	0	7.50	2	7.70	2	19.00	26.00	18.00
3	Palladium Drive (SB)	180	0	4.50	1	5.99	1	24.00	23.00	23.50
4	Campeau Drive (EB)	270	0	3.50	1	4.60	1	36.00	13.00	20.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	Palladium Drive (NB)	44.00	5.70	1	8.20	2	7.50	2
2	Campeau Drive (WB)	44.00	5.70	1	4.80	1	3.70	1
3	Palladium Drive (SB)	44.00	8.80	2	5.80	1	5.50	1
4	Campeau Drive (EB)	44.00	8.80	2	5.40	1	4.10	1

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (m)	Default Capacity	Calib Capacity	V (m)	Default Capacity	Calib Capacity
1	Palladium Drive (NB)	0	1.000	0	1.000	7.00	3430	0	7.50	3675	0
2	Campeau Drive (WB)	0	1.000	0	1.000	6.00	3675	0	3.70	1813	0
3	Palladium Drive (SB)	0	1.000	0	1.000	6.00	2205	0	5.50	2695	0
4	Campeau Drive (EB)	0	1.000	0	1.000	6.30	3087	0	4.10	2009	0

Traffic Flow Data (veh/hr)

2029 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers		
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor	Peak Hour Factor
1	Palladium Drive (NB)	139	110	129	0	303	9.0	1.00	1.000
2	Campeau Drive (WB)	20	286	49	17	0	9.0	1.00	1.000
3	Palladium Drive (SB)	0	31	222	2	0	13.0	1.00	1.000
4	Campeau Drive (EB)	0	0	148	0	61	15.0	1.00	1.000

Operational Results

2029 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Palladium Drive (NB)	Free	378	303	199	0	708	792	1012	0.4773	0.2995
2	Campeau Drive (WB)	None	372		378		502	1507		0.2468	
3	Palladium Drive (SB)	None	255		604		146	902		0.2828	
4	Campeau Drive (EB)	Merge	148	61	698	647	161	573	870	0.2582	0.0701

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Palladium Drive (NB)	Free	7.37	0.00	4.09	2.01	0.00	A	A	A
2	Campeau Drive (WB)	None	3.44		3.44	0.93		A		A
3	Palladium Drive (SB)	None	9.34		9.34	1.72		A		A
4	Campeau Drive (EB)	Merge	7.01	4.44	6.26	0.76	0.20	A	A	A

APPENDIX J

Transportation Demand Management Checklists

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

Legend

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☐
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☐
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☒
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐ 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 *(see Official Plan policy 4.3.12)*	☒

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☒
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☒
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 Zoning By-law Section 111)*	☒
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	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☐ 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)	☐
	2.3	**Shower & change facilities**	
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	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
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	☐
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐

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

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

Legend

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

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

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

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

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances	☒ 2 bus routes (62/162) identified
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	☐
		3.2	**Transit fare incentives**	
			Commuter travel	
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	☐
			Visitor travel	
BETTER		3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3	**Enhanced public transit service**	
			Commuter travel	
BETTER		3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4	**Private transit service**	
			Commuter travel	
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)	☐
			Visitor travel	
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: *Non-residential developments*	Check if proposed & add descriptions
		4.	**RIDESHARING**	
		4.1	**Ridematching service**	
			Commuter travel	
BASIC	★	4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2	**Carpool parking price incentives**	
			Commuter travel	
BETTER		4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3	**Vanpool service**	
			Commuter travel	
BETTER		4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5.	**CARSHARING & BIKESHARING**	
		5.1	**Bikeshare stations & memberships**	
BETTER		5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
			Commuter travel	
BETTER		5.1.2	Provide employees with bikeshare memberships for local business travel	☐
		5.2	**Carshare vehicles & memberships**	
			Commuter travel	
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	☐
		6.	**PARKING**	
		6.1	**Priced parking**	
			Commuter travel	
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	☐
			Visitor travel	
BETTER		6.1.3	Charge for short-term parking (hourly)	☐

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

APPENDIX K

MMLOS Review

Segment MMLOS Analysis

This section provides a review of the boundary street Campeau Drive, Huntmar Drive, and Journeyman Street using complete streets principles. The *Multi-Modal Level of Service (MMLOS) Guidelines*, produced by IBI Group in October 2015, were used to evaluate the levels of service for each alternative mode of transportation on Campeau Drive, Huntmar Drive, and Journeyman Street, based on the targets for areas within 'Employment Areas'. Segments have been analyzed based on existing conditions and the cycling and pedestrian facilities on the north side of Campeau Drive between Huntmar Drive and Journeyman Street to be built by others is assumed to be existing for the purpose of this analysis.

Exhibit 4 of the *MMLOS Guidelines* has been used to evaluate the segment pedestrian level of service (PLOS) of Campeau Drive, Huntmar Drive, and Journeyman Street. Exhibit 22 suggests a target PLOS C for all roadways within employment areas. The results of the segment PLOS analysis are summarized in **Table 1**.

Exhibit 11 of the *MMLOS Guidelines* has been used to evaluate the segment bicycle level of service (BLOS) of Campeau Drive, Huntmar Drive, and Journeyman Street. Within employment areas, Exhibit 22 suggests a target BLOS C for arterial roadways with a Local Route designation (Huntmar Drive north of Campeau Drive), a target BLOS E for arterial roadways with no cycling designation (Campeau Drive west of Huntmar Drive), and no target for a local road with no cycling designation (Journeyman Street). The results of the segment BLOS analysis are summarized in **Table 2**.

Exhibit 15 of the *MMLOS Guidelines* has been used to evaluate the segment transit level of service (TLOS) of Campeau Drive and Huntmar Drive, Journeyman Street has not been evaluated as there is no proposed or existing transit routes. Within employment areas, Exhibit 22 does not identify a target TLOS for roadways that are not in the City's Transit Priority Network. The results of the segment TLOS analysis are summarized in **Table 3**.

Exhibit 20 of the *MMLOS Guidelines* has been used to evaluate the segment truck level of service (TkLOS) of Campeau Drive, Huntmar Drive, and Journeyman Street. Within employment areas, Exhibit 22 suggests a target TkLOS D for arterial roadways with no truck route designation and target TkLOS E for local roadways with no truck route designation. The results of the segment TkLOS analysis are summarized in **Table 4**.

Table 1: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed[1]	PLOS
Campeau Drive (north side, Huntmar Drive to Journeyman Street)					
2.0m	> 2.0m	< 3,000 vpd	No	70 km/h	B
Campeau Drive (south side, Huntmar Drive to Journeyman Street)					
2.0m	> 2.0m	< 3,000 vpd	No	70 km/h	B
Huntmar Drive (east side, north of Campeau Drive)					
2.0m	> 2.0m	> 3,000 vpd	No	60 km/h	C
Huntmar Drive (west side, north of Campeau Drive)					
0m	0m	> 3,000 vpd	No	60 km/h	**F**
Journeyman Street (east side, Upper Canada Street to Campeau Drive)					
2.0m	2.0m	< 3,000 vpd	No	60 km/h	A
Journeyman Street (west side, Upper Canada Street to Campeau Drive)					
2.0m	2.0m	< 3,000 vpd	No	60 km/h	A

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

Table 2: BLOS Segment Analysis

Road Class	Type of Route	Type of Bikeway	Travel Lanes	Operating Speed	BLOS
Campeau Drive (Huntmar Drive to Journeyman Street)					
Arterial	None	Physically Separated	4	70 km/h	A
Huntmar Drive (north of Campeau Drive)					
Arterial	Local	Mixed Traffic	4	60 km/h	**F**
Journeyman Street (Upper Canada Street to Campeau Drive)					
Local	None	Mixed Traffic	2	60km/h	**F**

Table 3: TLOS Segment Analysis

Facility Type	Exposure to Congestion Delay, Friction, and Incidents			TLOS
	Congestion	Friction	Incident Potential	
Campeau Drive (Huntmar Drive to Journeyman Street)				
Mixed Traffic – Limited Parking/Driveway Friction	Yes	Low	Medium	D
Huntmar Drive (north of Campeau Drive)				
Mixed Traffic – Limited Parking/Driveway Friction	Yes	Low	Medium	D

Table 4: TkLOS Segment Analysis

Curb Lane Width	Number of Travel Lanes Per Direction	TkLOS
Campeau Drive (Huntmar Drive to Journeyman Street)		
≤ 3.7m	2	A
Huntmar Drive (Journeyman Street to Paine Avenue)		
≤ 3.7m	2	A
Journeyman Street (Upper Canada Street to Campeau Drive)		
> 3.7m	1	B

Intersection MMLOS Analysis

The following is a review of the MMLOS of the signalized intersections within the study area, using complete streets principles. As Campeau Drive/Journeyman Street is the only signalized intersection in the study area it is the only intersection to be analyzed. Campeau Drive/Journeyman Street has been evaluated using the MMLOS targets for intersections within employment area. Campeau Drive/Journeyman Street has been analyzed based on existing conditions and the cycling and pedestrian facilities on the north side of Campeau Drive between Huntmar Drive and Journeyman Street to be built by others is assumed to be existing for the purpose of this analysis.

Exhibit 5 of the Addendum to the MMLOS Guidelines has been used to evaluate the existing PLOS at the intersections listed above. Exhibit 22 of the MMLOS Guidelines suggests a target PLOS A for all roadways within an employment area. The results of the intersection PLOS analysis are summarized in **Table 5**.

Exhibit 12 of the MMLOS Guidelines has been used to evaluate the existing BLOS at the intersection listed above. Within an employment area, Exhibit 22 of the MMLOS Guidelines suggests a target BLOS E for arterial roadways without a cycling designation (Campeau Drive) and no target for local roadways without a cycling designation (Journeyman Street). The results of the intersection BLOS analysis are summarized in **Table 6**.

Exhibit 16 of the MMLOS Guidelines has been used to evaluate the existing TLOS at the intersection listed above. Exhibit 22 of the MMLOS Guidelines does not identify a target TLOS for roadways that are not in the City's Transit Priority Network. However, the TLOS has been evaluated for every approach that is currently used by transit (Campeau Drive). The results of the intersection TLOS analysis are summarized in **Table 7**.

Exhibit 21 of the MMLOS Guidelines has been used to evaluate the existing TkLOS at the intersection listed above. Within an employment area, Exhibit 22 of the MMLOS Guidelines identifies a target TkLOS D for arterial roadways without a truck route designation (Campeau Drive) and a target TkLOS E for local roadways without a truck route designation (Journeyman Street). The results of the intersection TkLOS analysis are summarized in **Table 8**.

Table 5: PLOS Intersection Analysis – Campeau Drive/Journeyman Street

Criteria	North Approach		South Approach		East Approach		West Approach	
Campeau Drive/Journeyman Street								
PETSI SCORE								
CROSSING DISTANCE CONDITIONS								
Median > 2.4m in Width	No	39	No	55	No	39	No	39
Lanes Crossed (3.5m Lane Width)	7		6		7		7	
SIGNAL PHASING AND TIMING								
Left Turn Conflict	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8
Right Turn Conflict	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5	Permissive or Yield	-5
Right Turn on Red	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3	RTOR Allowed	-3
Leading Pedestrian Interval	No	-2	No	-2	No	-2	No	-2
CORNER RADIUS								
Parallel Radius	> 10m to 15m	-6	> 5m to 10m	-5	> 5m to 10m	-5	> 15m to 25m	-8
Parallel Right Turn Channel	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4	No Right Turn Channel	-4
Perpendicular Radius	N/A	0	N/A	0	N/A	0	N/A	0
Perpendicular Right Turn Channel	N/A	0	N/A	0	N/A	0	N/A	0
CROSSING TREATMENT								
Treatment	Standard	-7	Zebra Stripe	-4	Standard	-7	Zebra Stripe	-4
PETSI SCORE		**4**		**24**		**5**		**5**
LOS		**F**		**F**		**F**		**F**
DELAY SCORE								
Cycle Length		90		90		90		90
Pedestrian Walk Time		11.5		11.5		18.2		18.2
DELAY SCORE		**34.2**		**34.2**		**28.6**		**28.6**
LOS		**D**		**D**		**C**		**C**
OVERALL		**F**		**F**		**F**		**F**

Table 6: BLOS Intersection Analysis

Approach	Facility Type	Criteria	Travel Lanes and/or Speed	BLOS
North Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane 50m long and turning speed <25km/h	F
		Left Turn Accommodation	One lane crossed, ≥ 60km/hr	
South Approach	Mixed Traffic	Right Turn Lane Characteristics	Right turn lane 50m long and turning speed <25km/h	D
		Left Turn Accommodation	One lane crossed, 50km/hr	
East Approach	Cycle Track	Right Turn Lane Characteristics	No impact on LTS	A
		Left Turn Accommodation	Two-stage left turn	
West Approach	Cycle Track	Right Turn Lane Characteristics	No impact on LTS	A
		Left Turn Accommodation	Two-stage left turn	

Table 7: TLOS Intersection Analysis

Approach	Delay[1]		TLOS
	AM Peak	PM Peak	
East Approach	2 sec	5 sec	B
West Approach	2 sec	6 sec	B

1. Delay based on outputs from Synchro analysis of existing conditions

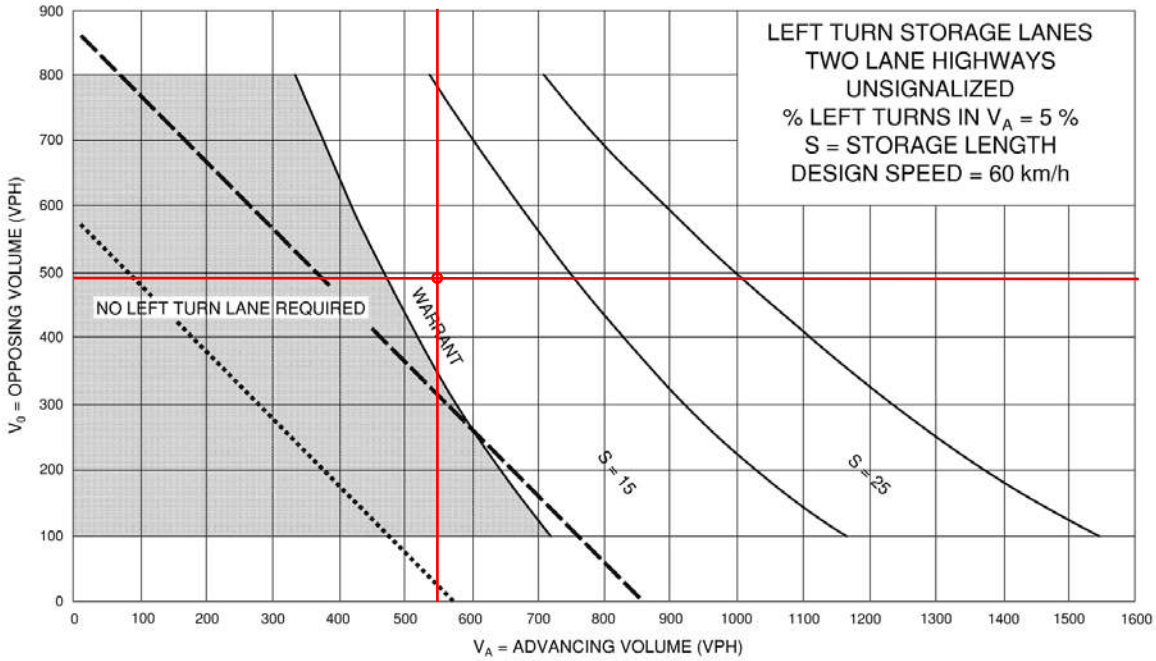
Table 8: TkLOS Intersection Analysis

Approach	Effective Corner Radius	Number of Receiving Lanes Departing Intersection	TkLOS
North Approach	> 15m	2	A
South Approach	< 10m	2	D
East Approach	> 15m	1	C
West Approach	< 10m	2	D

APPENDIX L

MTO Left Turn Lane Warrants

Exhibit 9A-7



AM Va:548 Vo:493

TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

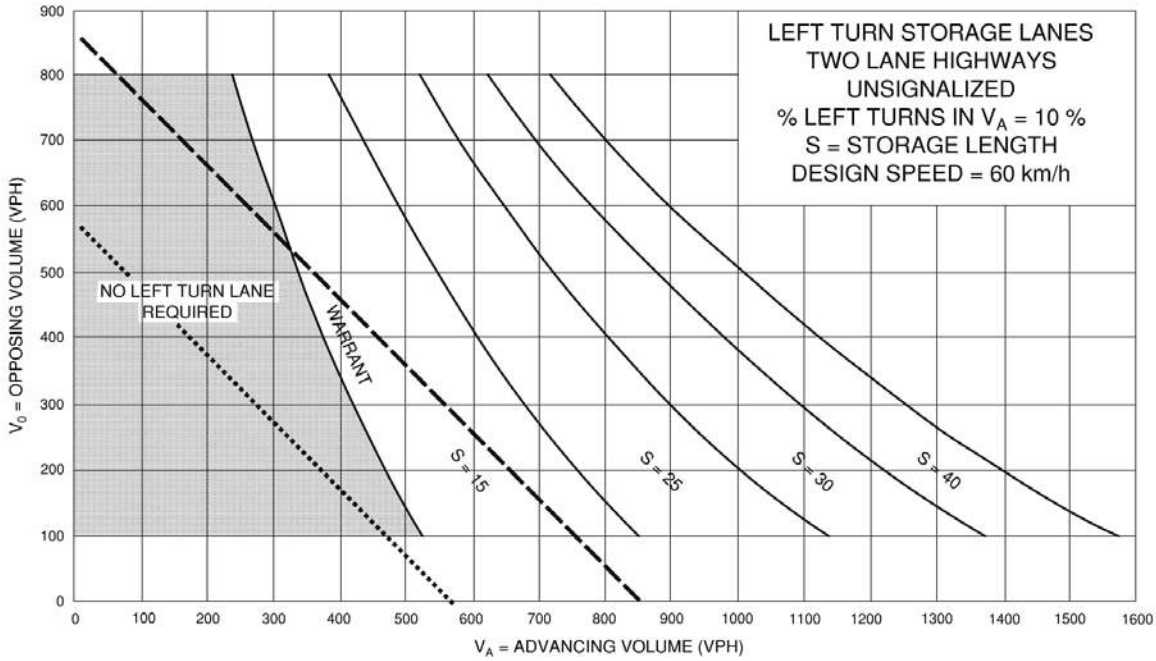
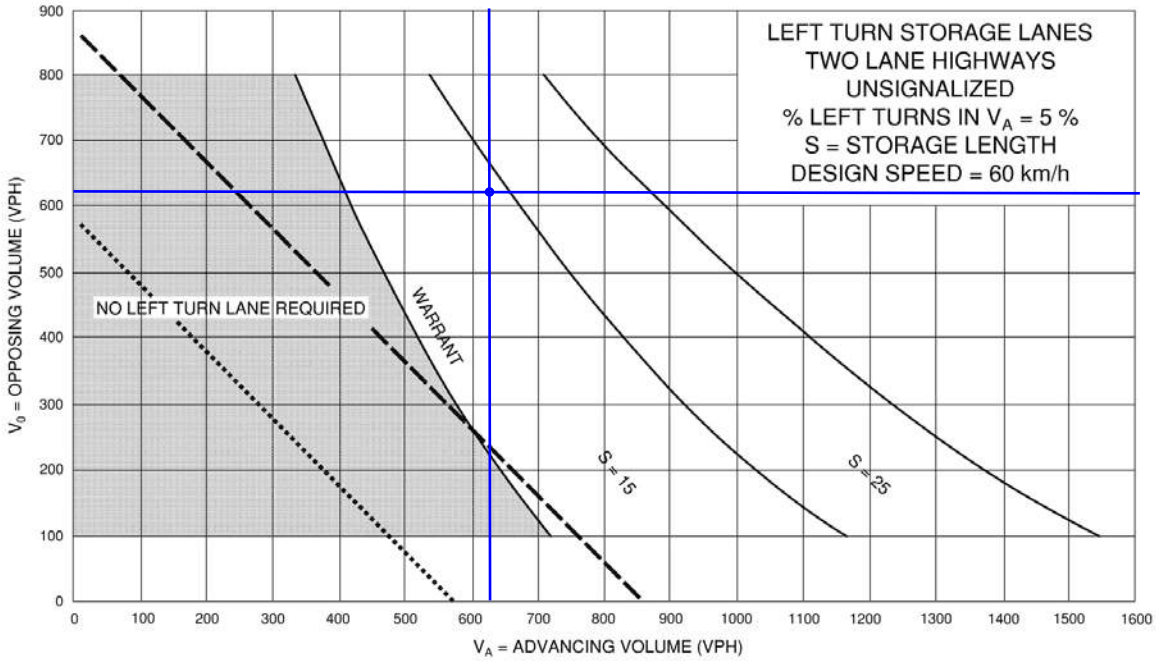


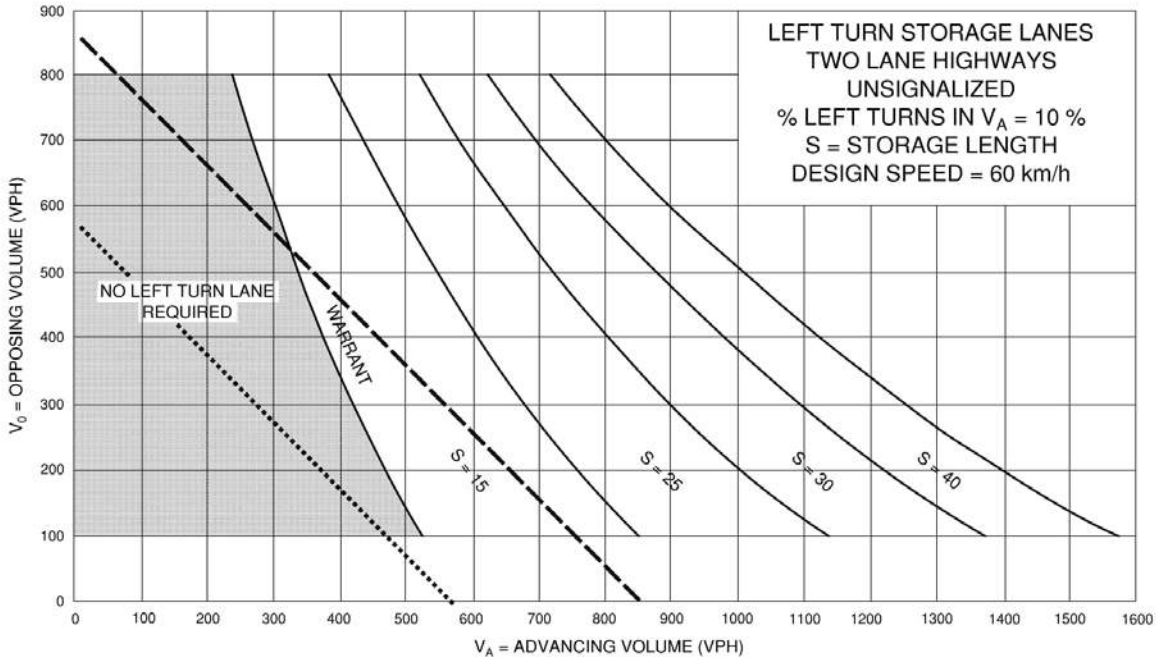
Exhibit 9A-7



PM Va:625 Vo:622

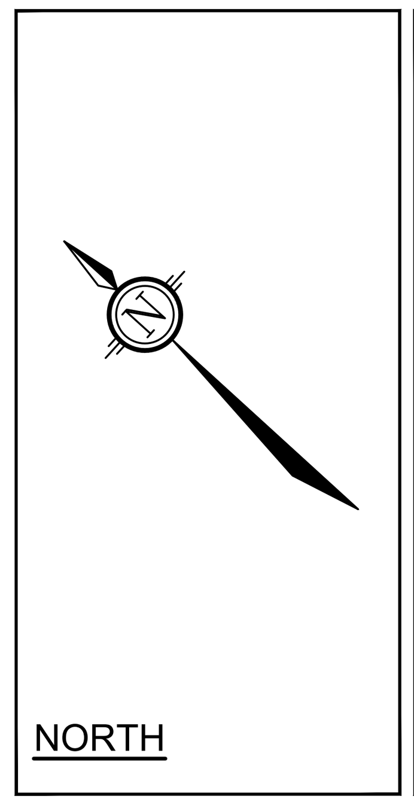
TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

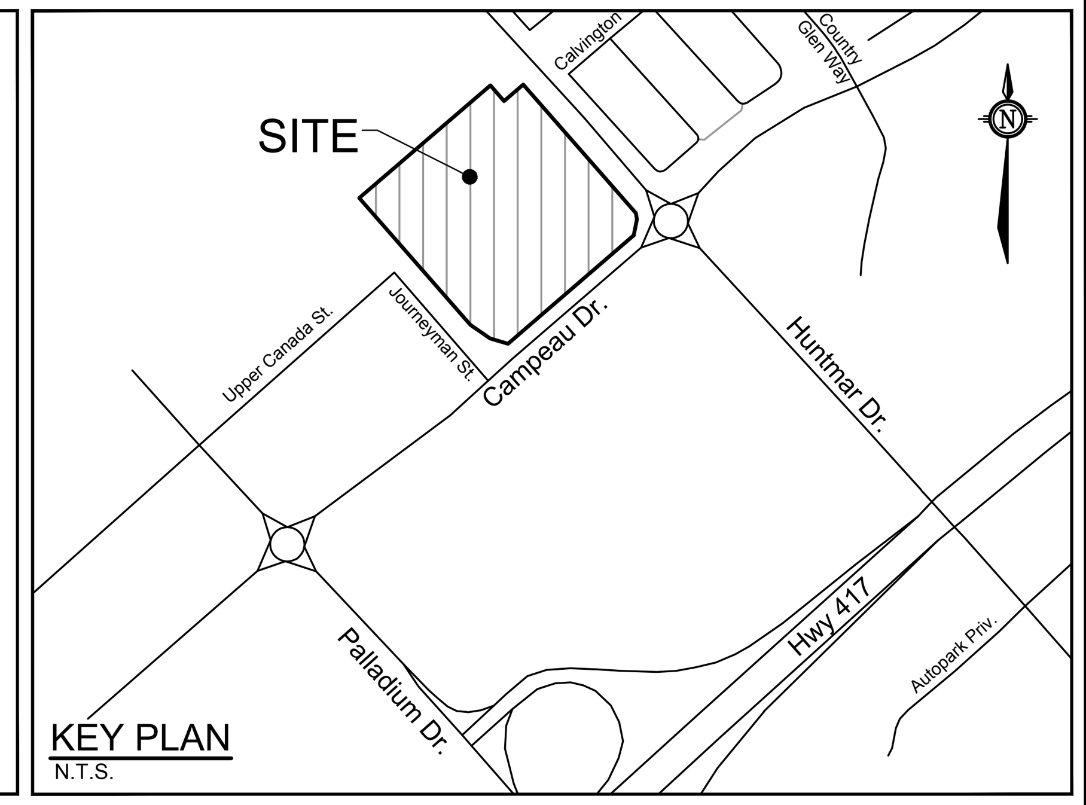
TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS



APPENDIX M

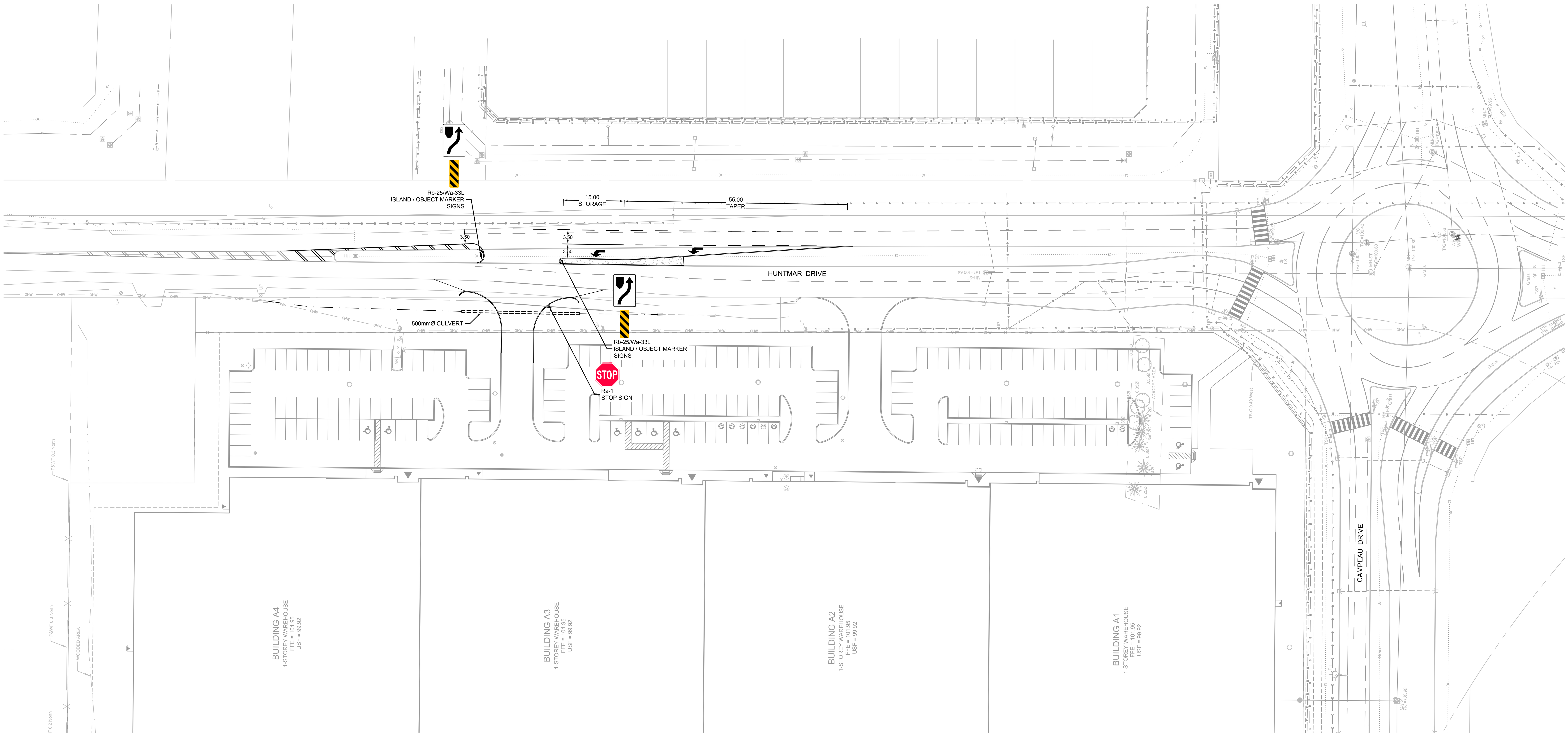
Functional Design of Left Turn Lane





LEGEND

- TRAFFIC DUCT
- WATERMAIN
- STORM SEWER
- SANITARY SEWER
- STREET LIGHT & DUCT
- HYDRO DUCT
- BELL DUCT
- GAS MAIN
- GAS MAIN



C:\temp\AcPublish_16928\122151-FD_Opt2.dwg, FD, Dec 16, 2022 - 9:39am, rhiller

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, 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.

No.	REVISION	DATE	BY
2.	ISSUED FOR CITY REVIEW	DEC 16/22	BJB
1.	ISSUED FOR COORDINATION	DEC 06/22	BJB

SCALE
1:500
1:500
0 5 10 15 20

DESIGN	RCH
CHECKED	TVW
DRAWN	RCH
CHECKED	BJB
APPROVED	BJB

FOR REVIEW ONLY

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Engineers, Planners & Landscape Architects
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Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY of OTTAWA
405 HUNTMAR DRIVE

DRAWING NAME
FUNCTIONAL DESIGN
HUNTMAR DRIVE NORTHBOUND
LEFT TURN LANE

PROJECT No. 122151
REV # 1
DRAWING No. 122151-FD